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November 9, 2018

Mr. Matthew J. Ohl
Remedial Project Manager
U.S. EPA – Region 5
77 West Jackson Blvd., SR-6J
Chicago, IL 60604

Subject: Revision 1 of the Final Closure Report
Non-Asbestos-Containing On-Site Landfill
Permit Exempt "815" Facility #0971900014
Johns Manville, Waukegan, Lake County, Illinois

Dear Mr. Ohl:

On behalf Johns Manville, included with this submittal is two copies of Revision 1 of the Final Closure Report for the Non-Asbestos Containing On-Site Landfill ("On-Site Landfill"), a permit exempt "815" facility at the former Johns Manville manufacturing facility located in Waukegan, Illinois (#0971900014). This Final Closure report provides the documentation to confirm that the final closure of On-Site Landfill remedial activity has been completed in accordance to the Final Phase II Remedial Work Plan (Revision 1) dated June 20, 2008, and satisfactorily meets the full requirements of the First Amended Consent Decree, the Adjusted Standard Order dated December 6, 2007, and regulations for existing landfills set forth in 35 IAC Part 814, Subparts A and C.

If you have any questions, please contact me at 312.861.4030.

Yours sincerely,

Tim Dull, P.E.
Senior Project Manager
timothy.dull@aecom.com

William A. Bow, C.P.G.
Vice President
william.bow@aecom.com

Attachment: Revision 1 of the Final Closure Report, Non-Asbestos-Containing On-Site Landfill

Copies:

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Prepared for:
Johns Manville

Prepared by:
AECOM
Warrenville, Illinois
Project No. 60556851
November 2018

Non-Asbestos Containing On-Site Landfill Construction Final Closure Report - State Facility ID# 0971900014

Johns Manville Facility
1871 N. Pershing Road
Waukegan, Illinois

Revision 1

AECOM

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Non-Asbestos Containing On-Site Landfill Construction Final Closure Report - State Facility ID# 0971900014

Johns Manville Facility
1871 N. Pershing Road
Waukegan, Illinois

Revision 1

Bridget A. Bulthaup

Prepared By: Bridget Bulthaup
Project Geologist

Reviewed By: Tim Dull, PE
Project Manager

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List of Acronyms

ACMs	Asbestos containing materials
AECOM	AECOM Technical Services, Inc.
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
FACD	First Amended Consent Decree
IAC	Illinois Administrative Code
Illinois EPA	Illinois Environmental Protection Agency
IPCB	Illinois Pollution Control Board
JM	Johns Manville
LEL	Lower Explosive Limit
LFR	LFR, Inc.
MDP	Miscellaneous Disposal Pit
NRG	NRG Energy Inc.
OCD	Original Consent Decree
O&M	Operation and Maintenance
ND	non-detected
QAPP	Quality Assurance Project Plan
RWP	Remedial Work Plan
U.S. EPA	United States Environmental Protection Agency

Executive Summary

AECOM Technical Services, Inc. (AECOM) has prepared the Final Closure Report for the Non-Asbestos Containing On-Site Landfill, Revision 1 (On-Site Landfill), a permit exempt “815” Facility at the former Johns Manville (JM) manufacturing facility, located at 1871 North Pershing Road in Waukegan, Illinois; State Facility ID# 0971900014. This Final Closure Report is being submitted as part of fulfilling the documentation of activities governed by the First Amended Consent Decree (FACD), Civil Action No. 88C 630, entered in 2004. This Revision 1 to the Final Closure Report incorporates U.S. EPA comments and AECOM responses presented in the following documents and on **Table 1**:

1) Final Closure Report submitted to the U.S. Environmental Protection Agency (EPA) on March 31, 2017.
2) Response to U.S. EPA Comments Received December 5, 2017 (RTC #1) (**Appendix F**) was submitted to the U.S. EPA on April 25, 2018.
3) Response to U.S. EPA Comments Received July 26, 2018 (RTC #2) (**Appendix G**) was submitted to the U.S. EPA on August 22, 2018.
4) Response to U.S. EPA Comments Received September 13, 2018 (RTC #3) (**Appendix H**) was submitted to the U.S. EPA on September 26, 2018.
5) Response to U.S. EPA Comments Received October 19, 2018 (RTC #4) (**Appendix I**) was submitted to the U.S. EPA on November 9, 2018.

The On-Site Landfill was closed and stopped accepting waste in 1998. The On-Site Landfill meets the definition of “existing facility or existing unit” contained in 35 IAC Section 810.103, it is subject to the standards for existing landfills and units, set forth in 35 IAC Part 814, Subparts A and C. The final cover for the landfill was constructed in 2008. The completed final cover consists of a 1-foot thick barrier layer, a 1-foot thick sand drainage layer, a 3-foot thick compacted clay soil cover, and surface vegetation.

This Final Closure report provides the documentation to confirm that the final closure of the On-Site Landfill (#0971900014) remedial activity has been completed in accordance to the Final Phase II Remedial Work Plan (Revision 1) dated June 20, 2008, and satisfactorily meets the full requirements of the FACD, the Adjusted Standard Order dated December 6, 2007, and regulations for existing landfills set forth in 35 IAC Part 814, Subparts A and C.

1.0 Introduction

AECOM Technical Services, Inc. (AECOM) prepared this Final Closure Report for the Non-Asbestos Containing On-Site Landfill, Revision 1 (On-Site Landfill), a permit exempt “815” Facility at the former Johns Manville (JM) manufacturing facility, located at 1871 North Pershing Road in Waukegan, Illinois, State Facility ID# 0971900014). This Revision 1 to the Final Closure Report incorporates U.S. EPA comments and AECOM responses presented in the following documents and on **Table 1**:

1) Final Closure Report submitted to the U.S. Environmental Protection Agency (EPA) on March 31, 2017.
2) Response to U.S. EPA Comments Received December 5, 2017 (RTC #1) (**Appendix F**) was submitted to the U.S. EPA on April 25, 2018.
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5) Response to U.S. EPA Comments Received October 19, 2018 (RTC #4) (**Appendix I**) was submitted to the U.S. EPA on November 9, 2018.

The On-Site Landfill is located in the southeast corner of the JM property as shown on **Figure 1**. Fill Area 1 of the On-Site Landfill, also known as the Miscellaneous Disposal Pit (MDP), is an approximately 12-acre rectangular area to the south of the former Collection Basin and former Settling Basin. Fill Area 2 is an approximately 3.5-acre square-shaped area comprising roughly the southern one-third of the former Collection Basin. These two fill areas of the Non-Asbestos Containing On-Site Landfill are hereafter referred to collectively as the “On-Site Landfill.”

This Final Closure Report is being submitted as part of fulfilling the documentation of activities governed by the First Amended Consent Decree (FACD), Civil Action No. 88C 630, entered in 2004. Under the terms of the FACD, JM was required to develop and implement the approved Final Phase II Remedial Work Plan(s) (RWPs) for three areas of the JM property: (1) Wastewater Treatment Ponds, (2) the On-Site Landfill; and (3) the Industrial Canal, Pumping Lagoon, and Collection Basin. Following closure, JM is required to implement measures and perform activities required for operation and maintenance (O&M) of the closed areas for a minimum period of 30 years after completion of construction.

The On-Site Landfill is closed. The On-Site Landfill stopped accepting waste in 1998, and the final cover was constructed in 2008 and is considered to have a fully established vegetated final cover as documented in this Final Closure Report. Because the On-Site Landfill meets the definition of “existing facility or existing unit” contained in 35 IAC Section 810.103, it is subject to the standards for existing landfills and units, set forth in 35 IAC Part 814, Subparts A and C.

Between 2005 and 2008, data was collected related to landfill gas monitoring, leachate collection, and groundwater monitoring. Additional work completed between 2005 and 2008 was related to developing a design basis for the On-Site Landfill cap and deriving an appropriate HELP Model that was acceptable to the U.S. EPA. Data was submitted to the Illinois Pollution Control Board (IPCB) in support of the adjusted standards, comments were received, and responses to comments were made.

On December 6, 2007, the IPCB issued an Opinion and Order regarding adjusted standards for the On-Site Landfill. The IPCB granted JM adjusted standards for (i) landfill gas monitoring frequency, (ii) landfill gas management system, (iii) standards for location of monitoring points, and (iv) the horizontal extent of the zone of attenuation.

The gap between the conclusion of substantial work in November 2008 to 2016 was in-part, due to ongoing O&M of the vegetative cover and changes to the Industrial Canal and Pumping Lagoon closure methods. Submittal of the March 2017 Final Closure Report was tabled until all work described in the FACD was complete.

2.0 Background

2.1 Property Location and Description

JM's approximately 353-acre Property is located along the shoreline of Lake Michigan primarily in the City of Waukegan, Lake County, Illinois (**Figure 1**). It is bounded on the west by the Union Pacific Railroad, on the south by Greenwood Avenue, NRG Energy Inc. Waukegan Generating Station, Commonwealth Edison, and City of Waukegan property, on the east by the shoreline of Lake Michigan, and on the north by the Illinois Beach State Park Nature Preserve.

For discussion purposes, the Property may be divided into five general areas (**Figure 1**): former Manufacturing Area (roughly 109 acres), former Disposal Area (142 acres), Borrow Pit (roughly 50 acres), Beach (roughly 23 acres) and former Industrial Canal and former Pumping Lagoon (roughly 29 acres). The On-Site Landfill (approximately 15.5 acres) is located within the south east corner of the former JM Disposal Area. The former Settling Basin occupies the central portion of the former JM Disposal area, with the former Collection Basin to the east and the Mixing Basin and Catch Basin to the immediate west.

2.2 Property History

JM has occupied the Property since approximately 1920. Prior to that time, the area was largely undeveloped. Manufacturing facilities were constructed within the former Manufacturing Area (**Figure 1**) beginning in the early 1920s with various changes and additions made until the late 1970s. At its peak, the manufacturing plant employed up to several thousand workers and produced a wide range of asbestos-containing products. The manufacture of asbestos-containing materials (ACMs) was discontinued at the Site circa December 1985. Manufacturing of other building materials continued until September 1998.

By October 2001, the manufacturing buildings in the southwestern portion of the JM Property were demolished. The only permanent structure that currently remains on the Property is a building to house property maintenance staff and equipment, adjacent to the Pumping Lagoon.

Historically, waste manufacturing debris and other ACMs were placed in the former JM Disposal Area. In September 1983, pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), U.S. EPA placed the Disposal Area on the National Priorities List. In July 1985, JM submitted a Remedial Investigation Report for the JM Disposal Area. In accordance with the original federal Consent Decree (OCD) between JM, U.S. EPA, and the State of Illinois dated March 18, 1988, the former JM Disposal Area was closed and capped with an engineered cover. These closure and capping activities began in 1989 and were completed in 1992.

As stated above, JM has previously conducted substantial closure activities within the former Disposal Area pursuant to the OCD between the United States of America, the State of Illinois, and JM. That work was substantially completed prior to 1992. Other areas of the Site, including the On-Site Landfill were, by agreement, left open for continued use as part of the manufacturing operations until they were no longer needed for that purpose.

To support post-1992 (non-asbestos) manufacturing operations, a portion of the southeast corner of the former Disposal Area was utilized for on-site disposal of non-asbestos waste materials generated at the plant (On-Site Landfill). During its operating history from 1992 to 1998, the predominant waste that was placed in the On-Site Landfill was calcium silicate, an inert, nonhazardous material used by JM to produce T-12, a high temperature calcium silicate block insulation material. JM also disposed of lesser quantities of roofing materials, wood, paper, and cardboard, materials in the On-Site Landfill that Illinois Environmental Protection Agency (Illinois EPA) subsequently considered to be putrescible wastes.

Subsequent to manufacturing activity, through 2016, the property activity involved regulatory activities with the objective of final closure as described in **Table 2** and described in sections to follow.

3.0 Chronology of Events

A summary of key milestones and chronology of closure events and associated construction activities for the On-Site Landfill is provided in **Table 2**. This summary includes time periods of non-asbestos containing landfilling operations, interim and final landfill capping and closure activities with key regulatory milestones through final vegetative cover establishment from 1989 through 2016.

4.0 Final Closure Requirements

Performance of work for the On-Site Landfill closure is described in Section V of the FACD, paragraph 15 (c). JM is required to close the MDP and portion of the collection basin where non-asbestos containing waste materials were deposited in accordance with 35 IAC Part 814 – Standards for Existing Landfills and Units, or an adjusted standard of 35 IAC Part 814. Completion of work identified in FACD is described in this section. **Table 4** compares the FACD with the Final Phase II Remedial Work Plan (Revision 1) dated June 20, 2008 and references the document approving any scope change.

4.1 Adjusted Standards

JM was granted adjusted standards to 35 IAC Part 814 Subpart A and C for the On-Site Landfill. This included exemption to the requirement for a leachate collection or management system. Prior to construction of the On-Site Landfill cap in 2008, periodic removal of leachate from wells was performed. Leachate recovery documentation is included in the 2009 to 2017 Annual Reports for On-Site Permit Exempt "815" Facility (Reports #8 to #16 identified in **Table 3**). Following the cap construction, leachate no longer accumulated, as expected. The key milestone dates for the initial petition, regulatory correspondence, and final order by the IPCB is as follows:

- On June 30, 2004, JM filed an adjusted standard petition with the IPCB.
- On August 5, 2004, the IPCB issued an order to address deficiencies in the petition.
- On September 30, 2004, JM filed an amended adjusted standard petition with IPCB.
- Illinois EPA comments dated November 17, 2004, August 30, 2005, September 14, 2005, and November 23, 2005 were addressed by JM in various meetings and report submittals.
- On November 14, 2006, JM submitted a request for U.S. EPA opinion regarding proposed groundwater monitoring well locations.
- On December 5, 2006, U.S. EPA issued a letter of agreement that alternate groundwater monitoring locations were acceptable.
- On December 6, 2007, the IPCB issued an Opinion and Order regarding Adjusted Standards for the On-Site Landfill.

Adjusted standard supporting documents and correspondence reflected the key milestones above are provided in **Appendix A**. The IPCB Opinion and Order of December 6, 2007 granted JM adjusted standards for (i) landfill gas monitoring frequency, (ii) landfill gas management system, (iii) standards for location of monitoring points, and (iv) the horizontal extent of the zone of attenuation. Additional details regarding these four adjusted standards are provided in Section 4.1.1 to 4.1.4 below.

4.1.1 Landfill Gas Monitoring

Landfill gas monitoring procedures and data are presented in the 2009 to 2017 Annual Reports for On-Site Permit Exempt "815" Facility (Reports #8 to #16 identified in **Table 3**). The Adjusted Standard Order (IPCB, 2007) granted the following landfill gas monitoring program an adjusted standard as follows:

Johns Manville must operate all gas monitoring devices, including the ambient air monitors, such that samples will be collected on a semi-annual basis for a period of five years following approval of this adjusted standard. If, at the end of five years, the requirements for implementing a Landfill Gas Collection System (35 Ill. Adm. Code 811.311) are not met, no further monitoring must be conducted.

The landfill gas monitoring system was comprised of subsurface and ambient air monitoring locations described in the Final Phase II RWP Non-Asbestos Containing On-Site Landfill Closure (Revision 1) by LFR dated June 2008. Sixteen monitoring locations were used to detect migrating landfill gases within, and in, the immediate perimeter of the On-Site Landfill. Well logs for landfill monitoring locations are provided in **Appendix B**. As the Site is comprised of two distinct fill areas, three ambient air monitoring locations were located downwind of each fill area.

The landfill gas monitoring events required by the adjusted standard was conducted from May 21, 2008 to September 17, 2012. The results are summarized in data tables from the 2012 annual report (AECOM, 2013) submitted to the Illinois EPA and U.S. EPA dated February 14, 2014 and provided in **Appendix C**. The results indicate that the requirements for implementing a landfill gas collection system were not met, so no further monitoring was conducted per the Adjusted Standard Order.

Landfill gas monitoring is no longer required nor is there a need for further monitoring of landfill gas emissions as described in the 2012 Annual Report for On-Site Permit Exempt “815” Facility (Report #11 in **Table 3**) and the Petition of Johns Manville for an Adjusted Standard from: 35 Ill. Adm. Code 811.310, 811.311, 811.318, 811.320, and 814 (Report #23 in **Table 3**). Landfill gas monitoring data described in the 2012 Annual Report indicated that no substantial pressure was measured and the On-Site Landfill cap minimized the introduction of water, which further mitigated the generation of landfill gas. Therefore, there is no buildup of pressure beneath the On-Site Landfill cap. Additionally, the On-Site Landfill vegetation is thriving and there has not been any visual indication of vegetative stress due to landfill gas (i.e. “vegetation burnout”), even prior to On-Site Landfill capping activities.

4.1.2 Landfill Gas Management System

The Adjusted Standard Order (IPCB, 2007) granted the following landfill gas monitoring program adjusted standard:

Johns Manville must install a gas management system if a methane concentration greater than 50 percent of the lower explosive limit in air, is detected below the ground surface by a monitoring device or is detected by an ambient air monitor located as close as possible to, but outside the boundary line shown on Figure 7 of the amended adjusted standard petition (attached to and made a part of this order) or the property line, whichever is less.

Landfill gas samples from monitoring points shown on **Figure 2** located outside the landfill boundary (i.e., LMW-12, LMW-19, LMW-21, LMW-23, LMW-25, SMW-07A, SMW-08AR, SMW-10A, and SMW-12R) were monitored semi-annually from fall 2008 to September 17, 2012. The methane concentrations were less than 50% of the lower explosive limit (LEL, or 5% methane) for the period May 21, 2008 to September 17, 2012. The results are summarized in data tables from the 2012 annual report (AECOM, 2013) submitted to the Illinois EPA and U.S. EPA dated February 14, 2014 and provided in **Appendix C**. Soil gas monitoring data was not collected from LMW-20, LMW-22, LMW-24, and LMW-26 due to submerged well screens.

Monitoring ceased at these locations when data indicated it was not required by the December 2007 Adjusted Standard Order (Report #23 in **Table 3**) to install a landfill gas collection system nor perform further landfill gas monitoring as discussed in the 2012 Annual Report for On-Site Permit Exempt "815" Facility (Report #11 in **Table 3**).

Based on results of the landfill gas monitoring program (Report #11 of **Table 3**), no landfill gas management system is required per the adjusted standards (Report #23 of **Table 3**).

4.1.3 Groundwater Monitoring

The Adjusted Standard Order (IPCB, 2007) granted the following groundwater monitoring well location adjusted standard:

> *Johns Manville must install groundwater monitoring wells at the locations specified on Figure 8 (Rev. 1, July 19, 2007) (attached to and made a part of this order) of the amended adjusted standard petition. Those monitoring wells located along the proposed zone of attenuation boundary (see condition 4) shall be considered "Applicable Groundwater Quality Standard" (AGQS) wells consistent with the requirements of 35 Ill. Adm. Code 811.318(b)(5)*

During August 20 to August 26, 2008, JM installed groundwater monitoring wells as identified in Figure 8 of the December 7, 2007 Adjusted Standard Order. The final locations of the groundwater monitoring wells are shown in **Figure 2**, and well construction logs are provided in **Appendix B**.

A total of eleven (11) temporary piezometers were installed to assist in the determination of groundwater elevations, flow direction, and gradients within the shallow sand aquifer. These temporary piezometers and three additional piezometers (04-89, 04-91, and 04-92) were also used to assess the soil gas quality before and after the adjusted standards were approved. Two inch diameter PVC piezometers were installed within or near Fill Area 1 at three (3) locations (LMW-04, LMW-06 and LMW-07) and one inch diameter PVC piezometers were installed south and east of Fill Area 1 at eight (8) locations (P-87 through P-94) and east of Fill Area 2 at three (3) locations (04-89, 04-91, 04-92). Two inch diameter piezometers were installed using a drill rig equipped with hollow stem augers and constructed of two inch polyvinyl chloride (PVC) risers and 5 feet of 0.010 inch screen. One inch diameter piezometers were installed using a Geoprobe® drill rig with an expendable aluminum drive point and constructed of one inch PVC risers and 5 feet of 0.010 inch screen. Temporary piezometers, 04-89, 04-91 and 04-92, were installed with a Geoprobe® drill rig to a depth of five feet below ground surface (bgs) with 2.5 feet of 0.010 slotted screen on the bottom. Both diameters of temporary piezometers were installed to a depth below the surface of the shallow water table. Additional details of the temporary well installation and construction are provided in the Site Investigation Report dated September 26, 2005 (Report #28 in **Table 3**) and the Final Phase II Remedial Work Plan, Revision 1 dated June 20, 2008 (Report #32 in **Table 3**).Comparisons of groundwater and leachate monitoring results to standards as well as data trends are provided in the 2009 to 2017 Annual Reports for On-Site Permit Exempt "815" Facility (Reports #8 to #16 in **Table 3**).

4.1.4 Zone of Attenuation

The Adjusted Standard Order (IPCB, 2007) granted the following zone of attenuation adjusted standard to JM:

> *The zone of attenuation for Johns Manville's on-site landfill, within which concentrations of constituents in leachate discharged from the unit may exceed the applicable groundwater*

quality standard set forth at 35 Ill. Adm. Code 811.320, is a volume bounded by a vertical plane located as shown on the amended adjusted standard petition Figure 8 (Rev. 1, July 19, 2007) (attached to and made a part of this order), extending from the ground surface to the bottom of the uppermost aquifer and excluding the volume occupied by the waste.

The zone of attenuation was established by the Illinois EPA for O&M of the On-Site Landfill as depicted in Figure 8 (Revision 1, July 19, 2007) of the December 6, 2007 Adjusted Standard Order provided in **Appendix A**.

With final closure of the On-Site Landfill, the zone of attenuation will continue to be referenced during the post-closure monitoring phase of landfill O&M.

4.2 95% Phase II Work Plan

Under the terms of the FACD, a Draft Phase II RWP (35% design) was to be submitted within 60 days following issuance of the IPCB's final decision on the adjusted standard petition. That decision was issued on December 6, 2007. However, rather than submit the work plan at the 35% design level, as the design elements were largely completed and to expedite the overall schedule, JM elected to submit a Final Phase II RWP at the 95% level, bypassing the Draft Phase II RWP.

The U.S. EPA approved the Final Phase II RWP with modifications on April 14, 2008. On June 8, 2008, JM submitted Revision 1 of the Final Phase II RWP (LFR, 2008a) addressing each modification requested by U.S. EPA, as described in the transmittal letter for the Final Phase II RWP. A copy of the U.S. EPA and JM correspondences dated; February 8, 2008, April 14, 2008, and June 20, 2008 for the Final Phase II RWP are provided in **Appendix D**.

4.3 Completion of Construction

After detailed review, the final barrier layer grades, sand drainage layer, and final clay protection layer construction was completed in accordance with the Final Phase II RWP (Revision 1) dated June 8, 2008 (LFR, 2008a), including supporting plans for quality assurance and construction quality control. The final vegetative cover is considered to meet the requirements of 35 IAC 811.322 referenced in 35 IAC 814.302. No issues or emergency conditions were encountered during completion of On-Site Landfill capping activities.

Appendix E contains a written report and as-built drawings documenting final remedial construction stamped by a registered professional engineer.

Approval of the Final Phase II Remedial Work Plan dated June 20, 2008 (Report #32 in **Table 3**) served as the basis for approving sand for the drainage layer. Sand testing results indicated that standards were achieved and the sand was suitable for use.

Under the terms of the FACD, JM shall submit a written report to the U.S. EPA for approval, with a copy to the Illinois EPA, when it has completed construction of remedial activities for the On-Site Landfill. This Final Closure Report provides supporting documentation and notice to the Illinois EPA that the construction of the On-Site Landfill remedial activity has been completed in full satisfaction of the requirements of the FACD.

4.4 Ongoing Regulatory Requirements

The following paragraphs provide a description of the closure requirements from 35 IAC 811, 814, and 815 that are applicable to the On-Site Landfill.

35 IAC 811: The On-Site Landfill meets the definition of “existing facility or existing unit” contained in 35 IAC Section 810.103. The only requirements in 35 IAC 811 that are applicable to the On-Site Landfill are the general requirements in 35 IAC Section 811.110 (Closure and Written Closure Plan) and 35 IAC Section 811.111 (Post-Closure Maintenance). This Final Closure Report and the Final Phase II Remedial Work Plan dated June 20, 2008 (Report #32 in **Table 3**) satisfy the requirements of the Closure and Written Closure Plan in 35 IAC 811.110. Post-closure maintenance has been performed since January 2009 and will continue to be performed in accordance with 35 IAC Section 811.111 per the current O&M Manual which will be revised as necessary.

35 IAC 814: The requirements in 35 IAC 814 Subparts A and C are no longer applicable as they are addressed in the Final Phase II Remedial Work Plan dated June 20, 2008 (Report #32 in **Table 3**) and the Petition for Adjusted Standards (Report #23 in **Table 3**) with one exception. Section 814.302 (b)(2), which requires the owner or operator to provide a long-term static safety factor of at least 1.5 (and 1.3 under seismic conditions) to protect the completed units against slope failure, is applicable. However, a soil cover with a grade averaging 10 horizontal to 1 vertical (10 percent grade), and flatter, are common covers at Fill Areas #1 and #2. Fill Area #1 was constructed by filling a depression that was surrounded by the CERCLA landfill. The CERCLA landfill cap was completed in the early 1990s and approved by the U.S, EPA in the First Amended Consent Decree (FACD) and Explanation of Significant Differences (ESDs). Fill Area #2 was constructed by filling a depression called the Collection Basin, and that too was approved by the U.S. EPA in the FACD and ESDs.

35 IAC 815: The On-Site Landfill is considered a permit exempt “815” Facility. As such, an annual report is required pursuant to 35 IAC 815 Subpart C. Data gathered and submitted with the annual report (Reports #3 through #16 of **Table 3**) fulfills the requirements identified in Part 815.303.

5.0 Certifications

Certification of this report by a licensed professional engineer in the State of Illinois is provided below:

> I attest that this document and all attachments were prepared under my direction or reviewed by me, and to the best of my knowledge and belief, the work described in the report has been completed in accordance with the Phase II Remedial Work Plan (Revision 1) dated June 20, 2008, and meets the requirements of the FACD, the Adjusted Standard Order dated December 6, 2007, and regulations for existing landfills set forth in 35 IAC Part 814, Subparts A and C, and the information presented is accurate and complete.

Professional Engineer's Seal or Stamp

TIMOTHY C. DULL 062-048470 LICENSED PROFESSIONAL ENGINEER OF ILLINOIS

Name: Timothy Dull
Title: Senior Project Manager
Company: AECOM Technical Services, Inc.
Registration Number: 062-048470
License Expiration Date:

Signature: ______________ Date: 11/8/2018

The certification required in the FACD for construction completion of the JM On-Site Landfill is provided below:

> To the best of my knowledge, after thorough investigation, I certify that the information contained in or accompanying this submission is 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.

Name: Scott Myers
Title: Director of Environmental Programs
Company: Johns Manville

Signature: ______________ Date: 11/08/2018

6.0 References

AECOM Technical Services, Inc. (2013), 2012 Annual Report for On-Site Permit Exempt "815" Facility, Johns Manville, Waukegan, Illinois (#0971900014), February 14.

Consent Decree (1988). United States v. Manville Sales Corporation, Civil Action No. 88C 630, United States District Court for the Northern District of Illinois, Eastern Division, March 18.

First Amended Consent Decree (2004). United States v. Manville Sales Corporation, Civil Action No. 88C 630, United States District Court for the Northern District of Illinois, Eastern Division.

Illinois Pollution Control Board (IPCB) (2007), Order AS 04-4 (Adjusted Standard – Land), Petition of Johns Manville for an Adjusted Standard from 35 Ill. Adm. Code 811.310, 811.318, 811.320 and 814, December 6.

LFR Inc. (2005), Site Investigation Report, On-site Landfill, Johns Manville, Waukegan, Illinois, September 26.

LFR Inc. (2008a), Final Phase II Remedial Work Plan Non-Asbestos Containing On-Site Landfill, Revision 1, Johns Manville, Waukegan, Illinois, June 20.

Tables

Table 1 - Response to U.S. EPA Comments Cross-Reference Table
On-Site Landfill - Johns Manville
Waukegan, Illinois

Response to Comment (RTC) Document	Comment Number	Reference in Final Closure Report
Response to December 5, 2017 U.S. EPA Comments (RTC #1)	1	Section 1.0
	2	Table 3, Compact Discs
	3	Tables 2 and 3, Compact Discs
	4	Section 3.3 of Appendix E
	5	Appendix M of Appendix E
	6	Sections 2.1 and 2.2.2 of Appendix E
	7	Section 4.0 and 5.0 of Appendix E
	8	Section 4.0 and 5.0 and Appendix M of Appendix E
	9	Section 4.3
	10	Section 4.1, Table 3, Compact Discs
	11	Sections 4.1.1. and 4.1.2, Table 3, Compact Discs
	12	Sections 4.1.1, 4.1.2, and 4.1.3, Table 3, Compact Discs
	13	Sections 4.1.2 and 4.1.3, Appendix B, Table 3, Compact Discs
	14	Section 4.1.1, Table 3, Compact Discs
	15	Section 4.1.3, Table 3, Compact Discs
	16	Section 5.0 of Appendix E
	17	Section 8.3 of Appendix E
	18	Appendix H of Appendix E
	19	Section 3.2 and Appendix L of Appendix E
	20	Section 2.1
	21	Section 2.1 and Appendix C of Appendix E
	22	Section 5.0 of Appendix E
	23	Section 5.0 of Appendix E
Response to July 26, 2018 U.S. EPA Comments (RTC #2)	1	Table 3, Compact Discs
	2	Table 2
	3	Tables 2 and 3, Compact Discs
	4	Table 4
	5	Section 3.3 and Appendices A and F of Appendix E
	6	Section 2.2.1 and 3.5 Appendices A, D, E, and H of Appendix E
	7	No Action
	8	Section 4.4
	9	Section 5.0 and Appendices A and O of Appendix E
	10	Section 8.3 of Appendix E
	11	Sections 3.3 and 3.5 of Appendix E
	12	Section 2.1 of Appendix E
	13	No Action
Response to September 13, 2018 U.S. EPA Comments (RTC #3)	1	Section 3.5.2 and Appendices A and N of Appendix E
	1a	Section 3.5.2 and Appendices A and N of Appendix E
	1b	Section 3.5.2 and Appendices A and N of Appendix E
	1c	Section 3.5.2 and Appendices A and N of Appendix E
	1d	No Action
	1e	Section 2.2.2 of Appendix E
	1f	Sections 5.0 and 6.0 of Appendix E
	1g	No Action
	2	Section 3.1 and 8.3 of Appendix E
Response to October 19, 2018 U.S. EPA Comments (RTC #4)	1	No Action
	2	Section 3.5.2 and Appendices A and N of Appendix E, Table 3, Compact Discs
	3	Section 3.5.2 and Appendices A and N of Appendix E
	4	Appendix N of Appendix E
	5	Section 8.3 of Appendix E
	6	Sections 3.1 and 3.5.2 of Appendix E

Table 2. Chronology of Events and Construction Activities

Date	Milestone
July 13, 1989 to August 7, 1989	As part of CERCLA Disposal Area closure activities, JM completed installation of a 6-inch sand layer over the sideslopes and base of the Miscellaneous Disposal Pit (MDP). After the sand layer installation, JM continued to place non-asbestos containing manufacturing wastes in the MDP.
December 20, 1989 to January 1990	A 15-inch clay cover was placed on the sideslopes of the MDP as part of closure activities for the CERCLA Disposal Area.
May 8, 1990	JM completed installation of an additional six-inch sand layer over regraded wastes of the MDP. Placement of the sand layer concluded USEPA requirements for closure of the MDP prior to the closure of the CERCLA Disposal Area.
September 1992	JM prepared and submitted an Initial Facility Report (IFR) to the Illinois Environmental Protection Agency (IEPA) describing the disposal activities that had taken place and the plans for future disposal in the On-Site Landfill. The IFR filed in 1992 indicated JM's intention to operate the On-Site Landfill as an inert waste landfill, based on leachate data for the wastes that were intended to be placed in the unit.
1992 to 1998	Non-asbestos-containing waste placement activities into the On-Site Landfill. Daily and interim cover was periodically placed over waste material in Fill Area #1 and Fill Area #2.
September 22, 2000	The U.S. EPA issued a Second ESD to the OCD. In the ESD, U.S. EPA determined that the On-Site Landfill should be closed.
April 2003	Thickness of interim clay barrier was placed over Fill Area #1 and Fill Area #2 was confirmed with 86 soil borings.
July 10, 2003	A Compliance Plan for closure of the On-site Landfill was submitted to the U.S. EPA and the Illinois Environmental Protection Agency (IEPA) regarding activities that are planned to meet the regulatory requirements for closure and to identify those requirements that cannot be met; and for which JM intends to seek adjusted standards from the IPCB. Appendix D (Construction Compliance Plan) of the Final Phase II Remedial Work Plan (RWP) (Revision 1) superseded the July 10, 2003 Compliance Plan.
September 6, 2005	Site Investigation Report submitted to U.S. EPA and IEPA.
February 8, 2008	Final Phase II Remedial Work Plan (Revision 0) submitted to U.S. EPA and IEPA.
April 14, 2008	U.S. EPA approval of Phase II Remedial Work Plan with modifications.
June 20, 2008	Final Phase II Remedial Work Plan (Revision 1) submitted to U.S. EPA and IEPA.
August 4, 2008 to November 7, 2008	Completed final capping of On-site Landfill. Achievement of design barrier layer sub-base grades, a 1-foot thick sand drainage layer and a 3-foot thick compacted clay final protective layer was completed as described in the Construction Completion Report (**Appendix E**).
November 8, 2008 to November 30, 2016	Operations and Maintenance for the final cover per the activities described in Section 4 of the Final Phase II RWP (Revision 1). Closure of the On-site Landfill was delayed due to changes to the Industrial Canal and Pumping Lagoon closure methods, and closure of the On-site Landfill was tabled until all the work described in the First Amended Consent Decree (FACD) was completed in November 2016.

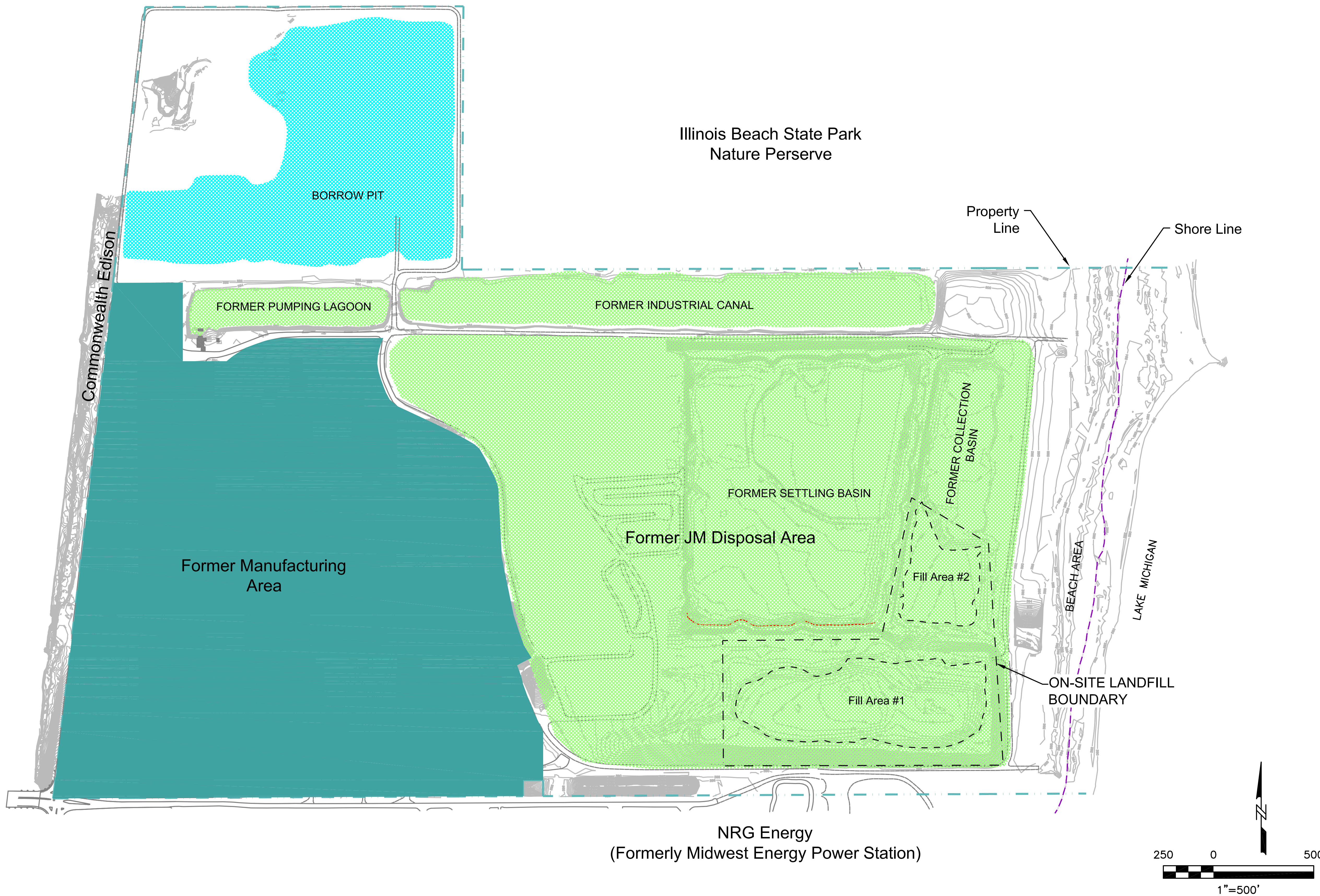
Table 3 - On-Site Landfill Reporting Summary
On-Site Landfill - Johns Manville
Waukegan, Illinois

Reporting Programs	Report #	Title of Report	Date of Report
Consent Decrees	1	Consent Decree (1988)	3/18/1988
	2	First Amended Consent Decree	2/4/2004
815 Reports	3	2004 Annual Report for On-Site Permit Exempt "815" Facility	2/14/2005
	4	2005 Annual Report for On-Site Permit Exempt "815" Facility	2/14/2006
	5	2006 Annual Report for On-Site Permit Exempt "815" Facility	2/14/2007
	6	2007 Annual Report for On-Site Permit Exempt "815" Facility	2/14/2008
	7	2008 Annual Report for On-Site Permit Exempt "815" Facility	2/12/2009
	8	2009 Annual Report for On-Site Permit Exempt "815" Facility	2/12/2010
	9	2010 Annual Report for On-Site Permit Exempt "815" Facility	2/15/2011
	10	2011 Annual Report for On-Site Permit Exempt "815" Facility	2/14/2012
	11	2012 Annual Report for On-Site Permit Exempt "815" Facility	2/14/2013
	12	2013 Annual Report for On-Site Permit Exempt "815" Facility	2/14/2014
	13	2014 Annual Report for On-Site Permit Exempt "815" Facility	2/13/2015
	14	2015 Annual Report for On-Site Permit Exempt "815" Facility	2/3/2016
	15	2016 Annual Report for On-Site Permit Exempt "815" Facility	2/14/2017
	16	2017 Annual Report for On-Site Permit Exempt "815" Facility	2/13/2018
5-Year Post-Remedial Construction Reports	17	First 5-Year Post-Remedial Construction Ambient Air, Groundwater, and Surface Water Monitoring Event Report	4/1/1997
	18	Second 5-Year Post-Remedial Construction Ambient Air, Groundwater, and Surface Water Monitoring Event Report	6/7/2002
	19	Third 5-Year Post-Remedial Construction Ambient Air, Groundwater, and Surface Water Monitoring Event Report	3/21/2008
	20	Fourth 5-Year Post-Remedial Construction Ambient Air, Groundwater, and Surface Water Monitoring Event Report	11/22/2013
	21	Fifth 5-Year Post-Remedial Construction Ambient Air, Groundwater, and Surface Water Monitoring Event Report	2/16/2018
Adjusted Standard Petition and Order	22	Petition of Johns Manville for an Adjusted Standard from 35 Ill. Adm. Code 814, 811.310, 811.311, 811.318, 811.320	9/30/2004
	23	Petition of Johns Manville for an Adjusted Standard from: 35 Ill. Adm. Code 811.310, 811.311, 811.318, 811.320, and 814	12/6/2007
Miscellaneous Reports	24	Initial Facility Report	9/1/1992
	25	Operation and Maintenance Manual, Revision 1	10/11/2002
	26	On-Site Landfill Supporing Documents to Describe Historical Activities at Johns Manville Site	2/24/2003
	27	Proposed Final Cover Soil and Thickness On-Site Landfill	9/17/2004
	28	Site Investigation Report On-Site Landfill	9/26/2005
	29	Response to IEPA Comments on HELP Model (August 30, 2005) and Petition for Adjusted Standards	4/25/2006
	30	Request for U.S. EPA Opinion on Proposed Groundwater Monitoring Well Locations; On-Site Landfill	11/14/2006
	31	Final Phase II Remedial Work Plan Non-Asbestos Containing On-Site Landfill Closure	2/8/2008
	32	Final Phase II Remedial Work Plan Non-Asbestos Containing On-Site Landfill Closure, Revision 1	6/20/2008
	33	Operation and Maintenance Manual, Revision 2	5/18/2010
	34	Revised Quality Assurance Project Plan (Revision 1)	1/24/2013
	35	Non-Asbestos Containing ON-Site Landfill Construction Final Closure Report - State Facility ID# 0971900014	3/31/2017
	36	CERCLA Operations and Maintenance Manual, Revision 3	3/24/2018

Table 4 - Comparison of First Amended Consent Decree Requirements and the Remedial Work Plan
On-Site Landfill - Johns Manville
Waukegan, Illinois

Final Phase II Remedial Work Plan On-Site Landfill, Revision 1 (RWP) dated June 20, 2008		First Amended Consent Decree (FACD) or Regulatory Reference	Document Indicating Scope Change
Section 3.1 Final Cover	Barrier Soil Layer: minimum 12-inch vertical thickness of previously placed clay (as interim cover), or equivalent.	FACD Section III(4)(x) and V(15)(c).	Described in “Proposed Final Cover Soil and Thickness” (LFR, September 17, 2004) and equivalent cover per 35 IAC Part 811.314(b)(3)(A)(iii).
	Lateral Drainage Layer: 12-inch vertical thickness of sand overlying the Barrier Soil Layer.		
	Final Protective Layer: 36-inch vertical thickness of clay overlying the lateral drainage layer capable of supporting vegetation.		
Section 3.2 Landfill Gas Monitoring	Landfill gas monitoring plan and schedule and ambient air monitoring	35 IAC Part 811.310 and Adjusted Standard Order.	Adjusted Standard Order dated 12/6/2007 describes the reduction in landfill gas monitoring in multiple sections. Landfill gas management changes described in the 2012 Annual Report dated 2/14/2013.
Section 3.3 Leachate Monitoring and Management System	Includes design of leachate collection and monitoring system, leachate sampling and recovery.	35 IAC Part 811.309; Monitoring Results provided in On-Site Permit Exempt "815" Facility Reports to Illinios EPA.	Adjusted Standard Order dated 12/6/2007 describes changes to the "zone of attenuation" [Section 811.320(c)(1)] for leachate monitoring in multiple sections.
Section 3.4 Groundwater Monitoring System	Includes design of well construction, location, sampling plans and schedules, and contingency plan.	35 IAC Part 811.318 and 811.319, and the Adjusted Standard Order.	Adjusted Standard Order dated 12/6/2007 describes changes in well locations and groundwater quality monitoring in multiple sections.
Section 4.0 Operation and Maintenance Activities	Site Security - 6 ft high perimeter fence and swinging gates with key entry pads and signage.	35 IAC Part 811.11; Operations and Maintenance Manual, Revision 1; FACD.	CERCLA Operations and Maintenance Manual, Revision 3 dated 3/24/2018.
	Access Roads - Class I ro Class II access roads located along south and east boundaries of Site and between Fill Area #1 and Fill Area #2.		
	Inspection Frequency - A minimum frequency of quarterly inspections of the final cover and all vegetated areas for a period of five years.		
	Final Cover Maintenance - The final cover will consist of 36 inches of clay over a 12 inch sand drainage layer over a 12 inch minimum compacted clay barrier layer. The top surface of the final cover will be vegetated. The primary function of the final cover is to reduce water percolation and infiltration through the waste material and to route water drainage from the sand drainage layer to surface drainage. Normal O&M consists of regular inspections, tree/shrub removal, and erosion repair. Non-routine O&M includes differential settlement and slope repair. The required O&M period in accordance with the FACD is 30 years after completion of construction. After 30 years, U.S. EPA and the State of Illinois shall evaluate the need for further operation and maintenance as specified in the FACD.		
	Cover Inspections - On-Site Landfill cover inspections will consist of weekly inspections until vegetative cover is thriving, monthly inspections conducted thereafter, and inspections within 72 hours of heavy rainfall events. Inspections will be conducted concurrently with inspection requirements for the CERCLA vegetative cover in the approved O&M Manual for the JM Disposal Area.		
	Maintenance - The detailed construction of the vegetated soil cover for the site is described in Section 3.0. Replacement materials should meet the specifications established in Section 3.0.		
Section 5.0 Other Submittals	Construction Compliance Plan	FACD Section V(15)(b)	No update.
	Emergency and Contingency Plan		No update.
	Sampling and Analysis Plan		Revised Quality Assurance Project Plan (Revision 1) dated 1/24/2013 Section 3.3.
	Quality Assurance Project Plan Addendum		Revised Quality Assurance Project Plan (Revision 1) dated 1/24/2013.
	Site Health and Safety Plan		CERCLA Operations and Maintenance Manual, Revision 3 dated 3/24/2018.

Figures



AECOM

JOHNS MANVILLE WAUKEGAN, ILLINOIS PROJECT NO. 60326956			GENERAL PROPERTY LOCATION MAP
DATE: 01/25/2017	DRWN: BKR		FIGURE 1

LEGEND:

- EXISTING WELL LOCATION
- LEACHATE WELL LOCATION (NOT IN USE)

NOTE:

LEACHATE WELL SAMPLING CEASED DECEMBER 2013, THESE WELLS ARE NO LONGER BEING SAMPLED

AECOM

JOHNS MANVILLE
WAUKEGAN, ILLINOIS
PROJECT NO. 60458421

DATE: 01/26/16 DRWN: JC

ON-SITE LANDFILL LEACHATE & GROUNDWATER MONITORING LOCATIONS

FIGURE 2

Appendix A

Adjusted Standard Correspondence

RECEIVED
CLERK'S OFFICE

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD JUN 30 2004

STATE OF ILLINOIS
Pollution Control Board

IN THE MATTER OF:	)	
	)	
PETITION OF JOHNS MANVILLE	)	
FOR AN ADJUSTED STANDARD FROM	)	
35 ILL.ADM. CODE PART 814, §§ 811.310,	)	
811.311, 811.318	)	**AS 04-** 04
	)	**(Adjusted Standard-Land)**
	)	

NOTICE OF FILING

To: Attached Service List

Please take notice that on June 30, 2004, Johns Manville has filed the attached adjusted standard petition, a copy of which is hereby served upon you.

Johns Manville, Petitioner.

By: Edward P. Kenney
One of Its Attorneys

Edward P. Kenney
Sidley Austin Brown & Wood LLP
Bank One Plaza
10 South Dearborn Street
Chicago, Illinois 60603
(312) 853-7000

RECEIVED
CLERK'S OFFICE
JUN 30 2004
STATE OF ILLINOIS
Pollution Control Board

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:	)	
	)	
PETITION OF JOHNS MANVILLE	)	
FOR AN ADJUSTED STANDARD FROM	)	
35 ILL.ADM. CODE PART 814, §§ 811.310,	)	
811.311, 811.318	)	**AS 04-** 04
	)	**(Adjusted Standard-Land)**
	)	
	)	
	)	
	)	
	)	
	)	

PETITIONER JOHNS MANVILLE'S PETITION FOR AN ADJUSTED STANDARD FOR CERTAIN PROVISIONS OF 35 ILL.ADM.CODE, PARTS 814 AND 811

Statement Describing Standard From Which Adjusted Standard is Sought, Pursuant to 35 Ill.Adm.Code § 104.406

Johns Manville ("JM"), a Delaware corporation, comes by its attorneys, and pursuant to Section 28.1 of the Illinois Environmental Protection Act ("the Act"), 415 ILCS 5/28.1 and 35 Ill.Adm.Code §§ 104.400 et seq., seeks an adjusted standard to requirements contained in 35 Ill.Adm.Code Part 814, which incorporates specific requirements of 35 Ill.Adm.Code §§ 811.310, 811.311, , and 811.318- concerning its onsite landfill. These rules became effective September 18, 1990. Johns Manville is requesting the concurrence of the Illinois Environmental Protection Agency (IEPA) in this petition.

Statement That Regulation of General Applicability Was Not Promulgated to Implement Federal Requirements Pursuant to 35 Ill.Adm.Code § 104.406(b)

The regulations of general applicability that are the subject of this adjusted standard petition were not promulgated to implement the requirements of the Clean Water Act, Safe Drinking Water Act, Comprehensive Environmental Response, Compensation and Liability Act, Clean Air Act, or the State programs concerning RCRA, UIC, or NPDES. The regulations in question implement State, not federal requirements.

Level of Justification 35 Ill.Adm.Code § 104.406(c)

The regulations for which the adjusted standards are sought do not contain specified levels of justification, so the factors set forth in Section 28.1(c) of the Act apply to this petition. As will be described in more detail below, JM can establish that: the factors relating to its onsite landfill are substantially different from the factors relied upon by the Board in adopting the regulations of general applicability; the existence of these different factors justifies an adjusted standard; the requested standard will not result in environmental health effects more adverse than the effects considered by the Board in adopting the rules of general applicability; and, the adjusted standard is consistent with applicable federal law. The justification for this adjusted standard is set forth below.

BACKGROUND OF JOHNS MANVILLE'S ONSITE LANDFILL

Description of Petitioner's Activities 35 Ill.Adm.Code § 104.406(d)

<u>JM Facility Background and Regulatory History</u>

JM owns a facility in Waukegan, Illinois in Lake County at which JM previously manufactured building materials, including roofing and insulation products. The facility is located on a tract consisting of approximately 350 acres on the shore of Lake Michigan. The facility began operations *ca.* 1920, and employed several thousand employees at its peak. Historically, asbestos-containing building materials were manufactured at the plant, but all such manufacture of asbestos-containing building materials ceased in 1985. After a gradual phaseout, all of the remaining manufacturing operations at the facility completely ceased in

1998, and the manufacturing buildings (which represented over 1,700,000 square feet under roof) were demolished in 2000-2001. At present, only a few contract employees associated with maintaining the site are located at the facility. As will be described below, the on-site landfill at issue in this proceeding began operations in 1992 and was not used to dispose of asbestos-containing materials. The Illinois Attorney General's Office and Illinois Environmental Protection Agency have acknowledged that the landfill that is subject to this petition is an "existing landfill" and therefore subject to 35 Ill.Adm.Code Part 814. Specific requirements contained in 35 Ill.Adm.Code Part 811, including the provisions for which the adjusted standards are sought, are incorporated by 35 Ill.Adm.Code § 814.302.

In 1983, relying on its authority in Section 105 of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 42 USC § 9605, the United States Environmental Protection Agency (USEPA) placed a portion of the facility (consisting of approximately 120 acres) on the National Priorities List (NPL), which is set forth in 40 CFR Part 300, Appendix B, by publication at 48 Fed.Reg. 40658 (September 8, 1983). The on-site landfill at issue in this petition is physically located on the tract identified on the NPL, and it is located on and surrounded by units that were remediated under CERCLA. On June 14, 1984, JM and USEPA executed an Administrative Order on Consent, under which JM conducted a Remedial Investigation Feasibility Study (RIFS), pursuant to 40 CFR § 300.68. The Remedial Investigation Report was submitted on July 3, 1985, and the Feasibility Study Report was submitted to USEPA in December 1986. USEPA adopted an Addendum to the Feasibility Study Report on January 28, 1987. After notice and public hearing, on June 30, 1987 USEPA issued a Record of Decision (ROD) in which the State of Illinois concurred. The ROD provided for the placement of cover over a number of areas at which asbestos containing waste materials had been disposed of at the JM facility. JM, USEPA and the State of Illinois executed a consent decree that implemented the ROD, and that consent decree was entered by the United States District Court for the Northern District of Illinois on or about March 18, 1988, in United States v. Manville Sales Corporation, C.A. No. 88C 630.

In addition to providing for cover of historical disposal areas, the Consent Decree contemplated that ongoing non-asbestos manufacturing operations at the JM site would continue. The Consent Decree therefore provided for ongoing operation of both the wastewater treatment system, which consisted of a number of settling and retention basins, as well as the onsite landfill. JM conducted substantial remedial actions at the facility, placing cover over the historic areas where asbestos containing waste materials had been disposed. JM's remedial activities were largely completed in 1991.

USEPA issued two Explanations of Significant Differences (ESD), the first on February 9, 1993, and the second on September 22, 2000. The first ESD addressed primarily the differences between the remedial action as described in the June 1987 ROD and the remedial action actually constructed as necessitated by field conditions. The second ESD provided, in light of cessation of manufacturing operations at the facility, for closure of both the wastewater treatment system and the on-site landfill which is the subject of this petition.

Description of Nature of Efforts Necessary to Comply With Regulations of General Applicability, 35 Ill.Adm.Code § 104.406(e)

Because the onsite landfill is located in the midst of the CERCLA site, any activities relating to it must be coordinated with both USEPA and IEPA. The United States Department of Justice, USEPA, Illinois Attorney General's Office, IEPA, and JM signed an amended federal consent decree which was lodged with the United States District Court for the Northern District of Illinois on February 11, 2004 (notice published at 69 Fed. Reg. 7982

(February 20, 2004)). Comments have been filed, and a responsiveness summary is due to be filed by July 16, 2004. JM anticipates the federal amended consent decree will be entered by the Court in the near future. The Illinois Attorney General's Office, IEPA and JM have also signed a consent order which addresses this landfill. This consent order should be submitted to the Lake County Circuit Court for approval in the near future. Both the federal amended consent decree and consent order provide for final closure of the landfill that is subject of this petition, and this adjusted standard petition should result in final closure in the most effective and expeditious manner. JM advised the agencies of the probable need for an adjusted standard in the negotiations which resulted in the federal amended consent decree, and the State Consent Order, and each of these documents specifically provides for the filing of an adjusted standards petition. Therefore, this adjusted standard proceeding will not be contrary to either document when and if they are entered; it will in fact, assist in implementation of these documents.

JM's On-site Landfill

JM's on-site landfill has always operated pursuant to the statutory permit exception contained in Section 21(d) of the Act, 415 ILCS 5/21(d); since JM has used the onsite landfill to dispose of only that waste generated by its own activities at this location, JM has neither received nor been required to hold an IEPA solid waste operating permit. Pursuant to 35 Ill.Adm.Code § 815.200 et seq., JM submitted its initial facility report to IEPA in September 1992. As described in the initial facility report and as operated, the onsite landfill consisted of two areas: 1) the miscellaneous disposal pit, that was constructed on top of clean fill that had been placed during CERCLA remedial activities and 2) a portion of the collection basin, which had formerly been operated as part of the wastewater treatment system. These units are depicted in Figure 1 (Site Plan).

The initial facility report filed in 1992 indicated JM's intention to operate the onsite landfill as an inert waste landfill, based on leachate data for the wastes that were intended to be placed in the onsite landfill. During its operating history from 1992 to 1998, the predominant waste that was placed in the landfill was calcium silicate, an inert, nonhazardous material used by JM to produce T-12, a high temperature calcium silicate block insulation material.

JM also disposed of lesser quantities of roofing materials, wood, paper, and cardboard, materials that IEPA considers to be putrescible wastes. Because the onsite landfill arguably meets the definition of "existing facility or existing unit" contained in 35 Ill.Adm.Code § 810.103, the onsite landfill is subject to the standards for existing landfills and units, set forth in 35 Ill.Adm.Code Part 814, pursuant to 35 Ill.Adm.Code § 814.101.

In order to accomplish the most efficient final closure that considers the landfill contents and the landfill's location on units previously remediated under CERCLA, JM is seeking an adjusted standard for (i) the Monitoring Frequency for Landfill Gas Monitoring (35 Ill.Adm.Code § 811.310(c)(1)), (ii) the requirements for implementing a Landfill Gas Management System, specifically, the provisions relating to detection distance for implementing such a system (35 Ill.Adm.Code § 811.311(a)(1)), and (iii) the Standards for the Location of Monitoring Points found in 35 Ill.Adm.Code § 811.318(b)(4), specifically, the requirement that monitoring wells shall be located within half the distance from the edge of the potential discharge source to the edge of the zone of attenuation.[1]

[1] The costs of complying with the regulations are very difficult to quantify because, as described below, compliance with the regulations as adopted would involve drilling gas monitoring devices and groundwater monitoring wells through engineered cover that was built pursuant to the Superfund remedial activities at the site. The motivation for this adjusted standard is not to provide for lower costs, but to prevent the adverse effects that could result from installing the gas monitoring and groundwater wells in locations that would damage the cover of the remediated

Narrative Description of Proposed Adjusted Standard, 35 Ill.Adm.Code § 104.406(f)

PROPOSED ADJUSTED STANDARD FOR LANDFILL GAS MONITORING FREQUENCY REQUIREMENTS

In adopting its comprehensive regulations governing nonhazardous waste landfills, the Pollution Control Board specifically addressed two broad types of landfills: landfills for inert waste, and landfills for chemical and putrescible wastes.[2] The Board later adopted requirements for municipal solid waste landfills in order to ensure that the state regulations met the requirements for the Resource Conservation and Recovery Act (RCRA) Subpart D program. Because the landfill in question here is not a municipal solid waste landfill (and is therefore not addressed in the federal program), granting the petition sought here will in no way be inconsistent with federal requirements[3]. There are also no federal procedural requirements that would apply to this petition.

As discussed above, JM originally contended that its on-site landfill was properly characterized as an inert waste landfill, because the wastes placed in the landfill were primarily inert (calcium silicate materials, concrete, and similar materials)[4]. However, IEPA advised that

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areas and potentially create pathways for migration of contaminants.

[2] The Pollution Control Board has also adopted special requirements for other types of landfills, (e.g., landfills used for certain wastes from iron and steel manufacturing facilities and foundries (see 35 Ill.Adm.Code Part 817)). These regulations contain three classes of waste, and wastes which present more potential to generate potentially harmful leachate are subject to more stringent requirements.

[3] Moreover, both the federal amended consent decree and the State consent order described above would require final closure of the landfill that is the subject of this petition.

[4] The requirements for inert waste landfills are considerably less stringent than those for chemical and putrescible and municipal solid waste landfills, due to significant differences between the types of materials disposed of in each type of landfill. Unlike chemical or putrescible landfills and municipal solid waste landfills, inert waste landfills need not have gas collection systems, groundwater monitoring systems or leachate collection systems, on the theory that the leachate generated by inert waste landfills is so innocuous in terms of quantity

the presence of materials like wood, cardboard and paper in the landfill *in any amount* meant that the landfill should be more properly characterized as a chemical and putrescible waste landfill.

The requirements in 35 Ill.Adm.Code § 811.310(c)(1) (applicable to chemical and putrescible landfills but not to inert waste landfills) specify that landfill gas monitoring devices shall be operated to obtain samples on a monthly basis for the entire operating period and for a minimum of five years after closure. Given the nature of the wastes disposed in the On-Site Landfill, studies were undertaken to determine the general physical properties within the landfill and whether landfill gas was currently present within or outside the landfill limits in quantities that might warrant the required level of monitoring.

As described in the Site Investigation Report for the On-Site Landfill, it was determined that methane generation was more consistent with an inert waste landfill, rather than a typical chemical and putrescible landfill. Specifically, the following observations were made:

- Measured landfill gas temperatures (approximately 50°F) were not typical of landfill gas temperatures in a solid waste landfill, which typically ranges from 100 to 130 °F during substantial anaerobic activity and between 130 and 160 °F during substantial aerobic activity.
- The vegetative grass cover over the landfill was intact, growing and healthy, and showed no signs of burn-out, which is indicative of methane release to the landfill surface. Moreover, there are no buildings, structures or utilities on or around the landfill that could serve as a conduit for relieving methane pressures.
- Landfill gas pressures measured in monitoring wells were typically extremely low (less than 0.01" of water). This indicates negligible gas generation.
- No malodors were noted within the landfill at any time, indicating little or no landfill gas generation.
- The carbon dioxide levels in the On-Site Landfill were measured to be less than 1%. This is not consistent with an active chemical and putrescible landfill, where the levels of carbon dioxide typically range from 40-48%.

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and constituents that such systems are not warranted. Final cover for inert waste landfills consists of a minimum three foot thick layer of soil capable of supporting vegetation. In contrast, final cover for chemical and putrescible landfills and municipal solid waste landfills must consist of a low permeability layer with a thickness of at least three feet (or equivalent) overlain by a protective layer with a thickness of at least three feet.

- No methane was present above regulatory criteria (50% of the Lower Explosive Level (LEL)) outside the limits of the waste boundary, despite the lack of any landfill gas collection system. Given that wastes have not been added to the On-Site Landfill for almost six years, and that very little additional wastes, if any, are expected to be added in the future, it is unlikely that the landfill gas generation rate would increase, thereby resulting in an increased potential to detect migrating landfill gas.

These results were not particularly surprising, in light of the relatively low percentage of organic material disposed in the landfill, and the relatively small size of the units. While the on-site Landfill may technically meet the requirements for chemical and putrescible waste landfills, the above-described data confirm that the landfill is actually more similar to the inert waste landfills considered by the Board in adopting the regulations. As a result, the frequency of landfill gas monitoring as technically required by 35 Ill.Adm.Code § 811.310(c)(1) is not necessary and would not provide any additional degree of protection to human health or the environment as compared to the proposed adjusted standard.

For all of these reasons, JM is proposing the following adjusted standard:

> **"In lieu of compliance with 35 Ill.Adm.Code § 811.310(c)(1) as applied to the On-Site Landfill at its facility in Waukegan, Illinois, Johns Manville shall operate all gas monitoring devices, including the ambient air monitors, such that samples will be collected on a semi-annual basis for a period of five years following approval of this adjusted standard. If, at the end of five years, the requirements for implementing a Landfill Gas Collection System (35 Ill.Adm.Code § 811.311) are not met, no further monitoring will be conducted.**

Based on the data collected, compliance with the proposed adjusted standard will not have a more adverse effect on the environment than would compliance with the regulations.

PROPOSED ADJUSTED STANDARD FOR IMPLEMENTATION OF A LANDFILL GAS MANAGEMENT SYSTEM

As shown on Figure 2 (Proposed Landfill Gas Monitoring Device Locations), the miscellaneous disposal pit unit (Fill Area #1) is located within the aerial limits of the remediated area of the CERCLA site. The On-Site Landfill is essentially a landfill constructed within and overlying the "CERCLA" landfill that was previously closed through placement of a two-foot engineered cover over both topographically flat areas, as well as the steeply sloping sides of the original miscellaneous disposal pit. The lateral limits of the steeply sloping sides are shown on Figure 2. The regulations governing implementation of a Landfill Gas Collection System (35 Ill.Adm.Code § 811.311(a)(1)) contemplate detection of elevated methane levels below the "ground surface" at a distance of 100 feet outside the edge of the unit, or at the property boundary, whichever is closer. As the property boundary is further away, the distance of 100 feet from the edge of the unit would appear to apply. However, at this distance (100 feet) from the edge of Fill Area #1 within the On-Site Landfill, the monitoring locations would fall on the steep side slopes and covered areas within the now-closed CERCLA landfill.

Landfill gas monitoring at this location would require installation of monitoring wells on the steeply sloping sides and through the engineered cover placed for closure of the CERCLA landfill. Installation, monitoring, and maintenance of wells installed within this steep incline may result in compromising the integrity of the CERCLA cover and thereby trigger maintenance obligations not otherwise required, as well as potentially expose the now-covered asbestos materials to personnel collecting the air samples and/or cause the release of asbestos fibers to ambient air. Furthermore, it is not clear whether monitoring for landfill gas beneath the cover of an adjacent landfill meets the intention of "ground surface," in that the goal is to detect whether elevated levels of methane generated within the On-Site Landfill are migrating away from that unit. As a result, locating the landfill gas monitoring devices at a distance of 100 feet from Unit #1, as technically required by 35 Ill.Adm.Code § 811.311(a)(1) would be very burdensome, potentially harmful to the CERCLA remedy, and due to the extremely low levels of gas generated, would not provide any additional degree of protection to human health or the environment.

For all of these reasons, JM is proposing the following adjusted standard:

"In lieu of compliance with 35 Ill.Adm.Code § 811.311(a)(1) as applied to the On-Site Landfill at its facility in Waukegan, Illinois, Johns Manville shall install a gas management system if a methane concentration greater than 50 percent of the lower explosive limit in air, is detected below the ground surface by a monitoring device or is detected by an ambient air monitor located at 200 feet from the edge of the unit or the property line, whichever is less."

Based on the data collected, compliance with the adjusted standard proposed will not have a more adverse effect on the environment than would compliance with the regulations.

PROPOSED ADJUSTED STANDARD FOR THE LOCATIONS OF GROUNDWATER MONITORING WELLS

As shown on Figure 3 (Proposed Groundwater Monitoring Well Locations), the miscellaneous disposal pit unit (Fill Area #1) is located within the aerial limits of the remediated area of the CERCLA site. The On-Site Landfill is essentially a landfill constructed within and overlying the "CERCLA" landfill that was previously closed through placement of a two-foot engineered cover over both topographically flat areas, as well as the steeply sloping sides. The lateral limits of the steeply sloping sides are shown on Figure 3. The regulation governing the Design, Construction, and Operation of Groundwater Monitoring Systems (35 Ill.Adm.Code § 811.318(b)(4)) contemplates locating the monitoring wells within half the distance from the edge of the potential source of the discharge to the edge of the zone of attenuation downgradient, with respect to groundwater flow, from the source. However, at this distance from the edge of the On-Site Landfill (50 feet), the monitoring locations would fall on the steep side slopes and covered areas of the now-closed CERCLA landfill.

Groundwater monitoring at this location would require installation of monitoring wells on the steeply sloping sides and through the engineered cover placed for closure of the CERCLA landfill. Installation, monitoring, and maintenance of wells installed within this steep incline may result in compromising the integrity of the CERCLA cover and thereby trigger maintenance obligations not otherwise required, as well as potentially expose the now-covered asbestos materials to personnel collecting the air samples and/or cause the release of asbestos fibers to ambient air. As a result, locating groundwater monitoring wells at a distance of 50 feet from Unit #1, as technically required by 35 Ill.Adm.Code § 811.318(b)(4) would be very burdensome, potentially harmful to the CERCLA remedy, and would not provide any additional degree of protection to human health or the environment.

For all of these reasons, JM is proposing the following adjusted standard:

> **"In lieu of compliance with 35 Ill.Adm.Code § 811.318(b)(4) as applied to the On-Site Landfill at its facility in Waukegan, Illinois, Johns Manville shall install groundwater monitoring wells at a distance of no more than 200 feet from the edge of the unit or the property line, whichever is less."**

Based on the data collected, compliance with the adjusted standard proposed will not have a more adverse effect on the environment than would compliance with the regulations.

Description of Impact of Compliance With General Standard As Compared to Proposed Adjusted Standard, and Justification, 35 Ill.Adm.Code §§ 104.4-6(g)-(h)

For the reasons described above, compliance with the Proposed Adjusted Standard will be, at a minimum, equally protective of the environment as would compliance with the regulations of general applicability. JM believes that granting the adjusted standard would be justified for the reasons set forth above, and would create a lesser risk of damage to the remediated areas at the Superfund site.

Board May Grant Adjusted Standard Consistent With Federal Law, 35 Ill.Adm.Code § 104.406(i)

As described above, if the Board were to grant the adjusted standard, it would in no way be contrary to federal statutory or regulatory requirements. Moreover, the federal consent decree described above, expressly contemplated that an adjusted standard petition could be filed, so granting the adjusted standard would not be inconsistent with any federal judicial order or consent decree.

Hearing Requested 35 Ill.Adm.Code 104.406(j)

JM has discussed these proposed adjusted standards with the Illinois Environmental Protection Agency(IEPA), and is requesting the Agency's concurrence. If Agency concurs with this petition, it may not be necessary to have a hearing (assuming that members of the public do not request one. If the IEPA concurs with the petition, and there are no requests for a hearing from the public or other interested parties, JM can waive its request for a hearing.

Documentation to Be Relied Upon, 35 Ill.Adm.Code § 104.406(k)-(l)

As described above, JM has collected data which is in the form of a Site Investigation Report. This document is very voluminous, and can be submitted in the future.

CONCLUSION

For the reasons set forth above, JM respectfully requests that the Pollution Control Board grant the adjusted standards to 35 Ill.Adm.Code Part 814, incorporating 35 Ill.Adm.Code §§ 811.310, 811.311, and 811.318 as described in this petition, and as set forth below:

"In lieu of compliance with 35 Ill.Adm.Code § 811.310(c)(1) as applied to the On-Site Landfill at its facility in Waukegan, Illinois, Johns Manville shall operate all gas monitoring devices, including the ambient air monitors, such that samples will be collected on a semi-annual basis for a period of five years following approval of this adjusted standard. If, at the end of five years, the requirements for implementing a Landfill Gas Collection System (35 Ill.Adm.Code § 811.311) are not met, no further monitoring will be conducted."

"In lieu of compliance with 35 Ill.Adm.Code § 811.311(a)(1) as applied to the On-Site Landfill at its facility in Waukegan, Illinois, Johns Manville shall install a gas management system if a methane concentration greater than 50 percent of the lower explosive limit in air, is detected below the ground surface by a monitoring device or is detected by an ambient air monitor located at 200 feet from the edge of the unit or the property line, whichever is less."

"In lieu of compliance with 35 Ill.Adm.Code § 811.318(b)(4) as applied to the On-Site Landfill at its facility in Waukegan, Illinois, Johns Manville shall install groundwater monitoring wells at a distance of no more than 200 feet from the edge of the unit or the property line, whichever is less."

Respectfully submitted,

JOHNS MANVILLE,
Petitioner,

By: Edward P. Kenney
One of Its Attorneys

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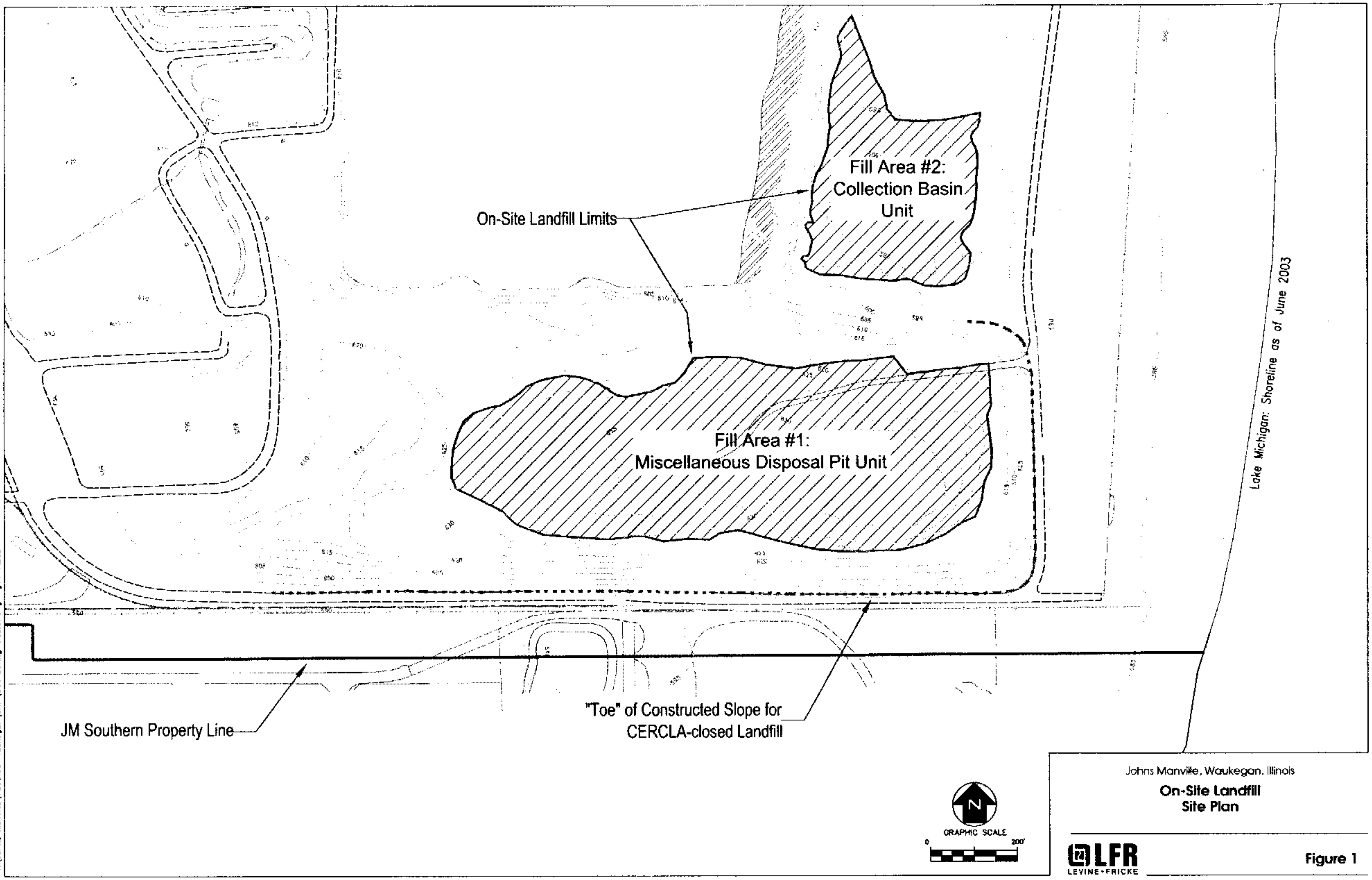
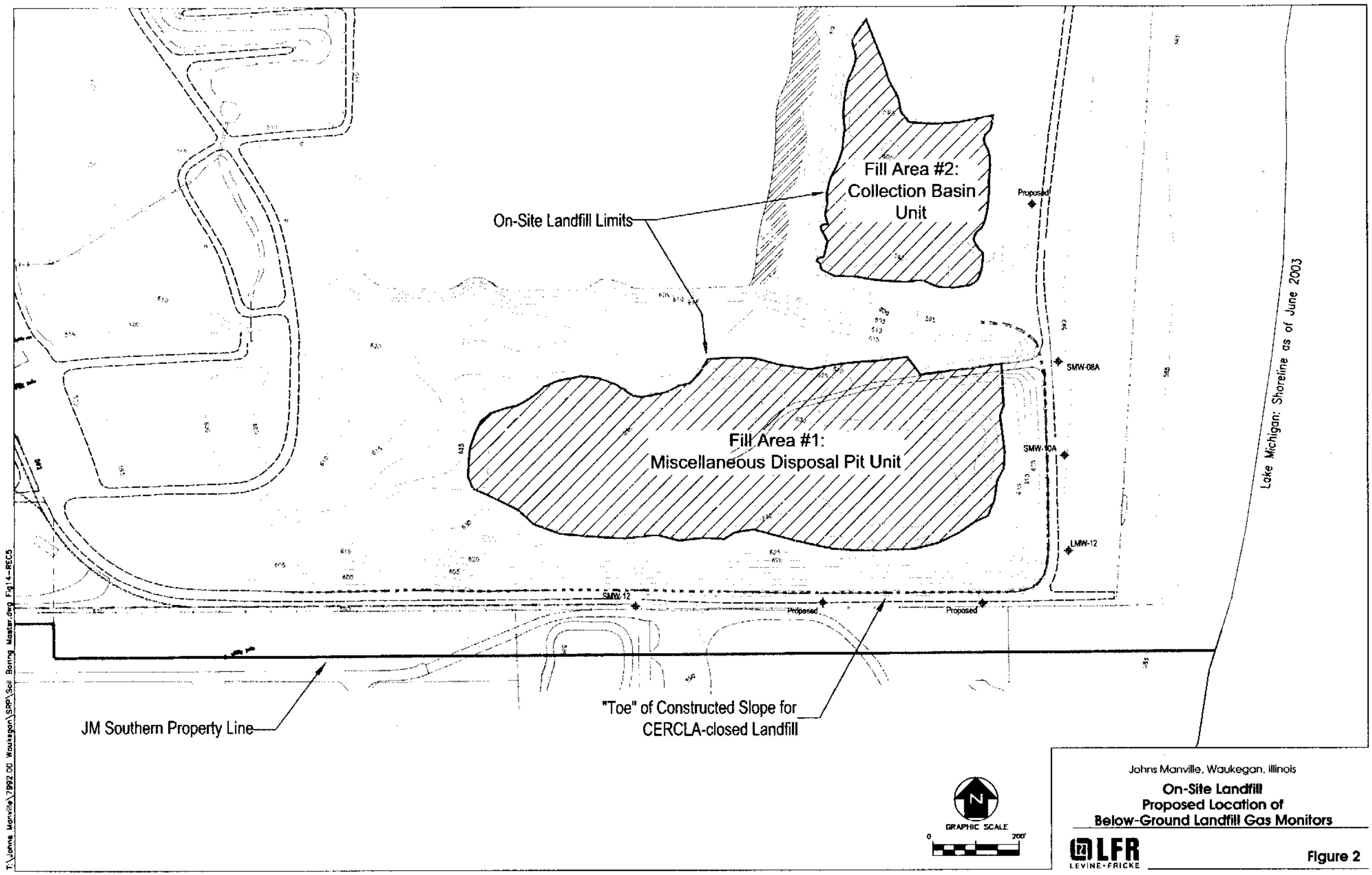


Johns Manville, Waukegan, Illinois

On-Site Landfill
Site Plan

Figure 1

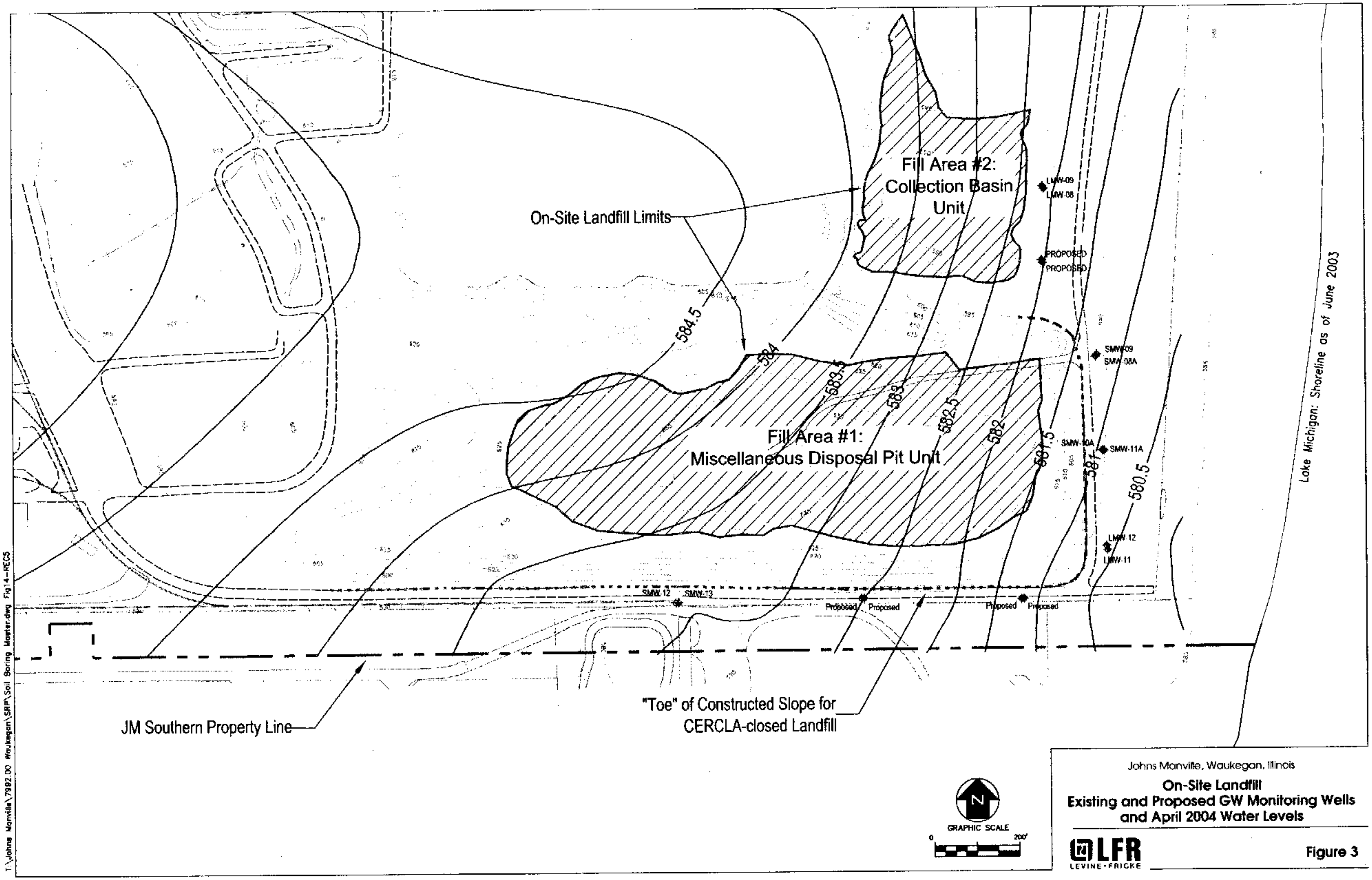


Johns Manville, Waukegan, Illinois

On-Site Landfill
Proposed Location of
Below-Ground Landfill Gas Monitors

LFR LEVINE·FRICKE

Figure 2



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Johns Manville, Waukegan, Illinois

On-Site Landfill
Existing and Proposed GW Monitoring Wells and April 2004 Water Levels

LFR
LEVINE·FRICKE

Figure 3

CERTIFICATE OF SERVICE

The undersigned, an attorney, hereby certifies that he caused the foregoing notice and petition for adjusted standard to be served upon:

Division of Legal Counsel
Illinois Environmental Protection Agency
1021 North Grand Avenue East
P.O. Box 19276
Springfield, Illinois 62794-9276

Peter Orlinsky
Assistant Counsel, Northern Region
Illinois Environmental Protection Agency
9511 West Harrison Street
Des Plaines, Illinois 60016

Elizabeth Wallace
Assistant Attorney General, Environmental Law
188 West Randolph Street, 20th Floor
Chicago, Illinois 60601

by placing the same in the United States mail, first-class postage prepaid, this 30th day of June, 2004.

Edward P. Kenney

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF:	)	
	)	
PETITION OF JOHNS MANVILLE FOR AN ADJUSTED STANDARD FROM 35 ILL.ADM. CODE PART 814, §§ 811.310, 811.311, 811.318, 811.320	)	**AS 04-04**
	)	**(Adjusted Standard-Land)**
	)	

NOTICE OF FILING

To: Attached Service List

Please take notice that on September 30, 2004, Johns Manville has filed the attached amended petition for an adjusted standard with the Illinois Pollution Control Board, a copy of which is hereby served upon you.

Johns Manville,
Petitioner.

By: Edward P. Kenney
One of Its Attorneys

Edward P. Kenney
Sidley Austin Brown & Wood LLP
Bank One Plaza
10 South Dearborn Street
Chicago, Illinois 60603
(312) 853-7000

BEFORE THE ILLINOIS POLLUTION CONTROL BOARD

IN THE MATTER OF: **PETITION OF JOHNS MANVILLE FOR AN ADJUSTED STANDARD FROM 35 ILL.ADM. CODE PART 814, §§ 811.310, 811.311, 811.318, 811.320**	)))))))))))))	**AS 04-04** **(Adjusted Standard-Land)**

PETITIONER JOHNS MANVILLE'S AMENDED PETITION FOR AN ADJUSTED STANDARD FOR CERTAIN PROVISIONS OF 35 ILL.ADM.CODE, PARTS 814 AND 811

INTRODUCTION

Johns Manville ("JM"), a Delaware corporation, comes by its attorneys, and pursuant to Section 28.1 of the Illinois Environmental Protection Act ("the Act"), 415 ILCS 5/28.1 and 35 Ill.Adm.Code §§ 104.400 et seq., seeks an adjusted standard to certain requirements of the Pollution Control Board's regulations governing on-site landfills, as will be described below. JM owns a facility in Waukegan, Illinois located on a 350 acre tract on the shore of Lake Michigan (See Figure 1).

JM previously filed a petition with the Board on June 30, 2004. By Order dated August 5, 2004, the Board found that petition to be deficient because the factors contained in

Section 814.402(b)(3) had not been addressed. The Board directed petitioner to address the information requirements of Section 28.1 of the Act (415 ILCS 5/28.1) and Section 104.406 of the Board's rules in an amended petition. After consulting with the Board's staff attorneys, JM is submitting this amended petition. The caption has changed slightly to reflect an additional related regulatory provision for which an adjusted standard is sought. Since the filing of the original petition, JM has had additional discussions with the Illinois Environmental Protection Agency concerning this proposed adjusted standard and is requesting the Agency's concurrence in this amended petition.

JM filed a public notice in a local newspaper shortly after filing the original petition. Because the language of the proposed adjusted standard requested in this amended petition is somewhat different from that in the original petition, JM intends to file a new public notice in accordance with 35 Ill.Adm.Code § 104.408.

Statement Describing Standards From Which Adjusted Standard is Sought, Pursuant to 35 Ill.Adm.Code § 104.406

JM is seeking an adjusted standard to requirements contained in 35 Ill.Adm.Code Part 814, which incorporates specific requirements of 35 Ill.Adm.Code §§ 811.310, 811.311, 811.318, and 811.320 concerning its onsite landfill, which consists of two units: 1) the miscellaneous disposal pit; and 2) a portion of the collection basin. These units are depicted in Figure 2 (General Property Map and On-Site Landfill Location). The relevant rules became effective September 18, 1990.

<u>Statutory Section 28.1(c) Factors</u>

The regulations which are the subject of this adjusted standard petition were adopted by the Pollution Control Board In the Matter of: Development of Operating and Reporting Requirements for Non-Hazardous Waste Landfills, R88-7, and were effective on September 8, 1990. A review of the rulemaking record in that proceeding indicates that the Board was attempting to update and expand its existing regulations governing sanitary landfills (Previously Chapter 7 of the Pollution Control Board's regulations) to incorporate more modern approaches for addressing a variety of industrial and municipal non-hazardous waste landfills.

In this rulemaking, the Board adopted different standards for landfills which were going to remain open for short periods of time, landfills that would remain open for longer duration, and for existing and new landfills. The Board also adopted differing standards for inert waste landfills (no leachate collection, no landfill gas collection, minimal cover, and no groundwater monitoring requirements) than for landfills where chemical and putrescible waste would be managed (leachate collection, more substantial final cover, gas collection and monitoring, and groundwater monitoring) due to the greater likelihood that groundwater quality could be adversely impacted by the latter category of landfill. The regulations were designed to accommodate both permitted landfills and onsite landfills which were exempt from permit requirements.

The JM landfill is different from the landfills considered by the Board in a couple of respects. First, much of the waste in the landfill is virtually inert, being composed primarily of calcium silicate and fiber glass-based roofing materials. Although some of the waste in the landfill may not meet the technical requirements in the inert waste regulations, JM's landfill differs from chemical and putrescible landfill in that very little landfill gas is generated. The second major difference is that, unlike most landfills in Illinois, the JM site was under intense federal and state oversight since before the adoption of the Pollution Control Board's solid waste landfill regulations as a result of its inclusion on the Superfund National Priority List in 1983. There is nothing in the rulemaking record indicating that the Board considered situations similar to that of the JM facility, where the facility as a whole was subject to a Superfund consent decree which required the construction of cover to isolate asbestos that had been historically disposed of on-site. See the federal consent decree entered by the United States District Court for the Northern District of Illinois in United States v. Manville Sales Corporation, C.A. No. 88C 630. At the time the rules were adopted in 1990, JM was well into the construction of remedial measures to isolate the asbestos on the site, and was subject to a federal consent decree which described in detail how these landfills were to be constructed and maintained, under the close oversight of the USEPA and IEPA.

After the adoption of the Board's solid waste regulations, JM submitted an initial facility report for the units (collection basin and miscellaneous disposal pit) which the consent decree authorized to remain open. In September 1992, JM submitted an Initial Facility Report to IEPA for these units. Due to the nature of the waste, JM managed the landfills as inert waste landfills. Subsequent testing has verified that, despite the presence of small amounts of putrescible material, very little landfill gas is generated by decomposition of the wastes in the miscellaneous disposal pit and the collection basin, as is the case with inert waste landfills. (Gas generation data is included as Exhibit 1.) As a result, the gas collection and monitoring requirements for chemical and putrescible landfills do not fit the JM landfill. Similarly, percolation of stormwater through the collection basin and miscellaneous disposal pit has not resulted in the generation of much leachate.

Strict compliance with the Board's solid waste regulations governing landfill gas collection and monitoring and groundwater monitoring in this instance would involve drilling gas collection wells and groundwater monitoring wells through the closed Superfund cells. This presents the potential for disturbing the underlying Superfund waste, and also breaching the Superfund cover. There is no evidence in the rulemaking record that the Board addressed or even considered a similar situation.

The JM landfill also differs from the landfills considered by the Board in adopting the rules in that the units subject to the groundwater monitoring requirements are surrounded by units that were constructed pursuant to a federal consent decree under federal and state oversight. The operating and maintenance requirements imposed on JM through that decree restricts JM's ability to drill groundwater monitoring wells or gas wells through engineered covers which isolate asbestos. Without obtaining the concurrence of the USEPA and IEPA, JM is not as able to place groundwater monitoring wells where required by the Pollution Control Board's rules as would be a landfill that does not have a remediated Superfund site surrounding the units to be monitored.

In accordance with Section 28.1(c)(2), the existence of these different factors justifies the issuance of the adjusted standard that JM is requesting. JM is requesting an adjusted standard to the landfill gas monitoring and frequency requirements. Because the JM landfill is different from the more typical chemical and putrescible landfills at which the Board's solid waste landfill regulations were directed, in that much less gas is generated at the JM landfill, the landfill gas collection and monitoring program described in this adjusted standard petition is better tailored to this situation than the one otherwise required by the regulations.

Likewise, the risks associated with drilling groundwater monitoring wells through Superfund cover and the underlying asbestos wastes are different from the landfills addressed by the regulations, and justify the groundwater monitoring program that JM is proposing. JM's proposed program would minimize the amount of disturbance to the Superfund remediated areas, while providing for a protective monitoring program that will allow timely action in the event that either of the Part 814 regulated landfill units adversely affects groundwater.

The requested adjusted standards will not result in environmental or health effects that are substantially and significantly more adverse than the effects the Board considered in adopting the rules of general applicability. In adopting the rules, the Board was trying to provide for landfills in which waste would be isolated, and operated in such a way that migration of gas or leachate to groundwater or to ambient air would not be a problem. To the extent that landfill gas would be generated, the Board's regulations provided for it to be monitored and collected. To the extent that a chemical and putrescible waste landfill (or later, a municipal solid waste landfill) would present a potential adverse impact on groundwater, the regulations provided for implementation of a groundwater monitoring program that would provide for detection, assessment and potentially corrective action if a regulated unit is adversely affecting the groundwater. The groundwater monitoring program presented in this adjusted standard petition will similarly provide for detection of potential issues in a timely fashioned, allowing officials to make decisions as to how to protect the groundwater.

Statement That Regulation of General Applicability Was Not Promulgated to Implement Federal Requirements Pursuant to 35 Ill.Adm.Code § 104.406(b)

The regulations of general applicability that are the subject of this adjusted standard petition were not promulgated to implement the requirements of the Clean Water Act, Safe Drinking Water Act, Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), Clean Air Act, or the State programs concerning RCRA, UIC, or NPDES. The regulations in question implement State, not federal requirements. According to 35 Ill.Adm.Code §§ 807.101, 811.101, the Board relied upon Sections 5, 21.1, 22, 22.17, 28.1 and 27 of the Illinois Environmental Protection Act in adopting the regulations from which the adjusted standards are sought.

Level of Justification 35 Ill.Adm.Code § 104.406(c)

The regulations for which the adjusted standards are sought do not contain specified levels of justification, so the factors set forth in Section 28.1(c) of the Act apply to this petition. Those factors are discussed above. As will be described in more detail below, JM can establish that: the factors relating to its onsite landfill are substantially different from the factors relied upon by the Board in adopting the regulations of general applicability; the existence of these different factors justifies an adjusted standard; the requested standard will not result in environmental health effects more adverse than the effects considered by the Board in adopting the rules of general applicability; and, the adjusted standard is consistent with applicable federal law.

BACKGROUND OF JOHNS MANVILLE'S ONSITE LANDFILL

Description of Petitioner's Activities 35 Ill.Adm.Code § 104.406(d)

<u>JM Facility Background and Regulatory History</u>

JM owns a facility in Waukegan, Illinois in Lake County at which JM previously manufactured building materials, including roofing and insulation products. The facility is located on a tract consisting of approximately 350 acres on the shore of Lake Michigan. (<u>See</u> Figure 1). The facility began operations *ca.* 1920, and employed several thousand employees at its peak. Historically, asbestos-containing building materials were manufactured at the plant, but all such manufacture of asbestos-containing building materials ceased in 1985. After a gradual phaseout, all of the remaining manufacturing operations at the facility completely ceased in 1998, and the manufacturing buildings (which represented over 1,700,000 square feet under roof) were demolished in 2000-2001. At present, only a few contract employees associated with maintaining the site are located at the facility.

In 1983, relying on its authority in Section 105 of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 42 USC § 9605, the United States Environmental Protection Agency (USEPA) placed a portion of the facility (consisting of approximately 120 acres) on the National Priorities List (NPL), which is set forth in 40 CFR Part 300, Appendix B, by publication at 48 Fed.Reg. 40658 (September 8, 1983). On June 14, 1984, JM and USEPA executed an Administrative Order on Consent, under which JM conducted a Remedial Investigation /Feasibility Study (RI/FS), pursuant to 40 CFR § 300.68. The Remedial Investigation Report was submitted on July 3, 1985, and the Feasibility Study Report was submitted to USEPA in December 1986. USEPA adopted an Addendum to the Feasibility Study Report on January 28, 1987. After notice and public hearing, on June 30, 1987 USEPA issued a Record of Decision (ROD) in which the State of Illinois concurred. The ROD provided for the placement of cover over a number of areas at which asbestos containing waste materials had been disposed of at the JM facility. JM, USEPA and the State of Illinois executed a consent decree that implemented the ROD, and that consent decree was entered by the United States District Court for the Northern District of Illinois on or about March 18, 1988, in United States v. Manville Sales Corporation, C.A. No. 88C 630.

In addition to providing for cover of historical disposal areas, the Consent Decree contemplated that ongoing non-asbestos manufacturing operations at the JM site would continue. The Consent Decree therefore provided for ongoing operation of both the wastewater treatment system, which consisted of a number of settling and retention basins, as well as the onsite landfill. JM conducted substantial remedial actions at the facility, placing cover over the historic areas where asbestos containing waste materials had been disposed. JM's remedial activities were largely completed in 1991.

USEPA issued two Explanations of Significant Differences (ESD), the first on February 9, 1993, and the second on September 22, 2000. The first ESD addressed primarily the differences between the remedial action as described in the June 1987 ROD and the remedial action actually constructed as necessitated by field conditions. The second ESD provided, in light of cessation of manufacturing operations at the facility, for closure of both the wastewater treatment system and the on-site landfill which is the subject of this petition. This adjusted standard and a amended federal consent decree (lodged in the United States District Court for the Northern District of Illinois and likely to be entered in the near future) are intended to implement the second ESD.

The On-Site Landfill at issue in this petition is physically located on the tract identified on the NPL, and it is located on and surrounded by units that were remediated under CERCLA. The On-Site Landfill at issue in this proceeding began operations in 1992 and was not used to dispose of asbestos-containing materials. The Illinois Attorney General's Office and Illinois Environmental Protection Agency have acknowledged that the landfill that is subject to this petition is an "existing landfill" and therefore subject to 35 Ill.Adm.Code Part 814. Specific requirements contained in 35 Ill.Adm.Code Part 811, including the provisions for which the adjusted standards are sought, are incorporated by 35 Ill.Adm.Code § 814.302.

As Figure 2 shows, the On-Site Landfill is located within the areal limits of the former Disposal Area landfill that was previously closed (completed in 1992) pursuant to CERCLA through placement of a two-foot engineered cover over both topographically flat areas, as well as the steeply sloping sides of the original miscellaneous disposal pit. Figure 3 is a Site Plan of the On-Site Landfill; Figures 4, 5, and 6 are cross sections showing the vertical and horizontal relationship between the On Site Landfill and the underlying "CERCLA" landfill.

Description of Nature of Efforts Necessary to Comply With Regulations of General Applicability, 35 Ill.Adm.Code § 104.406(e)

Because the onsite landfill is located in the midst of the CERCLA NPL site, any activities relating to it must be coordinated with both USEPA and IEPA. The United States Department of Justice, USEPA, Illinois Attorney General's Office, IEPA, and JM signed an amended federal consent decree which was lodged with the United States District Court for the Northern District of Illinois on February 11, 2004 (Notice of that lodging was published at 69 Fed. Reg. 7982 (February 20, 2004)). Comments have been filed, and a responsiveness summary was filed on or about July 16, 2004. JM anticipates the federal amended consent decree will be entered by the Court in the near future. The Illinois Attorney General's Office, IEPA and JM have also signed a consent order that addresses the landfill units that are the subject of this petition. This consent order was submitted to the Lake County Circuit Court for approval, and is being evaluated by the Court. It also allows for the filing of this petition.

Both the federal amended consent decree and the State consent order provide for final closure of the landfill that is subject of this petition, and this adjusted standard petition should result in final closure in the most effective and expeditious manner. JM advised the agencies of the probable need for this adjusted standard in the negotiations which resulted in the federal amended consent decree, and the State Consent Order, and each of these documents specifically provides for the filing of an adjusted standards petition. Therefore, this adjusted standard proceeding will not be contrary to either document when and if they are entered; it will in fact, assist in implementation of these documents.

JM's On-site Landfill

JM's on-site landfill has always operated pursuant to the statutory permit exception contained in Section 21(d) of the Act, 415 ILCS 5/21(d); since JM has used the onsite landfill to dispose of only that waste generated by its own activities at this location, JM has neither received nor been required to hold an IEPA solid waste operating permit. Pursuant to 35 Ill.Adm.Code § 815.200 et seq., JM submitted its initial facility report to IEPA in September 1992. As described in the initial facility report and as operated, the onsite landfill consisted of two areas: 1) the miscellaneous disposal pit, that was constructed on top of clean fill that had been placed during CERCLA remedial activities and 2) a portion of the collection basin. These units are depicted in Figure 2 (Site Plan).

The initial facility report filed in 1992 indicated JM's intention to operate the onsite landfill as an inert waste landfill, based on leachate data for the wastes that were intended to be placed in the onsite landfill. During its operating history from 1992 to 1998, the predominant waste that was placed in the landfill was calcium silicate, an inert, nonhazardous material used by JM to produce T-12, a high temperature calcium silicate block insulation material.

JM also disposed of lesser quantities of fiber glass-based roofing materials, wood pallets, paper, and cardboard packaging, materials that IEPA considers to be putrescible wastes.

Because the onsite landfill arguably meets the definition of "existing facility or existing unit" contained in 35 Ill.Adm.Code § 810.103, the Onsite Landfill is subject to the standards for existing landfills and units, set forth in 35 Ill.Adm.Code Part 814, pursuant to 35 Ill.Adm.Code § 814.101.

In order to accomplish the most efficient final closure that considers the landfill contents and the landfill's location on units previously remediated under CERCLA, JM is seeking an adjusted standard for (i) the Monitoring Frequency for Landfill Gas Monitoring (35 Ill.Adm.Code § 811.310(c)(1)), (ii) the requirements for implementing a Landfill Gas Management System, specifically, the provisions relating to detection distance for implementing such a system (35 Ill.Adm.Code § 811.311(a)(1)), and (iii) the Standards for the Location of Monitoring Points found in 35 Ill.Adm.Code §§ 811.318(b)(3), and 811.320, specifically, the requirement that monitoring wells shall be located within half the distance from the edge of the potential discharge source to the edge of the zone of attenuation.[1]

Narrative Description of Proposed Adjusted Standard, 35 Ill.Adm.Code § 104.406(f)

PROPOSED ADJUSTED STANDARD FOR LANDFILL GAS MONITORING FREQUENCY REQUIREMENTS

In adopting its comprehensive regulations governing nonhazardous waste landfills, the Pollution Control Board specifically addressed two broad types of landfills: landfills for inert waste, and landfills for chemical and putrescible wastes.[2] The Board later

[1] The costs of complying with the regulations are very difficult to quantify because, as described below, compliance with the regulations as adopted would involve drilling gas monitoring devices and groundwater monitoring wells through engineered cover that was built pursuant to the Superfund remedial activities at the site. The motivation for this adjusted standard is not to provide for lower costs, but to prevent the adverse effects that could result from installing the gas monitoring and groundwater wells in locations that would damage the cover of the remediated areas and potentially create pathways for migration of contaminants.

[2] The Pollution Control Board has also adopted special requirements for other types of landfills, (e.g., landfills used for certain wastes from iron and steel manufacturing facilities and foundries

adopted requirements for municipal solid waste landfills in order to ensure that the state regulations met the requirements for the Resource Conservation and Recovery Act (RCRA) Subpart D program. Because the landfill in question here is not a municipal solid waste landfill (and is therefore not addressed in the federal program), granting the petition sought here will in no way be inconsistent with federal requirements[3]. There are also no federal procedural requirements that would apply to this petition.

As discussed above, JM originally contended that its on-site landfill was properly characterized as an inert waste landfill, because the wastes placed in the landfill were primarily inert (calcium silicate materials, concrete, fiber glass, and similar materials)[4]. However, IEPA advised that the presence of materials like wood, cardboard and paper in the landfill *in any amount* meant that the landfill should be more properly characterized as a chemical and putrescible waste landfill.

The requirements in 35 Ill.Adm.Code § 811.310(c)(1) (applicable to chemical and putrescible landfills but not to inert waste landfills) specify that landfill gas monitoring devices shall be operated to obtain samples on a monthly basis for the entire operating period and for a

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(see 35 Ill.Adm.Code Part 817)). These regulations contain three classes of waste, and wastes which present more potential to generate potentially harmful leachate are subject to more stringent requirements.

[3] Moreover, both the federal amended consent decree and the State consent order described above contemplate final closure of the landfill that is the subject of this petition.

[4] The requirements for inert waste landfills are considerably less stringent than those for chemical and putrescible and municipal solid waste landfills, due to significant differences between the types of materials disposed of in each type of landfill. Unlike chemical or putrescible landfills and municipal solid waste landfills, inert waste landfills need not have gas collection systems, groundwater monitoring systems or leachate collection systems, on the theory that the leachate generated by inert waste landfills is so innocuous in terms of quantity and constituents that such systems are not warranted. Final cover for inert waste landfills consists of a minimum three foot thick layer of soil capable of supporting vegetation. In contrast, final cover for chemical and putrescible landfills and municipal solid waste landfills must consist of a low permeability layer with a thickness of at least three feet (or equivalent) overlain by a protective layer with a thickness of at least three feet.

minimum of five years after closure. Given the nature of the wastes disposed in the On-Site Landfill, studies were undertaken to determine the general physical properties within the landfill and whether landfill gas was currently present within or outside the landfill limits in quantities that might warrant the required level of monitoring.

Previous investigations of the On-Site Landfill gas determined that methane generation was more consistent with an inert waste landfill, rather than a typical chemical and putrescible landfill. Specifically, the following observations were made:

- Measured landfill gas temperatures (approximately 50°F) were not typical of landfill gas temperatures in a solid waste landfill, which typically ranges from 100 to 130 °F during substantial anaerobic activity and between 130 and 160 °F during substantial aerobic activity.
- The vegetative grass cover over the landfill was intact, growing and healthy, and showed no signs of burn-out, which is indicative of methane release to the landfill surface. Moreover, there are no buildings, structures or utilities on or around the landfill that could serve as a conduit for relieving methane pressures.
- Landfill gas pressures measured in monitoring wells were typically extremely low (less than 0.01" of water). This indicates negligible gas generation.
- No malodors were noted within the landfill at any time, indicating little or no landfill gas generation.
- The carbon dioxide levels in the On-Site Landfill were measured to be less than 1%. This is not consistent with an active chemical and putrescible landfill, where the levels of carbon dioxide typically range from 40-48%.
- No methane was present above regulatory criteria (50% of the Lower Explosive Level (LEL)) outside the limits of the waste boundary, despite the lack of any landfill gas collection system. Given that wastes have not been added to the On-Site Landfill for almost six years, and that very little additional wastes, if any, are expected to be added in the future, it is unlikely that the landfill gas generation rate would increase, thereby resulting in an increased potential to detect migrating landfill gas.

Copies of the July, August and September 2004 landfill gas monitoring reports are included as an Exhibit 1 to this Amended Petition. These results, which confirm previous observations were not particularly surprising, in light of the relatively low percentage of organic material disposed in the landfill, and the relatively small size of the units. While the On-Site

Landfill may technically meet the requirements for chemical and putrescible waste landfills, the above-described data confirm that the landfill is actually more similar to the inert waste landfills considered by the Board in adopting the regulations. As a result, the frequency of landfill gas monitoring as technically required by 35 Ill.Adm.Code § 811.310(c)(1) is not necessary and would not provide any additional degree of protection to human health or the environment as compared to the proposed adjusted standard.

For all of these reasons, JM is proposing the following adjusted standard:

> **"In lieu of compliance with 35 Ill.Adm.Code § 811.310(c)(1) as applied to the On-Site Landfill at its facility in Waukegan, Illinois, Johns Manville shall operate all gas monitoring devices, including the ambient air monitors, such that samples will be collected on a semi-annual basis for a period of five years following approval of this adjusted standard. If, at the end of five years, the requirements for implementing a Landfill Gas Collection System (35 Ill.Adm.Code § 811.311) are not met, no further monitoring will be conducted.**

Based on the data collected, compliance with the proposed adjusted standard will not have a more adverse effect on the environment than would compliance with the regulations.

PROPOSED ADJUSTED STANDARD FOR IMPLEMENTATION OF A LANDFILL GAS MANAGEMENT SYSTEM

The regulations governing implementation of a Landfill Gas Collection System (35 Ill.Adm.Code § 811.311(a)(1)) contemplate detection of elevated methane levels below the "ground surface" at a distance of 100 feet outside the edge of the unit, or at the property boundary, whichever is closer. As the property boundary is further away, the distance of 100 feet from the edge of the unit would appear to apply. However, at this distance (100 feet) from the edge of the On-Site Landfill, the subsurface monitoring locations would fall within the area where CERCLA wastes were covered. Within the area adjacent to Miscellaneous Disposal Pit (also called Fill Area #1), the lateral limits of waste material are substantially defined by the toe of the steep side slopes of the CERCLA landfill. Adjacent to the Collectin Basin (also called Fill Area # 2), seven soil borings were advanced in the area located between the eastern limit of the On-Site Landfill (Fill Area # 2) and the perimeter road. Figure 7 shows these boring locations; the subsurface logs for these borings are also attached, as Exhibit 2. As the logs indicate, waste materials (roofing, transite, and white granular materials) are present within the subsurface in this area. Based upon the history of the site, these waste materials are likely not present beneath the surface in the area east of the perimeter road.

Landfill gas monitoring within these areas (west of the perimeter road) would require installation of wells through the engineered cover placed for closure of the CERCLA landfill and into the underlying waste materials. Installation, monitoring, and maintenance of wells installed in these locations not only compromises the integrity of the CERCLA cover and thereby triggers maintenance obligations not otherwise required, it also potentially exposes the now-covered asbestos-containing waste materials to personnel collecting the air samples and/or cause the release of asbestos fibers to ambient air. Furthermore, it is not clear whether monitoring for On-Site Landfill gas beneath the cover of an adjacent landfill meets the intention of "ground surface," in that the goal is to detect whether elevated levels of methane generated within the On-Site Landfill are migrating away from that unit. As a result, locating the landfill gas monitoring devices at a distance of 100 feet from the On-Site Landfill as technically required by 35 Ill.Adm.Code § 811.311(a)(1) would be very burdensome, potentially harmful to the CERCLA remedy, and due to the extremely low levels of gas being generated, would not provide any additional degree of protection to human health or the environment.

For all of these reasons, JM is proposing the following adjusted standard:

"In lieu of compliance with 35 Ill.Adm.Code § 811.311(a)(1) as applied to the On-Site Landfill at its facility in Waukegan, Illinois, Johns Manville shall

install a gas management system if a methane concentration greater than 50 percent of the lower explosive limit in air, is detected below the ground surface by a monitoring device or is detected by an ambient air monitor located as close as possible to, but outside the boundary line shown on Figure 7 or the property line, whichever is less."

Based on the data collected, compliance with the adjusted standard proposed will not have a more adverse effect on the environment than would compliance with the regulations.

PROPOSED ADJUSTED STANDARD FOR THE LOCATIONS OF GROUNDWATER MONITORING WELLS

The regulation governing the Design, Construction, and Operation of Groundwater Monitoring Systems (35 Ill.Adm.Code § 811.318(b)(3)) contemplates locating monitoring points for the On-Site Landfill (as Maximum Allowable Predicted Concentration or "MAPC" wells) within one-half the distance from the edge of the potential source of the discharge to the edge of the zone of attenuation downgradient, with respect to groundwater flow, from the source. Additionally, at least one monitoring well (as an Applicable Groundwater Quality Standard or "AGQS" well) is required at the downgradient limit of the Zone of Attenuation (35 Ill.Adm.Code § 811.318(b)(5)). However, at these distances from the edge of the On-Site Landfill (50 feet for "MAPC" wells and 100 feet for "AGQS" wells), the monitoring locations would fall within the areal limits of where subsurface waste materials are present as part of the now-closed CERCLA landfill. JM is therefore proposing to move the Zone of Attenuation a short distance (maximum of 115 feet) in the southeast corner of the Miscellaneous Disposal Pit (Fill Area # 1) (See Figure 8). In most cases, the distance will be approximately 50 feet beyond the regulatory limits.

Groundwater monitoring at these locations would require installation of wells either (i) on the steeply sloping sides of the CERCLA landfill (Fill Area #1), (ii) through the engineered cover placed for closure of the CERCLA landfill (Fill Areas #1 and #2) and/or (iii) into and through the underlying "CERCLA" waste materials, prior to penetrating the underlying groundwater-bearing zone (Fill Areas #1 and #2). Installation, monitoring, and maintenance of wells installed in these locations is not desirable for the following reasons:

- Drilling through waste materials prior to installing a monitoring well within the underlying groundwater increases the risk of cross-contamination of that groundwater either through (i) carrying contaminants vertically downward during the drilling process and/or (ii) providing a conduit for ongoing vertical migration of waste material leachate down an inefficient annular seal within the borehole. It is acknowledged that the final landfill cover is intended to minimize leachate generation and that the use of various drilling techniques and grouts are available to minimize the possibility of cross contamination. However, these methods and their intended application are not without risk and thus, their use is not consistent with good environmental management practices, provided that the applicable data may be obtained without substantial compromise.

- In the case of Fill Area #1, ongoing and repetitive operations for many years on the steeply sloping, more erosion-prone sides of the CERCLA landfill increases both the cover maintenance obligations (as solely a cost-related issue) and the risk of ambient release of asbestos fiber and subsequent exposure to surrounding populations from incremental erosion events or catastrophic slope failure (*e.g.*, due to drilling operations using heavy equipment).

- As specified in the Operating and Maintenance Manual governing closure of the CERCLA landfill, activities that may result in penetration or damage to the existing CERCLA cover must (i) be pre-approved by U.S. EPA and IEPA, and (ii) must adhere to Health and Safety protocols designed to limit exposure to asbestos.

As a result, locating groundwater monitoring wells at a distance of 50 feet from Unit #1, as technically required by 35 Ill.Adm.Code § 811.318(b)(3) would be very burdensome, would increase the risk of contaminating underlying groundwater, would increase the risk of ambient release and human exposure to asbestos fiber through inadvertent and potentially catastrophic failure of the CERCLA remedy, and would not provide any additional degree of protection to human health or the environment.

For all of these reasons, JM is proposing adjusted standards to those regulations governing the definition of the Zone of Attenuation and the location of monitoring points, as follows:

"In lieu of compliance with 35 Ill.Adm.Code § 811.320(c)(1) as applied to the On-Site Landfill at its facility in Waukegan, Illinois, the Zone of Attenuation, within which concentrations of constituents in leachate discharged from the unit may exceed the applicable groundwater quality standard of this Section, is a volume bounded by a vertical plane located as shown on Figure 8, extending from the ground surface to the bottom of the uppermost aquifer and excluding the volume occupied by the waste."

"In lieu of compliance with 35 Ill.Adm.Code § 811.318(b)(3) as applied to the On-Site Landfill at its facility in Waukegan, Illinois, Johns Manville shall install groundwater monitoring wells at the locations specified on the attached Figure 8. Those monitoring wells located along the proposed Zone of Attenuation boundary shall be considered Applicable Groundwater Quality Standards or "AGQS" wells consistent with the requirements of 35 Ill.Adm.Code § 811.318(b)(5)"

The following additional clarifications to potentially applicable regulations are offered, based on discussions with the IEPA:

The location of the bottom of the uppermost aquifer shall be determined in a manner consistent with the requirements of 35 Ill.Adm.Code § 811.311(c)(2)(B).

Compliance with 35 Ill.Adm.Code § 811.317(b) shall be assessed by modeling all applicable Zone of Attenuation distances, as shown on Figure 8.

It is recognized that no Maximum Allowable Predicted Concentration or "MAPC" wells are being proposed; all monitoring points are considered Applicable Groundwater Quality Standards or "AGQS" locations. As such, the obligations described in 35 Ill.Adm.Code § 811.319(b)(3) immediately apply, if the concentration of one or more constituents monitored at or beyond the Zone of Attenuation, as shown on Figure 8, is above the applicable groundwater quality standards of Section 811.320 and is attributable to the On-Site Landfill.

These proposed adjusted standards are designed to implement the applicable regulations in a manner that is consistent with maximizing protection of the environment without increasing the potential accidental harm that might be caused inadvertently.

In reviewing any petition related to groundwater standards and the Zone of Attenuation, the Board may adjust the compliance boundary based on a consideration of the factors listed in 814.402(b)(3), as long as the alternative compliance boundary will not result in contamination of groundwater that is or may be needed for human consumption. In its August 5, 2004 Order, the Board directed JM to address these factors, and JM addresses the applicable factors below. In this Amended Petition, JM has requested an adjusted standard to Section 811.320(c)(1) by explaining that compliance with the applicable regulations may result in (i) inadvertent impacts to underlying groundwater (814.402(b)(3)(F)) and (ii) exposure to asbestos fiber present beneath the CERCLA cap, thus potentially impacting public safety (814.402(b)(3)(G)). Any adjustments to the compliance boundary would not impact groundwater that is or may be used for human consumption, because there are no existing groundwater users in the immediate area, and because there will be prohibitions on the use of groundwater on the JM property pursuant to the amended federal consent decree. The proximity of the facility to Lake Michigan makes it very unlikely that any adjacent properties would attempt to use groundwater for human consumption. Moreover, the following factors also serve to show that compliance with the adjusted standards proposed will not have a more adverse effect on the environment than would compliance with the regulations:

- Native soils at the site consist of moderately sorted sand from the surface to approximately 40 feet below grade (see attached well log for LMW-11). Below this unit is a dry, lean clay that, based upon water production logs from the 1920s, is approximately 45 to 75 feet in thickness (see attached well logs for JM Wells 1, 2, 3, and 4). Confirmation of the thickness of the underlying clay will be conducted pursuant to the requirements of 811.315(c)(2)(b). The consistency in the soil type and the lack of intervening clay layers in the uppermost aquifer serves to minimize the number of potential migration pathways that contaminants might seek. Therefore, extending the Zone of Attenuation laterally (by a maximum of 115 feet) will not result in masking contaminants in the uppermost aquifer due to alternate migration pathways.

- Figure 8 also depicts the April 2004 groundwater flow contours in the vicinity of the On-Site Landfill. As would be expected, the flow direction is towards Lake Michigan, at an average gradient of 0.004 feet per foot. Figures 9, 10, 11, and 12 depict the groundwater elevations for April 2003, July 2003, December 2003, and April 2004, respectively. As can be seen, the groundwater flow direction and gradient is very consistent during these 4 quarters of data. Therefore, moving the Zone of Attenuation laterally will not result in masking contaminant transport due to an unexpected change in the groundwater flow characteristics.

- The proposed lateral adjustment to the location of the Zone of Attenuation (maximum of 115 feet in the southwest corner of Fill Area #1) is further mitigated by the deed restriction requirement contained with the First Amended Consent Decree currently lodged in District Court prohibiting use of the groundwater on the Johns Manville property. As the proposed Zone of Attenuation boundary is still located on the JM property, this will not result in any further limitations on the use of groundwater that might be impacted within the Zone of Attenuation.

Description of Impact of Compliance With General Standard As Compared to Proposed Adjusted Standard, and Justification, 35 Ill.Adm.Code §§ 104.4-6(g)-(h)

As has been described above, because of the presence of the adjacent remediated Superfund cells, strict compliance with the regulations could result in drilling through engineered cover and waste, compromising the Superfund remedy. On the other hand, compliance with the proposed adjusted standard should meet the goals of the Board's Solid Waste Regulations with respect to gas control and groundwater monitoring. JM's proposed adjusted standard should provide sufficient information with respect to gas generation and groundwater impact so that future action can be taken, if necessary, under other provisions of the Board's solid waste regulations. Compliance with the Proposed Adjusted Standard will be, at a minimum, equally protective of the environment as would compliance with the regulations of general applicability. JM believes that granting the adjusted standard would be justified for the reasons set forth above, and would create a lesser risk of damage to the remediated areas at the Superfund site.

The Board May Grant Adjusted Standard Consistent With Federal Law, 35 Ill.Adm.Code § 104.406(i)

As described above, if the Board were to grant the adjusted standard, it would in no way be contrary to federal statutory or regulatory requirements. Moreover, the federal consent decree described above, expressly contemplated that an adjusted standard petition could be filed, so granting the adjusted standard would not be inconsistent with any federal judicial order or consent decree.

Hearing Requested 35 Ill.Adm.Code 104.406(j)

JM has discussed these proposed adjusted standards with the Illinois Environmental Protection Agency(IEPA), and is requesting the Agency's concurrence. If Agency concurs with this petition, it may not be necessary to have a hearing (assuming that members of the public do not request one. If the IEPA concurs with the petition, and there are no requests for a hearing from the public or other interested parties, JM can waive its request for a hearing.

Documentation to Be Relied Upon, 35 Ill.Adm.Code § 104.406(k)-(l)

JM has attached a number of documents, including gas generation data and chart showing the locations of Superfund remediated areas in support of this petition. Due to the site's Superfund history, there is voluminous data and numerous reports concerning the conditions of the site prior to remedial activities, and the construction of the cap over the cells. This data can be provided to the Board or to the IEPA in the event that additional information is required.

CONCLUSION

For the reasons set forth above, JM respectfully requests that the Pollution Control Board grant the adjusted standards to 35 Ill.Adm.Code Part 814, incorporating 35 Ill.Adm.Code §§ 811.310, 811.311, and 811.318 as described in this petition, and as set forth below:

> **"In lieu of compliance with 35 Ill.Adm.Code § 811.310(c)(1) as applied to the On-Site Landfill at its facility in Waukegan, Illinois, Johns Manville shall operate all gas monitoring devices, including the ambient air monitors, such that samples will be collected on a semi-annual basis for a period of five years following approval of this adjusted standard. If, at the end of five years, the requirements for implementing a Landfill Gas Collection System (35**

Ill.Adm.Code § 811.311) are not met, no further monitoring will be conducted."

"In lieu of compliance with 35 Ill.Adm.Code § 811.311(a)(1) as applied to the On-Site Landfill at its facility in Waukegan, Illinois, Johns Manville shall install a gas management system if a methane concentration greater than 50 percent of the lower explosive limit in air, is detected below the ground surface by a monitoring device or is detected by an ambient air monitor located as close as possible to the boundary line shown on Figure 7 or the property line, whichever is less."

"In lieu of compliance with 35 Ill.Adm.Code § 811.320(c)(1) as applied to the On-Site Landfill at its facility in Waukegan, Illinois, the Zone of Attenuation, within which concentrations of constituents in leachate discharged from the unit may exceed the applicable groundwater quality standard of this Section, is a volume bounded by a vertical plane located as shown on Figure 8, extending from the ground surface to the bottom of the uppermost aquifer and excluding the volume occupied by the waste."

"In lieu of compliance with 35 Ill.Adm.Code § 811.318(b)(3) as applied to the On-Site Landfill at its facility in Waukegan, Illinois, Johns Manville shall install groundwater monitoring wells at the locations specified on the attached Figure 8. Those monitoring wells located along the proposed Zone of Attenuation boundary shall be considered Applicable Groundwater Quality Standards or "AGQS" wells consistent with the requirements of 35 Ill.Adm.Code § 811.318(b)(5)"

Respectfully submitted,

JOHNS MANVILLE,
Petitioner,

By: Edward P. Kenney
One of Its Attorneys

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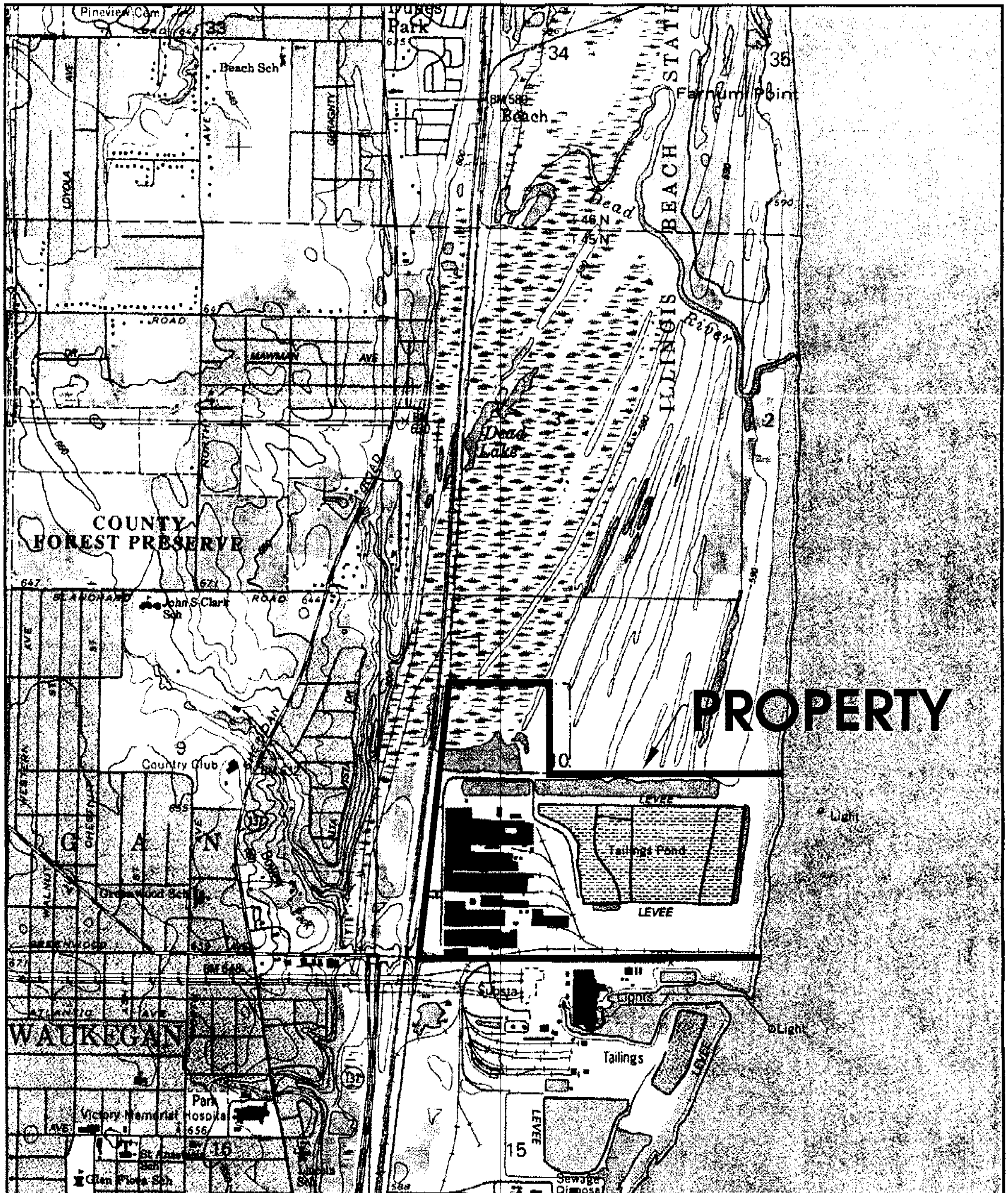
Sidley, Austin, Brown & Wood LLP
10 South Dearborn Street
BankOne Plaza
Chicago, Illinois 60603
(312)853-2062

FIGURES AND EXHIBITS



N

GRAPHIC SCALE
0 1,000' 2,000'

Source:
Zion, Illinois (1993) USGS
7.5 Minute Series
Quadrangle Map

Property Location Map

Johns Manville
1871 North Pershing Road
Waukegan, Illinois

LFR
LEVINE•FRICKE

Figure 1

T:\Johns Manville\7992.00Waukegan\2ndESD\On-SiteLandfillClosure\SIR Report\Drawings\Figure01-SiteLocationMap.dwg

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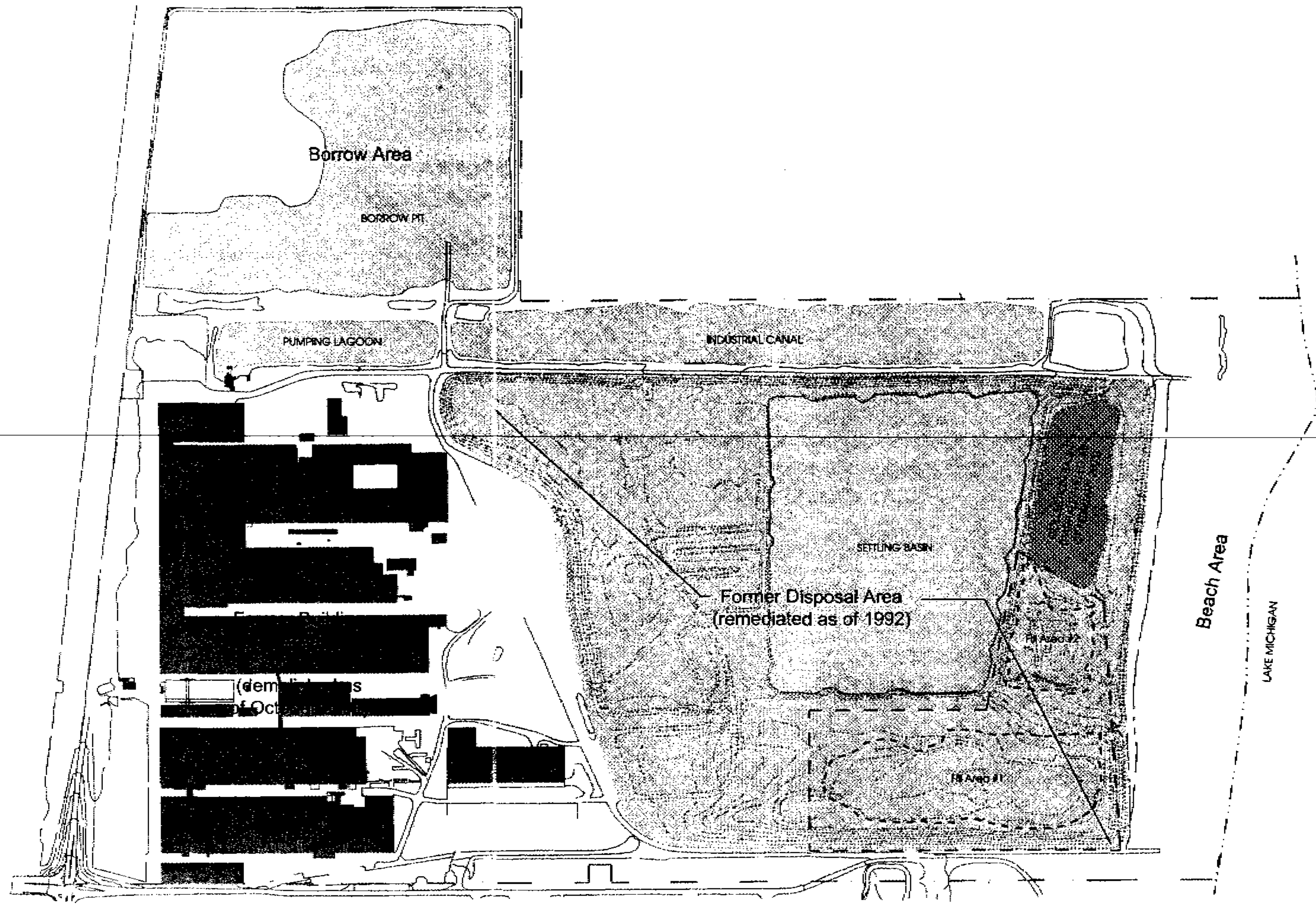

— — Property Line

- - - - On-Site Landfill Area

JOHNS MANVILLE, WAUKEGAN, ILLINOIS

General Property Map and On-Site Landfill Location

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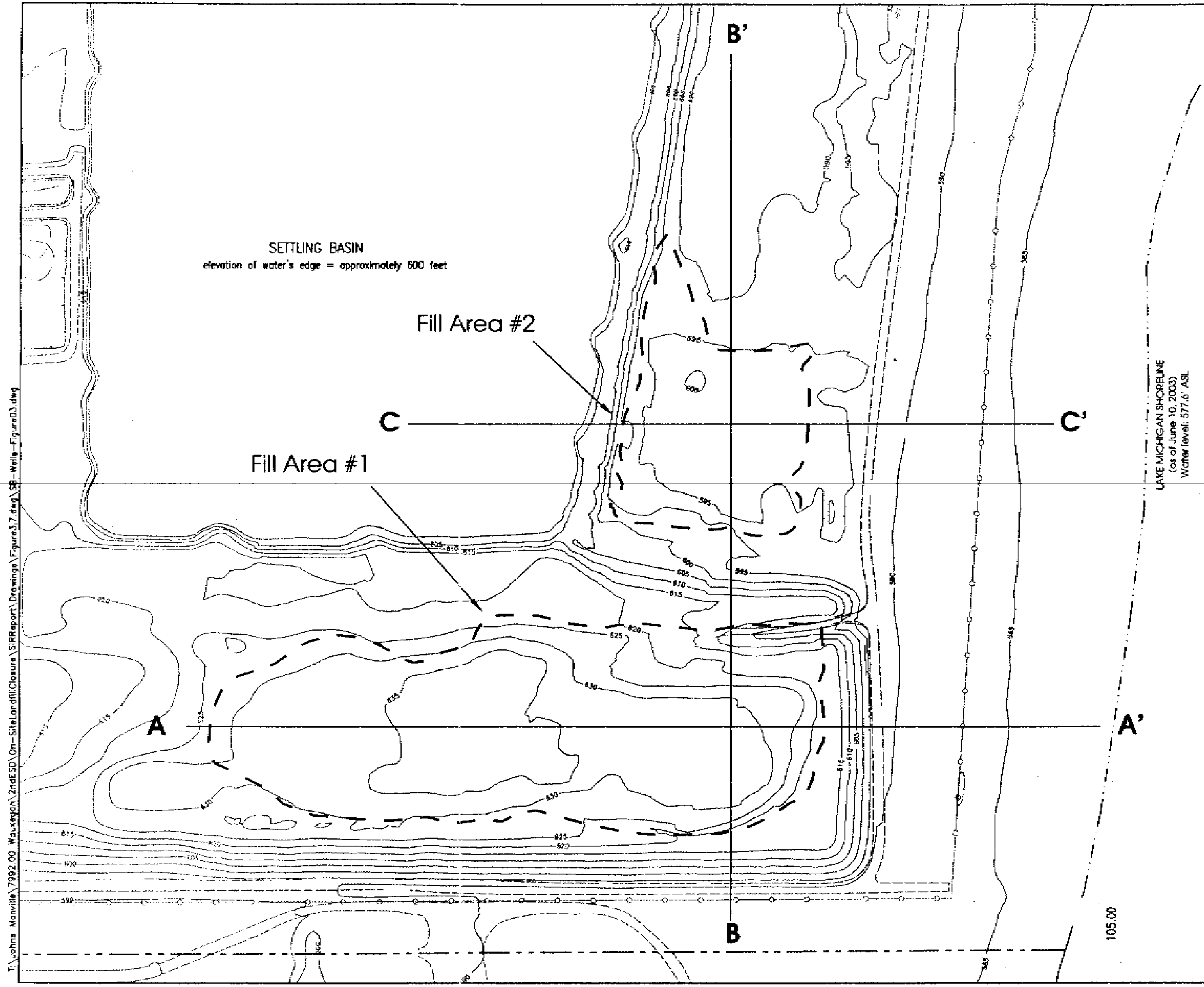
Figure 2



JOHNS MANVILLE

On Site Landfill Site Plan and Location of Cross Sections

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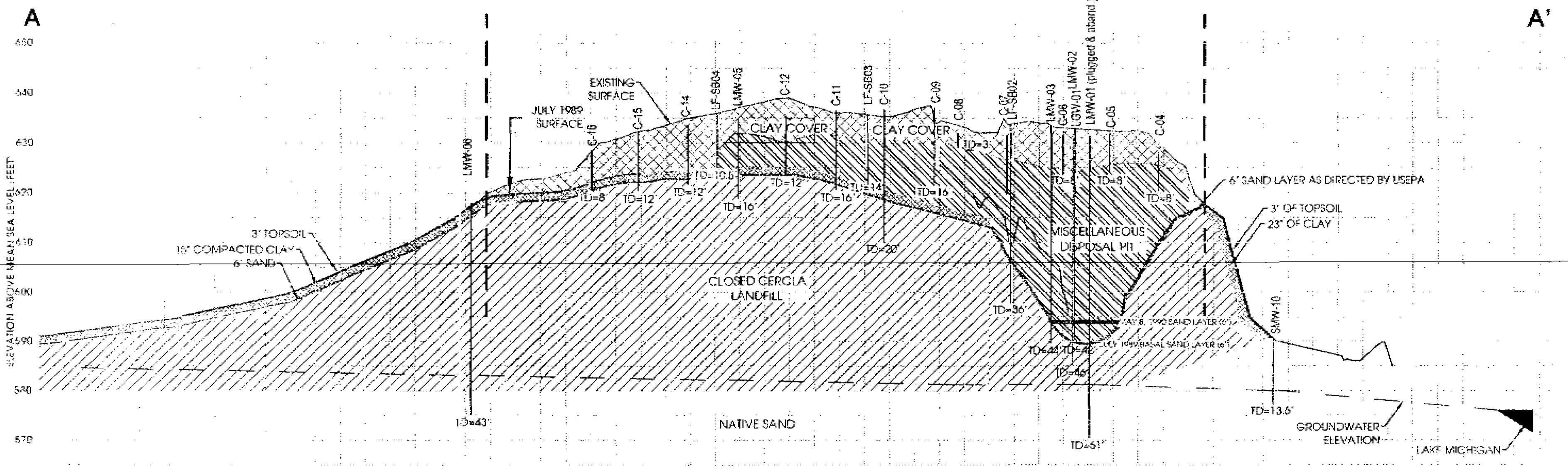
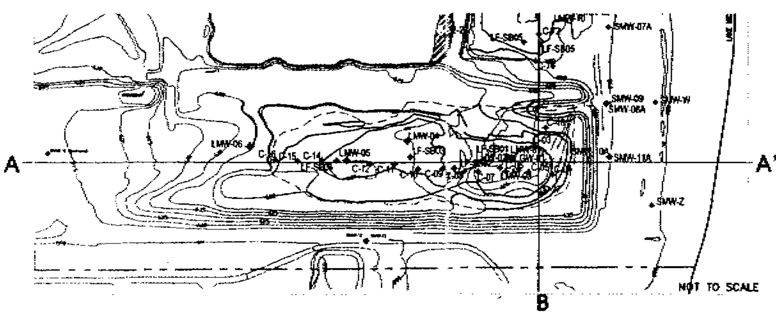
Figure 3





LEGEND

- ON-SITE LANDFILL COVER (CLAY)
- ON-SITE LANDFILL WASTE (NON-ASBESTOS)
- CERCLA WASTE

GRAPHIC SCALE 0 100' 200'

JOHNS MANVILLE

On-Site Landfill
West-East Cross Section
April 2003

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Figure 4

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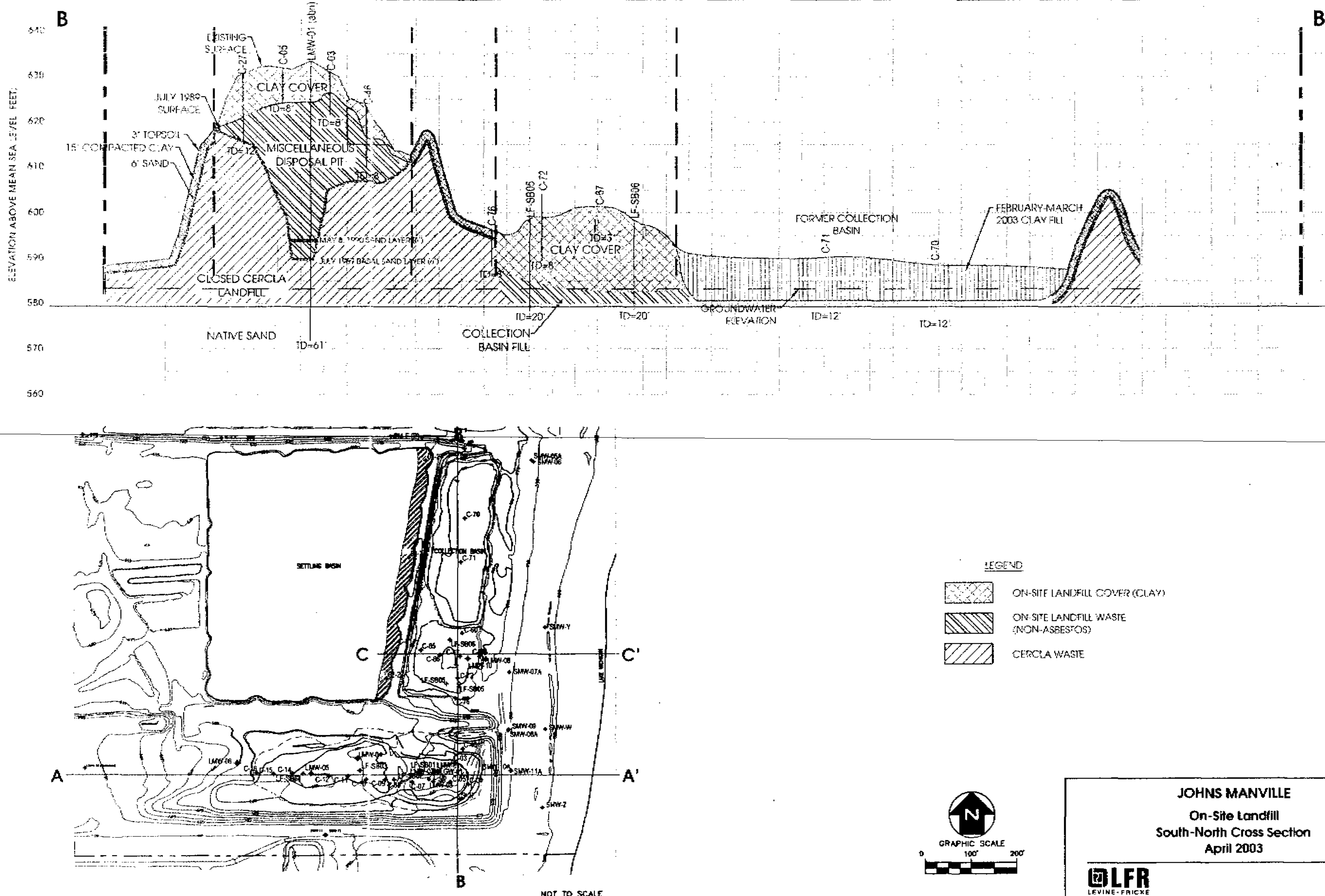

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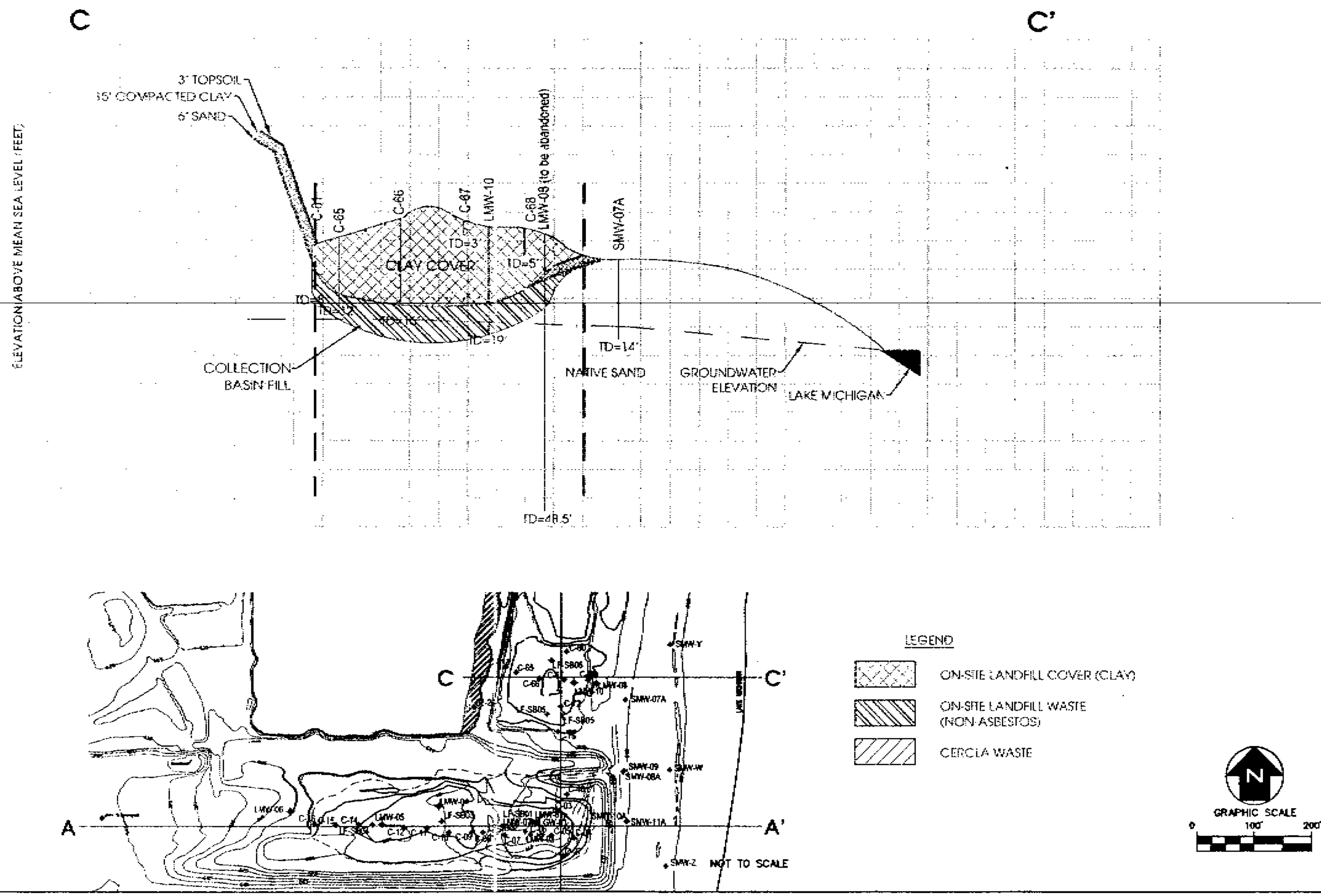
JOHNS MANVILLE

On-Site Landfill
South-North Cross Section
April 2003

LFR LEVINE·FRICKE

Figure 5



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JOHNS MANVILLE

On-Site Landfill
West-East Cross Section
April 2003

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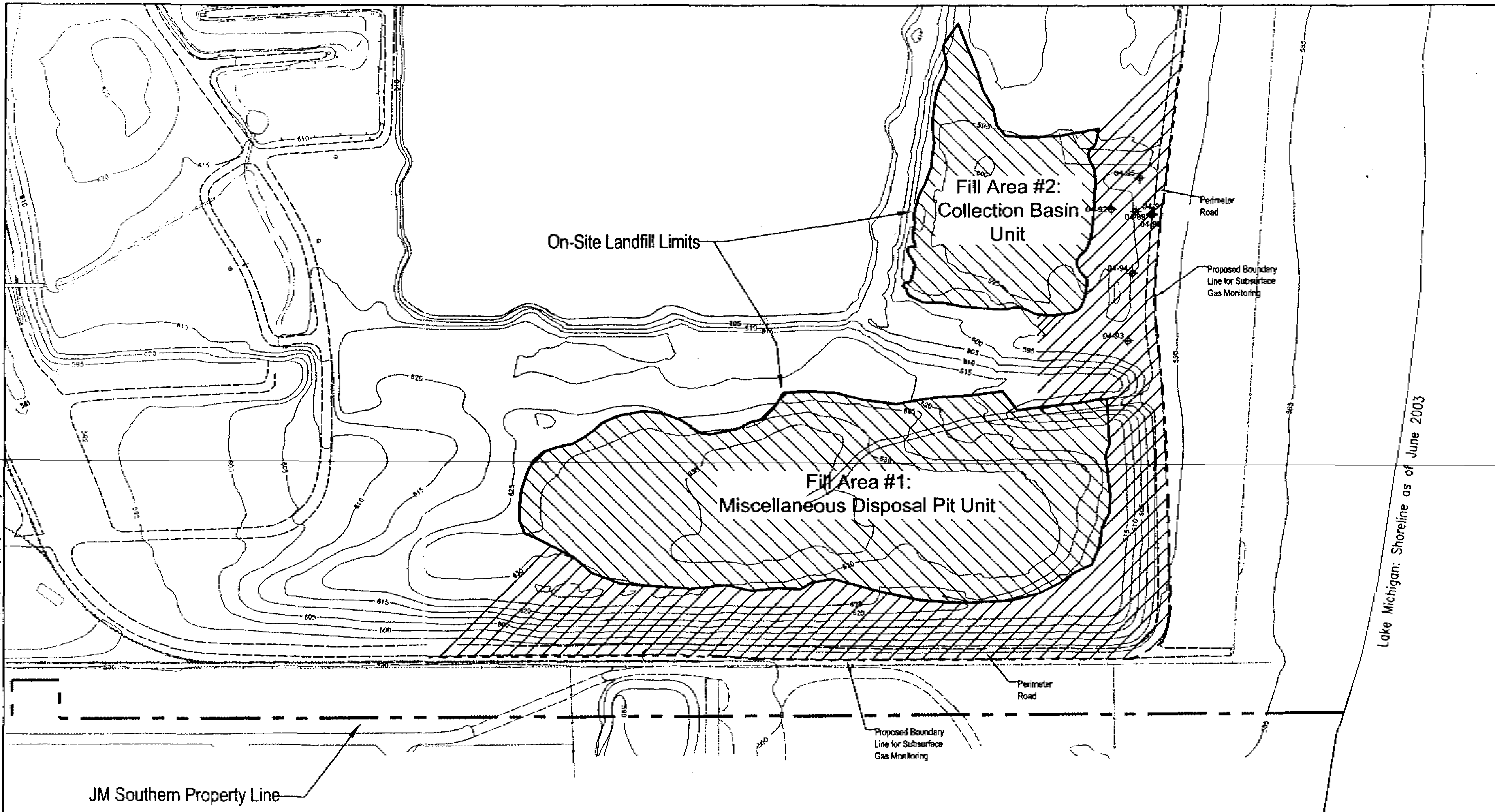
Figure 6



04-93 Soil Boring Location

Pertinent Areas of CERCLA Cover w/ Underlying Visible Waste Materials

GRAPHIC SCALE

0 200'

Johns Manville, Waukegan, Illinois

On-Site Landfill
Soil Boring Locations
and Proposed Landfill Gas Monitoring Boundary

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Figure 7

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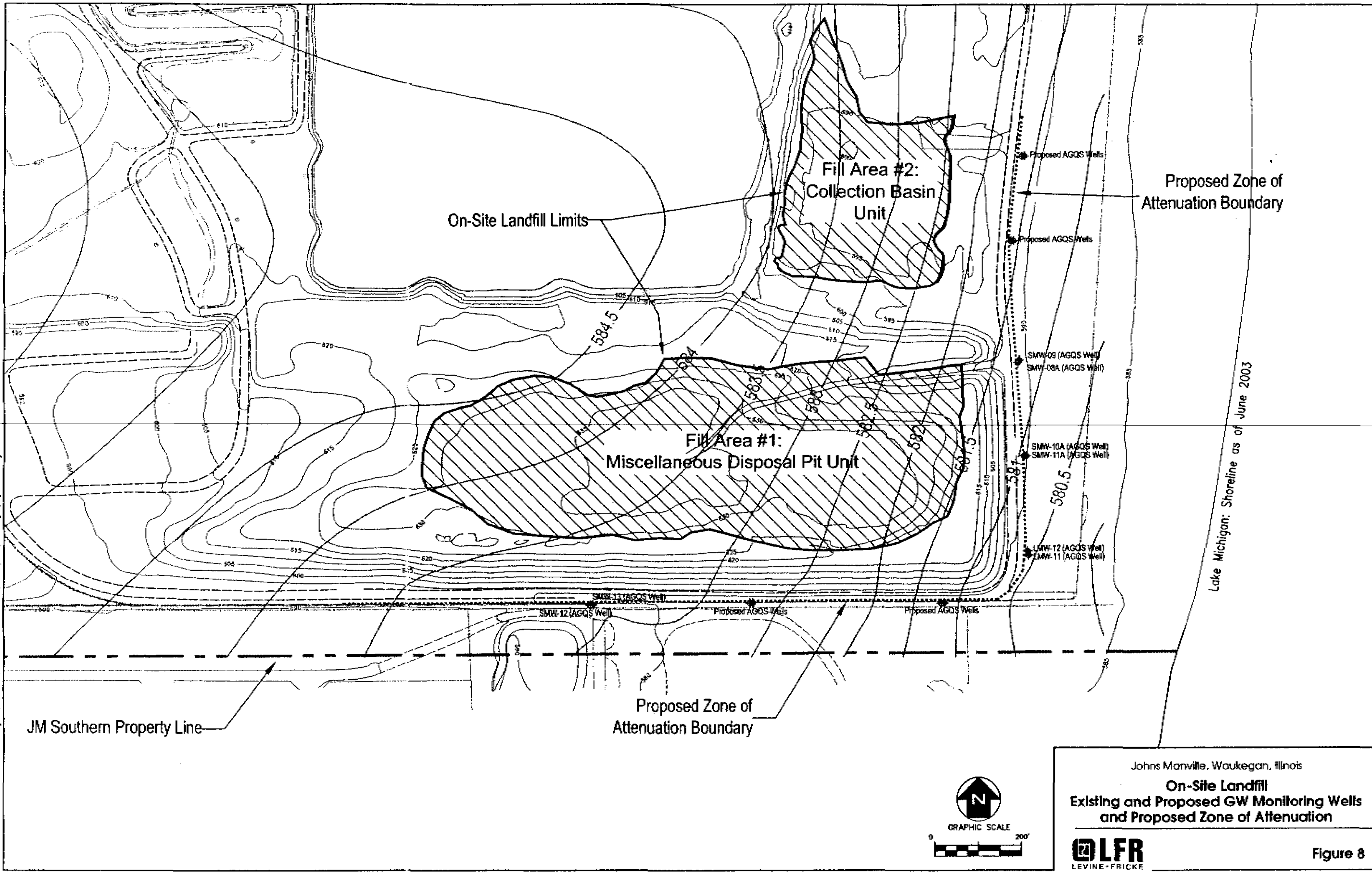

Johns Manville, Waukegan, Illinois

On-Site Landfill
Existing and Proposed GW Monitoring Wells and Proposed Zone of Attenuation

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Figure 8

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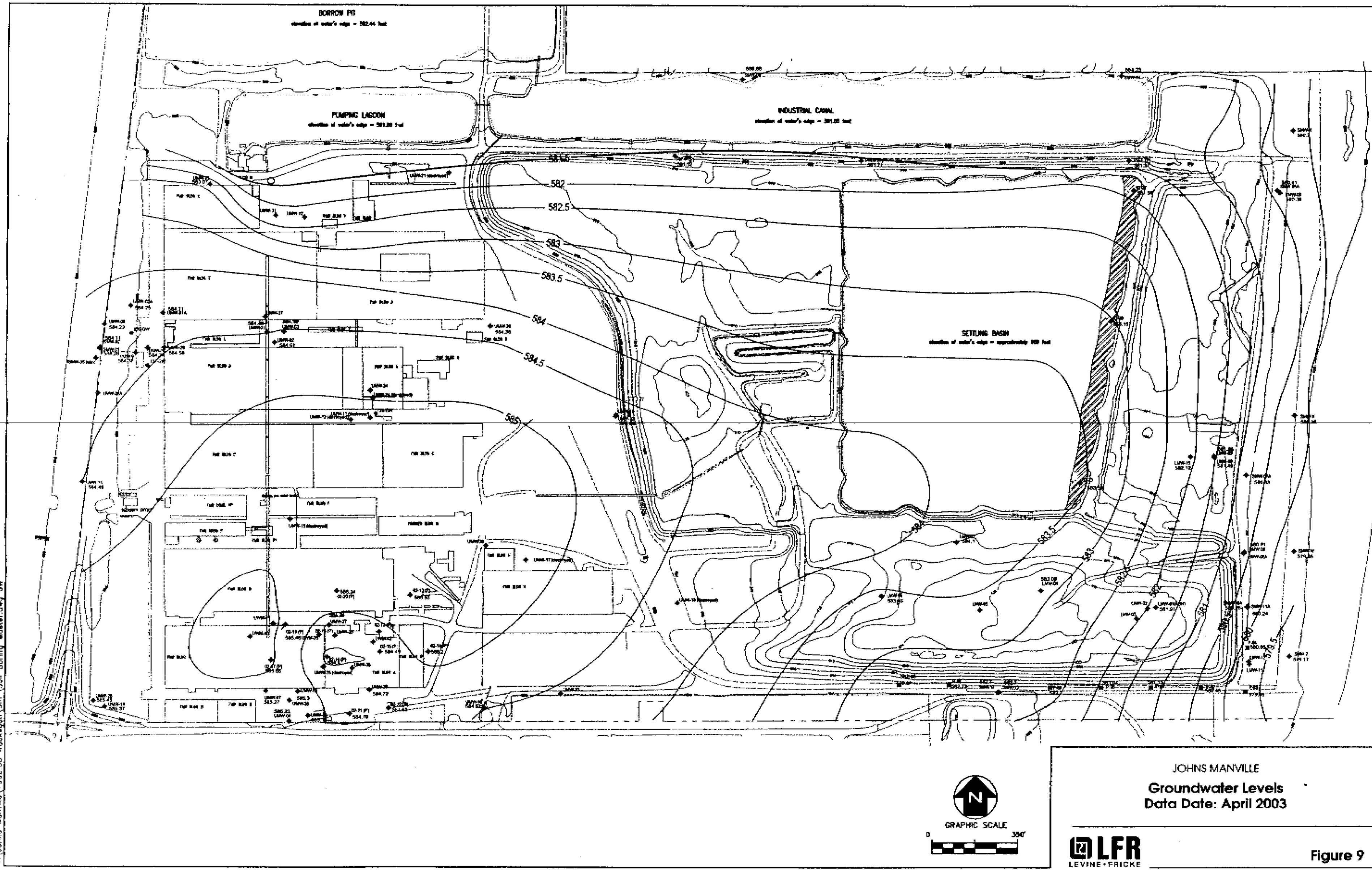

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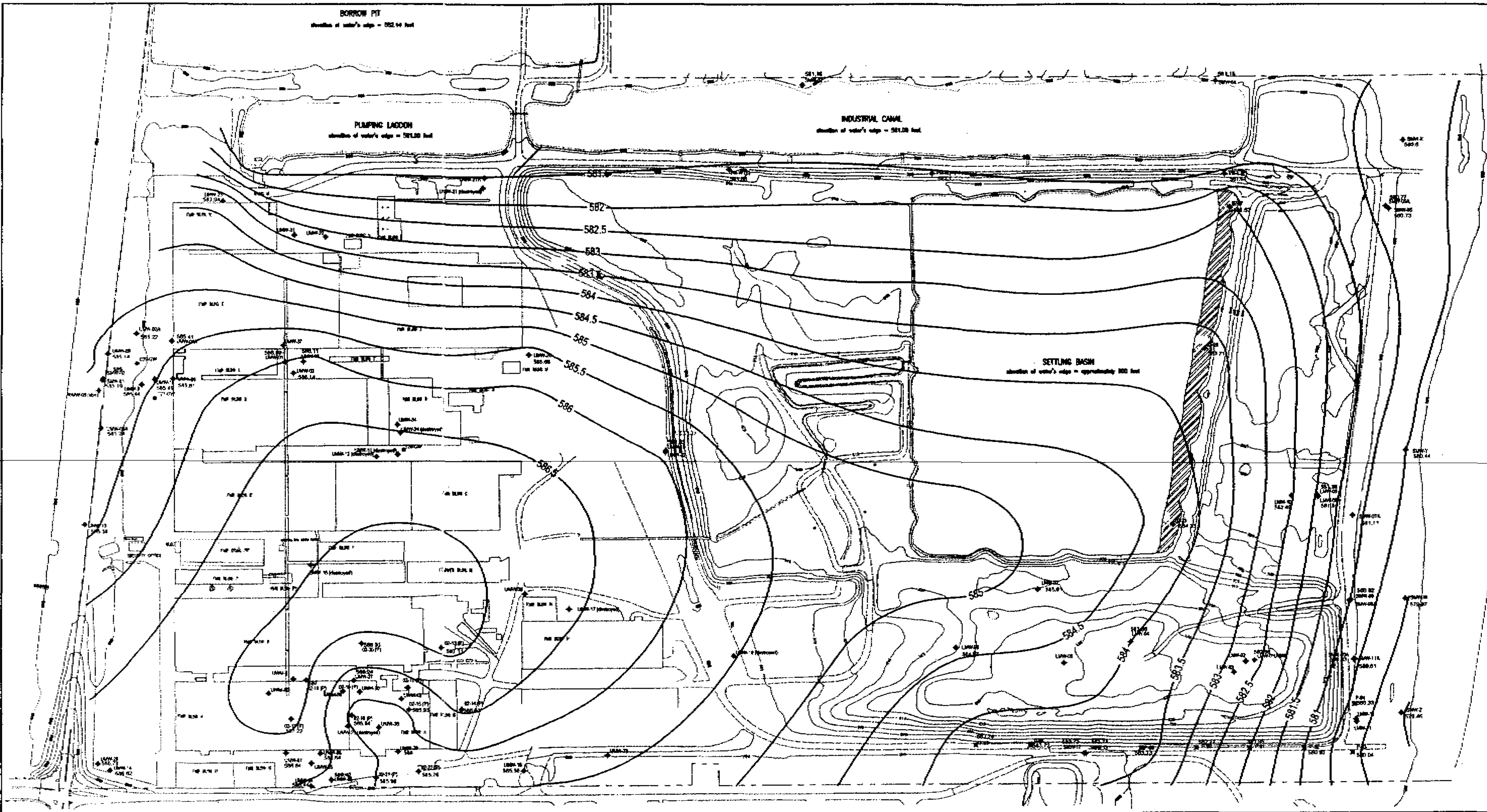
JOHNS MANVILLE

Groundwater Levels
Data Date: April 2003

LFR LEVINE•FRICKE

Figure 9



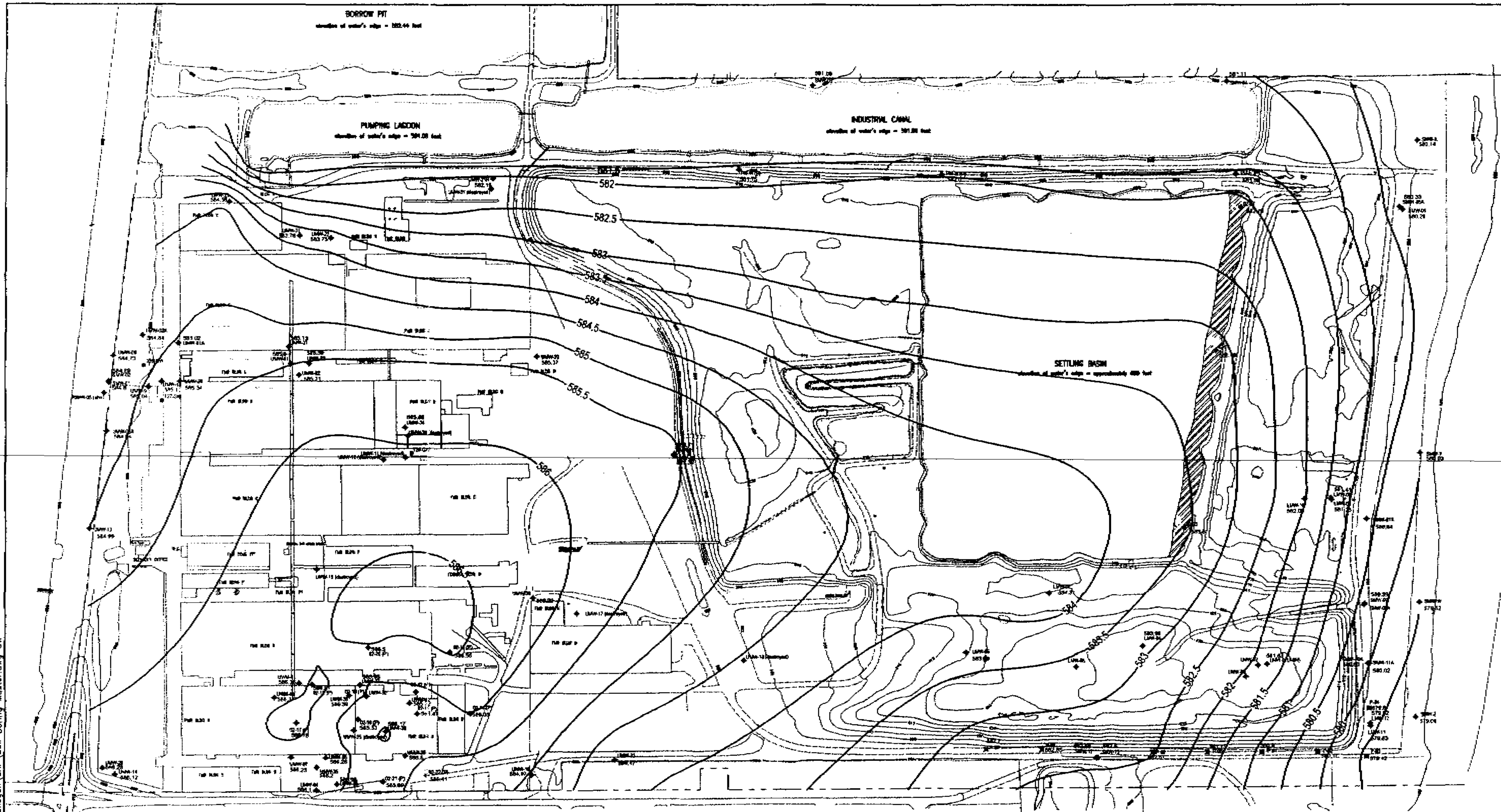
Johns Manville, Waukegan, Illinois

Groundwater Levels
Data Date: July 2003

LFR LEVINE·FRICKE

Figure 10

T:\Johns Manville\7992.00 Waukegan\SRP\Soil Boring Master.dwg GW



Johns Manville, Waukegan, Illinois

Groundwater Levels
Data Date: December 2003

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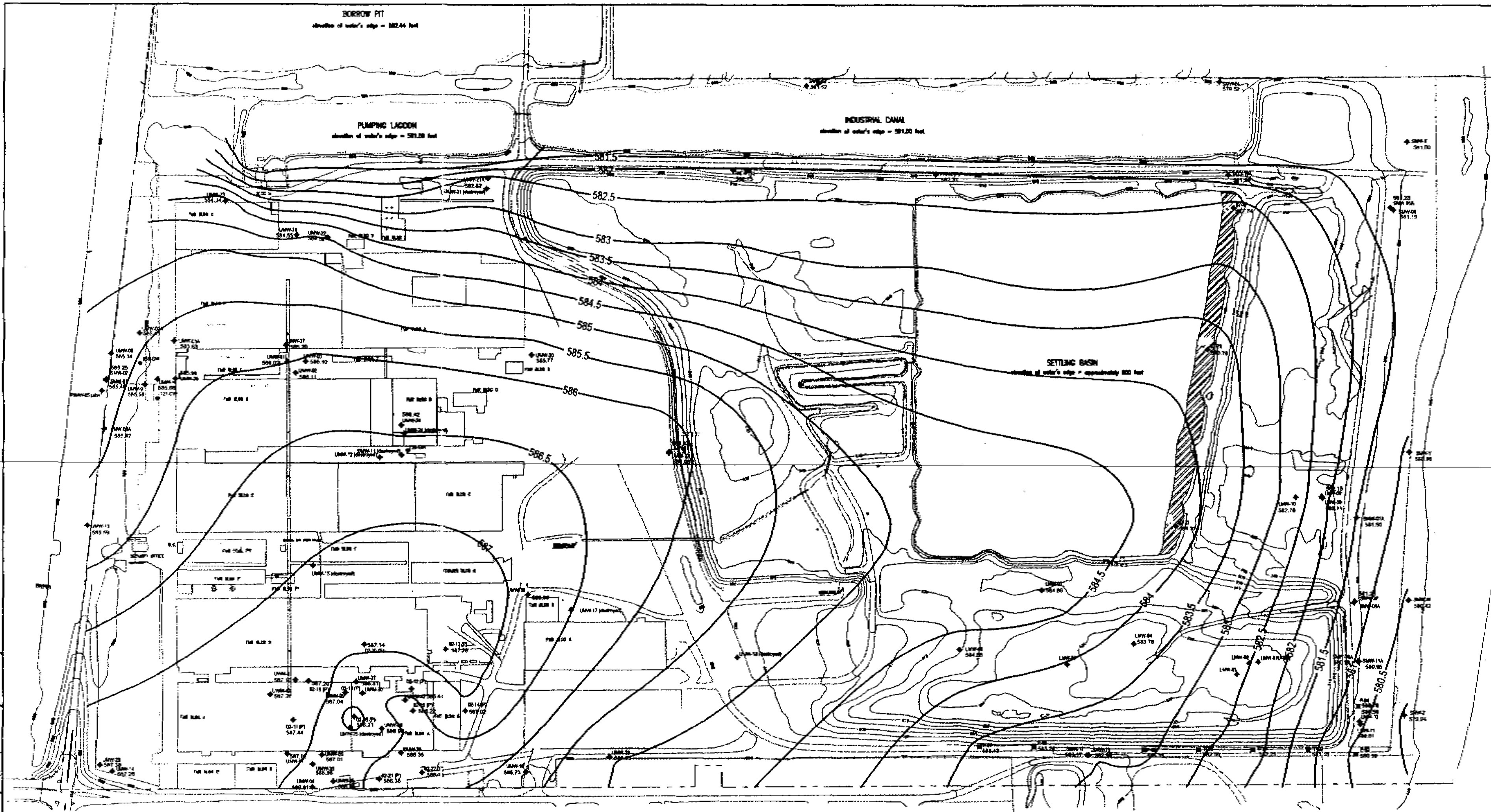
Figure 11

T:\Johns Manville\7992.00 Waukegan\SRP\Soil Boring Master.dwg GW



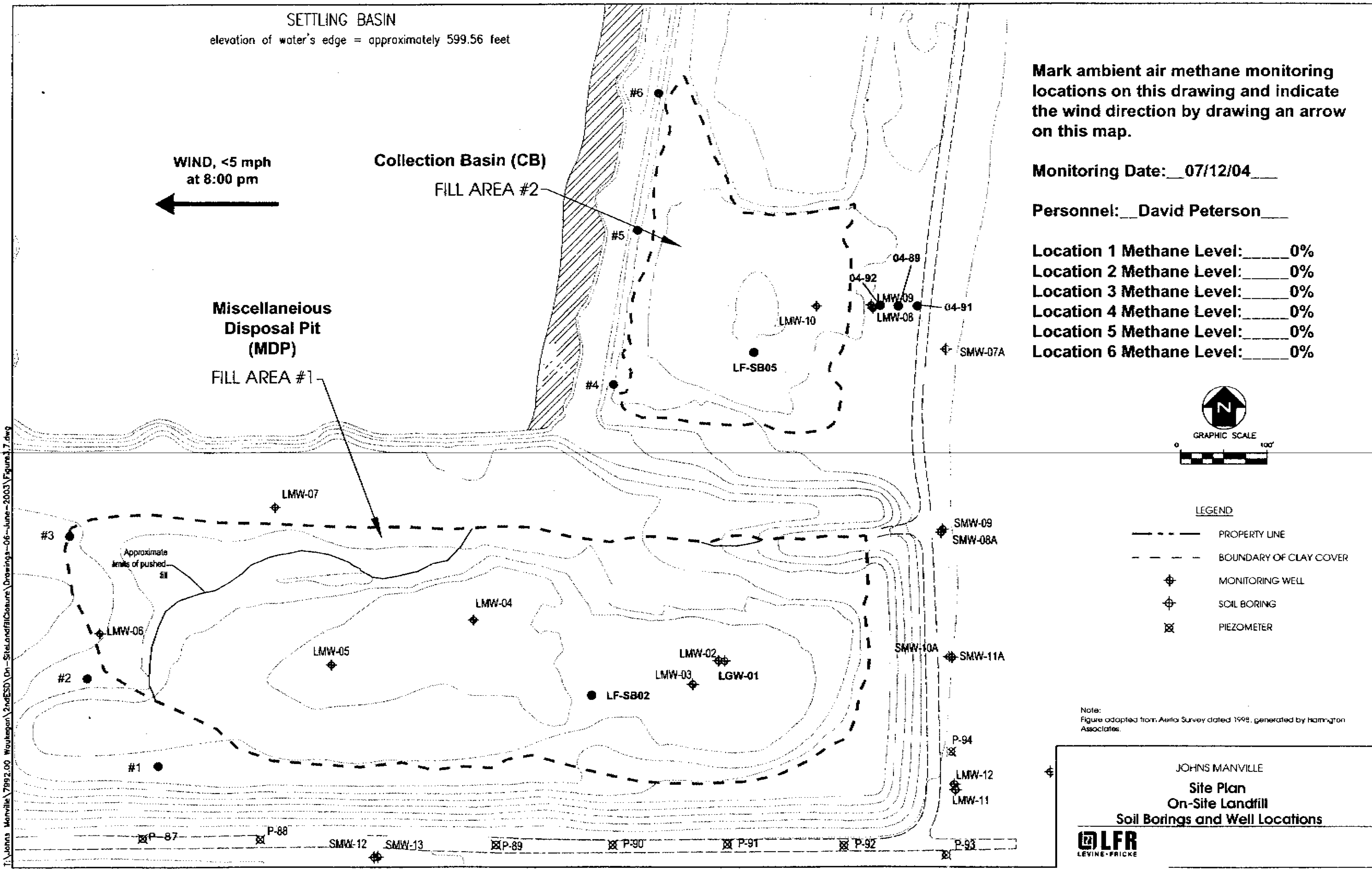
Johns Manville, Waukegan, Illinois

Groundwater Levels
Data Date: April 2004

LFR LEVINE·FRICKE

Figure 12

EXHIBIT 1



SETTLING BASIN
elevation of water's edge = approximately 599.56 feet
Mark ambient air methane monitoring locations on this drawing and indicate the wind direction by drawing an arrow on this map.
Monitoring Date:__07/12/04___
Personnel:__David Peterson___
Location 1 Methane Level:_____0%
Location 2 Methane Level:_____0%
Location 3 Methane Level:_____0%
Location 4 Methane Level:_____0%
Location 5 Methane Level:_____0%
Location 6 Methane Level:_____0%
WIND, <5 mph at 8:00 pm
Collection Basin (CB)
FILL AREA #2
Miscellaneious Disposal Pit (MDP)
FILL AREA #1
Approximate limits of pushed fill
#1
#2
#3
#4
#5
#6
04-89
04-92
04-91
LMW-09
LMW-08
LMW-10
LF-SB05
SMW-07A
LMW-07
LMW-06
LMW-05
LMW-04
LMW-02
LMW-03
LGW-01
LF-SB02
SMW-09
SMW-08A
SMW-10A
SMW-11A
P-94
LMW-12
LMW-11
P-87
P-88
SMW-12
SMW-13
P-89
P-90
P-91
P-92
P-93
GRAPHIC SCALE
0
100'
LEGEND
PROPERTY LINE
BOUNDARY OF CLAY COVER
MONITORING WELL
SOIL BORING
PIEZOMETER
JOHNS MANVILLE
Site Plan
On-Site Landfill
Soil Borings and Well Locations
LFR
LEVINE·FRICKE

Johns Manville – Waukegan Plant
On-Site Landfill Gas Monitoring Form

Date:	7/14/04		Personnel:	David Peterson
Ambient Temperature:	76	deg. F	Landfill Gas Instrument:	Landtec GA-90 (Rented from F.E.I.)
Barometric Pressure:	29.87	in Hg	Pressure Instrument:	Magnehelic Gauges (0-1 and 0-10 in. water)
Wind Speed:	9	mph	Water Level Instrument:	Solonist
Wind Direction:	From the NW		Weather Conditions:	Partly Sunny

Monitoring Location	Subsurface Pressure (in. water)	CH_4 Level (%)	CO_2 Level (%)	O_2 Level (%)	Depth to Water below TOC (ft)	TOS below Top of Casing (TOC) (ft)	Top of Screen (TOS) Elev. (ft)	Bottom of Screen Elev. (ft)	Screen Interval Description
LGW-01	0	55	0	0.6	38.03 Dry	11.00	622.67	597.67	In MDP waste
LMW-05	0	12.3	0	0.1	9.22 Dry	2.00	635.22	628.22	In MDP waste
LMW-06	0	0	0.1	19.8	34.71	37.50	582.99	577.99	West of MDP
LMW-07	0.18	0	0	20.8	36.96	44.00	579.01	574.01	North of MDP
LMW-12	0	0	6.8	9.4	10.19	5.00	586.28	576.28	East of MDP
SMW-8A	0	0	0.1	20.1	11.20	8.30	584.97	579.97	East of MDP
SMW-10A	0	0	0	20.6	10.88	8.60	583.87	578.87	East of MDP
SMW-12	0	0	0	20.8	7.38	8.40	583.07	578.57	South of MDP
LMW-9	0	2.4	2.8	0.3	17.67	12.00	588.92	578.92	East of CB, below asbestos landfill cap
LMW-10	0	3.2	0	15.6	16.89	13.50	587.38	582.38	In CB waste

Ambient Location	CH_4 Level (%)	Sample Location Description
1	0	MDP - Sampled 07/12/04 at 8:00 pm, west side of landfill, south sample
2	0	MDP - Sampled 07/12/04 at 8:00 pm, west side of landfill, middle sample
3	0	MDP - Sampled 07/12/04 at 8:00 pm, west side of landfill, north sample
4	0	CB - Sampled 07/12/04 at 8:10 pm, west side of landfill, south sample
5	0	CB - Sampled 07/12/04 at 8:10 pm, west side of landfill, middle sample
6	0	CB - Sampled 07/12/04 at 8:10 pm, west side of landfill, north sample

Note: Surface methane levels measured with a MSA Microgard O2/LEL meter calibrated to 50% pentane, corrected for methane using a response factor of 0.5.
Water levels collected on July 12, 2004

Johns Manville – Waukegan Plant
On-Site Landfill Gas Monitoring Form
Optional Additional Data

Date:	7/14/04		Personnel:	David Peterson
Ambient Temperature:	76	deg. F	Landfill Gas Instrument:	Landtec GA-90 (Rented from F.E.I.)
Barometric Pressure:	29.87	in Hg	Pressure Instrument:	Magnehelic Gauges (0-1 and 0-10 in. water)
Wind Speed:	9	mph	Water Level Instrument:	Solonist
Wind Direction:	From the NW		Weather Conditions:	Partly Sunny

Monitoring Location	Subsurface Pressure (in. water)	CH_4 Level (%)	CO_2 Level (%)	O_2 Level (%)	Depth to Water below TOC (ft)	TOS below Top of Casing (TOC) (ft)	Top of Screen (TOS) Elev. (ft)	Bottom of Screen Elev. (ft)	Screen Interval Description
LMW-02	0	2.6	0	19.6	39.51	38.00	595.48	590.48	In MDP waste
LMW-03	-0.18	15.4	2.2	9.1	44.87 Dry	38.00	596.37	591.37	In MDP waste
LMW-04	0.50	0.1	0.2	19.0	56.39	59.00	582.22	577.22	Beneath MDP
P-87	0.52	0	0	20.9	10.05	6.00	588.62	583.62	South of MDP
P-88	NM	0	0	20.8	10.37	5.50	589.17	584.17	South of MDP
P-89	0.60	0	0	20.7	9.65	5.75	587.89	582.89	South of MDP
P-90	0.72	0	0	20.8	10.09	6.50	586.83	581.83	South of MDP
P-91	0.20	0	0	20.8	10.11	6.50	586.24	581.24	South of MDP
P-92	0.20	0	0.2	20.7	10.20	6.80	585.04	580.04	South of MDP
P-93	0	0	0.2	19.7	10.33	6.50	584.69	579.69	South of MDP
P-94	NM	0	0	20.6	13.45	9.00	585.76	580.76	South of MDP
04-92	0	0	3.6	16.6	5.98	4.80	0.8 ft BGS	3.8 ft BGS	50 ft E. of CB
04-89	NM	NM	NM	NM	Dry at 6.60	4.75	0.75 ft BGS	3.75 ft BGS	100 ft E. of CB
04-91	NM	NM	NM	NM	Dry at 6.35	4.64	0.1 ft BGS	2.6 ft BGS	140 ft E. of CB
LF-SB02	0	15	0.7	11.7	22.90	35.50	32 ft BGS	37 ft BGS	In MDP waste
LF-SB05	NM	0	9.8	0.3	8.00	9.50	7.5 ft BGS	12.5 ft BGS	In CB waste

Note: NM = not measured.
Water levels collected on July 12, 2004

Johns Manville – Waukegan Plant
On-Site Landfill Gas Monitoring Form

Date:	8/31/04		Personnel:	David Peterson
Ambient Temperature:	70	deg. F	Landfill Gas Instrument:	Landtec GA-90 (Rented from F.E.I.)
Barometric Pressure:	30.24	in Hg	Pressure Instrument:	Magnehelic Gauges (0-1 and 0-10 in. water)
Wind Speed:	4	Mph	Water Level Instrument:	Heron (Rented from F.E.I)
Wind Direction:	From the NE		Weather Conditions:	Sunny and clear

Monitoring Location	Subsurface Pressure (in. water)	CH_4 Level (%)	CO_2 Level (%)	O_2 Level (%)	Depth to Water below TOC (ft)	TOS below Top of Casing (TOC) (ft)	Top of Screen (TOS) Elev. (ft)	Bottom of Screen Elev. (ft)	Screen Interval Description
LGW-01	-0.02	55	0.5	0.8	Dry	11.00	622.67	597.67	In MDP waste
LMW-05	0	0.3	0.5	5.9	Dry	2.00	635.22	628.22	In MDP waste
LMW-06	0	0	0.1	20.1	36.15	37.50	582.99	577.99	West of MDP
LMW-07	-1.0	0	0	20.5	38.20	44.00	579.01	574.01	North of MDP
LMW-12	0	0	0	20.7	10.66	5.00	586.28	576.28	East of MDP
SMW-8A	0	0	1.1	18.4	Dry	8.30	584.97	579.97	East of MDP
SMW-10A	0	0	0	20.6	11.51	8.60	583.87	578.87	East of MDP
SMW-12	-0.04	0	0	20.5	8.52	8.40	583.07	578.57	South of MDP
LMW-9	0	0.7	3.2	0.4	18.88	12.00	588.92	578.92	East of CB, below asbestos landfill cap
LMW-10	0	27.0	1.9	2.3	17.70	13.50	587.38	582.38	In CB waste

Ambient Location	CH_4 Level (%)	Sample Location Description
1	0	MDP - south side of landfill, east sample
2	0	MDP - south side of landfill, middle sample
3	0	MDP - south side of landfill, west sample
4	0	CB - south side of landfill, east sample
5	0	CB - south side of landfill, middle sample
6	0	CB - south side of landfill, west sample

Note: Surface methane levels measured with a Landtec GA-90.

Johns Manville – Waukegan Plant
On-Site Landfill Gas Monitoring Form
Optional Additional Data

Date:	8/31/04		Personnel:	David Peterson
Ambient Temperature:	70	deg. F	Landfill Gas Instrument:	Landtec GA-90 (Rented from F.E.I.)
Barometric Pressure:	30.24	in Hg	Pressure Instrument:	Magnehelic Gauges (0-1 and 0-10 in. water)
Wind Speed:	4	mph	Water Level Instrument:	Heron (Rented from F.E.I)
Wind Direction:	From the NE		Weather Conditions:	Sunny and clear

Monitoring Location	Subsurface Pressure (in. water)	CH_4 Level (%)	CO_2 Level (%)	O_2 Level (%)	Depth to Water below TOC (ft)	TOS below Top of Casing (TOC) (ft)	Top of Screen (TOS) Elev. (ft)	Bottom of Screen Elev. (ft)	Screen Interval Description
LMW-02	0.20	2.1	0	19.9	39.56	38.00	595.48	590.48	In MDP waste
LMW-03	-0.25	8.4	1.6	13.0	Dry	38.00	596.37	591.37	In MDP waste
LMW-04	-1.2	0.1	0.4	18.6	57.55	59.00	582.22	577.22	Beneath MDP
P-87	0	0	7.6	3.9	11.35	6.00	588.62	583.62	South of MDP
P-88	0	0	6.4	5.1	11.61	5.50	589.17	584.17	South of MDP
P-89	NM	0	1.8	15.2	10.75	5.75	587.89	582.89	South of MDP
P-90	0	0	4.5	4.9	11.06	6.50	586.83	581.83	South of MDP
P-91	0	0.4	4.6	0.4	11.13	6.50	586.24	581.24	South of MDP
P-92	0	0	5.2	1.0	10.85	6.80	585.04	580.04	South of MDP
P-93	0	0	5.8	11.5	10.68	6.50	584.69	579.69	South of MDP
P-94	0	0	0	20.7	13.94	9.00	585.76	580.76	South of MDP
04-92	0	0	2.5	17.6	Dry	4.80	0.8 ft BGS	3.8 ft BGS	50 ft E. of CB
04-89	NM	NM	NM	NM	Dry	4.75	0.75 ft BGS	3.75 ft BGS	100 ft E. of CB
04-91	NM	NM	NM	NM	Dry	4.64	0.1 ft BGS	2.6 ft BGS	140 ft E. of CB
LF-SB02	NM	13	1.0	11.2	23.03	35.50	32 ft BGS	37 ft BGS	In MDP waste
LF-SB05	NM	0	1.1	19.3	12.11	9.50	7.5 ft BGS	12.5 ft BGS	In CB waste

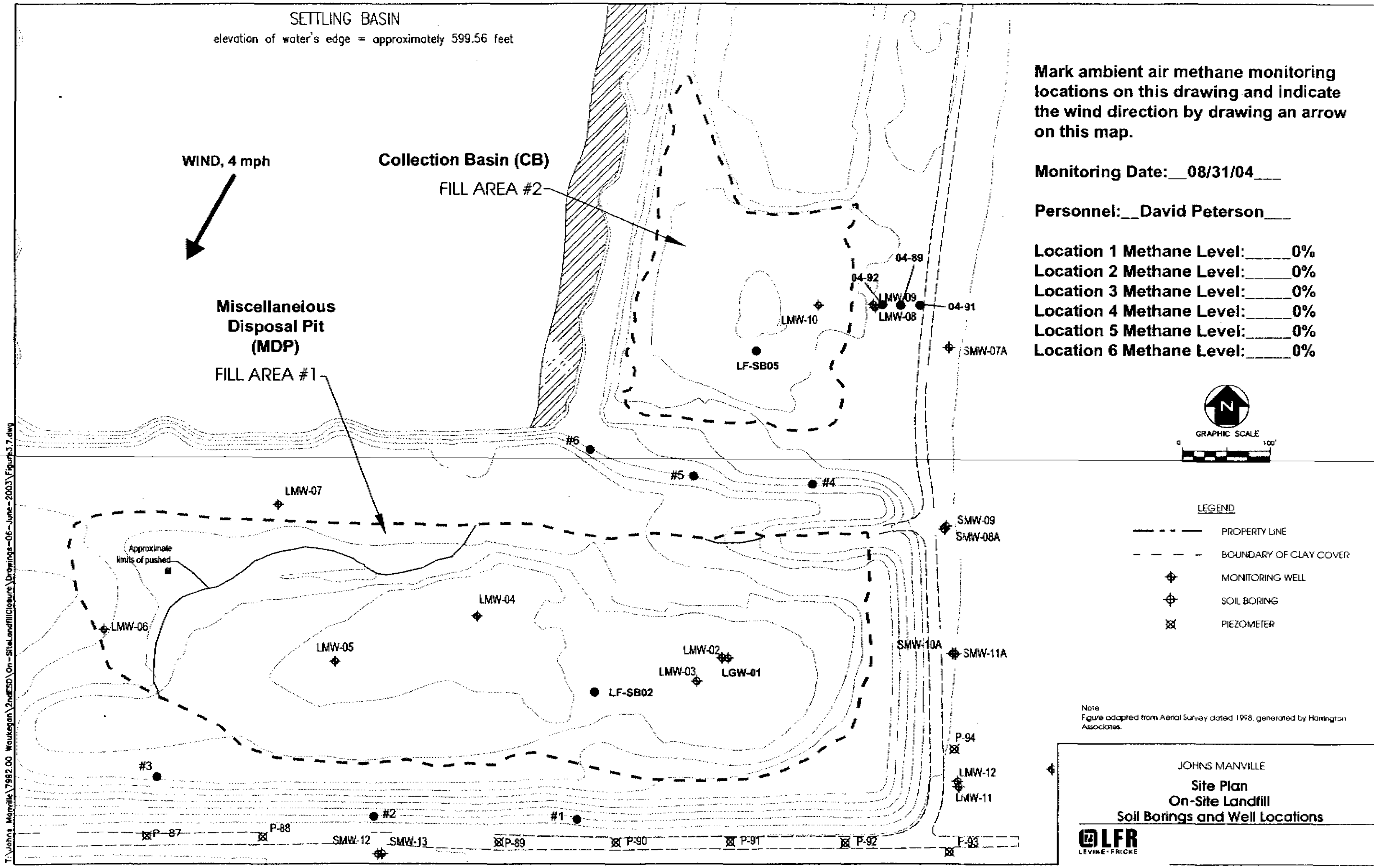
Note: NM = not measured.

Mark ambient air methane monitoring locations on this drawing and indicate the wind direction by drawing an arrow on this map.

Monitoring Date:__08/31/04___

Personnel:__David Peterson___

Location 1 Methane Level:_____0%
Location 2 Methane Level:_____0%
Location 3 Methane Level:_____0%
Location 4 Methane Level:_____0%
Location 5 Methane Level:_____0%
Location 6 Methane Level:_____0%



Johns Manville – Waukegan Plant
On-Site Landfill Gas Monitoring Form

Date:	9/01/04		Personnel:	David Peterson
Ambient Temperature:	70	deg. F	Landfill Gas Instrument:	Landtec GA-90 (Rented from F.E.I.)
Barometric Pressure:	30.27	in Hg	Pressure Instrument:	Magnehelic Gauges (0-1 and 0-10 in. water)
Wind Speed:	1	mph	Water Level Instrument:	Heron (Rented from F.E.I)
Wind Direction:	From the S		Weather Conditions:	Sunny and clear

Monitoring Location	Subsurface Pressure (in. water)	CH_4 Level (%)	CO_2 Level (%)	O_2 Level (%)	Depth to Water below TOC (ft)	TOS below Top of Casing (TOC) (ft)	Top of Screen (TOS) Elev. (ft)	Bottom of Screen Elev. (ft)	Screen Interval Description
LGW-01	0	52.6	0.7	0.8	Dry	11.00	622.67	597.67	In MDP waste
LMW-05	0	0.2	0.6	4.2	Dry	2.00	635.22	628.22	In MDP waste
LMW-06	0	0	0.1	20.1	36.15	37.50	582.99	577.99	West of MDP
LMW-07	0	0	0	20.6	38.19	44.00	579.01	574.01	North of MDP
LMW-12	0	0	4.4	14.8	10.73	5.00	586.28	576.28	East of MDP
SMW-8A	0	0	1.2	18.0	Dry	8.30	584.97	579.97	East of MDP
SMW-10A	0.12	0	0	20.6	11.56	8.60	583.87	578.87	East of MDP
SMW-12	-0.60	0	0	20.6	8.48	8.40	583.07	578.57	South of MDP
LMW-9	0	0.6	3.3	0.4	18.88	12.00	588.92	578.92	East of CB, below asbestos landfill cap
LMW-10	0	26.0	1.3	2.4	17.71	13.50	587.38	582.38	In CB waste

Ambient Location	CH_4 Level (%)	Sample Location Description
1	0	MDP - north side of landfill, east sample
2	0	MDP - north side of landfill, middle sample
3	0	MDP - north side of landfill, west sample
4	0	CB - north side of landfill, east sample
5	0	CB - north side of landfill, middle sample
6	0	CB - north side of landfill, west sample

Note: Surface methane levels measured with a Landtec GA-90.

Johns Manville – Waukegan Plant
On-Site Landfill Gas Monitoring Form
Optional Additional Data

Date:	9/01/04		Personnel:	David Peterson
Ambient Temperature:	70	deg. F	Landfill Gas Instrument:	Landtec GA-90 (Rented from F.E.I.)
Barometric Pressure:	30.27	in Hg	Pressure Instrument:	Magnehelic Gauges (0-1 and 0-10 in. water)
Wind Speed:	1	Mph	Water Level Instrument:	Heron (Rented from F.E.I)
Wind Direction:	From the S		Weather Conditions:	Sunny and clear

Monitoring Location	Subsurface Pressure (In. water)	CH_4 Level (%)	CO_2 Level (%)	O_2 Level (%)	Depth to Water below TOC (ft)	TOS below Top of Casing (TOC) (ft)	Top of Screen (TOS) Elev. (ft)	Bottom of Screen Elev. (ft)	Screen Interval Description
LMW-02	-0.04	1.9	0	20.0	39.51	38.00	595.48	590.48	In MDP waste
LMW-03	-0.1	14.4	2.7	8.9	Dry	38.00	596.37	591.37	In MDP waste
LMW-04	0.60	0	0.2	19.3	57.55	59.00	582.22	577.22	Beneath MDP
P-87	0	0	7.3	4.7	11.37	6.00	588.62	583.62	South of MDP
P-88	0	0	7.2	3.3	11.57	5.50	589.17	584.17	South of MDP
P-89	NM	0	3.8	4.8	10.78	5.75	587.89	582.89	South of MDP
P-90	0	0	2.4	11.7	11.03	6.50	586.83	581.83	South of MDP
P-91	0	0.5	2.9	2.6	11.09	6.50	586.24	581.24	South of MDP
P-92	0	0	4.9	2.3	10.89	6.80	585.04	580.04	South of MDP
P-93	0	0	5.1	12.4	10.76	6.50	584.69	579.69	South of MDP
P-94	0	0	0	20.7	14.00	9.00	585.76	580.76	South of MDP
04-92	0	0	3.2	17.4	Dry	4.80	0.8 ft BGS	3.8 ft BGS	50 ft E. of CB
04-89	NM	NM	NM	NM	Dry	4.75	0.75 ft BGS	3.75 ft BGS	100 ft E. of CB
04-91	NM	NM	NM	NM	Dry	4.64	0.1 ft BGS	2.6 ft BGS	140 ft E. of CB
LF-SB02	NM	5.3	0.4	17.4	23.03	35.50	32 ft BGS	37 ft BGS	In MDP waste
LF-SB05	NM	0	9.2	10.7	12.14	9.50	7.5 ft BGS	12.5 ft BGS	In CB waste

Note: NM = not measured.

EXHIBIT 2

Log of Borehole: 04-89

LFR LEVINE·FRICKE

Client: Johns Manville	**Project:** Landfill		**Project No:** 009-07992-00
Project Location: Waukegan, IL	**Total Depth:** 12	**Elevation:**	**Date Start:** 5/10/04
Surface Conditions: Topsoil			**Date End:** 5/10/04
Drilling Contractor: Terra Trace	**Driller:** Dennis	**Geologist/Engineer:** W. Teskey	

SAMPLE DATA

Sample Number	Sample Type	N Value (bpf)	Recovery (%)	PID/FID (ppmv)	Analytical Sample	Well Data
1	Tube		70	0		
2	Tube		40	0.5		
3	Tube		50	0.8		

SUBSURFACE PROFILE

Depth (ft)	Soil Description	Remarks
0	Ground Surface	Boring advanced with a geoprobe using a 4' long by 2" OD macrotube sampler. CERCLA landfill cap encountered at 0.25 ft.
0–0.6	***Topsoil-Silty Sand (SM)*** Dark brown; dry; 10% roots	
0.6–2.1	***Lean Clay (CL)*** Brown; dry; stiff.	
2.1–2.6	***Poorly Graded Sand (SP)*** Brown; dry.	
2.6–7	***Lean Clay (CL)*** Gray; dry; stiff; 5% with fibrous material. dark gray clay grades in; moist.	
7–8	***Fibrous Material*** Dark gray; white fibers; moist; 15% paper, brown cardboard.	
8–11	***Poorly Graded Sand (SP)*** Black; dry; loose.	Temporary gas monitoring well installed: 1 inch diameter PVC. Screened from 1.0 to 4.0 ft.
11–11.5	***Roofing Shingles*** Black; dry; dense; fragments.	
11.5–12	***Poorly Graded Sand (SP)*** Dark gray; dry; loose.	
12	End of Borehole	

Log of Borehole: 04-90

LFR LEVINE·FRICKE	Client: Johns Manville	Project: Landfill		Project No: 009-07992-00
	Project Location: Waukegan, IL	Total Depth: 8	Ground Elevation:	Date Start: 5/10/04
Surface Conditions: Topsoil				Date End: 5/10/04
Drilling Contractor: Terra Trace		Driller: Dennis	Geologist/Engineer: W. Teskey	

SAMPLE DATA / **SUBSURFACE PROFILE**

Sample Number	Sample Type	Recovery (%)	PID/FID (ppmv)	Analytical Soil Sample	Depth (ft)	Soil Description	Remarks
					0	Ground Surface	Boring advanced with a geoprobe using a 4' long by 2" OD macrotube sampler. CERCLA landfill cap encountered at 0.25 ft.
1	Tube	25	0		0–4	***Topsoil-Silty Sand (SM)*** Brown, dry, 15% roots. ***Lean Clay (CL)*** Brown; dry; stiff. ***Poorly Graded Gravel (GP)*** Gray; dry; angular; coarse. ***Roofing*** Black; dry; hard; crushed shingle material.	
2	Tube	60	0.4		4–8	***Roofing Shingles*** Black; dry; dense; fragments. ***Fine Grained Material*** White; dry; crumbles; trace blue; no fibers.	
					8	End of Borehole	

Depth scale (ft): 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15

Log of Borehole: 04-91

LFR LEVINE·FRICKE	Client: Johns Manville	Project: Landfill		Project No: 009-07992-00
	Project Location: Waukegan, IL	Total Depth: 3	Elevation:	Date Start: 5/10/04
Surface Conditions: Topsoil				Date End: 5/10/04
Drilling Contractor: Terra Trace		Driller: Dennis	Geologist/Engineer: W. Teskey	

SAMPLE DATA							SUBSURFACE PROFILE			
Sample Number	Sample Type	N Value (bpf)	Recovery (%)	PID/FID (ppmv)	Analytical Sample	Well Data	Depth (ft)	Symbol	Soil Description	Remarks
							0		Ground Surface	Boring advanced with a geoprobe using a 4' long by 2" OD macrotube sampler.
									Topsoil-Silty Sand (SM) Brown; dry; 10% roots	
							1		***Lean Clay (CL)*** Brown; dry; stiff.	
1	Tube		80	0.2			2			CERCLA landfill cap encountered at 0.25 ft.
							3		***Fine Grained Material*** Off white and tan; dry; crumbles.	
							4		End of Borehole	Temporary gas monitoring well installed: 1 inch diameter PVC. Screened from 0.5 to 3.0 ft.
							5			
							6			
							7			
							8			
							9			
							10			
							11			
							12			
							13			
							14			
							15			

Log of Borehole: 04-92

LFR LEVINE•FRICKE	Client: Johns Manville	Project: Landfill		Project No: 009-07992-00
	Project Location: Waukegan, IL	Total Depth: 8	Elevation:	Date Start: 5/10/04
Surface Conditions: Topsoil				Date End: 5/10/04
Drilling Contractor: Terra Trace		Driller: Dennis	Geologist/Engineer: W. Teskey	

SAMPLE DATA							SUBSURFACE PROFILE			
Sample Number	Sample Type	N Value (bpf)	Recovery (%)	PID/FID (ppmv)	Analytical Sample	Well Data	Depth (ft)	Symbol	Soil Description	Remarks
							0		Ground Surface	Boring advanced with a geoprobe using a 4' long by 2" OD macrotube sampler.
1	Tube		95	0.1			0–4		**Lean Clay (CL)** Brown; dry; stiff; 10% fine gravel. dark brown clay grades in.	
2	Tube		90	0.6			4–5.5		**Lean Clay (CL)** Dark brown to brown; very stiff; dry.	CERCLA landfill cap encountered at 4 ft.
							5.5–6.7		**Sand (SP)** Brown; dry.	
							6.7–7.2		**Lean Clay (CL)** Brown; sl. moist.	
							7.2–7.5		Crushed transite Pieces; gray; dry.	
							7.5–8		**Roofing** Black; dry; hard; full shingles.	Temporary gas monitoring well: 1-inch diameter PVC. Screened from 1.0 to 4.0 ft.
							8		End of Borehole	

Depth scale (ft): 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15

Log of Borehole: 04-93

LFR LEVINE·FRICKE

Client: Johns Manville	**Project:** Landfill		**Project No:** 009-07992-00
Project Location: Waukegan, IL	**Total Depth:** 8	**Ground Elevation:**	**Date Start:** 5/10/04
Surface Conditions: Topsoil/clay			**Date End:** 5/10/04
Drilling Contractor: Terra Trace	**Driller:** Dennis	**Geologist/Engineer:** W. Teskey	

SAMPLE DATA					SUBSURFACE PROFILE			
Sample Number	Sample Type	Recovery (%)	PID/FID (ppmv)	Analytical Soil Sample	Depth (ft)	Symbol	Soil Description	Remarks
					0		Ground Surface	
1	Tube	80	0.5		0–2		***Lean Clay (CL)*** Brown; dry; stiff; 10% roots at surface; 5% fine gravel.	Boring advanced with a geoprobe using a 4' long by 2" OD macrotube sampler. CERCLA landfill cap encountered at surface.
					2		***Poorly Graded Sand (SP)*** Brown; dry; 5% fine gravel.	
							Silty Sand (SP) Black; dry.	
					3		Crushed transite; gray.	
2	Tube	75	0.9		4		***Roofing*** Black; dry; shingles.	
					5.5		***Roofing Granules*** Green and gray; dry; loose.	
					6.5		Crushed transite; gray; dry.	
					7.2		Wood pulp; brown.	
							Fine grained material; off white; trace blue.	
					8		End of Borehole	Boring backfilled to surface with cuttings.

Depth (ft): 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15

Log of Borehole: 04-94

LFR LEVINE·FRICKE	Client: Johns Manville	Project: Landfill		Project No: 009-07992-00
	Project Location: Waukegan, IL	Total Depth: 4	Ground Elevation:	Date Start: 5/10/04
Surface Conditions: Clay				Date End: 5/10/04
Drilling Contractor: Terra Trace		Driller: Dennis	Geologist/Engineer: W. Teskey	

SAMPLE DATA					SUBSURFACE PROFILE			
Sample Number	Sample Type	Recovery (%)	PID/FID (ppmv)	Analytical Soil Sample	Depth (ft)	Symbol	Soil Description	Remarks
					0		Ground Surface	
1	Tube	90	0.3		0–2		***Lean Clay (CL)*** Brown; dry: stiff; 10% fine gravel.	Boring advanced with a geoprobe using a 4' long by 2" OD macrotube sampler. CERCLA landfill cap encountered at surface.
					2–2.5		***Poorly Graded Sand (SP)*** Brown; dry; 5% fine gravel.	
					2.5–4		***Lean Clay (CL)*** Brown; dry: stiff. trace fine grained white; fibrous material.	
					4		End of Borehole	Boring backfilled to surface with cuttings.

Depth scale (ft): 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15

Log of Borehole: 04-95

LFR LEVINE·FRICKE	Client: Johns Manville	Project: Landfill		Project No: 009-07992-00
	Project Location: Waukegan, IL	Total Depth: 4	Ground Elevation:	Date Start: 5/10/04
Surface Conditions: Clay				Date End: 5/10/04
Drilling Contractor: Terra Trace		Driller: Dennis	Geologist/Engineer: W. Teskey	

SAMPLE DATA					SUBSURFACE PROFILE			
Sample Number	Sample Type	Recovery (%)	PID/FID (ppmv)	Analytical Soil Sample	Depth (ft)	Symbol	Soil Description	Remarks
					0		Ground Surface	
1	Tube	90	0		0–2		***Lean Clay (CL)*** Brown; dry; very stiff.	Boring advanced with a geoprobe using a 4' long by 2" OD macrotube sampler. CERCLA landfill cap encountered at surface.
					2–2.5		***Poorly Graded Sand (SP)*** Brown; dry.	
					2.5–4		***Lean Clay (CL)*** Gray; dry; stiff.	
					4		Fibrous roofing; black; moist; trace fine grained gray material.	
							End of Borehole	Boring backfilled to surface with cuttings.

Depth scale: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15

Log of Borehole: LMW-11

LFR LEVINE·FRICKE	Client: Johns Manville	Project: Landfill Well		Project No: 009-07992
	Project Location: Waukegan, IL	**Total Depth:** 41'	**Ground Elev.:** 588.22	**Date Start:** 5/16/03
Surface Conditions: Topsoil				**Date End:** 5/16/03
Drilling Contractor: Mid-America		**Driller:** Brian	**Geologist/Engineer:** W. Teskey	

SAMPLE DATA / SUBSURFACE PROFILE

Sample Number	Sample Type	Recovery (%)	N Value	Analytical Sample	Monitoring Well	Depth (ft)	Symbol	Soil Description	Remarks
						0		Ground Surface	Boring advanced using 4.25" ID hollow stem augers. Sampled using 3" diameter by 5' long CME spoons or 2" 2' long split spoons.
								Lean Clay (CL) Dark brown; slightly moist; moderately stiff; 15% rootlets	
						1		Grading brown; dry; very stiff; compacted; 5% fine gravel	
	CME	30	NA	NA		2		***Sand (SP)*** Brown; dry; loose; 5-10% fine gravel	
						3			
						4			
						5		Grading black with 5% roofing granules	
								Very moist; 10-15% roofing granules; poor recovery	
						6			
						7			
2	CME	20	NA	NA					Poor recovery: 5-10'. Limestone cobble in shoe of sampler.
						8			
						9			
						10		***Sand with Gravel (SP)*** Dark gray; moderately dense; wet; 15% fine gravel	
3	SS	50	NA	NA		11		***Sand (SP)*** Dark gray; wet; moderately dense; medium sand; 5% fine gravel	
						12			Heaving sand encountered while drilling.

Log of Borehole: LMW-11

LFR LEVINE·FRICKE	Client: Johns Manville	Project: Landfill Well		Project No: 009-07992
	Project Location: Waukegan, IL	Total Depth: 41'	Ground Elev.:	Date Start: 5/16/03
Surface Conditions: Topsoil				Date End: 5/16/03
Drilling Contractor: Mid-America		Driler: Brian	Geologist/Engineer: W. Teskey	

SAMPLE DATA						SUBSURFACE PROFILE			
Sample Number	Sample Type	Recovery (%)	N Value	Analytical Sample	Monitoring Well	Depth (ft)	Symbol	Soil Description	Remarks
								Sand (SP) Dark gray; wet; moderately dense; medium sand; 5% fine gravel. Increase to 10-12% gravel	
4	SS	70	NA	NA		13			
						14			
5	SS	70	NA	NA		15			
						16		Grading grayish brown; decrease to 5% gravel	
6	SS	70	NA	NA		17			
						18			
7	SS	30	NA	NA		19			
						20			
8	SS	70	NA	NA		21		1/4" layer peat; black; soft 1/2" layer silt; gray; dense	
						22		***Sand (SP)*** Dark gray; wet; moderately dense; medium grained sand; 5% fine gravel	
9	SS	50	NA	NA		23			
						24			

Log of Borehole: LMW-11

LFR LEVINE·FRICKE	Client: Johns Manville	Project: Landfill Well		Project No: 009-07992
	Project Location: Waukegan, IL	Total Depth: 41'	Ground Elev.:	Date Start: 5/16/03
Surface Conditions: Topsoil				Date End: 5/16/03
Drilling Contractor: Mid-America		Driller: Brian	Geologist/Engineer: W. Teskey	

SAMPLE DATA						SUBSURFACE PROFILE			
Sample Number	Sample Type	Recovery (%)	N Value	Analytical Sample	Monitoring Well	Depth (ft)	Symbol	Soil Description	Remarks
								Sand (SP) Dark gray; wet; moderately dense; medium grained sand; 5% fine gravel	–
10	SS	40	NA	NA		25			
						26		Grading brown	
11	SS	80	NA	NA		27		Grading to fine sand	
						28			
12	SS	80	NA	NA		29			
						30			
						31			
						32			
						33			
						34		Grading brownish-gray	
13	SS	100	NA	NA		35			
						36			

Log of Borehole: LMW-11

LFR LEVINE•FRICKE	Client: Johns Manville	Project: Landfill Well		Project No: 009-07992
	Project Location: Waukegan, IL	Total Depth: 41'	Ground Elev.:	Date Start: 5/16/03
Surface Conditions: Topsoil				Date End: 5/16/03
Drilling Contractor: Mid-America		Driller: Brian	Geologist/Engineer: W. Teskey	

SAMPLE DATA						SUBSURFACE PROFILE			
Sample Number	Sample Type	Recovery (%)	N Value	Analytical Sample	Monitoring Well	Depth (ft)	Symbol	Soil Description	Remarks
								Grading brownish-gray	Monitoring well constructed with stainless steel riser and screen on 5/16/03. Screen (0.010" slot) from 35' to 40'. Silica sand (#5) from 32' to 40'. Cement bentonite grout: 2' to 32'. Bentonite chips from 0.5' to 2'. Concrete pad 0' to 0.5'. Above ground steel protective casing w/ locking cap. Water level on 5/19/03: approximately 8.5 ft. below grade.
						37			
						38			
14	SS	90	NA	NA		39			
						40			
15	SS	100	NA	NA				***Lean Clay (CL)*** Gray; dry; stiff; 5% fine gravel	
						41		End of Borehole	
						42			
						43			
						44			
						45			
						46			
						47			
						48			

WELL LOG SUMMARY

(1) P=Public Supply } Human
D= Domestic } Consumption

County Lake State Illinois
Township Waukegan T45 N/[illegible], R12 E/[illegible]
Section No. 10

WELL LOG NO.	OWNERS NAME	OWNERS NO.	WELL TYPE (1) P.D.I.O.	LOCATION	DEPTH FEET	DIA. INCHES	STATIC W.L. FT. B. L.S.	Q	Topo Elev	LOG	DRIFT OR ROCK	REMARKS
1	Johns-Manville	1 Co#1728		SE, SE, SW	108				588	✓	D&R	drilled 1920 •
2	Johns-Manville	2 Co#1729		NW, SE, SW	127				588	✓	D&R	drilled 1920 •
3	Johns-Manville	3 Co#1730		NW, SE, SW	132				588	✓	D&R	drilled 1920 •
4	Johns-Manville	4 Co#1731		SW, SE, SW	132				588	✓	D&R	drilled 1920 •

* Limestone Aquifer
[illegible]

-B4-

John C. Moore Corporation, Rochester, N.Y. Binder and holes in ~~loose each~~ Patented 1906. 386790

10-1

TOWN TOWNSHIP Waukegan Map No. 8

COMPANY No. R. 12 E.

FARM Johns-Manville No. 1 T Sec.

AUTHORITY Supt.

ELEVATION 588 45 N. 10

COLLECTOR W.D.G. DATE DRILLED 1920

CONFIDENTIAL SE SE SW

No.	COUNTY NO. 1728 STRATA	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	Sand	30		30	
	Hard pan	25		55	
	Clay, blue	50		105	
	Sand	3		108	
	Rock at 108'				

NO ENVELOPE

County LAKE Index No. 0810

T.—DRILL RECORD 10-45N-12E

(30819—5M—7-31) Illinois Geological Survey, Urbana.

John C. Moore Corporation, Rochester, N.Y. ... leaves ... 3667

10-L

TOWN TOWNSHIP Waukegan Map No. 8

COMPANY No. R. 12 E.

FARM Johns-Manville No. 2 T

AUTHORITY Supt. Sec.

ELEVATION 588 45 N. 10

COLLECTOR W.D.G. DATE DRILLED 1920 NW, SE, SW

CONFIDENTIAL

No.	COUNTY NO. 1729 STRATA	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	Sand	34		34	
	Hard pan	21		55	
	Clay, blue	43		98	
	Sand and gravel	14		112	
	Rock	15		127	

NO ENVELOPE

County LAKE Index No. 0810

T.—DRILL RECORD 10-45N-12E

(30810—5M—7-31) 2 Illinois Geological Survey, Urbana.

-B5-

John C. Moore Corporation, Rochester, N.Y. Binder and holes in leaves, each Patented 1906. 386790

10-3

TOWN

TOWNSHIP Waukegan

Map No. 8

COMPANY

No.

R. 12 E.

FARM Johns-Manville

No. 3

T

Sec. 10

AUTHORITY Supt.

ELEVATION 588

45 N.

COLLECTOR W.D.G.

DATE DRILLED 1920

CONFIDENTIAL

NW, SE, SW

No.	COUNTY NO. 1732 STRATA	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	Sand	30		30	
	Hard pan	25		55	
	Clay, blue	47		102	
	Sand and gravel	13		115	
	Rock	17		132	

NO ENVELOPE

County LAKE

Index No. 0810

T.—DRILL RECORD

10-45N-12E

(30819—5M—7-34) Illinois Geological Survey, Urbana.

J Moore ion, R , N.Y. and be raves, ented 38679

10-4

TOWN TOWNSHIP Waukegan Map No. 8

COMPANY No. R. 12 E.

FARM Johns-Manville No. 4 T Sec.

AUTHORITY Supt.

ELEVATION 588 45 N. 10

COLLECTOR W.D.G. DATE DRILLED 1920

CONFIDENTIAL SWSE, SW

No.	COUNTY NO. 1791 STRATA	Thickness Feet	Thickness In.	Depth Feet	Depth In.
	Sand	50		50	
	Hard pan	10		60	
	Clay, blue	37		97	
	Sand and gravel	18		115	
	Rock	17		132	

NO ENVELOPE

County LAKE Index No. 0610

T.—DRILL RECORD 10-45N-12E

(30819—5M—7-31) Illinois Geological Survey, Urbana.

-87

CERTIFICATE OF SERVICE

The undersigned, an attorney, hereby certifies that he caused the foregoing notice and amended petition for adjusted standard to be served upon:

Division of Legal Counsel
Illinois Environmental Protection Agency
1021 North Grand Avenue East
P.O. Box 19276
Springfield, Illinois 62794-9276

Peter Orlinsky
Assistant Counsel, Northern Region
Illinois Environmental Protection Agency
9511 West Harrison Street
Des Plaines, Illinois 60016

Elizabeth Wallace
Assistant Attorney General, Environmental Law
188 West Randolph Street, 20th Floor
Chicago, Illinois 60601

by placing the same in the United States mail, first-class postage prepaid, this 30th day of September, 2004.

Edward P. Kenney

CH1 3057722v1 . September 30, 2004 (02:06pm)

ILLINOIS POLLUTION CONTROL BOARD
August 5, 2004

IN THE MATTER OF:	)	
	)	
PETITION OF JOHNS MANVILLE FOR AN ADJUSTED STANDARD FROM: 35 Ill. Adm. Code 811.310, 811.311, 811.318, and 814	))))	AS 04-04 (Adjusted Standard – Land)

ORDER OF THE BOARD (by G.T. Girard):

On June 30, 2004, Johns Manville (JM) filed a request (Pet.) for an adjusted standard pursuant to Section 28.1 of the Environmental Protection Act (Act) (415 ILCS 5/28.1 (2002)). JM seeks relief from the landfill closure requirements pertaining to landfill gas monitoring and management, and groundwater monitoring under 35 Ill. Adm. Code 814, 811.310(c)(1), 811.311(a)(1), and 811.318(b)(4).

The landfill is located on a 350-acre tract bordering Lake Michigan owned by JM in Waukegan, Lake County. The landfill is located on and surrounded by units remediated under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 42 USC §9605. Pet. at 3. During its operating period from 1992 to 1998, the facility was intended to accept inert waste, but also received some putrescible waste, such as roofing materials, wood, paper, and cardboard. Pet. at 6. Since the production of methane gas is expected to be very small, the petitioner is seeking to opt out of installing a landfill gas management system if 5 years of monitoring fail to show significant gas production. Pet. at 9. Additionally, to avoid compromising the integrity of the CERCLA engineered cover and steep side slopes of the site, petitioner is also seeking to install gas and groundwater monitoring points at a greater distance than required by 35 Ill. Adm. Code 811.311 and 811.318. Pet. at 11.

Section 28.1 of the Act (415 ILCS 5/28.1 (2002)) and 35 Ill. Adm. Code 104.408 require publication of a notice of an adjusted standard proceeding in a newspaper of general circulation in the area affected by the petitioner's activity. The notice must be published within 14 days of filing a petition for an adjusted standard with the Board. *See* 35 Ill. Adm. Code 104.408(a). As required by 35 Ill. Adm. Code 104.410, the petitioner timely filed a certificate of publication with the Board on July 15, 2004. The notice of petition was published in the *News-Sun* on July 7, 2004.

Although the notice is proper, the Board finds that the petition has not adequately addressed the requirements of Section 28.1(c) of the Act (415 ILCS 5/28.1(c) (2002)) and the Board's rules at 35 Ill. Adm. Code 104.406. The Board finds that the petition is deficient because the factors in Section 814.402(b)(3) have not been addressed.

The petition does not adequately explain how petitioner will demonstrate compliance with groundwater standards. The requested adjusted standard would effectively change the compliance boundary where groundwater standards must be met by extending that boundary to

200 feet. The Board rules at Section 811.320(a)(1) requires that "groundwater quality shall be maintained . . . at or beyond the zone of attenuation (ZOA)." The ZOA is generally 100 feet from the edge of the unit or the property boundary, whichever is less. *See* 35 Ill. Adm. Code 811.320(c). Pursuant to Section 814.402(b)(3), the Board may adjust the compliance boundary with an adjusted standard, as long as the petitioner addresses the factors set forth in that section. The petition before the Board does not establish how petitioner will demonstrate compliance with the groundwater standards relative to the zone of attenuation. Further, the petition lacks information on how the compliance boundary will be determined. Finally, a review of the petition indicates that the petitioner may also need to seek an adjusted standard from Section 811.320(c) by addressing the factors in Section 814.402(b)(3).

The Board notes that the petition has sparse descriptions of the site and numerous references to other documents that may have more information pertinent to the Board's consideration of this petition. For example, the petition at page 5 states that ". . . the onsite landfill consisted of two areas: 1) the miscellaneous disposal pit, that was constructed on top of clean fill that had been placed during CERCLA remedial activities and 2) a portion of the collection basin, which had formerly been operated as part of the wastewater treatment system." Pet. at 5. On page 6, the petition describes wastes that were placed in the landfill: calcium silicate, roofing materials, wood, paper, and cardboard. Pet. at 6. The petition is not clear as to whether or not the collection basin from the wastewater treatment system will be included with the landfill. If that is the case, petitioner should describe the type of material that was accumulated and remains in the collection basin as well as the landfill gas production potential of the materials. These questions and additional Board inquiries can be addressed at hearing if an amended petition is filed and accepted by the Board.

Due to the deficiency in addressing the factors in Section 814.402(b)(3), the Board cannot accept the petition. The Board therefore directs petitioner to address the information requirements of Section 28.1 of the Act (415 ILCS 5/28.1 (2002)) and Section 104.406 of the Board's rules in an amended petition.

IT IS SO ORDERED.

I, Dorothy M. Gunn, Clerk of the Illinois Pollution Control Board, certify that the Board adopted the above order on August 5, 2004, by a vote of 4-0.

Dorothy M. Gunn

Dorothy M. Gunn, Clerk
Illinois Pollution Control Board

DRAFT Summary of IEPA Comments and Responses
On-Site Landfill

Source	IEPA Comment	Response
November 17, 2004 email message from Ed Kenney summarizing comments from Gwenyth Thompson	Comment 1: Figure 8 scale should be 1 in. = 200 ft. to determine distances from wells to the proposed zone of attenuation (ZOA)	Map was reduced from 1"=200' scale for inclusion in Adjusted Standard Petition submitted. Full scale map printed and provided to agency.
	Comment 2: Need properly scaled map or cross sections showing limits of waste, CERCLA cover, proposed zone of attenuation, and well locations	Site Investigation Report, Sept. 26, 2005, Figures 15, 16, and 17.
	Comment 3(a): Additional information requested regarding hydrogeological characteristics of the [waste] unit and surrounding land	Site Investigation Report, Sept. 26 2005, Section 3.3 and Appendices B, C, and D
	Comment 3(b): Additional information requested regarding volume and physical and chemical characteristics of leachate	Groundwater and Leachate Monitoring Data, June 20, 2005. Quality issues were described in June 20, 2005 correspondence to IEPA regarding Groundwater and Leachate Monitoring Data
	Comment 3(c): Additional information requested regarding quantity, quality and direction of groundwater flow	Site Investigation Report, Sept. 26 2005, Figures 8, 9, 10 and 11
	Comment 3(d): Additional information requested regarding proximity and withdrawal rates of groundwater users	Site Investigation Report, Sept. 26 2005, Table 6
	Comment 3(e): {comment missing}	

Source	IEPA Comment	Response
November 17, 2004 email message from Ed Kenney summarizing comments from Gwenyth Thompson	Comment 3 (f): The existing quality of groundwater including other sources of contamination and their cumulative impacts on groundwater	Preliminary Groundwater and Leachate Monitoring Data provided by LFR in a report to Gwyneth Thompson dated June 20, 2005
	Comment 3 (g): Public health, safety and welfare effects including potential impacts from an extended zone of attenuation	LFR Site Investigation Report, Sept. 26 2005, Section 4.4, Table 6, and Appendix H
	Comment 3 (h): Need to demonstrate that the zone of compliance does not extend [beyond the facility property line or] beyond the annual high water mark of any navigable surface water	LFR Site Investigation Report, Sept. 26 2005, Figures 15, 16, and 17. The ordinary high watermark for Lake Michigan is 581.5 ft. (1985 IGLD). The ground surface for proposed wells is approximately 590 ft. ASL.
	Comment 3 (i): Need adequately scaled maps to show the distance of the ZOA to the waste to confirm that in no case will the zone of compliance at an existing MSWLF unit extend beyond 150 meters from the edge of the unit	Not applicable?
August 30, 2005 email message to Peter Orlinsky from Gwenyth Thompson	The Uppermost Aquifer has not been adequately defined	LFR Site Investigation Report, Sept. 26 2005 provides a description of the uppermost aquifer at the Site.

DRAFT Summary of IEPA Comments and Responses
On-Site Landfill

Source	IEPA Comment	Response
September 14, 2005 fax from Peter Orlinsky Comments from Gwenyth Thompson on June 22, 2005 document on groundwater and leachate	Comment 1: Sampling techniques not discussed.	Sampling techniques provided in quarterly monitoring reports, including field logs. Reports currently being compiled.
	Comment 2: Compliance levels based on background concentrations not determined	Tolerance limits, will be determined for the well data presented for UMW-14 and UMW-28. The tolerance limit method is one of several statistical methods for initial assessment of individual downgradient monitoring well results compared to background results. For normally-distributed datasets, the tolerance limit, K, will be based on n=8 quarterly sample results from March 2004 to December 2005. Two-sided values of K for normal or lognormal datasets will be developed for 95% and 99% coverage of future downgradient monitoring results. For non-parametric datasets, the maximum concentration value will be used as the prediction limit.
	Comment 3: Need clarification on which parameters were normally-distributed	While preliminary Ryan-Joiner normal distribution test results were provided in Appendix E, Shapiro-Wilk normality test results will be provided for final statistical analysis of sample results from sample results from March 2004 to December 2005. The value of the W test statistic for the Shapiro-Wilk test will be provided in the final report. Shapiro-Wilk normality testing will be used for upgradient groundwater quality data.

DRAFT Summary of IEPA Comments and Responses
On-Site Landfill

Source	IEPA Comment	Response
September 14, 2005 fax from Peter Orlinsky Comments from Gwenyth Thompson on June 22, 2005	Comment 4: Need to document data transformation techniques used (e.g. ladder of powers) to determine if data are normally distributed.	Log transformation of sample results will be evaluated in the final statistical analysis. Ladder of powers data transformation will be evaluated, if necessary, for the final statistical analysis of background groundwater quality data from March 2004 to December 2005.
	Comment 5: Need clarification on shallow background cadmium results	Cadmium in well UMW-14 was 100% non-detect for March 2004 to March 2005. Table 2A incorrectly reported 80% ND; has been corrected.
	Comment 6: Groundwater exceedances need to be developed based on compliance levels.	The preliminary data analyses included individual well comparisons to background quality. The tolerance limits will be used for initial screening of groundwater
November 23, 2005 email message to Ed Kenny from Peter Orlinsky regarding Gwenyth Thompson comments	Comment 1: Document (hydrogeological report) does not address Agency Technical Comments from August 30, 2005 regarding groundwater quality and statistics.	Preliminary statistical analysis was presented correspondence to Gwyneth Thompson dated June 20, 2005. Updated groundwater statistical analysis is being provided as obtained.
	Comment 2: Document (hydrogeological report) does not address comments to Chris Bergmann from August 2005.	Comments addressed in submittal dated April 27, 2006.
	Comment 3(a): Document (hydrogeological report) does not provide detail on which IEPA comments are being addressed	
	Comment 3(b): Public health and safety not addressed (previous comment 3G.)	Information provided in LFR Site Investigation Report, Sept. 26 2005, Section 4.4, Table 6, and Appendix H

LFR ENVIRONMENTAL MANAGEMENT & CONSULTING ENGINEERING

November 14, 2006

Brad Bradley
Remedial Project Manager
U.S. Environmental Protection Agency
Region V
77 West Jackson Boulevard
Chicago, IL 60604

Subject: Request for U.S. EPA Opinion on Proposed Groundwater Monitoring Well Locations; On-Site Landfill; Johns Manville, Waukegan, IL

Dear Mr. Bradley:

As you are aware, the First Amended Consent Decree (FACD) requires Johns Manville (JM) to close their "on-site" landfill located in Waukegan, Illinois pursuant to state regulations governing such landfills. You may recall that the on-site landfill is located in the southeastern corner of the JM property and, more importantly, inside the physical boundary of the former Disposal Area that was previously closed in the early 1990s pursuant to a federal Consent Decree.

At this site, Illinois regulations governing landfill closure require ongoing groundwater monitoring at a distance of 50 feet from the edge of the waste that is being regulated by the state, unless a formal legal variance is sought (so-called "adjusted standard"). This 50-foot distance would require the installation of approximately 12 monitoring wells roughly halfway up the side-slopes of the closed CERCLA landfill.

Alternatively, JM is seeking an "adjusted standard" to the regulation to allow for installation of these monitoring wells at the base of the CERCLA-closed landfill slope. The adjusted standard petition was submitted to the Illinois Pollution Control Board (IPCB) on September 30, 2004 and is currently under review. We expect that the IPCB will seek resolution of this matter via hearing within the next several months.

JM is seeking the adjusted standard because installation, sampling, and maintenance of the wells on the now-closed CERCLA landfill side-slope is not considered prudent or reasonable for the following reasons:

1. Wells placed on the steep side-slopes increases the risk for ambient release of asbestos fibers and increased landfill cover maintenance obligations. Heavy equipment used to install monitoring wells may compromise slope stability and lead to slope failure, potentially exposing asbestos-containing waste materials. In addition, routine access to monitoring wells on steep side-slopes may lead to increased cover erosion.

630 Tollgate Road, Suite D
Elgin, Illinois 60123-9302
Offices Nationwide

847.695.8855 m
847.695.7799 f
www.lfr.com

LFR

2. Penetration of monitoring wells through CERCLA regulated waste materials increases the risk of contamination to underlying groundwater by overlying waste materials and leachate. While it is acknowledged that drilling techniques and grouts are available to minimize cross-contamination, installation of wells through waste materials is not considered good engineering practice when alternative well locations are available.

JM's proposed adjusted standard has the effect of moving the location of monitoring wells laterally by a maximum of 115 feet. We note that the new locations are still located on the JM property and at least 100 feet inside the property boundary.

JM is seeking written concurrence from U.S. EPA that locating the monitoring wells on the side-slopes of the now closed CERCLA landfill is neither reasonable nor prudent. Given the nature of the aquifer (sand, with no layering), the alternate locations will not result in obscuring impacts the on-site landfill may have on groundwater quality. Thus, there is no need to incur the potential risks as described above.

If you have any questions, please do not hesitate to contact me at (847) 695-8855, extension 101.

Sincerely,

William A. Bow, C.P.G.
Principal

Cc: Denny Clinton

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

December 5, 2006

REPLY TO THE ATTENTION OF:

William Bow
Levine-Fricke
630 Tollgate Road, Suite D
Elgin, IL 60123-9302

Dear Mr. Bow:

The U.S. Environmental Protection Agency (EPA) has reviewed your November 14, 2006 correspondence titled "Request for U.S. EPA opinion on Proposed Groundwater Monitoring Well Locations; On-Site Landfill; Johns Manville, Waukegan, IL". EPA agrees that placing monitoring wells on the side slopes of the now closed CERCLA landfill is not acceptable and agrees that alternate locations that are beyond the current "footprint" of the landfill would be acceptable.

EPA is concerned that placing groundwater monitoring wells on the side slopes of the current closed landfill could breach and/or compromise the soil cover required under the June 30, 1987 Record of Decision for the Johns-Manville Site and may cause cross-contamination of the ground water with asbestos-containing waste materials. Additionally, the restrictive covenants for the Johns-Manville Site prohibit such activities unless EPA and the State of Illinois provide approval in advance. EPA is not inclined to approve the installation of any groundwater monitoring wells that would be located within the current boundaries of the CERCLA landfill area.

Please contact me at (312) 886-4742 if you have any questions concerning this letter.

Sincerely,

Brad Bradley

Brad Bradley
Remedial Project Manager

cc: Sandy Bron, Illinois EPA

ILLINOIS POLLUTION CONTROL BOARD
December 6, 2007

IN THE MATTER OF:	)	
	)	
PETITION OF JOHNS MANVILLE FOR AN ADJUSTED STANDARD FROM: 35 Ill. Adm. Code 811.310, 811.311, 811.318, 811.320 and 814	))))	AS 04-4 (Adjusted Standard – Land)

EDWARD P. KENNEY APPEARED ON BEHALF OF PETITIONER; and

PETER E. ORLINSKY APPEARED ON BEHALF OF THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY.

OPINION AND ORDER OF THE BOARD (by G.T. Girard):

Johns Manville (JM) seeks an adjusted standard from specific landfill closure requirements for monitoring groundwater and gas at an on-site landfill in Waukegan, Lake County. The Illinois Environmental Protection Agency (IEPA) recommends that the adjusted standard be granted.

The Board's responsibility in this matter arises from the Environmental Protection Act (Act) (415 ILCS 5/1 *et seq.* (2006)). The Board is charged to "determine, define and implement the environmental control standards applicable in the State of Illinois" (415 ILCS 5/5(b) (2006)), and to "grant . . . an adjusted standard for persons who can justify such an adjustment" (415 ILCS 5/28.1(a) (2006)). More generally, the Board's responsibility in this matter is based on the checks and balances integral to Illinois environmental governance: the Board is charged with the rulemaking and principal adjudicatory functions, and the IEPA is responsible for carrying out the principal administrative duties.

The Board finds that JM has demonstrated that the factors relating to JM are substantially and significantly different from the factors considered by the Board in adopting the rules of general applicability. Further, the Board finds that JM has justified the grant of the adjusted standard and the request is consistent with federal law. The Board also finds that the requested standard will not result in environmental or health effects substantially and significantly more adverse than the effects considered by the Board in adopting the rule of general applicability. Therefore the Board grants the adjusted standard as set forth in the Board's order.

PROCEDURAL HISTORY

On June 30, 2004, JM filed a request (Pet.) for an adjusted standard pursuant to Section 28.1 of the Act (415 ILCS 5/28.1 (2006)). JM seeks relief from the landfill closure requirements pertaining to landfill gas monitoring and management, and groundwater monitoring under 35 Ill. Adm. Code 814, 811.310(c)(1), 811.311(a)(1), 811.318(b)(4), and 811.320.

Section 28.1 of the Act (415 ILCS 5/28.1 (2006)) and 35 Ill. Adm. Code 104.408 require publication of a notice of an adjusted standard proceeding in a newspaper of general circulation in the area affected by the petitioner's activity. The notice must be published within 14 days of filing a petition for an adjusted standard with the Board. *See* 35 Ill. Adm. Code 104.408(a). As required by 35 Ill. Adm. Code 104.410, the petitioner timely filed a certificate of publication with the Board on July 15, 2004. The notice of petition was published in the *News-Sun* on July 7, 2004.

Although JM had met the notice requirements, on August 5, 2004, the Board asked for additional information regarding the request for adjusted standard and declined to accept the petition. On September 30, 2004, petitioner filed an amended petition (Am. Pet.). The amended petition addressed most of the deficiencies cited by the Board, changed Section 811.318(b)(4) to Section 811.318(b)(3), and also requested relief from an additional provision set forth under 35 Ill. Adm. Code 811.320(c)(1). On November 4, 2004, the Board accepted the amended petition for hearing and directed JM to address the two issues concerning leachate characteristics and groundwater quality that were not addressed in the amended petition at hearing. During 2005-2006, the petitioner was working with the IEPA to address informational deficiencies and resolve IEPA concerns. *See* Joint Status Report (Sept. 29, 2006).

On May 22, 2007, the IEPA filed a recommendation (Rec.) and a motion to file the recommendation *instanter*. The Board grants the motion and accepts the recommendation. The IEPA recommends that the adjusted standard be granted as requested by JM.

On July 18, 2007, hearing was held before Board Hearing Officer Bradley Halloran (Tr. at @). The hearing was held in Waukegan, Lake County. At the hearing, JM presented the testimony of William Bow. The IEPA did not present witnesses and no members of the public attended the hearing.

ADJUSTED STANDARD PROCEDURE

In both a general rulemaking and a site-specific rulemaking, the Board is required to take the following factors into consideration: the existing physical conditions; the character of the area involved, including the character of the surrounding land uses; zoning classifications; the nature of the receiving body of water; and the technical feasibility and economic reasonableness of measuring or reducing a particular type of pollution. 415 ILCS 5/27(a) (2006). The general procedures that govern an adjusted standard proceeding are found at Section 28.1 of the Act and the Board's procedural rules at 35 Ill. Adm. Code 104. Section 28.1 also requires that the adjusted standard procedure be consistent with Section 27(a) of the Act. *Id*.

JM seeks an adjusted standard from rules of general applicability, which do not specify a level of justification for an adjusted standard. Therefore, in determining whether an adjusted standard should be granted from a rule of general applicability, the Board must consider, and JM has the burden to prove, the factors at Section 28.1(c) of the Act (415 ILCS 5/28.1(c) (2006)):

1) factors relating to that petitioner are substantially and significantly different from the factors relied upon by the Board in adopting the general regulation applicable to the petitioner;

2) the existence of those factors justifies an adjusted standard;

3) the requested standard will not result in environmental or health effects substantially and significantly more adverse than the effects considered by the Board in adopting the rule of general applicability; and

4) the adjusted standard is consistent with any applicable federal law. 35 Ill. Adm. Code 104.426(a) and 415 ILCS 5/28.1(c) (2006).

FACILITY DESCRIPTION

JM's facility is located in Waukegan, Lake County and is a 350-acre tract on the shore of Lake Michigan. Am. Pet. at 2. JM previously manufactured building materials including roofing and insulation products at the site. Am. Pet. at 8. The facility began operation in 1920 and employed several thousand people at the peak of manufacturing. Am. Pet. at 8-9. During the plant's operation, asbestos-containing building materials were manufactured until 1985 when manufacture of asbestos-containing building materials ceased. Am. Pet. at 9. JM gradually phased out manufacturing at the site until all manufacturing ceased in 1998 and the manufacturing buildings were demolished in 2000-2001. *Id*. Currently only a few contract employees are located at the facility. *Id*.

In 1983, pursuant to Section 105 of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) (42 U.S.C. § 9605), the United States Environmental Protection Agency (USEPA) placed a portion of the JM facility on the National Priorities List (NPL). Am. Pet. at 9. The NPL is set forth in 40 C.F.R. Part 300, Appendix B and was published at 48 *Fed. Reg.* 40658 (Sept. 9, 1993). *Id*. The portion of the facility placed on the NPL consists of approximately 120 acres. *Id*.

On June 14, 1984, JM and the USEPA executed an "Administrative Order and Consent Decree" that required JM to conduct a "Remedial Investigation/Feasibility Study" which was submitted on July 3, 1985. Am. Pet. at 9. On June 30, 1987, the USEPA issued a decision and the State of Illinois concurred with that decision. *Id*. On March 18, 1998, USEPA, JM, and the State of Illinois entered the consent decree in the United States District Court of the Northern District of Illinois. *Id*. The consent decree required placement of cover over a number of areas where asbestos-containing waste had been disposed of at the JM facility. *Id*.

USEPA issued two "Explanations of Significant Differences" to the consent decree. The first, in June 1987, addressed differences in remedial actions taken and the second, on September 22, 2000, provided for the closure of the wastewater treatment system and the on-site landfill. Am. Pet. at 10. The on-site landfill was no longer required due to cessation of manufacturing activities. *Id*. This adjusted standard and an amended federal consent decree are intended to implement the provisions of the second "Explanation of Significant Differences" issued by USEPA. *Id*.

After completion of the CERCLA action in 1992, JM filed an initial facility report to provide for the disposal of non-asbestos waste generated from manufacturing activities at the facility. Tr. at 22-23. The report provided that non-asbestos containing materials would be disposed of in the former miscellaneous disposal pit that had been created as a result of the surrounding area being built up during the CERCLA landfill work (Fill Area #1). Tr. at 23. The former collection basin would also be used for disposal of non-asbestos containing materials (Fill Area #2). Tr. at 23. The on-site landfill is physically located on the NPL tract and is on and surrounded by the CERCLA units. Am. Pet. at 10; Tr. at 28.

The landfill was intended to accept inert waste but also received some putrescible waste. More specifically, the waste deposited in the landfills was calcium silicate, which is crushed lime and sand (limestone) used in the insulation material, roofing materials, some granules, and miscellaneous smaller amounts of paper, cardboard, and occasional pieces of wood. Tr. at 23. The main materials were however calcium silicate and roofing materials. *Id*. No asbestos-containing materials were disposed of in the either of the two fill areas. *Id*. Furthermore, the consent decree specifically prohibited disposal of asbestos-containing materials in the two fill areas. Tr. at 24.

In preparing this adjusted standard, JM's consultants performed additional work to evaluate and verify what was in the on-site landfill. Tr. at 24. One method used for evaluation was well drilling which showed that the materials disposed of in the pit were consistent with the items JM had indicated were disposed in the landfill. *Id*., and Petitioner's Group A at Exh. 7, pgs. 20-21. Work was also performed to establish that how much landfill gas was being generated and that work indicated very low pressure. Tr. at 25. Gas monitoring continued from April 2003 until the present on a monthly basis. Tr. at 25-26. The monthly monitoring shows very low gas pressure and no detections of landfill gas migrating. Tr. at 26.

REQUESTED RELIEF

The IEPA and the Illinois Attorney General have acknowledged that the on-site landfill is an existing landfill subject to the Board's rules at 35 Ill. Adm. Code 814. *Id*. Part 814 incorporates the provisions of Part 811 from which JM seeks an adjusted standard. Specifically JM seeks and adjusted standard from:

1. the requirements of Section 814.302 to the extent that the provisions of Sections 811.310(c)(1), 811.311(a)(1), 811.318(b)(4), and 811.320 are incorporated by reference;

2. the monitoring frequency for landfill gas monitoring (35 Ill. Adm. Code 811.310(c)(1));

3. the requirements for implementing a landfill gas management system, specifically the provisions relating to detection distance from the edge of the unit for implementing such a system (35 Ill. Adm. Code 811.311(a)(1)); and

4. the standards for the location of monitoring points found in 35 Ill. Adm. Code 811.318(b)(3) and 811.320(c)(1), specifically the requirement that monitoring wells shall be located within half the distance form the edge of the unit to the edge of the zone of attenuation. Am. Pet. at 13.

JM is specifically seeking two types of relief. Tr. at 26. First, JM is seeking reduction in the frequency of landfill gas monitoring from a monthly period to semi-annual for a total of five years. Tr. at 26-27. Secondly, JM is seeking relief from the location requirements for monitoring wells for groundwater and monitoring for gas that are currently required 100 feet away from the edge of the waste. Tr. at 27.

The specific language requested by JM for landfill gas monitoring frequency is:

> In lieu of compliance with 35 Ill. Adm. Code 811.310(c)(1) as applied to the On-Site Landfill at its facility in Waukegan, Illinois Johns Manville shall operate all gas monitoring devices, including the ambient air monitors, such that samples will be collected on a semi-annual basis for a period of five years following approval of this adjusted standard. If, at the end of five years, the requirements for implementing a Landfill Gas collection System (35 Ill. Adm. Code 811.311) are not met, no further monitoring will be conducted. Petitioner's Group A, Exh. 8.

And for installation of a landfill gas management system, JM offers this specific language:

> In lieu of compliance with 35 Ill. Adm. Code 811.311(a)(1) as applied to the On-Site Landfill at its facility in Waukegan, Illinois Johns Manville shall install a gas management system if a methane concentration greater than 50 percent of the lower explosive limit in air, is detected below the ground surface by a monitoring device or is detected by an ambient air monitor located as close as possible to, but outside the boundary line shown on Figure 7 or the property line, whichever is less. *Id*.

The specific language requested by JM for determination of the zone of attenuation:

> In lieu of compliance with 35 Ill. Adm. Code 811.320(c)(1) as applied to the On-Site Landfill at its facility in Waukegan, Illinois, the zone of attenuation, within which concentrations of constituents in leachate discarded from the unit may exceed the applicable groundwater quality standard of this Section is a volume bounded by a vertical plane located as shown on Figure 8, extending form the ground surface to the bottom of the uppermost aquifer and excluding the volume occupied by the waste. Petitioner's Group A, Exh. 9.

And for the location of the groundwater monitoring points, JM offers the following:

In lieu of compliance with 35 Ill. Adm. Code 811.318(b)(3) as applied to the On-Site Landfill at its facility in Waukegan, Illinois Johns Manville shall install groundwater monitoring wells at the locations specified on the attached Figure 8. Those monitoring wells located along the proposed zone of attenuation boundary shall be considered "AGQS" wells consistent with the requirements of 35 Ill. Adm. Code 811.318(b)(5). *Id*.

JM offers additional clarification, based on discussion with the IEPA as follows:

The location of the bottom of the uppermost aquifer shall be determined in a manner consistent with the requirements of 35 Ill. Adm. Code 811.311(c)(2)(B).

Compliance with 35 Ill. Adm. Code 811.317(b) shall be assessed by modeling all applicable zone of attenuation distances, as shown on Figure 8.

It is recognized that no Maximum Allowable Predicted Concentrations or "MAPC" wells are being proposed; all monitoring pints are considered Applicable Groundwater Quality Standards or "AGQS" locations. As such, the obligations described in 35 Ill. Adm. Code 319(b)(3) immediately apply, if the concentration of one or more constituents monitored at or beyond the zone of attenuation, as shown on Figure 8, is above the applicable groundwater quality standards of Section 811.320 and is attributable to the On-Site Landfill. Am. Pet. at 20.

REGULATORY FRAMEWORK

JM seeks and adjusted standard from the requirements contained in 35 Ill. Adm. Code 814 which incorporate specific requirements of 35 Ill. Adm. Code 811.310(c)(1), 811.311(a)(1), 811.320(c)(1), and 811.318(b)(3). Also, JM references 35 Ill. Adm. Code 811.318(b)(5) in the requested adjusted standard.

Section 814.302 is in Subpart C, which is entitled "Standards of Existing Units Accepting Chemical or Putrescible Wastes that Remain Open for more than Seven Years". Section 814.302(a), in relevant part provides:

All of the requirements for new units described in 35 Ill. Adm. Code 811 shall apply to units regulated under this Subpart . . .. 35 Ill. Adm. Code 814.302(a).

Section 811.310(c)(1) provides:

c) Monitoring Frequency.

1) All gas monitoring devices, including the ambient air monitors must be operated to obtain samples on a monthly basis for the

entire operating period and for a minimum of five years after closure. 35 Ill. Adm. Code 811.310(c)(1).

Section 811.311(a)(1) provides:

a) The operator shall install a gas management system if any one of the following conditions are met:

1) A methane concentration greater than 50 percent of the lower explosive limit in air, is detected below the ground surface by a monitoring device or is detected by an ambient air monitor located at or beyond the property boundary or 30.5 meters (100 feet) from the edge of the unit, whichever is less, unless the operator can demonstrate that the detected methane concentration is not attributable to the facility. 35 Ill. Adm. Code 811.311(a)(1).

Section 811.320(c)(1) provides:

c) Determination of the Zone of Attenuation

1) The zone of attenuation, within which concentrations of constituents in leachate discharged from the unit may exceed the applicable groundwater quality standard of this Section, is a volume bounded by a vertical plane at the property boundary or 100 feet from the edge of the unit, whichever is less, extending from the ground surface to the bottom of the uppermost aquifer and excluding the volume occupied by the waste. 35 Ill. Adm. Code 811.320(c)(1).

Section 811.318(b)(3) and (5) provide:

b) Standards for the Location of Monitoring Points

3) Monitoring wells shall be established as close to the potential source of discharge as possible without interfering with the waste disposal operations, and within half the distance from the edge of the potential source of discharge to the edge of the zone of attenuation downgradient, with respect to groundwater flow, from the source.

* * *

5) A minimum of at least one monitoring well shall be established at the edge of the zone of attenuation and shall be located downgradient with respect to groundwater flow and not excluding the downward direction, from the unit. Such well or wells shall be used to monitor any statistically significant increase in the

> concentration of any constituent, in accordance with Section 811.320(e) and shall be used for determining compliance with an applicable groundwater quality standard of Section 811.320. An observed statistically significant increase above the applicable groundwater quality standards of Section 811.320 in a well located at or beyond the compliance boundary shall constitute a violation. 35 Ill. Adm. Code 811.318(b)(3) and (5).

DISCUSSION

Before granting an adjusted standard, the Board must find that the factors delineated in Section 28.1(c) of the Act (415 ILCS 5/28.1(c) (2006)) have been addressed such that JM is entitled to the relief sought. The Board will summarize JM's arguments on each of those factors, then the Board will summarize the IEPA's position. The Board will also summarize the comment received. Then the Board will set forth the Board's findings on the requested adjusted standard.

Substantially Different Factors

The Board will first discuss generally the reasons why JM believes that the on-site landfill is substantially different than those considered by the Board in adopting the rules of general applicability. Next, the Board will discuss the specifics concerning the gas monitoring requirements, then the gas management system requirements. Finally, the Board will discuss the placement of the groundwater monitoring wells.

Generally

Mr. Bow testified that because of the characteristics of the waste disposed in JM's on-site landfill, the on-site landfill is much more similar to an inert waste landfill than a chemical and putrescible waste landfill. Tr. at 53. JM states, "much of the waste in the landfill is virtually inert, being composed primarily of calcium silicate and fiber glass-based roofing materials." Am. Pet. at 4. Technically, the on-site landfill is classified as a chemical and putrescible waste landfill; however, the limited amount of landfill gas generation is much more like an inert waste landfill. Tr. at 53. Mr. Bow testified that the difference between treating the on-site landfill as an inert waste landfill rather than a chemical and putrescible waste landfill would have made a difference in the adjusted standard. Tr. at 56-57.

Additionally, JM states "unlike most landfills in Illinois, the JM site was under intense federal and state oversight since before the adoption of the Pollution Control Board's solid waste landfill regulations as a result of its inclusion on the Superfund National Priority List in 1983." Pet at 5. JM asserts that the landfill rulemaking record does not indicate that the Board considered situations similar to JM's on-site landfill facility, "where the [JM] facility as a whole was subject to a Superfund consent decree which required the construction of cover to isolate asbestos that had been historically disposed of on-site" and the on-site landfill is "surrounded by units that were remediated under CERCLA." Am. Pet. at 5, 10.

Gas Monitoring

JM points out that the Board's statewide regulations on landfills specifically address two types of landfills: landfills for inert waste and landfills for chemical and putrescible wastes. Am. Pet. at 13. JM initially characterized the on-site landfill as an inert waste landfill but the IEPA indicated that the presence of materials like wood, cardboard and paper in the landfill in any amount meant the landfill should more properly be characterized as a chemical and putrescible waste landfill. Am. Pet. at 14.

JM notes that Section 811.310(c)(1) of the Board's rules applies to chemical and putrescible waste landfills and requires landfill gas monitoring devices to be operated to obtain samples on a monthly basis for the entire operating period of the landfill and for five years after closure. 35 Ill. Adm. Code 811.310(c)(1); Am. Pet. 14-15. However, JM asserts that investigation of the on-site landfill has found that the methane generation is more consistent with an inert waste landfill rather than a chemical and putrescible waste landfill. Am. Pet. at 15. JM's investigation resulted in the following observations:

1. measured landfill gas temperatures (approximately 50°F) were not typical of landfill gas temperatures in a solid waste landfill, which typically range from 100 to 130°F during substantial anaerobic activity and between 130 and 160°F during substantial aerobic activity;

2. the vegetative grass cover over the landfill was intact, growing and healthy, and showed no signs of burn-out, which is indicative of methane release to the landfill surface;

3. landfill gas pressures measured in monitoring wells were typically extremely low (less than 0.01" of water);

4. no malodors were noted within the landfill at any time;

5. the carbon dioxide levels in the on-site landfill were measured to be less than 1%.

6. no methane was present above regulatory criteria (50% of the Lower Explosive Level (LEL)) outside the limits of the waste boundary, despite the lack of any landfill gas collection system. Am. Pet. at 15.

These observations, according to JM, indicate negligible gas generation. *Id*.

JM maintains that while the on-site landfill may technically meet the requirements for chemical and putrescible waste landfills, the landfill characteristics for methane are more like an inert waste landfill. Am. Pet. at 16. JM argues that the frequency of landfill gas monitoring required by Section 811.310(c) is not necessary and would not provide additional protection to human health or the environment as compared to the requested adjusted standard. *Id*.

Gas Management System

JM notes that Section 811.311(a)(1) of the Board's rules contemplates detection of elevated methane levels below the ground surface 100 feet from the edge of the unit or the property boundary, whichever is closer. 35 Ill. Adm. Code 811.311(a)(1); Am. Pet. at 16. JM indicates that the property boundary is more than 100 feet from the edge of the unit, so the 100 feet mark applies to JM's on-site landfill. *Id*. However, JM states that 100 feet from the boundary of the on-site landfill is the area of the CERCLA landfill. *Id*.

JM states that within the area adjacent to Fill Area #1, the lateral limits of waste material are substantially defined by the toe of the steep side slopes of the CERCLA landfill. Am. Pet. at 16-17. As to Fill Area #2, JM advanced seven soil borings between the eastern limit of the on-site landfill and the perimeter road. Am. Pet. at 17. The soil borings indicate that roofing materials, transite, and white granular materials are present in the area; however based on the site history are not likely present below the surface east of the perimeter road. *Id*.

JM asserts that landfill gas monitoring, west of the perimeter road, would require installation of wells through the engineered cover placed for closure over the CERCLA landfill and into the underlying waste. Am. Pet. at 17. JM argues that installing, monitoring and maintaining wells in these locations compromises the integrity of the CERCLA cover and triggers maintenance obligations. *Id*. JM further argues that such placement also potentially exposes the now-covered asbestos-containing waste materials to personnel collecting the air samples. *Id*.

JM notes that whether monitoring gas beneath the cover of an adjacent landfill meets the intention of "ground surface" as used in the rule is not clear. Am. Pet. at 17. JM opines that the intent of the monitoring is to detect whether elevated levels of methane are generated by the landfill and are migrating away from the unit. *Id*. JM asserts that locating landfill gas monitoring devices at a distance of 100 feet from the on-site landfill would be very burdensome, potentially harmful to the CERCLA site and would not provide any additional protection to human health or the environment than the proposed adjusted standard due to extremely low levels of gas being generated by the on-site landfill. *Id*.

Groundwater Monitoring

JM points out that Section 811.318(b)(3) of the Board's rules provides for the placement of Maximum Allowable Predicted Concentration (MAPC) wells within one-half the distance from the edge of the potential source of the discharge to the edge of the zone of attenuation downgradient, with respect to groundwater flow, from the source. 35 Ill. Adm. Code 811.318(b)(3); Am. Pet. at 18. Further, JM notes that Section 811.318(b)(5) requires at least one monitoring well as an Applicable Groundwater Quality Standard (AGQS) well at the downgradient limit of the zone of attenuation. 35 Ill. Adm. Code 811.318(b)(5); Am. Pet. at 18. Additionally, Section 811.320(c)(1) sets forth that the horizontal extent of the zone of attenuation as the vertical plane at the property boundary or 100 feet from the edge of the unit, whichever is less. 35 Ill. Adm. Code 811.320(c)(1). JM indicates that the property boundary is more than 100 feet from the edge of the unit, so the 100 feet mark applies to JM's on-site landfill. Am. Pet. at 16.

JM asserts that placement of monitoring wells at locations specified in the rules, *i.e.* 50 feet for "MAPC" wells and 100 feet for "AGQS" wells, would result in the wells being located in the areal limits of where subsurface waste materials are present as part of the CERCLA landfill. Am. Pet. at 18. JM maintains that groundwater monitoring at the locations required in the rules of general applicability would require either placement of the wells on the steeply sloping sides of the CERCLA landfill or through the engineered cover placed for closure of the CERCLA landfill. Am. Pet. at 18. Further, such placement could result in the wells being placed through the underlying CERCLA waste materials before actually entering the underlying groundwater-bearing zone. Am. Pet. at 18-19.

JM argues that installation, monitoring and maintenance of wells at the locations required in the rules of general applicability is not desirable for several reasons. First drilling through waste prior to installing monitoring wells can increase the risk of cross-contamination either by carrying contaminants vertically downward during drilling or providing a conduit for downward migration. Am. Pet. at 19. JM acknowledges that there are methods that can minimize the possibility of cross contamination; however, the practices are not without risk. *Id*. JM asserts that the use of these methods is not consistent with good environmental management practices. *Id*.

A second reason for concern is that in the case of Fill Area #1, ongoing and repetitive operations on the steeply sloping, more erosion-prone sides of the CERCLA landfill increases cover maintenance obligations. Am. Pet. at 19. Also such operations increase the risk of ambient release of asbestos fiber and subsequent exposure to surrounding populations from incremental erosion events or catastrophic slope failure. *Id*. A third concern is that any activities that result in penetration or damage to the existing CERCLA cover must be pre-approved by USEPA and IEPA and must adhere to health and safety protocols for the site. *Id*.

JM argues that for all these reasons locating groundwater monitoring wells as required by the rules of general applicability would be very burdensome and would increase the risk of contaminating the underlying groundwater. Am. Pet. at 19. Furthermore, JM asserts that the risk of ambient release and human exposure to asbestos fiber through inadvertent and potential catastrophic failure of the CERCLA remedy would be increased. *Id*. JM maintains that the increased risk would not be offset by any additional degree of protection to human health or the environment than the requested relief. *Id*. Therefore, JM argues the Board should grant the requested relief. *Id*.

Justification

JM argues that because of the presence of the adjacent CERCLA landfill, strict compliance with the rules of general applicability for monitoring of both gas and groundwater could result in drilling through an engineered cover into asbestos-containing waste. Am. Pet. at 22. Such drilling could compromise the CERCLA site and the CERCLA remedy. *Id*. In contrast, JM asserts that compliance with the proposed adjusted standard should meet the goals of the Board regulations and be equally protective of the environment. *Id*. JM states that granting the adjusted standard is justified due to the uniqueness of the site and the granting of the adjusted standard will create a lesser risk for the CERCLA site. *Id*.

Environmental Effect

The following discussion of JM's reasoning regarding the environmental effect of the adjusted standard begins with a general discussion. Then the Board will discuss the gas monitoring and gas management system requirements. Finally, the Board will discuss the placement of the groundwater monitoring wells.

Generally

Mr. Bow testified that if both the gas management system and the groundwater monitoring wells were placed as required by the rules of general applicability, there would be health and safety issues. Tr. at 34. Specifically, Mr. Bow testified that the wells would be installed halfway up the slope of a now closed CERCLA landfill and not only the actual drilling but the equipment needed for the drilling could cause disturbances of the CERCLA landfill. Tr. at 34-35. Furthermore, IEPA, USEPA and JM would prefer to avoid drilling through a CERCLA cap as much as possible. Tr. at 35. Mr. Bow further testified that in his opinion the adjusted standard requested is equally protective of the environment as the rules of general applicability. Tr. at 54.

Gas Monitoring and Gas Management

JM contends that the intent of the gas monitoring is to detect whether elevated levels of methane generated by the landfill are migrating away from the unit. Am. Pet. at 17. JM concedes that the on-site landfill may technically meet the definition of a chemical and putrescible waste unit; however, the on-site landfill is really more similar to an inert waste landfill. Am. Pet. at 16; Tr. at 53. Thus, JM maintains that the frequency of the gas monitoring and location of the wells as required by the rules of general applicability would not be more protective of the environment or human health than the adjusted standard. *Id*.; Tr. at 53-54. JM further argues that this is especially true given the potential disturbance of the CERCLA landfill. Am. Pet. at 17.

Groundwater Monitoring

JM is requesting an adjusted standard from the groundwater monitoring requirements, because compliance with Sections 811.318(b)(3) and 811.320(c)(1) could result in inadvertent impacts to groundwater and exposure to asbestos fiber present beneath the CERCLA cap. Am. Pet. at 19 and 21. JM asserts that "[a]ny adjustment to the compliance boundary would not impact groundwater that is or may be used for human consumption" because there are no existing users of groundwater in the area. *Id*. Further, JM opines that any adjacent properties would not use the groundwater given the proximity of Lake Michigan. *Id*.

JM also points to factors such as the native soils, which due to the nature of the soils will minimize the number of potential migration pathways that contamination will follow. Am. Pet.

at 21. JM notes that the groundwater flow and data developed about the flow indicates that moving the zone of attenuation laterally will not result in the masking of contaminant transport due to an unexpected change in the groundwater flow characteristics. Am. Pet. at 21-22. Finally, JM notes that the adjusted standard will still have the edge of the zone of attenuation located on JM's property. Am. Pet. at 22.

JM states that the implementation of a groundwater monitoring program under Part 811 is intended to provide for detection, assessment and potentially corrective action if a regulated unit is adversely affecting the groundwater. JM asserts that the groundwater monitoring program proposed in the adjusted standard petition will similarly provide for detection of potential issues in a timely fashion, allowing officials to make decisions as to how to protect the groundwater. Am. Pet. at 7.

Consistency with Federal Law

JM opines that because the on-site landfill is not a municipal solid waste landfill as defined by Resource Conservation and Recovery Act (42 U.S.C. §§ 6921 *et. seq.*) (RCRA), granting the adjusted standard is consistent with federal law. Am. Pet. at 13. Further JM notes that the federal consent decree expressly contemplated the potential need for an adjusted standard from Illinois regulations. Am. Pet. at 22-23. Thus, the granting of the adjusted standard would not be contrary to the federal court case. Am. Pet. at 23.

IEPA Recommendation and Brief

The IEPA recommends that the adjusted standard be granted to JM. Resp. at 4. The IEPA agrees that the adjusted standard requested is consistent with federal law and that JM has provided sufficient justification to warrant the adjusted standard. *Id*. The IEPA also believes that the requested adjusted standard is "at least as protective of the environment" as the rules of general applicability. *Id*.

More specifically, the IEPA notes that on January 6, 2005, the State of Illinois and JM entered into a consent decree that included an agreement by JM to close the on-site landfill. Resp. at 1. The consent decree "contemplated the possibility that JM would have to obtain an adjusted standard from the Board" to complete closure. *Id*. The IEPA has met with JM and asked questions at hearing and as a result recommends that the adjusted standard be approved. *Id*.; Br. at 1.

The IEPA has no knowledge of the costs associated with JM's complying with the rules of general applicability; however, the IEPA is aware of non-monetary problems. Resp. at 3. The IEPA agrees that very little gas is being generated and that semi-annual monitoring for gas will be sufficient. *Id.* Further, the IEPA acknowledges that in order to locate the monitoring wells, pursuant to the rules of general applicability, JM would need to drill through the CERCLA engineered barrier. *Id.* The IEPA therefore agrees that the alternative locations required by the requested adjusted standard are preferable. *Id*.

Public Comment

On November 23, 2004, the Board received one public comment from Jeffery C. Camplin on behalf of the Illinois Dunesland Preservation Society (Society) (PC 1). The Society notes that groundwater flows from the JM site to the "Federally Protected Critical Habitat and State Dedicated Nature Preserve of Illinois Beach State Park (Nature Preserve)" and the Society is currently seeking re-classification of the groundwater at the Nature Preserve. PC 1. In addition, the Society points out that the JM site is bordered by property used for public access and recreation. The Society asks that the Board consider the special protection afforded the Nature Preserve and the surrounding land uses when considering the adjusted standard. *Id*.

The Society also has concerns that the JM site has additional pollution which could be contaminating the groundwater and that the groundwater in the Nature Preserve could be contaminated. PC 1. The Society asks that the Board "review" the testing done of contaminants in the "soils, sludges, sediments, and groundwater" on the JM site and that proper testing be performed before the adjusted standard petition is considered. *Id*. The Society commented on the consent decrees and asked that the Board delay any decision on the petition until the State and Federal court rule. *Id*.

Board Findings

The Board agrees that the rules of general applicability from which JM is seeking an adjusted standard do not include a level of justification. Therefore, JM must prove the criteria of Section 28.1(c) of the Act (415 ILCS 5/28.1(c) (2006)) to establish that an adjusted standard is warranted. JM is seeking relief from the Board's landfill regulations regarding gas monitoring, implementation of gas management system, and location requirements for groundwater monitoring wells. In this section of the opinion, the Board will evaluate JM's petition, expert testimony, and supporting documentation to determine whether JM has demonstrated compliance with the Section 28.1(c) criteria.

As noted above, JM contends that its on-site landfill is different from the landfills considered by the Board because: the waste contained in the landfill is virtually inert; and the JM facility as a whole was subject to a Superfund consent decree which required the construction of cover to isolate asbestos that had been historically disposed of on-site. Am. Pet. at 4-5.

Landfill Gas Monitoring Frequency (Section 811.310(c)(1))

Substantially different factors. The Board's landfill regulations under Parts 811 and 814 set forth appropriate requirements for inert waste landfills, chemical waste landfills, putrescible waste landfills and municipal solid waste landfills. The Board's rules do not require gas monitoring and placement of gas monitoring systems for an inert waste landfill (*see* 35 Ill. Adm. Code 811.201-207). The Board rules also do not require monitoring of landfill gas for "chemical waste" landfills because by definition "chemical waste" is non-putrescible, *i.e.* the waste is not subject to biological processes that result in emission of landfill gas. *See* 35 Ill. Adm. Codes 810.103 and 811.310(a). In this regard, there appears to be some misunderstanding of the Board rules by the petitioner when it states that the gas monitoring requirements under Section 811.310 apply to chemical and putrescible waste landfills. Am. Pet. at 14. However, because of the placement of a small amount of materials such as wood, cardboard and paper, JM's on-site landfill cannot be classified as either an inert waste landfill or a chemical waste landfill, but rather a putrescible waste landfill. Therefore, gas monitoring and placement of gas monitoring systems is required (*see* 35 Ill. Adm. Code 811.310, 811.311) and JM must comply with those regulations or seek relief when appropriate.

The Board notes that gas-monitoring requirements under Part 811 are intended mainly to apply to putrescible or municipal solid waste landfills, which emit significant amounts of landfill gas. While the Board regulations address wastes that do not produce landfill gas, the Board did not consider situations where a landfill would be classified as a putrescible waste landfill because of small amount putrescible waste being placed in an otherwise inert or chemical waste landfill. Therefore, the Board finds that the factors applicable to JM's request for relief from landfill gas monitoring requirements are substantially and significantly different from those considered by the Board in adopting the rule of general applicability. 415 ILCS 5/28.1(c)(1) (2006).

Justification for Relief. As to the requested relief from the gas monitoring requirements, JM's justification for seeking a lower monitoring frequency is that the on-site landfill generates little gas due to the fact that the on-site landfill is more representative of an inert waste landfill than a putrescible waste landfill. The Board notes that the results of monthly gas monitoring data are consistent with JM's assertions that methane production is low. Am. Pet. Exh. 1. Some of the other observations made by JM regarding landfill gas temperature, vegetative cover and malodor are also indicative of low landfill gas production. The Board finds that the petitioner has provided sufficient information to justify the granting of the adjusted standard. 415 ILCS 5/28.1(c)(2) (2006).

Environmental Impact. JM's testimony at hearing is that semi-annual monitoring is equally protective of the environment and the IEPA agrees. Again, the Board notes the monthly monitoring frequency required by the rule of general applicability at Section 811.310(c) is intended to address putrescible or municipal solid waste landfills where landfill gas is produced at higher rates. The record shows that JM's on-site landfill has very low gas production due to the inert characteristics of the waste contained in the landfill. In light of this, the Board finds that the requested adjusted standard will not result in environmental or health effects substantially and significantly more adverse than the effects considered by the Board in adopting the rule of general applicability. 415 ILCS 5/28.1(c)(3) (2006).

Consistency with Federal Law. Finally, both JM and the IEPA agree that the granting of the adjusted standard is consistent with federal law. The Board finds that the proposed adjusted standard is consistent with federal law. 415 ILCS 5/28.1(c)(4) (2006).

Finding. The Board finds that JM has demonstrated that an adjusted standard from the gas-monitoring requirement at Section 811.310(c)(1) is warranted and the Board will grant the adjusted standard.

Implementation of Landfill Gas Management System (Section 811.311(a)(1))

Substantially Different Factors. The landfill gas management system provision at Section 811.311(a)(1) requires the implementation of a gas management system if a methane concentration greater than 50% of the lower explosive limit is detected below the ground surface or in the ambient air at 100 feet from the edge of the unit or the property boundary, whichever is less. Since the property boundary is at a greater distance, the 100-foot distance from the edge of the unit applies to JM's landfill. JM asserts that the factors that apply to its on-site landfill are substantially different than those considered by the Board because JM's site includes a Superfund site that has been remediated pursuant to CERCLA and includes a closed landfill with an engineered barrier. The CERCLA areas surround the on-site landfill at issue in this proceeding.

According to JM, compliance with Section 811.311(a)(1) would require the placement of the gas monitoring devices or monitoring wells approximately half way up the side slope of the closed CERCLA landfill. Clearly, the Board's landfill rules requiring placement of gas and groundwater monitoring wells did not contemplate placement of such wells that would result in significant disturbance of a closed Superfund site. Thus, the Board finds that there exist substantially and significantly different factors for JM than those considered in adopting the rules of general applicability. 415 ILCS 5/28.1(c)(1) (2006).

Justification for Relief. JM has submitted detailed information including topographic maps to show the location of the CERCLA landfill with respect to the on-site landfill and demonstrate that the placement of gas monitoring devices or wells in accordance with Section 811.311(a)(1) would compromise the integrity of the closed RCRA landfill. The Board notes that JM also provided additional information and a revised Figure 8 to address concerns about the zone of attenuation. Finally, as noted above, JM has provided sufficient information to show that the on-site landfill does not produce significant quantities of landfill gas. The Board finds that the existence of the substantially different factors and the supporting data justifies granting the adjusted standard. 415 ILCS 5/28.1(c)(2) (2006).

Environmental Impact. As to the environmental impact of the requested adjusted standard, the Board agrees with the petitioner that the placement of gas monitoring devices that affect the integrity of the closed CERCLA landfill is potentially hazardous. Further, the Board notes that under the adjusted standard, JM will continue to monitor landfill gas levels at locations farther away from the edge of the on-site landfill. Given the inert nature of the wastes contained in the on-site landfill and continued monitoring of landfill gas at or within the property boundary, the Board is convinced that the proposed adjusted standard from the gas management system requirements are at least as protective of the environment as the rules of general applicability. Therefore, the Board finds that the proposed adjusted standard "will not result in environmental or health effects substantially and significantly more adverse than the effects considered by the Board in adopting the rule of general applicability." 415 ILCS 5/28.1(c)(3) (2006).

Consistency with the Federal Law. JM and the IEPA agree that the proposed adjusted standard is consistent with federal law. Further, both JM and the IEPA indicate that the consent decree in federal court contemplated this adjusted standard. The Board has reviewed the record and finds that the proposed adjusted standard is consistent with federal law. 415 ILCS 5/28.1(c)(4) (2006).

<u>Finding</u>. The Board finds that JM has demonstrated that an adjusted standard from the implementation of a gas monitoring system requirement at Section 811.311(a)(1) is warranted and the Board will grant the adjusted standard.

<u>Location of Groundwater Monitoring Wells (Sections 811.318(b)(3) and 811.320(c)(1))</u>

<u>Substantially Different Factors.</u> JM seeks relief from groundwater monitoring well location requirements to avoid drilling monitoring wells through the engineered cover of the closed CERCLA landfill. Specifically, JM requests relief from Section 811.318(b)(3), which requires placement of monitoring wells within half the distance from the edge of the potential source of discharge to the edge of the zone of attenuation, downgradient with respect to groundwater flow. JM also seeks relief from Section 811.320(c)(1), which sets forth, in part, that the extent of the zone of attenuation is a volume bounded by a vertical plane at the property boundary or 100 feet from the edge of the unit, whichever is less. JM seeks relief from Section 811.320(c)(1) because Section 811.318(b)(5) requires the placement of at least one monitoring well at the edge of the zone of attenuation, downgradient with respect to groundwater flow.

As noted earlier, for JM's on-site landfill, the edge of the zone of attenuation is located at 100 feet from edge of the unit, since JM's property boundary is at a distance greater than 100 feet from the edge of the unit. The placement of monitoring wells at 100 feet from the edge of the unit, and at a distance halfway from the edge of the unit and the edge of the zone of attenuation, would involve the installation of wells: 1) on the steeply sloping sides of the CERCLA landfill (Fill Area #1); 2) through the engineered cover placed for closure of the CERCLA landfill (Fill Areas #1 and #2); and/or 3) into and through the underlying "CERCLA" waste materials, prior to penetrating the underlying groundwater-bearing zone (Fill Areas #1 and #2). Am. Pet. at 18-19.

The Board rules pertaining to location of monitoring wells at Section 811.318 (b)(3) are intended to be part of the early warning groundwater monitoring requirements for chemical and putrescible waste landfills. *See* 35 Ill. Adm. Code 811.318(c) and 811.319(a)(4)(A)(ii). The zone of attenuation requirement at Section 811.320(c)(1) is intended "to provide a buffer area between the source of the discharge and the point at which the applicable groundwater standards are enforced." *See* <u>Development, Operating And Reporting Requirements For Non-Hazardous Waste Landfills</u>, R88-7 (Aug. 17, 1990) at Exh. 1 pg. 76. While the groundwater monitoring well location provisions at issue are intended for addressing groundwater contamination issues in a timely manner, the landfill rules did not contemplate drilling wells through closed CERCLA landfills. Thus, the Board finds that there exist substantially and significantly different factors for JM than those considered in adopting the rules of general applicability. 415 ILCS 5/28.1(c)(1) (2006).

<u>Justification for Relief.</u> JM has submitted detailed information including topographic maps to show the location of the CERCLA landfill with respect to the on-site landfill and demonstrate that the placement of monitoring wells in accordance with Sections 811.318(b)(3) and 811.320(c)(1) would compromise the integrity of the closed CERCLA site. The Board notes that JM also provided additional information and a revised Figure 8 to address concerns about the zone of attenuation. The revised Figure 8 shows the zone of attenuation under the proposed adjusted standard along with alternative locations of the monitoring wells. The Board finds that the existence of the substantially different factors and the supporting data justifies granting the adjusted standard. 415 ILCS 5/28.1(c)(2) (2006).

Environmental Impact. Regarding the environmental impact of the proposed adjusted standard, the Board agrees with the petitioner that the placement of groundwater monitoring wells that affect the integrity of the closed CERCLA site is potentially hazardous. As noted by JM, compliance with the rule of general applicability would increase the risk of: contaminating underlying groundwater; and ambient release and human exposure to asbestos fiber through inadvertent and potentially catastrophic failure of the CERCLA remedy. Further, the Board notes that under the adjusted standard JM is still subject to the groundwater monitoring and compliance requirements. As clarified by the petitioner, the requirements of Section 811.319(b)(3) "immediately apply, if the concentration of one or more constituents monitored at or beyond the zone of attenuation, as shown on Figure 8, is above the applicable groundwater quality standards of Section 811.320 and is attributable to the On-Site Landfill." Am. Pet. at 20. In light of this, the Board finds that the proposed adjusted standard "will not result in environmental or health effects substantially and significantly more adverse than the effects considered by the Board in adopting the rule of general applicability." 415 ILCS 5/28.1(c)(3) (2006).

Consistency with the Federal Law. As noted above, JM and the IEPA agree that the proposed adjusted standard is consistent with federal law. Further, both JM and the IEPA indicate that the consent decree in federal court contemplated this adjusted standard. At hearing, JM added that there has not been any development associated with either the State consent order or the federal consent decree that would affect the adjusted standard proceeding. Tr. at 44. The Board has reviewed the record and finds that the proposed adjusted standard is consistent with federal law. 415 ILCS 5/28.1(c)(4) (2006).

Finding. The Board finds that JM has demonstrated that an adjusted standard from the location requirements for groundwater monitoring wells at Sections 811.318(b)(3) and 811.320(c)(1) is warranted and the Board will grant the adjusted standard.

Requested Adjusted Standard from Part 814

Although JM seeks an adjusted standard from Part 814, the Board finds that JM's request for relief from Part 814 is unnecessary. Section 814.302(a) requires JM to comply with the provisions of 35 Ill. Adm. Code 811, with a few exceptions. In this proceeding, JM has demonstrated that relief from the provisions discussed more thoroughly above is warranted. Therefore, the Board is granting an adjusted standard to JM from specific sections in Part 811 and the Board finds that an adjusted standard from Part 814 is not necessary.

CONCLUSION

The Board finds that JM has proven that the factors in Section 28.1(c) of the Act (415 ILCS 5/28.1(c) (2006)) support granting the adjusted standard. Therefore, the Board will grant JM an adjusted standard from the following requirements:

1. the monitoring frequency for landfill gas monitoring set forth at 35 Ill. Adm. Code 811.310(c)(1);

2. the requirements for implementing a landfill gas management system, specifically the provisions relating to detection distance for implementing such a system found in 35 Ill. Adm. Code 811.311(a)(1);

3. the standards for the location of monitoring points found in 35 Ill. Adm. Code 811.318(b)(3), specifically the requirement that monitoring wells shall be located within half the distance from the edge of the potential discharge source to the edge of the zone of attenuation; and

4. the horizontal extent of the zone of attenuation specified at 35 Ill. Adm. Code 811.320(c)(1).

This opinion constitutes the Board's findings of fact and conclusions of law.

ORDER

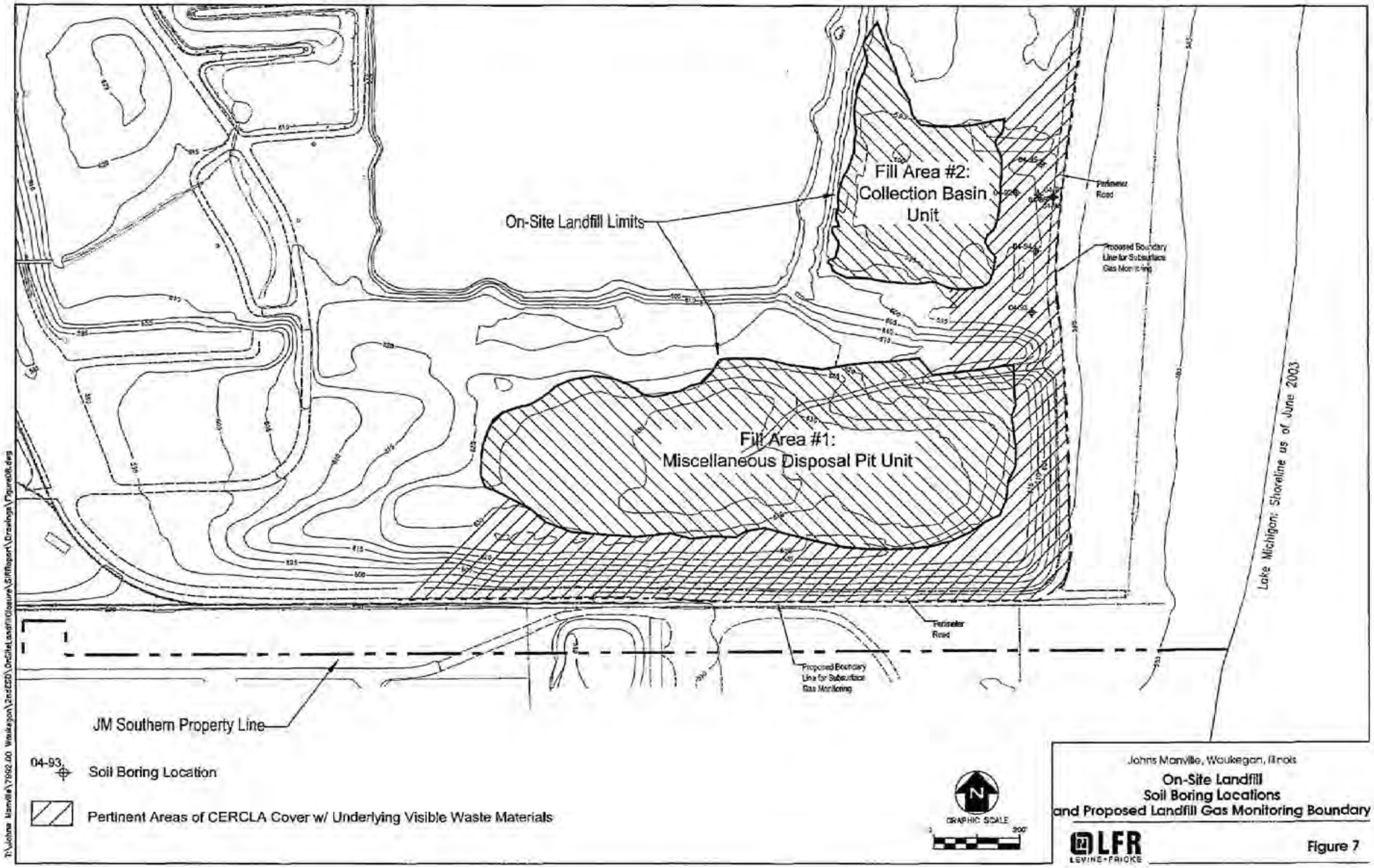
Johns Manville is hereby granted an adjusted standard from 35 Ill. Adm. Code 811.310(c)(1), 811.311(a)(1), 811.318(b)(3) and 811.320(c)(1). Pursuant to this adjusted standard, 35 Ill. Adm. Code 811.310(c)(1), 811.311(a), 811.318(b)(3) and 811.320(c)(1) shall not apply to Johns Manville's on-site landfill located at its facility at 1871 North Pershing Road in Waukegan, Illinois. The granting of this adjusted standard is contingent upon the following conditions:

1. Johns Manville must operate all gas monitoring devices, including the ambient air monitors, such that samples will be collected on a semi-annual basis for a period of five years following approval of this adjusted standard. If, at the end of five years, the requirements for implementing a Landfill Gas Collection System (35 Ill. Adm. Code 811.311) are not met, no further monitoring must be conducted.

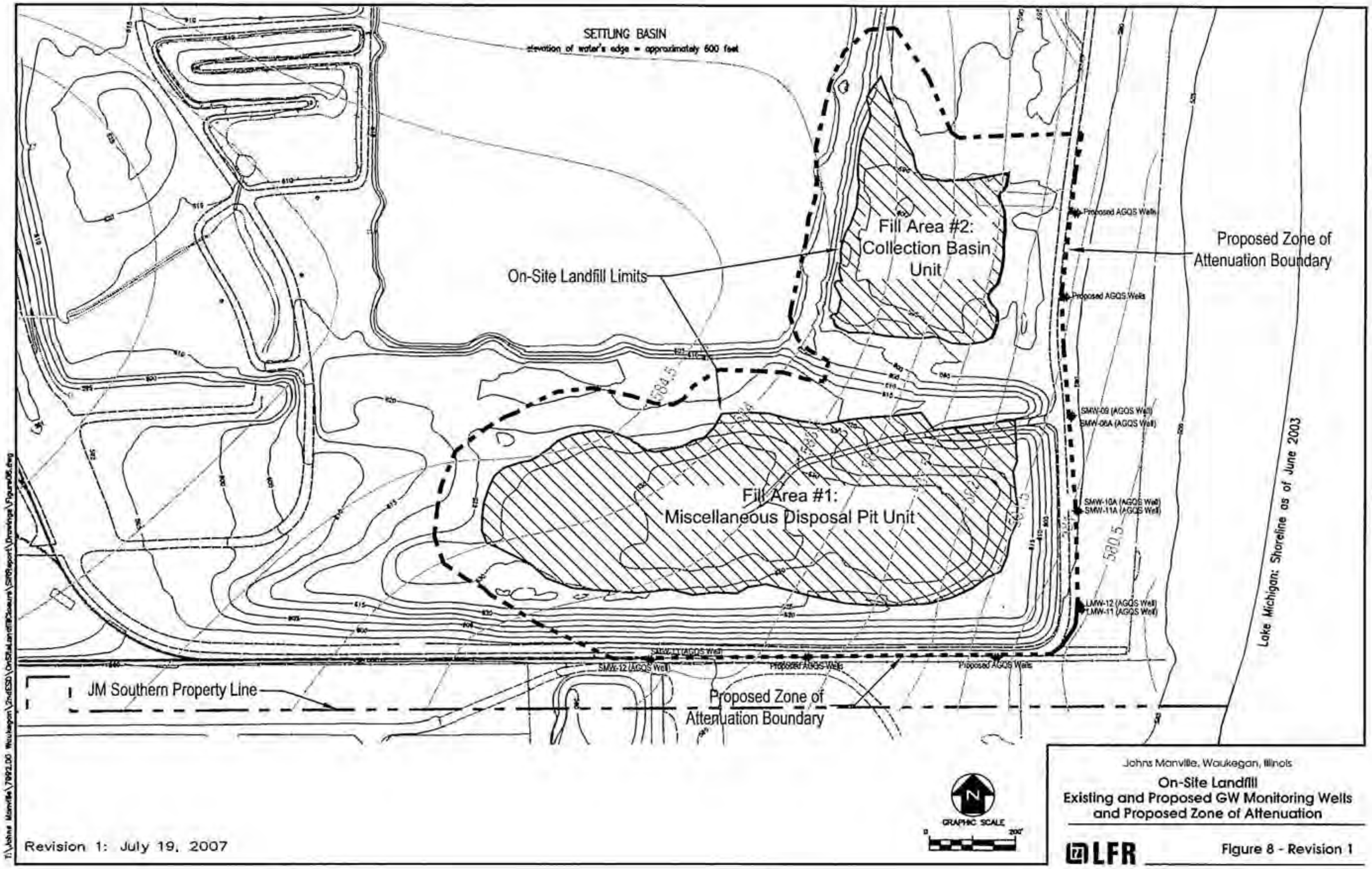
2. Johns Manville must install a gas management system if a methane concentration greater than 50 percent of the lower explosive limit in air, is detected below the ground surface by a monitoring device or is detected by an ambient air monitor located as close as possible to, but outside the boundary line shown on Figure 7 of the amended adjusted standard petition (attached to and made a part of this order) or the property line, whichever is less.

3. Johns Manville must install groundwater monitoring wells at the locations specified on Figure 8 (Rev. 1, July 19, 2007) (attached to and made a part of this order) of the amended adjusted standard petition. Those monitoring wells located along the proposed zone of attenuation boundary (see condition 4) shall be considered "Applicable Groundwater Quality Standard" (AGQS) wells consistent with the requirements of 35 Ill. Adm. Code 811.318(b)(5).

4. The zone of attenuation for Johns Manville's on-site landfill, within which concentrations of constituents in leachate discharged from the unit may exceed the applicable groundwater quality standard set forth at 35 Ill. Adm. Code 811.320, is a volume bounded by a vertical plane located as shown on the amended adjusted standard petition Figure 8 (Rev. 1, July 19, 2007) (attached to and made a part of this order), extending from the ground surface to the bottom of the uppermost aquifer and excluding the volume occupied by the waste.



Fill Area #2:
Collection Basin Unit
On-Site Landfill Limits
Perimeter Road
Proposed Boundary Line for Subsurface Gas Monitoring
Fill Area #1:
Miscellaneous Disposal Pit Unit
Lake Michigan: Shoreline as of June 2003
Perimeter Road
Proposed Boundary Line for Subsurface Gas Monitoring
JM Southern Property Line
04-93
Soil Boring Location
Pertinent Areas of CERCLA Cover w/ Underlying Visible Waste Materials
N
GRAPHIC SCALE
200'
Johns Manville, Waukegan, Illinois
On-Site Landfill
Soil Boring Locations
and Proposed Landfill Gas Monitoring Boundary
LFR
LEVINE·FRICKE
Figure 7


SETTLING BASIN
elevation of water's edge = approximately 600 feet
Fill Area #2:
Collection Basin
Unit
On-Site Landfill Limits
Proposed Zone of
Attenuation Boundary
Proposed AGQS Wells
SMW-09 (AGQS Well)
SMW-06A (AGQS Well)
Fill Area #1:
Miscellaneous Disposal Pit Unit
SMW-10A (AGQS Well)
SMW-11A (AGQS Well)
LMW-12 (AGQS Well)
LMW-11 (AGQS Well)
Lake Michigan: Shoreline as of June 2003
SMW-11 (AGQS Well)
SMW-12 (AGQS Well)
Proposed AGQS Wells
JM Southern Property Line
Proposed Zone of
Attenuation Boundary
N
GRAPHIC SCALE
Revision 1: July 19, 2007
Johns Manville, Waukegan, Illinois
On-Site Landfill
Existing and Proposed GW Monitoring Wells
and Proposed Zone of Attenuation
LFR
Figure 8 - Revision 1

IT IS SO ORDERED.

Section 41(a) of the Environmental Protection Act provides that final Board orders may be appealed directly to the Illinois Appellate Court within 35 days after the Board serves the order. 415 ILCS 5/41(a) (2006); *see also* 35 Ill. Adm. Code 101.300(d)(2), 101.906, 102.706. Illinois Supreme Court Rule 335 establishes filing requirements that apply when the Illinois Appellate Court, by statute, directly reviews administrative orders. 172 Ill. 2d R. 335. The Board's procedural rules provide that motions for the Board to reconsider or modify its final orders may be filed with the Board within 35 days after the order is received. 35 Ill. Adm. Code 101.520; *see also* 35 Ill. Adm. Code 101.902, 102.700, 102.702.

I, John T. Therriault, Assistant Clerk of the Illinois Pollution Control Board, certify that the Board adopted the above opinion and order on December 6, 2007, by a vote of 4-0.

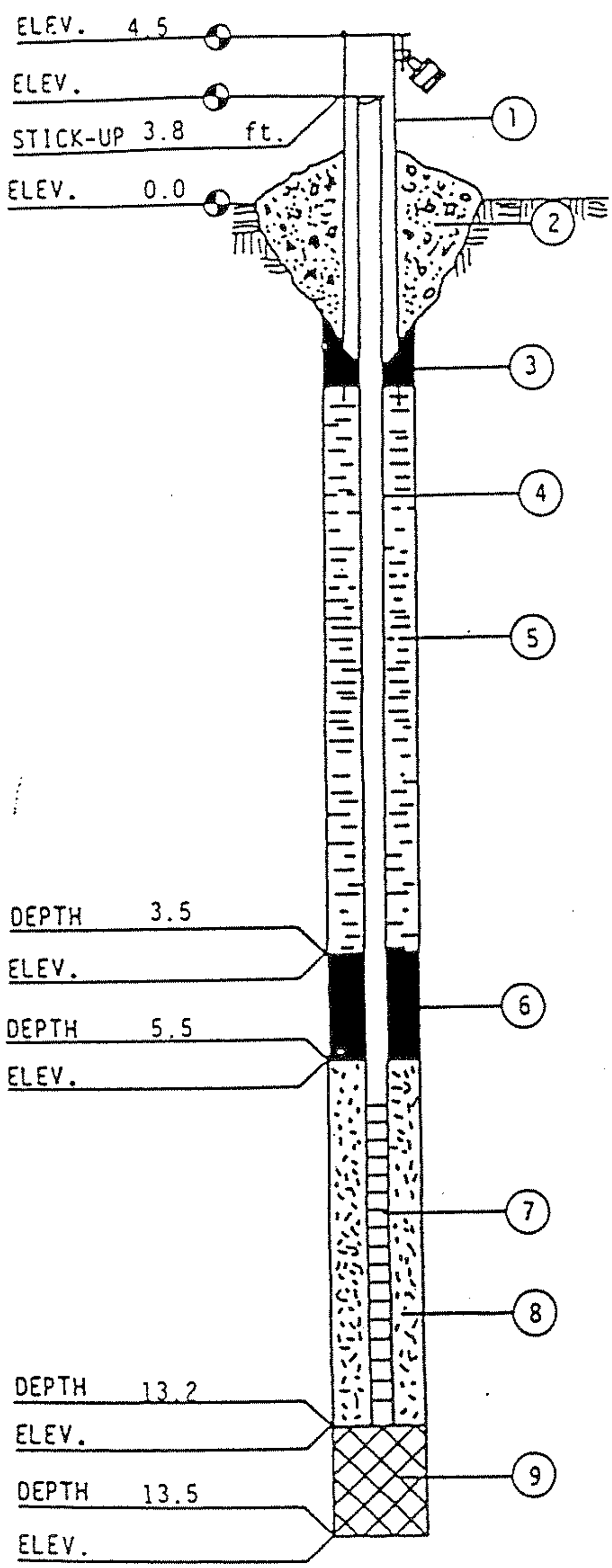
John T. Therriault

John T. Therriault, Assistant Clerk
Illinois Pollution Control Board

Appendix B

Well Logs

SMW-07A



EXPLORATION TECHNOLOGY INC.

MONITORING WELL CONSTRUCTION INFORMATION

JOB NO. 813280

BORING/WELL NO. MW 7A

DATE 11-30-89

CHIEF/UNIT KT/9910

1. PROTECTIVE CASING YES NO

   LOCKING YES NO

2. CONCRETE SEAL YES NO

3. TYPE OF SURFACE SEAL (IF INSTALLED)

   Cement Bentonite Grout

4. SOLID PIPE TYPE 304 Stainless Steel

   SOLID PIPE LENGTH 12.0 ft.

   JOINT TYPE SLIP/GLUED THREADED

5. TYPE OF BACKFILL Cement Bentonite Grout

   HOW INSTALLED - ~~TREMIE~~ FROM SURFACE

6. TYPE OF LOWER SEAL (IF INSTALLED)

   Bentonite Pellets

7. SCREEN TYPE Stainless Steel Channel Pack

   SCREEN LENGTH 5.0

   SLOT-SIZE .010 LENGTH 5.0 ft.

   SCREEN DIAMETER 2.0 in.

8. TYPE OF BACKFILL AROUND SCREEN

   #30 Flint Sand

9. TYPE OF BACKFILL Natural Soils

10. DRILLING METHOD 6 1/4" HSA

11. ADDITIVES USED (IF ANY)

    None

WATER LEVEL ______ DATE ______

*ALL DEPTHS MEASURED FROM GROUND SURFACE.

SMW-07A

CCJM ENVIRONMENTAL ENGINEERS & SCIENTISTS

3310 Eagle Park Drive, N.E., Suite #101
Grand Rapids, Michigan 49505
(616) 940-2007
FAX (616) 940-1603

Job No. 651-011-00001
LOG OF TEST BORING NO. MW 7A
Sheet 1 of 1
Project Marville Remedial Action
Location Waukegan Illinois

Date Completed 11-30-89
Hydrogeologist Joe Mack
Driller & Rig Type ETI - CME 550
Boring Method 6 1/4" Hollow Stem Auger
Hole Plugged with See below

GROUNDWATER:
Encountered @ ~7.5'
After Completion NA
After NA hrs.
Seepage NA
Boring Caved at NA

MONITOR WELL DATA:
Pipe/Type 2" Stainless Steel
Length 1-10' + 1-2' = 12' total
Above Ground 3.8'
Cap Stainless Steel
Screen/Type 2" Stainless, Channel Pack
Size 5.0' x 2" diameter (ID)
Slot 10
Set @ 13.2' to 8.2'
Backfilled 13.2 to 5.5 - Sand Pack
Bentonite Seal 5.5 to 3.5'
Grout/Type Cement / Bentonite
Depth 3.5 to 1.5, cement to 0.5'
Protective Casing yes
Materials Cleaned Steam
Development 30 gallons removed w/ trash pump by ETI - Lake very clean - CCJM - Bailed 5 gallons then pumped 300 gallons
Remarks

LEGEND:
Blow Count/Blows per 6" w/140# hammer = 30" drop
SS = 2" Split Spoon Sampler
LS = Brass Liner Sample
ST = Shelby Tube Sample
SNR = Sample not recovered

Sample Type	AEC	Blow Count	HNu/OVA	Depth in Feet	Soil Description
				0 – 4.5'	Black, fine to medium Sand. Fill Material (?)
				4.5' – 13.2'	Brown fine to Medium Sand
				7.5'	Water
				13.2'	End of Boring

Depth scale: 5, 10, 15, 20, 25, 30

Backfill Materials

1 - bag portland cement

4 - bags filter Sand

2 - buckets (5 gallon) Bentonite Pellets

1 - bag Quick Gel

Permit # 14044

SMW-07A

LOG of TEST BORING

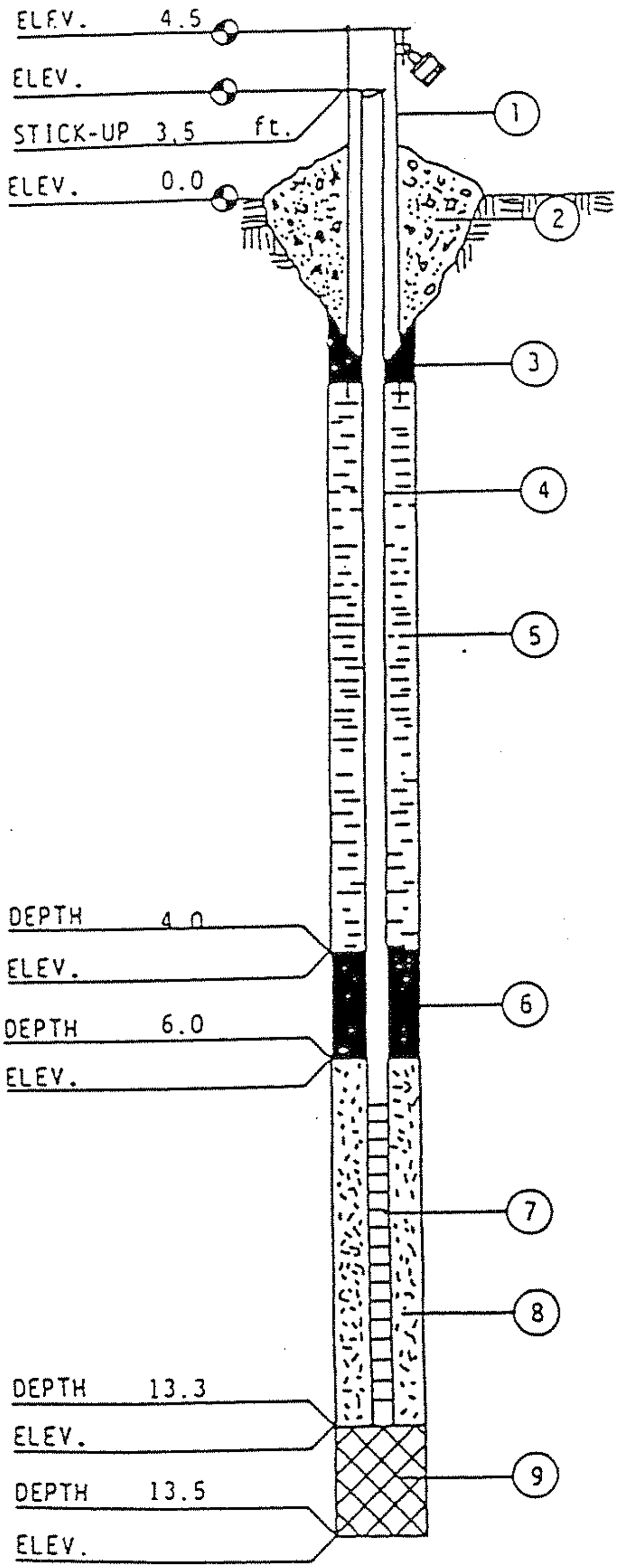
PROJECT NO.	813280	BORING No.	MW 7A
PROJECT NAME	Manville Corporation	BORING LOCATION	As Staked
PROJECT LOCATION	Waukegan, IL	OFFSET	
		ELEVATION	
CLIENT	C.C. Johnson & Malhotra Inc.	DRILL METHOD	Hollow Stem Auger
DRILLER	KT		
		BORING DIA.	10.0"
RIG	550	DATE STARTED	11-30-89
CHECKED BY	TCR	DATE COMPLETED	11-30-89

SMP NO.	MOIS TURE	BPF /N	REC (in.)	DEPTH (ft.)	CLASSIFICATION/DESCRIPTION	HNu TSF	REMARKS
				1	Black fine to coarse Sandy SILT, trace of		
				2	Garbage		
				3			
				4			
				5	Brown fine to coarse SAND, trace of Silt		
				6			
				7			
				8			
				9			
				10			
				11			
				12			
				13			
				14	End of boring 13.5'		
				15			
				16			
				17			
				18			
				19			
				20			
				21			
				22			
				23			
				24			
				25			
				26			
				27			
				28			
				29			
				30			
				31			
				32			
				33			
				34			
				35			

W.L. MEASUREMENTS:		DRILL CASING INSTALLED	4.0'
While drilling		ADDITIVES USED	None
1/4 Hrs. after boring		WELL INSTALLATION DEPTH	13.5'
___Hrs. after boring		ABANDONMENT PROCEDURE	NA
Cave in depth			

EXPLORATION TECHNOLOGY INC.

SmW-08A



EXPLORATION TECHNOLOGY INC.

MONITORING WELL CONSTRUCTION INFORMATION

JOB NO. 813280

BORING/WELL NO. MW 8A

DATE 11-30-89

CHIEF/UNIT KT/9910

1. PROTECTIVE CASING YES NO

   LOCKING YES NO

2. CONCRETE SEAL YES NO

3. TYPE OF SURFACE SEAL (IF INSTALLED)

   Cement Bentonite Grout

4. SOLID PIPE TYPE 304 Stainless Steel

   SOLID PIPE LENGTH 12.0 ft.

   JOINT TYPE SLIP/GLUED THREADED

5. TYPE OF BACKFILL Cement Bentonite Grout

   HOW INSTALLED ~~TREMIE~~ FROM SURFACE

6. TYPE OF LOWER SEAL (IF INSTALLED)

   Bentonite Pellets

7. SCREEN TYPE Stainless Steel Channel Pac

   SCREEN LENGTH 5.0

   SLOT-SIZE .010 LENGTH 5.0 ft.

   SCREEN DIAMETER 2.0 in.

8. TYPE OF BACKFILL AROUND SCREEN

   #30 Flint Sand

9. TYPE OF BACKFILL Natural Soils

10. DRILLING METHOD 6 1/4" HSA

11. ADDITIVES USED (IF ANY)

    None

WATER LEVEL ________ DATE ________

*ALL DEPTHS MEASURED FROM GROUND SURFACE.

SMW-08A

CCJM ENVIRONMENTAL ENGINEERS & SCIENTISTS

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Job No. 651-011-00001
LOG OF TEST BORING NO. MW 8A
Sheet 1 of 1
Project Mauvelle Remedial Action
Location Waukegan Illinois

Date Completed 11-30-89
Hydrogeologist Joe Mark
Driller & Rig Type ETI - CME 550
Boring Method 6 1/4" Hollow Stem Augers
Hole Plugged with See Below

GROUNDWATER:
Encountered @ ≈ 7.0'
After Completion NA
After NA hrs.
Seepage NA
Boring Caved at NA

MONITOR WELL DATA:
Pipe/Type 2" Stainless Steel
Length 1-10' + 1-2' = 12' total
Above Ground 3.5'
Cap Stainless Steel
Screen/Type 2" Stainless Channel Pack
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Slot 10
Set @ 13.3 to 8.3
Backfilled 13.3 to 6.0 - Sand Pack
Bentonite Seal 6.0' to 4.0'
Grout/Type Cement/Bentonite
Depth 4.0' to 2.0', Grout to 0.5'
Protective Casing Yes
Materials Cleaned Steam
Development 30 gallons removed w/ ETI pump by ETI - water very clear
CCJM - Bailed 5 gallons, then pumped 300 gallons.
Remarks

Sample Type	REC	Blow Count	OVA	Depth in Feet	Soil Description
				0 – 3.5	Black, Fine to Medium Sand with trace of debris Fill Material (?)
				3.5 – 13.5	Brown, fine to medium sand with trace of fine gravel
				7.0	Water
				10	Sediments are slightly greyer with more fines
				13.5	End of Boring

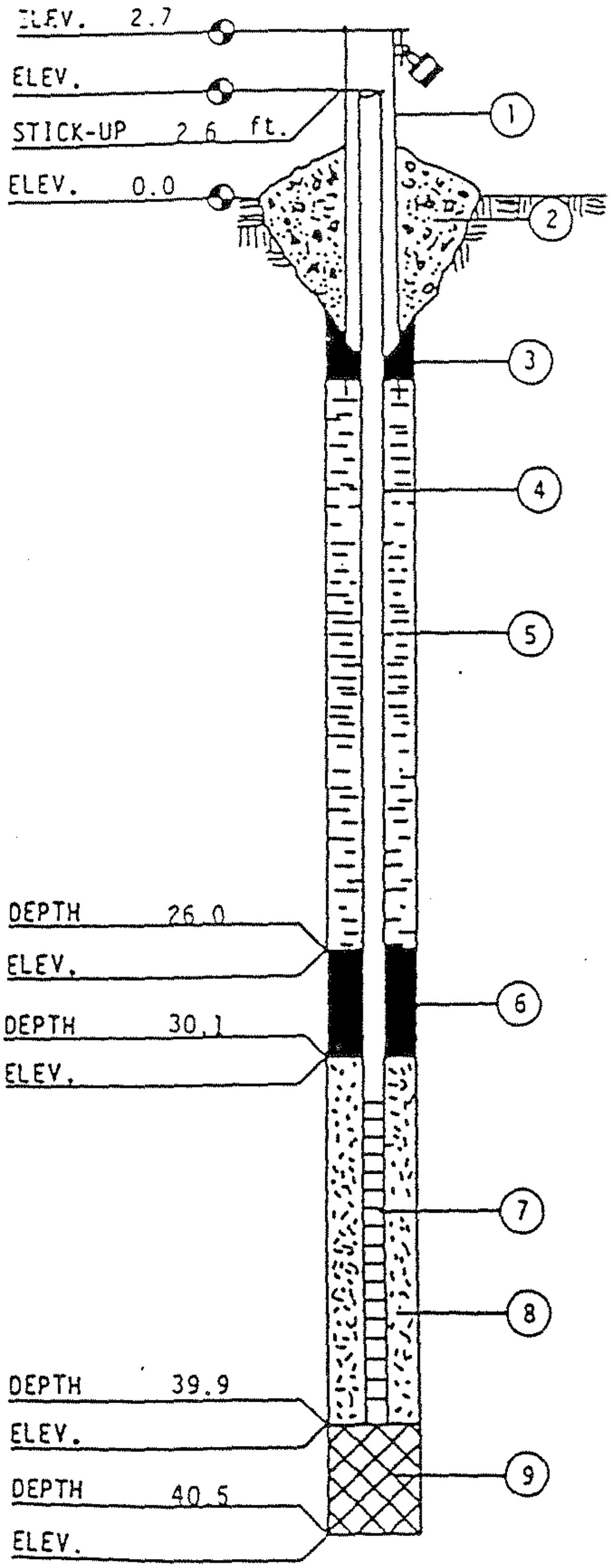
Backfill Materials

1 - bag portland cement
4 - bags sand
2 - buckets (5 gallons) Bentonite Pellets
1 - bag Quick Gel

LEGEND:
Blow Count/Blows per 6" w/140# hammer & 30" drop
SS = 2" Split Spoon Sampler
LS = Brass Liner Sample
ST = Shelby Tube Sample
SNR = Sample not recovered

Permit # 140245

SMW-09



EXPLORATION TECHNOLOGY INC.

MONITORING WELL CONSTRUCTION INFORMATION

JOB NO. 812585

BORING/WELL NO. MW-9

DATE 10-28-88

CHIEF/UNIT KT/9920

1. PROTECTIVE CASING YES NO

   LOCKING YES NO

2. CONCRETE SEAL YES NO

3. TYPE OF SURFACE SEAL (IF INSTALLED)

   Concrete

4. SOLID PIPE TYPE 304 Stainless Steel

   SOLID PIPE LENGTH 37.5 ft.

   JOINT TYPE SLIP/GLUED THREADED

5. TYPE OF BACKFILL Cement Bentonite Slurry

   HOW INSTALLED - TREMIE
   FROM SURFACE

6. TYPE OF LOWER SEAL (IF INSTALLED)

   Bentonite Pellets

7. SCREEN TYPE 304 Stainless Steel

   SCREEN LENGTH 5.0

   SLOT-SIZE .008 LENGTH 4.5 ft.

   SCREEN DIAMETER 2.0 in.

8. TYPE OF BACKFILL AROUND SCREEN

   Natural Soils

9. TYPE OF BACKFILL Natural Soils

10. DRILLING METHOD 4 1/4" HSA

11. ADDITIVES USED (IF ANY)

    None

WATER LEVEL ______ DATE ______

*ALL DEPTHS MEASURED FROM GROUND SURFACE.

JOHNSON & MALHOTRA, P.C.
ENVIRONMENTAL ENGINEERS

SMW-09

LOG OF BORING MW9

SHEET 1 OF 2

PROJECT AND LOCATION: Johns-Manville Disposal Area Waukegan IL		ELEVATION AND DATUM	PROJECT NO: 0651-001-100C
DRILLING AGENCY: Exploration Technology Inc	FOREMAN: Ken Tranter	DATE STARTED: 10/28/88	DATE FINISHED: 10/28/88
DRILLING EQUIPMENT: Dietrich D50		COMPLETION DEPTH: 40.5'	ROCK DEPTH: Not Encountered
SIZE AND TYPE OF BIT	SIZE AND TYPE CORE BARREL	NO SAMPLES: DIST / UNDIST. / CORE	
CASING		WATER LEVEL (FT): FIRST / COMPL. / 24 HR.	
CASING HAMMER / WEIGHT	DROP	BORING ANGLE AND DIRECTION: vertical	
SAMPLER 2' x " split spoon		INSPECTOR: David T Heidlauf	
SAMPLER HAMMER / WEIGHT 140 lbs	DROP 30"		

CASING PENETR. RESIST. (BL/FT)	DESCRIPTION	PIEZ.	DEPTH, FT	SAMPLES: TYPE NUMBER	RECOV. FT	PENETR. RESIST BL/6 IN	R. CORE: RECOVERY %	RQD	READINGS (PPM): SAMPLE	AMB. AIR	REMARKS
	ML; black silty FILL. with chunks of tile		0–4						0	0	
	SW; loose, brown c-m SAND trace gravel, moist		4–8								← water table
	SW; loose, brown c-m SAND trace gravel, wet		8–13						0	0	
	SW; medium dense, brown c-m SAND, some gravel wet		13–16						0	0	
	SW; medium dense, gray c-f SAND, trace f. gravel wet		16–20								

C.C. JOHNSON & MALHOTRA, P.C.

SMW-09

LOG OF BORING MW7

SHEET 2 OF 2

CASING PENETR. RESIST. BL/FT	DESCRIPTION	PIEZ.	DEPTH, FT	SAMPLES TYPE NUMBER	SAMPLES RECOV. FT	SAMPLES PENETR RESIST BL/6IN	R. CORE RECOVERY, %	R. CORE RQD	READINGS (PPM) SAMPLE	READINGS (PPM) AMB. AIR	REMARKS
	SW; medium dense, brownish gray C-F SAND, trace gravel, saturated		21–22						0	0	
	SW; medium dense, brownish gray C-F SAND, trace gravel, saturated		26–27						0	0	
	SW; loose, brownish gray m-vf SAND trace c sand, f. gravel, and silt, saturated		31–33						0	0	
	SP; loose, brownish gray f-vf SAND, some silt, trace c-m sand, saturated		36–38								
	silt/clay Till		39–40						0	0	>' sand heave wash out tricone
	Bottom of Boring 40.5'		41								Evidence tile - drillability - color and grain size of last of wash water - clay on the Auger kelh of lead Auger

PROJECT NO.	812585		BORING No.	MW-9
PROJECT NAME	Johns Manville Plant		BORING LOCATION	As Staked
PROJECT LOCATION	Waukegan, IL		OFFSET	
			ELEVATION	
CLIENT	C.C. Johnson & Malhotra P.C.		DRILL METHOD	4 1/4" Hollow Stem Auger
DRILLER	KT			
			BORING DIA.	8.0"
RIG	9920		DATE STARTED	10-28-88
CHECKED BY	TCR		DATE COMPLETED	10-28-88

SMW-09

SMP NO.	MOISTURE	BPF /N	REC (in.)	DEPTH (ft.)	CLASSIFICATION/DESCRIPTION	QU TSF	REMARKS
				1	Dark brown Silty fine SAND, some Garbage		
				2			
				3			
				4			
				5			
				6	Brown fine SAND, trace of Silt		
				7			
				8			
				9			
				10			
				11			
				12			
				13			
				14			
				15			
				16			
				17			
				18			
				19			
				20			
				21			
				22			
				23			
				24			
				25			
				26			
				27			
				28			
				29			
				30			
				31			
				32			
				33			
				34			
				35	Very fine SAND		

W.L. MEASUREMENTS:		DRILL CASING INSTALLED	None
while drilling	6.0'	ADDITIVES USED	None
1/4 Hrs. after boring		WELL INSTALLATION DEPTH	39.9'
___Hrs. after boring		ABANDONMENT PROCEDURE	NA
Cave in depth			

EXPLORATION TECHNOLOGY INC.

LOG TEST BORING

SMW-09

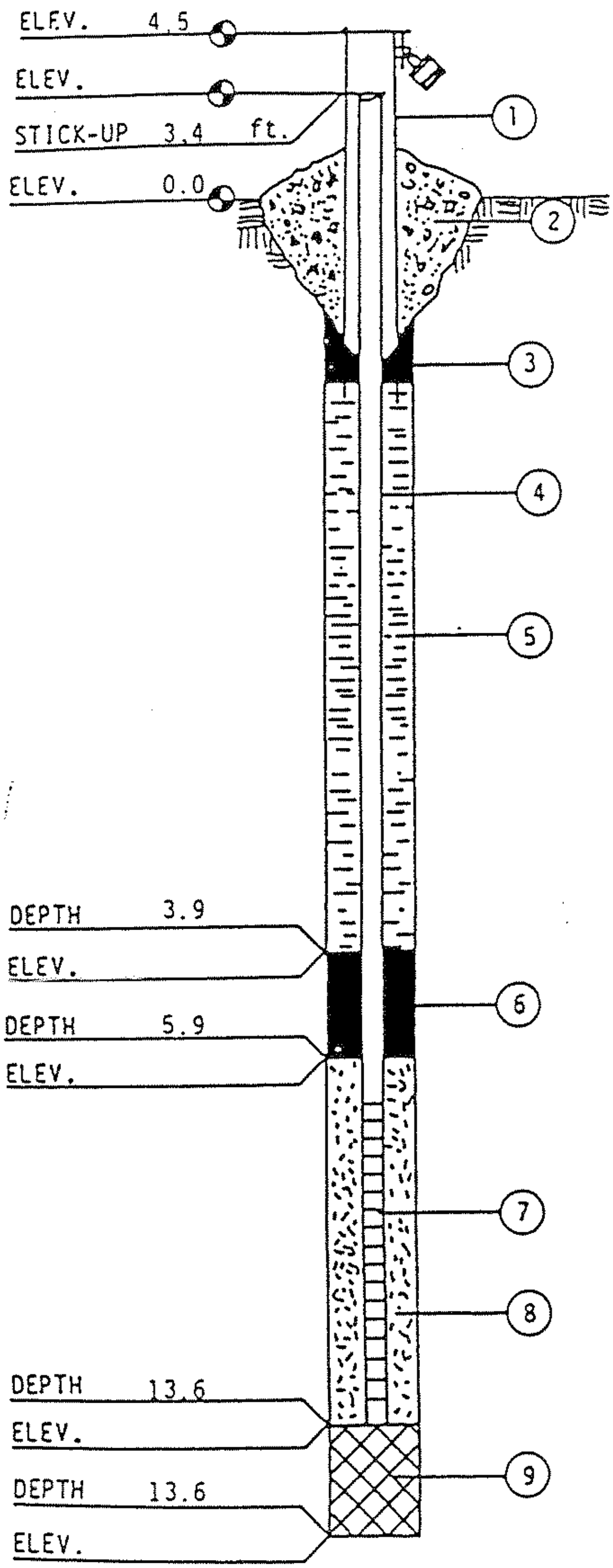
PROJECT NO.	812585	BORING No.	MW-9
PROJECT NAME	Johns Manville Plant	BORING LOCATION	As Staked
PROJECT LOCATION	Waukegan, IL	OFFSET	
		ELEVATION	
CLIENT	C.C. Johnson & Malhotra P.C.	DRILL METHOD	4 1/4" Hollow Stem Auger
DRILLER	KT		
		BORING DIA.	8.0"
RIG	9920	DATE STARTED	10-28-88
CHECKED BY	TCR	DATE COMPLETED	10-28-88

SMP NO.	MOISTURE	BPF /N	REC (in.)	DEPTH (ft.)	CLASSIFICATION/DESCRIPTION	QU TSF	REMARKS
				35			
				36			
				37			
				38			
				39	Hard Gray SILT, trace of fine Gravel		
				40			
				41	End of boring MW-9 @ 40.5'		
				42			
				43			
				44			
				45			
				46			
				47			
				48			
				49			
				50			
				51			
				52			
				53			
				54			
				55			
				56			
				57			
				58			
				59			
				60			
				61			
				62			
				63			
				64			
				65			
				66			
				67			
				68			
				69			

W.L. MEASUREMENTS:		DRILL CASING INSTALLED	None
While drilling	6.0'	ADDITIVES USED	None
1/4 Hrs. after boring		WELL INSTALLATION DEPTH	39.9'
___Hrs. after boring		ABANDONMENT PROCEDURE	NA
Cave in depth			

EXPLORATION TECHNOLOGY INC.

SMW-10A



EXPLORATION TECHNOLOGY INC.

MONITORING WELL CONSTRUCTION INFORMATION

JOB NO. 813280

BORING/WELL NO. MW 10A

DATE 11-30-89

CHIEF/UNIT KT 9910

1. PROTECTIVE CASING YES NO

   LOCKING YES NO

2. CONCRETE SEAL YES NO

3. TYPE OF SURFACE SEAL (IF INSTALLED)

   Cement Bentonite Slurry

4. SOLID PIPE TYPE 304 Stainless Steel

   SOLID PIPE LENGTH 12.0 ft.

   JOINT TYPE SLIP/GLUED THREADED

5. TYPE OF BACKFILL Cement Bentonite Grout

   HOW INSTALLED - ~~TREMIE~~ FROM SURFACE

6. TYPE OF LOWER SEAL (IF INSTALLED)

   Bentonite Pellets

7. SCREEN TYPE Stainless Steel Channel Pack

   SCREEN LENGTH 5.0

   SLOT-SIZE .010 LENGTH 5.0 ft.

   SCREEN DIAMETER 2.0 in.

8. TYPE OF BACKFILL AROUND SCREEN

   #30 Flint Sand

9. TYPE OF BACKFILL None

10. DRILLING METHOD 6 1/4" HSA

11. ADDITIVES USED (IF ANY)

    None

WATER LEVEL ______ DATE ______

*ALL DEPTHS MEASURED FROM GROUND SURFACE.

SMW-10A

CCJM ENVIRONMENTAL ENGINEERS & SCIENTISTS

3310 Eagle Park Drive, N.E., Suite #101
Grand Rapids, Michigan 49505
(616) 940-2007
FAX (616) 940-1603

Job No. 651-011-00001
LOG OF TEST BORING NO. MW 10A
Sheet 1 of 1
Project Maxville Remedial Action
Location Waukegan, Illinois

Date Completed 11-30-89
Hydrogeologist Joe Mark
Driller & Rig Type ETI - CME 550
Boring Method 6 1/4" Hollow Stem Augers
Hole Plugged with See Below

GROUNDWATER:
Encountered @ ~ 7.0'
After Completion NA
After NA hrs.
Seepage NA
Boring Caved at NA

MONITOR WELL DATA:
Pipe/Type 2" Stainless Steel
Length 1-10' + 1-2' = 12' total
Above Ground 3.4'
Cap Stainless Steel
Screen/Type 2" Stainless Channel Pack
Size 5.0' x 2" diameter (ID)
Slot 10
Set @ 13.6 to 8.6
Backfilled 13.6 to 5.9 - Sand Pack
Bentonite Seal 5.9' to 3.9'
Grout/Type Cement/Bentonite
Depth 3.9 to 2.0 Concrete to 0.5'
Protective Casing Yes
Materials Cleaned Steam
Development 30 gallons removed w/ BK pump by ETI - Water very Clear CCJM - Bailed 3 gallons, pumped 240 gallons
Remarks Had to move rig 3 times and restart boring due to presence of debris at ~ 3.0'

LEGEND:
Blow Count/Blows per 6" w/140# hammer + 30" drop
SS - 2" Split Spoon Sample
LS - Brass Liner Sample
ST - Shelby Tube Sample
SNR - Sample not recovered

Permit # 140246

Sample Type	REC	Blow Count	HNU/OVA	Depth in Feet	Soil Description
				0	Greyish, fine to medium Sand - Trace of fine gravel
				5	
				7.0	Water
				10	
				13.6	End of Boring
				15	
				20	Backfill Materials
					2 - bags portland Cement
					4 - bags Sand
				25	2 - Buckets (5 gallon) Bentonite Pellets
					1 - bag Quick Gel
				30	

LOG of TEST BORING

SMW-10A

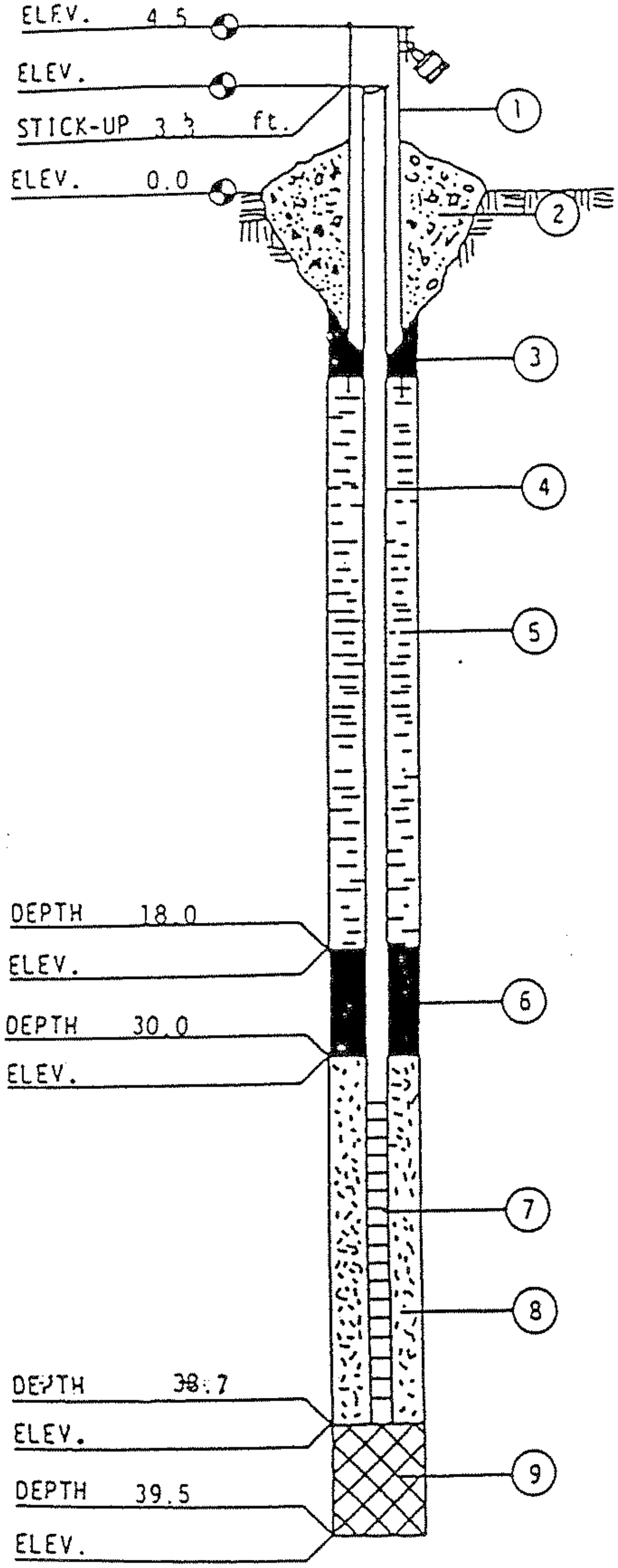
PROJECT NO.	813280	BORING No.	MW 10-A
PROJECT NAME	Manville Corporation	BORING LOCATION	As Staked
PROJECT LOCATION	Waukegan, IL	OFFSET	
		ELEVATION	
CLIENT	C.C. Johnson & Malhotra Inc.	DRILL METHOD	Hollow Stem Auger
DRILLER	KT		
		BORING DIA.	10.0"
RIG	550	DATE STARTED	11-30-89
CHECKED BY	TCR	DATE COMPLETED	11-30-89

SMP NO.	MOIS TURE	BPF /N	REC (in.)	DEPTH (ft.)	CLASSIFICATION/DESCRIPTION	HNu TSF	REMARKS
				1	Black fine to coarse Sandy SILT, trace of		
				2	Garbage		
				3			
				4			
				5	Brown fine to coarse SAND, trace of Silt		
				6			
				7			
				8			
				9			
				10			
				11			
				12			
				13			
				14	End of boring 13.5'		
				15			
				16			
				17			
				18			
				19			
				20			
				21			
				22			
				23			
				24			
				25			
				26			
				27			
				28			
				29			
				30			
				31			
				32			
				33			
				34			
				35			

W.L. MEASUREMENTS:		DRILL CASING INSTALLED	4.0'
While drilling	6.0'	ADDITIVES USED	None
1/4 Hrs. after boring		WELL INSTALLATION DEPTH	13.5'
___Hrs. after boring		ABANDONMENT PROCEDURE	NA
Cave in depth			

EXPLORATION TECHNOLOGY INC.

SMW-11A



MONITORING WELL CONSTRUCTION INFORMATION

JOB NO. 813210

BORING/WELL NO. MW 11A

DATE 11-29-89

CHIEF/UNIT KT/9910

1. PROTECTIVE CASING YES NO

   LOCKING YES NO

2. CONCRETE SEAL YES NO

3. TYPE OF SURFACE SEAL (IF INSTALLED)

   Cement Bentonite Slurry

4. SOLID PIPE TYPE 304 Stainless Steel

   SOLID PIPE LENGTH 37.0 ft.

   JOINT TYPE SLIP/GLUED THREADED

5. TYPE OF BACKFILL Cement Bentonite Grout

   HOW INSTALLED - TREMIE
   FROM SURFACE

6. TYPE OF LOWER SEAL (IF INSTALLED)

   Bentonite Slurry

7. SCREEN TYPE Stainless Steel Channel Pack

   SCREEN LENGTH 5.0

   SLOT-SIZE .010 LENGTH 5.0 ft.

   SCREEN DIAMETER 2.0 in.

8. TYPE OF BACKFILL AROUND SCREEN

   #30 Flint Sand

9. TYPE OF BACKFILL Natural Soils

10. DRILLING METHOD 6 1/4" HSA

11. ADDITIVES USED (IF ANY)

    Clear Water

WATER LEVEL ______ DATE ______

*ALL DEPTHS MEASURED FROM GROUND SURFACE.

EXPLORATION TECHNOLOGY INC.

SMW-11A

CCJM ENVIRONMENTAL ENGINEERS & SCIENTISTS

3310 Eagle Park Drive, N.E., Suite #101
Grand Rapids, Michigan 49505
(616) 940-2007
FAX (616) 940-1603

Job No. 651-011-00001
LOG OF TEST BORING NO. MW 11A
Sheet 1 of 2
Project Marville Remedial Action
Location Waukegan, Illinois

Date Completed 11-30-89
Hydrogeologist Joe Mack
Driller & Rig Type ETI - CME 550
Boring Method 6 1/4" Hollow Stem Augers
Hole Plugged with See Below

GROUNDWATER:
Encountered @ ~ 6.5'
After Completion NA
After NA hrs.
Seepage NA
Boring Caved at NA

MONITOR WELL DATA:
Pipe/Type 2" Stainless Steel
Length 3-10' + 1-5' + 1-2' = 37' LW
Above Ground 3.3
Cap Stainless steel
Screen/Type Stainless 2" Channel Pack
Size 5.0' x 2" diameter (ID)
Slot 10
Set @ 38.7 to 33.7
Backfilled 38.7 to 30.0 sandpack
Bentonite Seal 30.0' to 18.0'
Grout/Type Cement/Bentonite
Depth 18.0' to 2.0 Concrete to 0.5'
Protective Casing Yes
Materials Cleaned Steam
Development 45 gallons removed w/ BK pump by ETI - water very clear

Remarks

LEGEND:
Blow Count/Blows per 6" w/140# hammer & 30" drop
SS - 2" Split Spoon Sampler
LS - Brass Liner Sample
ST - Shelby Tube Sample
SNR - Sample not recovered

Sample Type	REC	Blow Count	OVA	Depth in Feet	Soil Description
					Grey, fine to medium sand with trace of black flecks
				5	
				6.5'	Water
				10	
				15	
				20	
				23'	Grey, fine to medium sand with a trace of silt.
				25	
				30	

Permit # 140247

SMW-11A

LOG of TEST BORING

PROJECT NO.	813280	BORING No.	MW 11-A
PROJECT NAME	Manville Corporation	BORING LOCATION	As Staked
PROJECT LOCATION	Waukegan, IL	OFFSET	
		ELEVATION	
CLIENT	C.C. Johnson & Malhotra Inc.	DRILL METHOD	Hollow Stem Auger
DRILLER	KT		
		BORING DIA.	10.0"
RIG	550	DATE STARTED	11-28-89
CHECKED BY	TCR	DATE COMPLETED	11-28-89

SMP NO.	MOISTURE	BPF /N	REC (in.)	DEPTH (ft.)	CLASSIFICATION/DESCRIPTION	HNu TSF	REMARKS
				1	Brown fine to medium SAND, trace of Silt,		
				2	little Garbage		
				3			
				4	Brown fine to coarse SAND, trace of little		
				5	Silt		
				6			
				7			
				8			
				9			
				10			
				11			
				12			
				13			
				14			
				15			
				16			
				17			
				18			
				19			
				20			
				21			
				22			
				23	Very fine SAND		
				24			
				25			
				26			
				27			
				28			
				29			
				30			
				31			
				32			
				33			
				34			
				35			

W.L. MEASUREMENTS:		DRILL CASING INSTALLED	4.0'
While drilling	6.0'	ADDITIVES USED	None
1/4 Hrs. after boring	5.7'	WELL INSTALLATION DEPTH	39.5'
____Hrs. after boring		ABANDONMENT PROCEDURE	NA
Cave in depth			

EXPLORATION TECHNOLOGY INC.

SMW-11A

LOG of TEST BORING

PROJECT NO.	813280	BORING No.	MW 11-A
PROJECT NAME	Manville Corporation	BORING LOCATION	As Staked
PROJECT LOCATION	Waukegan, IL	OFFSET	
		ELEVATION	
CLIENT	C.C. Johnson & Malhotra Inc.	DRILL METHOD	Hollow Stem Auger
DRILLER	KT		
		BORING DIA.	10.0"
RIG	550	DATE STARTED	11-28-89
CHECKED BY	TCR	DATE COMPLETED	11-28-89

SMP NO.	MOIS TURE	BPF /N	REC (in.)	DEPTH (ft.)	CLASSIFICATION/DESCRIPTION	QU TSF	REMARKS
				36			
				37			
				38			
				39			
				40	End of boring MW-11A @ 39.5'		
				41			
				42			
				43			
				44			
				45			
				46			
				47			
				48			
				49			
				50			
				51			
				52			
				53			
				54			
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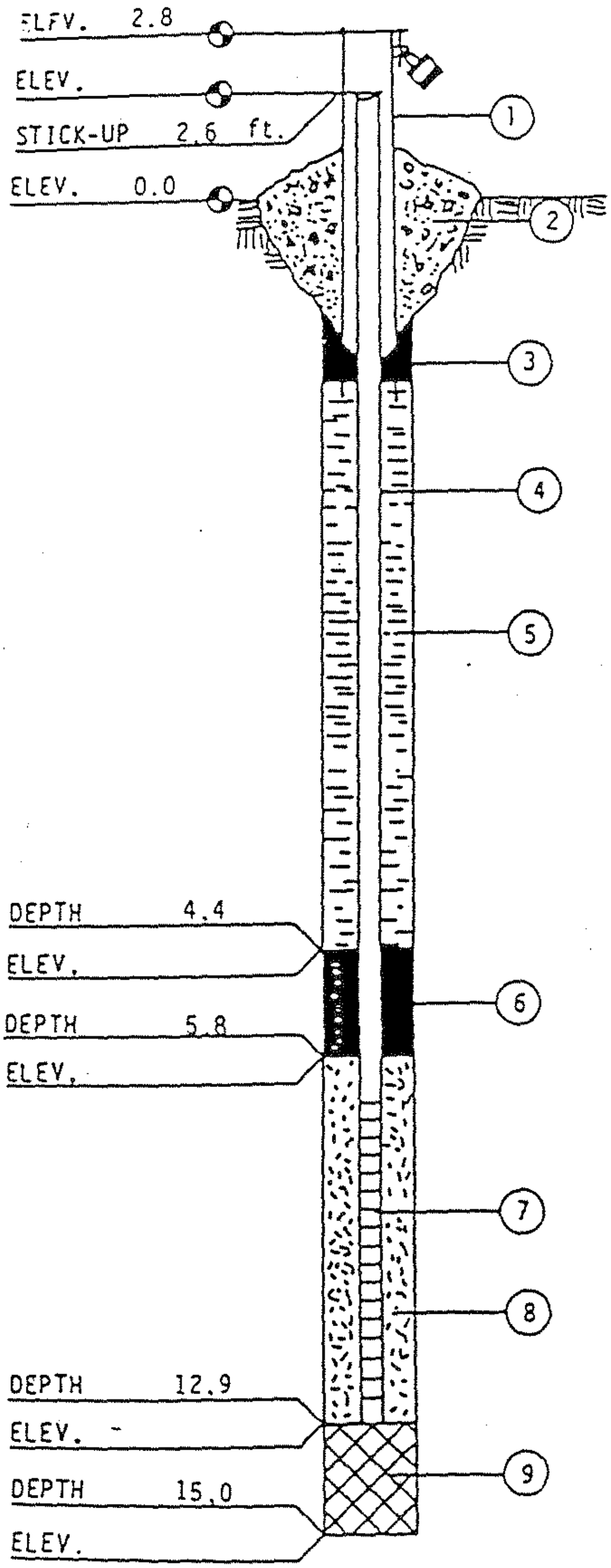
				58			
				59			
				60			
				61			
				62			
				63			
				64			
				65			
				66			
				67			
				68			
				69			
				70			

W.L. MEASUREMENTS:		DRILL CASING INSTALLED	4.0'
While drilling	6.0'	ADDITIVES USED	None
1/4 Hrs. after boring	5.7'	WELL INSTALLATION DEPTH	39.5'
____Hrs. after boring		ABANDONMENT PROCEDURE	NA
Cave in depth			

EXPLORATION TECHNOLOGY INC.

SMW-12



EXPLORATION TECHNOLOGY INC.

MONITORING WELL CONSTRUCTION INFORMATION

JOB NO. 812585

BORING/WELL NO. MW-12

DATE 10-29-88

CHIEF/UNIT KT/9920

1. PROTECTIVE CASING YES NO

   LOCKING YES NO

2. CONCRETE SEAL YES NO

3. TYPE OF SURFACE SEAL (IF INSTALLED) Concrete

4. SOLID PIPE TYPE 304 Stainless Steel

   SOLID PIPE LENGTH 10.5 ft.

   JOINT TYPE SLIP/GLUED THREADED

5. TYPE OF BACKFILL Cement Bentonite Slurry

   HOW INSTALLED - TREMIE FROM SURFACE

6. TYPE OF LOWER SEAL (IF INSTALLED) Bentonite Pellets

7. SCREEN TYPE 304 Stainless Steel

   SCREEN LENGTH 5.0

   SLOT-SIZE .008 LENGTH 4.5 ft.

   SCREEN DIAMETER 2.0 in.

8. TYPE OF BACKFILL AROUND SCREEN Natural Soils

9. TYPE OF BACKFILL Natural Soils

10. DRILLING METHOD 4 1/4" HSA

11. ADDITIVES USED (IF ANY) None

WATER LEVEL ______ DATE ______

*ALL DEPTHS MEASURED FROM GROUND SURFACE.

JOHNSON & MALHOTRA, P.C.
ENVIRONMENTAL ENGINEERS

SMW-12

LOG OF BORING mw 12

PROJECT AND LOCATION: Johns-Manville Disposal Area, Waukegan IL		ELEVATION AND DATUM:	PROJECT NO: 0651-0001-1000
DRILLING AGENCY: Exploration Technologies INC	FOREMAN: Kim Tunter	DATE STARTED: 10/29/88	DATE FINISHED: 10/29/88
DRILLING EQUIPMENT: Diedrich D-50		COMPLETION DEPTH: 15.0'	ROCK DEPTH: Not Encountered
SIZE AND TYPE OF BIT:	SIZE AND TYPE CORE BARREL:	NO. SAMPLES DIST:	UNDIST: CORE:
CASING:		WATER LEVEL (FT) FIRST:	COMPL: 24 HR:
CASING HAMMER: WEIGHT:	DROP:	BORING ANGLE AND DIRECTION: vertical	
SAMPLER: 2' x " split spoon		INSPECTOR: David T Heidlauf	
SAMPLER HAMMER: WEIGHT: 140 lbs	DROP: 30"		

CASING PENETR. RESIST. BL/FT	DESCRIPTION	PIEZ.	DEPTH, FT	SAMPLES TYPE NUMBER	RECOV. FT	PENETR. RESIST BL/6 IN.	R CORE RECOVERY %	RQD	READINGS (PPM) SAMPLE	AMB. AIR	REMARKS
	SM; medium dense, black silty SAND, some gravel (FILL)		0–3								
	SP; loose, light gray brown m-f SAND, trace gravel, moist		4–5								
			6								← water table
	SP; loose, dull gray brown m-f SAND, trace gravel, wet		7–8								
	SP; loose, gray, m-f SAND trace f gravel, saturated		12–13						0	0	
	Bottom of Boring		15								

smw-12

LOG of TEST BORING

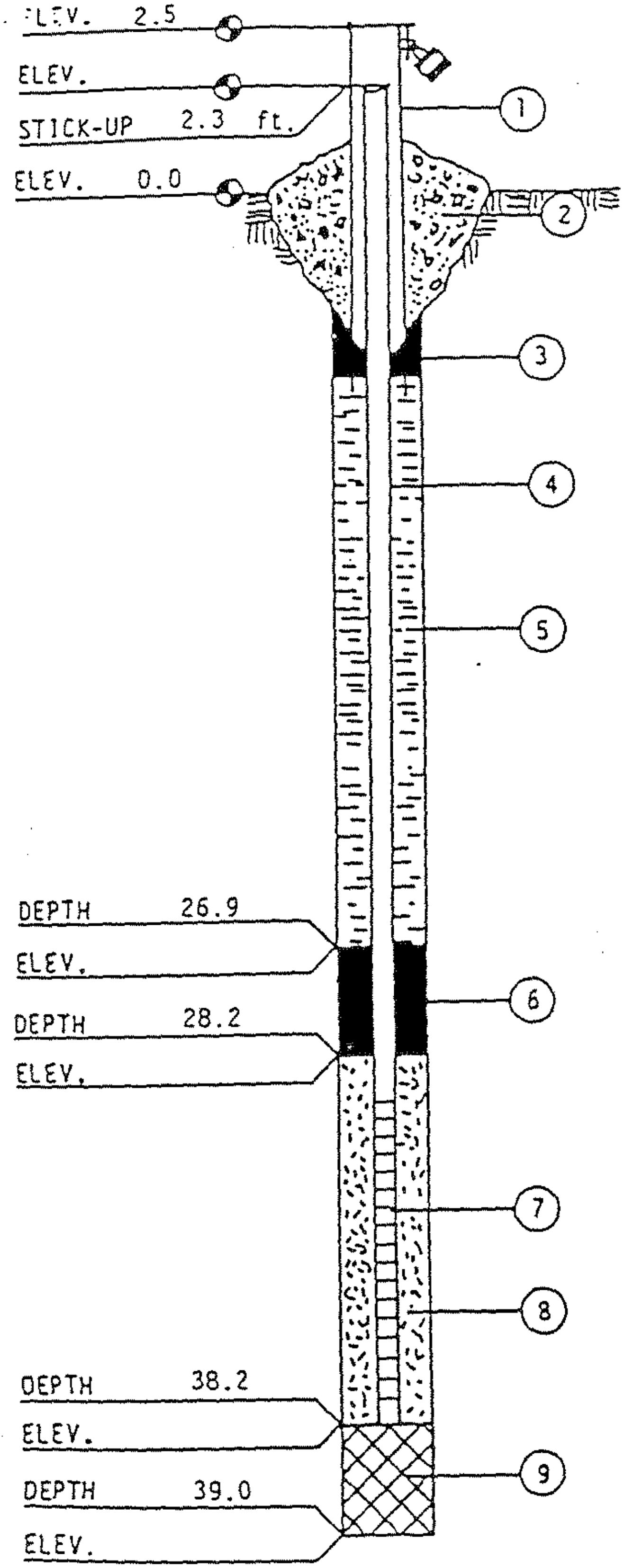
PROJECT NO.	812585	BORING No.	MW-12
PROJECT NAME	Johns Manville Plant	BORING LOCATION	As Staked
PROJECT LOCATION	Waukegan, IL	OFFSET	
		ELEVATION	
CLIENT	C.C. Johnson & Malhotra P.C.	DRILL METHOD	4 1/4" Hollow Stem Auger
DRILLER	KT		
		BORING DIA.	8.0"
RIG	9920	DATE STARTED	10-27-88
CHECKED BY	TCR	DATE COMPLETED	10-27-88

SMP NO.	MOISTURE	BPF /N	REC (in.)	DEPTH (ft.)	CLASSIFICATION/DESCRIPTION	QU TSF	REMARKS
				1	Black Silty SAND, little fine Gravel		
				2			
				3			
				4	Brown fine SAND, little Silt		
				5			
				6			
				7			
				8			
				9			
				10	Trace of Gravel		
				11			
				12			
				13			
				14			
				15			
				16	End of boring MW-12 @ 15.0'		
				17			
				18			
				19			
				20			
				21			
				22			
				23			
				24			
				25			
				26			
				27			
				28			
				29			
				30			
				31			
				32			
				33			
				34			
				35			

W.L. MEASUREMENTS:		DRILL CASING INSTALLED	None
While drilling	6.5'	ADDITIVES USED	None
1/4 Hrs. after boring	5.8'	WELL INSTALLATION DEPTH	13.2'
___Hrs. after boring		ABANDONMENT PROCEDURE	NA
Cave in depth			

EXPLORATION TECHNOLOGY INC.

SMW-13



EXPLORATION TECHNOLOGY INC.

MONITORING WELL CONSTRUCTION INFORMATION

JOB NO. 812585

BORING/WELL NO. MW-13

DATE 10-29-88

CHIEF/UNIT KT/9920

1. PROTECTIVE CASING YES NO

   LOCKING YES NO

2. CONCRETE SEAL YES NO

3. TYPE OF SURFACE SEAL (IF INSTALLED)

   Concrete

4. SOLID PIPE TYPE 304 Stainless Steel

   SOLID PIPE LENGTH 35.5 ft.

   JOINT TYPE SLIP/GLUED THREADED

5. TYPE OF BACKFILL Cement Bentonite Slurry

   HOW INSTALLED - TREMIE
   FROM SURFACE

6. TYPE OF LOWER SEAL (IF INSTALLED)

   Bentonite Pellets

7. SCREEN TYPE 304 Stainless Steel

   SCREEN LENGTH 5.0

   SLOT-SIZE .008 LENGTH 4.5 ft.

   SCREEN DIAMETER 2.0 in.

8. TYPE OF BACKFILL AROUND SCREEN

   Natural Soils

9. TYPE OF BACKFILL Natural Soils

10. DRILLING METHOD 4 1/4" HSA

11. ADDITIVES USED (IF ANY)

    None

WATER LEVEL ________ DATE ________

*ALL DEPTHS MEASURED FROM GROUND SURFACE.

SMW-13

JOHNSON & MALHOTRA, P.C.
ENVIRONMENTAL ENGINEERS

LOG OF BORING MW 13

SHEET 1 OF 2

PROJECT AND LOCATION: Johns-Manville Disposal Area, Waukegan IL	ELEVATION AND DATUM	PROJECT NO: 0651-0001-1000
DRILLING AGENCY: Exploration Technology Inc / FOREMAN: Kev Tanker	DATE STARTED: 10/29/88	DATE FINISHED: 10/29/88
DRILLING EQUIPMENT: Diedrich D 50	COMPLETION DEPTH: 39' Bgs	ROCK DEPTH: Not Encountered
SIZE AND TYPE OF BIT / SIZE AND TYPE CORE BARREL	NO. SAMPLES DIST	UNDIST. / CORE
CASING	WATER LEVEL (FT) FIRST	COMPL. / 24 HR.
CASING HAMMER / WEIGHT / DROP	BORING ANGLE AND DIRECTION: vertical	
SAMPLER: 2' x " split spoon	INSPECTOR: David T Heidlauf	
SAMPLER HAMMER / WEIGHT 140 lbs / DROP 30"		

CASING PENETR. RESIST. BL/FT	DESCRIPTION	PIEZ.	DEPTH, FT	SAMPLES TYPE NUMBER	RECOV. FT	PENETR. RESIST BL/6 IN	R. CORE RECOVERY %	RQD	READINGS (PPM) SAMPLE	AMB. AIR	REMARKS
	SM, medium dense, black silty SAND, some gravel (Fill)		1–2								
			3						0	0	
	- - - - - - - -		5								
	SP, loose, gray m-f SAND, trace gravel, wet		7–8								
	SP, loose, gray m-f SAND trace gravel, saturated		12–13								
	SW, medium dense, brown gray c-m-f SAND, trace gravel wet		17–18								
			19								

LOG OF BORING MW13

CASING PENETR. RESIST. BL/FT	DESCRIPTION	PIEZ.	DEPTH, FT	SAMPLES			CORE		READINGS (PPM)		REMARKS
				TYPE NUMBER	RECOV. FT	PENETR. RESIST BL/6IN	RECOVERY %	RQD	SAMPLE	AMB. AIR	
			21								
	SW; medium dense, brown gray, C-M-F SAND, trace gravel, wet		22								
			23								
			24								
			25								
			26								
	″		27								
			28								
			29								
			30								
			31								
	SW; medium dense, brown gray C-M-F SAND, trace gravel + silt saturated		32								
			33								
			34								
			35								
	SP, loose, gray, M-F SAND some silt, saturated		36								8' heave up
			37								washed with tricone
	silt/clay Till		38								
	Bottom of Boring 37' bgs		39								Evidence of Till
			40								- drillability
			41								- tricone wash
			42								- clay on end of
			43								lead Auger
			44								
			45								

LOG TEST BORING

SMW-13

PROJECT NO. 812585
PROJECT NAME Johns Manville Plant
PROJECT LOCATION Waukegan, IL

CLIENT C.C. Johnson & Malhotra P.C.
DRILLER KT

RIG 9920
CHECKED BY TCR

BORING No. MW-13
BORING LOCATION As Staked
OFFSET
ELEVATION
DRILL METHOD 4 1/4" Hollow Stem Auger

BORING DIA. 8.0"
DATE STARTED 10-29-88
DATE COMPLETED 10-29-88

SMP NO.	MOIS TURE	BPF /N	REC (in.)	DEPTH (ft.)	CLASSIFICATION/DESCRIPTION	QU TSF	REMARKS
				1	Black Silty SAND, some fine Gravel		
				2			
				3			
				4			
				5	Black Silty SAND		
				6			
				7			
				8			
				9			
				10			
				11	Brown fine SAND, trace of Silt		
				12			
				13			
				14			
				15			
				16			
				17			
				18			
				19			
				20			
				21			
				22			
				23			
				24			
				25			
				26			
				27			
				28			
				29			
				30			
				31			
				32			
				33			
				34			
				35			

W.L. MEASUREMENTS:
While drilling 6.5' <-- ADDITIVES USED None
1/4 Hrs. after boring 5.8'
___Hrs. after boring
Cave in depth

DRILL CASING INSTALLED None
ADDITIVES USED None
WELL INSTALLATION DEPTH 38.2'
ABANDONMENT PROCEDURE NA

EXPLORATION TECHNOLOGY INC.

SMW-13

LOG of TEST BORING

PROJECT NO.	812585	BORING No.	MW-13
PROJECT NAME	Johns Manville Plant	BORING LOCATION	As Staked
PROJECT LOCATION	Waukegan, IL	OFFSET	
		ELEVATION	
CLIENT	C.C. Johnson & Malhotra P.C.	DRILL METHOD	4 1/4" Hollow Stem Auger
DRILLER	KT		
		BORING DIA.	8.0"
RIG	9920	DATE STARTED	10-29-88
CHECKED BY	TCR	DATE COMPLETED	10-29-88

SMP NO.	MOIS TURE	BPF /N	REC (in.)	DEPTH (ft.)	CLASSIFICATION/DESCRIPTION	QU TSF	REMARKS
				35			
				36			
				37			
				38	Dense gray SILT, trace of Gravel, little Clay		
				39			
				40	End of boring MW-13 @ 39.0'		
				41			
				42			
				43			
				44			
				45			
				46			
				47			
				48			
				49			
				50			
				51			
				52			
				53			
				54			
				55			
				56			
				57			
				58			
				59			
				60			
				61			
				62			
				63			
				64			
				65			
				66			
				67			
				68			
				69			

W.L. MEASUREMENTS:		DRILL CASING INSTALLED	None
While drilling	6.5'	ADDITIVES USED	None
1/4 Hrs. after boring	5.8'	WELL INSTALLATION DEPTH	38.2'
___Hrs. after boring		ABANDONMENT PROCEDURE	NA
Cave in depth			

EXPLORATION TECHNOLOGY INC.

UMW-14

CCJM

Environmental Engineers & Scientists

3310 Eagle Park Dr., NE, Suite 101
Grand Rapids, MI 49505
(616) 940-2007 FAX (616) 940-1603

Job No. 651-051-00001

LOG OF TEST BORING NO. 14

Sheet 1 of 1
Project Manville UST
Location Waukegan, Illinois

Date Completed 10-30-91
Hydrogeologist Randy Mattzela
Driller & Rig Type Fox-D-25
Boring Method 3.75" HSA

GROUNDWATER
Encountered @ 6'
After Completion NA
After NA Hours
Seepage NA
Boring Caved at: NA

REMARKS
The natural cuttings were used to backfill the boring around the screen and above the hole plug.
The remaining cuttings were drummed on site.

MONITORING WELL DATA
Monitor well data presented on Well Construction Diagram

LEGEND:
Blow Count/Blows per 6"
w/140# hammer x 30" drop
SS – 2" Split Spoon Sampler
LS – Brass Liner Sample
ST – Shelby Tube Sample
SNR – Sample Not Recovered

Sample Type	REC	Blow Count	HNU/OVM	Depth in Feet	Soil Description
					Asphalt
			0		Brown gravel sub base
					Light brown fine to medium sand
			0		
			0		
			0		
				5	
			0		
				6	
			0		
					? ? ? ?
					Light gray to black motted fine to medium grained sand
			0		
			0		
				9.5	End of Boring
				10	

UMW-14

CCJM

Environmental Engineers & Scientists

3310 Eagle Park Dr., NE, Suite 101
Grand Rapids, MI 49505
(616) 940-2007 FAX (616) 940-1603

Well Construction Diagram

Job No. 651-051-00001

WELL NUMBER 14

Project Manville UST
Location Waukegan, Illinois

Date Completed 10-30-91
Hydrogeologist Randy Mattzela
Driller & Rig Type Fox-D-25
Boring Method 3.75" HSA

GROUNDWATER:
Encountered @ 6'
After Completion NA
After NA Hours
Seepage NA
Boring Caved at: NA

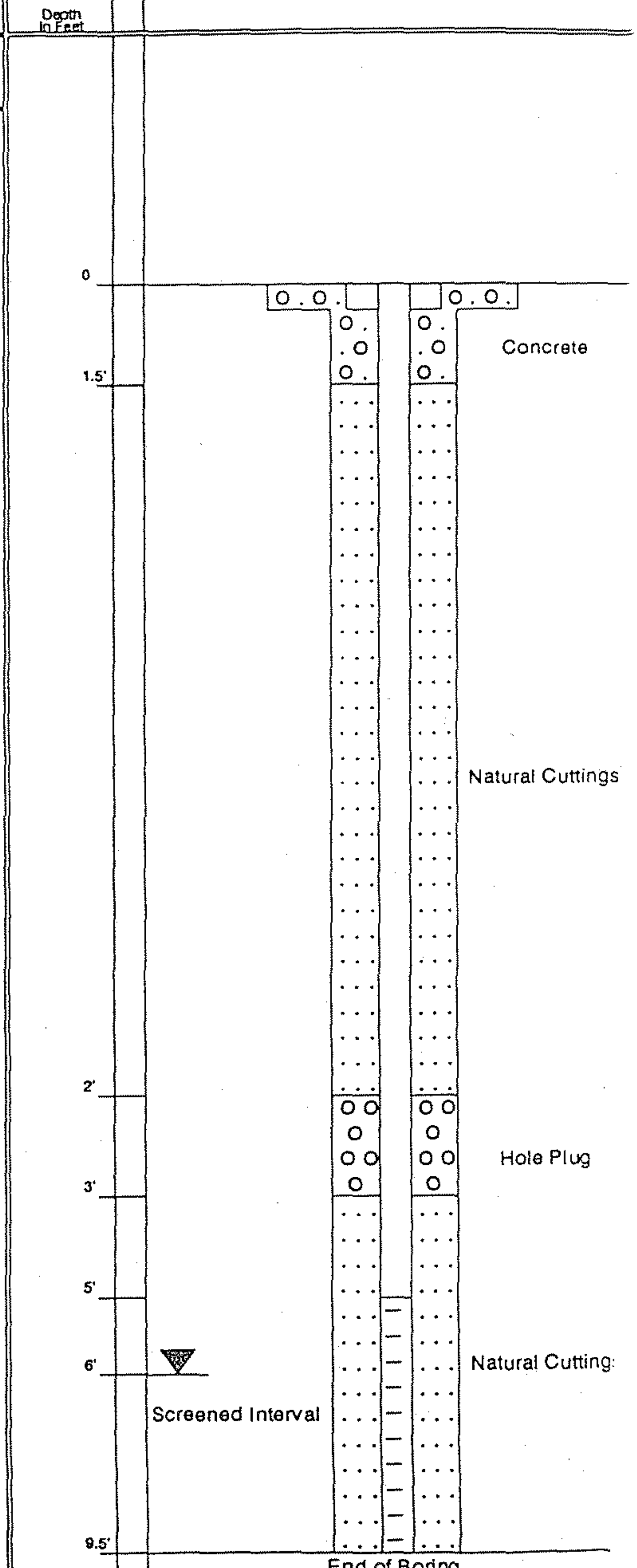
MONITOR WELL DATA
Pipe/Type 2" Galvanized riser
Length 3' 11"
Above Ground 0
Cap Plug

Screen/Type Stainless steel
Size 5'
Slot 10
Set @ 5' to 9.5'
Backfilled Natural Collapse 3' to 9.5'
and 1.5' to 2'
Bentonite Seal Hole plug 2' to 3'
Grout/Type None used

Protective Casing 6" Flushmount Manhole
Materials Cleaned Steamed

Development 7 gallons were bailed from the well during development.

Remarks This well is located in the southwest part of the southwest parking lot. Below the gravel base a light brown sand was encountered and below that a light gray sand was encountered. No organic odor or oily sheen were observed while developing the well.



Log of Borehole: UMW-28

LFR LEVINE·FRICKE	Client: Johns Manville	Project: Groundwater Well		Project No: 009-07992
	Project Location: Waukegan, IL	Total Depth: 27'	Ground Elev.: 590.49'	Date Start: 4/23/03
Surface Conditions: Asphalt				Date End: 4/23/03
Drilling Contractor: Mid-America		Driller: D. McCoy	Geologist/Engineer: W. Teskey	

SAMPLE DATA / SUBSURFACE PROFILE

Sample Number	Sample Type	Recovery (%)	N Value	Analytical Sample	Depth (ft)	Soil Description	Remarks
					0	Ground Surface	Boring advanced using 4.25" ID hollow stem augers. Sampled using 3" diameter by 5' long CME spoons or 2" by 2' long split spoons.
						Asphalt Black; dry; hard	
						Gravel with Fibrous Material Tan and light brown; dry; loose; 30% fibrous material	
					1	***Sand (SP)*** Brown; dry; loose; 5% fine gravel	
1	CME	10	NA	NA	2–4		
					4–5	Grading wet	
2	CME	25	NA	NA	5–8		
					8.5	***Peat*** Black; slightly moist; moderately dense; spongy; 5% roots	
					9	***Sand (SP)*** Dark gray to black; wet; medium grained	
					10	Grading brown with 5% fine gravel	
					11		

Log of Borehole: UMW-28

LFR LEVINE•FRICKE	**Client:** Johns Manville	**Project:** Groundwater Well		**Project No:** 009-07992
	Project Location: Waukegan, IL	**Total Depth:** 27'	**Ground Elev.:** 590.49'	**Date Start:** 4/23/03
Surface Conditions: Asphalt				**Date End:** 4/23/03
Drilling Contractor: Mid-America		**Driller:** D. McCoy	**Geologist/Engineer:** W. Teskey	

Sample Number	Sample Type	Recovery (%)	N Value	Analytical Sample	Monitoring Well	Depth (ft)	Symbol	Soil Description	Remarks
								Grading brown with 5% fine gravel	
						12			
3	CME	30	NA	NA		13			
						14			
									Heaving sand encountered.
						15			
						16			
						17			
4	CME	25	NA	NA					
						18			
								Grading grayish-brown with 5-10% fine gravel	
						19			
						20			
						21		Gray grades in	
						22			

Log of Borehole: UMW-28

LFR LEVINE•FRICKE	Client: Johns Manville	Project: Groundwater Well		Project No: 009-07992
	Project Location: Waukegan, IL	Total Depth: 27'	Ground Elev.: 590.49'	Date Start: 4/23/03
Surface Conditions: Asphalt				Date End: 4/23/03
Drilling Contractor: Mid-America		Driller: D. McCoy	Geologist/Engineer: W. Teskey	

SAMPLE DATA / SUBSURFACE PROFILE

Sample Number	Sample Type	Recovery (%)	N Value	Analytical Sample	Monitoring Well	Depth (ft)	Symbol	Soil Description	Remarks
								Gray grades in	
5	CME	50	NA	NA		23, 24			Monitoring well constructed with stainless steel riser and screen on 4/23/03. Screen (0.010" slot) from 21.5' to 26.5'. Silica sand (#5) from 19.5' to 26.5'. Bentonite grout from 2' to 19.5'. Hydrated bentonite chips: 1' to 2'. Concrete pad 0' to 1'. Above ground steel protective casing w/ locking cap. Water level at 5.3' 1 hour after construction.
6	SS	80	NA	NA		25, 26		***Gravel (GP)*** Tan to gray; wet; moderately dense; very angular coarse gravel	
						27		***Silt (ML)*** Gray; dry; moderately stiff	
								End of Borehole	
						28, 29, 30, 31, 32, 33			

Log of Borehole: LGW-01

LFR LEVINE·FRICKE	Client: Johns Manville	Project: Landfill Gas Well		Project No: 009-07992
	Project Location: Waukegan, IL	Total Depth: 42'	Ground Elev.: 631.26'	Date Start: 4/15/03
Surface Conditions: Clay and weeds				Date End: 4/15/03
Drilling Contractor: CS Drilling		Driller: M. Jatali	Geologist/Engineer: W. Teskey	

SAMPLE DATA / SUBSURFACE PROFILE

Sample Number	Sample Type	Recovery (%)	N Value	Analytical Sample
1	Tube	100	NA	NA
2	Tube	60	NA	NA
3	Tube	100	NA	NA

Depth (ft) | Symbol | Soil Description | Remarks

0 Ground Surface

Lean Clay (CL)
Brown; slightly moist; soft; 5% roots

Remarks: Boring advanced using 4.25" ID hollow stem augers. Sampled using 4' long tubes or 2" by 2' long split spoons.

Grading dry; stiff; 10% fine gravel grades in

Grading soft

1" piece of fibrous white material

Grading moderately stiff

Roofing Material
Black; dry; hard; shingle-like

Lean Clay (CL)
Brown; dry; soft; 10% black tar

Lean Clay (CL)
Gray; very moist; spoon is wet; soft

Roofing Material
Black; very moist; hard; shingles

Depth scale: 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12

Log of Borehole: LGW-01

LFR LEVINE·FRICKE

Client: Johns Manville	**Project:** Landfill Gas Well		**Project No:** 009-07992
Project Location: Waukegan, IL	**Total Depth:** 42'	**Ground Elev.:** 631.26'	**Date Start:** 4/15/03
Surface Conditions: Clay and weeds			**Date End:** 4/15/03
Drilling Contractor: CS Drilling	**Driller:** M. Jatali	**Geologist/Engineer:** W. Teskey	

SAMPLE DATA / SUBSURFACE PROFILE

Sample Number	Sample Type	Recovery (%)	N Value	Analytical Sample	Depth (ft)	Soil Description	Remarks
4	Tube	50	NA	NA	12–16	***Roofing Material*** Black; very moist; hard; shingles ***Lean Clay (CL)*** Grayish brown; slightly moist; 20% fine gravel; moderately dense ***Sand (SP)*** Grayish brown; dry; moderately dense; 90% coarse sand; 10% fine gravel ***Lean Clay with Gravel (CL)*** Brownish gray; dry; moderately dense; 20% fine gravel; 5-10% sand ***Roofing Material*** Black; dry; hard; shingles	Poor recovery in 12' to 16' interval: sleeve was stuck.
5	SS	60	NA	NA	16–18	***Calcium Silicate*** Bright blue; dry; moderately stiff ***Lean Clay (CL)*** Dark brown; dry; stiff; 10% fine gravel	
6	SS	100	NA	NA	18–20		
7	SS	100	NA	NA	20–22	***Calcium Silicate*** Bright blue; dry; moderately stiff 1/2" layer roofing shingles on 1" layer sand with gravel @ 21'	
8	SS	100	NA	NA	22–24	***Lean Clay (CL)*** Brown; dry; stiff; 5% fine gravel ***Calcium Silicate*** Bright blue; dry; moderately stiff; fibrous	

Log of Borehole: LGW-01

LFR LEVINE•FRICKE

Client: Johns Manville	**Project:** Landfill Gas Well		**Project No:** 009-07992
Project Location: Waukegan, IL	**Total Depth:** 42'	**Ground Elev.:** 631.26'	**Date Start:** 4/15/03
Surface Conditions: Clay and weeds			**Date End:** 4/15/03
Drilling Contractor: CS Drilling	**Driler:** M. Jatali	**Geologist/Engineer:** W. Teskey	

Sample Number	Sample Type	Recovery (%)	N Value	Analytical Sample	Monitoring Well	Depth (ft)	Symbol	Soil Description	Remarks
								Calcium Silicate Bright blue; dry; moderately stiff; fibrous	
9	SS	100	NA	NA		25		***Sand with Gravel (SP)*** Gray and black; dry; very loose; 25% fine black gravel; trace green roofing granules	
10	SS	100	NA	NA		26		***Calcium Silicate*** Bright blue; dry; moderately stiff	
								Lean Clay (CL) Dark brown; very stiff; 10% fine gravel	
						27		***Calcium Silicate*** Bright blue; dry; moderately stiff	
11	SS	100	NA	NA		28, 29			
12	SS	100	NA	NA		30, 31		5% gray grades in @ 30.5'; then grades out	
13	SS	100	NA	NA		32, 33		***Sand (SP)*** Very dark gray; dry; loose; 5% roots	Monitoring well constructed with PVC riser and screen on 4/15/03. Screen (0.020" slot) from 11' to 36'. Silica sand (#5) from 10' to 36'. Hydrated bentonite pellets: 8' to 10'. Hydrated bentonite chips: 1.5' to 8'. Concrete pad 0' to 1.5'. Above ground steel protective casing w/ locking cap. No water in well 2 hours after construction.
								Calcium Silicate Bright blue; dry; moderately stiff	
14	SS	100	NA	NA		34, 35, 36		20% gray grades in with 5% very dark gray sand	

Log of Borehole: LGW-01

LFR LEVINE·FRICKE	Client: Johns Manville	Project: Landfill Gas Well		Project No: 009-07992
	Project Location: Waukegan, IL	Total Depth: 42'	Ground Elev.: 631.26'	Date Start: 4/15/03
Surface Conditions: Clay and weeds				Date End: 4/15/03
Drilling Contractor: CS Drilling		Driller: M. Jatali	Geologist/Engineer: W. Teskey	

Sample Number	Sample Type	Recovery (%)	N Value	Analytical Sample	Monitoring Well	Depth (ft)	Symbol	Soil Description	Remarks
15	SS	100	NA	NA		37			
								Roofing Slate Gray; wet; moderately dense; 80% fine gravel; 20% sand; trace green; grading black	
						38		**Sludge** Black; very moist; moderately dense	Estimated May 1990 sand level.
16	SS	100	NA	NA		39		**Sand (SP)** Very dark gray; very moist; moderately dense	
								Lean Clay with Gravel (CL) Brown; dry; stiff; 15% fine gravel; 15% blue calcium silicate. 1" layer of roofing and plastic at top of interval.	
						40		Blue calcium silicate grades out; 15% gray fibrous material grades in	
17	SS	100	NA	NA		41		**Roofing Material** Black; dry; no granules; 10% tar 1" layer clay (CL); dark brown; dry; soft	
						42		**Sand (SP)** Light gray; dry; loose; medium grained	
								End of Borehole	
						43			
						44			
						45			
						46			
						47			
						48			

Log of Borehole: LMW-02

LFR LEVINE•FRICKE	Client: Johns Manville	Project: Landfill Leachate Well		Project No: 009-07992
	Project Location: Waukegan, IL	Total Depth: 46'	Ground Elev.: 631.10'	Date Start: 4/15/03
Surface Conditions: Clay and weeds				Date End: 4/16/03
Drilling Contractor: CS Drilling		Driller: M. Jatali	Geologist/Engineer: W. Teskey	

SAMPLE DATA / SUBSURFACE PROFILE

Sample Number	Sample Type	Recovery (%)	N Value	Analytical Sample	Depth (ft)	Soil Description	Remarks
					0	Ground Surface	Boring advanced using 4.25" ID hollow stem augers. Sampled using 4' long tubes or 2" by 2' long split spoons.
						Lean Clay (CL) Brown; slightly moist; soft; 5% roots	
					1	Grading dry; stiff; increase to 10% fine gravel	
1	Tube	95	NA	NA	2		
					3		
					4		
					5	Dark gray grades in	
2	Tube	90	NA	NA	6	Very moist to wet; soft; gravel grades out	
					7	***Roofing Material*** Black; dry; hard; shingle-like	
					8	wet	
3	SS	90	NA	NA	9	1/2" piece of sheet metal at 9 ft.	
					10		
4	SS	95	NA	NA	11		
						Lean Clay (CL) Grayish-brown; slightly moist; soft; 10% fine gravel; 15% black sludge (non-petroleum)	
					12		

Log of Borehole: LMW-02

LFR LEVINE·FRICKE	Client: Johns Manville	Project: Landfill Leachate Well		Project No: 009-07992
	Project Location: Waukegan, IL	Total Depth: 46'	Ground Elev.: 631.10'	Date Start: 4/15/03
Surface Conditions: Clay and weeds				Date End: 4/16/03
Drilling Contractor: CS Drilling		Driller: M. Jatali	Geologist/Engineer: W. Teskey	

SAMPLE DATA						SUBSURFACE PROFILE			
Sample Number	Sample Type	Recovery (%)	N Value	Analytical Sample	Monitoring Well	Depth (ft)	Symbol	Soil Description	Remarks
								Lean Clay (CL) Grayish-brown; slightly moist; soft; 10% fine gravel; 15% black sludge (non-petroleum)	
5	SS	100	NA	NA		13		***Roofing Material*** Black; dry; hard; shingles; with black granular surfaces	
						14			
6	SS	100	NA	NA		15		***Lean Clay (CL)*** Brown; dry; very stiff; 10% fine gravel; 1% glass fragments	
						16			
7	SS	100	NA	NA		17			
						18		***Roofing Material*** Black; dry; hard; shingles with granular surfaces	
								Lean Clay (CL) Brown; slightly moist; soft; 10% fine gravel	
8	SS	80	NA	NA		19		***Roofing Material*** Black; dry; hard; shingles with granular surfaces	
						20			
9	SS	70	NA	NA		21		***Lean Clay (CL)*** Brown; dry; stiff; 10% fine gravel	
								Sand with Gravel (SP) Gray and black; dry; very loose; 25% fine black gravel; trace green roofing granules	
						22		***Calcium Silicate*** Bright blue; dry; moderately stiff	
10	SS	90	NA	NA		23		***Lean Clay (CL)*** Brown; slighty moist; soft; 5% fine gravel; 5-10% black fibrous material	
						24		***Calcium Silicate*** Bright blue; dry; moderately stiff; fibrous	

Log of Borehole: LMW-02

LFR LEVINE•FRICKE	Client: Johns Manville	Project: Landfill Leachate Well		Project No: 009-07992
	Project Location: Waukegan, IL	Total Depth: 46'	Ground Elev.: 631.10'	Date Start: 4/15/03
Surface Conditions: Clay and weeds				Date End: 4/16/03
Drilling Contractor: CS Drilling		Driller: M. Jatali	Geologist/Engineer: W. Teskey	

SAMPLE DATA

Sample Number	Sample Type	Recovery (%)	N Value	Analytical Sample
11	SS	90	NA	NA
12	SS	100	NA	NA
13	SS	80	NA	NA
14	SS	5	NA	NA
15	SS	<5	NA	NA
16	SS	100	NA	NA

SUBSURFACE PROFILE

Depth (ft): 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36

Soil Description

Calcium Silicate
Bright blue; dry; moderately stiff; fibrous

Lean Clay (CL)
Brown; dry; stiff

25% blue calcium silicate grades in

1" layer white material; soft; dry; fiberglass

Grading very stiff

Calcium Silicate
Bright blue; dry; moderately stiff

Lean Clay (CL)
Dark brown; dry; stiff

Roofing Material
Black; dry; hard; plastic layer at bottom

Black fibrous material; dry; moderately stiff with wood fragment at top

Sand (SP)
Gray; dry; loose; fine sand; 25% dark gray

Calcium Silicate
Bright blue: dry; moderately stiff

20% gray grades in

Gray grades out

Roofing Slate
Black and white; dry; very loose; fine to medium grained

Remarks

Poor recovery in 30' to 32' and 32' to 34' intervals.

Log of Borehole: LMW-02

LFR LEVINE•FRICKE	Client: Johns Manville	Project: Landfill Leachate Well		Project No: 009-07992
	Project Location: Waukegan, IL	Total Depth: 46'	Ground Elev.: 631.10'	Date Start: 4/15/03
Surface Conditions: Clay and weeds				Date End: 4/16/03
Drilling Contractor: CS Drilling		Driller: M. Jatali	Geologist/Engineer: W. Teskey	

SAMPLE DATA						SUBSURFACE PROFILE			
Sample Number	Sample Type	Recovery (%)	N Value	Analytical Sample	Monitoring Well	Depth (ft)	Symbol	Soil Description	Remarks
								Roofing Slate Black and white; dry; very loose; fine to medium grained	
								Roofing Granules Dark gray; moist; loose; very coarse grained	
17	SS	100	NA	NA		37			
						38		***Sand (SP)*** Dark gray; very moist to wet; moderately loose; medium grained	Estimated May 1990 level.
18	SS	60	NA	NA		39		***Lean Clay (CL)*** Dark gray and brown; slightly moist; dense; 15% gravel; 20% fibrous material; blue and black; 5% shingles	
						40		1" layer roofing shingles and tar; wet	
19	SS	95	NA	NA		41			Monitoring well constructed with stainless steel riser and screen on 4/16/03. Screen (0.010" slot) from 38' to 43'. Silica sand (#5) from 36' to 43'. Hydrated bentonite pellets: 34' to 36'. Hydrated bentonite chips: 1.5' to 34'. Concrete pad 0' to 1.5'. Above ground steel protective casing w/ locking cap. Water level at 41.4' 2 hours after construction.
						42		***Sand (SP)*** Brown; dry; loose; medium grained 1 piece of wood 4" layer saturated sand	
20	SS	60	NA	NA		43		***Sludge*** Gray; moist; moderately stiff; 5% white	
						44			
21	SS	100	NA	NA		45			
						46		End of Borehole	
						47			
						48			

Log of Borehole: LMW-03

LFR LEVINE•FRICKE	Client: Johns Manville	Project: Landfill Leachate Well		Project No: 009-07992
	Project Location: Waukegan, IL	Total Depth: 44'	Ground Elev.: 632.31'	Date Start: 4/16/03
Surface Conditions: Clay and weeds				Date End: 4/16/03
Drilling Contractor: CS Drilling		Driler: M. Jatali	Geologist/Engineer: W. Teskey	

SAMPLE DATA						SUBSURFACE PROFILE			
Sample Number	Sample Type	Recovery (%)	N Value	Analytical Sample	Monitoring Well	Depth (ft)	Symbol	Soil Description	Remarks
						0		Ground Surface	Boring advanced using 4.25" ID hollow stem augers. Sampled using 4' long tubes or 2" by 2' long split spoons.
								Lean Clay (CL) Brown; slightly moist; soft; 10% coarse gravel	
						1			
								Coarse gravel grades out; 10% fine gravel grades in; stiff	
1	Tube	70	NA	NA		2			
						3			
						4			
						5			
								Grayish brown grades in; moderately stiff	
2	Tube	100	NA	NA		6			
						7			
								Grading soft	
						8		**Roofing Material** Black; dry; hard; shingles; 1" layer	
								Lean Clay (CL) As above	
						9			
								Sandy Lean Clay (CL) Grayish brown; wet; soft; 20% sand; 10% fine gravel	
3	Tube	70	NA	NA		10			
						11			
								Roofing shingles; 1" layer	
						12		**Lean Clay (CL)** Grayish brown; dry; stiff-grading soft	

Log of Borehole: LMW-03

LFR LEVINE•FRICKE	**Client:** Johns Manville	**Project:** Landfill Leachate Well	**Project No:** 009-07992
	Project Location: Waukegan, IL	**Total Depth:** 44' / **Ground Elev.:** 632.31'	**Date Start:** 4/16/03
Surface Conditions: Clay and weeds			**Date End:** 4/16/03
Drilling Contractor: CS Drilling		**Driller:** M. Jatali	**Geologist/Engineer:** W. Teskey

Sample Number	Sample Type	Recovery (%)	N Value	Analytical Sample	Depth (ft)	Soil Description	Remarks
4	Tube	100	NA	NA	12–16	***Lean Clay (CL)*** Grayish brown; dry; stiff-grading soft Crushed roofing material; 2" layer 10% fine gravel grades in Crushed roofing material; 1" layer Roofing shingles; 1" layer	
5	SS	40	NA	NA	16–17.2	***Roofing Material*** Black; dry; hard; shingles	
6	SS	35	NA	NA	17.2–21.4	***Calcium Silicate*** Bright blue; dry; moderately dense; fibrous	
7	SS	40	NA	NA	21.4–22.7	***Roofing Granules*** Black and gray; dry; loose; trace red and green; medium grained	
8	SS	90	NA	NA	22.7–24	***Lean Clay with Gravel (CL)*** Gray and brown; dry; very stiff; 20% fine gravel; 2% roofing shingles; 2% black fibrous material	

Depth scale: 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24

Log of Borehole: LMW-03

LFR LEVINE•FRICKE	Client: Johns Manville	Project: Landfill Leachate Well		Project No: 009-07992
	Project Location: Waukegan, IL	Total Depth: 44'	Ground Elev.: 632.31'	Date Start: 4/16/03
Surface Conditions: Clay and weeds				Date End: 4/16/03
Drilling Contractor: CS Drilling		Driller: M. Jatali	Geologist/Engineer: W. Teskey	

SAMPLE DATA / SUBSURFACE PROFILE

Sample Number	Sample Type	Recovery (%)	N Value	Analytical Sample	Monitoring Well	Depth (ft)	Symbol	Soil Description	Remarks
								Lean Clay with Gravel (CL) Gray and brown; dry; very stiff; 20% fine gravel; 2% roofing shingles; 2% black fibrous material	
9	SS	90	NA	NA		25		***Roofing Material*** Black; dry; hard; shingles	
								Calcium Silicate Blue and gray; dry; fibrous; 10% crushed black asphalt	
						26		***Lean Clay (CL)*** Brown; dry; stiff; 10-15% fine gravel	
								Calcium Silicate Bright blue; dry; moderately stiff; 1" layer brown sand; dry; loose; at bottom of interval	
10	SS	85	NA	NA		27		***Roofing Material*** Black; dry; hard	
								Calcium Silicate Bright blue; dry; moderately stiff	
						28		Sand layer: brown; dry; loose; 2" layer at 27.3'	
11	SS	95	NA	NA		29			
						30		***Sand (SP)*** Gray; dry; loose; 2% fine gravel; medium grained sand	
12	SS	90	NA	NA		31		***Roofing Material*** Black; dry; hard; shingles	
						32		***Cardboard*** Dry; hard; brown paper with blue printing; solid wood fragment at 32 ft.	
								Calcium Silicate Bright blue; dry; moderately stiff	
13	SS	80	NA	NA		33		1" layer cardboard material	
						34		***Tar with Cardboard*** Black tar; brown cardboard; 20% black sludge; trace gravel	
								Calcium Silicate Bright blue; dry; moderately stiff	
14	SS	75	NA	NA		35			
						36		***Roofing Slate*** Gray and black; dry; loose; trace red and green; 30% very fine gray sand	

Log of Borehole: LMW-03

LFR LEVINE•FRICKE	**Client:** Johns Manville	**Project:** Landfill Leachate Well		**Project No:** 009-07992
	Project Location: Waukegan, IL	**Total Depth:** 44'	**Ground Elev.:** 632.31'	**Date Start:** 4/16/03
Surface Conditions: Clay and weeds				**Date End:** 4/16/03
Drilling Contractor: CS Drilling		**Driller:** M. Jatali	**Geologist/Engineer:** W. Teskey	

SAMPLE DATA | SUBSURFACE PROFILE

Sample Number	Sample Type	Recovery (%)	N Value	Analytical Sample	Monitoring Well	Depth (ft)	Symbol	Soil Description	Remarks
15	SS	0	NA	NA		36–38		No Sample	No recovery in 36' to 38' interval due to locked rods.
16	SS	90	NA	NA		38–38.5		***Roofing Material*** Black; dry; hard; shingles	
						38.5–39		***Lean Clay (CL)*** Brown; dry; stiff; 15% fine gravel	Estimated May 1990 level.
17	SS	80	NA	NA		39–43.5		***Sand (SP)*** Brownish-gray; dry; loose; medium grained	Monitoring well constructed with stainless steel riser and screen on 4/16/03. Screen (0.010" slot) from 38' to 43'. Silica sand (#5) from 36' to 43'. Hydrated bentonite pellets: 34' to 36'. Hydrated bentonite chips: 1.5' to 34'. Concrete pad 0' to 1.5'. Above ground steel protective casing w/ locking cap. No water in well 2 hours after construction.
18	SS	15	NA	NA		43.5–44		***Sludge*** Gray; moist; soft; fibrous	

End of Borehole

Depth scale: 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48

Log of Borehole: LMW-04

LFR LEVINE•FRICKE	**Client:** Johns Manville	**Project:** Landfill Well		**Project No:** 009-07992
	Project Location: Waukegan, IL	**Total Depth:** 65'	**Ground Elev.:** 638.40'	**Date Start:** 4/17/03
Surface Conditions: Clay and weeds				**Date End:** 4/18/03
Drilling Contractor: CS Drilling		**Driller:** M. Jatali	**Geologist/Engineer:** W. Teskey	

SAMPLE DATA						SUBSURFACE PROFILE			
Sample Number	Sample Type	Recovery (%)	N Value	Analytical Sample	Monitoring Well	Depth (ft)	Symbol	Soil Description	Remarks
						0		Ground Surface	
1	Tube	70	NA	NA		0–1		***Lean Clay with Gravel (CL)*** Brown; dry; moderately stiff; 15-20% fine gravel	Boring advanced using 4.25" ID hollow stem augers. Sampled using 4' long tubes or 2" by 2' long split spoons.
						1		Grading stiff	
						3		Grading soft	
2	Tube	75	NA	NA		4		Grading stiff	
						5.6		***Cardboard*** Brown with blue printing; slightly moist; multiple layers of paper	
						6.4		***Lean Clay (CL)*** Brownish gray; dry; stiff; 10% fine to coarse gravel; grading soft	
						8		Grading soft	
						9		1/2" layer roofing granules; black and white; dry	
		100				9.8		5-10% gray fibrous material grades in	
						11			

Log of Borehole: LMW-04

LFR LEVINE•FRICKE	Client: Johns Manville	Project: Landfill Well		Project No: 009-07992
	Project Location: Waukegan, IL	Total Depth: 65'	Ground Elev.: 638.40'	Date Start: 4/17/03
Surface Conditions: Clay and weeds				Date End: 4/18/03
Drilling Contractor: CS Drilling		Driller: M. Jatali	Geologist/Engineer: W. Teskey	

SAMPLE DATA / SUBSURFACE PROFILE

Sample Number	Sample Type	Recovery (%)	N Value	Analytical Sample	Depth (ft)	Soil Description	Remarks
3	Tube	100	NA	NA		**_Calcium Silicate_** Light tan; dry; moderately stiff; 5% gray	
					12		
					13		
4	Tube	70	NA	NA	14		
						Light gray grades in	
					15	**_Lean Clay (CL)_** Dark brown; dry; soft; 10% fine gravel	
					16		
					17	**_Calcium Silicate_** Light tan; dry; moderately stiff; 5% gray	
						Lean Clay (CL) Dark gray; moist; moderately soft; 5% gray fibrous material	
5	Tube	100	NA	NA	18	**_Fibrous Material_** Light gray; moist; moderately dense; dark gray and black grades in	
					19	**_Lean Clay (CL)_** Very dark brown; dry 5-10% roots; moderately stiff Brown grades in; very stiff; compacted; 10% fine gravel	CERCLA landfill cap encountered at 18.9'.
					20		
						Sand (SP) Brown; dry; loose; medium grained	
6	SS	90	NA	NA	21	**_Lean Clay (CL)_** Brown; dry; stiff	
					22		

Log of Borehole: LMW-04

LFR LEVINE•FRICKE	Client: Johns Manville	Project: Landfill Well		Project No: 009-07992
	Project Location: Waukegan, IL	Total Depth: 65'	Ground Elev.: 638.40'	Date Start: 4/17/03
Surface Conditions: Clay and weeds				Date End: 4/18/03
Drilling Contractor: CS Drilling		Driller: M. Jatali	Geologist/Engineer: W. Teskey	

SAMPLE DATA

Sample Number	Sample Type	Recovery (%)	N Value	Analytical Sample	Monitoring Well
7	SS	100	NA	NA	
8	SS	80	NA	NA	
9	SS	2	NA	NA	
10	SS	5	NA	NA	
11	SS	5	NA	NA	
		80			

SUBSURFACE PROFILE

Depth (ft)	Symbol	Soil Description	Remarks
		Sand with Gravel (SP) Black and brown; dry; loose; 20% coarse gravel; 5% cinders; 10% fibrous roofing material	
		Roofing Material Black; dry; hard; shingles	
23		Gray fibrous material; dry; hard; flakey	
		Roofing Material Black; hard; dry	
24		***Fibrous Material*** Gray; dry; hard; flakey	
		Asphaltic Roofing Black; dry; crushed pieces	
25		***Roofing Material*** Black; dry; hard	
26		***Fibrous Material*** Gray; dry; hard; flakey	
27			
28			
29		3" piece of wood	
		1" section of hard, black roofing	
30			
31		2" piece woven plastic material	
32		***Fibrous Material*** Light gray; slightly moist to dry; moderately stiff; fine grained material; compacted	
33			

Log of Borehole: LMW-04

LFR LEVINE·FRICKE	Client: Johns Manville	Project: Landfill Well		Project No: 009-07992
	Project Location: Waukegan, IL	Total Depth: 65'	Ground Elev.: 638.40'	Date Start: 4/17/03
Surface Conditions: Clay and weeds				Date End: 4/18/03
Drilling Contractor: CS Drilling		Driller: M. Jatali	Geologist/Engineer: W. Teskey	

Sample Number	Sample Type	Recovery (%)	N Value	Analytical Sample	Monitoring Well	Depth (ft)	Symbol	Soil Description	Remarks
12	SS	80	NA	NA				***Fibrous Material*** Light gray; slightly moist to dry; moderately stiff; fine grained material; compacted	
13	SS	100	NA	NA		34		Grading to white with 5% gray	
						35			
14	SS	100	NA	NA		36			Poor recovery in 26' to 32' intervals.
						37			
15	SS	100	NA	NA		38			
						39			
16	SS	90	NA	NA		40		Green fine grained material; soft; dry; 1/4" layer	
								Black fine grained material; moderately dense; dry; 20% fibrous; 10% dark gray	
								Dark gray grades in	
						41			
17	SS	100	NA	NA		42		***Roofing Material*** Black; dry; hard; layered	
						43			
						44			

Log of Borehole: LMW-04

LFR LEVINE•FRICKE	Client: Johns Manville	Project: Landfill Well		Project No: 009-07992
	Project Location: Waukegan, IL	Total Depth: 65'	Ground Elev.: 638.40'	Date Start: 4/17/03
Surface Conditions: Clay and weeds				Date End: 4/18/03
Drilling Contractor: CS Drilling		Driller: M. Jatali	Geologist/Engineer: W. Teskey	

Sample Number	Sample Type	Recovery (%)	N Value	Analytical Sample	Depth (ft)	Soil Description	Remarks
						Fibrous Material Black; dry; moderately stiff to soft; fine grained	
18	SS	100	NA	NA	45	***Fibrous Material*** White; moderately stiff to soft; fine grained	
					46		
19	SS	100	NA	NA	47	***Fibrous Material - paper*** Dark yellow; soft; layered	
						Gray fibrous material; dry; moderately stiff	
						Coarse black asphaltic roofing sand	
						Blue and gray fibrous paper-like material; layered	
20	SS	80	NA	NA	48	***Asphaltic Roofing*** Black; compacted debris; 10% brown sand 1 piece of wood at 48.8	
					49		
						Fibrous soft material; dry; bright white; fluffy insulation	
21	SS	30	NA	NA	50	No sample	
					51		
						Transite: gray; hard; fibrous; solid	
						Roofing debris; tar paper; black; hard; fibrous	
22	SS	80	NA	NA	52	Gray fine-grained material; slightly moist; moderately dense; 20% roofing granules	
						Asphaltic roofing; black; crushed	
						Brown paper; layered; compacted; hard	
					53	***Fibrous Material*** Greenish-gray; dry; stiff	
					54	1/4" layer multilayered plastic	
		90			55	***Fibrous Material*** Gray to dark gray; dry; soft; fine grained; 5% white	

Log of Borehole: LMW-04

LFR LEVINE•FRICKE	**Client:** Johns Manville	**Project:** Landfill Well	**Project No:** 009-07992
	Project Location: Waukegan, IL	**Total Depth:** 65' **Ground Elev.:** 638.40'	**Date Start:** 4/17/03
Surface Conditions: Clay and weeds			**Date End:** 4/18/03
Drilling Contractor: CS Drilling		**Driller:** M. Jatali	**Geologist/Engineer:** W. Teskey

SAMPLE DATA

Sample Number	Sample Type	Recovery (%)	N Value	Analytical Sample
23	SS	90	NA	NA
24	SS	70	NA	NA
25	SS	60	NA	NA
26	SS	40	NA	NA

SUBSURFACE PROFILE

Depth (ft)	Soil Description	Remarks
55.5	***Roofing Material*** Black; dry; hard; layered shingles	
57	***Sand (SP)*** Dark gray; wet; 5% fine gravel; medium grained	Native sand level.
	Brown grades in	
58		Heaving sands encountered.
	Dark gray grades in	
	Slightly coarser sand grades in	
60		Monitoring well constructed with PVC riser and screen on 4/16/03. Screen (0.010" slot) from 59' to 64'. Silica sand (#5) from 58' to 64'. Hydrated bentonite pellets: 52' to 58'. Hydrated bentonite chips: 2' to 52'. Concrete pad 0' to 1.5'. Above ground steel protective casing w/ locking cap. Water level after construction: 58.11' bgs
65	End of Borehole	

Depth scale: 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66

Log of Borehole: LMW-05

LFR LEVINE•FRICKE	**Client:** Johns Manville	**Project:** Landfill Leachate Well		**Project No:** 009-07992
	Project Location: Waukegan, IL	**Total Depth:** 16'	**Ground Elev.:** 634.72'	**Date Start:** 4/18/03
Surface Conditions: Clay and weeds				**Date End:** 4/18/03
Drilling Contractor: CS Drilling		**Driller:** M. Jatali	**Geologist/Engineer:** W. Teskey	

SAMPLE DATA						SUBSURFACE PROFILE			
Sample Number	Sample Type	Recovery (%)	N Value	Analytical Sample	Monitoring Well	Depth (ft)	Symbol	Soil Description	Remarks
						0		Ground Surface ***Lean Clay (CL)*** Brown; dry; stiff; 10% fine to coarse gravel	Boring advanced using 4.25" ID hollow stem augers. Sampled using 2" by 4' long tubes.
						1		1" layer roofing material; black; dry; hard; shingles	
1	Tube	100	NA	NA		2		***Fibrous Material - Calcium Silicate*** Light tan to light pinkish orange; dry; moderately soft; fine grained	
						3			Monitoring well constructed with stainless steel riser and screen on 4/18/03. Screen (0.010" slot) from 2' to 7'. Silica sand (#5) from 1.5' to 7'. Hydrated bentonite chips: 1' to 1.5'. Concrete pad 0' to 1.5'. Above ground steel protective casing w/ locking cap. No water in well 1 hour after construction.
						4		2" long piece of cardboard; brown	
						5		Grading slightly moist from 5 to 6 ft.	
2	Tube	100	NA	NA		6		Gray grades in Light blue grades in	
						7		***Lean Clay (CL)*** Dark brown; dry; moderately stiff; 5% roots Brown grades in with 10% fine gravel; very stiff; compacted	CERCLA landfill cap encountered at 7'.
						8			
						9			
3	Tube	30	NA	NA		10		***Sand (SP)*** Brown; dry; loose; 5% fine gravel	
						11		***Fibrous Material*** Gray; dry; moderately stiff; fine grained	
						12			

Log of Borehole: LMW-05

LFR LEVINE•FRICKE	Client: Johns Manville	Project: Landfill Leachate Well		Project No: 009-07992
	Project Location: Waukegan, IL	Total Depth: 16'	Ground Elev.: 634.72'	Date Start: 4/18/03
Surface Conditions: Clay and weeds				Date End: 4/18/03
Drilling Contractor: CS Drilling		Driller: M. Jatali	Geologist/Engineer: W. Teskey	

SAMPLE DATA						SUBSURFACE PROFILE			
Sample Number	Sample Type	Recovery (%)	N Value	Analytical Sample	Monitoring Well	Depth (ft)	Symbol	Soil Description	Remarks
								2% white grades in	
						13			
4	Tube	30	NA	NA		14			
						15			
						16		End of Borehole	
						17			
						18			
						19			
						20			
						21			
						22			
						23			
						24			

Log of Borehole: LMW-06

LFR LEVINE·FRICKE	Client: Johns Manville	Project: Landfill Well		Project No: 009-07992
	Project Location: Waukegan, IL	Total Depth: 43'	Ground Elev.: 618.09'	Date Start: 4/21/03
Surface Conditions: Clay and weeds				Date End: 4/21/03
Drilling Contractor: Mid-America		Driller: D. McCoy	Geologist/Engineer: W. Teskey	

Sample Number	Sample Type	Recovery (%)	N Value	Analytical Sample	Monitoring Well	Depth (ft)	Symbol	Soil Description	Remarks
								Ground Surface	
						0		**_Lean Clay (CL)_** Very dark brown; dry; stiff; 5% roots	Boring advanced using 4.25" ID hollow stem augers. Sampled using 3" diameter by 5' long CME spoons or 2" 2' long split spoons.
						1		Grading brown; very stiff; compacted	CERCLA landfill cap encountered at surface.
1	CME	50	NA	NA		2–4			
						4.2		**_Sand (SP)_** Brown; dry; loose; 5% fine gravel	
						5		No sample	
2	CME	<5	NA	NA		6–9			Poor recovery 5-10 ft. interval.
						10		**_Sandy Lean Clay (CL)_** Dark brown; dry; moderately stiff; 20% sand; 5% fine gravel	
						11.5		5-10% roofing granules grade in; red, white and black	
						12			

Log of Borehole: LMW-06

LFR LEVINE•FRICKE	Client: Johns Manville	Project: Landfill Well		Project No: 009-07992
	Project Location: Waukegan, IL	Total Depth: 43'	Ground Elev.: 618.09'	Date Start: 4/21/03
Surface Conditions: Clay and weeds				Date End: 4/21/03
Drilling Contractor: Mid-America		Driller: D. McCoy	Geologist/Engineer: W. Teskey	

Sample Number	Sample Type	Recovery (%)	N Value	Analytical Sample	Monitoring Well	Depth (ft)	Symbol	Soil Description	Remarks
3	CME	40	NA	NA		13, 14		5-10% roofing granules grade in; red, white and black 10-20% fibrous material grades in; black	
4	CME	60	NA	NA		15		***Fibrous Material*** Gray; slightly moist; fibrous	
						16, 17, 18, 19		***Sandy Clay with Fibrous Material (CL)*** Black, tan and brown; slightly moist; moderately stiff; 20% sand; 20% tan fibrous waste Reddish-oranges grades in Gray and tan waste grades in	
								Crushed Asphalt Black; dry; loose Hard asphalt/tar grades in	
		0				20, 21, 22, 23, 24		No sample	No sample from 20' to 25'.

Log of Borehole: LMW-06

LFR LEVINE·FRICKE

Client: Johns Manville	**Project:** Landfill Well		**Project No:** 009-07992
Project Location: Waukegan, IL	**Total Depth:** 43'	**Ground Elev.:** 618.09'	**Date Start:** 4/21/03
Surface Conditions: Clay and weeds			**Date End:** 4/21/03
Drilling Contractor: Mid-America	**Driller:** D. McCoy	**Geologist/Engineer:** W. Teskey	

SAMPLE DATA / SUBSURFACE PROFILE

Sample Number	Sample Type	Recovery (%)	N Value	Analytical Sample	Monitoring Well	Depth (ft)	Symbol	Soil Description	Remarks
5	CME	0	NA	NA				No sample	
6	SS	40	NA	NA		25–26		**Clayey Sand (SC)** Black; dry; moderately loose; 25% black sand; 5-10% roofing granules; 5% asphalt pieces	
						27		Woven plastic; white with blue printing; multi-layered	
7	SS	5	NA	NA		27–28		**Transite** Light green; fibrous; hard	
8	SS	5	NA	NA		29–30			Poor recovery 27' to 31'
9	SS	60	NA	NA		31		**Sand (SP)** Brownish-gray; wet; loose; 5% fine gravel; grading black	
						32		**Sludge** Gray; moist; fibrous; black @ top	
10	SS	30	NA	NA		33–34		**Sandy Clay (SC)** Brown; dry; moderately stiff; 20% sand and roofing granules; 5% transite pieces	
		80				35–36		**Sand (SP)** Gray; wet; moderately dense; medium grained; grading coarse; 5% fine gravel	Native sand encountered.

Log of Borehole: LMW-06

LFR LEVINE·FRICKE	**Client:** Johns Manville	**Project:** Landfill Well	**Project No:** 009-07992
	Project Location: Waukegan, IL	**Total Depth:** 43' / **Ground Elev.:** 618.09'	**Date Start:** 4/21/03
Surface Conditions: Clay and weeds			**Date End:** 4/21/03
Drilling Contractor: Mid-America		**Driller:** D. McCoy	**Geologist/Engineer:** W. Teskey

SAMPLE DATA / SUBSURFACE PROFILE

Sample Number	Sample Type	Recovery (%)	N Value	Analytical Sample	Depth (ft)	Soil Description	Remarks
						2" layer with 10-15% fine gravel	
11	SS	80	NA	NA			
					37	Dark gray grades in; gravel grades out	
12	SS	90	NA	NA	38		
						Sand with Gravel (SP) Black; wet; loose; 25% fine gravel	
					39	***Sand (SP)*** Dark gray to black; wet; loose; medium grained; 5-10% fine gravel	
13	SS	75	NA	NA	40		Heaving sand encountered.
					41		Monitoring well constructed with PVC riser and screen on 4/21/03. Screen (0.010" slot) from 37.5' to 42.5'. Silica sand (#5) from 35' to 42.5'. Hydrated bentonite pellets: 33' to 35'. Hydrated bentonite chips: 1.5' to 33'. Concrete pad 0' to 1.5'. Above ground steel protective casing w/ locking cap. Water encountered at 34.5 ft. 1 day after construction.
					42		
					43	End of Borehole	
					44		
					45		
					46		
					47		
					48		

Log of Borehole: LMW-07

LFR LEVINE•FRICKE	Client: Johns Manville	Project: Landfill Well		Project No: 009-07992
	Project Location: Waukegan, IL	Total Depth: 51'	Ground Elev.: 620.22'	Date Start: 4/21/03
Surface Conditions: Clay and weeds				Date End: 4/21/03
Drilling Contractor: Mid-America		Driller: D. McCoy	Geologist/Engineer: W. Teskey	

SAMPLE DATA						SUBSURFACE PROFILE			
Sample Number	Sample Type	Recovery (%)	N Value	Analytical Sample	Monitoring Well	Depth (ft)	Symbol	Soil Description	Remarks
								Ground Surface	
						0		**Lean Clay (CL)** Very dark brown; dry; stiff; 5% roots	CERCLA landfill cap encountered at surface.
						1		Grading brown; very stiff; compacted; 5% fine gravel	Boring advanced using 4.25" ID hollow stem augers. Sampled using 3" diameter by 5' long CME spoons or 2" 2' long split spoons.
1	CME	50	NA	NA		2			
						3		**Sand (SP)** Brown; dry; loose; 5% fine gravel	
						4		**Silty Sand with Gravel (SP)** Black; dry; moderately dense; 20% fine gravel; 5% roofing granules; 2% plastic; 2-5% white fibrous material	
						5		**Roofing Material** Black; dry; hard; fibrous; shingles with granular surfaces	
						6			
						7			
2	CME	5	NA	NA		8			
						9			
						10		**Fibrous Material** Gray; slightly moist; moderately stiff to soft; possible sludge	
		90				11			

Log of Borehole: LMW-07

LFR LEVINE•FRICKE			
Client: Johns Manville	**Project:** Landfill Well		**Project No:** 009-07992
Project Location: Waukegan, IL	**Total Depth:** 51'	**Ground Elev.:** 620.22'	**Date Start:** 4/21/03
Surface Conditions: Clay and weeds			**Date End:** 4/21/03
Drilling Contractor: Mid-America	**Driller:** D. McCoy	**Geologist/Engineer:** W. Teskey	

SAMPLE DATA | SUBSURFACE PROFILE

Sample Number	Sample Type	Recovery (%)	N Value	Analytical Sample	Monitoring Well	Depth (ft)	Symbol	Soil Description	Remarks
3	SS	90	NA	NA				***Fibrous Material*** Gray; slightly moist; moderately stiff to soft; possible sludge	
								Light gray to white grades in; dry	
						12			
4	SS	30	NA	NA		13			
						14			
								Dark gray grades in; very fine grained	
5	SS	90	NA	NA		15			
						16			
						17			
						18			
6	CME	90	NA	NA					
						19			
						20			
						21			
						22			

Log of Borehole: LMW-07

LFR LEVINE•FRICKE	Client: Johns Manville	Project: Landfill Well		Project No: 009-07992
	Project Location: Waukegan, IL	Total Depth: 51'	Ground Elev.: 620.22'	Date Start: 4/21/03
Surface Conditions: Clay and weeds				Date End: 4/21/03
Drilling Contractor: Mid-America		Driller: D. McCoy	Geologist/Engineer: W. Teskey	

SAMPLE DATA						SUBSURFACE PROFILE			
Sample Number	Sample Type	Recovery (%)	N Value	Analytical Sample	Monitoring Well	Depth (ft)	Symbol	Soil Description	Remarks
								Dark gray grades in; very fine grained	
						23			
7	CME	100	NA	NA		24			
						25		1" layer white	
								3" layer black	
								Gray grades in	
						26		Black grades in	
								Gray grades in	
						27			
						28			
8	CME	100	NA	NA					
						29			
						30			
						31			
						32			
						33			

Log of Borehole: LMW-07

LFR LEVINE·FRICKE	Client: Johns Manville	Project: Landfill Well		Project No: 009-07992
	Project Location: Waukegan, IL	Total Depth: 51'	Ground Elev.: 620.22'	Date Start: 4/21/03
Surface Conditions: Clay and weeds				Date End: 4/21/03
Drilling Contractor: Mid-America		Driller: D. McCoy	Geologist/Engineer: W. Teskey	

SAMPLE DATA

Sample Number	Sample Type	Recovery (%)	N Value	Analytical Sample
9	CME	35	NA	NA
10	CME	60	NA	NA
		25		

SUBSURFACE PROFILE

Depth (ft)	Soil Description	Remarks
33–34.7	Gray grades in Black grades in	
34.7–35.9	***Lean Clay (CL)*** Dark brown to black; 15% fine gravel	
35.9	Transite; 1" layer	
36–36.2	***Roofing Material*** Black; dry; mixed with peat and roots	
36.2–36.8	***Tar*** Black; dry; hard	
36.8–38.2	***Sludge*** Gray; very moist to wet; moderately dense; with 20% transite: hard; light green; fibrous	
38.2–41	***Roofing Sand*** Black; dry; dense; 30% black tar; 15% roofing granules; fibrous	
41–44	No Sample	Heaving sand encountered while drilling. Probable top of native sand.

Log of Borehole: LMW-07

LFR LEVINE·FRICKE	Client: Johns Manville	Project: Landfill Well		Project No: 009-07992
	Project Location: Waukegan, IL	Total Depth: 51'	Ground Elev.: 620.22'	Date Start: 4/21/03
Surface Conditions: Clay and weeds				Date End: 4/21/03
Drilling Contractor: Mid-America		Driller: D. McCoy	Geologist/Engineer: W. Teskey	

SAMPLE DATA | SUBSURFACE PROFILE

Sample Number	Sample Type	Recovery (%)	N Value	Analytical Sample	Monitoring Well	Depth (ft)	Symbol	Soil Description	Remarks
11	CME	25	NA	NA		45			Monitoring well constructed with PVC riser and screen on 4/21/03. Screen (0.010" slot) from 44' to 49'. Silica sand (#5) from 42' to 49'. Hydrated bentonite pellets: 40' to 42'. Hydrated bentonite chips: 1.5' to 40'. Concrete pad 0' to 1.5'. Above ground steel protective casing w/ locking cap. Water encountered at 36.6 ft. 1 day after construction.
								Sand (SP) Black; wet; 10% fine to coarse gravel	
						46		Grading dark gray; gravel grades out	
						47			
						48			
12	CME	40	NA	NA					
						49			
						50			
						51		End of Borehole	
						52			
						53			
						54			
						55			

Log of Borehole: LMW-09

LFR LEVINE•FRICKE	Client: Johns Manville	Project: Landfill Leachate Well		Project No: 009-07992
	Project Location: Waukegan, IL	Total Depth: 22'	Ground Elev.: 597.68'	Date Start: 4/22/03
Surface Conditions: Clay and weeds				Date End: 4/22/03
Drilling Contractor: Mid-America		Driller: D. McCoy	Geologist/Engineer: W. Teskey	

Sample Number	Sample Type	Recovery (%)	N Value	Analytical Sample	Depth (ft)	Soil Description	Remarks
					0	Ground Surface	
1	CME	60	NA	NA	0	**Lean Clay (CL)** Brown; dry; stiff; 10% fine gravel	Boring advanced using 4.25" ID hollow stem augers. Sampled using 3" diameter by 5' long CME spoons or 2" by 2' long split spoons.
					1	**Lean Clay with Gravel (CL)** Brown; dry; stiff; 20-25% fine to coarse gravel	
					3	**Sand (SP)** Dark gray; wet; medium grained; 5-10% fibers	
2	CME	50	NA	NA	4.6	**Lean Clay (CL)** Dark brown; dry; stiff; 5% roots	CERCLA landfill cap encountered at 4.6'.
						Grading brown; very stiff; compacted; 5% fine gravel	
					7.5	**Sand (SP)** Brown; dry; moderately dense; 5% fine gravel	
					8.6	**Lean Clay (CL)** Brown; dry; stiff; 5% fine gravel	
					9.2	**Roofing Material** Black; dry; hard; shingles with roofing granules	

Log of Borehole: LMW-09

LFR LEVINE•FRICKE	Client: Johns Manville	Project: Landfill Leachate Well		Project No: 009-07992
	Project Location: Waukegan, IL	Total Depth: 22'	Ground Elev.: 597.68'	Date Start: 4/22/03
Surface Conditions: Clay and weeds				Date End: 4/22/03
Drilling Contractor: Mid-America		Driller: D. McCoy	Geologist/Engineer: W. Teskey	

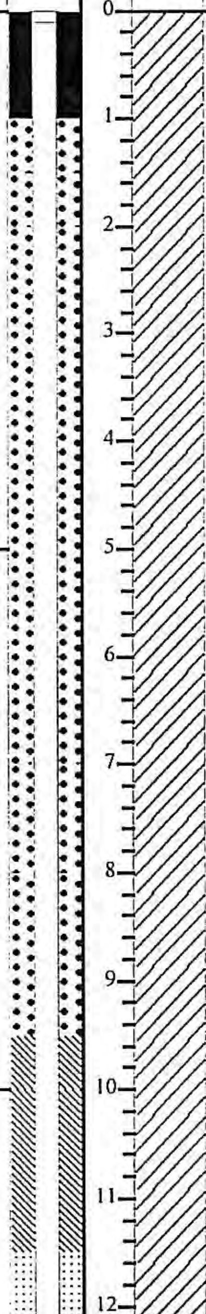
SAMPLE DATA						SUBSURFACE PROFILE			
Sample Number	Sample Type	Recovery (%)	N Value	Analytical Sample	Monitoring Well	Depth (ft)	Symbol	Soil Description	Remarks
3	CME	40	NA	NA		13 14 15		***Roofing Material*** Black; dry; hard; shingles with roofing granules	
4	SS	60	NA	NA		16		***Transite with Clay*** Light green to gray; dry; hard; 30% clay; brown; dry; hard ***Roofing Material*** Black; dry; hard; shingles ***Sand (SP)*** Dark gray to black; wet; moderately dense; medium grained; 2% fine gravel	Native sand encountered.
5	SS	50	NA	NA		17 18			Monitoring well constructed with stainless steel riser and screen on 4/22/03. Screen (0.010" slot) from 12' to 22'. Silica sand (#5) from 10' to 22'. Hydrated bentonite pellets: 8' to 10'. Hydrated bentonite chips: 1' to 8'. Concrete pad 0' to 1'. Above ground steel protective casing w/ locking cap. Water level at 16.3' 1 hour after construction.
6	SS	70	NA	NA		19 20 21			
						22 23 24		End of Borehole	

Log of Borehole: LMW-10

LFR LEVINE·FRICKE	Client: Johns Manville	Project: Landfill Leachate Well		Project No: 009-07992
	Project Location: Waukegan, IL	Total Depth: 19'	Ground Elev.: 597.90'	Date Start: 4/22/03
Surface Conditions: Clay and weeds				Date End: 4/23/03
Drilling Contractor: Mid-America		Driler: D. McCoy	Geologist/Engineer: W. Teskey	

SAMPLE DATA / SUBSURFACE PROFILE

Sample Number	Sample Type	Recovery (%)	N Value	Analytical Sample	Monitoring Well	Depth (ft)	Symbol	Soil Description	Remarks
						0		Ground Surface	Boring advanced using 4.25" ID hollow stem augers. Sampled using 3" diameter by 5' long CME spoons or 2" by 2' long split spoons.
1	CME	10	NA	NA		0–5		***Lean Clay with Gravel (CL)*** Brown; dry; stiff; 15-20% fine to coarse gravel; 2% roots	
2	CME	25	NA	NA		5–10			
						10–12			



Log of Borehole: LMW-10

LFR LEVINE•FRICKE	Client: Johns Manville	Project: Landfill Leachate Well		Project No: 009-07992
	Project Location: Waukegan, IL	Total Depth: 19'	Ground Elev.: 597.90'	Date Start: 4/22/03
Surface Conditions: Clay and weeds				Date End: 4/23/03
Drilling Contractor: Mid-America		Driller: D. McCoy	Geologist/Engineer: W. Teskey	

SAMPLE DATA / SUBSURFACE PROFILE

Sample Number	Sample Type	Recovery (%)	N Value	Analytical Sample	Monitoring Well	Depth (ft)	Symbol	Soil Description	Remarks
3	CME	80	NA	NA		13–15		**Sludge** Dark gray; slightly moist; moderately soft	Monitoring well constructed with stainless steel riser and screen on 4/23/03. Screen (0.010" slot) from 13.5' to 18.5'. Silica sand (#5) from 11.5' to 18.5'. Hydrated bentonite pellets: 9.5' to 11.5'. Hydrated bentonite chips: 1' to 9.5'. Concrete pad 0' to 1'. Above ground steel protective casing w/ locking cap. Water level at 16.1' 1 hour after construction.
4	SS	90	NA	NA		15–17			
5	SS	90	NA	NA		17–19		**Clay with Fibrous Material** Dark gray to black; dry; moderately stiff; 20% fibers	
						19		**Sand (SP)** Dark gray to black; wet; moderately dense; medium grained	Native sand encountered.
								End of Borehole	

Depth (ft): 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24

Log of Borehole: LMW-11

LEVINE•FRICKE	Client: Johns Manville	Project: Landfill Well		Project No: 009-07992
	Project Location: Waukegan, IL	Total Depth: 41'	Ground Elev.:	Date Start: 5/16/03
Surface Conditions: Topsoil				Date End: 5/16/03
Drilling Contractor: Mid-America		Driller: Brian	Geologist/Engineer: W. Teskey	

SAMPLE DATA

Sample Number	Sample Type	Recovery (%)	N Value	Analytical Sample
1	CME	30	NA	NA
2	CME	20	NA	NA
3	SS	50	NA	NA

SUBSURFACE PROFILE

Depth (ft)	Soil Description	Remarks
0	Ground Surface	Boring advanced using 4.25" ID hollow stem augers. Sampled using 3" diameter by 5' long CME spoons or 2" 2' long split spoons.
0–2	***Lean Clay (CL)*** Dark brown; slightly moist; moderately stiff; 15% rootlets. Grading brown; dry; very stiff; compacted; 5% fine gravel	
2–10	***Sand (SP)*** Brown; dry; loose; 5-10% fine gravel. Grading black with 5% roofing granules. Very moist; 10-15% roofing granules; poor recovery	Poor recovery: 5-10'. Limestone cobble in shoe of sampler.
10–10.9	***Sand with Gravel (SP)*** Dark gray; moderately dense; wet; 15% fine gravel	
10.9–12	***Sand (SP)*** Dark gray; wet; moderately dense; medium sand; 5% fine gravel	Heaving sand encountered while drilling.

Log of Borehole: LMW-11

LFR LEVINE•FRICKE	Client: Johns Manville	Project: Landfill Well		Project No: 009-07992
	Project Location: Waukegan, IL	Total Depth: 41'	Ground Elev.:	Date Start: 5/16/03
Surface Conditions: Topsoil				Date End: 5/16/03
Drilling Contractor: Mid-America		Driller: Brian	Geologist/Engineer: W. Teskey	

SAMPLE DATA						SUBSURFACE PROFILE			
Sample Number	Sample Type	Recovery (%)	N Value	Analytical Sample	Monitoring Well	Depth (ft)	Symbol	Soil Description	Remarks
4	SS	70	NA	NA		13		***Sand (SP)*** Dark gray; wet; moderately dense; medium sand; 5% fine gravel Increase to 10-12% gravel	
5	SS	70	NA	NA		14 15			
6	SS	70	NA	NA		16 17		Grading grayish brown; decrease to 5% gravel	
7	SS	30	NA	NA		18 19			
8	SS	70	NA	NA		20 21		1/4" layer peat; black; soft 1/2" layer silt; gray; dense	
9	SS	50	NA	NA		22 23 24		***Sand (SP)*** Dark gray; wet; moderately dense; medium grained sand; 5% fine gravel	

Log of Borehole: LMW-11

LFR LEVINE·FRICKE	Client: Johns Manville	Project: Landfill Well		Project No: 009-07992
	Project Location: Waukegan, IL	Total Depth: 41'	Ground Elev.:	Date Start: 5/16/03
Surface Conditions: Topsoil				Date End: 5/16/03
Drilling Contractor: Mid-America		Driler: Brian	Geologist/Engineer: W. Teskey	

SAMPLE DATA						SUBSURFACE PROFILE			
Sample Number	Sample Type	Recovery (%)	N Value	Analytical Sample	Monitoring Well	Depth (ft)	Symbol	Soil Description	Remarks
								Sand (SP) Dark gray; wet; moderately dense; medium grained sand; 5% fine gravel	
10	SS	40	NA	NA		25			
						26		Grading brown	
11	SS	80	NA	NA		27		Grading to fine sand	
						28			
12	SS	80	NA	NA		29			
						30			
						31			
						32			
						33			
						34		Grading brownish-gray	
13	SS	100	NA	NA		35			
						36			

Log of Borehole: LMW-11

LFR LEVINE•FRICKE	Client: Johns Manville	Project: Landfill Well		Project No: 009-07992
	Project Location: Waukegan, IL	Total Depth: 41'	Ground Elev.:	Date Start: 5/16/03
Surface Conditions: Topsoil				Date End: 5/16/03
Drilling Contractor: Mid-America		Driller: Brian	Geologist/Engineer: W. Teskey	

SAMPLE DATA						SUBSURFACE PROFILE			
Sample Number	Sample Type	Recovery (%)	N Value	Analytical Sample	Monitoring Well	Depth (ft)	Symbol	Soil Description	Remarks
								Grading brownish-gray	Monitoring well constructed with stainless steel riser and screen on 5/16/03. Screen (0.010" slot) from 35' to 40'. Silica sand (#5) from 32' to 40'. Cement bentonite grout: 2' to 32'. Bentonite chips from 0.5' to 2'. Concrete pad 0' to 0.5'. Above ground steel protective casing w/ locking cap. Water level on 5/19/03: approximately 8.5 ft. below grade.
						37			
						38			
14	SS	90	NA	NA		39			
						40			
15	SS	100	NA	NA				***Lean Clay (CL)*** Gray; dry; stiff; 5% fine gravel	
						41		End of Borehole	
						42			
						43			
						44			
						45			
						46			
						47			
						48			

Log of Borehole: LMW-12

LFR LEVINE·FRICKE	Client: Johns Manville	Project: Landfill Well		Project No: 009-07992
	Project Location: Waukegan, IL	**Total Depth:** 15'	**Ground Elev.:**	**Date Start:** 5/16/03
Surface Conditions: Topsoil				**Date End:** 5/16/03
Drilling Contractor: Mid-America		**Driller:** Brian	**Geologist/Engineer:** W. Teskey	

SAMPLE DATA / SUBSURFACE PROFILE

Sample Number	Sample Type	Recovery (%)	N Value	Analytical Sample	Monitoring Well	Depth (ft)	Symbol	Soil Description	Remarks
						0		Ground Surface ***Lean Clay (CL)*** Dark brown; slightly moist; moderately stiff; 15% rootlets	Boring advanced using 4.25" ID hollow stem augers. Sampled using 2" by 2' split spoons.
						1		Grading brown; dry; very stiff; compacted; 5% fine gravel	
						2		***Sand (SP)*** Brown; dry; loose; 5% fine gravel	
						3			
						4			
						5			
						6			
						7			
						8		Concrete fragment Grading black	
1	SS	100	NA	NA		9		***Peat*** Black; moist; soft ***Sand with Gravel (SP)*** Very dark gray; wet; moderately dense; 25% coarse gravel	
						10			
						11			
						12			

Log of Borehole: LMW-12

LFR LEVINE·FRICKE	Client: Johns Manville	Project: Landfill Well		Project No: 009-07992
	Project Location: Waukegan, IL	Total Depth: 15'	Ground Elev.:	Date Start: 5/16/03
Surface Conditions: Topsoil				Date End: 5/16/03
Drilling Contractor: Mid-America		Driller: Brian	Geologist/Engineer: W. Teskey	

SAMPLE DATA						SUBSURFACE PROFILE			
Sample Number	Sample Type	Recovery (%)	N Value	Analytical Sample	Monitoring Well	Depth (ft)	Symbol	Soil Description	Remarks
								Gravel decreases to 5% or less	
						13			Monitoring well constructed with stainless steel riser and screen on 5/16/03. Screen (0.010" slot) from 5' to 15'. Silica sand (#5) from 3' to 15'. Hydrated bentonite chips: 0.5' to 3'. Concrete pad 0' to 0.5'. Above ground steel protective casing w/ locking cap. Water level on 5/19/03: approximately 8.5 feet below grade.
						14			
						15		End of Borehole	
						16			
						17			
						18			
						19			
						20			
						21			
						22			
						23			
						24			

LOG OF BORING/WELL: LMW-19

PROJECT NAME: Landfill Groundwater Well

CLIENT: Johns Manville

PROJECT LOCATION: Waukegan, Illinois

PROJECT NUMBER: 009-07992-00, 001

LOCATION: South of Landfill, west of LMW-20 and P-90

OVA EQUIPMENT: Not Measured

GROUND ELEVATION: 589.92' AMSL HOLE DIAMETER: 8.25 Inch

TOP OF CASING ELEVATION: 592.19' AMSL HOLE DEPTH: 14 ft bgs

▽ FIRST ENCOUNTERED WATER: 8 ft bgs

▼ STABILIZED WATER: 7.95 ft bgs

LOGGED BY: Stuart Engelke DATE: August 26, 2008

DRILLING CONTRACTOR: CS Drilling

DRILLING METHOD: Hollow Stem Auger

STAMP (IF APPLICABLE) AND/OR NOTES

DEPTH (Feet)	SAMPLE TYPE	LITHOLOGIC DESCRIPTION	Elevations (ft)	PID or OVA (ppmv)
0		Ground Surface	589.9	
0–2	HSA	Blind drill to 14 ft bgs, observations of soil cuttings. Sand and gravel fill, dry.		N/M
2–8	HSA	**Fill** Brown to grey sand and fine gravel mix, moist to wet soil cuttings.	585.0 (at 5)	
8–14	HSA	**Poorly Graded Sand (SP)** Brown to grey, medium to fine grained, well sorted, moist to wet, trace fine rounded gravel.	580.0 (at 10)	
14		End of Borehole	575.0 (at 15); 570.0 (at 20)	

Well Construction Diagram

- Procover (2.5 ft AG) set in concrete.
- Bentonite Seal
- #5 Filter Sand
- 2" Schedule 40 PVC
- 0.010" Slot Screen

APPROVED BY: ______ DATE: ______

LFR

PROJECT NAME Landfill Groundwater Well

CLIENT Johns Manville

LOG OF BORING/WELL: LMW-20

PAGE: 1 of 1

PROJECT LOCATION Waukegan, Illinois

PROJECT NUMBER 009-07992-00, 001

LOCATION South of Landfill, east of LMW-19

OVA EQUIPMENT Not Measured

GROUND ELEVATION 589.86' AMSL HOLE DIAMETER 8.25 Inch

TOP OF CASING ELEVATION 592.10' AMSL HOLE DEPTH 41.0 ft bgs

∇ FIRST ENCOUNTERED WATER 9 ft bgs

▼ STABILIZED WATER 7.88 ft bgs

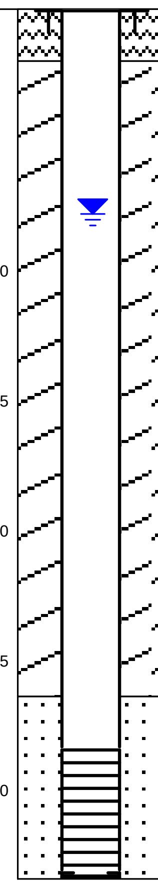
LOGGED BY Stuart Engelke DATE August 26, 2008

DRILLING CONTRACTOR CS Drilling

DRILLING METHOD Hollow Stem Auger/Split Spoon

STAMP (IF APPLICABLE) AND/OR NOTES

DEPTH (Feet)	SAMPLE TYPE	SAMPLE RECOVERY	GRAPHIC LOG	DEPTHS (ft bgs)	LITHOLOGIC DESCRIPTION	Elevations (ft)	PID or OVA (ppmv)	Depths (ft bgs)	Well Construction Diagram
					Ground Surface	589.9			
0	HSA			0	Blind drill to 35 ft bgs, observations of soil cuttings. Sand and gravel mix, fill. **Fill** Brown to grey sand and fine gravel mix, moist to wet soil cuttings.		N/M	0	Procover (2.50 ft AG) set in concrete.
5	HSA			5		585.0		5	2" Schedule 40 PVC
10	HSA			10	**Poorly Graded Sand (SP)** Brown to grey, medium to fine grained, well sorted, moist to wet, trace fine rounded gravel.	580.0		10	Bentonite Seal
15	HSA			15		575.0		15	
20	HSA			20		570.0		20	
25	HSA			25		565.0		25	#5 Filter Sand
30	HSA			30		560.0		30	0.010" Slot Screen with silt sock
35	SS			35		555.0		35	
	SS								
40	SS			40	**Lean Clay (CL)** Grey, with fine angular gravel, cohesive, dense, wet.	550.0		40	



APPROVED BY:______________ DATE:__________

LFR

LOG OF BORING/WELL: LMW-21

PAGE: 1 of 1

PROJECT NAME Landfill Groundwater Well
CLIENT Johns Manville

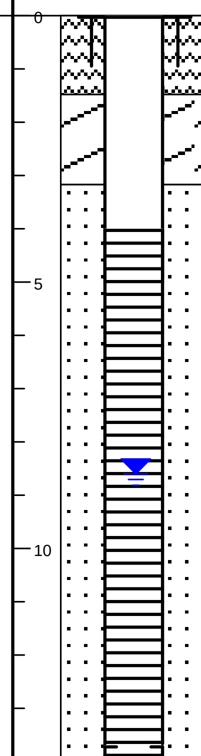
PROJECT LOCATION Waukegan, Illinois
PROJECT NUMBER 009-07992-00, 001
LOCATION South of Landfill, west of LMW-22
OVA EQUIPMENT Not Measured
GROUND ELEVATION 589.33' AMSL   HOLE DIAMETER 8.25 Inch
TOP OF CASING ELEVATION 591.65' AMSL   HOLE DEPTH 14.02 ft bgs
∇ FIRST ENCOUNTERED WATER 9 ft bgs
▼ STABILIZED WATER 8.6 ft bgs
LOGGED BY Stuart Engelke   DATE August 22, 2008

DRILLING CONTRACTOR CS Drilling
DRILLING METHOD Hollow Stem Auger

STAMP (IF APPLICABLE) AND/OR NOTES

DEPTH (Feet)	SAMPLE TYPE	DEPTHS (ft bgs)	LITHOLOGIC DESCRIPTION	Elevations (ft)	PID or OVA (ppmv)
			Ground Surface	589.3	
0–2	HSA	0	Blind drill to 14 ft bgs, observations of soil cuttings. Sand and gravel fill		N/M
2–8	HSA	5	**Fill** Brown to grey sand and fine gravel mix, moist to wet soil cuttings.	585.0	
8–14	HSA	10	**Poorly Graded Sand (SP)** Brown to grey, medium to fine grained, well sorted, moist to wet, trace fine rounded gravel.	580.0	
14		15	End of Borehole	575.0	
20		20		570.0	

Well Construction Diagram



Procover (2.4 ft AG) set in concrete.

Bentonite Seal

#5 Filter Sand

2" Schedule 40 PVC 0.010" Slot Screen

APPROVED BY:____________________ DATE:____________

LFR

PROJECT NAME Landfill Groundwater Well

CLIENT Johns Manville

LOG OF BORING/WELL: LMW-22

PROJECT LOCATION Waukegan, Illinois

PROJECT NUMBER 009-07992-00, 001

LOCATION South of Landfill, east of LMW-21, south of P-92

OVA EQUIPMENT Not Measured

GROUND ELEVATION 589.31' AMSL **HOLE DIAMETER** 8.25 Inch

TOP OF CASING ELEVATION 591.72' AMSL **HOLE DEPTH** 39.5 ft bgs

∇ **FIRST ENCOUNTERED WATER** 10 ft bgs

▼ **STABILIZED WATER** 8.65 ft bgs

LOGGED BY Stuart Engelke **DATE** August 22, 2008

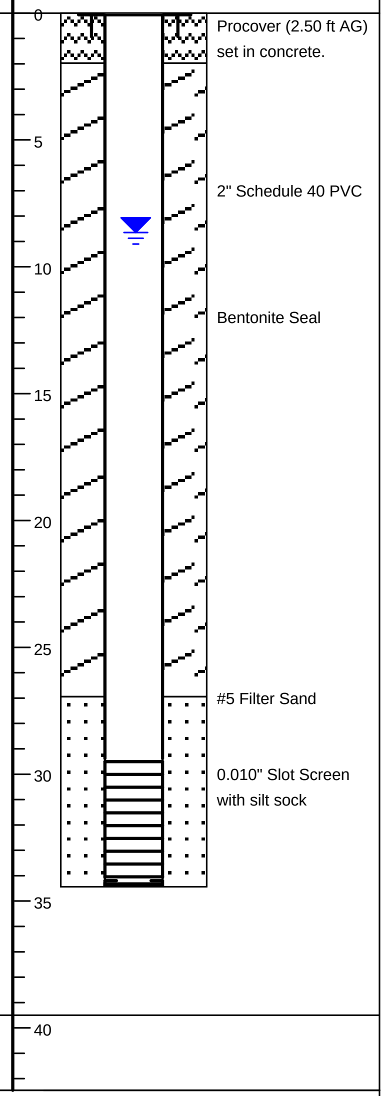
DRILLING CONTRACTOR CS Drilling

DRILLING METHOD Hollow Stem Auger/Split Spoon

STAMP (IF APPLICABLE) AND/OR NOTES

DEPTH (Feet)	SAMPLE TYPE	DEPTHS (ft bgs)	LITHOLOGIC DESCRIPTION	Elevations (ft)	PID or OVA (ppmv)
			Ground Surface	591.7	
0–5	HSA	0	**Sand (SP)** Blind drill to 37.5 ft bgs, observations of soil cuttings. Brown medium grained sand, some fill gravel embedded, dry.	590.0	N/M
5–10	HSA	5	Transition to moist.	585.0	
10–15	HSA	10	Transition to dark grey color, moist to wet.	580.0	
15–20	HSA	15	Transition to wet.	575.0	
20–25	HSA	20		570.0	
25–30	HSA	25		565.0	
30–35	HSA	30		560.0	
35–37.5	HSA	35		555.0	
37.5–39.5	SS		**Poorly Graded Sand (SP)** Grey, med. gr., well sorted, wet, some rounded gravel.		
39.5		40	**Lean Clay (CL)** Grey, with fine angular gravel, cohesive, dense, wet.		
			End of Borehole	550.0	

Well Construction Diagram



APPROVED BY: ______ **DATE:** ______

LFR

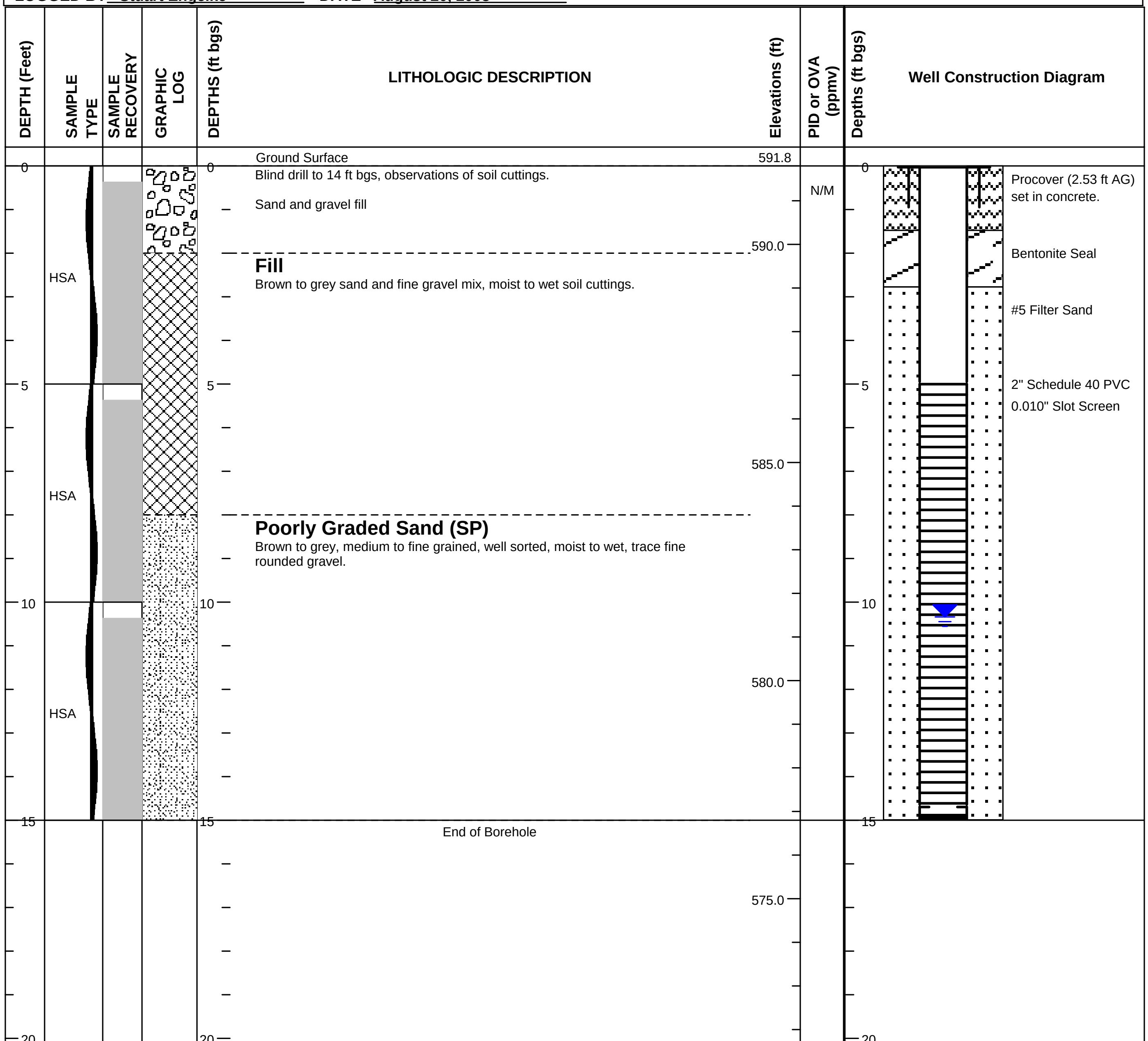
LOG OF BORING/WELL: LMW-23

PROJECT NAME: Landfill Groundwater Well
CLIENT: Johns Manville

PROJECT LOCATION: Waukegan, Illinois
PROJECT NUMBER: 009-07992-00, 001
LOCATION: East of Landfill, south of LMW-24 and SMW-7A
OVA EQUIPMENT: Not Measured
GROUND ELEVATION: 591.80' AMSL — HOLE DIAMETER: 8.25 Inch
TOP OF CASING ELEVATION: 593.82' AMSL — HOLE DEPTH: 15.00 ft bgs
FIRST ENCOUNTERED WATER: 11 ft bgs
STABILIZED WATER: 10.34 ft bgs
LOGGED BY: Stuart Engelke — DATE: August 20, 2008

DRILLING CONTRACTOR: CS Drilling
DRILLING METHOD: Hollow Stem Auger

STAMP (IF APPLICABLE) AND/OR NOTES



APPROVED BY: ____________ DATE: ________

PROJECT NAME Landfill Groundwater Well

CLIENT Johns Manville

LOG OF BORING/WELL: LMW-24

PAGE: 1 of 1

PROJECT LOCATION Waukegan, Illinois

PROJECT NUMBER 009-07992-00, 001

LOCATION East of Landfill, south of SMW-07A

OVA EQUIPMENT Not Measured

GROUND ELEVATION 591.67' AMSL HOLE DIAMETER 8.25 Inch

TOP OF CASING ELEVATION 593.75' AMSL HOLE DEPTH 44.0 ft bgs

▽ FIRST ENCOUNTERED WATER 11 ft bgs

▼ STABILIZED WATER 10.51 ft bgs

LOGGED BY Stuart Engelke DATE August 20, 2008

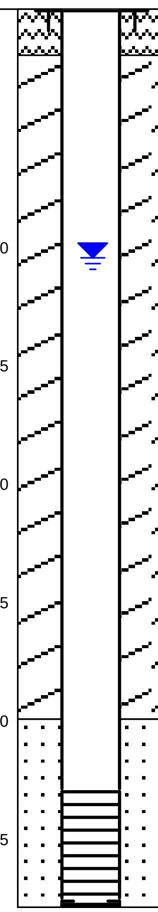
DRILLING CONTRACTOR CS Drilling

DRILLING METHOD Hollow Stem Auger/Split Spoon

STAMP (IF APPLICABLE) AND/OR NOTES

DEPTH (Feet)	SAMPLE TYPE	DEPTHS (ft bgs)	LITHOLOGIC DESCRIPTION	Elevations (ft)	PID or OVA (ppmv)
			Ground Surface	591.7	
0	HSA	0	Blind drill to 30 ft bgs, observations of soil cuttings. Sand and gravel mix, fill.	590.0	N/M
			Sand (SP) Brown to grey sand and fine gravel mix, moist to wet soil cuttings. No ACM debris observed.		
5	HSA	5		585.0	
10	HSA	10	Transition to fine grained, trace fine rounded gravel, wet.	580.0	
15	HSA	15		575.0	
20	HSA	20		570.0	
25	HSA	25		565.0	
30	SS	30	**Poorly Graded Sand (SP)** From Split Spoon. Grey, medium grained, well sorted, wet, dense.	560.0	
	SS				
35	SS	35		555.0	
	SS				
	SS				
40	SS	40		550.0	
	SS		**Lean Clay (CL)** Grey, with fine angular gravel, low cohesion, dense, moist. End of Borehole		
45		45			

Well Construction Diagram



Procover (2.25 ft AG) set in concrete.

2" Schedule 40 PVC

Bentonite Seal

#5 Filter Sand

0.010" Slot Screen with silt sock

APPROVED BY: DATE:

LFR

LOG OF BORING/WELL: LMW-25

PAGE: 1 of 1

PROJECT NAME Landfill Groundwater Well

CLIENT Johns Manville

PROJECT LOCATION Waukegan, Illinois

PROJECT NUMBER 009-07992-00, 001

LOCATION East of Landfill, North of LMW-26

OVA EQUIPMENT Not Measured

GROUND ELEVATION 592.65' AMSL HOLE DIAMETER 8.25 Inch

TOP OF CASING ELEVATION 595.02' AMSL HOLE DEPTH 15.00 ft bgs

∇ FIRST ENCOUNTERED WATER 13 ft bgs

▼ STABILIZED WATER 11.51 ft bgs

LOGGED BY Stuart Engelke DATE August 21, 2008

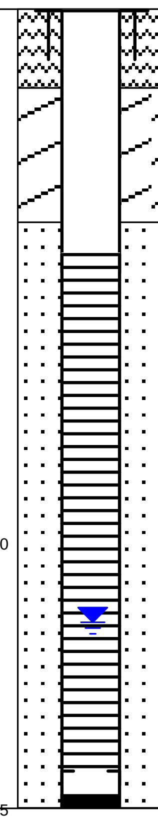
DRILLING CONTRACTOR CS Drilling

DRILLING METHOD Hollow Stem Auger

STAMP (IF APPLICABLE) AND/OR NOTES

DEPTH (Feet)	SAMPLE TYPE	SAMPLE RECOVERY	GRAPHIC LOG	DEPTHS (ft bgs)	LITHOLOGIC DESCRIPTION	Elevations (ft)	PID or OVA (ppmv)	Depths (ft bgs)
					Ground Surface	591.8		
0	HSA			0	Blind drill to 15 ft bgs, observations of soil cuttings. Dark brown sand and gravel fill.		N/M	0
					Fill Brown to grey sand and fine gravel mix, moist to wet soil cuttings.	590.0		
5	HSA			5		585.0		5
10	HSA			10	**Poorly Graded Sand (SP)** Brown to grey, medium to fine grained, well sorted, moist to wet, trace fine rounded gravel.	580.0		10
15				15	End of Borehole	575.0		15
20				20				20

Well Construction Diagram



APPROVED BY: DATE:

LFR

LOG OF BORING/WELL: LMW-26

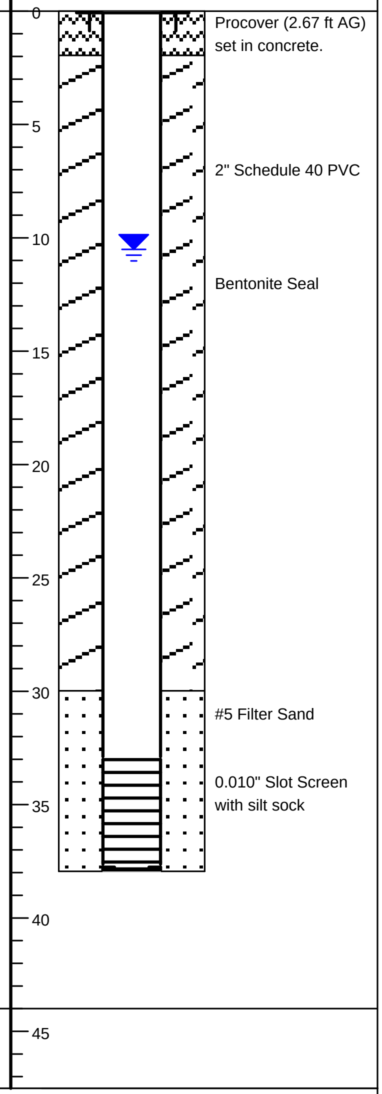
PROJECT NAME Landfill Groundwater Well
CLIENT Johns Manville

PROJECT LOCATION Waukegan, Illinois
PROJECT NUMBER 009-07992-00, 001
LOCATION East of Landfill, south of LMW-25
OVA EQUIPMENT Not Measured
GROUND ELEVATION 592.5' AMSL HOLE DIAMETER 8.25 Inch
TOP OF CASING ELEVATION 594.92' AMSL HOLE DEPTH 44.0 ft bgs
FIRST ENCOUNTERED WATER 12 ft bgs
STABILIZED WATER 11.61 ft bgs
LOGGED BY Stuart Engelke DATE August 21, 2008

DRILLING CONTRACTOR CS Drilling
DRILLING METHOD Hollow Stem Auger/Split Spoon
STAMP (IF APPLICABLE) AND/OR NOTES

DEPTH (Feet)	SAMPLE TYPE	DEPTHS (ft bgs)	LITHOLOGIC DESCRIPTION	Elevations (ft)	PID or OVA (ppmv)
			Ground Surface	592.5	
0–5	HSA	0	**Fill** Blind drill to 40 ft bgs, observations of soil cuttings. Sand and gravel mix, fill.	590.0	N/M
5–10	HSA	5	**Sand (SP)** Brown to grey sand and fine gravel mix, moist to wet soil cuttings.	585.0	
10–15	HSA	10		580.0	
15–20	HSA	15		575.0	
20–25	HSA	20		570.0	
25–30	HSA	25		565.0	
30–35	HSA	30		560.0	
35–40	HSA	35		555.0	
40–42	SS	40	**Poorly Graded Sand (SP)** Grey, fine grained, well sorted, wet, dense, trace carbonate shells.	550.0	
42–44	SS				
44–46		45	**Lean Clay (CL)** Grey, with 10% very fine angular gravel, very dense to hard, wet, trace very fine sand, glacial till.		

Well Construction Diagram



APPROVED BY: DATE:

LFR

PROJECT NAME Landfill Groundwater Well

CLIENT Johns Manville

LOG OF BORING/WELL: SMW-08AR

PROJECT LOCATION Waukegan, Illinois

PROJECT NUMBER 009-07992-00, 001

LOCATION East of Landfill, south of SMW-09

OVA EQUIPMENT Not Measured

GROUND ELEVATION 592.11' AMSL **HOLE DIAMETER** 8.25 Inch

TOP OF CASING ELEVATION 594.47' AMSL **HOLE DEPTH** 15 ft bgs

▽ **FIRST ENCOUNTERED WATER** 11 ft bgs

▼ **STABILIZED WATER** 11.20 ft bgs

LOGGED BY Stuart Engelke **DATE** August 25, 2008

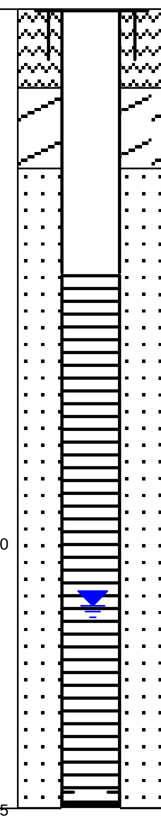
DRILLING CONTRACTOR CS Drilling

DRILLING METHOD Hollow Stem Auger

STAMP (IF APPLICABLE) AND/OR NOTES

DEPTH (Feet)	SAMPLE TYPE	SAMPLE RECOVERY	GRAPHIC LOG	DEPTHS (ft bgs)	LITHOLOGIC DESCRIPTION	Elevations (ft)	PID or OVA (ppmv)	Depths (ft bgs)
					Ground Surface	592.1		
0				0	Blind drill to 15 ft bgs, observations of soil cuttings. Sand and gravel fill.		N/M	0
					Fill Brown sand and fine gravel mix, moist.	590.0		
	HSA							
5				5				5
	HSA					585.0		
					Poorly Graded Sand (SP) Brown to grey, medium to fine grained, well sorted, moist to wet, trace fine rounded gravel.			
10				10				10
	HSA					580.0		
15				15	End of Borehole			15
						575.0		
20				20				20

Well Construction Diagram



Procover (2.5 ft AG) set in concrete.

Bentonite Seal

#5 Filter Sand

2" Stainless Steel 0.010" Slot Screen

APPROVED BY: __________ **DATE:** __________

LFR

LOG OF BORING/WELL: SMW-12R

PROJECT NAME: Landfill Groundwater Well
CLIENT: Johns Manville

PROJECT LOCATION: Waukegan, Illinois
PROJECT NUMBER: 009-07992-00, 001
LOCATION: South of Landfill, east of SMW-13
OVA EQUIPMENT: Not Measured
GROUND ELEVATION: 590.30' AMSL — HOLE DIAMETER: 8.25 Inch
TOP OF CASING ELEVATION: 592.54' AMSL — HOLE DEPTH: 14 ft bgs
∇ FIRST ENCOUNTERED WATER: 8 ft bgs
▼ STABILIZED WATER: 7.71 ft bgs
LOGGED BY: Stuart Engelke — DATE: August 26, 2008

DRILLING CONTRACTOR: CS Drilling
DRILLING METHOD: Split Spoon/Hollow Stem Auger

STAMP (IF APPLICABLE) AND/OR NOTES

DEPTH (Feet)	SAMPLE TYPE	SAMPLE RECOVERY	GRAPHIC LOG	DEPTHS (ft bgs)	LITHOLOGIC DESCRIPTION	Elevations (ft)	PID or OVA (ppmv)	Depths (ft bgs)	Well Construction Diagram
					Ground Surface	590.3			
0	SS			0	Gravel and silt fill.		N/M	0	Procover (2.5 ft AG) set in concrete.
1–3	SS				**Fill** Brown silt and sand mix, moist.				Bentonite Seal; #5 Filter Sand
3–8	SS, SS, SS			5	**Fill** Brown sand and silt mix, moist.	585.0		5	0.010" Slot Screen 2" Stainless Steel
8–14	SS, SS, SS			10	**Poorly Graded Sand (SP)** Grey, medium grained, well sorted, moist to wet, dense, trace fine rounded gravel.	580.0		10	
14					End of Borehole				
15				15		575.0		15	
20				20				20	

APPROVED BY: ____________ DATE: ____________

LFR

Log of Borehole: P-87

LFR LEVINE•FRICKE	Client: Johns Manville	Project: Landfill Groundwater Levels		Project No: 07992
	Project Location: Waukegan, Illinois	Total Depth: 11.25	Elevation:	Date Start: 4/21/03
Surface Conditions: Topsoil along road				Date End: 4/21/03
Drilling Contractor: CS Drilling		Driller: Joe	Geologist/Engineer: D. Kulczycki	

SAMPLE DATA

Sample Number	Sample Type	N Value (bpf)	Recovery (%)	PID/FID (ppmv)	Analytical Sample
1	Tube		75		
2	Tube		NA		
3	Tube		50		

SUBSURFACE PROFILE

Depth (ft)	Soil Description	Remarks
0	Ground Surface	
0–2.5	***Lean clay (CL)*** Dark brown; moist; stiff; low plasticity; 5% rootlets grading to brown; slightly moist; hard; trace fine gravel.	Boring advanced with a geoprobe using a 2" OD by 4' long macrotube sampler.
2.5–3.5	***Poorly Graded Sand (SP)*** Brown; moist; mod. dense; mostly medium sand with trace fine gravel.	
3.5–8	***Silty Sand (SM)*** Black; slightly moist; dense; mostly roofing shingles, transite, slag, cinders, little fine sand, trace fines.	Interval (4-8') advanced with a geoprobe using a 2" OD direct push drive casing with expendable aluminum point.
8–11.25	***Poorly Graded Sand (SP)*** Grayish brown; moist; mod. dense; mostly medium sand with trace fine gravel.	
11.25	End of Borehole	1" diameter PVC piezometer installed 4/21/03.

Log of Borehole: P-88

LFR LEVINE•FRICKE	Client: Johns Manville	Project: Landfill Groundwater Levels		Project No: 07992
	Project Location: Waukegan, Illinois	Total Depth: 10.5	Elevation:	Date Start: 4/21/03
Surface Conditions: Topsoil along road				Date End: 4/21/03
Drilling Contractor: CS Drilling		Driller: Joe	Geologist/Engineer: D. Kulczycki	

SAMPLE DATA								SUBSURFACE PROFILE		
Sample Number	Sample Type	N Value (bpf)	Recovery (%)	PID/FID (ppmv)	Analytical Sample	Well Data	Depth (ft)	Symbol	Soil Description	Remarks
							0		Ground Surface	Boring advanced with a geoprobe using a 2" OD direct push drive casing with expendable aluminum point.
							1			
							2			
							3			
							4			
							5			
							6			
							7			
							8			
							9			
							10			
							11		End of Borehole	1" diameter PVC piezometer installed on 4/21/03
							12			
							13			
							14			
							15			

Log of Borehole: P-89

LFR LEVINE•FRICKE	**Client:** Johns Manville	**Project:** Landfill Groundwater Levels		**Project No:** 07992
	Project Location: Waukegan, Illinois	**Total Depth:** 10.75	**Elevation:**	**Date Start:** 4/21/03
Surface Conditions: Topsoil along road				**Date End:** 4/21/03
Drilling Contractor: CS Drilling		**Driller:** Joe	**Geologist/Engineer:** D. Kulczycki	

Sample Number	Sample Type	N Value (bpf)	Recovery (%)	PID/FID (ppmv)	Analytical Sample	Well Data	Depth (ft)	Symbol	Soil Description	Remarks
							0		Ground Surface	
1	Tube		80				0–4		**Poorly Graded Sand (SP)** Brown; moist; mod. dense; mostly medium sand, trace coarse angular gravel at top. **Lean Clay (CL)** Dark brown; moist; stiff; medium plasticity; few fine gravel. **Transite** Gray; dry; hard; fibrous; layered. **Silty Sand (SM)** Black; slightly moist; dense; mostly coarse sand, little fines, few slag, cinders, red brick.	Boring advanced with a geoprobe using a 2" OD by 4' long macrotube sampler.
2	Tube		100				4–8		**Poorly Graded Sand (SP)** Grayish brown; moist; mod. dense; mostly medium sand with trace fine gravel.	
3			NA				8–10.75		grading to wet.	Interval (8-10.75') advanced with a geoprobe using a 2" OD direct push drive casing with expendable aluminum point.
							10.75		End of Borehole	1" diameter PVC piezometer installed 4/21/03.

Log of Borehole: P-90

LFR LEVINE•FRICKE	**Client:** Johns Manville	**Project:** Landfill Groundwater Levels	**Project No:** 07992
	Project Location: Waukegan, Illinois	**Total Depth:** 11.8 / **Elevation:**	**Date Start:** 4/21/03
Surface Conditions: Gravel Road			**Date End:** 4/21/03
Drilling Contractor: CS Drilling		**Driller:** Joe	**Geologist/Engineer:** D. Kulczycki

SAMPLE DATA / SUBSURFACE PROFILE

Sample Number	Sample Type	N Value (bpf)	Recovery (%)	PID/FID (ppmv)	Analytical Sample	Well Data	Depth (ft)	Symbol	Soil Description	Remarks
							0		Ground Surface	Boring advanced with a geoprobe using a 2" OD direct push drive casing with expendable aluminum point.
							11.8		End of Borehole	1" diameter PVC piezometer installed on 4/21/03.

Log of Borehole: P-91

LFR LEVINE•FRICKE	Client: Johns Manville	Project: Landfill Groundwater Levels		Project No: 07992
	Project Location: Waukegan, Illinois	Total Depth: 11.8	Elevation:	Date Start: 4/21/03
Surface Conditions: Gravel Road				Date End: 4/21/03
Drilling Contractor: CS Drilling		Driller: Joe	Geologist/Engineer: D. Kulczycki	

SAMPLE DATA								SUBSURFACE PROFILE		
Sample Number	Sample Type	N Value (bpf)	Recovery (%)	PID/FID (ppmv)	Analytical Sample	Well Data	Depth (ft)	Symbol	Soil Description	Remarks
							0		Ground Surface	Boring advanced with a geoprobe using a 2" OD direct push drive casing with expendable aluminum point.
							1			
							2			
							3			
							4			
							5			
							6			
							7			
							8			
							9			
							10			
							11			
							12		End of Borehole	1" diameter PVC piezometer installed on 4/21/03.
							13			
							14			
							15			

Log of Borehole: P-92

LFR LEVINE•FRICKE	Client: Johns Manville	Project: Landfill Groundwater Levels		Project No: 07992
	Project Location: Waukegan, Illinois	Total Depth: 11.9	Elevation:	Date Start: 4/21/03
Surface Conditions: Gravel Road				Date End: 4/21/03
Drilling Contractor: CS Drilling		Driller: Joe	Geologist/Engineer: D. Kulczycki	

Sample Number	Sample Type	N Value (bpf)	Recovery (%)	PID/FID (ppmv)	Analytical Sample	Well Data	Depth (ft)	Symbol	Soil Description	Remarks
							0		Ground Surface	Boring advanced with a geoprobe using a 2" OD direct push drive casing with expendable aluminum point.
							12		End of Borehole	1" diameter PVC piezometer installed on 4/21/03.

Log of Borehole: P-93

LFR LEVINE·FRICKE	**Client:** Johns Manville	**Project:** Landfill Groundwater Levels		**Project No:** 07992
	Project Location: Waukegan, Illinois	**Total Depth:** 11.75	**Elevation:**	**Date Start:** 4/21/03
Surface Conditions: Topsoil along road				**Date End:** 4/21/03
Drilling Contractor: CS Drilling		**Driller:** Joe	**Geologist/Engineer:** D. Kulczycki	

SAMPLE DATA

Sample Number	Sample Type	N Value (bpf)	Recovery (%)	PID/FID (ppmv)	Analytical Sample
1	Tube		75		
2	Tube		100		
3	Tube		75		

SUBSURFACE PROFILE

Depth (ft)	Soil Description	Remarks
0	Ground Surface	
0–1.4	***Lean clay (CL)*** Dark brown; moist; stiff; low plasticity; 10% rootlets	Boring advanced with a geoprobe using a 2" OD by 4' long macrotube sampler.
1.4–3.5	***Well Graded Gravel with Sand (GW)*** Gray; dry; dense; mostly coarse gravel with trace coarse sand.	
3.5–5	***Silty Sand (SM)*** Black; moist; dense; mostly coarse sand, little roofing shingles, transite, slag, cinders, trace fines.	
5–6.2	***Well Graded Sand (SW)*** Tan; dry; dense; mostly fine sand, little fibrous material, trace transite.	
6.2–7.4	***Roofing Material*** Black; dry; hard; shingle-like with granules.	
7.4–7.8	***Transite*** Gray; moist; dense; fibrous; layered	
7.8–11.75	***Poorly Graded Sand (SP)*** Grayish brown; moist; mod. dense; mostly coarse sand with trace fine gravel. grading to wet; medium sand.	
11.75	End of Borehole	1" diameter PVC piezometer installed 4/21/03.

Log of Borehole: P-94

LFR LEVINE•FRICKE	Client: Johns Manville	Project: Landfill Groundwater Levels		Project No: 07992
	Project Location: Waukegan, Illinois	Total Depth: 14.25	Elevation:	Date Start: 4/21/03
Surface Conditions: Grassy soil				Date End: 4/21/03
Drilling Contractor: CS Drilling		Driler: Joe	Geologist/Engineer: D. Kulczycki	

SAMPLE DATA								SUBSURFACE PROFILE		
Sample Number	Sample Type	N Value (bpf)	Recovery (%)	PID/FID (ppmv)	Analytical Sample	Well Data	Depth (ft)	Symbol	Soil Description	Remarks
							0		Ground Surface	Boring advanced with a geoprobe using a 2" OD direct push drive casing with expendable aluminum point.
							1			
							2			
							3			
							4			
							5			
							6			
							7			
							8			
							9			
							10			
							11			
							12			
							13			
							14			
							15		End of Borehole	1" diameter PVC piezometer installed on 4/21/03.

Appendix C

Landfill Gas Monitoring Results from 2015 Annual Report February 14, 2013

Table 2
Johns Manville - Waukegan Plant
On-Site Landfill Gas Monitoring
Below Ground Monitoring Locations

Monitoring Location	Pressures (in. water)									
	5/21/2008	9/23/2008	3/20/2009	9/17/2009	3/24/2010	9/20/2010	3/21/2011	9/21/2011	3/22/2012	9/17/2012
LGW-01	0.00	0.35	0.30	0.00	0.13	0.26	0.16	0.00	0.1	0.01
LMW-02	0.00	0.20	0.14	0.01	0.00	0.20	0.00	0.00	0.1	0.00
LMW-03	-0.43	0.00	0.29	0.03	0.18	0.27	0.12	0.00	0.1	0.03
LMW-04	0.43	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
LMW-05	0.00	0.15	0.20	0.10	0.08	0.15	0.18	0.00	0.0	0.03
LMW-06	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.0	0.00
LMW-07	-0.02	0.00	0.00	0.02	0.00	0.36	0.80	0.00	0.1	0.22
LMW-09	0.00	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
LMW-10	0.18	0.14	0.00	0.00	0.00	0.07	0.06	0.00	0.0	0.10
LMW-12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.1	0.10
LMW-19	NA	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.0	0.02
LMW-21	NA	0.00	0.12	0.03	0.00	0.01	0.10	0.00	0.1	0.02
LMW-23	NA	0.00	0.04	0.03	0.00	0.00	0.02	0.02	0.0	0.03
LMW-25	NA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.01
SMW-07A	NA	0.32	0.08	0.00	0.00	0.00	0.00	0.00	0.0	0.00
SMW-08A	0.00	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
SMW-08AR	NA	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.0	0.00
SMW-10A	0.38	-0.48	0.24	0.80	0.07	0.00	0.00	0.00	0.0	0.20
SMW-12	-0.02	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
SMW-12R	NA	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.0	0.02
P-87	0.00	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
P-88	NM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
P-89	0.00	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
P-90	0.00	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
P-91	0.00	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
P-92	0.00	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
P-93	0.00	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
P-94	NM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
04-92	-0.02	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
04-89	0.00	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
04-91	NM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM

NM = Not Measured
NA = Not Available (well not installed yet)
NLM = No Longer Measured (due to Adjusted Standard)
A negative pressure indicates a vacuum.
Depth to water is measured from top of casing.

Table 2 (continued)
Johns Manville - Waukegan Plant
On-Site Landfill Gas Monitoring
Below Ground Monitoring Locations

Monitoring Location	CH_4 Levels (%)									
	5/21/2008	9/23/2008	3/20/2009	9/17/2009	3/24/2010	9/20/2010	3/21/2011	9/21/2011	3/22/2012	9/17/2012
LGW-01	63.40	67.10	0.00	84.40	46.80	61.80	28.30	60.50	40.8	55.8
LMW-02	2.30	5.00	0.00	2.00	0.00	5.20	0.50	26.60	4.3	45.8
LMW-03	3.10	0.30	0.00	0.10	0.00	26.30	17.20	14.50	9.0	23.7
LMW-04	15.20	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
LMW-05	0.00	0.50	0.00	21.60	14.00	29.70	5.40	25.20	8.0	22.9
LMW-06	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.20	0.0	0.1
LMW-07	0.00	0.00	0.00	0.10	0.00	0.00	0.10	0.10	0.0	0.1
LMW-09	0.20	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
LMW-10	0.00	10.50	0.00	0.00	0.00	0.00	0.10	0.00	0.0	0.1
LMW-12	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.10	0.0	0.0
LMW-19	NA	0.00	0.00	0.10	0.00	0.00	0.00	0.10	0.0	0.1
LMW-21	NA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0
LMW-23	NA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0
LMW-25	NA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0
SMW-07A	NA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.0
SMW-08A	0.00	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
SMW-08AR	NA	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.0	0.0
SMW-10A	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.0	0.0
SMW-12	0.10	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
SMW-12R	NA	0.00	0.00	0.10	0.00	0.00	0.00	0.10	0.0	0.0
P-87	0.10	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
P-88	NM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
P-89	0.10	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
P-90	0.10	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
P-91	0.00	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
P-92	0.10	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
P-93	0.00	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
P-94	NM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
04-92	0.00	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
04-89	0.00	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
04-91	NM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM

NM = Not Measured
NA = Not Available (well not installed yet)
NLM = No Longer Measured (due to Adjusted Standard)
A negative pressure indicates a vacuum.
Depth to water is measured from top of casing.

Table 2 (continued)
Johns Manville - Waukegan Plant
On-Site Landfill Gas Monitoring
Below Ground Monitoring Locations

Monitoring Location	CO_2 Levels (%)									
	5/21/2008	9/23/2008	3/20/2009	9/17/2009	3/24/2010	9/20/2010	3/21/2011	9/21/2011	3/22/2012	9/17/2012
LGW-01	0.2	0.1	0.0	6.4	2.0	2.5	3.6	2.3	5.3	2.0
LMW-02	0.1	0.0	0.0	0.1	0.1	0.4	0.3	1.3	1.2	1.1
LMW-03	1.1	0.0	0.1	0.0	0.1	4.7	3.3	3.7	2.1	2.3
LMW-04	2.0	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
LMW-05	0.3	0.2	0.0	1.6	0.2	0.5	0.7	1.0	0.5	1.5
LMW-06	0.1	0.8	0.0	0.2	0.2	0.4	0.1	0.1	0.0	0.6
LMW-07	1.2	0.9	0.0	3.2	0.3	0.5	0.1	0.0	0.1	0.2
LMW-09	7.5	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
LMW-10	0.0	0.8	0.0	0.8	0.4	0.2	0.0	0.0	0.1	0.1
LMW-12	1.7	6.6	0.0	7.2	2.1	7.5	1.1	5.1	1.3	6.8
LMW-19	NA	6.3	0.0	7.9	1.0	6.4	0.8	6.2	2.1	6.8
LMW-21	NA	0.0	0.0	0.0	0.1	0.1	0.9	0.0	0.0	0.0
LMW-23	NA	2.2	0.0	3.6	0.1	3.9	1.2	2.5	0.5	3.3
LMW-25	NA	0.0	0.0	5.6	2.0	5.3	2.0	4.8	1.7	6.5
SMW-07A	NA	0.8	0.0	3.7	0.1	0.0	1.8	2.7	1.3	4.5
SMW-08A	0.3	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
SMW-08AR	NA	3.8	0.0	4.8	0.1	5.1	0.8	3.1	0.3	4.3
SMW-10A	0.2	0.0	0.0	0.1	1.3	0.4	0.6	0.0	0.0	3.0
SMW-12	0.0	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
SMW-12R	NA	10.8	0.0	12.4	4.0	9.9	2.0	0.1	3.9	10.7
P-87	3.1	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
P-88	NM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
P-89	1.3	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
P-90	1.9	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
P-91	0.9	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
P-92	2.5	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
P-93	2.1	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
P-94	NM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
04-92	0.9	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
04-89	1.5	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
04-91	NM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM

NM = Not Measured
NA = Not Available (well not installed yet)
NLM = No Longer Measured (due to Adjusted Standard)
A negative pressure indicates a vacuum.
Depth to water is measured from top of casing.

Table 2 (continued)
Johns Manville - Waukegan Plant
On-Site Landfill Gas Monitoring
Below Ground Monitoring Locations

Monitoring Location	O_2 Levels (%)									
	5/21/2008	9/23/2008	3/20/2009	9/17/2009	3/24/2010	9/20/2010	3/21/2011	9/21/2011	3/22/2012	9/17/2012
LGW-01	0.9	0.0	20.7	1.1	5.7	0.9	0.9	0.0	1.7	0.4
LMW-02	19.2	18.3	20.7	16.7	20.1	17.2	19.1	5.8	16.5	3.1
LMW-03	17.0	19.7	20.7	20.1	20.3	2.7	6.5	4.4	11.5	9.6
LMW-04	9.1	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
LMW-05	13.6	0.5	20.7	1.2	11.8	0.4	3.7	0.0	7.8	0.2
LMW-06	20.8	19.0	20.7	19.8	19.7	19.8	20.8	20.1	20.8	20.6
LMW-07	16.6	18.2	20.6	14.9	19.0	19.5	20.8	20.1	20.5	21.0
LMW-09	0.8	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
LMW-10	20.5	7.1	20.7	14.6	16.9	18.9	21.1	20.7	18.8	20.1
LMW-12	17.2	7.1	20.7	10.1	13.7	10.5	18.2	13.4	17.2	9.6
LMW-19	NA	3.3	20.9	9.7	18.8	12.0	16.3	10.3	15.2	11.4
LMW-21	NA	20.4	21.0	20.1	20.5	20.1	19.7	20.6	20.8	20.5
LMW-23	NA	1.7	20.8	8.9	20.5	10.7	10.3	10.5	18.2	8.3
LMW-25	NA	20.2	20.7	11.8	1.4	3.7	5.4	4.1	5.6	3.0
SMW-07A	NA	18.3	20.7	12.9	20.2	20.4	12.7	17.1	15.4	13.0
SMW-08A	19.7	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
SMW-08AR	NA	10.6	20.8	13.2	20.6	12.5	18.9	14.3	19.6	13.0
SMW-10A	20.8	20.2	20.8	20.0	19.5	20.0	19.5	20.7	20.8	17.7
SMW-12	20.7	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
SMW-12R	NA	9.1	20.8	8.8	12.8	10.5	17.2	20.3	14.4	9.7
P-87	15.0	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
P-88	NM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
P-89	14.6	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
P-90	8.8	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
P-91	11.3	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
P-92	5.0	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
P-93	11.3	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
P-94	NM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
04-92	19.3	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
04-89	17.9	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
04-91	NM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM

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NA = Not Available (well not installed yet)
NLM = No Longer Measured (due to Adjusted Standard)
A negative pressure indicates a vacuum.
Depth to water is measured from top of casing.

Table 2 (continued)
Johns Manville - Waukegan Plant
On-Site Landfill Gas Monitoring
Below Ground Monitoring Locations

Monitoring Location	Depth to Water (ft)									
	5/21/2008	9/23/2008	3/20/2009	9/17/2009	3/24/2010	9/20/2010	3/21/2011	9/21/2011	3/22/2012	9/17/2012
LGW-01	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	41.87
LMW-02	40.02	45.35	47.24	49.09	49.58	Dry	Dry	Dry	Dry	50.19
LMW-03	41.16	45.74	Dry	Dry	Dry	Dry	Dry	Dry	Dry	49.95
LMW-04	58.20	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
LMW-05	9.18	13.95	Dry	Dry	Dry	Dry	13.85	13.76	13.68	13.89
LMW-06	36.89	36.63	36.35	37.50	37.39	38.05	37.74	37.48	37.89	38.74
LMW-07	39.31	39.05	38.85	39.94	39.77	39.77	40.25	39.78	40.21	41.05
LMW-09	19.47	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
LMW-10	16.53	18.45	Dry	Dry	Dry	Dry	Dry	Dry	Dry	20.48
LMW-12	11.45	10.79	10.72	10.94	11.16	11.74	11.79	11.49	11.88	12.49
LMW-19	NA	9.79	9.32	10.27	10.06	10.90	10.06	10.41	10.60	11.42
LMW-21	NA	10.53	10.30	10.81	10.75	11.52	11.15	11.21	11.39	12.16
LMW-23	NA	12.18	12.04	12.69	12.66	13.33	13.20	12.86	13.22	14.03
LMW-25	NA	18.47	13.11	13.88	13.73	14.47	14.26	14	14.31	15.13
SMW-07A	NA	12.40	12.22	12.89	12.83	13.52	13.38	13.05	13.42	14.16
SMW-08A	Dry	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
SMW-08AR	NA	10.94	12.91	13.43	13.49	14.14	14.08	13.69	14.11	14.87
SMW-10A	12.08	11.45	11.36	11.78	11.89	12.53	12.5	12.17	12.56	13.23
SMW-12	8.77	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
SMW-12R	NA	9.62	9.17	10.17	10.03	10.77	10.11	10.28	10.45	11.21
P-87	11.84	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
P-88	NM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
P-89	11.22	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
P-90	11.38	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
P-91	11.76	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
P-92	11.56	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
P-93	11.52	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
P-94	NM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
04-92	7.25	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
04-89	Dry	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM
04-91	NM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM	NLM

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NLM = No Longer Measured (due to Adjusted Standard)
A negative pressure indicates a vacuum.
Depth to water is measured from top of casing.

Table 3
Johns Manville - Waukegan Plant
On-Site Landfill Gas Monitoring
Ambient Monitoring Locations

Ambient Monitoring Location	5/21/2008		9/30/2008		3/20/2009		9/17/2009	
	CH_4 Level (%)	Location	CH_4 Level (%)	Location	CH_4 Level (%)	Location	CH_4 Level (%)	Location
Miscellaneous Disposal Pit Locations								
1	0.1	S Side, W	0	E Side	0	E Side	0.2	W Side
2	0.1	S Side, M	0	E Side	0	E Side	0.2	W Side
3	0.1	S Side, E	0	E Side	0	E Side	0.1	W Side
Collection Basin Locations								
4	0.1	NR	0	S Side	0	E Side	0.1	W Side
5	0.1	NR	0	E Side	0	E Side	0.3	W Side
6	0.1	NR	0	E Side	0	E Side	0.2	W Side
Wind Direction	NNW		WNW		WNW		E	
Wind Speed (mph)	NR		7-18		3		2.9	

Ambient Surface Methane (CH_4) Levels (% by volume in air). Measurements are collected at 1 inch above the ground. Locations vary depending upon wind direction and are 100 feet downwind from the waste boundary.
NR = Not Recorded

Table 3 (continued)
Johns Manville - Waukegan Plant
On-Site Landfill Gas Monitoring
Ambient Monitoring Locations

Ambient Monitoring Location	3/24/2010		9/20/2010		3/21/2011		9/21/2011	
	CH_4 Level (%)	Location	CH_4 Level (%)	Location	CH_4 Level (%)	Location	CH_4 Level (%)	Location
Miscellaneous Disposal Pit Locations								
1	0	N Side	0	W Side	0.1	W Side	0	E Side
2	0	N Side	0	W Side	0.1	W Side	0	E Side
3	0	N Side	0	W Side	0.1	W Side	0	E Side
Collection Basin Locations								
4	0	N Side	0	W Side	0.1	W Side	0	E Side
5	0	N Side	0	W Side	0.1	W Side	0	E Side
6	0	N Side	0	W Side	0.1	W Side	0	E Side
Wind Direction	S		E		E		W	
Wind Speed (mph)	1.4		3.0		2.7		10	

Ambient Surface Methane (CH_4) Levels (% by volume in air). Measurements are collected at 1 inch above the ground. Locations vary depending upon wind direction and are 100 feet downwind from the waste boundary.
NR = Not Recorded

Table 3 (continued)
Johns Manville - Waukegan Plant
On-Site Landfill Gas Monitoring
Ambient Monitoring Locations

Ambient Monitoring Location	3/22/2012		9/19/2012	
	CH_4 Level (%)	Location	CH_4 Level (%)	Location
Miscellaneous Disposal				
1	0.0	W Side	0.0	E Side
2	0.1	W Side	0.0	E Side
3	0.0	W Side	0.0	E Side
Collection Basin				
4	0.0	W Side	0.0	E Side
5	0.0	W Side	0.0	E Side
6	0.0	W Side	0.0	E Side
Wind Direction	SE		NW	
Wind Speed (mph)	5		0-5	

Ambient Surface Methane (CH_4) Levels (% by volume in air). Measurements are collected at 1 inch above the ground. Locations vary depending upon wind direction and are 100 feet downwind from the waste boundary.
NR = Not Recorded

Appendix D

Phase II Remedial Work Plan Regulatory Correspondence

LFR
ENVIRONMENTAL MANAGEMENT & CONSULTING ENGINEERING

February 8, 2008 Via Overnight Mail

Mr. Brad Bradley
Project Manager
United States Environmental Protection Agency Region 5
77 West Jackson Boulevard
Chicago, Illinois 60604-3507

Subject: Letter of Transmittal; Final Phase II Remedial Work Plan (Revision 0); On-Site Landfill Closure; Johns Manville, Waukegan, Illinois

Dear Mr. Bradley:

In accordance with the First Amended Consent Decree, enclosed are three copies of the Final Phase II Remedial Work Plan (Revision 0) for closure of the On-Site Landfill at the Johns Manville facility located at 1871 North Pershing Road, Waukegan, Illinois. This work plan describes placement of the final cover, monitoring of landfill gas, leachate, and groundwater, and proposed modifications to the O&M plan.

If you have any questions, please contact me at 847-649-2021 or Denny Clinton of JM at 303-808-2127.

Sincerely,

William A. Bow, C.P.G.
Principal/Vice President

cc: Denny Clinton/JM
Brent Tracy/JM
Jan Carlson/U.S. EPA (electronic copy only)
Sandra Bron/IEPA (2 copies)
Peter Orlinsky/IEPA (electronic copy only)
Elizabeth Wallace/IAG (electronic copy only)

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF:

VIA TELEFAX AND
CERTIFIED MAIL

RECEIVED
APR 16 2008
LFR INC.

April 14, 2008

Bill Bow, Principal
Levin-Fricke
630 Tollgate Road, Suite D
Elgin, IL 60123-9364

Dear Mr. Bow:

The U.S. Environmental Protection Agency (EPA), in consultation with the State of Illinois, has reviewed the February 8, 2008 "Final Phase II Remedial Work Plan- On-Site Landfill Closure" (the Work Plan) for the Johns-Manville Site in Waukegan, Illinois (the Site). EPA hereby approves the Work Plan with the following modifications:

1. The title of the document should be changed to avoid confusion with the 150-acre CERCLA landfill area. Possible alternate titles for the document are "Final Phase II Remedial Work Plan- Former Miscellaneous Disposal Pit Closure" and "Final Phase II Remedial Work Plan- Non-Asbestos-Containing Landfill Area Closure".

2. The potential exists for the CERCLA cap to be penetrated during the work, especially near the east side of Fill Area #2. The Work Plan must describe how this will be verified during construction and, if it is penetrated, how the cap will be repaired.

3. The Barrier Layer must be verified to have 12 inch thickness after the cut and fill activities. How this will be accomplished must be stated in the Work Plan.

4. The Sand Drainage Layer, Final Protective Layer, and Vegetative Cover must meet the criteria (soil type, compaction) used for input to the HELP modeling; how this will be demonstrated must be stated in the Work Plan.

5. Page 28: Schedule: remove "anticipated" and add definite completion date for construction activities. Either "November 15, 2008" or "4 months after contractor mobilization" would be acceptable.

Please submit amended pages for insertion into the Work Plan at your earliest convenience. If you have any questions concerning this letter, please contact me at (312) 886-4742.

Sincerely,

Brad Bradley

Brad Bradley
Remedial Project Manager

cc: Sandy Bron, Illinois EPA
Beth Wallace, Illinois Attorney General's Office

LFR ENVIRONMENTAL MANAGEMENT & CONSULTING ENGINEERING

June 20, 2008 Via Overnight Mail

Mr. Patrick Hamblin
Remedial Project Manager
United States Environmental Protection Agency Region 5
SRF-6J
77 West Jackson Boulevard
Chicago, Illinois 60604-3507

Subject: Letter of Transmittal; Final Phase II Remedial Work Plan (Revision 1); On-Site Landfill Closure; Johns Manville, Waukegan, Illinois

Dear Mr. Hamblin:

Enclosed are three sets of replacement pages for revisions made to the referenced Work Plan: (i) Binder Cover page and spine label, (ii) report cover page, table of contents and main Work Plan text, (iii) Tables B-1 and B-2 to insert before first page of Appendix B (added pages, not a replacement), (iv) Appendix D Construction Compliance Plan, and (v) Appendix F Sampling and Analysis Plan. Revision 1 of the referenced Work Plan reflects modifications requested by U.S. EPA in written correspondence to LFR dated April 14, 2008.

The modifications requested by U.S. EPA were addressed as follows:

EPA Item 1. The document title was revised to "Final Phase II Remedial Work Plan – Non-Asbestos-Containing On-Site Landfill" to provide clarification requested by U.S. EPA. Document titles and document references were also revised for Appendix D (Construction Compliance Plan) and Appendix F (Sampling and Analysis Plan).

EPA Item 2. The Work Plan was amended to clarify handling of work areas regarding potential CERCLA cap penetration east of Fill Area #2. CERCLA cap penetration is discussed in the Work Plan (Section 3.1.1) and Appendix D (Section 7.2).

EPA Item 3. Barrier layer thickness verification is discussed in the Work Plan (Section 3.1.1) and Appendix D (Section 7.1 and 8.0). Calculated barrier thicknesses are provided in Appendix B (Tables B-1 and B-2).

EPA Item 4. Cover layer soil type and compaction criteria are discussed in the Work Plan (Sections 3.1.1, 3.1.2, and 3.1.3) and Appendix D (Section 8.0).

EPA Item 5. A revised construction activities schedule is provided in the Work Plan (Section 6.0).

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Please insert the pages as indicated, and discard the replaced pages. We are considering this to be "Revision 1" of the Work Plan originally transmitted to U.S. EPA on February 8, 2008 and March 7, 2008 (Revised Drawings).

If you have any questions, please contact me at 847-649-2021 or Denny Clinton of JM at 303-808-2127.

Sincerely,

William A. Bow, C.P.G.
Principal/Vice President

cc: Denny Clinton/JM
Brent Tracy/JM
Jan Carlson/U.S. EPA (electronic copy only)
Sandra Bron/IEPA (3 copies)
Peter Orlinsky/IEPA (electronic copy only)
Elizabeth Wallace/IAG (electronic copy only)

Appendix E

On-Site Landfill Capping Construction Completion Report

DAVID M. PETERSON, PE, PC
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SPECIALIZING IN ENVIRONMENTAL SOLUTIONS

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NON-ASBESTOS CONTAINING ON-SITE LANDFILL

CAPPING ACTIVITIES

CONSTRUCTION COMPLETION REPORT

JOHNS MANVILLE
1871 N. PERSHING ROAD
WAUKEGAN, ILLINOIS 60087

November 2018

Prepared for:
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Executive Summary

This Construction Completion Report (CCR) has been prepared to document capping activities associated with the non-asbestos containing On-Site Landfill (OSL). The OSL encompasses two areas described in the First Amended Consent Decree (FACD) including the Miscellaneous Disposal Pit (Fill Area 1) and a portion of the Collection Basin (Fill Area 2). The United States Environmental Protection Agency (USEPA) approved the Final Phase II Remedial Work Plan – On-Site Landfill Closure with modifications on April 14, 2008. A revised final Work Plan addressed the requested modifications and was submitted to the USEPA on June 20, 2008. This revised Work Plan provided for capping the OSL using existing soils at a minimum thickness of one foot to create a low permeability layer, covered with a one foot sand drainage layer, and capped with a three foot vegetated protective cover layer.

Four independent contractors completed this work on behalf of Johns Manville including Lake County Grading (earthworks contractor), Levine-Fricke Recon (environmental consultant), Construction Quality Management (compaction testing and surveying) and David M. Peterson, PE, PC (Resident Site Engineer). This work was completed between August 7, 2008 and November 5, 2008.

This CCR documents that the thicknesses were achieved for each layer as measured on a maximum 70-foot grid. The same grid was used for each layer to ensure consistent results. It also documents that compaction efforts were successful in achieving the necessary compaction standards for each layer as measured not less than one test per 20,000 square feet for every lift that was no more than 8-inches thick. A vegetative cover has been established and the OSL cap is in a stable condition.

The OSL cap is performing as designed, demonstrated by the fact that there has been no leachate collected from the OSL since 2011, the vegetative cover remains intact, no significant erosion has occurred, and landfill gas monitoring is no longer required. Consequently, no further cap construction work is warranted at this time. Periodic inspections (currently monthly) are completed, as required by the current Operation and Maintenance (O&M) Plan. OSL O&M commenced on January 1, 2009 and is scheduled to continue for 30 years (until January 1, 2039).

1.0 Introduction

This Construction Completion Report (CCR) has been developed to document the capping closure activities performed in relation to the non-asbestos containing On-Site Landfill (OSL), located at the Johns Manville (JM) property at 1871 North Pershing Road in Waukegan Illinois (**Figure 1** – Site Location Map). The General Site Map (**Figure 2**) depicts the location of the OSL within the limits of the former JM Disposal Area and other significant features. The OSL area, subject to this CCR, include Fill Area #1 (FA1) and Fill Area #2 (FA2), shown on **Figure 3**.

Under the terms of the First Amended Consent Decree (FACD) a work plan titled Final Phase II Remedial Work Plan – On-Site Landfill Closure dated February 8, 2008 was prepared by Levine-Fricke Recon (LFR) of Elgin, Illinois, submitted to the United States Environmental Protection Agency (EPA), and subsequently approved with modifications on April 14, 2008. A Phase II Remedial Work Plan (Revision 1) dated June 20, 2008 (Work Plan) addressed all five modifications requested by the EPA as described in the transmittal letter accompanying the Work Plan. In the vernacular of the FACD, the OSL consists of the Miscellaneous Disposal Pit (MDP) that is FA1 and a portion of the Collection Basin portion that is FA2.

Bid specifications were prepared, following EPA approval, to solicit costs to cap the OSL in accordance with the approved Work Plan. Bids were received, evaluated by Johns Manville, and environmental remediation work was performed by Lake County Grading of Libertyville, Illinois. Site surveying and compaction testing work was completed by Construction Quality Management (CQM) of Green Bay, Wisconsin in consultation with LFR. David M. Peterson, PE, PC (DMP) acted as the Resident Site Engineer (RSE) during the project. All of these companies acted as independent contractors, reporting to Johns Manville.

OSL capping activities commenced August 7, 2008 and were substantially completed on November 5, 2008. Remedial activities included: clearing and grubbing, soil and non-ACM cut/fill, construction of a drainage swale, and construction of a one foot thick barrier (low permeability) from materials already on-site. The one foot thick clay barrier was then covered with a one foot thick sand drainage layer, including 4-inch PVC lateral drain pipes. The sand drainage layer was covered with a three foot thick final protective layer of compacted clayey soil. Upon completion of the cap, a vegetative cover was established. The final grade was constructed in a manner that ensures minimum component layer thicknesses and creates slopes suitable for drainage and long-term maintenance requirements. The barrier and final protective layers were compacted to minimize the infiltration of storm water beneath the cap. Final as-built drawings are included in **Appendix A** (**Drawings A-1 through A-9)**.

The following sections of the report describe prequalification of capping materials, barrier layer construction, sand drainage layer construction, final protective layer construction, vegetative cover, field activities, operation and maintenance activities, and a conclusion.

2.0 Prequalification of Capping Materials

2.1 Borrow Pit Sand

The sand drainage layer was constructed using stockpiled sand obtained from the on-site JM Borrow Pit. Sand was removed using long-stick excavators, hauled with off-road trucks, and stockpiled west of the CERCLA landfill (Sand Stockpile 1). Stockpiled sand was not mixed with other soils. Mechanical dredging limits in the Borrow Pit were not expanded any nearer to boring B-3 than shown in Figure 09-02 of **Appendix C**. No non-asbestos containing shingle tabs and other roofing debris near or within the JM Borrow Pit were moved during OSL capping activities. Dredging was expanded to the south as shown in Figure 1 of **Appendix B** to generate supplemental sand used for capping the OSL. Note that soil sample B-3 on Figure 1 (from 2005) was not at the same location as soil sample B-3 on Figure 09-02 (from 2003); these were two different sampling locations.

The OSL one foot thick sand drainage layer spanned 9.6 acres in FA1 and 4.1 acres in FA2. Approximately 22,100 cubic yards (CY) of clean sand was placed in-situ to create the drainage layer. The volume of sand used to construct the drainage layer was calculated by multiplying a thickness of 1 foot by the area of FA1 (9.6 acres) and area of FA2 (4.1 acres). These areas exceeded the limits of waste: 1 ft x (9.6 + 4.1 acres) x 43,560 sq.ft./acre x CY/27cu.ft. = 22,100 CY.

Prior to excavating the sand, it was sampled and analyzed to demonstrate compliance with the analytical requirements established for fill material within the approved Phase II Remedial Work Plan (Revision 1A) Wastewater Treatment Pond Closure submitted to the USEPA on January 13, 2005. Laboratory analytical testing results are included in **Appendix B** along with a map of sand stockpile 1 location.

Representative sand samples were collected from undisturbed Borrow Pit sand at various depth intervals. Shallow samples were collected using a shovel while deeper samples were collected using a Geoprobe equipped with disposable liners. Once collected, sand samples were transferred to sample containers using disposable gloves, the sample containers were put on loose ice in a cooler, and the samples were transported under chain of custody protocol to the laboratory for analysis. Sample identifications were BP-NW-1, BP-2, BP-3, BP-4, BP-5, BP-6, BP-7, BP-3 (0.5’), BP-6 (0.5’), BP-8 (16”), BP-8 (3’), BP-9 (15”), BP-9 (3’), BP-10 (14”), BP-10 (3’), BP-11 (16”), BP-11 (3’), BP-12 (13”), BP-12 (3’), BP-13 (12”), BP-13 (3’), BP-14 (15”), BP-14 (3’), and DUP-1.

The 23 sand samples plus one duplicate sample (DUP-1) were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), Resource Conservation and Recovery Act (RCRA) metals, antimony, pH, pesticides, polychlorinated biphenyls (PCBs), and asbestos. At the required sampling frequency of one sample per 10,000 cubic yards (CY), this sampling event prequalified 230,000 CY of sand which exceeded the volume used to construct the one foot thick drainage layer. All sand laboratory analyses for VOCs, SVOCs, RCRA Metals, antimony, pH, pesticides, PCBs, and asbestos were below criteria. Therefore, no summary tables were prepared. Sand data validation summaries are included in **Appendix J**.

Samples of sand were also collected for geotechnical analysis in 2003 by advancing soil borings in the perimeter of the Borrow Pit area. **Appendix C** provides the boring logs, sieve analysis results, and a map of the boring locations. A drill rig utilizing hollow stem augers was used to collect sand samples at four separate locations around the Borrow Pit down to the underlying clay up to approximately 27 feet below grade. The sand was evaluated by a geologist using the Unified Soil Classification System (USCS) and was determined to be generally fine to medium grained and moderately dense. The sieve analyses were consistent with these observations.

2.2 Lake County Clayey Soils

2.2.1 Barrier Layer

The barrier layer was constructed using Lake County clayey soils. This clay was placed in the 1990s while the Johns Manville Waukegan Plant was operational. This existing clay was approved for use as barrier material by USEPA approval of the Work Plan. There is no record of the clay source(s). Environmental testing was also performed of existing barrier clay and the results are included in **Appendix D**. Geotechnical testing of the existing barrier clay was presented in the Site Investigation Report dated September 26, 2005 (Report #27 of Table 1); these are provided in **Appendix E**.

2.2.2 Final Protective Cover

The final protective layer was constructed using Lake County clayey soils. The three foot thick final protective layer spanned 10.7 acres in Fill Area 1 and 4.5 acres in Fill Area 2. Approximately 73,600 cubic yards (CY) of clayey soils were placed in-situ. The volume of clay used to construct the protective cover was calculated by multiplying a thickness of 3 feet of compacted clay by the area of FA1 (10.7 acres) and area of FA2 (4.5 acres). Clay extended beyond the sand so the areas of clay cover are larger than those of sand: 3 ft x (10.7 + 4.5 acres) x 43,560 sq.ft./acre x CY/27cu.ft. = 73,600 CY.

The Lake County clayey soils were obtained from a nearby existing stockpile, located north and east of the OSL on the JM property (clay stockpile 12). Clay stockpile 12 was created on top of orange snow fence, that served to mark the bottom of the pile, so there was no over-excavation into the CERCLA cover.

This clayey soil was originally imported in 2007 to the JM property from a virgin overburden stockpile / borrow area at the Veolia Landfill located in Zion, Illinois. An excavator was used to dig six test holes that were spaced apart at the landfill. Clay samples were collected at 6 foot and 12 foot depths from each hole using disposable gloves to fill sample containers which were then put on loose ice in a cooler and transported under chain of custody protocol to the laboratory for analysis. Sample identifications were OZL-14 (6'), OZL-14 (12'), OZL-14 (12') DUP, OZL-15 (6'), OZL-15 (12'), OZL-16 (6'), OZL-16 (12'), OZL-17 (6'), OZL-17 (6') DUP, OZL-17 (12'), OZL-18 (6'), OZL-18 (12'), OZL-19 (6'), OZL-19 (12').

This clayey soil was sampled and analyzed to demonstrate compliance with the analytical requirements established for fill material within the approved Phase II Remedial Work Plan (Revision 1A) Wastewater Treatment Pond Closure, submitted to the USEPA on January 13, 2005. The 12 clay samples plus two duplicate samples (suffix DUP) were analyzed for VOCs, SVOCs, RCRA Metals, antimony, pH, pesticides, PCBs, and asbestos. At the required sampling frequency of one sample per 10,000 CY, this sampling event prequalified 120,000 CY of clay which exceeded the volume used to construct the three foot thick protective cover. Laboratory analytical testing results are included in **Appendix D** along with a surveyed drawing of clay stockpile #12.

All clay laboratory analyses for VOCs, SVOCs, RCRA Metals, antimony, pH, pesticides, PCBs, and asbestos were below criteria with the exception of one arsenic result. The arsenic result was 13.6 mg/kg which was above the metropolitan background level of 13 mg/kg. Consequently, a 95% upper confidence limit (UCL) calculation was performed including all other arsenic results. The mean and standard deviation for the 12 samples were 8.57 mg/kg and 2.10 mg/kg, respectively. For this calculation duplicate samples were averaged with the original samples to calculate the data point that was used. The 95% UCL calculation was 9.76 mg/kg which was less than 13 mg/kg, therefore, the clay was accepted for use. Clay data validation summaries are presented in **Appendix K**.

Samples of the clayey soils were also collected for geotechnical analysis. On May 14, 2008 six samples were collected from clay stockpile 12, and two samples were collected from clay stockpiled in FA2. An excavator was used to dig test pits at six random locations around the perimeter of clay stockpile 12. Similarly, the excavator was used to excavate two test pits into the FA2 clay. Test pits were excavated approximately four feet into the clay. A shovel was then used to scrape clay from the internal side walls of the excavations and fill 5-gallon buckets. One 5-gallon bucket of clay was collected from each test pit for each sample. The buckets were then transported to the geotechnical testing laboratory for analysis. The locations of the test pits were not surveyed.

All eight samples were analyzed for modified Proctor density, grain size, hydrometer, moisture content, Atterberg limits, and soil classification. Five source samples were also analyzed for coefficient permeability and permeability compaction. Geotechnical results are included in **Appendix E**. Samples JM-TP-1 through JM-TP-6 were collected from Clay Stockpile 12. Samples JM-TP-7 and JM-TP-8 were collected from Fill Area 2 clay. Stockpile 12 was used for both the barrier and the protective cover. Sample JM-TP-2 provided the maximum density via modified proctor testing for Clay Stockpile 12. Sample JM-TP-2 also had a higher maximum density than the average of JM-TP-7 and JM-TP-8. Consequently, due to its use in both the barrier and compacted clay cover, sample JM-TP-2 was used for all compaction testing.

3.0 Barrier Layer Construction

The primary site preparation tasks included clearing and grubbing, drainage swale construction, and barrier clay cut/fill operations to achieve final barrier layer elevations.

3.1 Clearing and Grubbing

The construction of the final cover system began with initial clearing and grubbing of FA1 and FA2 using a skid steer equipped with a mowing blade and bailers. This resulted in vegetation that was approximately two inches high and left the barrier clay intact. Roots were not pulled from the soil. Therefore, the barrier clay thickness was not tested following clearing and grubbing.

3.2 Drainage Swale Construction

There was no excavation of, or impacts to, the existing CERCLA cover within the perimeter of Fill Area 1 and Fill Area 2 during OSL capping activities. The CERCLA cover remained intact. Construction of the drainage swale to the east of FA2 required penetration of the CERCLA cover to achieve the necessary design elevations and allow for proper drainage. During construction of the drainage swale the following means and methods were used:

- Survey stakes were established identifying where excavation was required to construct the drainage swale and the thickness of the excavation.

- Overburden soil consisting of sand and clay (not underlying waste material) was removed and transported to the MDP east access road in FA1 for filling (prior to being capped with compacted barrier clay).

- A water truck equipped with a pump, hose, and nozzle was used to wet the excavation. An asbestos trained laborer and supervisor were equipped in Level C personal protective equipment including using half-face respirators equipped with HEPA cartridges.

- Roll-off boxes were imported, strategically staged, and lined with plastic sheeting.

- An excavator removed waste materials to achieve the target elevations. Excavated waste materials were loaded directly into roll-off boxes and the excavator tracks did not contact the waste material. The excavator operator was equipped in Level C personal protective equipment including using half-face respirator equipped with HEPA cartridges.

- After roll-off boxes were filled, the excess plastic sheeting was wrapped over the roll-off box contents and secured with adhesive and/or duct tape effectively “burrito wrapping” the box contents. Roll-off boxes were then placarded (asbestos) for transportation.

- Trucks picking up the roll-off boxes covered them with a tarp and the drivers were issued manifests. Truck drivers transported the roll-off boxes to Veolia Environmental Services, Zion Landfill (now called Advanced Disposal Zion Landfill) for disposal.

- Excavation, transportation, and disposal activities lasted five days from August 14 to August 20, 2008 (no work occurred on August 16 and 17). A total of 43 roll-off boxes were transported to the Veolia Zion Landfill and resulted in the disposal of 546.47 tons. Manifests are included in **Appendix L**.

- Clay from stockpile 12 was imported and used to fill the excavation. Clay was placed in maximum 8-inch lifts and compacted to a minimum of 90% modified proctor density until a thickness of 26 inches of clay was achieved. Machines only drove over clay, no machines drove over waste material. The clay was compacted in the drainage swale using the same means and methods used to compact clay within Fill Area 1 and Fill Area 2. The final clay surface served as the bottom of the drainage swale.

- The drainage swale clay was seeded and erosion control matting was installed over the seed to establish a stabilized vegetative cover.

3.3 Fill Area 1

The barrier layer grades for FA1 were developed in a manner that minimized cutting and filling of interim soil cover materials, while providing adequate grades for water drainage and cover maintenance. No waste material was used within the barrier layer.

The Work Plan discussed cutting and filling activities to achieve the design elevations. In doing such work it was necessary to relocate non-ACM waste materials. It was understood that this would occur as non-ACM waste materials were encountered in soil borings prior to commencing work described in the Work Plan. Relocated non-ACM waste material from FA1 was placed within the former Miscellaneous Disposal Pit (MDP) access road on the east side of FA1. This was accomplished using an excavator, off-road trucks, and a bulldozer. The volume of material placed to fill the Miscellaneous Disposal Pit former access road below the barrier layer surface is estimated to be 5,000 cubic yards. The volume of non-ACM waste materials represented a fraction of this amount; estimated to be 10%, or 500 cubic yards.

Relocated non-ACM waste material was covered with compacted Barrier Layer clay from FA1, compacted Barrier Layer clay from FA2, and compacted clay from Stockpile 12. Clay was relocated using an excavator and off-road trucks, placed with a bulldozer, and compacted with a vibratory sheepsfoot compactor.

Excavation and regrading of portions of the southern and eastern boundary slopes of FA1 was completed in a manner that decreased the existing interim soil cover slopes. Excavation and regrading in these areas was necessary to maintain the existing bench between the toe of FA1 final cover and the crest of the CERCLA cover slope to the south and east. Barrier layer elevations on the bench between the toe of FA1 slope and the crest of the CERCLA cover slope were graded in a manner that allows runoff and drainage from the final cover sand drainage layer to flow toward the outside slopes of the existing CERCLA landfill. Grading of the CERCLA cap was accomplished by placing additional soil over the existing cover; there was no excavation of the existing CERCLA cover.

3.4 Fill Area 2

Cutting and regrading of the interim soil cover in FA2 was completed in a manner that achieved the desired barrier layer grades. As described in the Work Plan, the thickness of the interim soil cover for FA2 ranges from approximately 1 to 15.6 feet following completed cut-fill operations. Excess excavated soils from FA2 not needed as part of the final protective layer were placed in the MDP Access Road area and compacted.

3.5 Barrier Layer Testing

Compaction testing and surveying were completed to document that construction of the OSL met the project requirements.

3.5.1 Compaction

Appendix F contains results of barrier layer moisture and density testing and Drawing A-3 illustrates the locations of the barrier density tests. Drawing A-9 illustrates where the Barrier Layer was constructed. Clay was compacted in a maximum of 8-inch lifts to 90% of modified Proctor at a moisture content slightly above optimum as established by ASTM D1557. Compaction testing was performed using a Troxler 3440 density meter where barrier layer clay was relocated to confirm it met the minimum requirements. Compaction testing was performed at a minimum frequency of one test per 20,000 square feet. Only final conforming compaction tests were recorded. If there were any non-conforming test results, then that data was not recorded since it did not represent a final condition, and there was no requirement to document it. **Appendix M** contains the standard operating procedure (SOP) and calibration logs for the density meter.

3.5.2 Surveying

Initial barrier layer design locations and elevations were based upon a 2003 survey, developed by LFR, and presented in the Work Plan. CQM surveyed the OSL on April 1, 2008 to document pre-construction conditions to determine if any elevations had changed since 2003. This more recent survey data was used by CQM to establish surveying locations for construction. Additional surveying locations were identified by CQM to improve accuracy and achieve the project requirement of one survey point no more than every 5,000 square feet while also including features such as breaks, crests, and toes of slopes. CQM applied a different survey point numbering system than LFR due to the increased number of survey locations. The pre-construction survey and design barrier layout are presented in **Appendix N**. These same points were consistently measured during the construction of the OSL cap for the barrier elevation, sand elevation, and clay surface elevation of the protective cover. The following table provides a cross reference of the LFR points that coincided with CQM points.

LFR Point (C-Boring)	CQM Point	LFR Point (C-Boring)	CQM Point	LFR Point (C-Boring)	CQM Point
1102 (C-02)	1050	1122 (C-22)	1061	1135 (C-35)	1074
1104 (C-04)	1051	1123 (C-23)	1062	1136 (C-36)	1075
1105 (C-05)	1052	1124 (C-24)	1063	1137 (C-37)	1076
1107 (C-07)	1053	1125 (C-25)	1064	1138 (C-38)	1077
1110 (C-10)	1054	1126 (C-26)	1065	1141 (C-41)	1078

LFR Point (C-Boring)	CQM Point	LFR Point (C-Boring)	CQM Point	LFR Point (C-Boring)	CQM Point
1112 (C-12)	1055	1128 (C-28)	1067	1144 (C-44)	1080
1114 (C-14)	1056	1129 (C-29)	1068	1145 (C-45)	1081
1115 (C-15)	1057	1130 (C-30)	1069	1146 (C-46)	1082
1116 (C-16)	1058	1131 (C-31)	1070	1149 (C-49)	1083
1117 (C-17)	1059	1132 (C-32)	1071	1150 (C-50)	1084
1119 (C-19)	1060	1133 (C-33)	1072	1151 (C-51)	1085
1121 (C-21)	1109	1134 (C-34)	1073	1158 (C-58)	1086

In addition, CQM discovered that some elevations had changed, and therefore, some of the design barrier elevations were modified. Those points included:

- LFR Boring C-16 (CQM Pt 1058): RWP Table B-1 barrier design elevation of 628.4 ft ASL changed to 628.88 ft ASL.
- LFR Boring C-28 (CQM Pt 1067): RWP Table B-1 barrier design elevation of 623.6 ft ASL changed to 624.49 ft ASL.
- LFR Boring C-31 (CQM Pt 1070): RWP Table B-1 barrier design elevation of 628.9 ft ASL changed to 628.83 ft ASL.
- LFR Boring C-43 (CQM Pt 1079): RWP Table B-1 barrier design elevation of 616.4 ft ASL changed to 616.70 ft ASL.
- LFR Boring C-47 (Near CQM Pt 1033): RWP Table B-1 barrier design elevation of 617.5 ft ASL changed to 617.59 ft ASL.
- LFR Boring C-52 (Beyond the Limit of Waste; no cap required): RWP Table B-1 barrier design elevation of 628.8 ft ASL changed to 628.44 ft ASL (settled by 0.36 feet).

Comprehensive tables of the survey point coordinates, LFR design elevations, CQM design elevations, and CQM record elevations for the barrier are included in **Appendix N**. **Appendix N** also includes a drawing that illustrates the locations of all LFR and CQM points along with their coordinates. These coordinates, and the drawing scale, can be used to measure distances and directions between LFR points and CQM points.

Completed barrier surfaces were surveyed on a maximum 70-foot grid pattern with a GPS unit to confirm that the barrier layer was constructed at or above design elevations to conform to the minimum barrier thickness within the limits of waste identified in the Work Plan. Drawing A-4 depicts both the design of the cap and the barrier layer elevations.

CQM compared the LFR design barrier elevation to the actual recorded barrier elevation constructed in the field on Drawing A-4. Barrier design elevations were targeted and ultimately varied a little from the design while allowing for at least a one foot thickness. These changes were minor modifications that still provided a drainage slope. However, the barrier thickness was not measured after the barrier clay was relocated. Consequently, a Geoprobe was utilized to complete 40 soil borings and confirm that the barrier clay was at least 12 inches thick where it had been relocated. Drawing A-9 contains a figure of the barrier clay thickness measurements and a table of the results. In addition, a hand auger boring was completed at LFR Point C-28 to confirm that the barrier thickness was at least 12 inches thick (15 inches was measured).

After the barrier layer was constructed, then the design sand elevation was calculated to be one foot above the recorded barrier elevation and is on Drawing A-5. The sand layer was constructed, surveyed, and the recorded sand elevation is on Drawing A-5. After the sand layer was constructed, then the design protective cover elevation was calculated to be three feet above the recorded sand elevation and is on Drawing A-6. The protective layer was constructed, surveyed, and the recorded protective cover clay surface elevation is on Drawing A-6. This process ensured that sand and protective clay thicknesses were achieved based upon as-built measurements.

4.0 Sand Drainage Layer Construction

A minimum 1-foot thick sand drainage layer was constructed over the barrier layer. The drainage layer extends over all of FA1 and FA2. An excavator and off-road trucks were used to load and haul sand over designated roads from a sand stockpile 1, west of the CERCLA landfill, to the OSL. Machines and trucks only drove on either sand or barrier layer clay; sand and clay were not mixed. Once sand was placed, it was graded using bulldozers equipped with GPS units.

Wooden stakes marked with surveyor tape at the 12 inch thickness were installed 50 to 70 feet apart. The placement of sand was observed visually during each day of work and measured randomly during construction. The thickness of the sand drainage layer was surveyed on a maximum 70-foot grid pattern with a GPS unit to confirm that the sand drainage layer met the targeted one foot nominal thickness. A grid pattern identical to the barrier layer was used to document the sand layer. Drawing A-5 depicts both the design of the sand layer and the drainage layer elevations.

A perimeter drain was constructed to provide an outlet for water collecting within the sand drainage layer. A perforated lateral drain pipe wrapped with geotextile was embedded in the perimeter of the sand drainage layer parallel to the lateral limits of the final cover in FA1 and FA2 using the specified solid drain pipe outlet locations. Outlets for the drain pipe in FA1 discharge to the perimeter of the final cover in FA1. Outlets for the drain pipe in FA2 discharge to the drainage swales along the east and west boundaries of the final cover in FA2.

5.0 Final Protective Layer Construction

The final protective layer consists of Lake County clayey soils compacted to a minimum thickness of three feet in areas overlying the sand drainage layer. The final protective layer was hauled from clay stockpile 12 using scrapers, placed using track machines, and compacted using a sheepsfoot compactor to 90% modified proctor (ASTM D1557). Machines and trucks only drove on the clay protective layer; sand and clay were not mixed. Once clay was placed, it was graded using bulldozers equipped with GPS units and driven over by loaded and unloaded scrapers before it was compacted using a sheepsfoot compactor.

Compaction testing was performed no more than every 20,000 square feet of each lift using a Troxler 3440 density meter. Only final conforming compaction tests were recorded; if there were any non-conforming test results then the data was not recorded as it did not represent a final condition and there was no requirement to document it.

Wooden stakes marked with surveyor tape at the 8 inch thickness were installed 50 to 70 feet apart. The clay was placed in a maximum of 8 inch lifts to achieve the target elevations. The placement of clay was observed visually during each day of work and the thickness was measured randomly during construction. The thickness of the protective clay layer was surveyed on a maximum 70-foot grid pattern with a GPS unit to confirm that the protective clay layer met the targeted three foot nominal thickness.

The surface of the final protective layer (approximately 6 inches) was not compacted with a sheepsfoot compactor. This layer was compacted via track machines and scrapers, in a manner that facilitated addition of soil amendments and establishment of vegetation. Final cover grades were achieved using bulldozers equipped with GPS units. The upper 6-inch layer of clay (thinner than lower maximum 8-inch lifts) achieved the project compaction requirements in the absence of the sheepsfoot compactor.

Appendix G contains results of final protective layer and east swale moisture and density testing and Drawing A-7 illustrates the locations of the barrier density tests. The final protective layer surface was surveyed on a maximum 70-foot grid pattern, by using a GPS unit to confirm that the final protective layer was a minimum of three feet thick. The thickness of each compacted lift was not surveyed, however, the number of lifts that were installed is accurately represented in the drawings and compaction testing tables. Surveying was performed with the identical grid pattern used to document the sand drainage layer. Drawing A-6 depicts both the design and recorded final protective layer elevations.

The final protective layer was sloped to drain surface water runoff to perimeter areas of FA1 and FA2. Surface water runoff from FA1 "sheet flows" to perimeter areas of the CERCLA cap. Surface water runoff from FA2 "sheet flows" to perimeter drainage swales, located along the south, west, and east boundaries of FA2.

Storm water runoff design was included in the Work Plan and construction of the OSL cap was consistent with the design. Surface pipes serve to route storm water beneath access roads to facilitate drainage. Storm water runoff to the north of FA1 largely flows to the Collection Basin infiltration gallery that was installed in 2014 to minimize ponding water thereby maintaining the integrity of the clay cap. Runoff from FA2 also infiltrates into the ground within the Collection Basin. A small amount of runoff from FA1 drains towards the Settling Basin. Storm water runoff to the south of FA1 flows as it did prior to construction of the OSL cap. The infiltration gallery near the south-east access road entrance (near Greenwood Avenue) was constructed in an effort to contain storm water runoff from construction activities in 2016. The infiltration gallery was not constructed as part of OSL capping activities although it does capture runoff from the OSL.

Appendix O provides an overall survey of the area and shows storm water drainage flow paths. Drawings A-5, A-6, and A-8 in **Appendix A** show details, piping, and more detailed drainage path information including swales and drainage piping beneath access roads nearer the OSL. The overall drawing, A-5, A-6, and A-8 are consistent with one another. Manholes and conveyance piping along the western side of the Collection Basin and OSL Fill Area #2 formerly routed surface water from the Settling Basin to the Industrial Canal. These manholes and conveyance piping are no longer functional now that the Settling Basin, Collection Basin, and Industrial Canal have been filled.

6.0 Vegetative Cover

The surface of the final protective layer was placed in a manner that facilitated growth of the vegetative cover. Following placement of the surficial protective layer, a skid steer, equipped with a spiked roller (pulverizer), was used to pulverize the clay. The surface was then amended with starter fertilizer, as required, to allow and promote the establishment of a good vegetative cover. The vegetative cover was constructed in a manner that was consistent with the cover of the CERCLA landfill, as approved in the Work Plan. Construction of the final cover required seeding with a mixture of Kentucky 31 (minimum 50 lbs/acre), Perennial Rye Grass (minimum 30 lbs/acre), Creeping Red Fescue (minimum 20 lbs/acre), and Cover Crop. Cover Crop is a seed mixture that consists of Winter Wheat, sewn with a minimum application rate of 56 lbs/acre. Additional fertilizer was added following the seeding to promote growth. Vegetation emerged through the erosion control blanket within one to two weeks following seeding.

7.0 Field Activities

A pre-construction meeting was held at the JM site on August 7 with Lake County Grading (LCG), Construction Quality Management (CQM), David M. Peterson, PE, PC (DMP), and Johns Manville (JM) personnel to kick-off the project. Work commenced following the meeting and continued until November 5. Equipment and materials used to complete the work are described in this section. In addition, this section contains a summary of the work performed on a weekly basis. A safety tailgate meeting was held prior to commencing work each day. Field reports are included in **Appendix H** and photographs are included in **Appendix I**. Field reports identifying "existing clay placement" identify areas where clay has been previously placed (i.e. not today). Field reports identifying "clay placed today" identify areas where clay was placed today. The nomenclature was used in an effort to distinguish today's work from previous work during remedial construction.

7.1 Equipment

- 7 Caterpiller 627 scrapers
- 4 Caterpillar off-road trucks
- 2 water trucks
- 1 tractor with disk attachment
- 1 Caterpillar D8R bulldozer
- 1 Caterpillar 850C sheepsfoot compactor
- 1 Bomag smooth drum roller
- 1 John Deere 850 bulldozer with Topcon 3D GPS equipment for grading to target elevations
- 1 John Deere 750J bulldozer with Topcon 3D GPS equipment for grading to target elevations
- 1 John Deere 350 excavator
- 1 John Deere 325 excavator
- 1 Caterpillar 312B excavator
- 1 skid steer equipped with a spiked roller used to pulverize the clay surface
- Troxler Model 3440 nuclear density gauge for in-place nuclear moisture/density testing
- GPS based survey equipment

7.2 Materials

- Sand from the on-site Borrow Pit (stockpiled west of the CERLCA landfill in Sand Stockpile 1).
- Clayey soils from the Zion landfill (Clay Stockpile 12).
- Geosynthetic clay liner: CETCO Claymax 200R
- Drainage pipe: Contech A-2000 4-inch corrugated, perforated plastic piping wrapped in filter fabric and connected to 4-inch Sch. 40 PVC pipe at outlets.

- Seeding: Growmark, Inc (1701 Towanda Ave, Bloomington, IL 61702) – 182 x 50 pound bags of project seeding containing 35.28% rye grain (high-rye 500 brand, origin: South Dakota, germination: 85%), 31.36% tall fescue (Kentucky 31, origin: Oregon, germination: 85%), 18.62% perennial ryegrass (origin: Canada, germination: 90%), 12.63% creeping red fescue (origin: Canada, germination: 85%), 0.42% crop, 0.14% weeds, 1.55% inert.
- Seeding: 180 x 50 pound bags of winter wheat.
- Starter fertilizer: Howard Johnson's Enterprises, Inc (700 W. Virginia, Milwaukee, WI 53204) – 145 x 50 pound bags of 10-21-10 fertilizer (10% ammonia-nitrogen, 21% available phosphate, 10% soluble potash and 11.4% combined sulfur), derived from ammonium phosphate, ammonium sulfate, potassium chloride (not more than 6% chlorine).
- Secondary fertilizer: Howard Johnson's Enterprises, Inc – 210 x 50 pound bags of 18-18-18 fertilizer with 60% Meth-Ex 38 slow release nitrogen (54.5 pounds each of nitrogen, phosphorous and potassium per acre).
- Erosion control matting: North American Green S75, 16 ft wide by 108 ft long (192 square yards) per roll.
- Woven geotextile: Mirafi 600X (base for access roads).
- Gravel aggregate: Illinois DOT CA-6 (access road gravel).

7.3 Weekly Work

Week 1: August 4 – August 8

- Preconstruction Meeting – August 7.
- Mobilization.
- Clearing and grubbing vegetation in FA1 and FA2.

Week 2: August 11 – August 15

- Mobilization.
- Clearing and grubbing vegetation in FA1 and FA2.
- Constructed drainage swale east and north of FA2.

Week 3: August 18 – August 22

- Removed excess clayey soil from FA2 and relocated it to FA1.
- Relocated non-ACM waste from the southern and eastern waste boundary of FA1 to within the interior of FA1 to fill the access road at the northeast corner.
- Cut and filled clayey soil in FA1 to achieve target elevations.
- Added water to clayey soil in FA1 prior to compaction.
- Graded and compacted clayey soil in FA1 and FA2 with sheepsfoot compactor.
- Further compacted clayey soil in FA1 and FA2 with smooth drum roller compactor.

- Surveyed and performed compaction testing for barrier layer in FA1.
- Completed western half and northeastern corner of clayey soil in FA1.
- Staked FA1 on a 50 foot grid to a thickness of 1.2 feet for sand placement control.
- Placed sand drainage layer in FA1.
- Staked drainage swale east and north of FA2.
- Constructed drainage swale east and north of FA2.
- Water trucks were used to water the roads for dust suppression.

<u>Week 4: August 25 – August 29</u>

- Project progress meeting.
- Cut and filled clayey soil in FA1 and FA2 to achieve target elevations.
- Graded and compacted clayey soil in FA1 and FA2 with sheepsfoot compactor.
- Further compacted clayey soil in FA1 and FA2 with smooth drum roller compactor.
- Installed geosynthetic clay liner (GCL) with a 4-inch drainage pipe on top in swale west of FA2.
- Surveyed and performed compaction testing for barrier layer in FA1 and FA2.
- Placed sand drainage layer in FA1 and FA2.
- Installed sand drainage pipes in eastern portion of FA2.
- Constructed drainage swale east and north of FA2.
- Placed compacted clay in drainage swale east of FA2.
- Confirmed a minimum of 26 inches of clay beneath east swale by utilizing test pits in areas where compacted clay was not placed.
- Surveyed sand drainage layer in FA1.
- Installed and compacted protective layer of clayey soils in FA1.
- Performed compaction testing for protective layer in FA1.
- Installed perimeter drain pipe in FA1 and covered it with sand.
- Water trucks were used to water the roads for dust suppression.
- Increased monitoring well heights in FA1 and FA2 and protected them with Sono tubes.

<u>Week 5: September 2 – September 5</u>

- Project progress meeting.
- Placed sand drainage layer in FA2.
- Surveyed sand drainage layer in FA2.
- Installed and compacted protective layer of clayey soils in FA1.
- Performed compaction testing for protective layer in FA1.
- Performed road maintenance on haul roads for drainage purposes.
- Water trucks were used to water the roads for dust suppression.

Week 6: September 8 – September 12

- Project progress meeting.
- Placed sand drainage layer in FA2.
- Installed and compacted protective layer of clayey soils in FA1 and FA2.
- Compaction tested the protective layer in FA1 and FA2.
- Surveyed sand drainage layer pipe outlets in FA1 and FA2.
- Water trucks were used to water the roads for dust suppression.

Week 7: September 15 – September 19

- Weekly project meeting.
- Installed and compacted protective layer of clayey soils in FA1.
- Compaction tested the protective layer in FA1.
- Placed and graded surficial clayey soil protective layer for seeding in FA1.
- Water trucks were used to water the roads for dust suppression.

Week 8: September 22 – September 26

- Installed and compacted protective layer of clayey soils in FA1 and FA2.
- Compaction tested the protective layer in FA1 and FA2.
- Placed and graded surficial clayey soil protective layer for seeding in FA1 and FA2.
- Surveyed FA1 protective layer.
- Pulverized the protective layer clayey soil surface of FA1 in preparation for seeding.
- Fertilized and seeded FA1.
- Installed erosion control matting in FA1 and secured it by stapling it to the ground.
- Water trucks were used to water the roads for dust suppression.

Week 9: September 29 – October 3

- Project progress meeting.
- Surveyed FA1 protective layer.
- Graded FA2 to final elevations.
- Pulverized the protective layer clayey soil surface of FA2 in preparation for seeding.
- Fertilized and seeded FA1 and FA2.
- Installed erosion control matting in FA1 and FA2 and secured it by stapling it to the ground.
- Surveyed FA2 protective layer.
- Installed concrete anchor pads around monitoring wells.

Week 10: October 6 – October 10

- Surveyed FA2 protective layer.

- Fertilized and seeded FA2.
- Installed erosion control matting in FA2 and secured it by stapling it to the ground.
- Improved access road south of FA2.

Week 11: October 13 – October 17

- Vegetation starting to grow in FA1.
- Site restoration.
- Demobilization of most equipment.

Week 12: October 20 – October 24

- Vegetation starting to grow in FA2.
- Vegetation continues to grow in FA1.

Week 13: October 27 – October 31

- Vegetation continues to grow in FA1 and FA2.

Week 14: November 3 – November 7

- Installed woven geotextile and 8-inch thick compacted CA-6 gravel for access roads on top of FA1 to access monitoring wells.
- Installed storm water drainage pipes beneath haul road between FA1 and FA2 and beneath access drive (ramp) up to FA1.
- Graded and contoured the ditch on the south side of FA2.
- Pulverized clay, seeded and fertilized the ditch on the south side of FA2.
- Installed erosion control matting in the ditch and secured it by stapling it to the ground.

8.0 Operation and Maintenance Activities

Operation and maintenance (O&M) activities for the OSL necessary to maintain the effectiveness of the constructed cap are described in this Section. O&M operations for the OSL are consistent with those of the JM Disposal Area as described in the current O&M Manual, Revision 1, dated October 11, 2002 (O&M Manual). JM Disposal Area O&M activities pertaining specifically to the OSL cap include site security, access roads, and the OSL final cover. Post closure maintenance requirements for the OSL are also described in 35 Illinois Administrative Code (IAC) 811.111.

8.1 Site Security

The JM property is secured by means of a six foot high perimeter fence and swinging gates, equipped with key entry padlocks. As described in the O&M Manual, site fencing, gates, locks and warning sites are inspected during weekly and monthly site walks, to identify any areas of breaching or vandalism. Monitoring wells are secured with lockable caps or lockable expandable plugs. Inspection logs from the O&M Manual are completed at the time of inspection. Repairs are completed, as necessary, in accordance with the O&M Manual.

8.2 Access Roads

Illinois Department of Transportation (IDOT) Class I or Class II access roads are located along the south and east boundaries of the OSL. In addition, other access roads constructed for light-duty traffic, by placing geotextile covered with compacted CA-6 gravel are present around the OSL. These roads are inspected weekly, as well as monthly, and are maintained in accordance with the current O&M Manual.

8.3 OSL Final Cover

The final OSL cover consists of three feet of clay (final protective layer) over one foot of sand (sand drainage layer) and over one foot of compacted clay (barrier layer). The final (upper) protective layer is vegetated. The primary function of the final cover is to reduce water percolation and infiltration through buried waste material and to route water from the sand drainage layer and protective cover to surface drainage. Since the OSL cap was completed, leachate recovery volumes have progressively decreased and no leachate has been recovered since 2011. The total amount of leachate collected since the installation of the final cover is 7.63 gallons, as reported in annual reports.

Routine O&M consists of regular inspections, tree/shrub removal, and erosion repair. During the first year following construction of the OSL, additional seed was placed and mowing events occurred. As a result, the vegetative cover thrived. Non-routine O&M requirements precipitated by conditions such as differential settlement and slope repair have not been necessary since construction was completed in 2008. Annual mowing of the OSL occurs.

No erosion control measures have been necessary for storm water drainage following construction of the OSL cap. This is largely due to the gradual slopes of the landfill cap and the established vegetation of the surrounding stable CERCLA cap completed in the early 1990s. The storm water drainage system functions as designed.

In accordance with the currently approved O&M Manual, OSL cover inspections were performed until the vegetative cover thrived. Monthly inspections are currently performed on the CERCLA vegetative cover as required by the currently approved O&M Manual. When cover maintenance is required, replacement materials will consist of seeding, sand and/or Lake County clayey soils meeting the prequalification requirements described in this report.

A revised O&M Manual was submitted to the USEPA, the USEPA provided comments, and a Response to Comments was submitted to the USEPA on June 13, 2018. Long term care of the OSL will be performed in accordance with the revised O&M Manual (once approved by the USEPA) and consistent with the requirements of the FACD. The revised O&M Manual will include a detailed monitoring schedule for the OSL, as well as other CERCLA units. Whenever possible, monitoring events will be completed for the CERCLA units at the same time for on-site efficiency.

The revised O&M Manual will include the following elements, at a minimum:

- Semi-annual visual inspections (April-May and September-October) of gravel access roads, perimeter security fence and gates, vegetative soil cover, and monitoring wells.
- Completion of semi-annual inspection logs.
- Maintenance, as required, of gravel access roads (due to erosion), perimeter security fence and gates (due to trespassers), vegetative soil cover (due to deep rooted vegetation (i.e. tree saplings) and burrowing animals), and monitoring wells (due to flaking paint).
- Groundwater monitoring
- Mowing
- Surveying of the protective cover in 2022 and 2027 to correspond to the next two 5-year monitoring events. Surveying will be completed using the same CQM points presented on Drawing A-6. **Appendix P** contains a drawing that illustrates the survey locations along with a table for future elevations and changes in elevations. If the settlement between the 2022 and 2027 surveying events is less than or equal to 0.25 feet (3 inches), then those particular points will no longer be surveyed. Surveying will continue on the remaining points every five years until the settlement is less than or equal to 0.25 feet between surveying events.

The required O&M period in accordance with the FACD is 30 years after completion of construction which commenced January 1, 2009. After 30 years, U.S. EPA and the State of Illinois shall evaluate the need for further operation and maintenance as specified in the FACD.

9.0 Conclusion

The barrier layer, sand drainage layer, and protective layer were constructed to the specifications included in the approved Work Plan. The surface of the OSL is stable and vegetated. Gravel roads enable access to the OSL. Monitoring wells were preserved during capping activities and remain secure and in good condition. O&M inspections are completed periodically (currently monthly) in concert with other CERCLA inspections. No further OSL capping activities are warranted.

Appendix A

Construction Documentation Drawings

Johns Manville

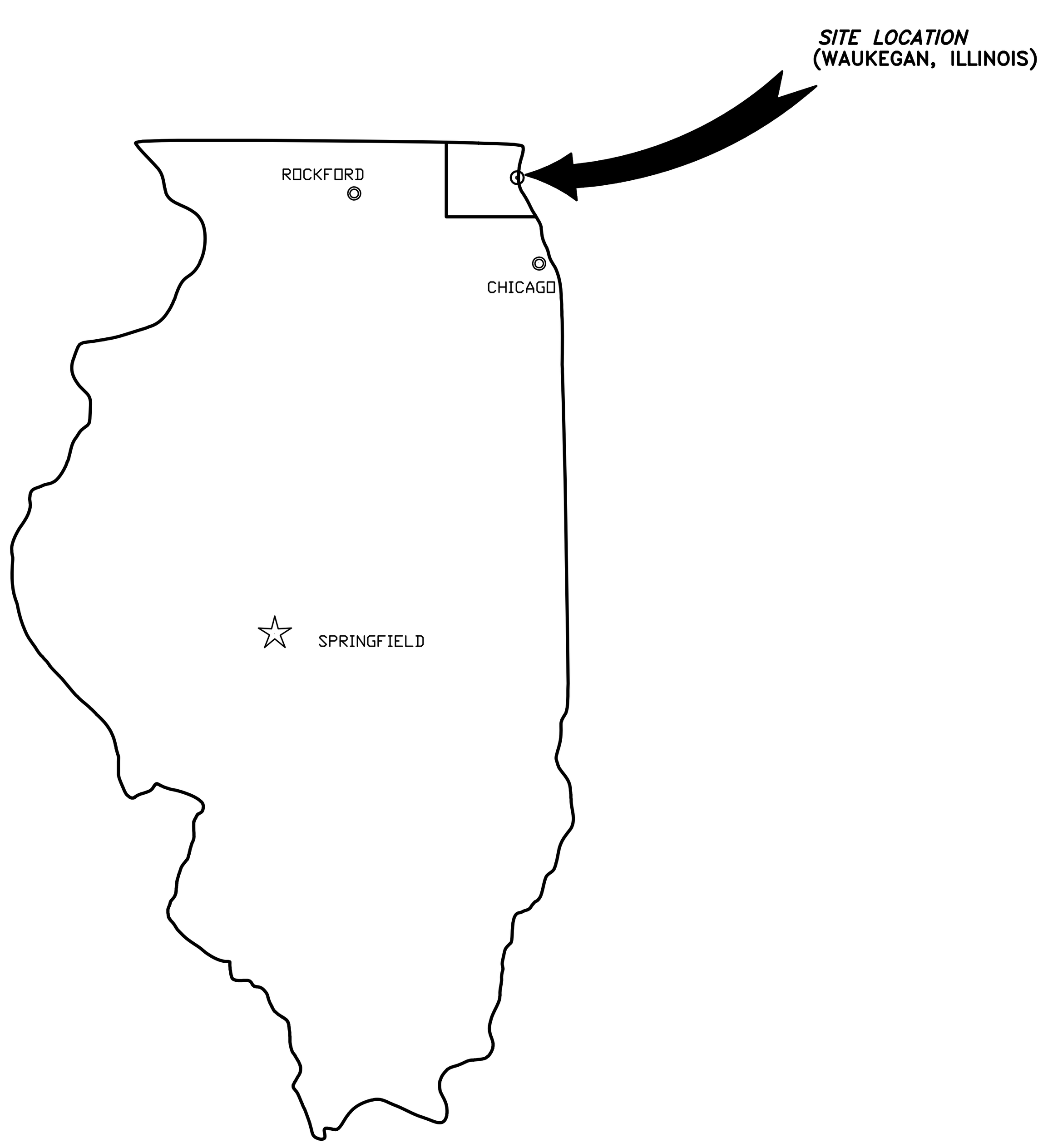
CONSTRUCTION DOCUMENTATION DRAWINGS

AREA 1 & 2 FINAL COVER

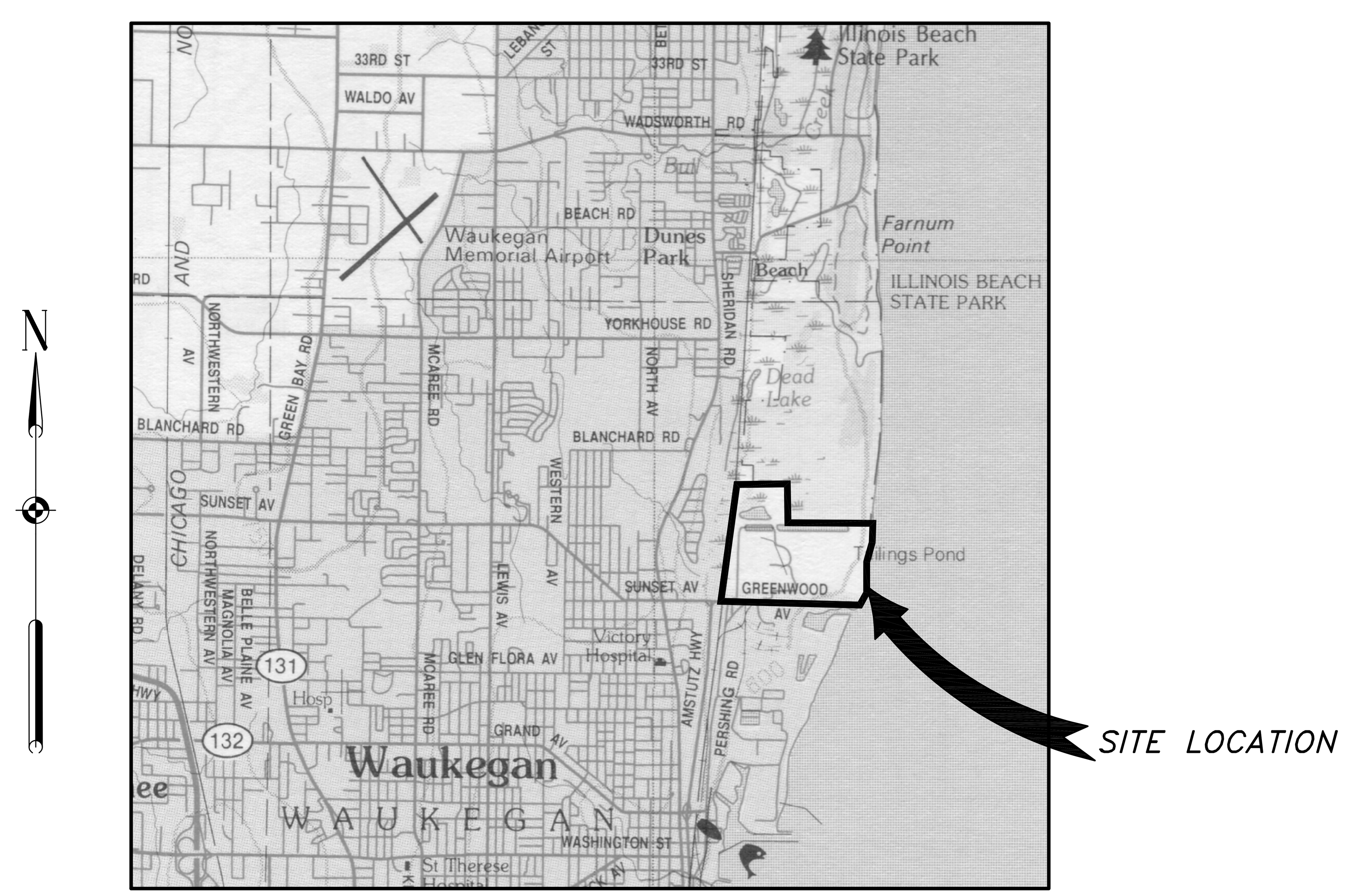
JOHNS MANVILLE WAUKEGAN PLANT

WAUKEGAN, ILLINOIS

JANUARY 2009



STATE LOCATION MAP



SITE LOCATION MAP – WAUKEGAN, ILLINOIS
NOT TO SCALE

INDEX	
DRAWING NO	DESCRIPTION
A–1	TITLE SHEET
A–2	EXISTING CONDITIONS
A–3	BARRIER LAYER FILL/DENSITY TEST LOCATIONS
A–4	BARRIER LAYER
A–5	SAND DRAINAGE LAYER AND PIPING
A–6	PROTECTIVE LAYER
A–7	PROTECTIVE LAYER DENSITY TEST LOCATIONS
A–8	DETAILS

FRANK R. STURZL
062-051026
LICENSED PROFESSIONAL ENGINEER
STATE OF ILLINOIS
3-23-17

Drawings Prepared By:

CQM, INC.

Engineering–Surveying–Material Testing

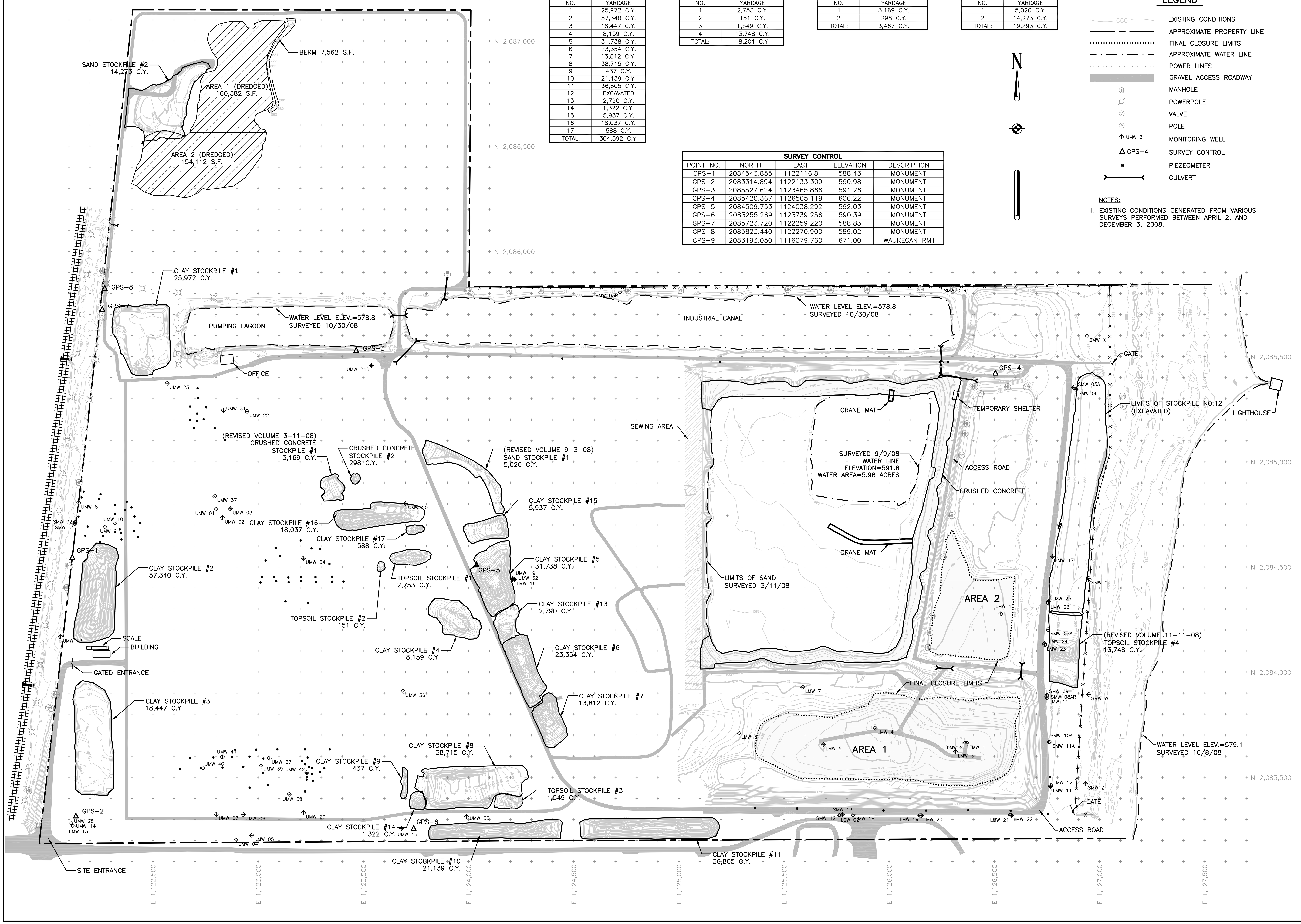
CLAY STOCKPILE	
STOCKPILE NO.	APPROXIMATE YARDAGE
1	25,972 C.Y.
2	57,340 C.Y.
3	18,447 C.Y.
4	8,159 C.Y.
5	31,738 C.Y.
6	23,354 C.Y.
7	13,812 C.Y.
8	38,715 C.Y.
9	437 C.Y.
10	21,139 C.Y.
11	36,805 C.Y.
12	EXCAVATED
13	2,790 C.Y.
14	1,322 C.Y.
15	5,937 C.Y.
16	18,037 C.Y.
17	588 C.Y.
TOTAL:	304,592 C.Y.

TOPSOIL STOCKPILE	
STOCKPILE NO.	APPROXIMATE YARDAGE
1	2,753 C.Y.
2	151 C.Y.
3	1,549 C.Y.
4	13,748 C.Y.
TOTAL:	18,201 C.Y.

CRUSHED CONCRETE	
STOCKPILE NO.	APPROXIMATE YARDAGE
1	3,169 C.Y.
2	298 C.Y.
TOTAL:	3,467 C.Y.

SAND STOCKPILE	
STOCKPILE NO.	APPROXIMATE YARDAGE
1	5,020 C.Y.
2	14,273 C.Y.
TOTAL:	19,293 C.Y.

SURVEY CONTROL				
POINT NO.	NORTH	EAST	ELEVATION	DESCRIPTION
GPS-1	2084543.855	1122116.8	588.43	MONUMENT
GPS-2	2083314.894	1122133.309	590.98	MONUMENT
GPS-3	2085527.624	1123465.866	591.26	MONUMENT
GPS-4	2085420.367	1126505.119	606.22	MONUMENT
GPS-5	2084509.753	1124038.292	592.03	MONUMENT
GPS-6	2083255.269	1123739.256	590.39	MONUMENT
GPS-7	2085723.720	1122259.220	588.83	MONUMENT
GPS-8	2085823.440	1122270.900	589.02	MONUMENT
GPS-9	2083193.050	1116079.760	671.00	WAUKEGAN RM1



LEGEND

- 660 EXISTING CONDITIONS
- APPROXIMATE PROPERTY LINE
- FINAL CLOSURE LIMITS
- APPROXIMATE WATER LINE
- POWER LINES
- GRAVEL ACCESS ROADWAY
- MANHOLE
- POWERPOLE
- VALVE
- POLE
- UMW 31 MONITORING WELL
- GPS-4 SURVEY CONTROL
- PIEZOMETER
- CULVERT

NOTES:

1. EXISTING CONDITIONS GENERATED FROM VARIOUS SURVEYS PERFORMED BETWEEN APRIL 2, AND DECEMBER 3, 2008.

RELEASE	DATE:	BY:
Project Review		
5		
4		
3		
2		
1		
NO.	DATE:	BY:
DESCRIPTION		
REVISIONS		

JM Johns Manville

CQM, INC.
Engineering–Surveying–Material Testing
2679 Continental Drive
Green Bay, WI 54311

Existing Conditions

Construction Documentation Drawings
Area 1 & 2 Final Cover
Johns Manville Waukegan Plant
Waukegan, IL

DRAWN BY: WBE

DATE: Jan. 2009

SCALE: 1"=200'

DRAWING NO.

A-2

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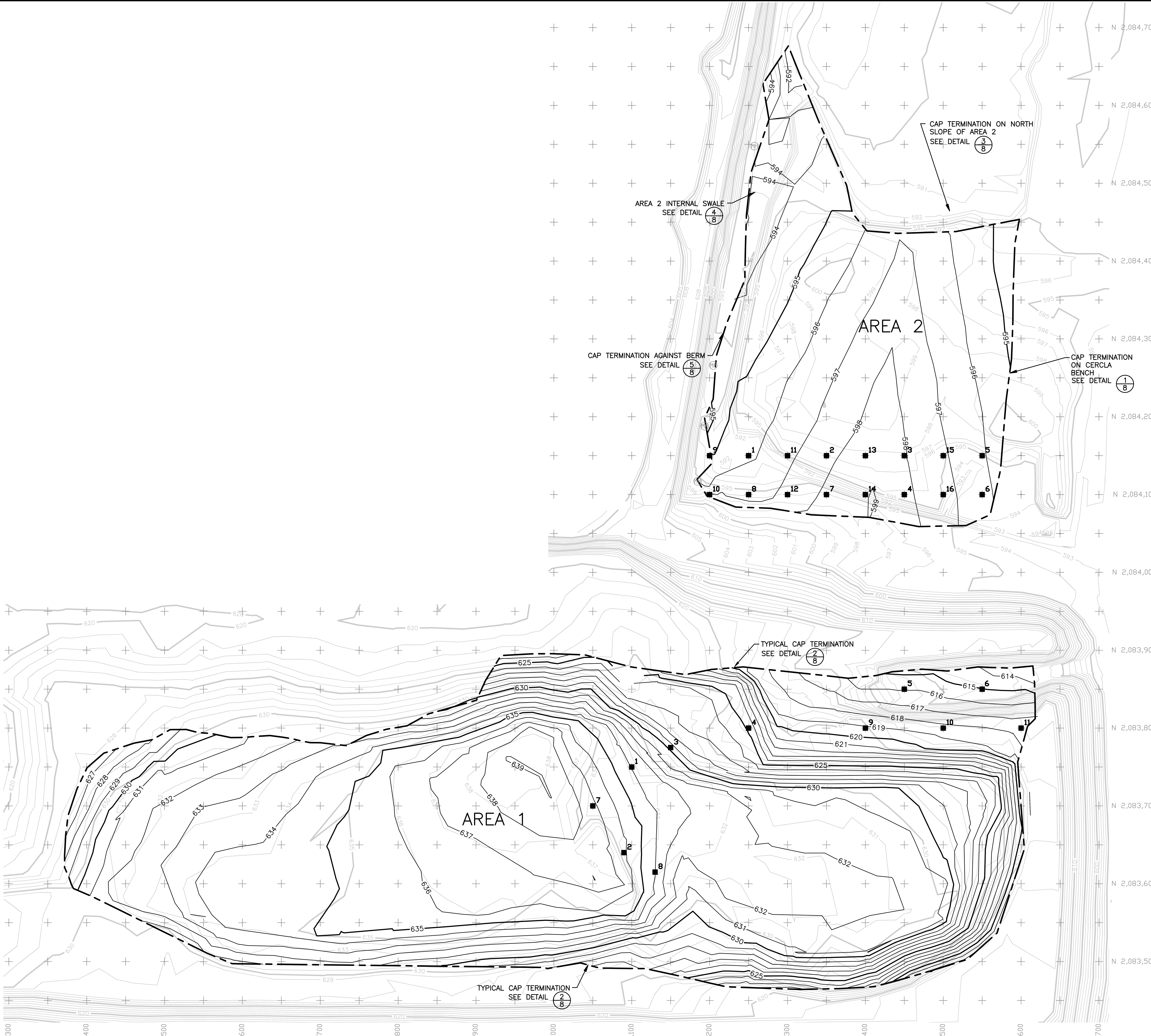

N

LEGEND

— - —	LIMITS OF WASTE
594	EXISTING CONDITIONS CONTOURS
632	AS-BUILT BARRIER LAYER CONTOURS
■ 10	DENSITY TEST LOCATION AND NUMBER

NOTES:

1. APPENDIX D OF THE DOCUMENTATION REPORT SUMMARIZES THE FIELD MOISTURE/DENSITY TESTING PERFORMED ON THE BARRIER LAYER MATERIAL.

RELEASE	DATE:	BY:
Project Review		
5		
4		
3		
2		
1		
NO.	DATE:	BY:
DESCRIPTION		

REVISIONS

JM Johns Manville

CQM, INC.
Engineering-Surveying-Material Testing
2679 Continental Drive
Green Bay, WI 54311

Barrier Layer Fill Density Test Locations

Construction Documentation Drawings
Area 1 & 2 Final Cover
Johns Manville Waukegan Plant
Waukegan, IL

DRAWN BY: WBE

DATE: Jan. 2009

SCALE: 1"=60'

DRAWING NO.

A-3

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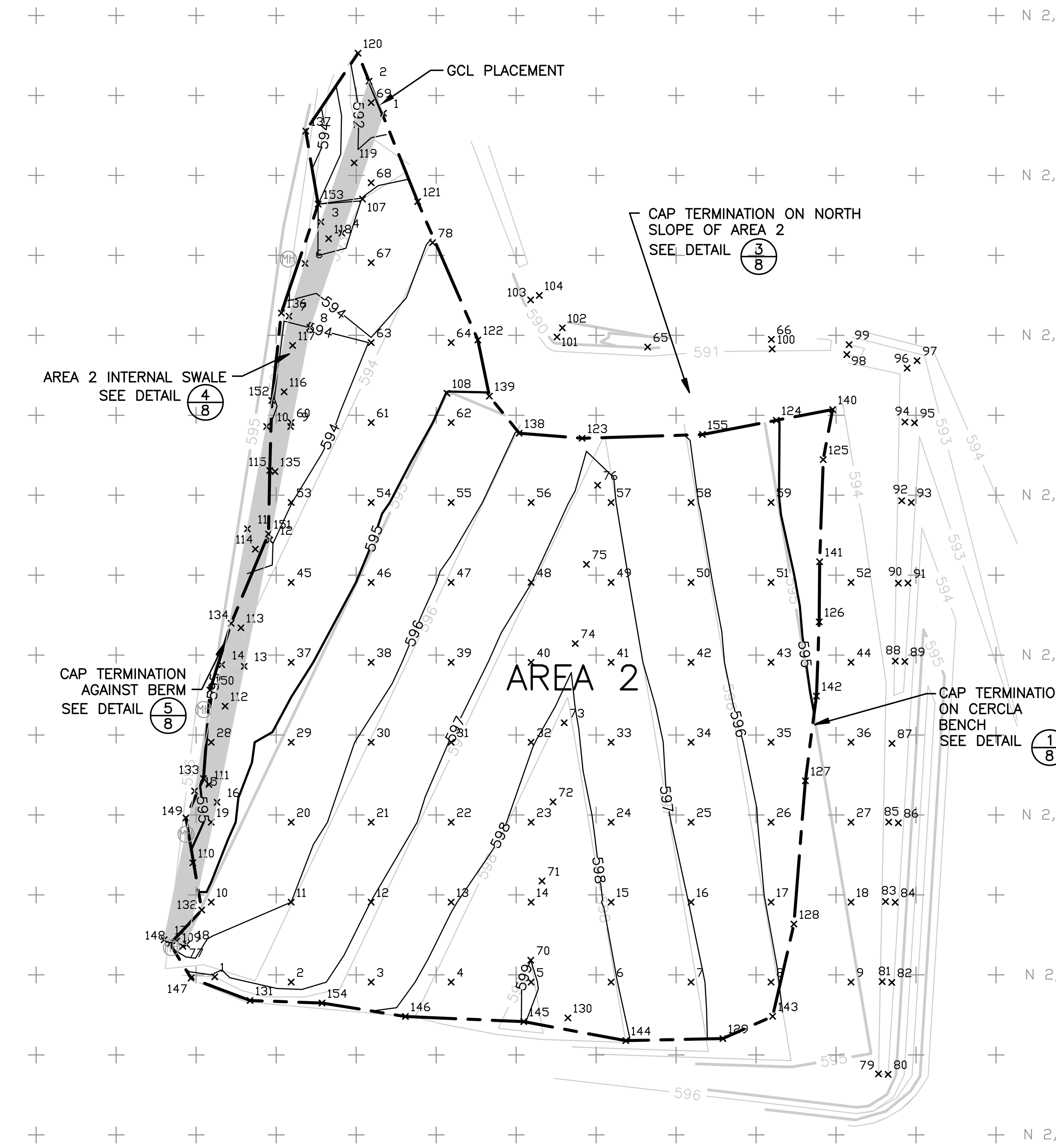
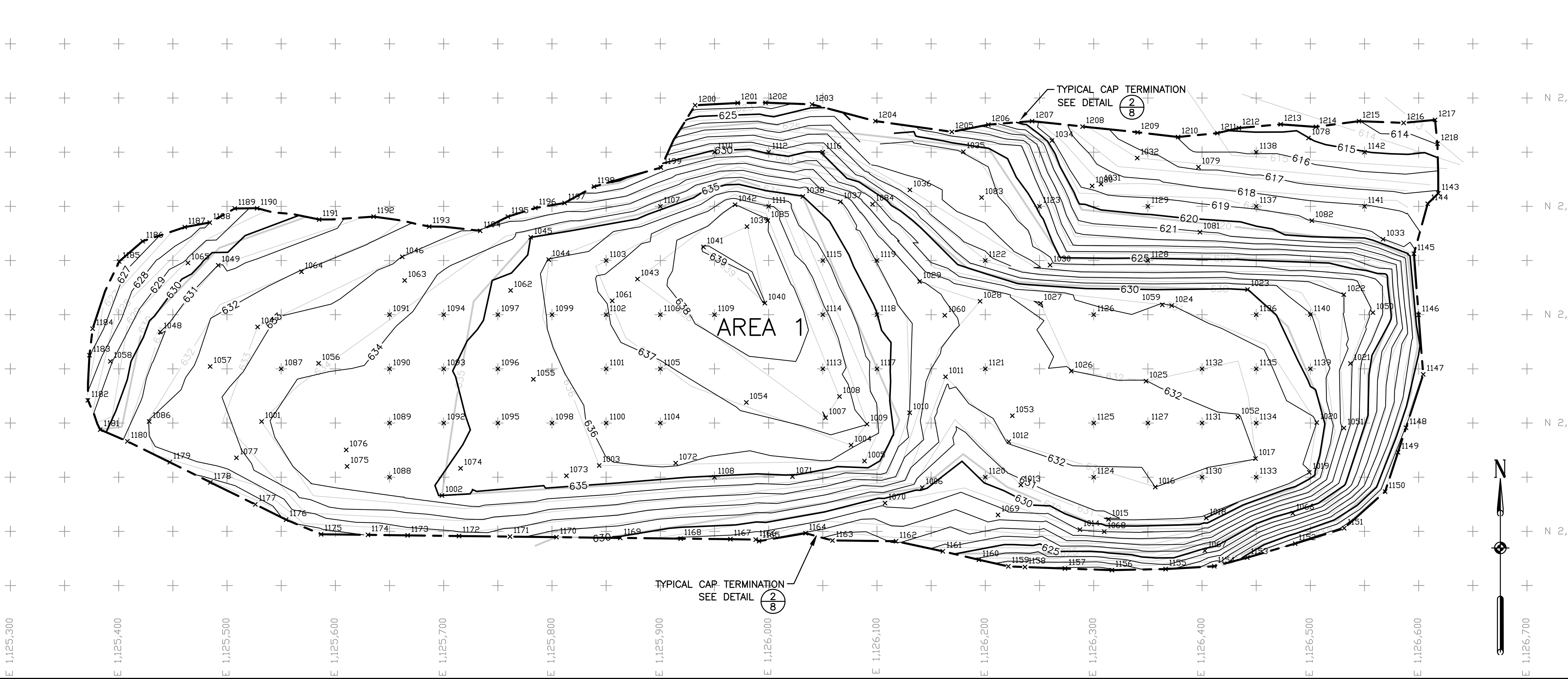
Area 1 Barrier Layer

Point No.	Coordinate North	Coordinate East	Design Barrier Elevation	Record Barrier Elevation	Delta	Description
1001	2083601.39	1125531.87	634.00	634.03	0.03	
1002	2083533.08	1125698.37	635.00	635.10	0.10	
1003	2083560.80	1125843.53	636.00	636.02	0.02	
1004	2083579.59	1126076.07	637.00	637.01	0.01	
1005	2083564.95	1126088.45	636.00	636.06	0.06	
1006	2083540.43	1126141.71	630.00	630.15	0.15	
1007	2083604.91	1126052.48	638.00	638.02	0.02	
1008	2083624.47	1126065.40	638.00	638.00	0.00	
1009	2083599.05	1126090.72	637.00	637.01	0.01	
1010	2083609.53	1126130.18	634.00	634.00	0.00	
1011	2083642.70	1126163.22	632.00	632.22	0.22	
1012	2083582.86	1126221.64	632.00	632.07	0.07	
1013	2083542.79	1126232.77	631.00	631.11	0.11	
1014	2083501.65	1126287.37	629.00	629.10	0.10	
1015	2083511.17	1126313.73	631.00	631.12	0.12	
1016	2083540.89	1126356.84	632.00	632.00	0.00	
1017	2083567.23	1126449.45	632.00	632.01	0.01	
1018	2083512.29	1126403.94	631.00	631.08	0.08	
1019	2083554.56	1126499.06	631.00	631.03	0.03	
1020	2083600.45	1126505.89	631.00	631.01	0.01	
1021	2083654.86	1126537.02	627.00	627.16	0.16	
1022	2083718.54	1126530.96	628.00	628.00	0.00	
1023	2083723.20	1126442.00	630.00	630.02	0.02	
1024	2083708.44	1126372.04	631.00	631.02	0.02	
1025	2083638.68	1126348.35	632.00	632.01	0.01	
1026	2083647.94	1126279.35	632.00	632.01	0.01	
1027	2083710.45	1126250.93	632.00	632.03	0.03	
1028	2083712.42	1126195.19	633.00	633.03	0.03	
1029	2083730.55	1126139.31	633.00	633.07	0.07	
1030	2083745.81	1126259.75	626.00	626.27	0.27	
1031	2083820.50	1126306.73	618.00	618.22	0.22	
1032	2083844.61	1126340.26	616.50	616.74	0.24	
1033	2083769.60	1126567.10	619.00	619.02	0.02	
1034	2083860.69	1126261.48	619.00	619.16	0.16	
1035	2083850.41	1126179.65	626.00	626.16	0.16	
1036	2083815.16	1126130.35	627.00	627.16	0.16	
1037	2083804.16	1126066.18	634.00	634.10	0.10	
1038	2083809.12	1126031.54	635.00	635.01	0.01	
1039	2083771.32	1125980.01	639.00	639.13	0.13	
1040	2083710.71	1125996.50	639.00	639.01	0.01	
1041	2083762.53	1125939.80	639.00	639.05	0.05	
1042	2083801.44	1125968.99	638.00	638.02	0.02	
1043	2083732.90	1125878.87	638.00	638.01	0.01	
1044	2083750.79	1125797.02	636.00	636.04	0.04	
1045	2083771.44	1125780.31	635.00	635.02	0.02	
1046	2083753.38	1125661.76	633.00	633.02	0.02	
1047	2083688.67	1125528.19	633.00	633.01	0.01	
1048	2083684.10	1125438.30	631.00	631.01	0.01	
1049	2083745.57	1125491.87	631.00	631.03	0.03	
1050	2083701.9	1125557.7	626.71	626.85	0.14	
1051	2083595.4	1126531.0	627.74	627.75	0.01	
1052	2083605.4	1126433.1	632.00	632.04	0.04	
1053	2083606.7	1126224.9	632.00	632.08	0.08	
1054	2083619.0	1125979.4	637.23	637.25	0.02	
1055	2083640.4	1125782.8	635.72	635.73	0.01	
1056	2083655.1	1125584.5	633.86	633.86	0.00	
1057	2083652.2	1125484.4	632.38	632.39	0.01	
1058	2083656.9	1125392.3	628.88	628.92	0.04	
1059	2083709.1	1126363.3	631.00	631.08	0.08	
1060	2083699.4	1126162.6	633.40	633.43	0.03	
1061	2083712.8	1125855.6	637.06	637.09	0.03	
1062	2083722.4	1125761.8	635.51	635.51	0.00	
1063	2083731.6	1125664.0	633.47	633.60	0.13	
1064	2083739.6	1125568.0	632.03	632.04	0.01	
1065	2083747.8	1125463.9	629.13	629.19	0.06	
1066	2083516.8	1126483.8	624.64	624.74	0.10	
1067	2083482.2	1126402.6	624.49	624.52	0.03	
1068	2083499.7	1126309.7	628.87	629.03	0.16	
1069	2083515.2	1126211.7	628.41	628.55	0.14	
1070	2083526.1	1126107.4	628.83	629.19	0.36	
1071	2083550.5	1126022.0	634.86	634.87	0.01	
1072	2083563.0	1125914.2	636.07	636.20	0.13	
1073	2083551.3	1125813.3	635.60	635.61	0.01	
1074	2083558.2	1125715.6	635.10	635.10	0.00	
1075	2083560.0	1125610.8	634.24	634.27	0.03	
1076	2083575.2	1125610.0	634.25	634.25	0.00	
1077	2083567.9	1125508.7	632.39	632.73	0.34	
1078	2083863.1	1126498.3	614.64	614.69	0.05	
1079	2083836.2	1126396.7	616.70	616.74	0.04	
1080	2083818.8	1126298.5	618.36	618.55	0.19	
1081	2083776.2	1126398.1	620.91	621.09	0.18	
1082	2083786.8	1126501.4	618.98	619.09	0.11	
1083	2083808.1	1126196.6	626.50	626.54	0.04	
1084	2083802.0	1126095.9	631.59	631.59	0.00	
1085	2083786.9	1125999.1	638.03	638.08	0.05	
1086	2083601.4	1125428.1	632.02	632.06	0.04	
1087	2083700.00	1125550.00	NA	633.64	NA	
1088	2083550.00	1125650.00	NA	634.13	NA	
1089	2083600.00	1125650.00	NA	634.39	NA	
1090	2083650.00	1125650.00	NA	634.24	NA	
1091	2083700.00	1125650.00	NA	633.85	NA	
1092	2083600.00	1125700.00	NA	634.80	NA	
1093	2083650.00	1125700.00	NA	634.61	NA	
1094	2083700.00	1125700.00	NA	634.54	NA	
1095	2083650.00	1125750.00	NA	635.16	NA	
1096	2083600.00	1125750.00	NA	635.18	NA	
1097	2083700.00	1125750.00	NA	635.29	NA	
1098	2083600.00	1125800.00	NA	635.71	NA	
1099	2083700.00	1125800.00	NA	636.06	NA	
1100	2083600.00	1125850.00	NA	636.03	NA	
1101	2083650.00	1125850.00	NA	636.40	NA	
1102	2083700.00	1125850.00	NA	636.86	NA	
1103	2083750.00	1125850.00	NA	636.93	NA	
1104	2083600.00	1125900.00	NA	636.41	NA	
1105	2083650.00	1125900.00	NA	636.81	NA	
1106	2083700.00	1125900.00	NA	637.78	NA	
1107	2083800.00	1125900.00	NA	634.94	NA	
1108	2083550.00	1125950.00	NA	634.90	NA	
1109	2083700.00	1125950.00	NA	638.30	NA	
1110	2083800.00	1125950.00	NA	629.16	NA	
1111	2083800.00	1126000.00	NA	637.10	NA	
1112	2083850.00	1126000.00	NA	629.34	NA	
1113	2083650.00	1126050.00	NA	637.78	NA	
1114	2083700.00	1126050.00	NA	637.11	NA	
1115	2083750.00	1126050.00	NA	635.27	NA	
1116	2083850.00	1126050.00	NA	627.67	NA	
1117	2083650.00	1126100.00	NA	635.10	NA	
1118	2083700.00	1126100.00	NA	633.46	NA	
1119	2083750.00	1126100.00	NA	633.92	NA	
1120	2083550.00	1126200.00	NA	629.85	NA	
1121	2083600.00	1126200.00	NA	632.21	NA	
1122	2083750.00	1126200.00	NA	628.28	NA	
1123	2083800.00	1126250.00	NA	624.69	NA	
1124	2083550.00	1126300.00	NA	631.69	NA	
1125	2083600.00	1126300.00	NA	631.86	NA	
1126	2083700.00	1126300.00	NA	630.14	NA	
1127	2083600.00	1126350.00	NA	631.93	NA	
1128	2083750.00	1126350.00	NA	625.20	NA	
1129	2083800.00	1126350.00	NA	619.40	NA	
1130	2083550.00	1126400.00	NA	631.90	NA	
1131	2083600.00	1126400.00	NA	631.97	NA	
1132	2083650.00	1126400.00	NA	631.94	NA	
1133	2083550.00	1126450.00	NA	631.61	NA	
1134	2083600.00	1126450.00	NA	631.74	NA	
1135	2083650.00	1126450.00	NA	631.47	NA	
1136	2083700.00	1126450.00	NA	630.30	NA	
1137	2083800.00	1126450.00	NA	619.01	NA	
1138	2083850.00	1126450.00	NA	615.14	NA	
1139	2083650.00	1126500.00	NA	629.66	NA	
1140	2083700.00	1126500.00	NA	629.29	NA	
1141	2083800.00	1126500.00	NA	618.40	NA	
1142	2083850.00	1126550.00	NA	614.68	NA	
1143	2083811.99	1126618.09	See Note 2	617.12	NA	Limits of Waste
1144	2083802.34	1126608.35	617.40	617.40	0.00	Limits of Waste
1145	2083756.31	1126595.58	618.84	619.11	0.27	Limits of Waste
1146	2083699.78	1126599.97	619.00	619.42	0.42	Limits of Waste
1147	2083644.90	1126604.19	619.47	619.56	0.09	Limits of Waste
1148	2083595.75	1126588.65	618.65	618.88	0.23	Limits of Waste
1149	2083572.99	1126580.93	618.27	618.53	0.26	Limits of Waste
1150	2083536.75	1126569.08	617.93	618.10	0.17	Limits of Waste
1151	2083502.89	1126531.21	617.59	617.66	0.07	Limits of Waste
1152	2083488.72	1126486.04	617.95	618.04	0.09	Limits of Waste
1153	2083475.81	1126441.88	619.25	619.44	0.19	Limits of Waste
1154	2083467.80	1126411.32	620.93	621.04	0.11	Limits of Waste
1155	2083465.25	1126366.39	623.31	623.34	0.03	Limits of Waste
1156	2083464.28	1126316.87	621.69	621.80	0.11	Limits of Waste
1157	2083465.74	1126273.50	621.79	621.81	0.02	Limits of Waste
1158	2083467.13	1126236.51	622.00	622.28	0.28	Limits of Waste
1159	2083467.69	1126221.24	622.32	622.38	0.06	Limits of Waste
1160	2083473.85	1126194.06	623.54	623.72	0.18	Limits of Waste
1161	2083481.62	1126160.75	625.48	625.58	0.10	Limits of Waste
1162	2083490.97	1126117.53	627.00	627.20	0.20	Limits of Waste
1163	2083491.64	1126058.91	627.81	626.91 *	0.90	Limits of Waste
1164	2083498.29	1126034.09	See Note 2	627.33	NA	Limits of Waste
1165	2083491.04	1125991.12	627.56	627.98	0.42	Limits of Waste
1166	2083492.47	1125988.07	628.00	628.15	0.15	Limits of Waste
1167	2083492.79	1125964.64	628.25	628.62	0.37	Limits of Waste
1168	2083493.32	1125918.73	628.74	628.88	0.14	Limits of Waste
1169	2083493.97	1125863.00	629.70	629.85	0.15	Limits of Waste
1170	2083494.68	1125804.05	630.00	630.34	0.34	Limits of Waste
1171	2083495.19	1125761.20	631.18	631.31	0.13	Limits of Waste
1172	2083495.70	1125714.18	631.67	631.70	0.03	Limits of Waste
1173	2083496.52	1125666.67	631.30	631.46	0.16	Limits of Waste
1174	2083496.79	1125630.07	631.02	631.04	0.02	Limits of Waste
1175	2083497.33	1125586.80	630.47	630.59	0.12	Limits of Waste
1176	2083510.84	1125554.51	631.15	631.15	0.00	Limits of Waste
1177	2083524.89	1125526.12	631.40	631.47	0.07	Limits of Waste
1178	2083545.26	1125484.64	See Note 2	630.88	NA	Limits of Waste
1179	2083563.87	1125447.08	631.53	631.54	0.01	Limits of Waste
1180	2083583.16	1125407.99	631.20	631.23	0.03	Limits of Waste
1181	2083593.87	1125382.95	See Note 2	630.05	NA	Limits of Waste
1182	2083620.87	1125377.63	See Note 2	628.52	NA	Limits of Waste
1183	2083662.64	1125373.04	See Note 2	626.62	NA	Limits of Waste
1184	2083687.07	1125375.95	625.70	626.69	0.99	Limits of Waste
1185	2083749.14	1125400.42	See Note 2	626.35	NA	Limits of Waste
1186	2083767.76	1125422.09	See Note 2	626.06	NA	Limits of Waste
1187	2083780.81	1125461.03	See Note 2	627.76	NA	Limits of Waste
1188	2083785.01	1125484.04	628.85	628.87	0.02	Limits of Waste
1189	2083798.05	1125507.11	See Note 2	629.35	NA	Limits of Waste
1190	2083798.22	1125527.76	630.00	630.04	0.04	Limits of Waste
1191	2083787.80	1125585.03	630.40	630.41	0.01	Limits of Waste
1192	2083790.48	1125635.30	See Note 2	631.02	NA	Limits of Waste
1193	2083781.33	1125686.60	632.40	632.41	0.01	Limits of Waste
1194	2083777.37	1125733.67	633.10	633.11	0.01	Limits of Waste
1195	2083790.51	1125759.32	632.60	632.63	0.03	Limits of Waste
1196	2083798.46	1125784.70	632.10	632.10	0.00	Limits of Waste
1197	2083803.10	1125811.58	631.97	632.10	0.13	Limits of Waste
1198	2083818.15	1125838.74	See Note 2	631.46	NA	Limits of Waste
1199	2083835.81	1126000.49	630.38	630.49	0.11	Limits of Waste
1200	2083893.30	1125932.09	623.40	623.44	0.04	Limits of Waste
1201	2083895.43	1125971.39	See Note 2	623.28	NA	Limits of Waste
1202	2083895.62	1125997.12	See Note 2	623.26	NA	Limits of Waste
1203	2083894.04	1126039.98	See Note 2	624.41	NA	Limits of Waste
1204	2083878.72	1126098.41	625.80	625.96	0.16	Limits of Waste
1205	2083868.73	1126169.02	623.57	623.58	0.01	Limits of Waste
1206	2083875.42	1126202.71	See Note 2	621.44	NA	Limits of Waste
1207	2083878.55	1126243.18	See Note 2	619.24	NA	Limits of Waste
1208	2083873.61	1126289.71	See Note 2	617.71	NA	Limits of Waste
1209	2083868.30	1126340.33	616.50	616.53	0.03	Limits of Waste
1210	2083864.01	1126377.96	615.60	615.85	0.25	Limits of Waste
1211	2083867.55	1126414.25	614.98	615.91	0.93	Limits of Waste
1212	2083872.29	1126434.07	614.55	614.57	0.02	Limits of Waste
1213	2083875.68	1126472.67	614.45	614.49	0.04	Limits of Waste
1214	2083873.34	1126505.25	614.46	614.47	0.01	Limits of Waste
1215	2083878.61	1126544.88	613.75	613.78	0.03	Limits of Waste
1216	2083877.02	1126586.17	613.45	613.47	0.02	Limits of Waste
1217	2083879.77	1126615.12	612.71	612.73	0.02	Limits of Waste
1218	2083857.80	1126617.40	613.57	613.61	0.04	Limits of Waste

NOTES:

1. * REPRESENTS RECORD BARRIER LAYER ELEVATION APPROVED BY LEVINE FRICKE (LFR), ELGIN, ILLINOIS.
2. POINTS 1143, 1164, 1178, 1181, 1182, 1183, 1185, 1186, 1187, 1189, 1192, 1198, 1201, 1202, 1203, 1206, 1207 AND, 1208 RECORD BARRIER LAYER ELEVATIONS APPROVED BY LFR.
3. TOP OF SAND ELEVATION MODIFIED 8/21/08 TO DEPICT 1.0 ABOVE RECORD BARRIER LAYER ELEVATION.





Area 2 Barrier Layer

Point No.	Coordinate North	Coordinate East	Design Barrier Elevation	Record Barrier Elevation	Delta	Description
1	2084098.87	1126211.56	597.00	597.10	0.10	
2	2084095.52	1126259.36	596.44	596.60	0.16	
3	2084095.52	1126309.36	597.32	597.51	0.19	
4	2084095.52	1126359.36	598.22	598.40	0.18	
5	2084095.52	1126409.36	599.00	599.08	0.08	
6	2084095.52	1126459.36	598.06	598.07	0.01	
7	2084095.52	1126509.36	597.07	597.19	0.12	
8	2084095.52	1126559.36	596.08	596.10	0.02	
9	2084095.52	1126609.36	595.10	595.10	0.00	Outside Limits of Waste
10	2084145.52	1126209.36	595.08	595.09	0.01	
11	2084145.52	1126259.36	595.98	596.00	0.02	
12	2084145.52	1126309.36	596.89	597.01	0.12	
13	2084145.52	1126359.36	597.79	597.94	0.15	
14	2084145.52	1126409.36	598.69	598.73	0.04	
15	2084145.52	1126459.36	597.89	597.90	0.01	
16	2084145.52	1126509.36	596.90	596.97	0.07	
17	2084145.52	1126559.36	595.92	595.93	0.01	
18	2084145.52	1126609.36	594.93	594.93	0.00	Outside Limits of Waste
19	2084195.52	1126209.36	594.65	594.73	0.08	
20	2084195.52	1126259.36	595.55	595.61	0.06	
21	2084195.52	1126309.36	596.46	596.47	0.01	
22	2084195.52	1126359.36	597.36	597.39	0.03	
23	2084195.52	1126409.36	598.26	598.27	0.01	
24	2084195.52	1126459.36	597.72	597.78	0.06	
25	2084195.52	1126509.36	596.74	596.74	0.00	
26	2084195.52	1126559.36	595.75	595.85	0.10	
27	2084195.52	1126609.36	594.75	594.76	0.01	Outside Limits of Waste
28	2084245.52	1126209.36	594.61	594.63	0.02	
29	2084245.52	1126259.36	595.12	595.31	0.19	
30	2084245.52	1126309.36	596.02	596.18	0.16	
31	2084245.52	1126359.36	596.93	597.03	0.10	
32	2084245.52	1126409.36	597.83	597.96	0.13	
33	2084245.52	1126459.36	597.56	597.58	0.02	
34	2084245.52	1126509.36	596.57	596.69	0.12	
35	2084245.52	1126559.36	595.59	595.63	0.04	
36	2084245.52	1126609.36	594.58	594.59	0.01	Outside Limits of Waste
37	2084295.52	1126259.36	594.69	594.76	0.07	
38	2084295.52	1126309.36	595.59	595.63	0.04	
39	2084295.52	1126359.36	596.50	596.59	0.09	
40	2084295.52	1126409.36	597.40	597.48	0.08	
41	2084295.52	1126459.36	597.39	597.39	0.00	
42	2084295.52	1126509.36	596.41	596.41	0.00	
43	2084295.52	1126559.36	595.42	595.43	0.01	
44	2084295.52	1126609.36	594.41	594.43	0.02	Outside Limits of Waste
45	2084345.52	1126259.36	594.26	594.32	0.06	
46	2084345.52	1126309.36	595.16	595.16	0.00	
47	2084345.52	1126359.36	596.07	596.19	0.12	
48	2084345.52	1126409.36	596.97	596.99	0.02	
49	2084345.52	1126459.36	597.22	597.22	0.00	
50	2084345.52	1126509.36	596.24	596.24	0.00	
51	2084345.52	1126559.36	595.25	595.34	0.09	
52	2084345.52	1126609.36	594.25	594.25	0.00	Outside Limits of Waste
53	2084395.52	1126259.36	593.83	593.99	0.16	
54	2084395.52	1126309.36	594.73	594.81	0.08	
55	2084395.52	1126359.36	595.62	595.62	0.00	
56	2084395.52	1126409.36	596.54	596.59	0.05	
57	2084395.52	1126459.36	597.05	597.06	0.01	
58	2084395.52	1126509.36	596.07	596.09	0.02	
59	2084395.52	1126559.36	595.09	595.10	0.01	
60	2084445.52	1126259.36	593.40	593.49	0.09	
61	2084445.52	1126309.36	594.30	594.39	0.09	
62	2084445.52	1126359.36	595.00	595.18	0.18	
63	2084495.52	1126309.36	593.87	594.03	0.16	
64	2084495.52	1126359.36	594.36	594.56	0.20	
65	2084492.67	1126482.23	590.85	590.92	0.07	Outside Limits of Waste
66	2084497.46	1126559.54	591.50	591.63	0.13	Outside Limits of Waste
67	2084545.52	1126309.36	593.44	593.56	0.12	
68	2084595.52	1126309.36	592.83	592.91	0.08	
69	2084645.52	1126309.36	591.13	591.29	0.16	
70	2084109.22	1126409.16	599.00	599.00	0.00	
71	2084158.74	1126416.11	598.70	598.71	0.01	
72	2084208.25	1126423.05	598.40	598.45	0.05	
73	2084257.76	1126430.00	598.10	598.19	0.09	
74	2084307.27	1126436.98	597.79	597.89	0.10	
75	2084356.78	1126443.98	597.49	597.50	0.01	
76	2084406.29	1126450.97	597.18	597.21	0.03	
77	2084117.90	1126191.69	595.00	595.29	0.29	
78	2084557.99	1126347.72	594.00	594.05	0.05	
79	2084038.13	1126626.53	594.00	594.18	0.18	Outside Limits of Waste
80	2084037.88	1126632.53	594.00	594.08	0.08	Outside Limits of Waste
81	2084095.89	1126628.87	593.76	593.81	0.05	Outside Limits of Waste
82	2084095.30	1126634.85	593.76	593.77	0.01	Outside Limits of Waste
83	2084145.93	1126630.89	593.54	593.64	0.10	Outside Limits of Waste
84	2084145.45	1126636.88	593.55	593.64	0.09	Outside Limits of Waste
85	2084195.62	1126632.91	593.33	593.39	0.06	Outside Limits of Waste
86	2084195.18	1126638.89	593.34	593.44	0.10	Outside Limits of Waste
87	2084244.80	1126634.90	593.13	593.21	0.08	Outside Limits of Waste
88	2084296.34	1126636.98	592.91	592.94	0.03	Outside Limits of Waste
89	2084296.03	1126642.97	592.92	593.01	0.09	Outside Limits of Waste
90	2084345.03	1126638.95	592.70	592.70	0.00	Outside Limits of Waste
91	2084345.16	1126644.96	592.70	592.74	0.04	Outside Limits of Waste
92	2084396.59	1126641.04	592.48	592.60	0.12	Outside Limits of Waste
93	2084395.48	1126647.00	592.48	592.64	0.16	Outside Limits of Waste
94	2084445.85	1126643.03	592.27	592.33	0.06	Outside Limits of Waste
95	2084445.34	1126649.02	592.26	592.36	0.10	Outside Limits of Waste
96	2084479.46	1126644.39	592.13	592.09	−0.04	Outside Limits of Waste
97	2084484.18	1126650.59	592.13	592.23	0.10	Outside Limits of Waste
98	2084487.97	1126606.70	592.00	591.92	−0.08	Outside Limits of Waste
99	2084494.23	1126608.12	592.00	591.84	−0.16	Outside Limits of Waste
100	2084491.45	1126560.06	591.50	591.69	0.19	Outside Limits of Waste
101	2084498.99	1126425.55	589.20	589.34	0.14	Outside Limits of Waste
102	2084504.66	1126428.89	589.20	589.32	0.12	Outside Limits of Waste
103	2084522.22	1126409.06	589.09	589.14	0.05	Outside Limits of Waste
104	2084525.02	1126414.43	589.09	589.05	−0.04	Outside Limits of Waste
105	2084777.41	1126349.61	588.01	588.10	0.09	Outside Limits of Waste
106	2084777.89	1126355.59	588.01	588.06	0.05	Outside Limits of Waste
107	2084585.29	1126303.97	593.00	593.02	0.02	
108	2084463.76	1126356.77	595.00	595.01	0.01	
109	2084121.22	1126187.77	594.90	595.13	0.23	
110	2084170.18	1126197.87	594.66	594.74	0.08	
111	2084219.15	1126207.98	594.42	594.66	0.24	
112	2084268.12	1126218.09	594.18	594.22	0.04	
113	2084317.14	1126227.94	593.94	594.14	0.20	
114	2084366.32	1126236.94	593.68	593.71	0.03	
115	2084415.50	1126245.94	593.42	593.59	0.17	
116	2084464.68	1126254.94	593.15	593.29	0.14	
117	2084493.71	1126260.26	593.00	593.16	0.16	
118	2084560.50	1126282.80	592.50	592.62	0.12	
119	2084607.87	1126298.79	592.14	592.20	0.06	
120	2084676.45	1126301.10	591.50	591.52	0.02	Limit of Waste
121	2084583.67	1126338.40	593.42	593.49	0.07	Limit of Waste
122	2084497.12	1126376.03	594.50	594.72	0.22	Limit of Waste
123	2084435.65	1126441.23	596.77	596.92	0.15	Limit of Waste
124	2084446.87	1126562.60	594.85	595.04	0.19	Limit of Waste
125	2084422.31	1126591.96	594.36	594.45	0.09	Limit of Waste
126	2084320.78	1126589.44	594.74	594.77	0.03	Limit of Waste
127	2084221.44	1126580.78	595.24	595.31	0.07	Limit of Waste
128	2084131.81	1126573.62	595.68	595.72	0.04	Limit of Waste
129	2084060.25	1126529.25	596.79	596.80	0.01	Limit of Waste
130	2084073.11	1126432.36	598.66	598.67	0.01	Limit of Waste
131	2084084.04	1126233.61	597.75	597.76	0.01	Limit of Waste
132	2084140.60	1126203.47	595.02	595.16	0.14	Limit of Waste
133	2084222.83	1126204.54	594.73	594.84	0.11	Limit of Waste
134	2084319.94	1126221.84	594.52	594.59	0.07	Limit of Waste
135	2084414.85	1126249.22	593.48	593.63	0.15	Limit of Waste
136	2084514.01	1126253.21	594.23	594.28	0.05	Limit of Waste
137	2084627.77	1126268.43	594.89	595.07	0.18	Limit of Waste
138	2084438.84	1126401.89	596.04	596.05	0.01	Limit of Waste
139	2084461.98	1126383.25	594.90	595.02	0.12	Limit of Waste
140	2084453.64	1126597.81	594.14	594.18	0.04	Limit of Waste
141	2084358.43	1126589.71	594.60	594.61	0.01	Limit of Waste
142	2084274.39	1126587.72	594.93	594.93	0.00	Limit of Waste
143	2084074.16	1126560.33	596.13	596.13	0.00	Limit of Waste
144	2084058.96	1126468.51	598.00	598.05	0.05	Limit of Waste
145	2084070.81	1126404.74	599.00	599.02	0.02	Limit of Waste
146	2084074.05	1126330.72	598.00	598.17	0.17	Limit of Waste
147	2084098.00	1126196.74	597.37	597.44	0.07	Limit of Waste
148	2084119.54	1126183.62	595.53	595.72	0.19	Limit of Waste
149	2084198.25	1126193.55	595.69	595.70	0.01	Limit of Waste
150	2084278.26	1126208.58	595.15	595.17	0.02	Limit of Waste
151	2084375.78	1126245.15	593.74	593.92	0.18	Limit of Waste
152	2084459.33	1126247.26	594.01	594.19	0.18	Limit of Waste
153	2084582.05	1126276.27	592.84	593.00	0.16	Limit of Waste
154	2084082.46	1126278.68	597.55	597.75	0.20	Limit of Waste
155	2084437.98	1126516.41	595.79	595.84	0.05	Limit of Waste

LEGEND

LIMITS OF WASTE
DESIGN BARRIER LAYER CONTOURS (594)
AS-BUILT BARRIER LAYER CONTOURS (594)
SURVEY POINT NUMBER AND LOCATION (×100)

RELEASE	DATE:	BY:
Project Review		
5		
4		
3		
2		
1		
NO.	DATE:	BY:
DESCRIPTION		

REVISIONS

JM Johns Manville

CQM, INC.
Engineering–Surveying–Material Testing
2679 Continental Drive
Green Bay, WI 54311

Barrier Layer

Construction Documentation Drawings
Area 1 & 2 Final Cover
Johns Manville Waukegan Plant
Waukegan, IL

DRAWN BY: WBE
DATE: Jan. 2009
SCALE: 1"=60'
DRAWING NO. A-4

G:\Project Data\MIS-SITE\Johns Manville\Site Cap\Documentation\A-4.dwg, 2/10/2009 2:05:26 PM

Area 1 Sand Drainage Layer

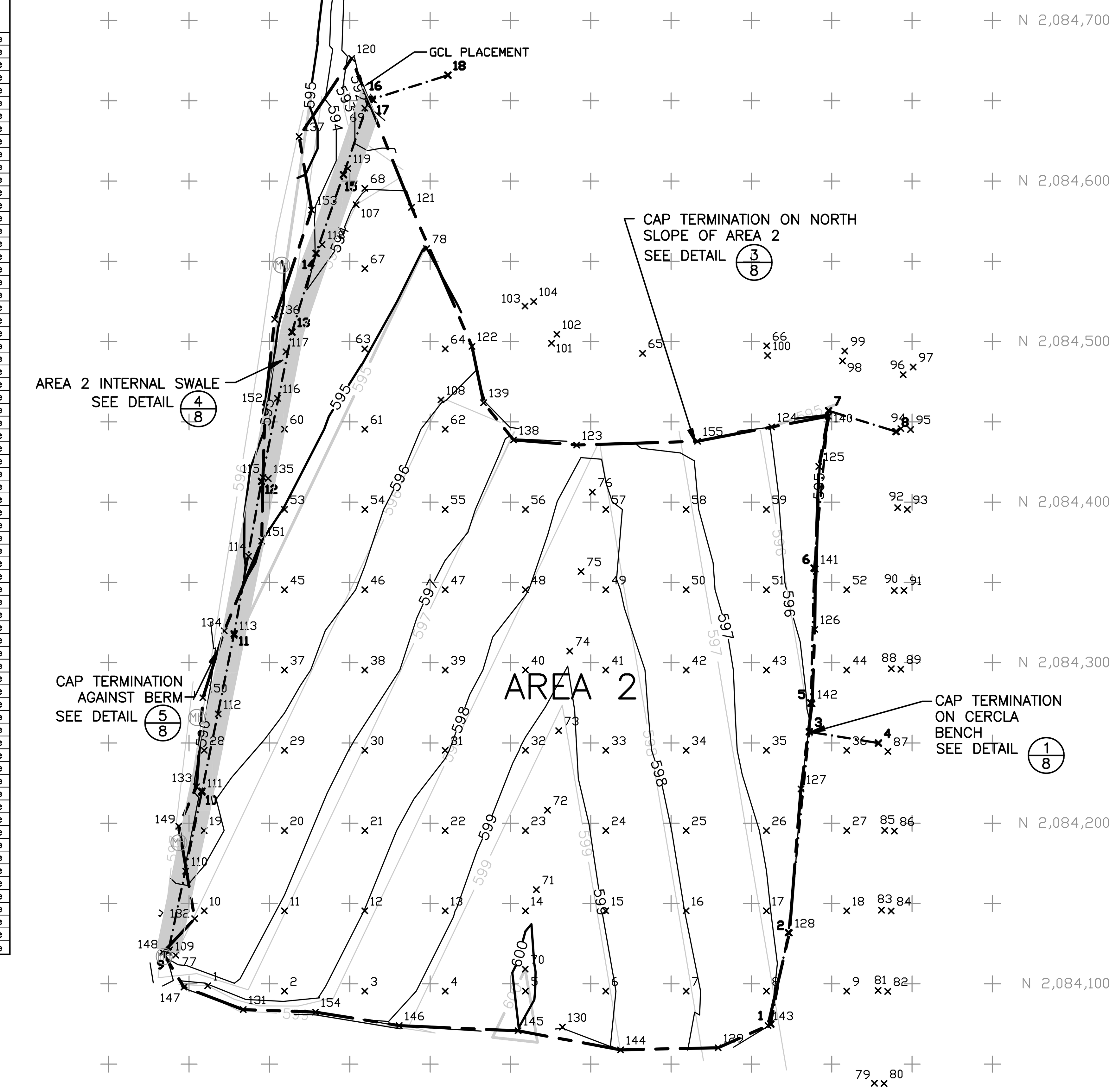
Point No.	Coordinate North	Coordinate East	Design Sand Elevation	Record Sand Elevation	Delta	Sand Thickness	Description
1074	2083558.2	1125715.6	636.10	636.20	0.10	1.10	
1075	2083560.0	1125610.8	635.27	635.27	0.00	1.00	
1076	2083575.2	1125610.0	635.25	635.26	0.01	1.01	
1077	2083567.9	1125508.7	633.73	633.74	0.01	1.01	
1078	2083863.1	1126498.3	615.69	615.69	0.00	1.00	
1079	2083836.2	1126396.7	617.74	617.75	0.01	1.01	
1080	2083818.8	1126298.5	619.55	619.75	0.20	1.20	
1081	2083776.2	1126398.1	622.09	622.09	0.00	1.00	
1082	2083786.8	1126501.4	620.09	620.21	0.12	1.12	
1083	2083808.1	1126196.6	627.54	627.60	0.06	1.06	
1084	2083802.0	1126095.9	632.59	632.62	0.03	1.03	
1085	2083786.9	1125999.1	639.08	639.00	-0.08	0.92	
1086	2083601.4	1125428.1	633.06	633.13	0.07	1.07	
1087	2083650.00	1125550.00	634.64	634.74	0.10	1.10	
1088	2083550.00	1125650.00	635.13	635.33	0.20	1.20	
1089	2083600.00	1125650.00	635.39	635.59	0.20	1.20	
1090	2083650.00	1125650.00	635.24	635.44	0.20	1.20	
1091	2083700.00	1125650.00	634.85	635.05	0.20	1.20	
1092	2083600.00	1125700.00	635.80	636.10	0.30	1.30	
1093	2083650.00	1125700.00	635.61	635.81	0.20	1.20	
1094	2083700.00	1125700.00	635.54	635.64	0.10	1.10	
1095	2083600.00	1125750.00	636.16	636.36	0.20	1.20	
1096	2083650.00	1125750.00	636.18	636.38	0.20	1.20	
1097	2083700.00	1125750.00	636.29	636.49	0.20	1.20	
1098	2083600.00	1125800.00	636.71	636.81	0.10	1.10	
1099	2083700.00	1125800.00	637.06	637.26	0.20	1.20	
1100	2083600.00	1125850.00	637.03	637.23	0.20	1.20	
1101	2083650.00	1125850.00	637.40	637.60	0.20	1.20	
1102	2083700.00	1125850.00	637.86	637.96	0.10	1.10	
1103	2083750.00	1125850.00	637.93	638.03	0.10	1.10	
1104	2083600.00	1125900.00	637.41	637.61	0.20	1.20	
1105	2083650.00	1125900.00	637.81	638.01	0.20	1.20	
1106	2083700.00	1125900.00	638.78	638.88	0.10	1.10	
1107	2083800.00	1125900.00	635.94	636.04	0.10	1.10	
1108	2083550.00	1125950.00	635.90	635.90	0.00	1.00	
1109	2083700.00	1125950.00	639.30	639.40	0.10	1.10	
1110	2083850.00	1125950.00	630.16	630.26	0.10	1.10	
1111	2083800.00	1126000.00	638.10	638.10	0.00	1.00	
1112	2083850.00	1126000.00	630.34	630.34	0.00	1.00	
1113	2083650.00	1126050.00	638.78	638.88	0.10	1.10	
1114	2083700.00	1126050.00	638.11	638.11	0.00	1.00	
1115	2083750.00	1126050.00	636.27	636.27	0.00	1.00	
1116	2083850.00	1126050.00	628.67	628.67	0.00	1.00	
1117	2083650.00	1126100.00	636.10	636.10	0.00	1.00	
1118	2083700.00	1126100.00	635.46	635.46	0.00	1.00	
1119	2083750.00	1126100.00	634.92	634.92	0.00	1.00	
1120	2083550.00	1126200.00	630.85	630.85	0.00	1.00	
1121	2083650.00	1126200.00	633.21	633.21	0.00	1.00	
1122	2083750.00	1126200.00	629.28	629.28	0.00	1.00	
1123	2083800.00	1126250.00	625.69	625.79	0.10	1.10	
1124	2083550.00	1126300.00	632.69	632.69	0.00	1.00	
1125	2083600.00	1126300.00	632.86	632.96	0.10	1.10	
1126	2083700.00	1126300.00	632.40	632.40	0.00	1.00	
1127	2083600.00	1126350.00	632.93	632.93	0.00	1.00	
1128	2083750.00	1126350.00	626.20	626.20	0.00	1.00	
1129	2083800.00	1126350.00	620.40	620.50	0.10	1.10	
1130	2083550.00	1126400.00	632.90	632.90	0.00	1.00	
1131	2083600.00	1126400.00	632.97	632.97	0.00	1.00	
1132	2083650.00	1126400.00	632.94	633.04	0.10	1.10	
1133	2083550.00	1126450.00	632.61	632.61	0.00	1.00	
1134	2083600.00	1126450.00	632.74	632.84	0.10	1.10	
1135	2083650.00	1126450.00	632.47	632.57	0.10	1.10	
1136	2083700.00	1126450.00	631.30	631.40	0.10	1.10	
1137	2083800.00	1126450.00	620.01	620.01	0.00	1.00	
1138	2083850.00	1126450.00	616.14	616.24	0.10	1.10	
1139	2083650.00	1126500.00	630.66	630.76	0.10	1.10	
1140	2083700.00	1126500.00	630.29	630.29	0.00	1.00	
1141	2083800.00	1126550.00	619.40	619.40	0.00	1.00	
1142	2083850.00	1126550.00	615.68	615.78	0.10	1.10	
1143	2083811.99	1126618.09	618.12	618.11	-0.01	0.99	Limits of Waste
1144	2083802.34	1126608.35	618.40	618.41	0.01	1.01	Limits of Waste
1145	2083756.31	1126595.58	620.11	620.12	0.01	1.01	Limits of Waste
1146	2083699.78	1126599.97	620.42	620.44	0.02	1.02	Limits of Waste
1147	2083644.90	1126604.19	620.56	620.63	0.07	1.07	Limits of Waste
1148	2083595.75	1126588.31	619.88	620.03	0.15	1.15	Limits of Waste
1149	2083572.99	1126580.93	619.53	619.55	0.02	1.02	Limits of Waste
1150	2083536.75	1126569.08	619.10	619.29	0.19	1.19	Limits of Waste
1151	2083502.89	1126531.21	618.66	618.77	0.11	1.11	Limits of Waste
1152	2083488.72	1126486.04	619.04	619.16	0.12	1.12	Limits of Waste
1153	2083475.81	1126441.88	620.44	620.44	0.00	1.00	Limits of Waste
1154	2083467.80	1126411.32	622.04	622.07	0.03	1.03	Limits of Waste
1155	2083465.25	1126366.39	624.34	624.35	0.01	1.01	Limits of Waste
1156	2083464.28	1126316.87	622.80	622.80	0.00	1.00	Limits of Waste
1157	2083465.74	1126273.50	622.81	622.95	0.14	1.14	Limits of Waste
1158	2083467.13	1126236.51	623.28	623.29	0.01	1.01	Limits of Waste
1159	2083467.69	1126221.24	623.38	623.44	0.06	1.06	Limits of Waste
1160	2083473.85	1126194.06	624.72	624.75	0.03	1.03	Limits of Waste
1161	2083481.62	1126160.75	626.58	626.67	0.09	1.09	Limits of Waste
1162	2083490.97	1126117.53	628.20	628.31	0.11	1.11	Limits of Waste
1163	2083491.64	1126058.91	627.91	627.92	0.01	1.01	Limits of Waste
1164	2083498.29	1126034.09	628.33	628.53	0.20	1.20	Limits of Waste
1165	2083491.04	1125991.12	628.98	629.00	0.02	1.02	Limits of Waste
1166	2083492.47	1125988.07	629.15	629.31	0.16	1.16	Limits of Waste
1167	2083492.79	1125964.64	629.62	629.69	0.07	1.07	Limits of Waste
1168	2083493.32	1125918.73	629.88	629.96	0.08	1.08	Limits of Waste
1169	2083493.97	1125863.00	630.85	630.92	0.07	1.07	Limits of Waste
1170	2083494.68	1125804.05	631.34	631.53	0.19	1.19	Limits of Waste
1171	2083495.19	1125761.20	632.31	632.37	0.06	1.06	Limits of Waste
1172	2083495.70	1125714.18	632.70	632.85	0.15	1.15	Limits of Waste
1173	2083496.36	1125666.67	632.46	632.50	0.04	1.04	Limits of Waste
1174	2083496.79	1125630.07	632.04	632.05	0.01	1.01	Limits of Waste
1175	2083497.33	1125586.80	631.59	631.62	0.03	1.03	Limits of Waste
1176	2083510.84	1125554.51	632.15	632.33	0.18	1.18	Limits of Waste
1177	2083524.89	1125526.12	632.47	632.52	0.05	1.05	Limits of Waste
1178	2083545.26	1125484.64	631.88	632.02	0.14	1.14	Limits of Waste
1179	2083563.87	1125447.08	632.54	632.55	0.01	1.01	Limits of Waste
1180	2083583.16	1125407.99	632.23	632.33	0.10	1.10	Limits of Waste
1181	2083593.87	1125382.95	631.05	631.22	0.17	1.17	Limits of Waste
1182	2083620.87	1125371.52	629.52	629.73	0.21	1.21	Limits of Waste
1183	2083662.64	1125373.04	627.62	627.81	0.19	1.19	Limits of Waste
1184	2083687.07	1125375.95	627.69	627.82	0.13	1.13	Limits of Waste
1185	2083749.14	1125400.42	627.35	627.53	0.18	1.18	Limits of Waste
1186	2083767.76	1125422.09	627.06	627.23	0.17	1.17	Limits of Waste
1187	2083780.81	1125461.03	628.76	628.82	0.06	1.06	Limits of Waste
1188	2083785.01	1125484.04	629.87	629.90	0.03	1.03	Limits of Waste
1189	2083798.05	1125507.11	630.35	630.54	0.19	1.19	Limits of Waste
1190	2083798.22	1125527.76	631.04	631.21	0.17	1.17	Limits of Waste
1191	2083787.80	1125585.03	631.41	631.51	0.10	1.10	Limits of Waste
1192	2083790.48	1125635.30	632.02	632.18	0.16	1.16	Limits of Waste
1193	2083781.33	1125686.60	633.41	633.58	0.17	1.17	Limits of Waste
1194	2083777.37	1125733.67	634.11	634.12	0.01	1.01	Limits of Waste
1195	2083790.51	1125759.32	633.63	633.67	0.04	1.04	Limits of Waste
1196	2083798.46	1125784.70	633.10	633.13	0.03	1.03	Limits of Waste
1197	2083803.10	1125811.58	633.10	633.11	0.01	1.01	Limits of Waste
1198	2083818.15	1125838.74	631.14	631.19	0.05	1.05	Limits of Waste
1199	2083835.81	1125900.49	631.49	631.65	0.16	1.16	Limits of Waste
1200	2083893.30	1125932.09	624.44	624.47	0.03	1.03	Limits of Waste
1201	2083895.43	1125971.39	623.76	623.93	0.17	1.17	Limits of Waste
1202	2083895.62	1125997.12	624.26	624.36	0.10	1.10	Limits of Waste
1203	2083894.04	1126039.98	625.41	625.43	0.02	1.02	Limits of Waste
1204	2083878.72	1126098.41	626.96	627.04	0.08	1.08	Limits of Waste
1205	2083868.73	1126169.02	624.58	624.51	-0.07	0.93	Limits of Waste
1206	2083875.42	1126202.71	622.44	622.51	0.07	1.07	Limits of Waste
1207	2083878.55	1126243.18	620.24	620.25	0.01	1.01	Limits of Waste
1208	2083873.61	1126289.71	618.71	618.71	0.00	1.00	Limits of Waste
1209	2083868.30	1126340.53	617.53	617.58	0.05	1.05	Limits of Waste
1210	2083864.01	1126377.96	616.85	616.86	0.01	1.01	Limits of Waste
1211	2083867.55	1126414.25	616.91	616.81	-0.10	0.90	Limits of Waste
1212	2083872.29	1126434.07	615.57	615.61	0.04	1.04	Limits of Waste
1213	2083875.68	1126472.67	615.49	615.59	0.10	1.10	Limits of Waste
1214	2083873.34	1126505.25	615.47	615.48	0.01	1.01	Limits of Waste
1215	2083878.61	1126544.88	614.78	614.87	0.09	1.09	Limits of Waste
1216	2083877.02	1126586.17	614.47	614.47	0.00	1.00	Limits of Waste
1217	2083879.77	1126615.12	613.73	613.76	0.03	1.03	Limits of Waste
1218	2083857.80	1126617.40	614.61	614.74	0.13	1.13	Limits of Waste

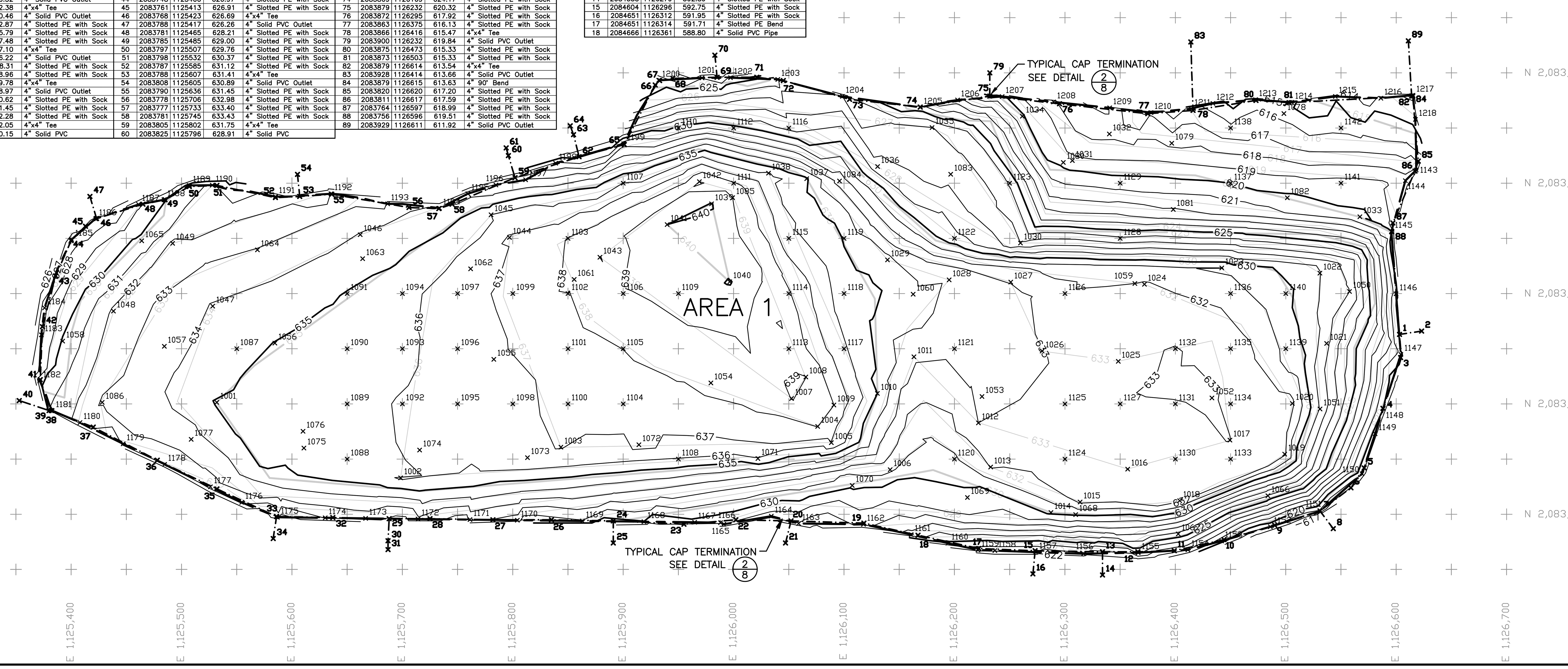
Area 1 Drain Collection Pipe

Point No.	Coordinate North	Coordinate East	Top of Pipe Elevation	Description
1	2083663	1126603	620.17	4"x4" Tee
2	2083666	1126623	619.01	4" Solid PVC Outlet
3	2083642	1126604	619.91	4" Slotted PE with Sock
4	2083596	1126588	619.31	4" Slotted PE with Sock
5	2083542	1126571	618.63	4" Slotted PE with Sock
6	2083524	1126559	618.13	4" Slotted PE with Sock
7	2083503	1126531	617.97	4"x4" Tee
8	2083487	1126543	616.47	4" Solid PVC Outlet
9	2083490	1126490	618.37	4" Slotted PE with Sock
10	2083477	1126444	620.11	4" Slotted PE with Sock
11	2083467	1126399	621.90	4" Slotted PE with Sock
12	2083466	1126366	623.85	4" Slotted PE with Sock
13	2083466	1126334	622.96	4"x4" Tee
14	2083445	1126334	620.32	4" Solid PVC Outlet
15	2083467	1126273	622.38	4"x4" Tee
16	2083446	1126271	620.46	4" Solid PVC Outlet
17	2083469	1126222	622.87	4" Slotted PE with Sock
18	2083481	1126167	625.79	4" Slotted PE with Sock
19	2083492	1126118	627.48	4" Slotted PE with Sock
20	2083494	1126052	627.10	4"x4" Tee
21	2083474	1126047	626.22	4" Solid PVC Outlet
22	2083495	1126002	628.31	4" Slotted PE with Sock
23	2083491	1125955	628.96	4" Slotted PE with Sock
24	2083494	1125891	629.78	4"x4" Tee
25	2083474	1125891	628.97	4" Solid PVC Outlet
26	2083495	1125835	630.62	4" Slotted PE with Sock
27	2083495	1125782	631.45	4" Slotted PE with Sock
28	2083496	1125725	632.28	4" Slotted PE with Sock
29	2083496	1125688	632.05	4"x4" Tee
30	2083476	1125687	630.15	4" Solid PVC
31	2083468	1125687	629.07	4" Solid PVC Outlet
32	2083497	1125637	631.70	4" Slotted PE with Sock
33	2083498	1125586	631.08	4"x4" Tee
34	2083478	1125583	629.12	4" Solid PVC Outlet
35	2083523	1125532	632.01	4" Slotted PE with Sock
36	2083549	1125478	631.42	4" Slotted PE with Sock
37	2083579	1125420	632.00	4" Slotted PE with Sock
38	2083594	1125382	630.64	4"x4" Tee
39	2083594	1125380	630.27	4" 45° Bend
40	2083603	1125353	627.88	4" Solid PVC Outlet
41	2083622	1125372	628.97	4" Slotted PE with Sock
42	2083670	1125374	627.33	4" Slotted PE with Sock
43	2083716	1125386	627.10	4" Slotted PE with Sock
44	2083748	1125400	626.97	4" Slotted PE with Sock
45	2083761	1125413	626.91	4" Slotted PE with Sock
46	2083768	1125423	626.69	4"x4" Tee
47	2083788	1125417	626.26	4" Solid PVC Outlet
48	2083781	1125465	628.21	4" Slotted PE with Sock
49	2083785	1125485	629.00	4" Slotted PE with Sock
50	2083797	1125507	629.76	4" Slotted PE with Sock
51	2083798	1125532	630.37	4" Slotted PE with Sock
52	2083787	1125585	631.12	4" Slotted PE with Sock
53	2083788	1125607	631.41	4"x4" Tee
54	2083808	1125605	630.89	4" Solid PVC Outlet
55	2083790	1125636	631.45	4" Slotted PE with Sock
56	2083778	1125706	632.98	4" Slotted PE with Sock
57	2083777	1125733	633.40	4" Slotted PE with Sock
58	2083781	1125745	633.43	4" Slotted PE with Sock
59	2083805	1125802	631.75	4"x4" Tee
60	2083825	1125796	628.91	4" Solid PVC
61	2083832	1125794	627.22	4" Solid PVC Outlet
62	2083824	1125860	630.14	4"x4" Tee
63	2083844	1125855	627.44	4" Solid PVC
64	2083852	1125852	626.06	4" Solid PVC Outlet
65	2083835	1125901	631.13	4" 45° Bend
66	2083889	1125929	624.05	4" Slotted PE with Sock
67	2083893	1125933	623.62	4" Slotted PE with Sock
68	2083895	1125945	623.46	4" Slotted PE with Sock
69	2083896	1125985	623.21	4"x4" Tee
70	2083916	1125983	621.79	4" Solid PVC Outlet
71	2083896	1126021	623.99	4" Slotted PE with Sock
72	2083893	1126045	625.07	4" Slotted PE with Sock
73	2083876	1126105	626.25	4" Slotted PE with Sock
74	2083869	1126169	624.17	4" Slotted PE with Sock
75	2083879	1126232	620.32	4" Slotted PE with Sock
76	2083872	1126295	617.92	4" Slotted PE with Sock
77	2083863	1126375	616.13	4" Slotted PE with Sock
78	2083866	1126416	615.47	4"x4" Tee
79	2083900	1126232	619.84	4" Solid PVC Outlet
80	2083875	1126473	615.33	4" Slotted PE with Sock
81	2083873	1126503	615.33	4" Slotted PE with Sock
82	2083879	1126614	613.54	4"x4" Tee
83	2083928	1126414	613.66	4" Solid PVC Outlet
84	2083879	1126615	613.63	4" 90° Bend
85	2083820	1126620	617.20	4" Slotted PE with Sock
86	2083811	1126617	617.59	4" Slotted PE with Sock
87	2083764	1126597	618.99	4" Slotted PE with Sock
88	2083756	1126596	619.51	4" Slotted PE with Sock
89	2083929	1126611	611.92	4" Solid PVC Outlet

Area 2 Drain Collection Pipe

Point No.	Coordinate North	Coordinate East	Top of Pipe Elevation	Description
1	2084075	1126562	596.50	4" Cap
2	2084132	1126573	596.09	4" Slotted PE with Sock
3	2084257	1126586	595.56	4"x4" Tee
4	2084250	1126629	594.39	4" Solid PVC Outlet
5	2084275	1126587	595.22	4" Solid PVC Outlet
6	2084359	1126589	594.90	4" Solid PVC Outlet
7	2084457	1126598	594.55	4"x4" Tee
8	2084444	1126640	593.63	4" Solid PVC Outlet
9	2084120	1126187	595.93	4" Cap
10	2084220	1126208	595.17	4" Slotted PE with Sock
11	2084318	1126228	594.61	4" Slotted PE with Sock
12	2084413	1126245	593.96	4" Slotted PE with Sock
13	2084506	1126264	593.33	4" Slotted PE with Sock
14	2084555	1126279	592.89	4" Slotted PE with Sock
15	2084604	1126296	592.75	4" Slotted PE with Sock
16	2084651	1126312	591.95	4" Slotted PE with Sock
17	2084651	1126314	591.71	4" Slotted PE Bend
18	2084666	1126361	588.80	4" Solid PVC Pipe





LEGEND

- LIMITS OF WASTE
- DRAIN PIPE
- 594 DESIGN SAND LAYER CONTOURS
- 594 AS-BUILT SAND LAYER CONTOURS
- ×100 SURVEY POINT NUMBER AND LOCATION
- ×100 DRAIN PIPE POINT NUMBER AND LOCATION

RELEASE	DATE:	BY:
Project Review		

REVISIONS (NO. / DATE: / BY: / DESCRIPTION)

JM Johns Manville

CQM, INC.
Engineering–Surveying–Material Testing
2679 Continental Drive
Green Bay, WI 54311

Sand Drainage Layer and Piping

Construction Documentation Drawings
Area 1 & 2 Final Cover
Johns Manville Waukegan Plant
Waukegan, IL

DRAWN BY: WBE
DATE: Jan. 2009
SCALE: 1"=60'
DRAWING NO. A–5

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Area 1 Protective Layer

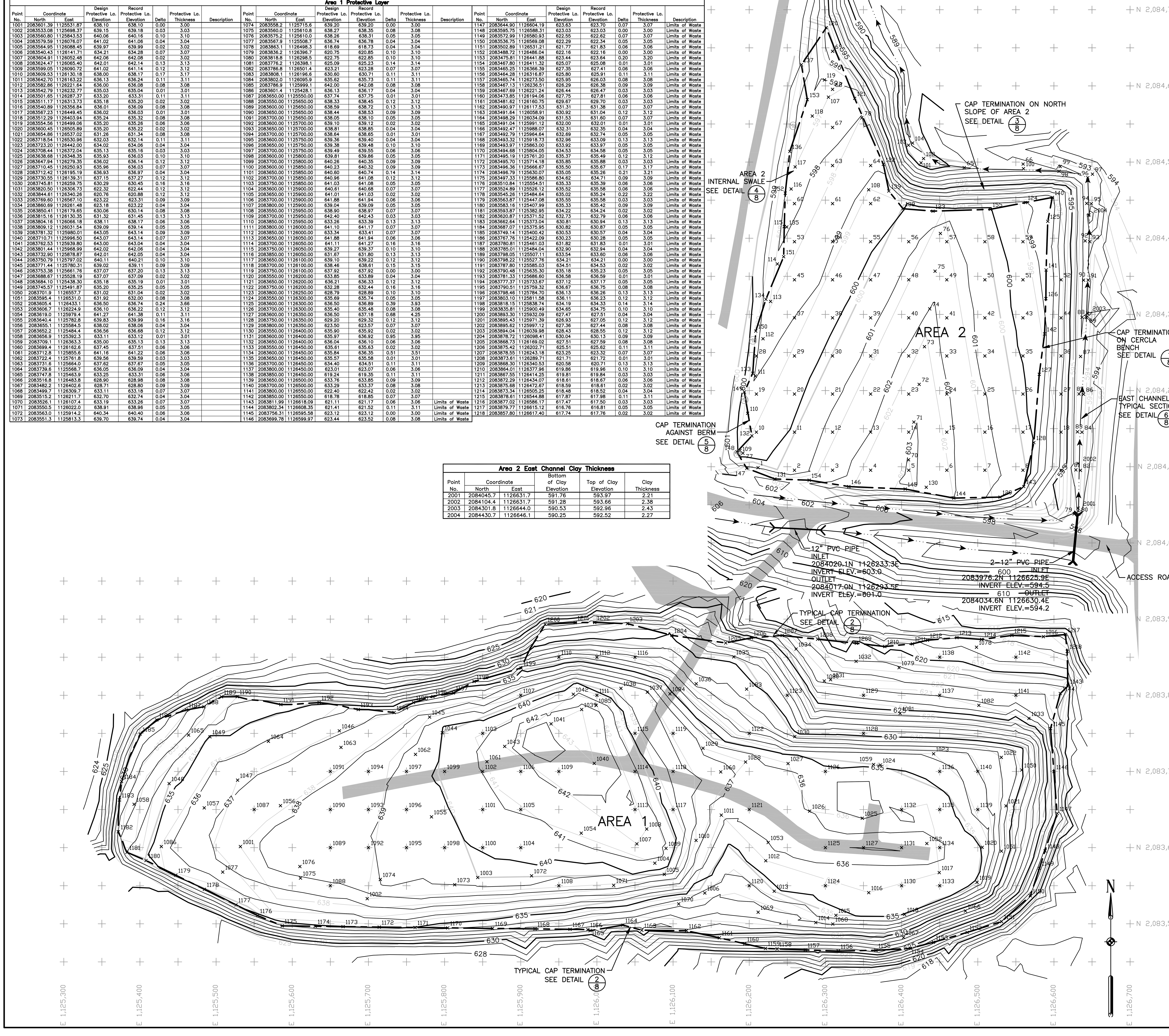
Point No.	Coordinate North	Coordinate East	Design Protective La. Elevation	Record Protective La. Elevation	Delta	Protective La. Thickness	Description
1001	2083601.39	1125531.87	638.10	638.10	0.00	3.00	
1002	2083533.08	1125698.37	639.15	639.18	0.03	3.03	
1003	2083560.80	1125843.53	640.06	640.16	0.10	3.10	
1004	2083579.59	1126076.07	641.02	641.06	0.04	3.04	
1005	2083564.95	1126088.45	639.97	639.99	0.02	3.02	
1006	2083540.43	1126141.71	634.21	634.28	0.07	3.07	
1007	2083604.91	1126052.48	642.06	642.08	0.02	3.02	
1008	2083624.47	1126065.40	642.01	642.14	0.13	3.13	
1009	2083599.05	1126090.72	641.02	641.14	0.12	3.12	
1010	2083609.53	1126130.18	638.00	638.17	0.17	3.17	
1011	2083642.70	1126163.22	636.13	636.24	0.11	3.11	
1012	2083582.86	1126221.64	636.00	636.08	0.08	3.08	
1013	2083542.79	1126232.77	635.03	635.04	0.01	3.01	
1014	2083501.65	1126287.37	633.20	633.31	0.11	3.11	
1015	2083511.17	1126313.73	635.18	635.20	0.02	3.02	
1016	2083540.89	1126356.84	636.01	636.09	0.08	3.08	
1017	2083567.23	1126449.45	636.02	636.03	0.01	3.01	
1018	2083512.29	1126403.94	635.24	635.32	0.08	3.08	
1019	2083554.56	1126499.06	635.20	635.26	0.06	3.06	
1020	2083600.45	1126505.89	635.20	635.22	0.02	3.02	
1021	2083654.86	1126537.02	631.26	631.34	0.08	3.08	
1022	2083718.54	1126530.96	632.03	632.14	0.11	3.11	
1023	2083723.20	1126442.00	634.02	634.06	0.04	3.04	
1024	2083708.44	1126372.04	635.13	635.16	0.03	3.03	
1025	2083638.68	1126348.35	635.93	636.03	0.10	3.10	
1026	2083647.94	1126279.35	636.02	636.14	0.12	3.12	
1027	2083710.45	1126250.93	635.96	636.03	0.07	3.07	
1028	2083712.42	1126195.19	636.93	636.97	0.04	3.04	
1029	2083730.55	1126139.31	637.15	637.27	0.12	3.12	
1030	2083745.81	1126259.75	630.29	630.45	0.16	3.16	
1031	2083820.50	1126306.73	622.32	622.44	0.12	3.12	
1032	2083844.61	1126340.26	620.76	620.88	0.12	3.12	
1033	2083769.60	1126567.10	623.22	623.31	0.09	3.09	
1034	2083860.69	1126261.48	623.18	623.24	0.06	3.06	
1035	2083850.41	1126179.65	630.06	630.14	0.08	3.08	
1036	2083815.16	1126130.35	631.32	631.45	0.13	3.13	
1037	2083804.16	1126066.18	638.11	638.17	0.06	3.06	
1038	2083809.12	1126031.54	639.09	639.14	0.05	3.05	
1039	2083781.32	1125980.01	643.05	643.14	0.09	3.09	
1040	2083710.71	1125996.50	643.07	643.14	0.07	3.07	
1041	2083762.53	1125939.80	643.00	643.04	0.04	3.04	
1042	2083801.44	1125968.99	642.02	642.06	0.04	3.04	
1043	2083732.90	1125878.87	642.01	642.05	0.04	3.04	
1044	2083750.79	1125797.02	640.11	640.21	0.10	3.10	
1045	2083771.44	1125780.31	639.02	639.11	0.09	3.09	
1046	2083753.35	1125661.76	637.07	637.20	0.13	3.13	
1047	2083688.67	1125528.19	637.07	637.09	0.02	3.02	
1048	2083684.10	1125438.30	635.18	635.19	0.01	3.01	
1049	2083745.57	1125491.87	635.20	635.25	0.05	3.05	
1050	2083701.9	1126557.7	631.02	631.04	0.02	3.02	
1051	2083595.4	1126531.0	631.92	632.00	0.08	3.08	
1052	2083605.4	1126433.1	636.50	636.74	0.24	3.66	
1053	2083606.7	1126224.9	636.10	636.22	0.12	3.12	
1054	2083619.0	1125979.4	641.27	641.38	0.11	3.11	
1055	2083640.4	1125782.8	639.83	639.99	0.16	3.16	
1056	2083655.1	1125584.5	638.02	638.06	0.04	3.04	
1057	2083652.2	1125484.4	636.56	636.68	0.12	3.12	
1058	2083656.9	1125392.3	633.11	633.12	0.01	3.01	
1059	2083709.1	1125363.3	635.00	635.13	0.13	3.13	
1060	2083699.4	1126162.6	637.45	637.51	0.06	3.06	
1061	2083770.8	1125855.6	641.16	641.22	0.06	3.06	
1062	2083722.4	1125761.8	639.56	639.59	0.03	3.03	
1063	2083731.6	1125664.0	637.62	637.67	0.05	3.05	
1064	2083739.6	1125568.7	636.05	636.09	0.04	3.04	
1065	2083747.8	1125463.9	633.25	633.31	0.06	3.06	
1066	2083516.8	1126483.8	628.90	628.98	0.08	3.08	
1067	2083482.2	1126402.6	628.71	628.80	0.09	3.09	
1068	2083499.7	1126309.7	633.11	633.18	0.07	3.07	
1069	2083515.2	1126211.7	632.70	632.74	0.04	3.04	
1070	2083526.1	1126107.4	633.19	633.26	0.07	3.07	
1071	2083550.5	1126022.0	638.91	638.96	0.05	3.05	
1072	2083563.0	1125914.2	640.34	640.40	0.06	3.06	
1073	2083551.3	1125813.3	639.70	639.74	0.04	3.04	
1074	2083558.2	1125715.6	639.20	639.20	0.00	3.00	
1075	2083560.0	1125610.8	638.27	638.35	0.08	3.08	
1076	2083575.2	1125610.0	638.26	638.31	0.05	3.05	
1077	2083567.9	1125508.7	636.74	636.78	0.04	3.04	
1078	2083863.1	1126498.3	618.69	618.73	0.04	3.04	
1079	2083836.2	1126396.7	620.75	620.85	0.10	3.10	
1080	2083818.8	1126298.5	622.75	622.85	0.10	3.10	
1081	2083776.2	1126398.1	625.09	625.23	0.14	3.14	
1082	2083786.8	1126501.4	623.21	623.28	0.07	3.07	
1083	2083808.1	1126196.6	630.60	630.71	0.11	3.11	
1084	2083802.0	1126095.9	635.62	635.73	0.11	3.11	
1085	2083786.9	1125999.1	642.00	642.08	0.08	3.08	
1086	2083601.4	1125428.1	636.13	636.17	0.04	3.04	
1087	2083650.00	1125550.00	637.74	637.75	0.01	3.01	
1088	2083550.00	1125650.00	638.33	638.45	0.12	3.12	
1089	2083600.00	1125650.00	638.59	638.72	0.13	3.13	
1090	2083650.00	1125650.00	638.44	638.53	0.09	3.09	
1091	2083700.00	1125650.00	638.05	638.10	0.05	3.05	
1092	2083600.00	1125700.00	639.10	639.12	0.02	3.02	
1093	2083650.00	1125700.00	638.81	638.85	0.04	3.04	
1094	2083700.00	1125700.00	638.64	638.65	0.01	3.01	
1095	2083600.00	1125750.00	639.36	639.40	0.04	3.04	
1096	2083650.00	1125750.00	639.38	639.48	0.10	3.10	
1097	2083700.00	1125750.00	639.49	639.55	0.06	3.06	
1098	2083600.00	1125800.00	639.81	639.86	0.05	3.05	
1099	2083700.00	1125800.00	640.26	640.35	0.09	3.09	
1100	2083600.00	1125850.00	640.23	640.32	0.09	3.09	
1101	2083650.00	1125850.00	640.60	640.74	0.14	3.14	
1102	2083700.00	1125850.00	640.96	641.08	0.12	3.12	
1103	2083750.00	1125850.00	641.03	641.08	0.05	3.05	
1104	2083600.00	1125900.00	640.61	640.68	0.07	3.07	
1105	2083650.00	1125900.00	641.01	641.03	0.02	3.02	
1106	2083700.00	1125900.00	641.88	641.94	0.06	3.06	
1107	2083800.00	1125900.00	639.04	639.09	0.05	3.05	
1108	2083550.00	1125950.00	638.90	638.97	0.07	3.07	
1109	2083700.00	1125950.00	642.40	642.43	0.03	3.03	
1110	2083850.00	1125950.00	633.26	633.39	0.13	3.13	
1111	2083800.00	1126000.00	641.10	641.17	0.07	3.07	
1112	2083850.00	1126000.00	633.34	633.41	0.07	3.07	
1113	2083650.00	1126050.00	641.88	641.94	0.06	3.06	
1114	2083700.00	1126050.00	641.11	641.27	0.16	3.16	
1115	2083750.00	1126050.00	639.27	639.37	0.10	3.10	
1116	2083850.00	1126050.00	631.67	631.80	0.13	3.13	
1117	2083650.00	1126100.00	639.10	639.22	0.12	3.12	
1118	2083700.00	1126100.00	638.46	638.61	0.15	3.15	
1119	2083750.00	1126100.00	637.92	637.92	0.00	3.00	
1120	2083550.00	1126200.00	633.85	633.89	0.04	3.04	
1121	2083650.00	1126200.00	636.21	636.33	0.12	3.12	
1122	2083750.00	1126200.00	632.28	632.44	0.16	3.16	
1123	2083800.00	1126250.00	628.79	628.89	0.10	3.10	
1124	2083550.00	1126300.00	635.69	635.74	0.05	3.05	
1125	2083600.00	1126300.00	636.50	636.89	0.39	3.93	
1126	2083700.00	1126300.00	635.40	635.48	0.08	3.08	
1127	2083600.00	1126350.00	636.50	637.18	0.68	4.25	
1128	2083750.00	1126350.00	629.20	629.32	0.12	3.12	
1129	2083800.00	1126350.00	623.50	623.57	0.07	3.07	
1130	2083550.00	1126400.00	635.90	635.92	0.02	3.02	
1131	2083600.00	1126400.00	635.97	636.92	0.95	3.95	
1132	2083650.00	1126400.00	636.04	636.10	0.06	3.06	
1133	2083550.00	1126450.00	635.61	635.63	0.02	3.02	
1134	2083600.00	1126450.00	635.84	636.35	0.51	3.51	
1135	2083650.00	1126450.00	635.57	635.58	0.01	3.01	
1136	2083700.00	1126450.00	634.40	634.51	0.11	3.11	
1137	2083800.00	1126450.00	623.01	623.07	0.06	3.06	
1138	2083850.00	1126450.00	619.24	619.35	0.11	3.11	
1139	2083650.00	1126500.00	633.76	633.85	0.09	3.09	
1140	2083700.00	1126500.00	633.29	633.37	0.08	3.08	
1141	2083800.00	1126550.00	622.40	622.42	0.02	3.02	
1142	2083850.00	1126550.00	618.78	618.85	0.07	3.07	
1143	2083811.99	1126618.09	621.11	621.17	0.06	3.06	Limits of Waste
1144	2083802.34	1126608.35	621.41	621.52	0.11	3.11	Limits of Waste
1145	2083756.31	1126595.58	623.12	623.12	0.00	3.00	Limits of Waste
1146	2083699.78	1126599.97	623.44	623.52	0.08	3.08	Limits of Waste
1147	2083644.90	1126604.19	623.63	623.70	0.07	3.07	Limits of Waste
1148	2083595.75	1126588.31	623.03	623.03	0.00	3.00	Limits of Waste
1149	2083572.99	1126580.93	622.55	622.62	0.07	3.07	Limits of Waste
1150	2083536.75	1126569.08	622.29	622.34	0.05	3.05	Limits of Waste
1151	2083502.89	1126531.21	621.77	621.83	0.06	3.06	Limits of Waste
1152	2083488.72	1126486.04	622.16	622.16	0.00	3.00	Limits of Waste
1153	2083475.81	1126441.88	623.44	623.64	0.20	3.20	Limits of Waste
1154	2083467.80	1126411.32	625.07	625.08	0.01	3.01	Limits of Waste
1155	2083465.25	1126366.39	627.35	627.41	0.06	3.06	Limits of Waste
1156	2083464.28	1126316.87	625.80	625.91	0.11	3.11	Limits of Waste
1157	2083465.74	1126273.50	625.95	626.03	0.08	3.08	Limits of Waste
1158	2083467.13	1126236.51	626.29	626.38	0.09	3.09	Limits of Waste
1159	2083467.69	1126221.24	626.44	626.47	0.03	3.03	Limits of Waste
1160	2083473.85	1126194.06	627.75	627.81	0.06	3.06	Limits of Waste
1161	2083481.62	1126160.75	629.67	629.70	0.03	3.03	Limits of Waste
1162	2083490.97	1126117.53	631.31	631.38	0.07	3.07	Limits of Waste
1163	2083491.64	1126058.91	630.92	631.04	0.12	3.12	Limits of Waste
1164	2083498.29	1126034.09	631.53	631.60	0.07	3.07	Limits of Waste
1165	2083491.04	1125991.12	632.00	632.01	0.01	3.01	Limits of Waste
1166	2083492.47	1125988.07	632.31	632.35	0.04	3.04	Limits of Waste
1167	2083492.79	1125964.64	632.69	632.74	0.05	3.05	Limits of Waste
1168	2083493.32	1125918.73	632.96	633.09	0.13	3.13	Limits of Waste
1169	2083493.97	1125863.00	633.92	633.97	0.05	3.05	Limits of Waste
1170	2083494.68	1125804.05	634.53	634.58	0.05	3.05	Limits of Waste
1171	2083495.19	1125761.20	635.37	635.49	0.12	3.12	Limits of Waste
1172	2083495.70	1125714.18	635.85	635.88	0.03	3.03	Limits of Waste
1173	2083496.36	1125666.67	635.50	635.67	0.17	3.17	Limits of Waste
1174	2083496.79	1125630.07	635.05	635.26	0.21	3.21	Limits of Waste
1175	2083497.33	1125586.80	634.62	634.71	0.09	3.09	Limits of Waste
1176	2083510.84	1125554.51	635.33	635.39	0.06	3.06	Limits of Waste
1177	2083524.89	1125526.12	635.52	635.58	0.06	3.06	Limits of Waste
1178	2083545.26	1125484.64	635.02	635.24	0.22	3.22	Limits of Waste
1179	2083563.87	1125447.08	635.55	635.58	0.03	3.03	Limits of Waste
1180	2083583.16	1125407.99	635.33	635.42	0.09	3.09	Limits of Waste
1181	2083593.87	1125382.95	634.22	634.24	0.02	3.02	Limits of Waste
1182	2083620.87	1125371.52	632.73	632.79	0.06	3.06	Limits of Waste
1183	2083662.64	1125373.04	630.81	630.94	0.13	3.13	Limits of Waste
1184	2083687.07	1125375.95	630.82	630.87	0.05	3.05	Limits of Waste
1185	2083749.14	1125400.42	630.53	630.57	0.04	3.04	Limits of Waste
1186	2083767.76	1125422.09	630.23	630.28	0.05	3.05	Limits of Waste
1187	2083780.81	1125461.03	631.82	631.83	0.01	3.01	Limits of Waste
1188	2083785.01	1125484.04	632.90	632.94	0.04	3.04	Limits of Waste
1189	2083798.05	1125507.11	633.54	633.60	0.06	3.06	Limits of Waste
1190	2083798.22	1125527.76	634.21	634.21	0.00	3.00	Limits of Waste
1191	2083787.80	1125585.03	634.51	634.53	0.02	3.02	Limits of Waste
1192	2083790.48	1125635.30	635.18	635.23	0.05	3.05	Limits of Waste
1193	2083781.33	1125686.60	636.58	636.59	0.01	3.01	Limits of Waste
1194	2083777.37	1125733.67	637.12	637.17	0.05	3.05	Limits of Waste
1195	2083790.51	1125759.32	636.67	636.75	0.08	3.08	Limits of Waste
1196	2083798.46	1125784.70	636.13	636.26	0.13	3.13	Limits of Waste
1197	2083803.10	1125811.58	636.11	636.23	0.12	3.12	Limits of Waste
1198	2083818.15	1125838.74	634.19	634.33	0.14	3.14	Limits of Waste
1199	2083835.81	1125900.49	634.65	634.75	0.10	3.10	Limits of Waste
1200	2083893.30	1125932.09	627.47	627.51	0.04	3.04	Limits of Waste
1201	2083895.43	1125971.39	626.93	627.05	0.12	3.12	Limits of Waste
1202	2083895.62	1125997.12	627.36	627.44	0.08	3.08	Limits of Waste
1203	2083894.04	1126039.98	628.43	628.55	0.12	3.12	Limits of Waste
1204	2083878.72	1126098.41	630.04	630.13	0.09	3.09	Limits of Waste
1205	2083868.73	1126169.02	627.51	627.59	0.08	3.08	Limits of Waste
1206	2083875.42	1126202.71	625.51	625.62	0.11	3.11	Limits of Waste
1207	2083878.55	1126243.18	623.25	623.32	0.07	3.07	Limits of Waste
1208	2083873.61	1126289.71	621.71	621.72	0.01	3.01	Limits of Waste
1209	2083868.30	1126340.53	620.58	620.71	0.13	3.13	Limits of Waste
1210	2083864.01	1126377.96	619.86	619.96	0.10	3.10	Limits of Waste
1211	2083867.55	1126414.25	619.81	619.84	0.03	3.03	Limits of Waste
1212	2083872.29	1126434.07	618.61	618.67	0.06	3.06	Limits of Waste
1213	2083875.68	1126472.67	618.59	618.61	0.02	3.02	Limits of Waste
1214	2083873.34	1126505.25	618.48	618.52	0.04	3.04	Limits of Waste
1215	2083878.61	1126544.88	617.87	617.98	0.11	3.11	Limits of Waste
1216	2083877.02	1126586.17	617.47	617.50	0.03	3.03	Limits of Waste
1217	2083879.77	1126615.12	616.76	616.81	0.05	3.05	Limits of Waste
1218	2083857.80	1126617.40	617.74	617.76	0.02	3.02	Limits of Waste

Area 2 East Channel Clay Thickness

Point No.	Coordinate North	Coordinate East	Bottom of Clay Elevation	Top of Clay Elevation	Clay Thickness
2001	2084045.7	1126631.7	591.76	593.97	2.21
2002	2084104.4	1126631.7	591.28	593.66	2.38
2003	2084301.8	1126644.0	590.53	592.96	2.43
2004	2084430.7	1126646.1	590.25	592.52	2.27

Area 2 Protective Layer

Point No.	North	East	Design Protect. Layer Elevation	Record Protect. Layer Elevation	Delta	Protect. Layer Thickness	Description
1	2084098.87	1126211.56	601.15	601.21	0.06	3.06	
2	2084095.52	1126259.36	600.61	600.63	0.02	3.02	
3	2084095.52	1126309.36	601.43	601.60	0.17	3.17	
4	2084095.52	1126359.36	602.32	602.41	0.09	3.09	
5	2084095.52	1126409.36	603.12	603.21	0.09	3.09	
6	2084095.52	1126459.36	602.12	602.28	0.16	3.16	
7	2084095.52	1126509.36	601.16	601.27	0.11	3.11	
8	2084095.52	1126559.36	600.27	600.34	0.07	3.07	
9	2084095.52	1126609.36	–	–	–	–	Outside Limits of Waste
10	2084145.52	1126209.36	599.28	599.32	0.04	3.04	
11	2084145.52	1126259.36	600.08	600.16	0.08	3.08	
12	2084145.52	1126309.36	601.01	601.03	0.02	3.02	
13	2084145.52	1126359.36	601.87	601.99	0.12	3.12	
14	2084145.52	1126409.36	602.93	603.06	0.13	3.13	
15	2084145.52	1126459.36	601.95	602.11	0.16	3.16	
16	2084145.52	1126509.36	600.98	601.15	0.17	3.17	
17	2084145.52	1126559.36	600.08	600.22	0.14	3.14	
18	2084145.52	1126609.36	–	–	–	–	Outside Limits of Waste
19	2084195.52	1126209.36	598.78	599.08	0.30	3.30	
20	2084195.52	1126259.36	599.67	599.79	0.12	3.12	
21	2084195.52	1126309.36	600.66	600.84	0.18	3.18	
22	2084195.52	1126359.36	601.52	601.72	0.20	3.20	
23	2084195.52	1126409.36	602.46	602.67	0.21	3.21	
24	2084195.52	1126459.36	601.77	601.86	0.09	3.09	
25	2084195.52	1126509.36	600.83	601.02	0.19	3.19	
26	2084195.52	1126559.36	599.92	600.11	0.19	3.19	
27	2084195.52	1126609.36	–	–	–	–	Outside Limits of Waste
28	2084245.52	1126209.36	598.83	598.98	0.15	3.15	
29	2084245.52	1126259.36	599.25	599.38	0.13	3.13	
30	2084245.52	1126309.36	600.19	600.33	0.14	3.14	
31	2084245.52	1126359.36	600.94	601.08	0.14	3.14	
32	2084245.52	1126409.36	602.09	602.28	0.19	3.19	
33	2084245.52	1126459.36	601.49	601.68	0.19	3.19	
34	2084245.52	1126509.36	600.63	600.77	0.14	3.14	
35	2084245.52	1126559.36	599.64	599.81	0.17	3.17	
36	2084245.52	1126609.36	–	–	–	–	Outside Limits of Waste
37	2084295.52	1126259.36	598.71	598.89	0.18	3.18	
38	2084295.52	1126309.36	599.60	599.79	0.19	3.19	
39	2084295.52	1126359.36	600.52	600.72	0.20	3.20	
40	2084295.52	1126409.36	601.54	601.76	0.22	3.22	
41	2084295.52	1126459.36	601.41	601.60	0.19	3.19	
42	2084295.52	1126509.36	600.57	600.75	0.18	3.18	
43	2084295.52	1126559.36	599.60	599.77	0.17	3.17	
44	2084295.52	1126609.36	–	–	–	–	Outside Limits of Waste
45	2084345.52	1126259.36	598.38	598.50	0.12	3.12	
46	2084345.52	1126309.36	599.08	599.28	0.20	3.20	
47	2084345.52	1126359.36	600.22	600.37	0.15	3.15	
48	2084345.52	1126409.36	600.96	601.15	0.19	3.19	
49	2084345.52	1126459.36	601.13	601.34	0.21	3.21	
50	2084345.52	1126509.36	600.41	600.62	0.21	3.21	
51	2084345.52	1126559.36	599.27	599.47	0.20	3.20	
52	2084345.52	1126609.36	–	–	–	–	Outside Limits of Waste
53	2084395.52	1126259.36	598.02	598.20	0.18	3.18	
54	2084395.52	1126309.36	598.81	598.86	0.05	3.05	
55	2084395.52	1126359.36	599.62	599.72	0.10	3.10	
56	2084395.52	1126409.36	600.63	600.84	0.21	3.21	
57	2084395.52	1126459.36	601.22	601.41	0.19	3.19	
58	2084395.52	1126509.36	600.15	600.22	0.07	3.07	
59	2084395.52	1126559.36	599.19	599.38	0.19	3.19	
60	2084395.52	1126609.36	597.61	597.79	0.18	3.18	
61	2084445.52	1126309.36	598.40	598.57	0.17	3.17	
62	2084445.52	1126359.36	599.26	599.30	0.04	3.04	
63	2084495.52	1126309.36	597.94	598.04	0.10	3.10	
64	2084495.52	1126359.36	598.68	598.82	0.14	3.14	
65	2084492.67	1126482.23	–	–	–	–	Outside Limits of Waste
66	2084497.46	1126559.54	–	–	–	–	Outside Limits of Waste
67	2084545.52	1126309.36	597.54	597.72	0.18	3.18	
68	2084595.52	1126309.36	596.98	597.18	0.20	3.20	
69	2084645.52	1126309.36	595.46	595.67	0.21	3.21	
70	2084109.22	1126416.81	603.13	603.19	0.06	3.06	
71	2084158.74	1126416.41	602.90	603.00	0.10	3.10	
72	2084208.25	1126423.05	602.57	602.75	0.18	3.18	
73	2084257.76	1126430.00	602.30	602.43	0.13	3.13	
74	2084307.27	1126436.98	601.93	602.11	0.18	3.18	
75	2084356.78	1126443.95	601.55	601.78	0.23	3.23	
76	2084406.29	1126450.97	601.41	601.58	0.17	3.17	
77	2084417.90	1126191.69	599.41	599.64	0.23	3.23	
78	2084457.99	1126347.72	598.03	598.08	0.05	3.05	
79	2084038.13	1126626.53	–	–	–	–	Outside Limits of Waste
80	2084037.88	1126632.53	–	–	–	–	Outside Limits of Waste
81	2084095.89	1126628.87	–	–	–	–	Outside Limits of Waste
82	2084095.30	1126634.85	–	–	–	–	Outside Limits of Waste
83	2084145.93	1126630.89	–	–	–	–	Outside Limits of Waste
84	2084145.45	1126636.88	–	–	–	–	Outside Limits of Waste
85	2084195.57	1126632.91	–	–	–	–	Outside Limits of Waste
86	2084195.18	1126638.89	–	–	–	–	Outside Limits of Waste
87	2084244.80	1126634.90	–	–	–	–	Outside Limits of Waste
88	2084296.34	1126636.98	–	–	–	–	Outside Limits of Waste
89	2084295.73	1126642.97	–	–	–	–	Outside Limits of Waste
90	2084345.03	1126638.95	–	–	–	–	Outside Limits of Waste
91	2084345.14	1126644.96	–	–	–	–	Outside Limits of Waste
92	2084395.59	1126641.04	–	–	–	–	Outside Limits of Waste
93	2084395.48	1126647.00	–	–	–	–	Outside Limits of Waste
94	2084445.85	1126643.03	–	–	–	–	Outside Limits of Waste
95	2084445.34	1126649.02	–	–	–	–	Outside Limits of Waste
96	2084479.46	1126644.39	–	–	–	–	Outside Limits of Waste
97	2084484.18	1126650.59	–	–	–	–	Outside Limits of Waste
98	2084487.97	1126604.70	–	–	–	–	Outside Limits of Waste
99	2084494.23	1126608.12	–	–	–	–	Outside Limits of Waste
100	2084491.45	1126560.06	–	–	–	–	Outside Limits of Waste
101	2084498.99	1126425.55	–	–	–	–	Outside Limits of Waste
102	2084504.66	1126428.89	–	–	–	–	Outside Limits of Waste
103	2084522.22	1126409.06	–	–	–	–	Outside Limits of Waste
104	2084525.02	1126414.43	–	–	–	–	Outside Limits of Waste
105	2084477.41	1126349.61	–	–	–	–	Outside Limits of Waste
106	2084477.89	1126355.59	–	–	–	–	Outside Limits of Waste
107	2084585.29	1126303.97	597.04	597.24	0.20	3.20	
108	2084463.76	1126356.77	598.97	599.07	0.10	3.10	
109	2084121.22	1126187.77	599.30	599.65	0.35	3.35	
110	2084170.18	1126197.87	598.90	599.11	0.21	3.21	
111	2084219.15	1126207.98	598.86	599.02	0.16	3.16	
112	2084268.12	1126218.09	598.42	598.61	0.19	3.19	
113	2084317.14	1126227.94	598.18	598.34	0.16	3.16	
114	2084366.32	1126236.94	597.91	598.10	0.19	3.19	
115	2084415.50	1126245.94	597.61	597.75	0.14	3.14	
116	2084464.68	1126254.94	597.43	597.63	0.20	3.20	
117	2084493.71	1126260.26	597.30	597.50	0.20	3.20	
118	2084560.50	1126284.22	596.78	596.97	0.19	3.19	
119	2084607.87	1126298.79	596.38	596.56	0.18	3.18	
120	2084676.45	1126301.10	595.72	595.77	0.05	3.05	Limit of Waste
121	2084583.67	1126338.40	597.39	597.44	0.05	3.05	Limit of Waste
122	2084497.12	1126376.03	598.85	598.88	0.03	3.03	Limit of Waste
123	2084435.65	1126441.23	600.85	601.02	0.17	3.17	Limit of Waste
124	2084446.87	1126562.60	598.98	599.13	0.15	3.15	Limit of Waste
125	2084422.31	1126591.96	598.40	598.44	0.04	3.04	Limit of Waste
126	2084320.78	1126589.44	598.74	598.91	0.17	3.17	Limit of Waste
127	2084221.44	1126580.78	599.33	599.49	0.16	3.16	Limit of Waste
128	2084131.81	1126573.62	599.70	599.76	0.06	3.06	Limit of Waste
129	2084060.25	1126529.25	600.78	600.89	0.11	3.11	Limit of Waste
130	2084073.11	1126432.36	602.62	602.76	0.14	3.14	Limit of Waste
131	2084084.04	1126332.61	601.89	602.00	0.11	3.11	Limit of Waste
132	2084140.60	1126203.47	599.23	599.34	0.11	3.11	Limit of Waste
133	2084222.83	1126204.54	598.87	599.20	0.33	3.33	Limit of Waste
134	2084319.94	1126221.84	598.67	598.76	0.09	3.09	Limit of Waste
135	2084414.85	1126249.22	597.64	597.69	0.05	3.05	Limit of Waste
136	2084514.01	1126253.21	598.28	598.32	0.04	3.04	Limit of Waste
137	2084627.77	1126268.43	598.99	599.22	0.23	3.23	Limit of Waste
138	2084438.84	1126401.89	600.10	600.19	0.09	3.09	Limit of Waste
139	2084461.98	1126383.25	599.21	599.42	0.21	3.21	Limit of Waste
140	2084453.64	1126597.81	598.26	598.43	0.17	3.17	Limit of Waste
141	2084363.45	1126589.71	598.55	598.72	0.17	3.17	Limit of Waste
142	2084274.39	1126587.42	598.92	599.18	0.26	3.26	Limit of Waste
143	2084172.44	1126560.33	600.09	600.19	0.10	3.10	Limit of Waste
144	2084058.96	1126468.51	601.87	602.06	0.19	3.19	Limit of Waste
145	2084070.81	1126494.74	602.99	602.99	0.00	3.00	Limit of Waste
146	2084074.05	1126330.72	602.16	602.33	0.17	3.17	Limit of Waste
147	2084098.00	1126196.74	601.38	601.44	0.06	3.06	Limit of Waste
148	2084119.54	1126183.62	599.76	600.09	0.33	3.33	Limit of Waste
149	2084198.25	1126193.65	599.84	599.89	0.05	3.05	Limit of Waste
150	2084278.26	1126208.58	599.25	599.39	0.14	3.14	Limit of Waste
151	2084375.78	1126245.15	598.00	598.13	0.13	3.13	Limit of Waste
152	2084459.33	1126247.26	598.18	598.20	0.01	3.01	Limit of Waste
153	2084582.05	1126276.27	597.08	597.21	0.13	3.13	Limit of Waste
154	2084082.46	1126278.68	601.79	601.83	0.04	3.04	Limit of Waste
155	2084437.85	1126516.41	599.94	600.11	0.17	3.17	Limit of Waste



RELEASE	DATE:	BY:
Project Review		
5		
4		
3		
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1		
NO.	DATE:	BY:
DESCRIPTION		

REVISIONS

JM Johns Manville

CQM, INC.
Engineering-Surveying-Material Testing
2679 Continental Drive
Green Bay, WI 54311

Protective Layer

Construction Documentation Drawings
Area 1 & 2 Final Cover
Johns Manville Waukegan Plant
Waukegan, IL

DRAWN BY: WBE

DATE: Jan. 2009

SCALE: 1"=60'

DRAWING NO.

A-6

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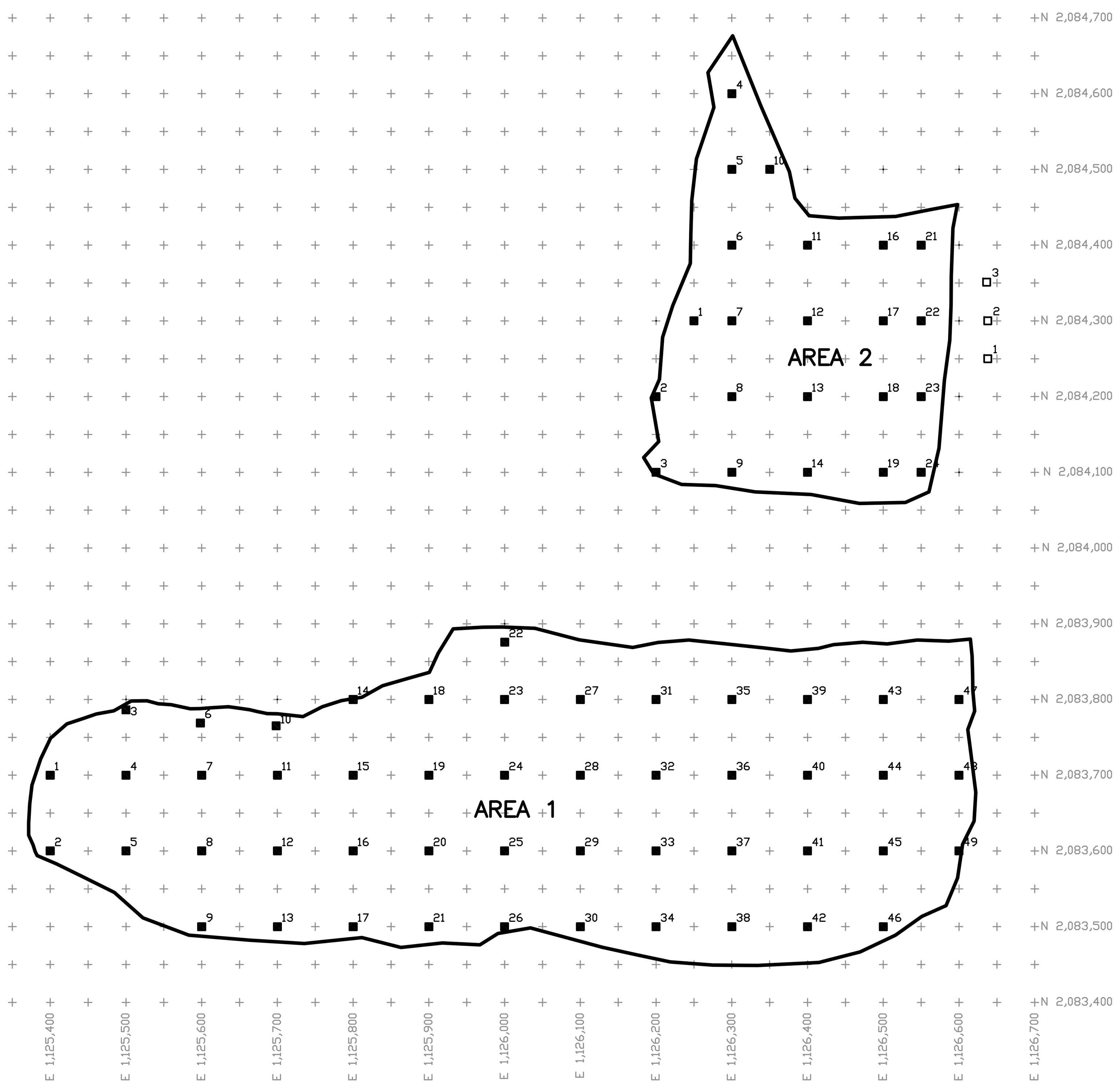

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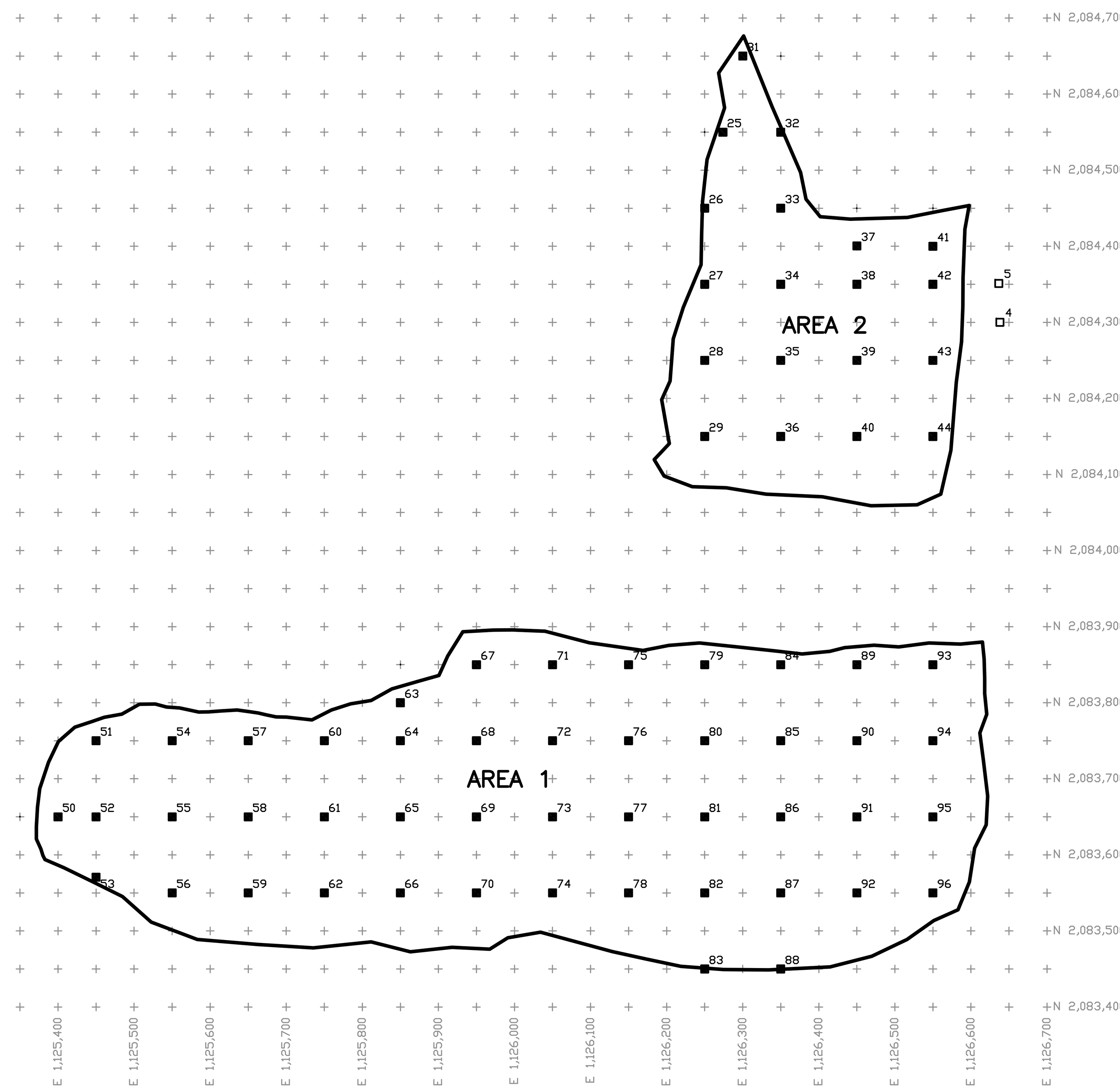

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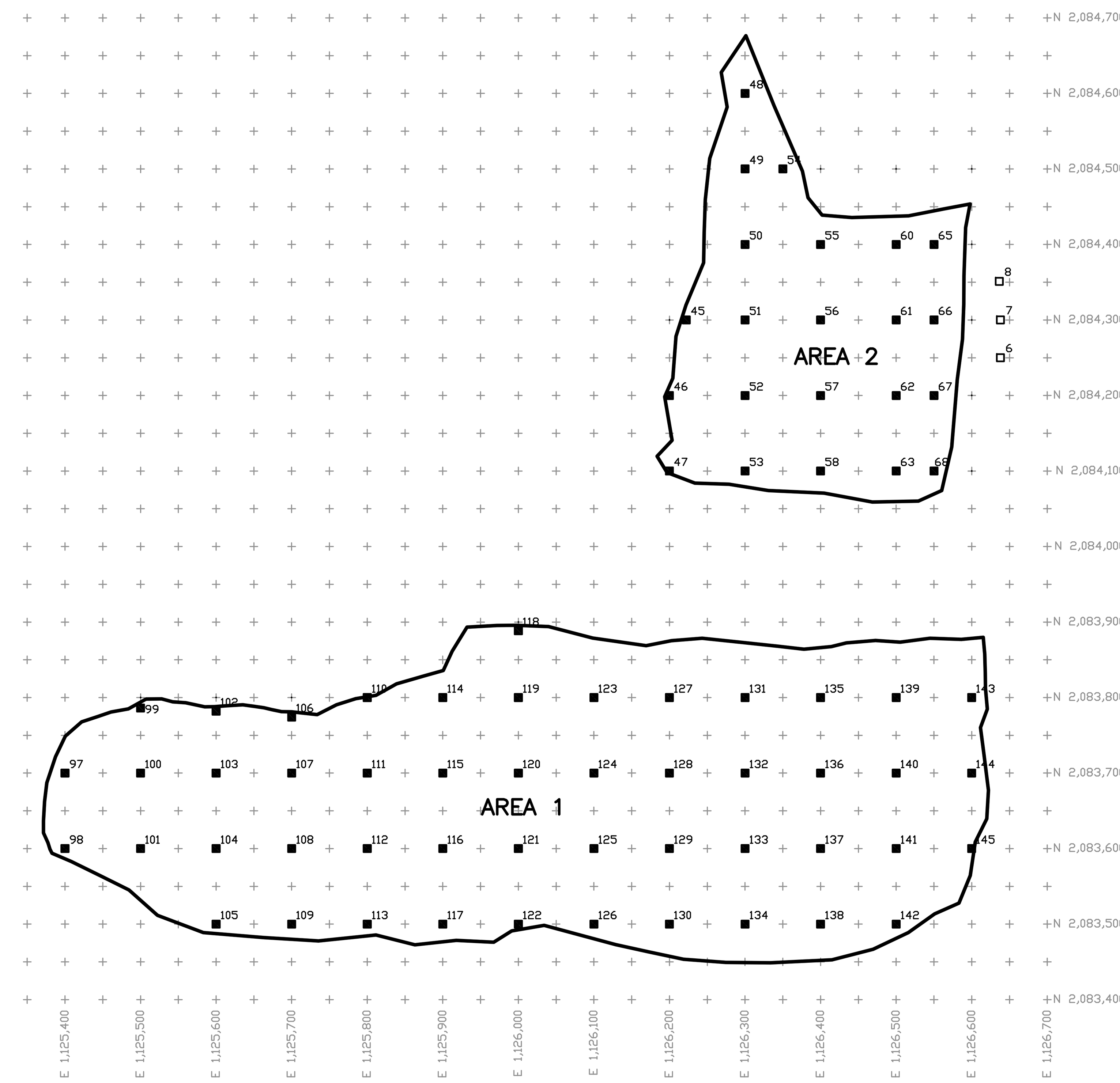

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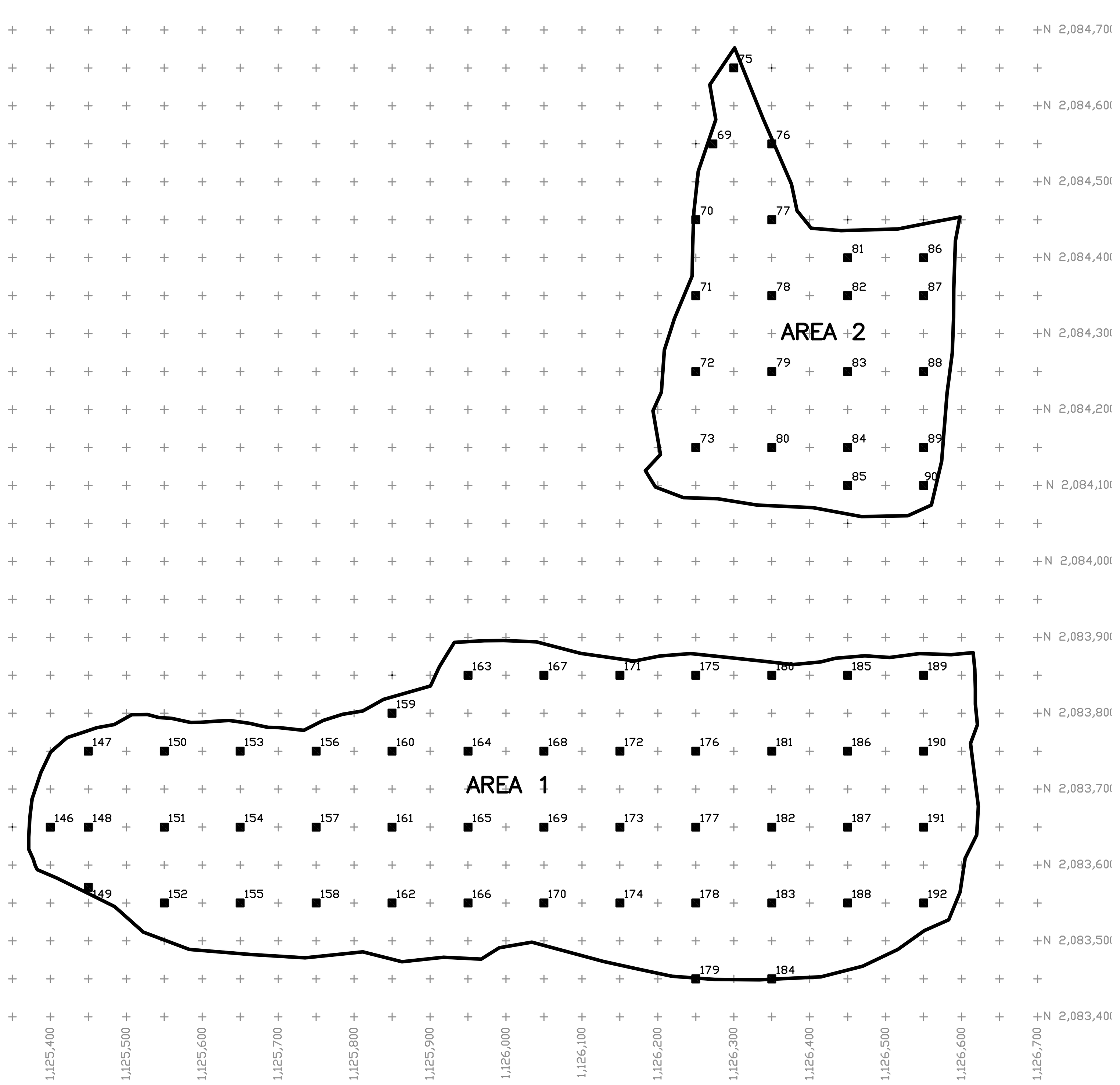

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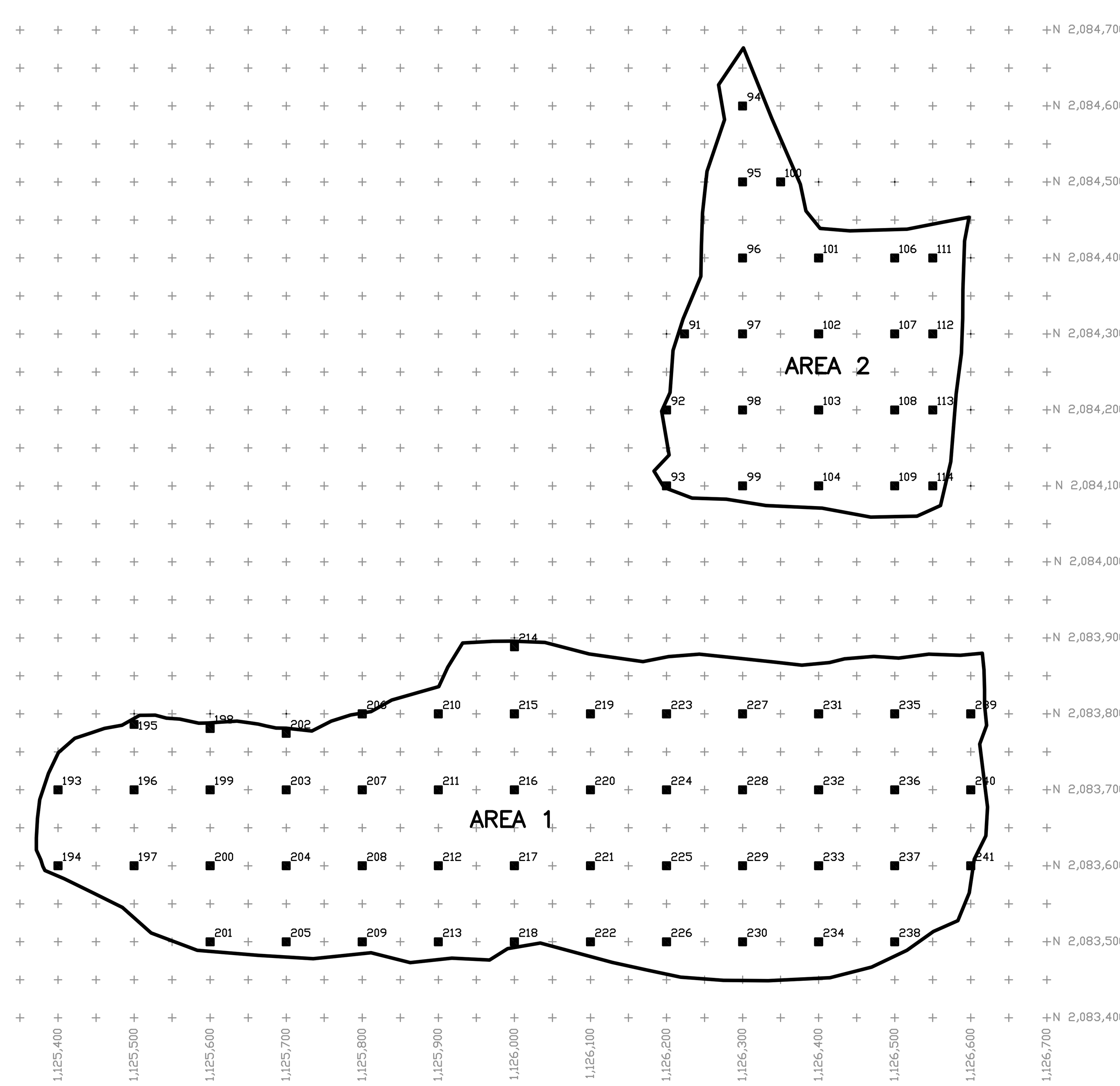

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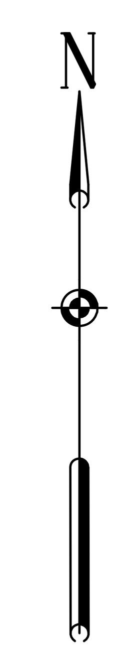


LEGEND

LIMITS OF WASTE

DENSITY TEST LOCATION AND NUMBER FOR EAST CHANNEL

DENSITY TEST LOCATION AND NUMBER

NOTES:

1. THE PROTECTIVE LAYER FOR AREA 1 AND 2 WAS PLACED IN APPROXIMATE 8-INCH LIFTS AND COMPACTED TO 6-INCHES. THE TOP 6-INCH LIFT OF THE 3-FOOT PROTECTIVE LAYER MATERIAL WAS TRACKED IN BY A DOZER TO PROMOTE VEGETATION GROWTH.
2. APPENDIX E OF THE DOCUMENTATION REPORT SUMMARIZES THE FIELD MOISTURE/DENSITY TESTING PERFORMED ON THE PROTECTIVE LAYER MATERIAL.
3. APPENDIX F OF THE DOCUMENTATION REPORT SUMMARIZES THE FIELD MOISTURE/DENSITY TESTING PERFORMED ON THE CERCLA CAP EAST CHANNEL MATERIAL.

RELEASE	DATE:	BY:
Project Review		
5		
4		
3		
2		
1		
NO.	DATE:	BY:
DESCRIPTION		

REVISIONS

JohnsManville

CQM, INC.
Engineering-Surveying-Material Testing
2679 Continental Drive
Green Bay, WI 54311

Protective Layer Density Test Locations

Construction Documentation Drawings
Area 1 & 2 Final Cover
Johns Manville Waukegan Plant
Waukegan, IL

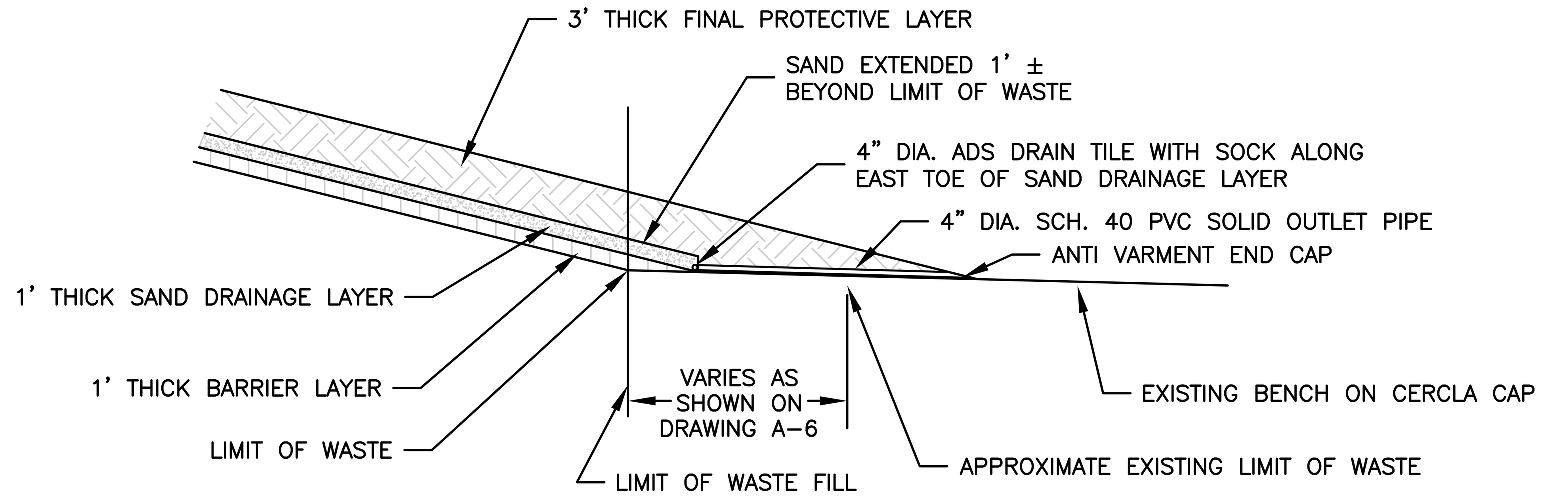
DRAWN BY: WBE

DATE: Jan. 2009

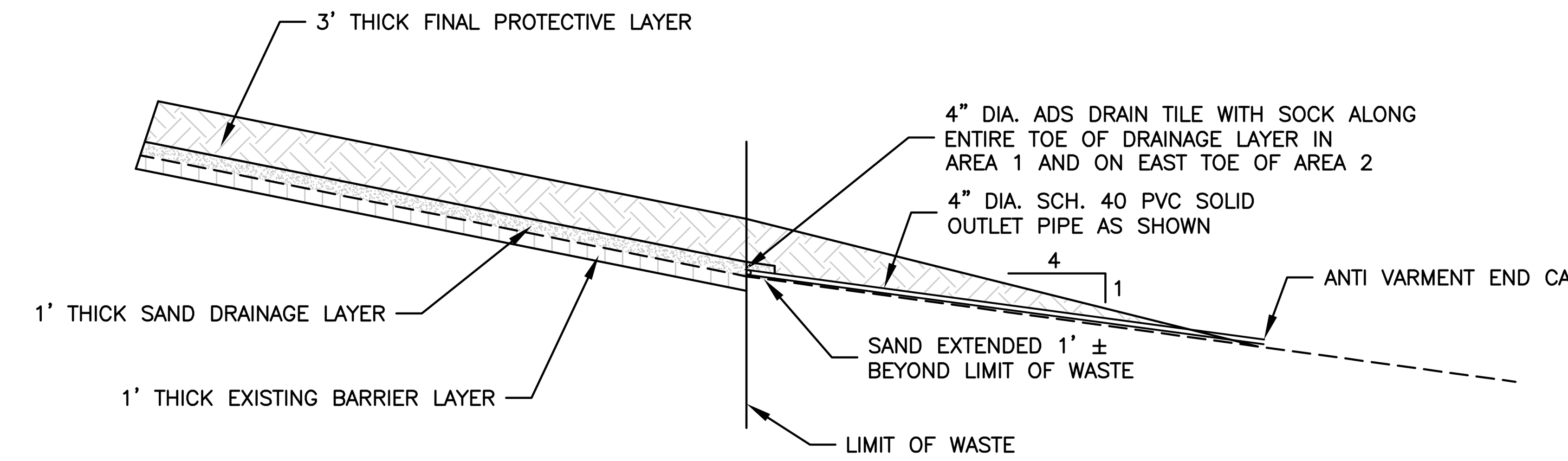
SCALE: NTS

DRAWING NO. A-7

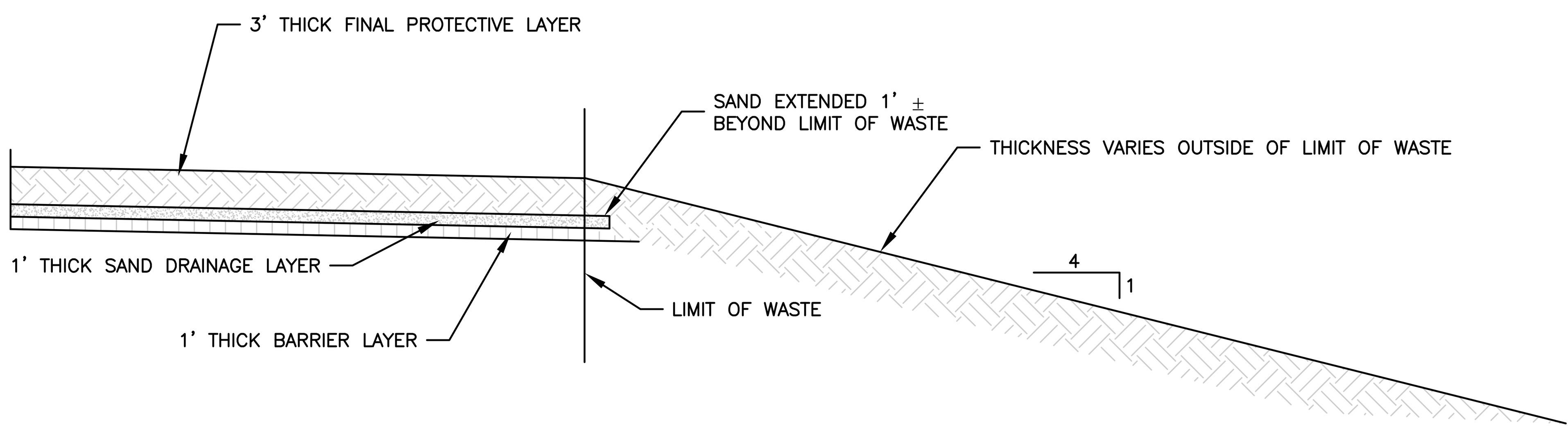
G:\Project Data\MIS-SITE\Johns Manville\Site Cap\Documentation\A-7.dwg, 2/10/2009 2:02:24 PM



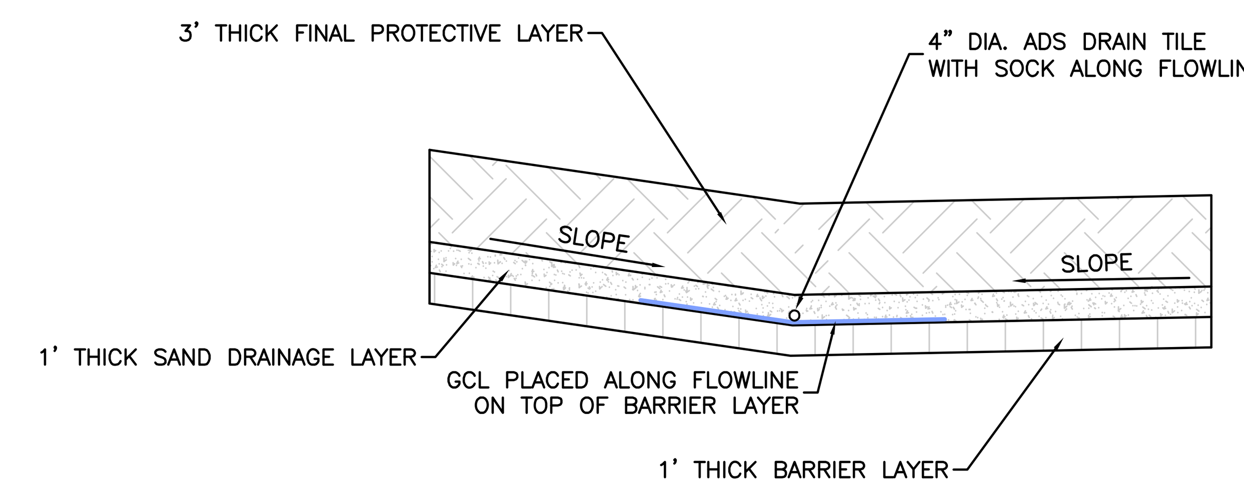
1/8 CAP TERMINATION ON CERCLA BENCH
NOT TO SCALE



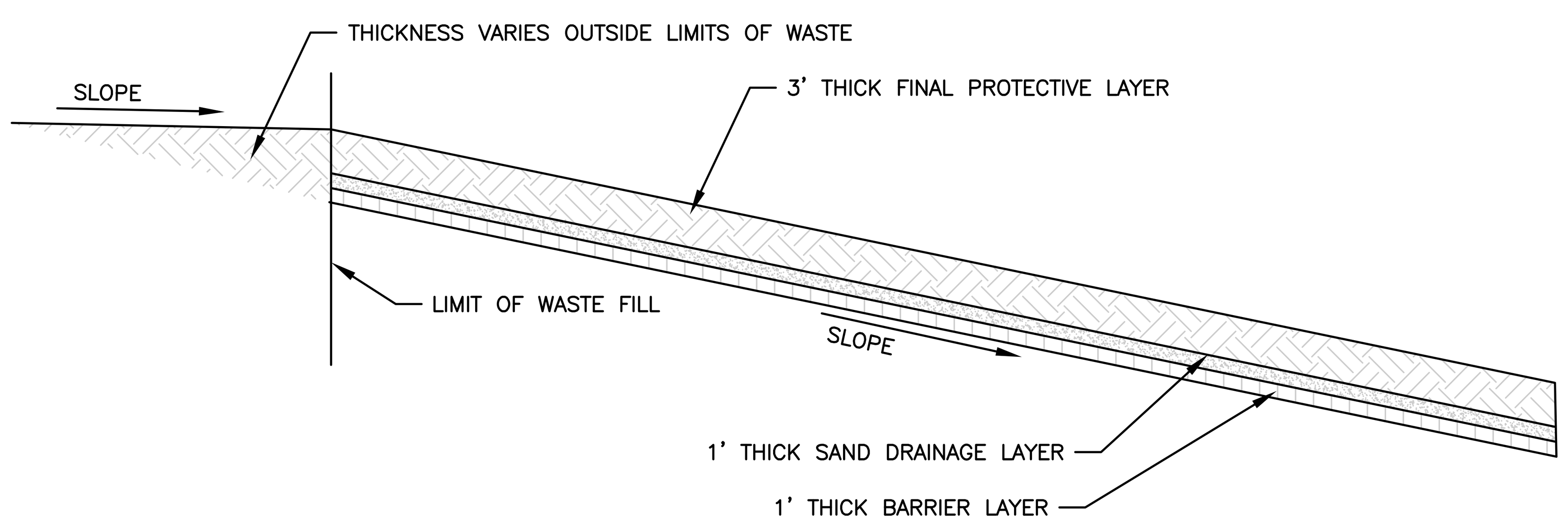
2/8 TYPICAL CAP TERMINATION
NOT TO SCALE



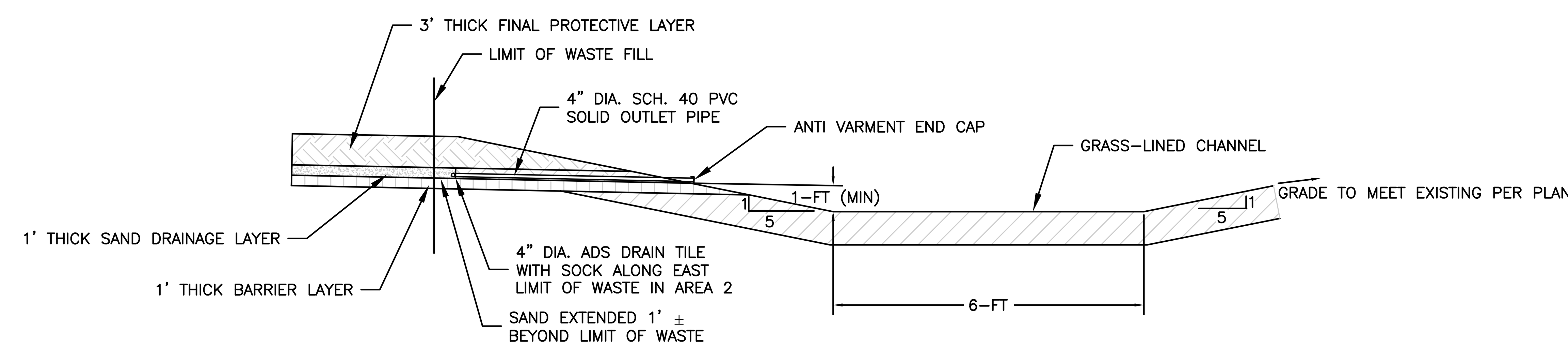
3/8 CAP TERMINATION AT NORTH SLOPE OF AREA 2
NOT TO SCALE



4/8 AREA 2 INTERIOR SWALE DETAIL
NOT TO SCALE



5/8 CAP TERMINATION AGAINST BERM ON WEST SIDE OF AREA 2
NOT TO SCALE



6/8 EAST CHANNEL – TYPICAL SECTION AND CAP TERMINATION
NOT TO SCALE

RELEASE	DATE:	BY:
Project Review		
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NO.	DATE:	BY:
DESCRIPTION		

REVISIONS

JM Johns Manville

CQM, INC.
Engineering-Surveying-Material Testing
2679 Continental Drive
Green Bay, WI 54311

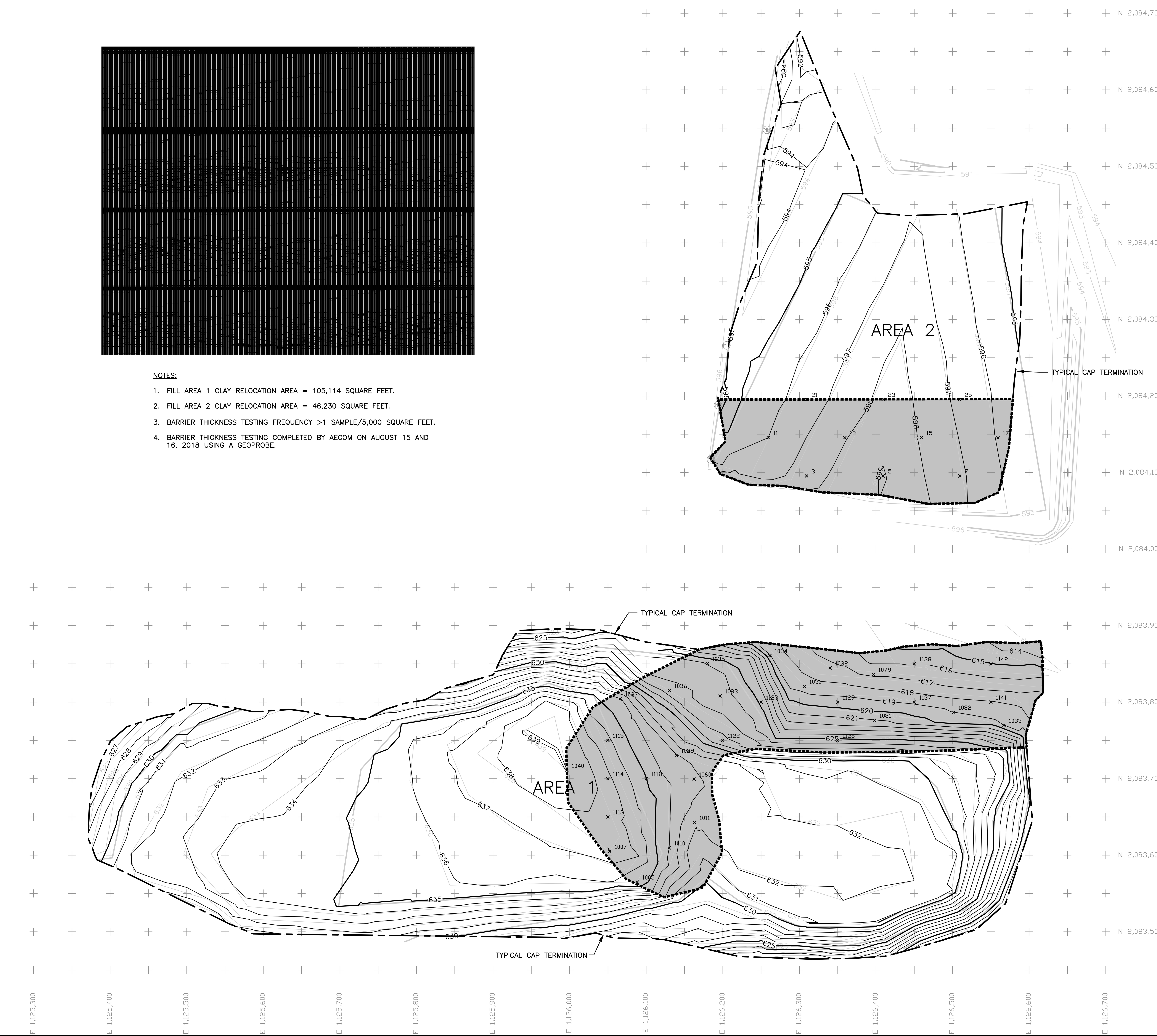
Details

Construction Documentation Drawings
Area 1 & 2 Final Cover
Johns Manville Waukegan Plant
Waukegan, IL

DRAWN BY: WBE
DATE: Jan. 2009
SCALE: NTS
DRAWING NO.
A-8

NOTES:

1. FILL AREA 1 CLAY RELOCATION AREA = 105,114 SQUARE FEET.
2. FILL AREA 2 CLAY RELOCATION AREA = 46,230 SQUARE FEET.
3. BARRIER THICKNESS TESTING FREQUENCY >1 SAMPLE/5,000 SQUARE FEET.
4. BARRIER THICKNESS TESTING COMPLETED BY AECOM ON AUGUST 15 AND 16, 2018 USING A GEOPROBE.



LEGEND

- LIMITS OF WASTE
- 594 DESIGN BARRIER LAYER CONTOURS
- 594 AS-BUILT BARRIER LAYER CONTOURS
- ×100 SURVEY POINT NUMBER AND LOCATION
- APPROXIMATE AREA OF CLAY RELOCATION

RELEASE	DATE:	BY:
Project Review		
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NO.	DATE:	BY:
DESCRIPTION		

REVISIONS

JM Johns Manville

CQM, INC.
Engineering–Surveying–Material Testing
2679 Continental Drive
Green Bay, WI 54311

Clay Barrier Layer Thickness

Area 1 & 2 Final Cover
Johns Manville Waukegan Plant
Waukegan, IL

DRAWN BY: WBE

DATE: Aug. 2018

SCALE: 1"=60'

DRAWING NO.

A–9

AECOM	Client: Johns Manville	Boring ID: Typical Log[1]
	Project Number: 60556851.130	
	Boring Location: 1871 North Pershing Ave, Waukegan, IL	
	Drilling Method: 6620DT Geoprobe Rig with Macro-Core (MC) Sampler	Sheet 1 of 1
	Weather: Sunny, ~70 to 85° F	Date Started: 8/15/2018
Logger By: Matt Kyrias and Erica Foley		
Drilled By: CS Drilling - Augustin Mendez		Date Finished: 8/16/2018

Depth (ft)	Layer Type and Minimum Barrier Thickness[2]	Sample Number	Sample Type	Recovery (in)	U.S.C.S.	**Lithologic Description**	Well Construction Details
1 2 3	Protective Cover	1	MC	52-60	CH	CLAY, trace SILT, trace FG SAND, high plasticity, moist, stiff, light brown.	Borehole backfilled with bentonite chips to grade.
4	Drainage Layer				SP	FINE-GRAINED SAND, poorly graded, moist, loose, light brown.	
5	Barrier Layer				CH	CLAY, trace GRAVEL, high plasticity, moist, stiff, light to dark brown.	

End of Boring: 5.5 to 7 feet below ground surface (bgs)

Fill Area #1 Boring Locations		**Fill Area #2 Boring Locations**
1005	1081	3
1007	1082	5
1010	1083	7
1011	1113	11
1029	1114	13
1031	1115	25
1032	1118	17
1033	1122	21
1034	1123	23
1035	1128	15
1036	1129	
1037	1137	
1040	1138	
1060	1141	
1079	1142	

Notes:

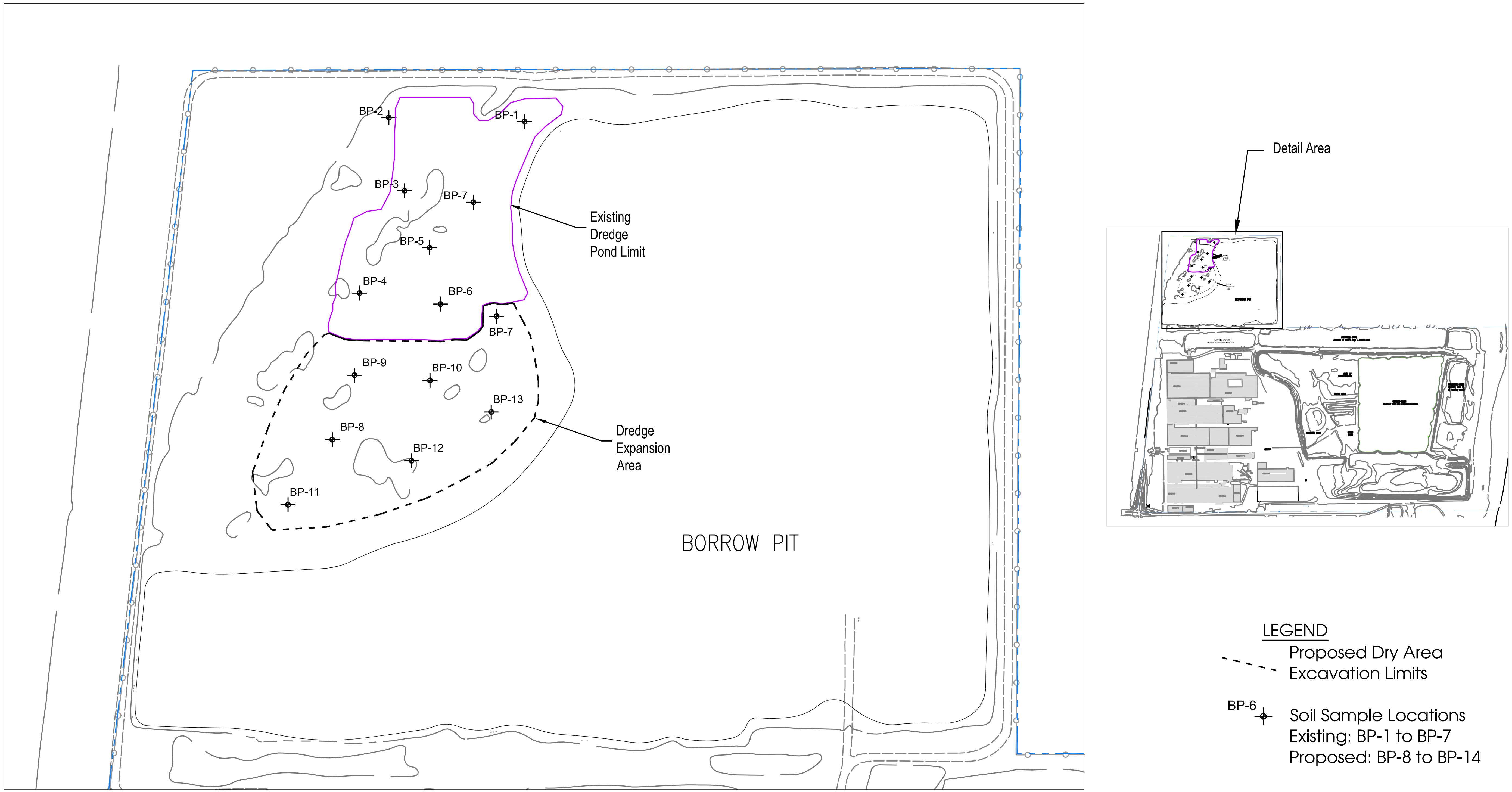
[1] Typical soil boring log from borings advanced on August 15 and 16, 2018.

[2] Layer Type and Minimum Barrier Thickness from Final Phase II Remedial Work Plan dated June 20, 2008.

--- Minimum thickness of 36 inches for protective cover, 12 inches for drainage layer, and 12 inches for barrier layer met or exceeded in each soil boring.

Appendix B

Borrow Pit Sand Laboratory Analytical Results



Notes:

A 30-foot width of undisturbed land shall remain between the excavation area and the current Borrow Pit shoreline and the Borrow Pit perimeter road.

Johns Manville

Proposed Dry Area Excavation Limits and Soil Sample Locations
April 2006

LFR LEVINE•FRICKE

Figure 1

T:\JohnsManville\7992-00Waukegan\2ndESD\PhaseIIRemedial\DraftPhaseII\DraftRWP-WasteTrtPonds\Figures\Figure04-14.dwg

0 200 FEET

JOHNS MANVILLE
WAUKEGAN, ILLINOIS

BORROW PIT
WITH 5-27-10 AERIAL PHOTOGRAPHY

ARCADIS

FIGURE
1

G:\LFR\Projects\Non Cinci\009-07992-00\Borrow Image.dwg LAYOUT: BORROW IMAGE SAVED: 6/16/2011 2:27 PM ACADVER: 17.1S (LMS TECH) PAGESETUP: — PLOTSTYLETABLE: LFR-STD.STB PLOTTED: 6/16/2011 3:19 PM BY: HAYS, MATTHEW

CLAY STOCKPILE	
#1	25,972 C.Y.
#2	57,340 C.Y.
#3	18,447 C.Y.
#4	8,159 C.Y.
#5	31,738 C.Y.
#6	23,354 C.Y.
#7	13,812 C.Y.
#8	65,223 C.Y.
#9	437 C.Y.
#10	21,139 C.Y.
#11	36,805 C.Y.
#12	127,595 C.Y.
#13	2,790 C.Y.
#14	1,322 C.Y.
#15*	5,937 C.Y.
TOTAL:	440,070 C.Y.

* STOCKPILE #15 WAS ADDED AND SURVEYED ON 11-1-07.

TOPSOIL STOCKPILE	
#1	2,753 C.Y.
#2	151 C.Y.
#3	1,549 C.Y.
#4*	14,948 C.Y.
TOTAL:	19,401 C.Y.

* STOCKPILE #4 WAS ADDED AND SURVEYED ON 11-1-07.

CRUSHED CONCRETE	
#1	3,169 C.Y.
#2*	298 C.Y.

* STOCKPILE #2 WAS ADDED AND SURVEYED ON 3-11-08.

SAND STOCKPILE	
#1	29,983 C.Y.*

* MATERIAL WAS REMOVED AND SURVEYED ON 3-11-08.

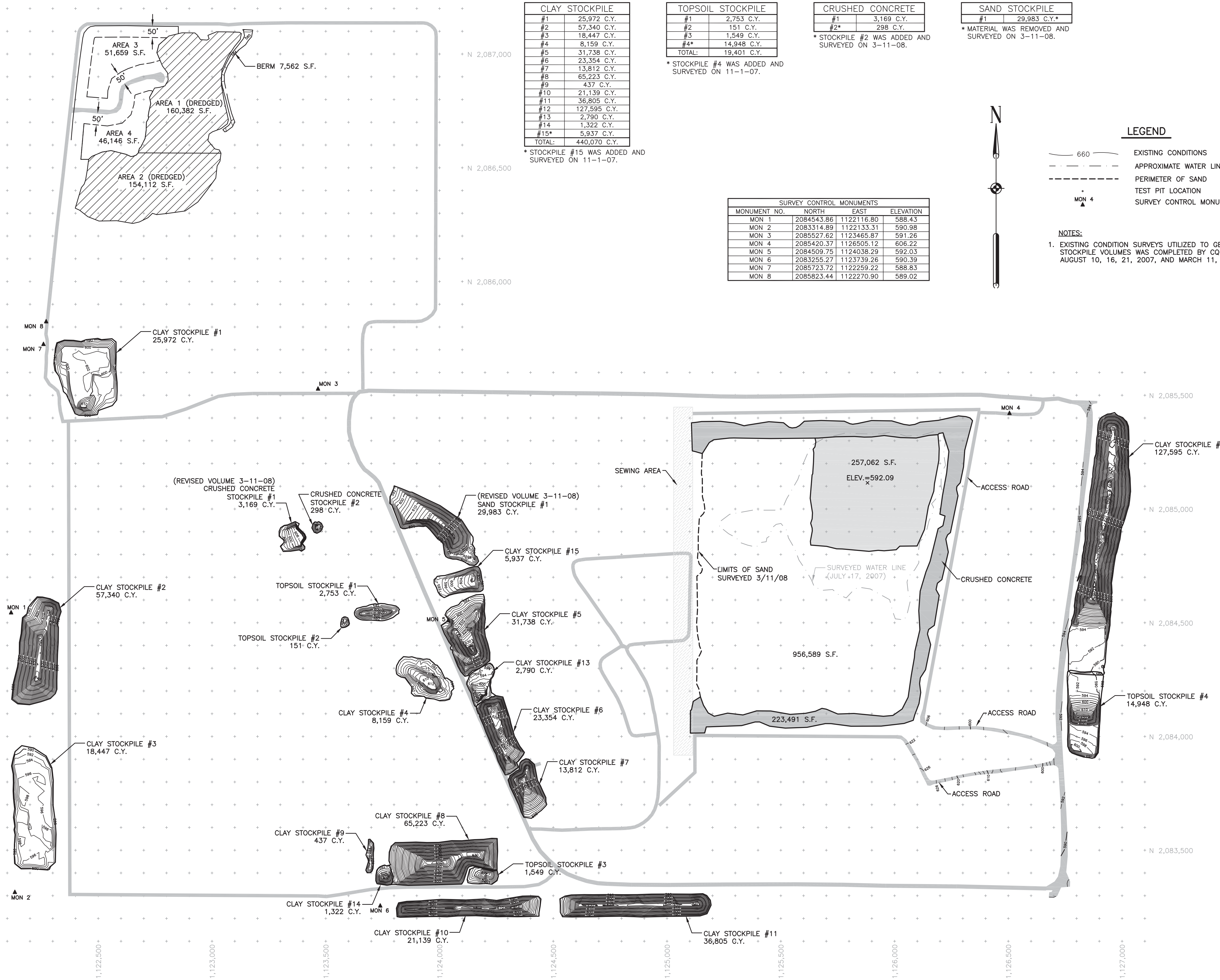
SURVEY CONTROL MONUMENTS			
MONUMENT NO.	NORTH	EAST	ELEVATION
MON 1	2084543.86	1122116.80	588.43
MON 2	2083314.89	1122133.31	590.98
MON 3	2085527.62	1123465.87	591.26
MON 4	2085420.37	1126505.12	606.22
MON 5	2084509.75	1124038.29	592.03
MON 6	2083255.27	1123739.26	590.39
MON 7	2085723.72	1122259.22	588.83
MON 8	2085823.44	1122270.90	589.02

LEGEND

- 660 EXISTING CONDITIONS
- APPROXIMATE WATER LINE
- PERIMETER OF SAND
- TEST PIT LOCATION
- MON 4 SURVEY CONTROL MONUMENT

NOTES:

1. EXISTING CONDITION SURVEYS UTILIZED TO GENERATE STOCKPILE VOLUMES WAS COMPLETED BY CQM, INC. ON AUGUST 10, 16, 21, 2007, AND MARCH 11, 2008.



RELEASE	DATE:	BY:
Project Review		
5		
4		
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1	11-1-07	WBE
ADDED STOCKPILES		
NO.	DATE:	BY:
DESCRIPTION		

REVISIONS

JM Johns Manville

CQM, INC.
Construction Quality Management
2679 Continental Drive
Green Bay, WI 54311

Stockpile Volumes

Johns Mansville Waukegan Plant
Waukegan, IL

DRAWN BY: WBE

DATE: Mar. 2008

SCALE: 1"=200'

DRAWING NO.

1

G:\Project Data\MIS-SITE\Johns Manville\Stockpiles\Existing Conditions 3-11-08\Stockpiles 3-11-08.dwg, 3/13/2008 3:30:54 PM

First
Environmental
Laboratories, Inc.

1600 Shore Road • Naperville, Illinois 60563 • Phone (630) 778-1200 • Fax (630) 778-1233
IL ELAP / NELAC Accreditation # 100292

June 30, 2005

Dave Peterson
JOHNS MANVILLE
1871 N. Pershing Road,
Waukegan, IL 60087

Project ID: Johns Manville
First Environmental File ID: 5-1589
Date Received: June 23, 2005

Dear Dave Peterson:

The above referenced project was analyzed as directed on the enclosed chain of custody record.

All analyses were performed in accordance with established methods and within established holding times. All Quality Control criteria as outlined in the methods and current IL ELAP/NELAP have been met unless otherwise noted. QA/QC documentation and raw data will remain on file for future reference. Our certificate is number 001201: 02/17/05 through 02/28/06.

I thank you for the opportunity to be of service to you and look forward to working with you again in the future. Should you have any questions regarding any of the enclosed analytical data or need additional information, please contact me at (630) 778-1200.

Sincerely,

W. Mottashed

William Mottashed
Project Manager

First Environmental Laboratories, Inc.
1600 Shore Road • Naperville, Illinois 60563 • Phone (630) 778-1200 • Fax (630) 778-1233
IL ELAP / NELAC Accreditation # 100292

Analytical Report

Client:	JOHNS MANVILLE	**Date Collected:**	06/22/05
Project ID:	Johns Manville	**Time Collected:**	10:30
Sample ID:	BP NW 1	**Date Received:**	06/23/05
Sample No:	5-1589-001	**Date Reported:**	06/30/05

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Solids, Total	**Method: 160.3**				
Analysis Date: 06/23/05					
Total Solids		79.65		%	
Volatile Organic Compounds	**Method: 5035A/8260B**				
Analysis Date: 06/29/05					
Acetone		< 100	100	ug/kg	
Benzene		< 5.0	5.0	ug/kg	
Bromodichloromethane		< 5.0	5.0	ug/kg	
Bromoform		< 5.0	5.0	ug/kg	
Bromomethane		< 10.0	10.0	ug/kg	
2-Butanone (MEK)		< 10.0	10.0	ug/kg	
Carbon disulfide		< 5.0	5.0	ug/kg	
Carbon tetrachloride		< 5.0	5.0	ug/kg	
Chlorobenzene		< 5.0	5.0	ug/kg	
Chlorodibromomethane		< 5.0	5.0	ug/kg	
Chloroethane		< 10.0	10.0	ug/kg	
Chloroform		< 5.0	5.0	ug/kg	
Chloromethane		< 10.0	10.0	ug/kg	
1,1-Dichloroethane		< 5.0	5.0	ug/kg	
1,2-Dichloroethane		< 5.0	5.0	ug/kg	
1,1-Dichloroethene		< 5.0	5.0	ug/kg	
cis-1,2-Dichloroethene		< 5.0	5.0	ug/kg	
trans-1,2-Dichloroethene		< 5.0	5.0	ug/kg	
1,2-Dichloropropane		< 5.0	5.0	ug/kg	
cis-1,3-Dichloropropene		< 5.0	5.0	ug/kg	
trans-1,3-Dichloropropene		< 5.0	5.0	ug/kg	
Ethylbenzene		< 5.0	5.0	ug/kg	
2-Hexanone		< 10.0	10.0	ug/kg	
Methyl-tert-butylether (MTBE)		< 5.0	5.0	ug/kg	
4-Methyl-2-pentanone (MIBK)		< 10.0	10.0	ug/kg	
Methylene chloride		< 5.0	5.0	ug/kg	
Styrene		< 5.0	5.0	ug/kg	
1,1,2,2-Tetrachloroethane		< 5.0	5.0	ug/kg	
Tetrachloroethene		< 5.0	5.0	ug/kg	
Toluene		< 5.0	5.0	ug/kg	
1,1,1-Trichloroethane		< 5.0	5.0	ug/kg	
1,1,2-Trichloroethane		< 5.0	5.0	ug/kg	
Trichloroethene		< 5.0	5.0	ug/kg	

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IL ELAP / NELAC Accreditation # 100292

Analytical Report

Client:	JOHNS MANVILLE	**Date Collected:**	06/22/05
Project ID:	Johns Manville	**Time Collected:**	10:30
Sample ID:	BP NW 1	**Date Received:**	06/23/05
Sample No:	5-1589-001	**Date Reported:**	06/30/05

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Volatile Organic Compounds Method: 5035A/8260B				
Analysis Date: 06/29/05				
Vinyl acetate	< 10.0	10.0	ug/kg	
Vinyl chloride	< 10.0	10.0	ug/kg	
Xylene, Total	< 5.0	5.0	ug/kg	
Semi-Volatile Compounds Method: 8270C		**Preparation Method 3540C**		
Analysis Date: 06/25/05		Preparation Date: 06/23/05		
Acenaphthene	< 330	330	ug/kg	
Acenaphthylene	< 330	330	ug/kg	
Anthracene	< 330	330	ug/kg	
Benzidine	< 330	330	ug/kg	
Benzo(a)anthracene	< 330	330	ug/kg	
Benzo(a)pyrene	< 90	90	ug/kg	
Benzo(b)fluoranthene	< 330	330	ug/kg	
Benzo(k)fluoranthene	< 330	330	ug/kg	
Benzo(ghi)perylene	< 330	330	ug/kg	
Benzoic acid	< 330	330	ug/kg	
Benzyl alcohol	< 330	330	ug/kg	
bis(2-Chloroethoxy)methane	< 330	330	ug/kg	
bis(2-Chloroethyl)ether	< 330	330	ug/kg	
bis(2-Chloroisopropyl)ether	< 330	330	ug/kg	
bis(2-Ethylhexyl)phthalate	< 330	330	ug/kg	
4-Bromophenyl phenyl ether	< 330	330	ug/kg	
Butyl benzyl phthalate	< 330	330	ug/kg	
Carbazole	< 330	330	ug/kg	
4-Chloroaniline	< 330	330	ug/kg	
4-Chloro-3-methylphenol	< 330	330	ug/kg	
2-Chloronaphthalene	< 330	330	ug/kg	
2-Chlorophenol	< 330	330	ug/kg	
4-Chlorophenyl phenyl ether	< 330	330	ug/kg	
Chrysene	< 330	330	ug/kg	
Di-n-butyl phthalate	< 330	330	ug/kg	
Di-n-octylphthalate	< 330	330	ug/kg	
Dibenzo(a,h)anthracene	< 90	90	ug/kg	
Dibenzofuran	< 330	330	ug/kg	
1,2-Dichlorobenzene	< 330	330	ug/kg	
1,3-Dichlorobenzene	< 330	330	ug/kg	
1,4-Dichlorobenzene	< 330	330	ug/kg	

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IL ELAP / NELAC Accreditation # 100292

Analytical Report

Client:	JOHNS MANVILLE		**Date Collected:**	06/22/05
Project ID:	Johns Manville		**Time Collected:**	10:30
Sample ID:	BP NW 1		**Date Received:**	06/23/05
Sample No:	5-1589-001		**Date Reported:**	06/30/05

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Semi-Volatile Compounds **Method: 8270C** Analysis Date: 06/25/05		**Preparation Method 3540C** Preparation Date: 06/23/05		
3,3'-Dichlorobenzidine	< 660	660	ug/kg	
2,4-Dichlorophenol	< 330	330	ug/kg	
Diethyl phthalate	< 330	330	ug/kg	
2,4-Dimethylphenol	< 330	330	ug/kg	
Dimethyl phthalate	< 330	330	ug/kg	
4,6-Dinitro-2-methylphenol	< 1,600	1600	ug/kg	
2,4-Dinitrophenol	< 1,600	1600	ug/kg	
2,4-Dinitrotoluene	< 250	250	ug/kg	
2,6-Dinitrotoluene	< 260	260	ug/kg	
Fluoranthene	< 330	330	ug/kg	
Fluorene	< 330	330	ug/kg	
Hexachlorobenzene	< 330	330	ug/kg	
Hexachlorobutadiene	< 330	330	ug/kg	
Hexachlorocyclopentadiene	< 330	330	ug/kg	
Hexachloroethane	< 330	330	ug/kg	
Indeno(1,2,3-cd)pyrene	< 330	330	ug/kg	
Isophorone	< 330	330	ug/kg	
2-Methylnaphthalene	< 330	330	ug/kg	
2-Methylphenol	< 330	330	ug/kg	
3 & 4-Methylphenol	< 330	330	ug/kg	
Naphthalene	< 330	330	ug/kg	
2-Nitroaniline	< 1,600	1600	ug/kg	
3-Nitroaniline	< 1,600	1600	ug/kg	
4-Nitroaniline	< 1,600	1600	ug/kg	
Nitrobenzene	< 260	260	ug/kg	
2-Nitrophenol	< 1,600	1600	ug/kg	
4-Nitrophenol	< 1,600	1600	ug/kg	
n-Nitrosodi-n-propylamine	< 330	330	ug/kg	
n-Nitrosodimethylamine	< 330	330	ug/kg	
n-Nitrosodiphenylamine	< 330	330	ug/kg	
Pentachlorophenol	< 330	330	ug/kg	
Phenanthrene	< 330	330	ug/kg	
Phenol	< 330	330	ug/kg	
Pyrene	< 330	330	ug/kg	
Pyridine	< 330	330	ug/kg	
1,2,4-Trichlorobenzene	< 330	330	ug/kg	

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IL ELAP / NELAC Accreditation # 100292

Analytical Report

Client:	JOHNS MANVILLE	**Date Collected:**	06/22/05
Project ID:	Johns Manville	**Time Collected:**	10:30
Sample ID:	BP NW 1	**Date Received:**	06/23/05
Sample No:	5-1589-001	**Date Reported:**	06/30/05

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Semi-Volatile Compounds — **Method: 8270C** — **Preparation Method 3540C**				
Analysis Date: 06/25/05 — Preparation Date: 06/23/05				
2,4,5-Trichlorophenol	< 330	330	ug/kg	
2,4,6-Trichlorophenol	< 330	330	ug/kg	
Pesticides/PCBs — **Method: 8081A/8082** — **Preparation Method 3540C**				
Analysis Date: 06/30/05 — Preparation Date: 06/23/05				
Aldrin	< 8.0	8.0	ug/kg	
Aroclor 1016	< 80.0	80.0	ug/kg	
Aroclor 1221	< 80.0	80.0	ug/kg	
Aroclor 1232	< 80.0	80.0	ug/kg	
Aroclor 1242	< 80.0	80.0	ug/kg	
Aroclor 1248	< 80.0	80.0	ug/kg	
Aroclor 1254	< 160	160	ug/kg	
Aroclor 1260	< 160	160	ug/kg	
alpha-BHC	< 2.0	2.0	ug/kg	
beta-BHC	< 8.0	8.0	ug/kg	
delta-BHC	< 8.0	8.0	ug/kg	
gamma-BHC (Lindane)	< 8.0	8.0	ug/kg	
alpha-Chlordane	< 80.0	80.0	ug/kg	
gamma-Chlordane	< 80.0	80.0	ug/kg	
4,4'-DDD	< 16.0	16.0	ug/kg	
4,4'-DDE	< 16.0	16.0	ug/kg	
4,4'-DDT	< 16.0	16.0	ug/kg	
Dieldrin	< 16.0	16.0	ug/kg	
Endosulfan I	< 8.0	8.0	ug/kg	
Endosulfan II	< 16.0	16.0	ug/kg	
Endosulfan sulfate	< 16.0	16.0	ug/kg	
Endrin	< 16.0	16.0	ug/kg	
Endrin aldehyde	< 16.0	16.0	ug/kg	
Endrin ketone	< 16.0	16.0	ug/kg	
Heptachlor	< 8.0	8.0	ug/kg	
Heptachlor epoxide	< 8.0	8.0	ug/kg	
Methoxychlor	< 80.0	80.0	ug/kg	
Toxaphene	< 160	160	ug/kg	

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IL ELAP / NELAC Accreditation # 100292

Analytical Report

Client: JOHNS MANVILLE
Project ID: Johns Manville
Sample ID: BP NW 1
Sample No: 5-1589-001

Date Collected: 06/22/05
Time Collected: 10:30
Date Received: 06/23/05
Date Reported: 06/30/05

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Total Metals	**Method: 6010B**		**Preparation Method 3050B**		
Analysis Date: 06/29/05			Preparation Date: 06/24/05		
Arsenic		1.8	0.2	mg/kg	
Barium		5.9	0.1	mg/kg	
Cadmium		0.4	0.1	mg/kg	
Chromium		8.9	0.1	mg/kg	
Lead		2.9	0.2	mg/kg	
Selenium		< 0.2	0.2	mg/kg	
Silver		< 0.1	0.1	mg/kg	
Antimony		< 1.0	1.0	mg/kg	
Total Metals	**Method: 7470A**				
Analysis Date: 06/28/05					
Mercury		< 0.05	0.05	mg/kg	
pH @ 25°C, 1:10	**Method: 4500H+B**				
Analysis Date: 06/24/05					
pH @ 25°C, 1:10		8.86		Units	

GREAT LAKES ANALYTICAL

CHAIN OF CUSTODY REPORT

~~1380 Busch Parkway~~
~~Buffalo Grove, IL 60089-4505~~
~~(847) 808-7766~~
~~FAX (847) 808-7772~~

~~140 E. Ryan Road~~
~~Oak Creek, WI 53154~~
~~(414) 570-9460~~
~~FAX (414) 570-9461~~

FIRST ENVIRONMENTAL LABORATORIES, INC.
1600 SHORE RD, NAPERVILLE IL 60563 (630) 778-1200

Client: JOHNS MANVILLE	Bill To: SAME		TAT: (STD) 4 DAY 3 DAY 2 DAY 1 DAY < 24 HRS.
Address: 1871 N. PERSHING RD.	Address:		☐ YES - TAT is critical ☐ NO - TAT is not critical — DATE RESULTS NEEDED:
WAUKEGAN IL 60087			TEMPERATURE UPON RECEIPT: 2°C
dmpete@concentric.net Report to: DAVE PETERSON — Phone #: (216)554-0413 Fax #: (847) 360-4558	State & Program: IL TACO	Phone #: ( ) Fax #: ( ) SAME	Deliverable Package Needed: ☐ STD ☐ Other — Air Bill No.
Project: SWD			
Sampler: DMP			
PO/Quote #:			

FIELD ID, LOCATION	DATE COLLECTED	TIME COLLECTED	SAMPLE MATRIX	# of Bottles Preservative Used: MeOH	NaHSO4	HCl	HNO3	H2SO4	NaOH	NONE	TOTAL # OF BOTTLES	VOCs 5035/8260	SVOCs 8270C	RCRA METALS	ANTIMONY 6010C	pH 150.1/9040B/9045C	PEST. 3540C/8081A	PCBs 3540C/8082				SAMPLE CONTROL: CRACKED-BROKEN	IMPROPERLY SEALED	LABORATORY ID NUMBER
1 BP NW 1 PID:	6/22/05	1030	SAND	1	2					5	8	X	X	X	X	X	X	X						5-1589-001
2 PID:																								
3 PID:																								
4 PID:																								
5 PID:																								
6 PID:																								
7 PID:																								
8 PID:																								
9 PID:																								
10 PID:																								

RELINQUISHED [signature] 6/22/05 1200	RECEIVED [signature] 06/23/05 1055	RELINQUISHED DATE TIME	RECEIVED DATE TIME
RELINQUISHED DATE TIME	RECEIVED DATE TIME	RELINQUISHED DATE TIME	RECEIVED DATE TIME

COMMENTS: RCRA METALS: ARSENIC, BARIUM, CADMIUM, CHROMIUM, LEAD, MERCURY, SELENIUM, SILVER VIA 3050B/6010B/7470

PAGE 1 OF 1

Asbestos Lead Environmental Materials & Indoor Air Analysis

EMSL Analytical, Inc.

http://www.emsl.com

107 Haddon Ave.
Westmont, NJ 08108
Phone: (856) 858-4800
Fax: (856) 858-4960

FACSIMILE TRANSMITTAL SHEET

TO:	David M. Peterson, PE, PC	**FROM:**	EMSL Analytical, Inc.
COMPANY:	Johns Manville	DATE:	6/30/2005 11:44:16 AM
FAX:	(847) 360-4558	PAGES INCLUDING COVER:	2
PHONE:	(847) 360-4439		

RE: Analysis Results for Order 040511079

The following report covers the analysis performed on samples submitted to EMSL Analytical, Inc. on 6/23/2005. The samples are for SWD.

Notice: **If you are not the stated recipient of this fax and have received this in error, please discard immediately and contact EMSL Analytical at the phone number listed above.**

If you have any questions, please do not hesitate to contact us at (856) 858-4800.

EMSL Analytical, Inc.

Attn: **David M. Peterson, PE, PC**
Johns Manville
1871 N. Pershing Road
Waukegan, IL 60087

Fax: (847) 360-4558 Phone: (847) 360-4439
Project: **SWD**

Customer ID: JOV177
Customer PO:
Received: 06/23/05 10:46 AM
EMSL Order: 040511079

EMSL Proj:
Analysis Date: 6/30/2005
Report Date: 6/30/2005

Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

			Non-Asbestos				Asbestos
Sample	**Location**	**Appearance**	**%**	**Fibrous**	**% Non-Fibrous**		**% Type**
BP NW 1 *040511079-0001*		Brown Non-Fibrous Heterogeneous			100%	Non-fibrous (other)	**None Detected**

Analyst(s)

Erica Valent (1)

Stephen Siegel, CIH
or other approved signatory

THIS IS THE LAST PAGE OF THE REPORT.

First Environmental Laboratories, Inc.

1600 Shore Road • Naperville, Illinois 60563 • Phone (630) 778-1200 • Fax (630) 778-1233
IL ELAP / NELAC Accreditation # 100292

August 24, 2005

Mr. William Bow, C.P.G.
LEVINE FRICKE
630 Tollgate Rd., Suite D
Elgin, IL 60123

Project ID: 009-07992-00-001; P.O. #06815
First Environmental File ID: 5-2529
Date Received: August 17, 2005

Dear Mr. William Bow, C.P.G.:

The above referenced project was analyzed as directed on the enclosed chain of custody record.

All analyses were performed in accordance with established methods and within established holding times. All Quality Control criteria as outlined in the methods and current IL ELAP/NELAP have been met unless otherwise noted. QA/QC documentation and raw data will remain on file for future reference. Our certificate is number 001201: 02/17/05 through 02/28/06.

I thank you for the opportunity to be of service to you and look forward to working with you again in the future. Should you have any questions regarding any of the enclosed analytical data or need additional information, please contact me at (630) 778-1200.

Sincerely,

William Mottashed
Project Manager

First Environmental Laboratories, Inc.

1600 Shore Road • Naperville, Illinois 60563 • Phone (630) 778-1200 • Fax (630) 778-1233
IL ELAP / NELAC Accreditation # 100292

Analytical Report

Client: LEVINE FRICKE
Project ID: 009-07992-00-001; P.O. #06815
Sample ID: BP2
Sample No: 5-2529-001

Date Collected: 08/17/05
Time Collected: 8:00
Date Received: 08/17/05
Date Reported: 08/24/05

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Solids, Total	**Method: 160.3**				
Analysis Date: 08/17/05					
Total Solids		89.10		%	
Total Metals	**Method: 7470A**				
Analysis Date: 08/19/05					
Mercury		< 0.05	0.05	mg/kg	
Volatile Organic Compounds	**Method: 5035A/8260B**				
Analysis Date: 08/23/05					
Acetone		< 100	100	ug/kg	
Benzene		< 5.0	5.0	ug/kg	
Bromodichloromethane		< 5.0	5.0	ug/kg	
Bromoform		< 5.0	5.0	ug/kg	
Bromomethane		< 10.0	10.0	ug/kg	
2-Butanone (MEK)		< 10.0	10.0	ug/kg	
Carbon disulfide		< 5.0	5.0	ug/kg	
Carbon tetrachloride		< 5.0	5.0	ug/kg	
Chlorobenzene		< 5.0	5.0	ug/kg	
Chlorodibromomethane		< 5.0	5.0	ug/kg	
Chloroethane		< 10.0	10.0	ug/kg	
Chloroform		< 5.0	5.0	ug/kg	
Chloromethane		< 10.0	10.0	ug/kg	
1,1-Dichloroethane		< 5.0	5.0	ug/kg	
1,2-Dichloroethane		< 5.0	5.0	ug/kg	
1,1-Dichloroethene		< 5.0	5.0	ug/kg	
cis-1,2-Dichloroethene		< 5.0	5.0	ug/kg	
trans-1,2-Dichloroethene		< 5.0	5.0	ug/kg	
1,2-Dichloropropane		< 5.0	5.0	ug/kg	
cis-1,3-Dichloropropene		< 5.0	5.0	ug/kg	
trans-1,3-Dichloropropene		< 5.0	5.0	ug/kg	
Ethylbenzene		< 5.0	5.0	ug/kg	
2-Hexanone		< 10.0	10.0	ug/kg	
Methyl-tert-butylether (MTBE)		< 5.0	5.0	ug/kg	
4-Methyl-2-pentanone (MIBK)		< 10.0	10.0	ug/kg	
Methylene chloride		< 5.0	5.0	ug/kg	
Styrene		< 5.0	5.0	ug/kg	
1,1,2,2-Tetrachloroethane		< 5.0	5.0	ug/kg	
Tetrachloroethene		< 5.0	5.0	ug/kg	

First Environmental Laboratories, Inc.

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IL ELAP / NELAC Accreditation # 100292

Analytical Report

Client:	LEVINE FRICKE	**Date Collected:**	08/17/05
Project ID:	009-07992-00-001; P.O. #06815	**Time Collected:**	8:00
Sample ID:	BP2	**Date Received:**	08/17/05
Sample No:	5-2529-001	**Date Reported:**	08/24/05

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Volatile Organic Compounds — **Method: 5035A/8260B**				
Analysis Date: 08/23/05				
Toluene	7.1	5.0	ug/kg	
1,1,1-Trichloroethane	< 5.0	5.0	ug/kg	
1,1,2-Trichloroethane	< 5.0	5.0	ug/kg	
Trichloroethene	< 5.0	5.0	ug/kg	
Vinyl acetate	< 10.0	10.0	ug/kg	
Vinyl chloride	< 10.0	10.0	ug/kg	
Xylene, Total	< 5.0	5.0	ug/kg	
Total Metals — **Method: 6010B** — **Preparation Method 3050B**				
Analysis Date: 08/22/05 — Preparation Date: 08/18/05				
Antimony	< 1.0	1.0	mg/kg	
Arsenic	0.7	0.2	mg/kg	
Barium	3.8	0.1	mg/kg	
Cadmium	< 0.1	0.1	mg/kg	
Chromium	2.9	0.1	mg/kg	
Lead	1.5	0.2	mg/kg	
Selenium	< 0.2	0.2	mg/kg	
Silver	< 0.1	0.1	mg/kg	
Semi-Volatile Compounds — **Method: 8270C** — **Preparation Method 3540C**				
Analysis Date: 08/18/05 — Preparation Date: 08/17/05				
Acenaphthylene	< 330	330	ug/kg	
Anthracene	< 330	330	ug/kg	
Benzidine	< 330	330	ug/kg	
Benzo(a)anthracene	< 330	330	ug/kg	
Benzo(a)pyrene	< 90	90	ug/kg	
Benzo(b)fluoranthene	< 330	330	ug/kg	
Benzo(ghi)perylene	< 330	330	ug/kg	
Benzo(k)fluoranthene	< 330	330	ug/kg	
Benzoic acid	< 330	330	ug/kg	
Benzyl alcohol	< 330	330	ug/kg	
4-Bromophenyl phenyl ether	< 330	330	ug/kg	
Butyl benzyl phthalate	< 330	330	ug/kg	
Carbazole	< 330	330	ug/kg	
4-Chloroaniline	< 330	330	ug/kg	
bis(2-Chloroethoxy)methane	< 330	330	ug/kg	
bis(2-Chloroethyl)ether	< 330	330	ug/kg	

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Analytical Report

Client:	LEVINE FRICKE	**Date Collected:**	08/17/05
Project ID:	009-07992-00-001; P.O. #06815	**Time Collected:**	8:00
Sample ID:	BP2	**Date Received:**	08/17/05
Sample No:	5-2529-001	**Date Reported:**	08/24/05

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Semi-Volatile Compounds **Method: 8270C** Analysis Date: 08/18/05		**Preparation Method 3540C** Preparation Date: 08/17/05		
bis(2-Chloroisopropyl)ether	< 330	330	ug/kg	
4-Chloro-3-methylphenol	< 330	330	ug/kg	
2-Chloronaphthalene	< 330	330	ug/kg	
2-Chlorophenol	< 330	330	ug/kg	
4-Chlorophenyl phenyl ether	< 330	330	ug/kg	
Chrysene	< 330	330	ug/kg	
Dibenzo(a,h)anthracene	< 90	90	ug/kg	
Dibenzofuran	< 330	330	ug/kg	
Di-n-butyl phthalate	< 330	330	ug/kg	
1,2-Dichlorobenzene	< 330	330	ug/kg	
1,3-Dichlorobenzene	< 330	330	ug/kg	
1,4-Dichlorobenzene	< 330	330	ug/kg	
3,3'-Dichlorobenzidine	< 660	660	ug/kg	
2,4-Dichlorophenol	< 330	330	ug/kg	
Dietbyl phthalate	< 330	330	ug/kg	
2,4-Dimethylphenol	< 330	330	ug/kg	
Dimethyl phthalate	< 330	330	ug/kg	
2,4-Dinitrophenol	< 1,600	1600	ug/kg	
2,4-Dinitrotoluene	< 250	250	ug/kg	
2,6-Dinitrotoluene	< 260	260	ug/kg	
Di-n-octylphthalate	< 330	330	ug/kg	
bis(2-Ethylhexyl)phthalate	< 330	330	ug/kg	
Fluoranthene	< 330	330	ug/kg	
Fluorene	< 330	330	ug/kg	
Hexachlorobenzene	< 330	330	ug/kg	
Hexachlorobutadiene	< 330	330	ug/kg	
Hexachlorocyclopentadiene	< 330	330	ug/kg	
Hexachloroethane	< 330	330	ug/kg	
Indeno(1,2,3-cd)pyrene	< 330	330	ug/kg	
Isophorone	< 330	330	ug/kg	
2-Methylnaphthalene	< 330	330	ug/kg	
2-Methylphenol	< 330	330	ug/kg	
3 & 4-Methylphenol	< 330	330	ug/kg	
Naphthalene	< 330	330	ug/kg	
2-Nitroaniline	< 1,600	1600	ug/kg	
3-Nitroaniline	< 1,600	1600	ug/kg	

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Analytical Report

Client:	LEVINE FRICKE	**Date Collected:**	08/17/05
Project ID:	009-07992-00-001; P.O. #06815	**Time Collected:**	8:00
Sample ID:	BP2	**Date Received:**	08/17/05
Sample No:	5-2529-001	**Date Reported:**	08/24/05

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Semi-Volatile Compounds — **Method: 8270C** — **Preparation Method 3540C**				
Analysis Date: 08/18/05 — Preparation Date: 08/17/05				
4-Nitroaniline	< 1,600	1600	ug/kg	
Nitrobenzene	< 260	260	ug/kg	
2-Nitrophenol	< 1,600	1600	ug/kg	
4-Nitrophenol	< 1,600	1600	ug/kg	
n-Nitrosodiphenylamine	< 330	330	ug/kg	
n-Nitrosodi-n-propylamine	< 330	330	ug/kg	
Pentachlorophenol	< 330	330	ug/kg	
Phenanthrene	< 330	330	ug/kg	
Phenol	< 330	330	ug/kg	
Pyrene	< 330	330	ug/kg	
1,2,4-Trichlorobenzene	< 330	330	ug/kg	
2,4,5-Trichlorophenol	< 330	330	ug/kg	
2,4,6-Trichlorophenol	< 330	330	ug/kg	
Pesticides/PCBs — **Method: 8081A/8082** — **Preparation Method 3540C**				
Analysis Date: 08/22/05 — Preparation Date: 08/18/05				
Aldrin	< 8.0	8.0	ug/kg	
Aroclor 1016	< 80.0	80.0	ug/kg	
Aroclor 1221	< 80.0	80.0	ug/kg	
Aroclor 1232	< 80.0	80.0	ug/kg	
Aroclor 1242	< 80.0	80.0	ug/kg	
Aroclor 1248	< 80.0	80.0	ug/kg	
Aroclor 1254	< 160	160	ug/kg	
Aroclor 1260	< 160	160	ug/kg	
alpha-BHC	< 2.0	2.0	ug/kg	
beta-BHC	< 8.0	8.0	ug/kg	
delta-BHC	< 8.0	8.0	ug/kg	
gamma-BHC (Lindane)	< 8.0	8.0	ug/kg	
alpha-Chlordane	< 80.0	80.0	ug/kg	
gamma-Chlordane	< 80.0	80.0	ug/kg	
4,4'-DDD	< 16.0	16.0	ug/kg	
4,4'-DDE	< 16.0	16.0	ug/kg	
4,4'-DDT	< 16.0	16.0	ug/kg	
Dieldrin	< 16.0	16.0	ug/kg	
Endosulfan I	< 8.0	8.0	ug/kg	
Endosulfan II	< 16.0	16.0	ug/kg	
Endosulfan sulfate	< 16.0	16.0	ug/kg	

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Analytical Report

Client:	LEVINE FRICKE	**Date Collected:**	08/17/05
Project ID:	009-07992-00-001; P.O. #06815	**Time Collected:**	8:00
Sample ID:	BP2	**Date Received:**	08/17/05
Sample No:	5-2529-001	**Date Reported:**	08/24/05

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Pesticides/PCBs — **Method: 8081A/8082** — **Preparation Method 3540C**				
Analysis Date: 08/22/05 — Preparation Date: 08/18/05				
Endrin	< 16.0	16.0	ug/kg	
Endrin aldehyde	< 16.0	16.0	ug/kg	
Endrin ketone	< 16.0	16.0	ug/kg	
Heptachlor	< 8.0	8.0	ug/kg	
Heptachlor epoxide	< 8.0	8.0	ug/kg	
Methoxychlor	< 80.0	80.0	ug/kg	
Toxaphene	< 160	160	ug/kg	
pH @ 25°C, 1:10 — **Method: 4500H+B**				
Analysis Date: 08/18/05				
pH @ 25°C, 1:10	9.15		Units	

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Analytical Report

Client:	LEVINE FRICKE	**Date Collected:**	08/17/05
Project ID:	009-07992-00-001; P.O. #06815	**Time Collected:**	8:20
Sample ID:	BP3	**Date Received:**	08/17/05
Sample No:	5-2529-002	**Date Reported:**	08/24/05

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Solids, Total	**Method: 160.3**				
Analysis Date: 08/17/05					
Total Solids		86.44		%	
Antimony		< 1.0	1.0	mg/kg	
Arsenic		0.7	0.2	mg/kg	
Barium		4.6	0.1	mg/kg	
Cadmium		< 0.1	0.1	mg/kg	
Chromium		2.9	0.1	mg/kg	
Lead		1.5	0.2	mg/kg	
Selenium		< 0.2	0.2	mg/kg	
Silver		< 0.1	0.1	mg/kg	
Total Metals	**Method: 7470A**				
Analysis Date: 08/19/05					
Mercury		< 0.05	0.05	mg/kg	
Acetone		< 100	100	ug/kg	
Benzene		< 5.0	5.0	ug/kg	
Bromodichloromethane		< 5.0	5.0	ug/kg	
Bromoform		< 5.0	5.0	ug/kg	
Bromomethane		< 10.0	10.0	ug/kg	
2-Butanone (MEK)		< 10.0	10.0	ug/kg	
Carbon disulfide		< 5.0	5.0	ug/kg	
Carbon tetrachloride		< 5.0	5.0	ug/kg	
Chlorobenzene		< 5.0	5.0	ug/kg	
Chlorodibromomethane		< 5.0	5.0	ug/kg	
Chloroethane		< 10.0	10.0	ug/kg	
Chloroform		< 5.0	5.0	ug/kg	
Chloromethane		< 10.0	10.0	ug/kg	
1,1-Dichloroethane		< 5.0	5.0	ug/kg	
1,2-Dichloroethane		< 5.0	5.0	ug/kg	
1,1-Dichloroethene		< 5.0	5.0	ug/kg	
cis-1,2-Dichloroethene		< 5.0	5.0	ug/kg	
trans-1,2-Dichloroethene		< 5.0	5.0	ug/kg	
1,2-Dichloropropane		< 5.0	5.0	ug/kg	
cis-1,3-Dichloropropene		< 5.0	5.0	ug/kg	
trans-1,3-Dichloropropene		< 5.0	5.0	ug/kg	
Ethylbenzene		< 5.0	5.0	ug/kg	
2-Hexanone		< 10.0	10.0	ug/kg	
Methyl-tert-butylether (MTBE)		< 5.0	5.0	ug/kg	

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IL ELAP / NELAC Accreditation # 100292

Analytical Report

Client:	LEVINE FRICKE	**Date Collected:**	08/17/05
Project ID:	009-07992-00-001; P.O. #06815	**Time Collected:**	8:20
Sample ID:	BP3	**Date Received:**	08/17/05
Sample No:	5-2529-002	**Date Reported:**	08/24/05

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Total Metals	**Method: 7470A**				
Analysis Date: 08/19/05					
4-Methyl-2-pentanone (MIBK)		< 10.0	10.0	ug/kg	
Methylene chloride		< 5.0	5.0	ug/kg	
Styrene		< 5.0	5.0	ug/kg	
1,1,2,2-Tetrachloroethane		< 5.0	5.0	ug/kg	
Tetrachloroethene		< 5.0	5.0	ug/kg	
Toluene		< 5.0	5.0	ug/kg	
1,1,1-Trichloroethane		< 5.0	5.0	ug/kg	
1,1,2-Trichloroethane		< 5.0	5.0	ug/kg	
Trichloroethene		< 5.0	5.0	ug/kg	
Vinyl acetate		< 10.0	10.0	ug/kg	
Vinyl chloride		< 10.0	10.0	ug/kg	
Xylene, Total		< 5.0	5.0	ug/kg	
Semi-Volatile Compounds	**Method: 8270C**		**Preparation Method 3540C**		
Analysis Date: 08/18/05			Preparation Date: 08/17/05		
Acenaphthylene		< 330	330	ug/kg	
Anthracene		< 330	330	ug/kg	
Benzidine		< 330	330	ug/kg	
Benzo(a)anthracene		< 330	330	ug/kg	
Benzo(a)pyrene		< 90	90	ug/kg	
Benzo(b)fluoranthene		< 330	330	ug/kg	
Benzo(ghi)perylene		< 330	330	ug/kg	
Benzo(k)fluoranthene		< 330	330	ug/kg	
Benzoic acid		< 330	330	ug/kg	
Benzyl alcohol		< 330	330	ug/kg	
4-Bromophenyl phenyl ether		< 330	330	ug/kg	
Butyl benzyl phthalate		< 330	330	ug/kg	
Carbazole		< 330	330	ug/kg	
4-Chloroaniline		< 330	330	ug/kg	
bis(2-Chloroethoxy)methane		< 330	330	ug/kg	
bis(2-Chloroethyl)ether		< 330	330	ug/kg	
bis(2-Chloroisopropyl)ether		< 330	330	ug/kg	
4-Chloro-3-methylphenol		< 330	330	ug/kg	
2-Chloronaphthalene		< 330	330	ug/kg	
2-Chlorophenol		< 330	330	ug/kg	
4-Chlorophenyl phenyl ether		< 330	330	ug/kg	
Chrysene		< 330	330	ug/kg	

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IL ELAP / NELAC Accreditation # 100292

Analytical Report

Client:	LEVINE FRICKE	**Date Collected:**	08/17/05
Project ID:	009-07992-00-001; P.O. #06815	**Time Collected:**	8:20
Sample ID:	BP3	**Date Received:**	08/17/05
Sample No:	5-2529-002	**Date Reported:**	08/24/05

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Semi-Volatile Compounds **Method: 8270C**		**Preparation Method 3540C**		
Analysis Date: 08/18/05		Preparation Date: 08/17/05		
Dibenzo(a,h)anthracene	< 90	90	ug/kg	
Dibenzofuran	< 330	330	ug/kg	
Di-n-butyl phthalate	< 330	330	ug/kg	
1,2-Dichlorobenzene	< 330	330	ug/kg	
1,3-Dichlorobenzene	< 330	330	ug/kg	
1,4-Dichlorobenzene	< 330	330	ug/kg	
3,3'-Dichlorobenzidine	< 660	660	ug/kg	
2,4-Dichlorophenol	< 330	330	ug/kg	
Diethyl phthalate	< 330	330	ug/kg	
2,4-Dimethylphenol	< 330	330	ug/kg	
Dimethyl phthalate	< 330	330	ug/kg	
2,4-Dinitrophenol	< 1,600	1600	ug/kg	
2,4-Dinitrotoluene	< 250	250	ug/kg	
2,6-Dinitrotoluene	< 260	260	ug/kg	
Di-n-octylphthalate	< 330	330	ug/kg	
bis(2-Ethylhexyl)phthalate	< 330	330	ug/kg	
Fluoranthene	< 330	330	ug/kg	
Fluorene	< 330	330	ug/kg	
Hexachlorobenzene	< 330	330	ug/kg	
Hexachlorobutadiene	< 330	330	ug/kg	
Hexachlorocyclopentadiene	< 330	330	ug/kg	
Hexachloroethane	< 330	330	ug/kg	
Indeno(1,2,3-cd)pyrene	< 330	330	ug/kg	
Isophorone	< 330	330	ug/kg	
2-Methylnaphthalene	< 330	330	ug/kg	
2-Methylphenol	< 330	330	ug/kg	
3 & 4-Methylphenol	< 330	330	ug/kg	
Naphthalene	< 330	330	ug/kg	
2-Nitroaniline	< 1,600	1600	ug/kg	
3-Nitroaniline	< 1,600	1600	ug/kg	
4-Nitroaniline	< 1,600	1600	ug/kg	
Nitrobenzene	< 260	260	ug/kg	
2-Nitrophenol	< 1,600	1600	ug/kg	
4-Nitrophenol	< 1,600	1600	ug/kg	
n-Nitrosodiphenylamine	< 330	330	ug/kg	
n-Nitrosodi-n-propylamine	< 330	330	ug/kg	

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Analytical Report

Client:	LEVINE FRICKE	**Date Collected:**	08/17/05
Project ID:	009-07992-00-001; P.O. #06815	**Time Collected:**	8:20
Sample ID:	BP3	**Date Received:**	08/17/05
Sample No:	5-2529-002	**Date Reported:**	08/24/05

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Semi-Volatile Compounds — **Method: 8270C** — **Preparation Method 3540C**				
Analysis Date: 08/18/05 — Preparation Date: 08/17/05				
Pentachlorophenol	< 330	330	ug/kg	
Phenanthrene	< 330	330	ug/kg	
Phenol	< 330	330	ug/kg	
Pyrene	< 330	330	ug/kg	
1,2,4-Trichlorobenzene	< 330	330	ug/kg	
2,4,5-Trichlorophenol	< 330	330	ug/kg	
2,4,6-Trichlorophenol	< 330	330	ug/kg	
Pesticides/PCBs — **Method: 8081A/8082** — **Preparation Method 3540C**				
Analysis Date: 08/22/05 — Preparation Date: 08/18/05				
Aldrin	< 8.0	8.0	ug/kg	
Aroclor 1016	< 80.0	80.0	ug/kg	
Aroclor 1221	< 80.0	80.0	ug/kg	
Aroclor 1232	< 80.0	80.0	ug/kg	
Aroclor 1242	< 80.0	80.0	ug/kg	
Aroclor 1248	< 80.0	80.0	ug/kg	
Aroclor 1254	< 160	160	ug/kg	
Aroclor 1260	< 160	160	ug/kg	
alpha-BHC	< 2.0	2.0	ug/kg	
beta-BHC	< 8.0	8.0	ug/kg	
delta-BHC	< 8.0	8.0	ug/kg	
gamma-BHC (Lindane)	< 8.0	8.0	ug/kg	
alpha-Chlordane	< 80.0	80.0	ug/kg	
gamma-Chlordane	< 80.0	80.0	ug/kg	
4,4'-DDD	< 16.0	16.0	ug/kg	
4,4'-DDE	< 16.0	16.0	ug/kg	
4,4'-DDT	< 16.0	16.0	ug/kg	
Dieldrin	< 16.0	16.0	ug/kg	
Endosulfan I	< 8.0	8.0	ug/kg	
Endosulfan II	< 16.0	16.0	ug/kg	
Endosulfan sulfate	< 16.0	16.0	ug/kg	
Endrin	< 16.0	16.0	ug/kg	
Endrin aldehyde	< 16.0	16.0	ug/kg	
Endrin ketone	< 16.0	16.0	ug/kg	
Heptachlor	< 8.0	8.0	ug/kg	
Heptachlor epoxide	< 8.0	8.0	ug/kg	
Methoxychlor	< 80.0	80.0	ug/kg	

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Analytical Report

Client:	LEVINE FRICKE	**Date Collected:**	08/17/05
Project ID:	009-07992-00-001; P.O. #06815	**Time Collected:**	8:20
Sample ID:	BP3	**Date Received:**	08/17/05
Sample No:	5-2529-002	**Date Reported:**	08/24/05

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Pesticides/PCBs	**Method: 8081A/8082**		**Preparation Method 3540C**		
Analysis Date: 08/22/05			Preparation Date: 08/18/05		
Toxaphene		< 160	160	ug/kg	
pH @ 25°C, 1:10	**Method: 4500H+B**				
Analysis Date: 08/18/05					
pH @ 25°C, 1:10		9.35		Units	

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Analytical Report

Client:	LEVINE FRICKE	**Date Collected:**	08/17/05
Project ID:	009-07992-00-001; P.O. #06815	**Time Collected:**	8:40
Sample ID:	BP4	**Date Received:**	08/17/05
Sample No:	5-2529-003	**Date Reported:**	08/24/05

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Solids, Total **Method: 160.3**				
Analysis Date: 08/17/05				
Total Solids	91.82		%	
Antimony	< 1.0	1.0	mg/kg	
Arsenic	0.5	0.2	mg/kg	
Barium	3.7	0.1	mg/kg	
Cadmium	< 0.1	0.1	mg/kg	
Chromium	3.5	0.1	mg/kg	
Lead	1.3	0.2	mg/kg	
Selenium	< 0.2	0.2	mg/kg	
Silver	< 0.1	0.1	mg/kg	
Total Metals **Method: 7470A**				
Analysis Date: 08/19/05				
Mercury	< 0.05	0.05	mg/kg	
Acetone	< 100	100	ug/kg	
Benzene	< 5.0	5.0	ug/kg	
Bromodichloromethane	< 5.0	5.0	ug/kg	
Bromoform	< 5.0	5.0	ug/kg	
Bromomethane	< 10.0	10.0	ug/kg	
2-Butanone (MEK)	< 10.0	10.0	ug/kg	
Carbon disulfide	< 5.0	5.0	ug/kg	
Carbon tetrachloride	< 5.0	5.0	ug/kg	
Chlorobenzene	< 5.0	5.0	ug/kg	
Chlorodibromomethane	< 5.0	5.0	ug/kg	
Chloroethane	< 10.0	10.0	ug/kg	
Chloroform	< 5.0	5.0	ug/kg	
Chloromethane	< 10.0	10.0	ug/kg	
1,1-Dichloroethane	< 5.0	5.0	ug/kg	
1,2-Dichloroethane	< 5.0	5.0	ug/kg	
1,1-Dichloroethene	< 5.0	5.0	ug/kg	
cis-1,2-Dichloroethene	< 5.0	5.0	ug/kg	
trans-1,2-Dichloroethene	< 5.0	5.0	ug/kg	
1,2-Dichloropropane	< 5.0	5.0	ug/kg	
cis-1,3-Dichloropropene	< 5.0	5.0	ug/kg	
trans-1,3-Dichloropropene	< 5.0	5.0	ug/kg	
Ethylbenzene	< 5.0	5.0	ug/kg	
2-Hexanone	< 10.0	10.0	ug/kg	
Methyl-tert-butylether (MTBE)	< 5.0	5.0	ug/kg	

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Analytical Report

Client:	LEVINE FRICKE	**Date Collected:**	08/17/05
Project ID:	009-07992-00-001; P.O. #06815	**Time Collected:**	8:40
Sample ID:	BP4	**Date Received:**	08/17/05
Sample No:	5-2529-003	**Date Reported:**	08/24/05

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Total Metals	**Method: 7470A**				
Analysis Date: 08/19/05					
4-Methyl-2-pentanone (MIBK)		< 10.0	10.0	ug/kg	
Methylene chloride		< 5.0	5.0	ug/kg	
Styrene		< 5.0	5.0	ug/kg	
1,1,2,2-Tetrachloroethane		< 5.0	5.0	ug/kg	
Tetrachloroethene		< 5.0	5.0	ug/kg	
Toluene		9.3	5.0	ug/kg	
1,1,1-Trichloroethane		< 5.0	5.0	ug/kg	
1,1,2-Trichloroethane		< 5.0	5.0	ug/kg	
Trichloroethene		< 5.0	5.0	ug/kg	
Vinyl acetate		< 10.0	10.0	ug/kg	
Vinyl chloride		< 10.0	10.0	ug/kg	
Xylene, Total		5.4	5.0	ug/kg	
Semi-Volatile Compounds	**Method: 8270C**		**Preparation Method 3540C**		
Analysis Date: 08/18/05			Preparation Date: 08/17/05		
Acenaphthylene		< 330	330	ug/kg	
Anthracene		< 330	330	ug/kg	
Benzidine		< 330	330	ug/kg	
Benzo(a)anthracene		< 330	330	ug/kg	
Benzo(a)pyrene		< 90	90	ug/kg	
Benzo(b)fluoranthene		< 330	330	ug/kg	
Benzo(ghi)perylene		< 330	330	ug/kg	
Benzo(k)fluoranthene		< 330	330	ug/kg	
Benzoic acid		< 330	330	ug/kg	
Benzyl alcohol		< 330	330	ug/kg	
4-Bromophenyl phenyl ether		< 330	330	ug/kg	
Butyl benzyl phthalate		< 330	330	ug/kg	
Carbazole		< 330	330	ug/kg	
4-Chloroaniline		< 330	330	ug/kg	
bis(2-Chloroethoxy)methane		< 330	330	ug/kg	
bis(2-Chloroethyl)ether		< 330	330	ug/kg	
bis(2-Chloroisopropyl)ether		< 330	330	ug/kg	
4-Chloro-3-methylphenol		< 330	330	ug/kg	
2-Chloronaphthalene		< 330	330	ug/kg	
2-Chlorophenol		< 330	330	ug/kg	
4-Chlorophenyl phenyl ether		< 330	330	ug/kg	
Chrysene		< 330	330	ug/kg	

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Analytical Report

Client:	LEVINE FRICKE	**Date Collected:**	08/17/05
Project ID:	009-07992-00-001; P.O. #06815	**Time Collected:**	8:40
Sample ID:	BP4	**Date Received:**	08/17/05
Sample No:	5-2529-003	**Date Reported:**	08/24/05

Results are reported on a dry weight basis.

Semi-Volatile Compounds — **Method: 8270C** — **Preparation Method 3540C**
Analysis Date: 08/18/05 — Preparation Date: 08/17/05

Analyte	Result	R.L.	Units	Flags
Dibenzo(a,h)anthracene	< 90	90	ug/kg	
Dibenzofuran	< 330	330	ug/kg	
Di-n-butyl phthalate	< 330	330	ug/kg	
1,2-Dichlorobenzene	< 330	330	ug/kg	
1,3-Dichlorobenzene	< 330	330	ug/kg	
1,4-Dichlorobenzene	< 330	330	ug/kg	
3,3'-Dichlorobenzidine	< 660	660	ug/kg	
2,4-Dichlorophenol	< 330	330	ug/kg	
Diethyl phthalate	< 330	330	ug/kg	
2,4-Dimethylphenol	< 330	330	ug/kg	
Dimethyl phthalate	< 330	330	ug/kg	
2,4-Dinitrophenol	< 1,600	1600	ug/kg	
2,4-Dinitrotoluene	< 250	250	ug/kg	
2,6-Dinitrotoluene	< 260	260	ug/kg	
Di-n-octylphthalate	< 330	330	ug/kg	
bis(2-Ethylhexyl)phthalate	< 330	330	ug/kg	
Fluoranthene	< 330	330	ug/kg	
Fluorene	< 330	330	ug/kg	
Hexachlorobenzene	< 330	330	ug/kg	
Hexachlorobutadiene	< 330	330	ug/kg	
Hexachlorocyclopentadiene	< 330	330	ug/kg	
Hexachloroethane	< 330	330	ug/kg	
Indeno(1,2,3-cd)pyrene	< 330	330	ug/kg	
Isophorone	< 330	330	ug/kg	
2-Methylnaphthalene	< 330	330	ug/kg	
2-Methylphenol	< 330	330	ug/kg	
3 & 4-Methylphenol	< 330	330	ug/kg	
Naphthalene	< 330	330	ug/kg	
2-Nitroaniline	< 1,600	1600	ug/kg	
3-Nitroaniline	< 1,600	1600	ug/kg	
4-Nitroaniline	< 1,600	1600	ug/kg	
Nitrobenzene	< 260	260	ug/kg	
2-Nitrophenol	< 1,600	1600	ug/kg	
4-Nitrophenol	< 1,600	1600	ug/kg	
n-Nitrosodiphenylamine	< 330	330	ug/kg	
n-Nitrosodi-n-propylamine	< 330	330	ug/kg	

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Analytical Report

Client: LEVINE FRICKE
Project ID: 009-07992-00-001; P.O. #06815
Sample ID: BP4
Sample No: 5-2529-003

Date Collected: 08/17/05
Time Collected: 8:40
Date Received: 08/17/05
Date Reported: 08/24/05

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Semi-Volatile Compounds — **Method: 8270C** — **Preparation Method 3540C**				
Analysis Date: 08/18/05 — Preparation Date: 08/17/05				
Pentachlorophenol	< 330	330	ug/kg	
Phenanthrene	< 330	330	ug/kg	
Phenol	< 330	330	ug/kg	
Pyrene	< 330	330	ug/kg	
1,2,4-Trichlorobenzene	< 330	330	ug/kg	
2,4,5-Trichlorophenol	< 330	330	ug/kg	
2,4,6-Trichlorophenol	< 330	330	ug/kg	
Pesticides/PCBs — **Method: 8081A/8082** — **Preparation Method 3540C**				
Analysis Date: 08/22/05 — Preparation Date: 08/18/05				
Aldrin	< 8.0	8.0	ug/kg	
Aroclor 1016	< 80.0	80.0	ug/kg	
Aroclor 1221	< 80.0	80.0	ug/kg	
Aroclor 1232	< 80.0	80.0	ug/kg	
Aroclor 1242	< 80.0	80.0	ug/kg	
Aroclor 1248	< 80.0	80.0	ug/kg	
Aroclor 1254	< 160	160	ug/kg	
Aroclor 1260	< 160	160	ug/kg	
alpha-BHC	< 2.0	2.0	ug/kg	
beta-BHC	< 8.0	8.0	ug/kg	
delta-BHC	< 8.0	8.0	ug/kg	
gamma-BHC (Lindane)	< 8.0	8.0	ug/kg	
alpha-Chlordane	< 80.0	80.0	ug/kg	
gamma-Chlordane	< 80.0	80.0	ug/kg	
4,4'-DDD	< 16.0	16.0	ug/kg	
4,4'-DDE	< 16.0	16.0	ug/kg	
4,4'-DDT	< 16.0	16.0	ug/kg	
Dieldrin	< 16.0	16.0	ug/kg	
Endosulfan I	< 8.0	8.0	ug/kg	
Endosulfan II	< 16.0	16.0	ug/kg	
Endosulfan sulfate	< 16.0	16.0	ug/kg	
Endrin	< 16.0	16.0	ug/kg	
Endrin aldehyde	< 16.0	16.0	ug/kg	
Endrin ketone	< 16.0	16.0	ug/kg	
Heptachlor	< 8.0	8.0	ug/kg	
Heptachlor epoxide	< 8.0	8.0	ug/kg	
Methoxychlor	< 80.0	80.0	ug/kg	

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Analytical Report

Client:	LEVINE FRICKE	**Date Collected:**	08/17/05
Project ID:	009-07992-00-001; P.O. #06815	**Time Collected:**	8:40
Sample ID:	BP4	**Date Received:**	08/17/05
Sample No:	5-2529-003	**Date Reported:**	08/24/05

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Pesticides/PCBs — **Method: 8081A/8082** — **Preparation Method 3540C**				
Analysis Date: 08/22/05 — Preparation Date: 08/18/05				
Toxaphene	< 160	160	ug/kg	
pH @ 25°C, 1:10 — **Method: 4500H+B**				
Analysis Date: 08/18/05				
pH @ 25°C, 1:10	9.21		Units	

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Analytical Report

Client:	LEVINE FRICKE	**Date Collected:**	08/17/05
Project ID:	009-07992-00-001; P.O. #06815	**Time Collected:**	8:50
Sample ID:	BP5	**Date Received:**	08/17/05
Sample No:	5-2529-004	**Date Reported:**	08/24/05

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Solids, Total	**Method: 160.3**				
Analysis Date: 08/17/05					
Total Solids		89.08		%	
Antimony		< 1.0	1.0	mg/kg	
Arsenic		1.9	0.2	mg/kg	
Barium		5.4	0.1	mg/kg	
Cadmium		0.1	0.1	mg/kg	
Chromium		8.5	0.1	mg/kg	
Lead		2.6	0.2	mg/kg	
Selenium		< 0.2	0.2	mg/kg	
Silver		< 0.1	0.1	mg/kg	
Total Metals	**Method: 7470A**				
Analysis Date: 08/19/05					
Mercury		< 0.05	0.05	mg/kg	
Acetone		< 100	100	ug/kg	
Benzene		< 5.0	5.0	ug/kg	
Bromodichloromethane		< 5.0	5.0	ug/kg	
Bromoform		< 5.0	5.0	ug/kg	
Bromomethane		< 10.0	10.0	ug/kg	
2-Butanone (MEK)		< 10.0	10.0	ug/kg	
Carbon disulfide		< 5.0	5.0	ug/kg	
Carbon tetrachloride		< 5.0	5.0	ug/kg	
Chlorobenzene		< 5.0	5.0	ug/kg	
Chlorodibromomethane		< 5.0	5.0	ug/kg	
Chloroethane		< 10.0	10.0	ug/kg	
Chloroform		< 5.0	5.0	ug/kg	
Chloromethane		< 10.0	10.0	ug/kg	
1,1-Dichloroethane		< 5.0	5.0	ug/kg	
1,2-Dichloroethane		< 5.0	5.0	ug/kg	
1,1-Dichloroethene		< 5.0	5.0	ug/kg	
cis-1,2-Dichloroethene		< 5.0	5.0	ug/kg	
trans-1,2-Dichloroethene		< 5.0	5.0	ug/kg	
1,2-Dichloropropane		< 5.0	5.0	ug/kg	
cis-1,3-Dichloropropene		< 5.0	5.0	ug/kg	
trans-1,3-Dichloropropene		< 5.0	5.0	ug/kg	
Ethylbenzene		< 5.0	5.0	ug/kg	
2-Hexanone		< 10.0	10.0	ug/kg	
Methyl-tert-butylether (MTBE)		< 5.0	5.0	ug/kg	

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Analytical Report

Client:	LEVINE FRICKE	**Date Collected:**	08/17/05
Project ID:	009-07992-00-001; P.O. #06815	**Time Collected:**	8:50
Sample ID:	BP5	**Date Received:**	08/17/05
Sample No:	5-2529-004	**Date Reported:**	08/24/05

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Total Metals	**Method: 7470A**				
Analysis Date: 08/19/05					
4-Methyl-2-pentanone (MIBK)		< 10.0	10.0	ug/kg	
Methylene chloride		< 5.0	5.0	ug/kg	
Styrene		< 5.0	5.0	ug/kg	
1,1,2,2-Tetrachloroethane		< 5.0	5.0	ug/kg	
Tetrachloroethene		< 5.0	5.0	ug/kg	
Toluene		9.6	5.0	ug/kg	
1,1,1-Trichloroethane		< 5.0	5.0	ug/kg	
1,1,2-Trichloroethane		< 5.0	5.0	ug/kg	
Trichloroethene		< 5.0	5.0	ug/kg	
Vinyl acetate		< 10.0	10.0	ug/kg	
Vinyl chloride		< 10.0	10.0	ug/kg	
Xylene, Total		5.8	5.0	ug/kg	
Semi-Volatile Componnds	**Method: 8270C**		**Preparation Method 3540C**		
Analysis Date: 08/18/05			Preparation Date: 08/17/05		
Acenaphthylene		< 330	330	ug/kg	
Anthracene		< 330	330	ug/kg	
Benzidine		< 330	330	ug/kg	
Benzo(a)anthracene		< 330	330	ug/kg	
Benzo(a)pyrene		< 90	90	ug/kg	
Benzo(b)fluoranthene		< 330	330	ug/kg	
Benzo(ghi)perylene		< 330	330	ug/kg	
Benzo(k)fluoranthene		< 330	330	ug/kg	
Benzoic acid		< 330	330	ug/kg	
Benzyl alcohol		< 330	330	ug/kg	
4-Bromophenyl phenyl ether		< 330	330	ug/kg	
Butyl benzyl phthalate		< 330	330	ug/kg	
Carbazole		< 330	330	ug/kg	
4-Chloroaniline		< 330	330	ug/kg	
bis(2-Chloroethoxy)methane		< 330	330	ug/kg	
bis(2-Chloroethyl)ether		< 330	330	ug/kg	
bis(2-Chloroisopropyl)ether		< 330	330	ug/kg	
4-Chloro-3-methylphenol		< 330	330	ug/kg	
2-Chloronaphthalene		< 330	330	ug/kg	
2-Chlorophenol		< 330	330	ug/kg	
4-Chlorophenyl phenyl ether		< 330	330	ug/kg	
Chrysene		< 330	330	ug/kg	

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Analytical Report

Client:	LEVINE FRICKE	**Date Collected:**	08/17/05
Project ID:	009-07992-00-001; P.O. #06815	**Time Collected:**	8:50
Sample ID:	BP5	**Date Received:**	08/17/05
Sample No:	5-2529-004	**Date Reported:**	08/24/05

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Semi-Volatile Compounds **Method: 8270C** Analysis Date: 08/18/05		**Preparation Method 3540C** Preparation Date: 08/17/05		
Dibenzo(a,h)anthracene	< 90	90	ug/kg	
Dibenzofuran	< 330	330	ug/kg	
Di-n-butyl phthalate	< 330	330	ug/kg	
1,2-Dichlorobenzene	< 330	330	ug/kg	
1,3-Dichlorobenzene	< 330	330	ug/kg	
1,4-Dichlorobenzene	< 330	330	ug/kg	
3,3'-Dichlorobenzidine	< 660	660	ug/kg	
2,4-Dichlorophenol	< 330	330	ug/kg	
Diethyl phthalate	< 330	330	ug/kg	
2,4-Dimethylphenol	< 330	330	ug/kg	
Dimethyl phthalate	< 330	330	ug/kg	
2,4-Dinitrophenol	< 1,600	1600	ug/kg	
2,4-Dinitrotoluene	< 250	250	ug/kg	
2,6-Dinitrotoluene	< 260	260	ug/kg	
Di-n-octylphthalate	< 330	330	ug/kg	
bis(2-Ethylhexyl)phthalate	< 330	330	ug/kg	
Fluoranthene	< 330	330	ug/kg	
Fluorene	< 330	330	ug/kg	
Hexachlorobenzene	< 330	330	ug/kg	
Hexachlorobutadiene	< 330	330	ug/kg	
Hexachlorocyclopentadiene	< 330	330	ug/kg	
Hexachloroethane	< 330	330	ug/kg	
Indeno(1,2,3-cd)pyrene	< 330	330	ug/kg	
Isophorone	< 330	330	ug/kg	
2-Methylnaphthalene	< 330	330	ug/kg	
2-Methylphenol	< 330	330	ug/kg	
3 & 4-Methylphenol	< 330	330	ug/kg	
Naphthalene	< 330	330	ug/kg	
2-Nitroaniline	< 1,600	1600	ug/kg	
3-Nitroaniline	< 1,600	1600	ug/kg	
4-Nitroaniline	< 1,600	1600	ug/kg	
Nitrobenzene	< 260	260	ug/kg	
2-Nitrophenol	< 1,600	1600	ug/kg	
4-Nitrophenol	< 1,600	1600	ug/kg	
n-Nitrosodiphenylamine	< 330	330	ug/kg	
n-Nitrosodi-n-propylamine	< 330	330	ug/kg	

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Analytical Report

Client: LEVINE FRICKE
Project ID: 009-07992-00-001; P.O. #06815
Sample ID: BP5
Sample No: 5-2529-004

Date Collected: 08/17/05
Time Collected: 8:50
Date Received: 08/17/05
Date Reported: 08/24/05

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Semi-Volatile Compounds — **Method: 8270C** — **Preparation Method 3540C**				
Analysis Date: 08/18/05 — Preparation Date: 08/17/05				
Pentachlorophenol	< 330	330	ug/kg	
Phenanthrene	< 330	330	ug/kg	
Phenol	< 330	330	ug/kg	
Pyrene	< 330	330	ug/kg	
1,2,4-Trichlorobenzene	< 330	330	ug/kg	
2,4,5-Trichlorophenol	< 330	330	ug/kg	
2,4,6-Trichlorophenol	< 330	330	ug/kg	
Pesticides/PCBs — **Method: 8081A/8082** — **Preparation Method 3540C**				
Analysis Date: 08/22/05 — Preparation Date: 08/18/05				
Aldrin	< 8.0	8.0	ug/kg	
Aroclor 1016	< 80.0	80.0	ug/kg	
Aroclor 1221	< 80.0	80.0	ug/kg	
Aroclor 1232	< 80.0	80.0	ug/kg	
Aroclor 1242	< 80.0	80.0	ug/kg	
Aroclor 1248	< 80.0	80.0	ug/kg	
Aroclor 1254	< 160	160	ug/kg	
Aroclor 1260	< 160	160	ug/kg	
alpha-BHC	< 2.0	2.0	ug/kg	
beta-BHC	< 8.0	8.0	ug/kg	
delta-BHC	< 8.0	8.0	ug/kg	
gamma-BHC (Lindane)	< 8.0	8.0	ug/kg	
alpha-Chlordane	< 80.0	80.0	ug/kg	
gamma-Chlordane	< 80.0	80.0	ug/kg	
4,4'-DDD	< 16.0	16.0	ug/kg	
4,4'-DDE	< 16.0	16.0	ug/kg	
4,4'-DDT	< 16.0	16.0	ug/kg	
Dieldrin	< 16.0	16.0	ug/kg	
Endosulfan I	< 8.0	8.0	ug/kg	
Endosulfan II	< 16.0	16.0	ug/kg	
Endosulfan sulfate	< 16.0	16.0	ug/kg	
Endrin	< 16.0	16.0	ug/kg	
Endrin aldehyde	< 16.0	16.0	ug/kg	
Endrin ketone	< 16.0	16.0	ug/kg	
Heptachlor	< 8.0	8.0	ug/kg	
Heptachlor epoxide	< 8.0	8.0	ug/kg	
Methoxychlor	< 80.0	80.0	ug/kg	

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Analytical Report

Client: LEVINE FRICKE
Project ID: 009-07992-00-001; P.O. #06815
Sample ID: BP5
Sample No: 5-2529-004

Date Collected: 08/17/05
Time Collected: 8:50
Date Received: 08/17/05
Date Reported: 08/24/05

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Pesticides/PCBs	**Method: 8081A/8082**		**Preparation Method 3540C**		
Analysis Date: 08/22/05			Preparation Date: 08/18/05		
Toxaphene		< 160	160	ug/kg	
pH @ 25°C, 1:10	**Method: 4500H+B**				
Analysis Date: 08/18/05					
pH @ 25°C, 1:10		9.27		Units	

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Analytical Report

Client:	LEVINE FRICKE	**Date Collected:**	08/17/05
Project ID:	009-07992-00-001; P.O. #06815	**Time Collected:**	9:00
Sample ID:	BP6	**Date Received:**	08/17/05
Sample No:	5-2529-005	**Date Reported:**	08/24/05

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Solids, Total	**Method: 160.3**				
Analysis Date: 08/17/05					
Total Solids		84.86		%	
Antimony		< 1.0	1.0	mg/kg	
Arsenic		0.9	0.2	mg/kg	
Barium		4.5	0.1	mg/kg	
Cadmium		< 0.1	0.1	mg/kg	
Chromium		3.5	0.1	mg/kg	
Lead		1.3	0.2	mg/kg	
Selenium		< 0.2	0.2	mg/kg	
Silver		< 0.1	0.1	mg/kg	
Total Metals	**Method: 7470A**				
Analysis Date: 08/19/05					
Mercury		< 0.05	0.05	mg/kg	
Acetone		< 100	100	ug/kg	
Benzene		< 5.0	5.0	ug/kg	
Bromodichloromethane		< 5.0	5.0	ug/kg	
Bromoform		< 5.0	5.0	ug/kg	
Bromomethane		< 10.0	10.0	ug/kg	
2-Butanone (MEK)		< 10.0	10.0	ug/kg	
Carbon disulfide		< 5.0	5.0	ug/kg	
Carbon tetrachloride		< 5.0	5.0	ug/kg	
Chlorobenzene		< 5.0	5.0	ug/kg	
Chlorodibromomethane		< 5.0	5.0	ug/kg	
Chloroethane		< 10.0	10.0	ug/kg	
Chloroform		< 5.0	5.0	ug/kg	
Chloromethane		< 10.0	10.0	ug/kg	
1,1-Dichloroethane		< 5.0	5.0	ug/kg	
1,2-Dichloroethane		< 5.0	5.0	ug/kg	
1,1-Dichloroethene		< 5.0	5.0	ug/kg	
cis-1,2-Dichloroethene		< 5.0	5.0	ug/kg	
trans-1,2-Dichloroethene		< 5.0	5.0	ug/kg	
1,2-Dichloropropane		< 5.0	5.0	ug/kg	
cis-1,3-Dichloropropene		< 5.0	5.0	ug/kg	
trans-1,3-Dichloropropene		< 5.0	5.0	ug/kg	
Ethylbenzene		< 5.0	5.0	ug/kg	
2-Hexanone		< 10.0	10.0	ug/kg	
Methyl-tert-butylether (MTBE)		< 5.0	5.0	ug/kg	

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Analytical Report

Client:	LEVINE FRICKE	**Date Collected:**	08/17/05
Project ID:	009-07992-00-001; P.O. #06815	**Time Collected:**	9:00
Sample ID:	BP6	**Date Received:**	08/17/05
Sample No:	5-2529-005	**Date Reported:**	08/24/05

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Total Metals **Method: 7470A**				
Analysis Date: 08/19/05				
4-Methyl-2-pentanone (MIBK)	< 10.0	10.0	ug/kg	
Methylene chloride	< 5.0	5.0	ug/kg	
Styrene	< 5.0	5.0	ug/kg	
1,1,2,2-Tetrachloroethane	< 5.0	5.0	ug/kg	
Tetrachloroethene	< 5.0	5.0	ug/kg	
Toluene	5.8	5.0	ug/kg	
1,1,1-Trichloroethane	< 5.0	5.0	ug/kg	
1,1,2-Trichloroethane	< 5.0	5.0	ug/kg	
Trichloroethene	< 5.0	5.0	ug/kg	
Vinyl acetate	< 10.0	10.0	ug/kg	
Vinyl chloride	< 10.0	10.0	ug/kg	
Xylene, Total	< 5.0	5.0	ug/kg	
Semi-Volatile Compounds **Method: 8270C**	**Preparatiou Method 3540C**			
Analysis Date: 08/22/05	Preparation Date: 08/21/05			
Acenaphthylene	< 330	330	ug/kg	
Anthracene	< 330	330	ug/kg	
Benzidine	< 330	330	ug/kg	
Benzo(a)anthracene	< 330	330	ug/kg	
Benzo(a)pyrene	< 90	90	ug/kg	
Benzo(b)fluoranthene	< 330	330	ug/kg	
Benzo(ghi)perylene	< 330	330	ug/kg	
Benzo(k)fluoranthene	< 330	330	ug/kg	
Benzoic acid	< 330	330	ug/kg	
Benzyl alcohol	< 330	330	ug/kg	
4-Bromophenyl phenyl ether	< 330	330	ug/kg	
Butyl benzyl phthalate	< 330	330	ug/kg	
Carbazole	< 330	330	ug/kg	
4-Chloroaniline	< 330	330	ug/kg	
bis(2-Chloroethoxy)methane	< 330	330	ug/kg	
bis(2-Chloroethyl)ether	< 330	330	ug/kg	
bis(2-Chloroisopropyl)ether	< 330	330	ug/kg	
4-Chloro-3-methylphenol	< 330	330	ug/kg	
2-Chloronaphthalene	< 330	330	ug/kg	
2-Chlorophenol	< 330	330	ug/kg	
4-Chlorophenyl phenyl ether	< 330	330	ug/kg	
Chrysene	< 330	330	ug/kg	

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Analytical Report

Client:	LEVINE FRICKE	**Date Collected:**	08/17/05
Project ID:	009-07992-00-001; P.O. #06815	**Time Collected:**	9:00
Sample ID:	BP6	**Date Received:**	08/17/05
Sample No:	5-2529-005	**Date Reported:**	08/24/05

Results are reported on a dry weight basis.

Semi-Volatile Compounds — **Method: 8270C** — **Preparation Method 3540C**
Analysis Date: 08/22/05 — Preparation Date: 08/21/05

Analyte	Result	R.L.	Units	Flags
Dibenzo(a,h)anthracene	< 90	90	ug/kg	
Dibenzofuran	< 330	330	ug/kg	
Di-n-butyl phthalate	< 330	330	ug/kg	
1,2-Dichlorobenzene	< 330	330	ug/kg	
1,3-Dichlorobenzene	< 330	330	ug/kg	
1,4-Dichlorobenzene	< 330	330	ug/kg	
3,3'-Dichlorobenzidine	< 660	660	ug/kg	
2,4-Dichlorophenol	< 330	330	ug/kg	
Diethyl phthalate	< 330	330	ug/kg	
2,4-Dimethylphenol	< 330	330	ug/kg	
Dimethyl phthalate	< 330	330	ug/kg	
2,4-Dinitrophenol	< 1,600	1600	ug/kg	
2,4-Dinitrotoluene	< 250	250	ug/kg	
2,6-Dinitrotoluene	< 260	260	ug/kg	
Di-n-octylphthalate	< 330	330	ug/kg	
bis(2-Ethylhexyl)phthalate	< 330	330	ug/kg	
Fluoranthene	< 330	330	ug/kg	
Fluorene	< 330	330	ug/kg	
Hexachlorobenzene	< 330	330	ug/kg	
Hexachlorobutadiene	< 330	330	ug/kg	
Hexachlorocyclopentadiene	< 330	330	ug/kg	
Hexachloroethane	< 330	330	ug/kg	
Indeno(1,2,3-cd)pyrene	< 330	330	ug/kg	
Isophorone	< 330	330	ug/kg	
2-Methylnaphthalene	< 330	330	ug/kg	
2-Methylphenol	< 330	330	ug/kg	
3 & 4-Methylphenol	< 330	330	ug/kg	
Naphthalene	< 330	330	ug/kg	
2-Nitroaniline	< 1,600	1600	ug/kg	
3-Nitroaniline	< 1,600	1600	ug/kg	
4-Nitroaniline	< 1,600	1600	ug/kg	
Nitrobenzene	< 260	260	ug/kg	
2-Nitrophenol	< 1,600	1600	ug/kg	
4-Nitrophenol	< 1,600	1600	ug/kg	
n-Nitrosodiphenylamine	< 330	330	ug/kg	
n-Nitrosodi-n-propylamine	< 330	330	ug/kg	

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Analytical Report

Client:	LEVINE FRICKE	**Date Collected:**	08/17/05
Project ID:	009-07992-00-001; P.O. #06815	**Time Collected:**	9:00
Sample ID:	BP6	**Date Received:**	08/17/05
Sample No:	5-2529-005	**Date Reported:**	08/24/05

Results are reported on a dry weight basis.

Analyte	Resnlt	R.L.	Units	Flags
Semi-Volatile Componnds — **Method: 8270C** — **Preparation Method 3540C**				
Analysis Date: 08/22/05 — Preparation Date: 08/21/05				
Pentachlorophenol	< 330	330	ug/kg	
Phenanthrene	< 330	330	ug/kg	
Phenol	< 330	330	ug/kg	
Pyrene	< 330	330	ug/kg	
1,2,4-Trichlorobenzene	< 330	330	ug/kg	
2,4,5-Trichlorophenol	< 330	330	ug/kg	
2,4,6-Trichlorophenol	< 330	330	ug/kg	
Pesticides/PCBs — **Method: 8081A/8082** — **Preparation Method 3540C**				
Analysis Date: 08/22/05 — Preparation Date: 08/18/05				
Aldrin	< 8.0	8.0	ug/kg	
Aroclor 1016	< 80.0	80.0	ug/kg	
Aroclor 1221	< 80.0	80.0	ug/kg	
Aroclor 1232	< 80.0	80.0	ug/kg	
Aroclor 1242	< 80.0	80.0	ug/kg	
Aroclor 1248	< 80.0	80.0	ug/kg	
Aroclor 1254	< 160	160	ug/kg	
Aroclor 1260	< 160	160	ug/kg	
alpha-BHC	< 2.0	2.0	ug/kg	
beta-BHC	< 8.0	8.0	ug/kg	
delta-BHC	< 8.0	8.0	ug/kg	
gamma-BHC (Lindane)	< 8.0	8.0	ug/kg	
alpha-Chlordane	< 80.0	80.0	ug/kg	
gamma-Chlordane	< 80.0	80.0	ug/kg	
4,4'-DDD	< 16.0	16.0	ug/kg	
4,4'-DDE	< 16.0	16.0	ug/kg	
4,4'-DDT	< 16.0	16.0	ug/kg	
Dieldrin	< 16.0	16.0	ug/kg	
Endosulfan I	< 8.0	8.0	ug/kg	
Endosulfan II	< 16.0	16.0	ug/kg	
Endosulfan sulfate	< 16.0	16.0	ug/kg	
Endrin	< 16.0	16.0	ug/kg	
Endrin aldehyde	< 16.0	16.0	ug/kg	
Endrin ketone	< 16.0	16.0	ug/kg	
Heptachlor	< 8.0	8.0	ug/kg	
Heptachlor epoxide	< 8.0	8.0	ug/kg	
Methoxychlor	< 80.0	80.0	ug/kg	

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Analytical Report

Client:	LEVINE FRICKE	**Date Collected:**	08/17/05
Project ID:	009-07992-00-001; P.O. #06815	**Time Collected:**	9:00
Sample ID:	BP6	**Date Received:**	08/17/05
Sample No:	5-2529-005	**Date Reported:**	08/24/05

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Pesticides/PCBs Analysis Date: 08/22/05	**Method: 8081A/8082**		**Preparation Method 3540C** Preparation Date: 08/18/05		
Toxaphene		< 160	160	ug/kg	
pH @ 25°C, 1:10 Analysis Date: 08/18/05	**Method: 4500H+B**				
pH @ 25°C, 1:10		9.23		Units	

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Analytical Report

Client:	LEVINE FRICKE	**Date Collected:**	08/17/05
Project ID:	009-07992-00-001; P.O. #06815	**Time Collected:**	9:30
Sample ID:	BP7	**Date Received:**	08/17/05
Sample No:	5-2529-006	**Date Reported:**	08/24/05

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Solids, Total	**Method: 160.3**				
Analysis Date: 08/17/05					
Total Solids		85.19		%	
Antimony		< 1.0	1.0	mg/kg	
Arsenic		0.9	0.2	mg/kg	
Barium		5.9	0.1	mg/kg	
Cadmium		0.1	0.1	mg/kg	
Chromium		11.2	0.1	mg/kg	
Lead		2.9	0.2	mg/kg	
Selenium		< 0.2	0.2	mg/kg	
Silver		< 0.1	0.1	mg/kg	
Total Metals	**Method: 7470A**				
Analysis Date: 08/19/05					
Mercury		< 0.05	0.05	mg/kg	
Acetone		< 100	100	ug/kg	
Benzene		< 5.0	5.0	ug/kg	
Bromodichloromethane		< 5.0	5.0	ug/kg	
Bromoform		< 5.0	5.0	ug/kg	
Bromomethane		< 10.0	10.0	ug/kg	
2-Butanone (MEK)		< 10.0	10.0	ug/kg	
Carbon disulfide		< 5.0	5.0	ug/kg	
Carbon tetrachloride		< 5.0	5.0	ug/kg	
Chlorobenzene		< 5.0	5.0	ug/kg	
Chlorodibromomethane		< 5.0	5.0	ug/kg	
Chloroethane		< 10.0	10.0	ug/kg	
Chloroform		< 5.0	5.0	ug/kg	
Chloromethane		< 10.0	10.0	ug/kg	
1,1-Dichloroethane		< 5.0	5.0	ug/kg	
1,2-Dichloroethane		< 5.0	5.0	ug/kg	
1,1-Dichloroethene		< 5.0	5.0	ug/kg	
cis-1,2-Dichloroethene		< 5.0	5.0	ug/kg	
trans-1,2-Dichloroethene		< 5.0	5.0	ug/kg	
1,2-Dichloropropane		< 5.0	5.0	ug/kg	
cis-1,3-Dichloropropene		< 5.0	5.0	ug/kg	
trans-1,3-Dichloropropene		< 5.0	5.0	ug/kg	
Ethylbenzene		< 5.0	5.0	ug/kg	
2-Hexanone		< 10.0	10.0	ug/kg	
Methyl-tert-butylether (MTBE)		< 5.0	5.0	ug/kg	

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Analytical Report

Client: LEVINE FRICKE
Project ID: 009-07992-00-001; P.O. #06815
Sample ID: BP7
Sample No: 5-2529-006

Date Collected: 08/17/05
Time Collected: 9:30
Date Received: 08/17/05
Date Reported: 08/24/05

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Total Metals	**Method: 7470A**				
Analysis Date: 08/19/05					
4-Methyl-2-pentanone (MIBK)		< 10.0	10.0	ug/kg	
Methylene chloride		< 5.0	5.0	ug/kg	
Styrene		< 5.0	5.0	ug/kg	
1,1,2,2-Tetrachloroethane		< 5.0	5.0	ug/kg	
Tetrachloroethene		< 5.0	5.0	ug/kg	
Toluene		8.6	5.0	ug/kg	
1,1,1-Trichloroethane		< 5.0	5.0	ug/kg	
1,1,2-Trichloroethane		< 5.0	5.0	ug/kg	
Trichloroethene		< 5.0	5.0	ug/kg	
Vinyl acetate		< 10.0	10.0	ug/kg	
Vinyl chloride		< 10.0	10.0	ug/kg	
Xylene, Total		< 5.0	5.0	ug/kg	
Semi-Volatile Compounds	**Method: 8270C**	**Preparation Method 3540C**			
Analysis Date: 08/22/05		Preparation Date: 08/21/05			
Acenaphthylene		< 330	330	ug/kg	
Anthracene		< 330	330	ug/kg	
Benzidine		< 330	330	ug/kg	
Benzo(a)anthracene		< 330	330	ug/kg	
Benzo(a)pyrene		< 90	90	ug/kg	
Benzo(b)fluoranthene		< 330	330	ug/kg	
Benzo(ghi)perylene		< 330	330	ug/kg	
Benzo(k)fluoranthene		< 330	330	ug/kg	
Benzoic acid		< 330	330	ug/kg	
Benzyl alcohol		< 330	330	ug/kg	
4-Bromophenyl phenyl ether		< 330	330	ug/kg	
Butyl benzyl phthalate		< 330	330	ug/kg	
Carbazole		< 330	330	ug/kg	
4-Chloroaniline		< 330	330	ug/kg	
bis(2-Chloroethoxy)methane		< 330	330	ug/kg	
bis(2-Chloroethyl)ether		< 330	330	ug/kg	
bis(2-Chloroisopropyl)ether		< 330	330	ug/kg	
4-Chloro-3-methylphenol		< 330	330	ug/kg	
2-Chloronaphthalene		< 330	330	ug/kg	
2-Chlorophenol		< 330	330	ug/kg	
4-Chlorophenyl phenyl ether		< 330	330	ug/kg	
Chrysene		< 330	330	ug/kg	

First Environmental Laboratories, Inc.
1600 Shore Road • Naperville, Illinois 60563 • Phone (630) 778-1200 • Fax (630) 778-1233
IL ELAP / NELAC Accreditation # 100292

Analytical Report

Client:	LEVINE FRICKE	**Date Collected:**	08/17/05
Project ID:	009-07992-00-001; P.O. #06815	**Time Collected:**	9:30
Sample ID:	BP7	**Date Received:**	08/17/05
Sample No:	5-2529-006	**Date Reported:**	08/24/05

Results are reported on a dry weight basis.

Semi-Volatile Compounds — **Method: 8270C** — **Preparation Method 3540C**
Analysis Date: 08/22/05 — Preparation Date: 08/21/05

Analyte	Result	R.L.	Units	Flags
Dibenzo(a,h)anthracene	< 90	90	ug/kg	
Dibenzofuran	< 330	330	ug/kg	
Di-n-butyl phthalate	< 330	330	ug/kg	
1,2-Dichlorobenzene	< 330	330	ug/kg	
1,3-Dichlorobenzene	< 330	330	ug/kg	
1,4-Dichlorobenzene	< 330	330	ug/kg	
3,3'-Dichlorobenzidine	< 660	660	ug/kg	
2,4-Dichlorophenol	< 330	330	ug/kg	
Diethyl phthalate	< 330	330	ug/kg	
2,4-Dimethylphenol	< 330	330	ug/kg	
Dimethyl phthalate	< 330	330	ug/kg	
2,4-Dinitrophenol	< 1,600	1600	ug/kg	
2,4-Dinitrotoluene	< 250	250	ug/kg	
2,6-Dinitrotoluene	< 260	260	ug/kg	
Di-n-octylphthalate	< 330	330	ug/kg	
bis(2-Ethylhexyl)phthalate	< 330	330	ug/kg	
Fluoranthene	< 330	330	ug/kg	
Fluorene	< 330	330	ug/kg	
Hexachlorobenzene	< 330	330	ug/kg	
Hexachlorobutadiene	< 330	330	ug/kg	
Hexachlorocyclopentadiene	< 330	330	ug/kg	
Hexachloroethane	< 330	330	ug/kg	
Indeno(1,2,3-cd)pyrene	< 330	330	ug/kg	
Isophorone	< 330	330	ug/kg	
2-Methylnaphthalene	< 330	330	ug/kg	
2-Methylphenol	< 330	330	ug/kg	
3 & 4-Methylphenol	< 330	330	ug/kg	
Naphthalene	< 330	330	ug/kg	
2-Nitroaniline	< 1,600	1600	ug/kg	
3-Nitroaniline	< 1,600	1600	ug/kg	
4-Nitroaniline	< 1,600	1600	ug/kg	
Nitrobenzene	< 260	260	ug/kg	
2-Nitrophenol	< 1,600	1600	ug/kg	
4-Nitrophenol	< 1,600	1600	ug/kg	
n-Nitrosodiphenylamine	< 330	330	ug/kg	
n-Nitrosodi-n-propylamine	< 330	330	ug/kg	

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Analytical Report

Client:	LEVINE FRICKE	**Date Collected:**	08/17/05
Project ID:	009-07992-00-001; P.O. #06815	**Time Collected:**	9:30
Sample ID:	BP7	**Date Received:**	08/17/05
Sample No:	5-2529-006	**Date Reported:**	08/24/05

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Semi-Volatile Compounds — **Method: 8270C** — **Preparation Method 3540C**				
Analysis Date: 08/22/05 — Preparation Date: 08/21/05				
Pentachlorophenol	< 330	330	ug/kg	
Phenanthrene	< 330	330	ug/kg	
Phenol	< 330	330	ug/kg	
Pyrene	< 330	330	ug/kg	
1,2,4-Trichlorobenzene	< 330	330	ug/kg	
2,4,5-Trichlorophenol	< 330	330	ug/kg	
2,4,6-Trichlorophenol	< 330	330	ug/kg	
Pesticides/PCBs — **Method: 8081A/8082** — **Preparation Method 3540C**				
Analysis Date: 08/22/05 — Preparation Date: 08/18/05				
Aldrin	< 8.0	8.0	ug/kg	
Aroclor 1016	< 80.0	80.0	ug/kg	
Aroclor 1221	< 80.0	80.0	ug/kg	
Aroclor 1232	< 80.0	80.0	ug/kg	
Aroclor 1242	< 80.0	80.0	ug/kg	
Aroclor 1248	< 80.0	80.0	ug/kg	
Aroclor 1254	< 160	160	ug/kg	
Aroclor 1260	< 160	160	ug/kg	
alpha-BHC	< 2.0	2.0	ug/kg	
beta-BHC	< 8.0	8.0	ug/kg	
delta-BHC	< 8.0	8.0	ug/kg	
gamma-BHC (Lindane)	< 8.0	8.0	ug/kg	
alpha-Chlordane	< 80.0	80.0	ug/kg	
gamma-Chlordane	< 80.0	80.0	ug/kg	
4,4'-DDD	< 16.0	16.0	ug/kg	
4,4'-DDE	< 16.0	16.0	ug/kg	
4,4'-DDT	< 16.0	16.0	ug/kg	
Dieldrin	< 16.0	16.0	ug/kg	
Endosulfan I	< 8.0	8.0	ug/kg	
Endosulfan II	< 16.0	16.0	ug/kg	
Endosulfan sulfate	< 16.0	16.0	ug/kg	
Endrin	< 16.0	16.0	ug/kg	
Endrin aldehyde	< 16.0	16.0	ug/kg	
Endrin ketone	< 16.0	16.0	ug/kg	
Heptachlor	< 8.0	8.0	ug/kg	
Heptachlor epoxide	< 8.0	8.0	ug/kg	
Methoxychlor	< 80.0	80.0	ug/kg	

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IL ELAP / NELAC Accreditation # 100292

Analytical Report

Client:	LEVINE FRICKE	**Date Collected:**	08/17/05
Project ID:	009-07992-00-001; P.O. #06815	**Time Collected:**	9:30
Sample ID:	BP7	**Date Received:**	08/17/05
Sample No:	5-2529-006	**Date Reported:**	08/24/05

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Pesticides/PCBs Analysis Date: 08/22/05	**Method: 8081A/8082**	**Preparation Method 3540C** Preparation Date: 08/18/05			
Toxaphene		< 160	160	ug/kg	
pH @ 25°C, 1:10 Analysis Date: 08/18/05	**Method: 4500H+B**				
pH @ 25°C, 1:10		9.23		Units	

CHAIN OF CUSTODY RECORD

First Environmental Laboratories, Inc.

First Environmental Laboratories
1600 Shore Road, Suite D
Naperville, Illinois 60563
Phone: (630) 778-1200 • Fax: (630) 778-1233
24 Hr. Pager (708) 569-7507
E-mail: info@firstenv.com
IEPA Certification# 100292

Company Name: LFR Levine Fricke
Street Address: 630 Tollgate Rd, Suite D
City: Elgin State: IL Zip: 60123
Phone: 847 695 8855 Fax: 847 695 7799
Send Report To: William Bow
Sampled By: John Chitwood

Project I.D.: 009-07992-00-001
P.O. #: 06815

Matrix Codes: S = Soil W = Water O = Other

Date/Time Taken	Sample Description	Matrix	VOCs 8260	SVOCs 8270	RCRA metals	Antimony	pH	Pest 8081A	PCB 8082		Comments	Lab I.D.
8/17 08:00	BP2	S	X	X	X	X	X	X	X			5?529-001
8/17 08:20	BP3	S	X	X	X	X	X	X	X			002
8/17 08:40	BP4	S	X	X	X	X	X	X	X			003
8/17 08:50	BP5	S	X	X	X	X	X	X	X			004
8/17 09:00	BP6	S	X	X	X	X	X	X	X			005
8/17 09:30	BP7	S	X	X	X	X	X	X	X			006

FOR LAB USE ONLY:

Cooler Temperature: 0.1-6ºC Yes__ No. ✓ 16 ºC
Received within 6 hrs. of collection: __✓__
Ice Present: Yes ✓ No__

Sample Refrigerated: Yes__ No__
Refrigerator Temperature: ____ ºC
5035 Vials Frozen: Yes__ No__
Freezer Temperature: ____ ºC

Containers Received Preserved: ___
Preserved in Lab: ___

Notes and Special Instructions: Metals analysis is for Total concentration. All samples 5-day TAT

Relinquished By: John Chitwood Date/Time 8/17/05 1245 Received By: L. Franklin Date/Time 8/17/05 1245
Relinquished By: ____ Date/Time ____ Received By: ____ Date/Time ____

Rev. 10/04

EMSL Analytical, Inc.
107 Haddon Ave., Westmont, NJ 08108
Phone: (856) 858-4800 Fax: (856) 858-4960 Email: ssiegel@EMSL.com

Attn: **John Chitwood**
LFR Levine Fricke
630 Tollgate Rd.
Suite D
Elgin, IL 60123

Fax: (847) 695-7799 Phone: (847) 695-8855
Project: **009-07992-00-001**

Customer ID: LEVI93
Customer PO: 08780
Received: 08/18/05 10:18 AM
EMSL Order: 040515950

EMSL Proj:
Analysis Date: 8/22/2005
Report Date: 8/22/2005

Qualitative asbestos analysis of soils using the EPA 600/R-93/116 method

Sample	Location	Appearance	Result	Notes
BP2 *040515950-0001*			**None Detected**	
BP3 *040515950-0002*			**None Detected**	
BP4 *040515950-0003*			**None Detected**	
BP5 *040515950-0004*			**None Detected**	
BP6 *040515950-0005*			**None Detected**	
BP7 *040515950-0006*			**None Detected**	

Analyst(s)

Delores Beard (6)

Stephen Siegel

Stephen Siegel, CIH
or other approved signatory

EMSL Analytical, Inc.

107 Haddon Avenue, Westmont, NJ 08108 Phone: 800-220-3675 Fax:856-858-4960

Client: LFR Levine Fricke
630 Tollgate Rd.
Suite D
Elgin, IL 60123

EMSL Reference: 040515950

Attention: John Chitwood
Fax: 847-695-7799 **Phone:**847-695-8855
Project: 009-07992-00-001

Date Received: 08/18/05
Date Analyzed: 08/19/05
Date Reported: 08/22/05

Asbestos Analysis of Soil via EPA 600/R-93/116 Method Utilizing Analytical Electron Microscopy (Section 2.5) with CARB 435 Prep (Milling) Level C for 0.01% Target Analytical Sensitivity

Client Sample ID	*EMSL Sample ID*	*Asbestos Type(s)*	*# of Asbestos Structures Detected*	*Analytical Sensitivity %*	*Asbestos Weight %*	*Comments*
BP5	040515950-00007	None Detected	0	0.01	**<0.01**	

Debbie Little
Analyst

Stephen Siegel, CIH or Approved EMSL Signatory

040515950

Chain of Custody

Asbestos Lab Services

EMSL Analytical, Inc.
107 Haddon Avenue
Westmont, NJ 08108

Phone: (856) 858-4800
Fax: (856) 858-4960
(856) 427-1608
http://www.emsl.com

Please print all information legibly.

PLM and

LEV 93

Company:	LFR Levine Fricke	*Bill To:*	LFR Levine Fricke
Address1:	630 Tollgate Road	*Address1:*	630 Tollgate Road
Address2:	Suite D	*Address2:*	Suite D
City, State:	Elgin, IL	*City, State:*	Elgin, IL
Zip/Post Code:	60123	*Zip/Post Code:*	60123
Country:		*Country:*	
Contact Name:	John Chitwood	***Attn:***	Wendy Krahn
Phone:	847 695 8855 x104	*Phone:*	(847) 695-8855 x11
Fax:	847 695 7799	*Fax:*	847 695 7799
Email:		*Email:*	wendy.krahn@lfr.com
EMSL Rep:	Steve Siegel	***P.O. Number:***	08780
Project Name/Number: 009-07992-00-001			

MATRIX			**TURNAROUND**			
☐ Air	☒ Soil	☐ Micro-Vac	☐ 3 Hours	☐ 6 Hours	☐ Same Day or 12 Hours*	☐ 24 Hours (1 day)
☐ Bulk	☐ Drinking Water		☐ 48 Hours (2 days)	☐ 72 Hours (3 days)	☐ 96 Hours (4 days)	☒ 120 Hours (5 days)
☐ Wipe	☐ Wastewater		☐ 144+ hours (6-10 days)			

TEM AIR, 3 hours, 6 hours, Please call ahead to schedule. There is a premium charge for 3-hour tat, please call 1-800-220-3675 for price prior to sending samples. You will be asked to sign an authorization form for this service.

***12 hours (must arrive by 11:00a.m. Mon -Fri.), Please Refer to Price Quote**

SAMPLES ACCEPTED FOR ANALYSIS BY EMSL ANALYTICAL INC.

PCM - Air
- ☐ NIOSH 7400(A) Issue 2: August 1994
- ☐ OSHA w/TWA
- ☐ Other:

TEM Air
- ☐ AHERA 40 CFR, Part 763 Subpart E
- ☐ NIOSH 7402
- ☐ EPA Level II

TEM WATER
- ☐ EPA 100.1
- ☐ EPA 100.2
- ☐ NYS 198.2

PLM - Bulk
- ☐ EPA 600/R-93/116
- ☐ EPA Point Count
- ☐ NY Stratified Point Count
- ☐ PLM NOB (Gravimetric) NYS 198.1
- ☐ NIOSH 9002:
- ☐ EMSL Standard Addition:

TEM BULK
- ☐ Drop Mount (Qualitative)
- ☐ Chatfield SOP - 1988-02
- ☐ TEM NOB (Gravimetric) NYS 198.4
- ☐ EMSL Standard Addition:

TEM Microvac/Wipe
- ☐ ASTM D 5755-95 (quantative method)
- ☐ Wipe Qualitative

XRD
- ☐ Asbestos
- ☐ Silica NIOSH 7500

SEM Air or Bulk
- ☐ Qualitative
- ☐ Quantitative

PLM Soil
- ☒ EPA Protocol Qualitative — as specified on page 2
- ☐ EPA Protocol Quantitative
- ☐ EMSL MSD 9000 Method fibers/gram

OTHER
- ☒ Carb 435C

RECEIVED EMSL WESTMONT, NJ 05 AUG 18 AM 10:

Chain of Custody

Asbestos Lab Services

EMSL Analytical, Inc.
107 Haddon Avenue
Westmont, NJ 08108

Phone: (856) 858-4800
Fax: (856) 858-4960
(856) 427-1608
http://www.emsl.com

Please print all information legibly.

Client Sample # (s) BP2 - BP7 **Total Samples #:** 6

Relinquished: [signature] **Date:** 8/17/05 **Time:** 1400 FedEx

Received: [signature] **Date:** **Time:**

Relinquished: **Date:** **Time:**

Received: **Date:** **Time:**

SAMPLE NUMBER	SAMPLE DESCRIPTION/LOCATION	VOLUME (if applicable)
BP2	Sand PLM	Bags around 4oz each
BP3	Sand PLM	
BP4	Sand PLM	
BP5	Sand PLM and CARB 435C	
BP6	Sand PLM	
BP7	Sand PLM	

SAMPLES ACCEPTED FOR ANALYSIS BY EMSL ANALYTICAL INC.

RECEIVED EMSL WESTMONT, N.J. 05 AUG 18 AM 8:18

First Environmental Laboratories, Inc.
1600 Shore Road • Naperville, Illinois 60563 • Phone (630) 778-1200 • Fax (630) 778-1233
IL ELAP / NELAC Accreditation # 100292

August 25, 2005

Ms. Wendy Krahn
LEVINE FRICKE
630 Tollgate Rd., Suite D
Elgin, IL 60123

Project ID: 009-07992-00-001 P.O. # 06815
First Environmental File ID: 5-2613
Date Received: August 22, 2005

Dear Ms. Wendy Krahn:

The above referenced project was analyzed as directed on the enclosed chain of custody record.

All analyses were performed in accordance with established methods and within established holding times. All Quality Control criteria as outlined in the methods and current IL ELAP/NELAP have been met unless otherwise noted. QA/QC documentation and raw data will remain on file for future reference. Our certificate is number 001201: 02/17/05 through 02/28/06.

I thank you for the opportunity to be of service to you and look forward to working with you again in the future. Should you have any questions regarding any of the enclosed analytical data or need additional information, please contact me at (630) 778-1200.

Sincerely,

William Mottashed
Project Manager

First Environmental Laboratories, Inc.
1600 Shore Road • Naperville, Illinois 60563 • Phone (630) 778-1200 • Fax (630) 778-1233
IL ELAP / NELAC Accreditation # 100292

Analytical Report

Client: LEVINE FRICKE
Project ID: 009-07992-00-001 P.O. # 06815
Sample ID: BP 3 (0.5)
Sample No: 5-2613-001

Date Collected: 08/22/05
Time Collected: 12:55
Date Received: 08/22/05
Date Reported: 08/25/05

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Solids, Total	**Method: 160.3**				
Analysis Date: 08/23/05					
Total Solids		90.62		%	
Volatile Organic Compounds	**Method: 5035A/8260B**				
Analysis Date: 08/24/05					
Acetone		< 100	100	ug/kg	
Benzene		< 5.0	5.0	ug/kg	
Bromodichloromethane		< 5.0	5.0	ug/kg	
Bromoform		< 5.0	5.0	ug/kg	
Bromomethane		< 10.0	10.0	ug/kg	
2-Butanone (MEK)		< 10.0	10.0	ug/kg	
Carbon disulfide		< 5.0	5.0	ug/kg	
Carbon tetrachloride		< 5.0	5.0	ug/kg	
Chlorobenzene		< 5.0	5.0	ug/kg	
Chlorodibromomethane		< 5.0	5.0	ug/kg	
Chloroethane		< 10.0	10.0	ug/kg	
Chloroform		< 5.0	5.0	ug/kg	
Chloromethane		< 10.0	10.0	ug/kg	
1,1-Dichloroethane		< 5.0	5.0	ug/kg	
1,2-Dichloroethane		< 5.0	5.0	ug/kg	
1,1-Dichloroethene		< 5.0	5.0	ug/kg	
cis-1,2-Dichloroethene		< 5.0	5.0	ug/kg	
trans-1,2-Dichloroethene		< 5.0	5.0	ug/kg	
1,2-Dichloropropane		< 5.0	5.0	ug/kg	
cis-1,3-Dichloropropene		< 5.0	5.0	ug/kg	
trans-1,3-Dichloropropene		< 5.0	5.0	ug/kg	
Ethylbenzene		< 5.0	5.0	ug/kg	
2-Hexanone		< 10.0	10.0	ug/kg	
Methyl-tert-butylether (MTBE)		< 5.0	5.0	ug/kg	
4-Methyl-2-pentanone (MIBK)		< 10.0	10.0	ug/kg	
Methylene chloride		< 5.0	5.0	ug/kg	
Styrene		< 5.0	5.0	ug/kg	
1,1,2,2-Tetrachloroethane		< 5.0	5.0	ug/kg	
Tetrachloroethene		< 5.0	5.0	ug/kg	
Toluene		< 5.0	5.0	ug/kg	
1,1,1-Trichloroethane		< 5.0	5.0	ug/kg	
1,1,2-Trichloroethane		< 5.0	5.0	ug/kg	
Trichloroethene		< 5.0	5.0	ug/kg	

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Analytical Report

Client:	LEVINE FRICKE	**Date Collected:**	08/22/05
Project ID:	009-07992-00-001 P.O. # 06815	**Time Collected:**	12:55
Sample ID:	BP 3 (0.5)	**Date Received:**	08/22/05
Sample No:	5-2613-001	**Date Reported:**	08/25/05

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Volatile Organic Compounds **Method: 5035A/8260B**				
Analysis Date: 08/24/05				
Vinyl acetate	< 10.0	10.0	ug/kg	
Vinyl chloride	< 10.0	10.0	ug/kg	
Xylene, Total	< 5.0	5.0	ug/kg	
Semi-Volatile Compounds **Method: 8270C**		**Preparation Method 3540C**		
Analysis Date: 08/24/05		Preparation Date: 08/23/05		
Acenaphthene	< 330	330	ug/kg	
Acenaphthylene	< 330	330	ug/kg	
Anthracene	< 330	330	ug/kg	
Benzidine	< 330	330	ug/kg	
Benzo(a)anthracene	< 330	330	ug/kg	
Benzo(a)pyrene	< 90	90	ug/kg	
Benzo(b)fluoranthene	< 330	330	ug/kg	
Benzo(k)fluoranthene	< 330	330	ug/kg	
Benzo(ghi)perylene	< 330	330	ug/kg	
Benzoic acid	< 330	330	ug/kg	
Benzyl alcohol	< 330	330	ug/kg	
bis(2-Chloroethoxy)methane	< 330	330	ug/kg	
bis(2-Chloroethyl)ether	< 330	330	ug/kg	
bis(2-Chloroisopropyl)ether	< 330	330	ug/kg	
bis(2-Ethylhexyl)phthalate	< 330	330	ug/kg	
4-Bromophenyl phenyl ether	< 330	330	ug/kg	
Butyl benzyl phthalate	< 330	330	ug/kg	
Carbazole	< 330	330	ug/kg	
4-Chloroaniline	< 330	330	ug/kg	
4-Chloro-3-methylphenol	< 330	330	ug/kg	
2-Chloronaphthalene	< 330	330	ug/kg	
2-Chlorophenol	< 330	330	ug/kg	
4-Chlorophenyl phenyl ether	< 330	330	ug/kg	
Chrysene	< 330	330	ug/kg	
Di-n-butyl phthalate	< 330	330	ug/kg	
Di-n-octylphthalate	< 330	330	ug/kg	
Dibenzo(a,h)anthracene	< 90	90	ug/kg	
Dibenzofuran	< 330	330	ug/kg	
1,2-Dichlorobenzene	< 330	330	ug/kg	
1,3-Dichlorobenzene	< 330	330	ug/kg	
1,4-Dichlorobenzene	< 330	330	ug/kg	

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IL ELAP / NELAC Accreditation # 100292

Analytical Report

Client: LEVINE FRICKE
Project ID: 009-07992-00-001 P.O. # 06815
Sample ID: BP 3 (0.5)
Sample No: 5-2613-001

Date Collected: 08/22/05
Time Collected: 12:55
Date Received: 08/22/05
Date Reported: 08/25/05

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Semi-Volatile Compounds **Method: 8270C**		**Preparation Method 3540C**		
Analysis Date: 08/24/05		Preparation Date: 08/23/05		
3,3'-Dichlorobenzidine	< 660	660	ug/kg	
2,4-Dichlorophenol	< 330	330	ug/kg	
Diethyl phthalate	< 330	330	ug/kg	
2,4-Dimethylphenol	< 330	330	ug/kg	
Dimethyl phthalate	< 330	330	ug/kg	
4,6-Dinitro-2-methylphenol	< 1,600	1600	ug/kg	
2,4-Dinitrophenol	< 1,600	1600	ug/kg	
2,4-Dinitrotoluene	< 250	250	ug/kg	
2,6-Dinitrotoluene	< 260	260	ug/kg	
Fluoranthene	< 330	330	ug/kg	
Fluorene	< 330	330	ug/kg	
Hexachlorobenzene	< 330	330	ug/kg	
Hexachlorobutadiene	< 330	330	ug/kg	
Hexachlorocyclopentadiene	< 330	330	ug/kg	
Hexachloroethane	< 330	330	ug/kg	
Indeno(1,2,3-cd)pyrene	< 330	330	ug/kg	
Isophorone	< 330	330	ug/kg	
2-Methylnaphthalene	< 330	330	ug/kg	
2-Methylphenol	< 330	330	ug/kg	
3 & 4-Methylphenol	< 330	330	ug/kg	
Naphthalene	< 330	330	ug/kg	
2-Nitroaniline	< 1,600	1600	ug/kg	
3-Nitroaniline	< 1,600	1600	ug/kg	
4-Nitroaniline	< 1,600	1600	ug/kg	
Nitrobenzene	< 260	260	ug/kg	
2-Nitrophenol	< 1,600	1600	ug/kg	
4-Nitrophenol	< 1,600	1600	ug/kg	
n-Nitrosodi-n-propylamine	< 330	330	ug/kg	
n-Nitrosodimethylamine	< 330	330	ug/kg	
n-Nitrosodiphenylamine	< 330	330	ug/kg	
Pentachlorophenol	< 330	330	ug/kg	
Phenanthrene	< 330	330	ug/kg	
Phenol	< 330	330	ug/kg	
Pyrene	< 330	330	ug/kg	
Pyridine	< 330	330	ug/kg	
1,2,4-Trichlorobenzene	< 330	330	ug/kg	

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IL ELAP / NELAC Accreditation # 100292

Analytical Report

Client: LEVINE FRICKE
Project ID: 009-07992-00-001 P.O. # 06815
Sample ID: BP 3 (0.5)
Sample No: 5-2613-001

Date Collected: 08/22/05
Time Collected: 12:55
Date Received: 08/22/05
Date Reported: 08/25/05

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Semi-Volatile Compounds — **Method: 8270C** — **Preparation Method 3540C**				
Analysis Date: 08/24/05 — Preparation Date: 08/23/05				
2,4,5-Trichlorophenol	< 330	330	ug/kg	
2,4,6-Trichlorophenol	< 330	330	ug/kg	
Pesticides/PCBs — **Method: 8081A/8082** — **Preparation Method 3540C**				
Analysis Date: 08/24/05 — Preparation Date: 08/23/05				
Aldrin	< 8.0	8.0	ug/kg	
Aroclor 1016	< 80.0	80.0	ug/kg	
Aroclor 1221	< 80.0	80.0	ug/kg	
Aroclor 1232	< 80.0	80.0	ug/kg	
Aroclor 1242	< 80.0	80.0	ug/kg	
Aroclor 1248	< 80.0	80.0	ug/kg	
Aroclor 1254	< 160	160	ug/kg	
Aroclor 1260	< 160	160	ug/kg	
alpha-BHC	< 2.0	2.0	ug/kg	
beta-BHC	< 8.0	8.0	ug/kg	
delta-BHC	< 8.0	8.0	ug/kg	
gamma-BHC (Lindane)	< 8.0	8.0	ug/kg	
alpha-Chlordane	< 80.0	80.0	ug/kg	
gamma-Chlordane	< 80.0	80.0	ug/kg	
4,4'-DDD	< 16.0	16.0	ug/kg	
4,4'-DDE	< 16.0	16.0	ug/kg	
4,4'-DDT	< 16.0	16.0	ug/kg	
Dieldrin	< 16.0	16.0	ug/kg	
Endosulfan I	< 8.0	8.0	ug/kg	
Endosulfan II	< 16.0	16.0	ug/kg	
Endosulfan sulfate	< 16.0	16.0	ug/kg	
Endrin	< 16.0	16.0	ug/kg	
Endrin aldehyde	< 16.0	16.0	ug/kg	
Endrin ketone	< 16.0	16.0	ug/kg	
Heptachlor	< 8.0	8.0	ug/kg	
Heptachlor epoxide	< 8.0	8.0	ug/kg	
Methoxychlor	< 80.0	80.0	ug/kg	
Toxaphene	< 160	160	ug/kg	

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IL ELAP / NELAC Accreditation # 100292

Analytical Report

Client:	LEVINE FRICKE	**Date Collected:**	08/22/05
Project ID:	009-07992-00-001 P.O. # 06815	**Time Collected:**	12:55
Sample ID:	BP 3 (0.5)	**Date Received:**	08/22/05
Sample No:	5-2613-001	**Date Reported:**	08/25/05

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Total Metals	**Method: 7470A**				
Analysis Date: 08/23/05					
Mercury		< 0.05	0.05	mg/kg	
Total Metals	**Method: 6010B**		**Preparation Method 3050B**		
Analysis Date: 08/24/05			Preparation Date: 08/23/05		
Arsenic		0.9	0.2	mg/kg	
Barium		3.3	0.1	mg/kg	
Cadmium		< 0.1	0.1	mg/kg	
Chromium		2.5	0.1	mg/kg	
Lead		1.3	0.2	mg/kg	
Selenium		< 0.2	0.2	mg/kg	
Silver		< 0.1	0.1	mg/kg	
Antimony		< 1.0	1.0	mg/kg	
pH @ 25°C, 1:10	**Method: 4500H+B**				
Analysis Date: 08/23/05					
pH @ 25°C, 1:10		8.83		Units	

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IL ELAP / NELAC Accreditation # 100292

Analytical Report

Client: LEVINE FRICKE
Project ID: 009-07992-00-001 P.O. # 06815
Sample ID: BP 6 (0.5)
Sample No: 5-2613-002

Date Collected: 08/22/05
Time Collected: 13:05
Date Received: 08/22/05
Date Reported: 08/25/05

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Solids, Total	**Method: 160.3**				
Analysis Date: 08/23/05					
Total Solids		85.45		%	
Volatile Organic Compounds	**Method: 5035A/8260B**				
Analysis Date: 08/24/05					
Acetone		< 100	100	ug/kg	
Benzene		< 5.0	5.0	ug/kg	
Bromodichloromethane		< 5.0	5.0	ug/kg	
Bromoform		< 5.0	5.0	ug/kg	
Bromomethane		< 10.0	10.0	ug/kg	
2-Butanone (MEK)		< 10.0	10.0	ug/kg	
Carbon disulfide		< 5.0	5.0	ug/kg	
Carbon tetrachloride		< 5.0	5.0	ug/kg	
Chlorobenzene		< 5.0	5.0	ug/kg	
Chlorodibromomethane		< 5.0	5.0	ug/kg	
Chloroethane		< 10.0	10.0	ug/kg	
Chloroform		< 5.0	5.0	ug/kg	
Chloromethane		< 10.0	10.0	ug/kg	
1,1-Dichloroethane		< 5.0	5.0	ug/kg	
1,2-Dichloroethane		< 5.0	5.0	ug/kg	
1,1-Dichloroethene		< 5.0	5.0	ug/kg	
cis-1,2-Dichloroethene		< 5.0	5.0	ug/kg	
trans-1,2-Dichloroethene		< 5.0	5.0	ug/kg	
1,2-Dichloropropane		< 5.0	5.0	ug/kg	
cis-1,3-Dichloropropene		< 5.0	5.0	ug/kg	
trans-1,3-Dichloropropene		< 5.0	5.0	ug/kg	
Ethylbenzene		< 5.0	5.0	ug/kg	
2-Hexanone		< 10.0	10.0	ug/kg	
Methyl-tert-butylether (MTBE)		< 5.0	5.0	ug/kg	
4-Methyl-2-pentanone (MIBK)		< 10.0	10.0	ug/kg	
Methylene chloride		< 5.0	5.0	ug/kg	
Styrene		< 5.0	5.0	ug/kg	
1,1,2,2-Tetrachloroethane		< 5.0	5.0	ug/kg	
Tetrachloroethene		< 5.0	5.0	ug/kg	
Toluene		< 5.0	5.0	ug/kg	
1,1,1-Trichloroethane		< 5.0	5.0	ug/kg	
1,1,2-Trichloroethane		< 5.0	5.0	ug/kg	
Trichloroethene		< 5.0	5.0	ug/kg	

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IL ELAP / NELAC Accreditation # 100292

Analytical Report

Client:	LEVINE FRICKE	**Date Collected:**	08/22/05
Project ID:	009-07992-00-001 P.O. # 06815	**Time Collected:**	13:05
Sample ID:	BP 6 (0.5)	**Date Received:**	08/22/05
Sample No:	5-2613-002	**Date Reported:**	08/25/05

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Volatile Organic Compounds — **Method: 5035A/8260B**				
Analysis Date: 08/24/05				
Vinyl acetate	< 10.0	10.0	ug/kg	
Vinyl chloride	< 10.0	10.0	ug/kg	
Xylene, Total	< 5.0	5.0	ug/kg	
Semi-Volatile Compounds — **Method: 8270C**		**Preparation Method 3540C**		
Analysis Date: 08/24/05		Preparation Date: 08/23/05		
Acenaphthene	< 330	330	ug/kg	
Acenaphthylene	< 330	330	ug/kg	
Anthracene	< 330	330	ug/kg	
Benzidine	< 330	330	ug/kg	
Benzo(a)anthracene	< 330	330	ug/kg	
Benzo(a)pyrene	< 90	90	ug/kg	
Benzo(b)fluoranthene	< 330	330	ug/kg	
Benzo(k)fluoranthene	< 330	330	ug/kg	
Benzo(ghi)perylene	< 330	330	ug/kg	
Benzoic acid	< 330	330	ug/kg	
Benzyl alcohol	< 330	330	ug/kg	
bis(2-Chloroethoxy)methane	< 330	330	ug/kg	
bis(2-Chloroethyl)ether	< 330	330	ug/kg	
bis(2-Chloroisopropyl)ether	< 330	330	ug/kg	
bis(2-Ethylhexyl)phthalate	< 330	330	ug/kg	
4-Bromophenyl phenyl ether	< 330	330	ug/kg	
Butyl benzyl phthalate	< 330	330	ug/kg	
Carbazole	< 330	330	ug/kg	
4-Chloroaniline	< 330	330	ug/kg	
4-Chloro-3-methylphenol	< 330	330	ug/kg	
2-Chloronaphthalene	< 330	330	ug/kg	
2-Chlorophenol	< 330	330	ug/kg	
4-Chlorophenyl phenyl ether	< 330	330	ug/kg	
Chrysene	< 330	330	ug/kg	
Di-n-butyl phthalate	< 330	330	ug/kg	
Di-n-octylphthalate	< 330	330	ug/kg	
Dibenzo(a,h)anthracene	< 90	90	ug/kg	
Dibenzofuran	< 330	330	ug/kg	
1,2-Dichlorobenzene	< 330	330	ug/kg	
1,3-Dichlorobenzene	< 330	330	ug/kg	
1,4-Dichlorobenzene	< 330	330	ug/kg	

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Analytical Report

Client:	LEVINE FRICKE	**Date Collected:**	08/22/05
Project ID:	009-07992-00-001 P.O. # 06815	**Time Collected:**	13:05
Sample ID:	BP 6 (0.5)	**Date Received:**	08/22/05
Sample No:	5-2613-002	**Date Reported:**	08/25/05

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Semi-Volatile Compounds Method: 8270C Analysis Date: 08/24/05		**Preparation Method 3540C** Preparation Date: 08/23/05		
3,3'-Dichlorobenzidine	< 660	660	ug/kg	
2,4-Dichlorophenol	< 330	330	ug/kg	
Diethyl phthalate	< 330	330	ug/kg	
2,4-Dimethylphenol	< 330	330	ug/kg	
Dimethyl phthalate	< 330	330	ug/kg	
4,6-Dinitro-2-methylphenol	< 1,600	1600	ug/kg	
2,4-Dinitrophenol	< 1,600	1600	ug/kg	
2,4-Dinitrotoluene	< 250	250	ug/kg	
2,6-Dinitrotoluene	< 260	260	ug/kg	
Fluoranthene	< 330	330	ug/kg	
Fluorene	< 330	330	ug/kg	
Hexachlorobenzene	< 330	330	ug/kg	
Hexachlorobutadiene	< 330	330	ug/kg	
Hexachlorocyclopentadiene	< 330	330	ug/kg	
Hexachloroethane	< 330	330	ug/kg	
Indeno(1,2,3-cd)pyrene	< 330	330	ug/kg	
Isophorone	< 330	330	ug/kg	
2-Methylnaphthalene	< 330	330	ug/kg	
2-Methylphenol	< 330	330	ug/kg	
3 & 4-Methylphenol	< 330	330	ug/kg	
Naphthalene	< 330	330	ug/kg	
2-Nitroaniline	< 1,600	1600	ug/kg	
3-Nitroaniline	< 1,600	1600	ug/kg	
4-Nitroaniline	< 1,600	1600	ug/kg	
Nitrobenzene	< 260	260	ug/kg	
2-Nitrophenol	< 1,600	1600	ug/kg	
4-Nitrophenol	< 1,600	1600	ug/kg	
n-Nitrosodi-n-propylamine	< 330	330	ug/kg	
n-Nitrosodimethylamine	< 330	330	ug/kg	
n-Nitrosodiphenylamine	< 330	330	ug/kg	
Pentachlorophenol	< 330	330	ug/kg	
Phenanthrene	< 330	330	ug/kg	
Phenol	< 330	330	ug/kg	
Pyrene	< 330	330	ug/kg	
Pyridine	< 330	330	ug/kg	
1,2,4-Trichlorobenzene	< 330	330	ug/kg	

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Analytical Report

Client:	LEVINE FRICKE	**Date Collected:**	08/22/05
Project ID:	009-07992-00-001 P.O. # 06815	**Time Collected:**	13:05
Sample ID:	BP 6 (0.5)	**Date Received:**	08/22/05
Sample No:	5-2613-002	**Date Reported:**	08/25/05

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Semi-Volatile Compounds Analysis Date: 08/24/05	**Method: 8270C**	**Preparation Method 3540C** Preparation Date: 08/23/05			
2,4,5-Trichlorophenol		< 330	330	ug/kg	
2,4,6-Trichlorophenol		< 330	330	ug/kg	
Pesticides/PCBs Analysis Date: 08/24/05	**Method: 8081A/8082**	**Preparation Method 3540C** Preparation Date: 08/23/05			
Aldrin		< 8.0	8.0	ug/kg	
Aroclor 1016		< 80.0	80.0	ug/kg	
Aroclor 1221		< 80.0	80.0	ug/kg	
Aroclor 1232		< 80.0	80.0	ug/kg	
Aroclor 1242		< 80.0	80.0	ug/kg	
Aroclor 1248		< 80.0	80.0	ug/kg	
Aroclor 1254		< 160	160	ug/kg	
Aroclor 1260		< 160	160	ug/kg	
alpha-BHC		< 2.0	2.0	ug/kg	
beta-BHC		< 8.0	8.0	ug/kg	
delta-BHC		< 8.0	8.0	ug/kg	
gamma-BHC (Lindane)		< 8.0	8.0	ug/kg	
alpha-Chlordane		< 80.0	80.0	ug/kg	
gamma-Chlordane		< 80.0	80.0	ug/kg	
4,4'-DDD		< 16.0	16.0	ug/kg	
4,4'-DDE		< 16.0	16.0	ug/kg	
4,4'-DDT		< 16.0	16.0	ug/kg	
Dieldrin		< 16.0	16.0	ug/kg	
Endosulfan I		< 8.0	8.0	ug/kg	
Endosulfan II		< 16.0	16.0	ug/kg	
Endosulfan sulfate		< 16.0	16.0	ug/kg	
Endrin		< 16.0	16.0	ug/kg	
Endrin aldehyde		< 16.0	16.0	ug/kg	
Endrin ketone		< 16.0	16.0	ug/kg	
Heptachlor		< 8.0	8.0	ug/kg	
Heptachlor epoxide		< 8.0	8.0	ug/kg	
Methoxychlor		< 80.0	80.0	ug/kg	
Toxaphene		< 160	160	ug/kg	

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Analytical Report

Client:	LEVINE FRICKE	**Date Collected:**	08/22/05
Project ID:	009-07992-00-001 P.O. # 06815	**Time Collected:**	13:05
Sample ID:	BP 6 (0.5)	**Date Received:**	08/22/05
Sample No:	5-2613-002	**Date Reported:**	08/25/05

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Total Metals	**Method: 7470A**				
Analysis Date: 08/23/05					
Mercury		< 0.05	0.05	mg/kg	
Total Metals	**Method: 6010B**		**Preparation Method 3050B**		
Analysis Date: 08/24/05			Preparation Date: 08/23/05		
Arsenic		1.2	0.2	mg/kg	
Barium		3.3	0.1	mg/kg	
Cadmium		< 0.1	0.1	mg/kg	
Chromium		2.5	0.1	mg/kg	
Lead		0.9	0.2	mg/kg	
Selenium		< 0.2	0.2	mg/kg	
Silver		< 0.1	0.1	mg/kg	
Antimony		< 1.0	1.0	mg/kg	
pH @ 25°C, 1:10	**Method: 4500H+B**				
Analysis Date: 08/23/05					
pH @ 25°C, 1:10		8.57		Units	

CHAIN OF CUSTODY RECORD

Page 1 of 1 pgs

First Environmental Laboratories, Inc.

First Environmental Laboratories
1600 Shore Road, Suite D
Naperville, Illinois 60563
Phone: (630) 778-1200 • Fax: (630) 778-1233
24 Hr. Pager (708) 569-7507
E-mail: info@firstenv.com
IEPA Certification# 100292

Company Name: LFR Levine-Fricke
Street Address: 630 Tollgate Rd Suite D
City: Elgin State: IL Zip: 60123
Phone: 847-695-8855 Fax: 847-695-2799
Send Report To: Wendy Krahn
Sampled By: W Krahn

Project I.D.: 009-07992-00-001
P.O. #: 06815

Matrix Codes: S = Soil W = Water O = Other

Analyses

Date/Time Taken	Sample Description	Matrix	VOCs 8260	SVOCs 8270	RCRA metals	Antimony	PH	Pest 8081A	PCB 8082		Comments	Lab I.D.
8/22/05 1255	BP3(0.5)	S	X	X	X	X	X	X	X			52613-001
↓ 1305	BP6(0.5)	S	X	X	X	X	X	X	X			002

FOR LAB USE ONLY:

Cooler Temperature: 0.1-6°C Yes ✓ No__ ______ °C
Received within 6 hrs. of collection: ______
Ice Present: Yes ✓ No__

Sample Refrigerated: Yes__ No__
Refrigerator Temperature: ______ °C
5035 Vials Frozen: Yes__ No__
Freezer Temperature: ______ °C

Containers Received Preserved: ✓
Preserved in Lab: ___

Notes and Special Instructions: Need results by Friday 8/26/05 at NOON.

Relinquished By: WKrahn Date/Time 8/22/05 3:25 Received By: [signature] Date/Time 8/22/05 325
Relinquished By: ______ Date/Time ______ Received By: ______ Date/Time ______

Rev. 10/04

EMSL Analytical, Inc.
107 Haddon Ave., Westmont, NJ 08108
Phone: (856) 858-4800 Fax: (856) 858-4960 Email: ssiegel@EMSL.com

Attn: **Wendy Krahn**
LFR Levine Fricke
630 Tollgate Rd.
Suite D
Elgin, IL 60123

Fax: (847) 695-7799 Phone: (847) 695-8855
Project: **009-07992-00-001**

Customer ID: LEVI93
Customer PO: 08780
Received: 08/23/05 10:56 AM
EMSL Order: 040516267

EMSL Proj:
Analysis Date: 8/24/2005
Report Date: 8/24/2005

Qualitative asbestos analysis of soils using the EPA 600/R-93/116 method

Sample	Location	Appearance	Result	Notes
BP3 (0.5) *040516267-0001*			**None Detected**	
BP6 (0.5) *040516267-0002*			**None Detected**	

Analyst(s)

Delores Beard (2)

Stephen Siegel
Stephen Siegel, CIH
or other approved signatory

040516267

Chain of Custody

Asbestos Lab Services

PLM Qual

EMSL Analytical, Inc.
107 Haddon Avenue
Westmont, NJ 08108

Phone: (856) 858-4800
Fax: (856) 858-4960
(856) 427-1608
http://www.emsl.com

Please print all information legibly.

LEVI 98

Company:	LFR Levine-Fricke	***Bill To:***	LFR Levine-Fricke
Address1:	630 Tollgate Rd.	*Address1:*	630 Tollgate Rd.
Address2:	Suite D	*Address2:*	Suite D
City, State:	Elgin, IL	*City, State:*	Elgin, IL
Zip/Post Code:	60123	*Zip/Post Code:*	60123
Country:	USA	*Country:*	USA
Contact Name:	Wendy Krahn	***Attn:***	Wendy Krahn
Phone:	847-695-8855 x112	*Phone:*	847-695-8855 x112
Fax:	847-695-7799	*Fax:*	847-695-7799
Email:	wendy.krahn@lfr.com	*Email:*	wendy.krahn@lfr.com
EMSL Rep:	Steve Siegel	***P.O. Number:***	08780
Project Name/Number:	009-07992-00-001		

MATRIX			**TURNAROUND**			
[ ] **Air**	[X] **Soil**	[ ] **Micro-Vac**	[ ] **3 Hours**	[ ] **6 Hours**	[ ] **Same Day or 12 Hours***	[ ] **24 Hours (1 day)**
[ ] **Bulk**	[ ] **Drinking Water**		[ ] **48 Hours (2 days)**	[X] **72 Hours (3 days)**	[ ] **96 Hours (4 days)**	[ ] **120 Hours (5 days)**
[ ] **Wipe**	[ ] **Wastewater**		[ ] **144+ hours (6-10 days)**			

TEM AIR, 3 hours, 6 hours, Please call ahead to schedule. There is a premium charge for 3-hour tat, please call 1-800-220-3675 for price prior to sending samples. You will be asked to sign an authorization form for this service.

***12 hours (must arrive by 11:00a.m. Mon -Fri.), Please Refer to Price Quote**

SAMPLES ACCEPTED FOR ANALYSIS BY EMSL ANALYTICAL INC.

PCM - Air
- [ ] NIOSH 7400(A) Issue 2: August 1994
- [ ] OSHA w/TWA
- [ ] Other:

TEM Air
- [ ] AHERA 40 CFR, Part 763 Subpart E
- [ ] NIOSH 7402
- [ ] EPA Level II

TEM WATER
- [ ] EPA 100.1
- [ ] EPA 100.2
- [ ] NYS 198.2

PLM - Bulk
- [ ] EPA 600/R-93/116
- [ ] EPA Point Count
- [ ] NY Stratified Point Count
- [ ] PLM NOB (Gravimetric) NYS 198.1
- [ ] NIOSH 9002:
- [ ] EMSL Standard Addition:

SEM Air or Bulk
- [ ] Qualitative
- [ ] Quantitative

TEM BULK
- [ ] Drop Mount (Qualitative)
- [ ] Chatfield SOP - 1988-02
- [ ] TEM NOB (Gravimetric) NYS 198.4
- [ ] EMSL Standard Addition:

PLM Soil EPA 600R-93/116
- [X] EPA Protocol Qualitative (yes/no)
- [ ] EPA Protocol Quantitative
- [ ] EMSL MSD 9000 Method fibers/gram

TEM Microvac/Wipe
- [ ] ASTM D 5755-95 (quantative method)
- [ ] Wipe Qualitative

XRD
- [ ] Asbestos
- [ ] Silica NIOSH 7500

OTHER
- [ ]

RECEIVED EMSL WESTMONT, NJ 05 AUG 23 AM 10:56

Chain of Custody
Asbestos Lab Services

EMSL Analytical, Inc.
107 Haddon Avenue
Westmont, NJ 08108

Phone: (856) 858-4800
Fax: (856) 858-4960
(856) 427-1608
http://www.emsl.com

Please print all information legibly.

Client Sample # (s) BP3 - BP6 **Total Samples #:** 2

Relinquished: WKm **Date:** 8/22/05 **Time:** 1800

Received: [signature] **Date:** **Time:**

Relinquished: **Date:** **Time:**

Received: **Date:** **Time:**

SAMPLE NUMBER	SAMPLE DESCRIPTION/LOCATION	VOLUME (if applicable)
BP3(0.5)	sand PLM	4oz
BP6(0.5)	Sand PLM	4oz

SAMPLES ACCEPTED FOR ANALYSIS BY EMSL ANALYTICAL INC.

RECEIVED EMSL WESTMONT N.J. 05 AUG 23 AM 10:56

First Environmental Laboratories, Inc. IL ELAP / NELAC Accreditation # 100292
1600 Shore Road • Naperville, Illinois 60563 • Phone (630) 778-1200 • Fax (630) 778-1233

May 08, 2006

Ms. Kate Troyer
LFR, INC.
630 Tollgate Rd.
Suite D
Elgin, IL 60123

RECEIVED
MAY - 9 2006
LFR LEVINE-FRICKE

Project ID: 009-07992-00/001 John's Manville
First Environmental File ID: 6-1778
Date Received: April 27, 2006

Dear Ms. Kate Troyer:

The above referenced project was analyzed as directed on the enclosed chain of custody record.

All analyses were performed in accordance with established methods and within established holding times. All Quality Control criteria as outlined in the methods and current IL ELAP/NELAP have been met unless otherwise noted. QA/QC documentation and raw data will remain on file for future reference. Our certificate is number 001498: 02/09/06 through 02/28/07.

I thank you for the opportunity to be of service to you and look forward to working with you again in the future. Should you have any questions regarding any of the enclosed analytical data or need additional information, please contact me at (630) 778-1200.

Sincerely,

W. Mottashed

William Mottashed
Project Manager

First
Environmental
Laboratories, Inc.
IL ELAP / NELAC Accreditation # 100292
1600 Shore Road • Naperville, Illinois 60563 • Phone (630) 778-1200 • Fax (630) 778-1233

Analytical Report

Client:	LFR, INC.	**Date Collected:**	04/26/06
Project ID:	009-07992-00/001 John's Manville	**Time Collected:**	10:00
Sample ID:	BP8 (16")	**Date Received:**	04/27/06
Sample No:	6-1778-001	**Date Reported:**	05/08/06

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Date Analyzed	Method	Flag
pH @ 25°C, 1:10	8.59		Units	05/01/06	4500H+B	

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Analytical Report

Client:	LFR, INC.	**Date Collected:**	04/26/06
Project ID:	009-07992-00/001 John's Manville	**Time Collected:**	10:00
Sample ID:	BP8 (16")	**Date Received:**	04/27/06
Sample No:	6-1778-001	**Date Reported:**	05/08/06

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Solids, Total	**Method: 160.3**		**Analysis Date:**	**04/28/06**	
Total Solids		78.37		%	
Volatile Organic Compounds	**Method: 5035A/8260B**		**Analysis Date:**	**05/01/06**	
Acetone		< 100	100	ug/kg	
Benzene		< 5.0	5.0	ug/kg	
Bromodichloromethane		< 5.0	5.0	ug/kg	
Bromoform		< 5.0	5.0	ug/kg	
Bromomethane		< 10.0	10.0	ug/kg	
2-Butanone (MEK)		< 10.0	10.0	ug/kg	
Carbon disulfide		< 5.0	5.0	ug/kg	
Carbon tetrachloride		< 5.0	5.0	ug/kg	
Chlorobenzene		< 5.0	5.0	ug/kg	
Chlorodibromomethane		< 5.0	5.0	ug/kg	
Chloroethane		< 10.0	10.0	ug/kg	
Chloroform		< 5.0	5.0	ug/kg	
Chloromethane		< 10.0	10.0	ug/kg	
1,1-Dichloroethane		< 5.0	5.0	ug/kg	
1,2-Dichloroethane		< 5.0	5.0	ug/kg	
1,1-Dichloroethene		< 5.0	5.0	ug/kg	
cis-1,2-Dichloroethene		< 5.0	5.0	ug/kg	
trans-1,2-Dichloroethene		< 5.0	5.0	ug/kg	
1,2-Dichloropropane		< 5.0	5.0	ug/kg	
cis-1,3-Dichloropropene		< 5.0	5.0	ug/kg	
trans-1,3-Dichloropropene		< 5.0	5.0	ug/kg	
Ethylbenzene		< 5.0	5.0	ug/kg	
2-Hexanone		< 10.0	10.0	ug/kg	
Methyl-tert-butylether (MTBE)		< 5.0	5.0	ug/kg	
4-Methyl-2-pentanone (MIBK)		< 10.0	10.0	ug/kg	
Methylene chloride		< 5.0	5.0	ug/kg	
Styrene		< 5.0	5.0	ug/kg	
1,1,2,2-Tetrachloroethane		< 5.0	5.0	ug/kg	
Tetrachloroethene		< 5.0	5.0	ug/kg	
Toluene		< 5.0	5.0	ug/kg	
1,1,1-Trichloroethane		< 5.0	5.0	ug/kg	
1,1,2-Trichloroethane		< 5.0	5.0	ug/kg	
Trichloroethene		< 5.0	5.0	ug/kg	
Vinyl acetate		< 10.0	10.0	ug/kg	
Vinyl chloride		< 10.0	10.0	ug/kg	
Xylene, Total		< 5.0	5.0	ug/kg	

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Analytical Report

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Project ID:	009-07992-00/001 John's Manville	**Time Collected:**	10:00
Sample ID:	BP8 (16")	**Date Received:**	04/27/06
Sample No:	6-1778-001	**Date Reported:**	05/08/06

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Semi-Volatile Compounds **Method: 8270C**		**Analysis Date: 05/02/06**		
Acenaphthylene	< 330	330	ug/kg	
Anthracene	< 330	330	ug/kg	
Benzidine	< 330	330	ug/kg	
Benzo(a)anthracene	< 330	330	ug/kg	
Benzo(a)pyrene	< 90	90	ug/kg	
Benzo(b)fluoranthene	< 330	330	ug/kg	
Benzo(ghi)perylene	< 330	330	ug/kg	
Benzo(k)fluoranthene	< 330	330	ug/kg	
Benzoic acid	< 330	330	ug/kg	
Benzyl alcohol	< 330	330	ug/kg	
bis(2-Chloroethoxy)methane	< 330	330	ug/kg	
bis(2-Chloroethyl)ether	< 330	330	ug/kg	
bis(2-Chloroisopropyl)ether	< 330	330	ug/kg	
bis(2-Ethylhexyl)phthalate	< 330	330	ug/kg	
4-Bromophenyl phenyl ether	< 330	330	ug/kg	
Butyl benzyl phthalate	< 330	330	ug/kg	
Carbazole	< 330	330	ug/kg	
4-Chloroaniline	< 330	330	ug/kg	
4-Chloro-3-methylphenol	< 330	330	ug/kg	
2-Chloronaphthalene	< 330	330	ug/kg	
2-Chlorophenol	< 330	330	ug/kg	
4-Chlorophenyl phenyl ether	< 330	330	ug/kg	
Chrysene	< 330	330	ug/kg	
Di-n-butyl phthalate	< 330	330	ug/kg	
Di-n-octylphthalate	< 330	330	ug/kg	
Dibenzo(a,h)anthracene	< 90	90	ug/kg	
Dibenzofuran	< 330	330	ug/kg	
1,2-Dichlorobenzene	< 330	330	ug/kg	
1,3-Dichlorobenzene	< 330	330	ug/kg	
1,4-Dichlorobenzene	< 330	330	ug/kg	
3,3'-Dichlorobenzidine	< 660	660	ug/kg	
2,4-Dichlorophenol	< 330	330	ug/kg	
Diethyl phthalate	< 330	330	ug/kg	
2,4-Dimethylphenol	< 330	330	ug/kg	
Dimethyl phthalate	< 330	330	ug/kg	
2,4-Dinitrophenol	< 1,600	1600	ug/kg	
2,4-Dinitrotoluene	< 250	250	ug/kg	
2,6-Dinitrotoluene	< 260	260	ug/kg	
Fluoranthene	< 330	330	ug/kg	

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Analytical Report

Client:	LFR, INC.	**Date Collected:**	04/26/06
Project ID:	009-07992-00/001 John's Manville	**Time Collected:**	10:00
Sample ID:	BP8 (16")	**Date Received:**	04/27/06
Sample No:	6-1778-001	**Date Reported:**	05/08/06

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Semi-Volatile Compounds	**Method: 8270C**		**Analysis Date:**	**05/02/06**	
Fluorene		< 330	330	ug/kg	
Hexachlorobenzene		< 330	330	ug/kg	
Hexachlorobutadiene		< 330	330	ug/kg	
Hexachlorocyclopentadiene		< 330	330	ug/kg	
Hexachloroethane		< 330	330	ug/kg	
Indeno(1,2,3-cd)pyrene		< 330	330	ug/kg	
Isophorone		< 330	330	ug/kg	
2-Methylnaphthalene		< 330	330	ug/kg	
2-Methylphenol		< 330	330	ug/kg	
3 & 4-Methylphenol		< 330	330	ug/kg	
Naphthalene		< 330	330	ug/kg	
2-Nitroaniline		< 1,600	1600	ug/kg	
3-Nitroaniline		< 1,600	1600	ug/kg	
4-Nitroaniline		< 1,600	1600	ug/kg	
Nitrobenzene		< 260	260	ug/kg	
2-Nitrophenol		< 1,600	1600	ug/kg	
4-Nitrophenol		< 1,600	1600	ug/kg	
n-Nitrosodiphenylamine		< 330	330	ug/kg	
n-Nitrosodi-n-propylamine		< 330	330	ug/kg	
Pentachlorophenol		< 330	330	ug/kg	
Phenanthrene		< 330	330	ug/kg	
Phenol		< 330	330	ug/kg	
Pyrene		< 330	330	ug/kg	
Pyridine		< 330	330	ug/kg	
1,2,4-Trichlorobenzene		< 330	330	ug/kg	
2,4,5-Trichlorophenol		< 330	330	ug/kg	
2,4,6-Trichlorophenol		< 330	330	ug/kg	
Pesticides/PCBs	**Method: 8081A/8082**		**Analysis Date:**	**05/04/06**	
Aldrin		< 8.0	8.0	ug/kg	
Aroclor 1016		< 80.0	80.0	ug/kg	
Aroclor 1221		< 80.0	80.0	ug/kg	
Aroclor 1232		< 80.0	80.0	ug/kg	
Aroclor 1242		< 80.0	80.0	ug/kg	
Aroclor 1248		< 80.0	80.0	ug/kg	
Aroclor 1254		< 160	160	ug/kg	
Aroclor 1260		< 160	160	ug/kg	
alpha-BHC		< 2.0	2.0	ug/kg	
beta-BHC		< 8.0	8.0	ug/kg	
delta-BHC		< 8.0	8.0	ug/kg	

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Analytical Report

Client:	LFR, INC.	**Date Collected:**	04/26/06
Project ID:	009-07992-00/001 John's Manville	**Time Collected:**	10:00
Sample ID:	BP8 (16")	**Date Received:**	04/27/06
Sample No:	6-1778-001	**Date Reported:**	05/08/06

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Pesticides/PCBs	**Method: 8081A/8082**		**Analysis Date:**	**05/04/06**	
gamma-BHC (Lindane)		< 8.0	8.0	ug/kg	
alpha-Chlordane		< 80.0	80.0	ug/kg	
gamma-Chlordane		< 80.0	80.0	ug/kg	
4,4'-DDD		< 16.0	16.0	ug/kg	
4,4'-DDE		< 16.0	16.0	ug/kg	
4,4'-DDT		< 16.0	16.0	ug/kg	
Dieldrin		< 16.0	16.0	ug/kg	
Endosulfan I		< 8.0	8.0	ug/kg	
Endosulfan II		< 16.0	16.0	ug/kg	
Endosulfan sulfate		< 16.0	16.0	ug/kg	
Endrin		< 16.0	16.0	ug/kg	
Endrin aldehyde		< 16.0	16.0	ug/kg	
Endrin ketone		< 16.0	16.0	ug/kg	
Heptachlor		< 8.0	8.0	ug/kg	
Heptachlor epoxide		< 8.0	8.0	ug/kg	
Methoxychlor		< 80.0	80.0	ug/kg	
Toxaphene		< 160	160	ug/kg	
Total Metals	**Method: 6010B**		**Analysis Date:**	**05/03/06**	
Antimony		< 1.0	1.0	mg/kg	
Arsenic		1.5	0.2	mg/kg	
Barium		5.5	0.1	mg/kg	
Cadmium		< 0.1	0.1	mg/kg	
Chromium		5.6	0.1	mg/kg	
Lead		1.4	0.2	mg/kg	
Selenium		< 0.2	0.2	mg/kg	
Silver		< 0.1	0.1	mg/kg	
Total Metals	**Method: 7470A**		**Analysis Date:**	**04/28/06**	
Mercury		< 0.05	0.05	mg/kg	

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Analytical Report

Client: LFR, INC.
Project ID: 009-07992-00/001 John's Manville
Sample ID: BP8 (3')
Sample No: 6-1778-002

Date Collected: 04/26/06
Time Collected: 10:05
Date Received: 04/27/06
Date Reported: 05/08/06

Results are reported on a dry weight basis.

Analyte	Resnlt	R.L.	Units	Date Analyzed	Method	Flag
pH @ 25°C, 1:10	9.01		Units	05/01/06	4500H+B	

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Analytical Report

Client:	LFR, INC.	**Date Collected:**	04/26/06
Project ID:	009-07992-00/001 John's Manville	**Time Collected:**	10:05
Sample ID:	BP8 (3')	**Date Received:**	04/27/06
Sample No:	6-1778-002	**Date Reported:**	05/08/06

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Solids, Total	**Method: 160.3**		**Analysis Date:**	**04/28/06**	
Total Solids		78.72		%	
Volatile Organic Compounds	**Method: 5035A/8260B**		**Analysis Date:**	**05/01/06**	
Acetone		< 100	100	ug/kg	
Benzene		< 5.0	5.0	ug/kg	
Bromodichloromethane		< 5.0	5.0	ug/kg	
Bromoform		< 5.0	5.0	ug/kg	
Bromomethane		< 10.0	10.0	ug/kg	
2-Butanone (MEK)		< 10.0	10.0	ug/kg	
Carbon disulfide		< 5.0	5.0	ug/kg	
Carbon tetrachloride		< 5.0	5.0	ug/kg	
Chlorobenzene		< 5.0	5.0	ug/kg	
Chlorodibromomethane		< 5.0	5.0	ug/kg	
Chloroethane		< 10.0	10.0	ug/kg	
Chloroform		< 5.0	5.0	ug/kg	
Chloromethane		< 10.0	10.0	ug/kg	
1,1-Dichloroethane		< 5.0	5.0	ug/kg	
1,2-Dichloroethane		< 5.0	5.0	ug/kg	
1,1-Dichloroethene		< 5.0	5.0	ug/kg	
cis-1,2-Dichloroethene		< 5.0	5.0	ug/kg	
trans-1,2-Dichloroethene		< 5.0	5.0	ug/kg	
1,2-Dichloropropane		< 5.0	5.0	ug/kg	
cis-1,3-Dichloropropene		< 5.0	5.0	ug/kg	
trans-1,3-Dichloropropene		< 5.0	5.0	ug/kg	
Ethylbenzene		< 5.0	5.0	ug/kg	
2-Hexanone		< 10.0	10.0	ug/kg	
Methyl-tert-butylether (MTBE)		< 5.0	5.0	ug/kg	
4-Methyl-2-pentanone (MIBK)		< 10.0	10.0	ug/kg	
Methylene chloride		< 5.0	5.0	ug/kg	
Styrene		< 5.0	5.0	ug/kg	
1,1,2,2-Tetrachloroethane		< 5.0	5.0	ug/kg	
Tetrachloroethene		< 5.0	5.0	ug/kg	
Toluene		< 5.0	5.0	ug/kg	
1,1,1-Trichloroethane		< 5.0	5.0	ug/kg	
1,1,2-Trichloroethane		< 5.0	5.0	ug/kg	
Trichloroethene		< 5.0	5.0	ug/kg	
Vinyl acetate		< 10.0	10.0	ug/kg	
Vinyl chloride		< 10.0	10.0	ug/kg	
Xylene, Total		< 5.0	5.0	ug/kg	

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Analytical Report

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Project ID:	009-07992-00/001 John's Manville	**Time Collected:**	10:05
Sample ID:	BP8 (3')	**Date Received:**	04/27/06
Sample No:	6-1778-002	**Date Reported:**	05/08/06

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Semi-Volatile Compounds **Method: 8270C**		**Analysis Date:**	**05/02/06**	
Acenaphthylene	< 330	330	ug/kg	
Anthracene	< 330	330	ug/kg	
Benzidine	< 330	330	ug/kg	
Benzo(a)anthracene	< 330	330	ug/kg	
Benzo(a)pyrene	< 90	90	ug/kg	
Benzo(b)fluoranthene	< 330	330	ug/kg	
Benzo(ghi)perylene	< 330	330	ug/kg	
Benzo(k)fluoranthene	< 330	330	ug/kg	
Benzoic acid	< 330	330	ug/kg	
Benzyl alcohol	< 330	330	ug/kg	
bis(2-Chloroethoxy)methane	< 330	330	ug/kg	
bis(2-Chloroethyl)ether	< 330	330	ug/kg	
bis(2-Chloroisopropyl)ether	< 330	330	ug/kg	
bis(2-Ethylhexyl)phthalate	< 330	330	ug/kg	
4-Bromophenyl phenyl ether	< 330	330	ug/kg	
Butyl benzyl phthalate	< 330	330	ug/kg	
Carbazole	< 330	330	ug/kg	
4-Chloroaniline	< 330	330	ug/kg	
4-Chloro-3-methylphenol	< 330	330	ug/kg	
2-Chloronaphthalene	< 330	330	ug/kg	
2-Chlorophenol	< 330	330	ug/kg	
4-Chlorophenyl phenyl ether	< 330	330	ug/kg	
Chrysene	< 330	330	ug/kg	
Di-n-butyl phthalate	< 330	330	ug/kg	
Di-n-octylphthalate	< 330	330	ug/kg	
Dibenzo(a,h)anthracene	< 90	90	ug/kg	
Dibenzofuran	< 330	330	ug/kg	
1,2-Dichlorobenzene	< 330	330	ug/kg	
1,3-Dichlorobenzene	< 330	330	ug/kg	
1,4-Dichlorobenzene	< 330	330	ug/kg	
3,3'-Dichlorobenzidine	< 660	660	ug/kg	
2,4-Dichlorophenol	< 330	330	ug/kg	
Diethyl phthalate	< 330	330	ug/kg	
2,4-Dimethylphenol	< 330	330	ug/kg	
Dimethyl phthalate	< 330	330	ug/kg	
2,4-Dinitrophenol	< 1,600	1600	ug/kg	
2,4-Dinitrotoluene	< 250	250	ug/kg	
2,6-Dinitrotoluene	< 260	260	ug/kg	
Fluoranthene	< 330	330	ug/kg	

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Analytical Report

Client:	LFR, INC.	**Date Collected:**	04/26/06
Project ID:	009-07992-00/001 John's Manville	**Time Collected:**	10:05
Sample ID:	BP8 (3')	**Date Received:**	04/27/06
Sample No:	6-1778-002	**Date Reported:**	05/08/06

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Semi-Volatile Compounds **Method: 8270C**		**Analysis Date: 05/02/06**		
Fluorene	< 330	330	ug/kg	
Hexachlorobenzene	< 330	330	ug/kg	
Hexachlorobutadiene	< 330	330	ug/kg	
Hexachlorocyclopentadiene	< 330	330	ug/kg	
Hexachloroethane	< 330	330	ug/kg	
Indeno(1,2,3-cd)pyrene	< 330	330	ug/kg	
Isophorone	< 330	330	ug/kg	
2-Methylnaphthalene	< 330	330	ug/kg	
2-Methylphenol	< 330	330	ug/kg	
3 & 4-Methylphenol	< 330	330	ug/kg	
Naphthalene	< 330	330	ug/kg	
2-Nitroaniline	< 1,600	1600	ug/kg	
3-Nitroaniline	< 1,600	1600	ug/kg	
4-Nitroaniline	< 1,600	1600	ug/kg	
Nitrobenzene	< 260	260	ug/kg	
2-Nitrophenol	< 1,600	1600	ug/kg	
4-Nitrophenol	< 1,600	1600	ug/kg	
n-Nitrosodiphenylamine	< 330	330	ug/kg	
n-Nitrosodi-n-propylamine	< 330	330	ug/kg	
Pentachlorophenol	< 330	330	ug/kg	
Phenanthrene	< 330	330	ug/kg	
Phenol	< 330	330	ug/kg	
Pyrene	< 330	330	ug/kg	
Pyridine	< 330	330	ug/kg	
1,2,4-Trichlorobenzene	< 330	330	ug/kg	
2,4,5-Trichlorophenol	< 330	330	ug/kg	
2,4,6-Trichlorophenol	< 330	330	ug/kg	
Pesticides/PCBs **Method: 8081A/8082**		**Analysis Date: 05/04/06**		
Aldrin	< 8.0	8.0	ug/kg	
Aroclor 1016	< 80.0	80.0	ug/kg	
Aroclor 1221	< 80.0	80.0	ug/kg	
Aroclor 1232	< 80.0	80.0	ug/kg	
Aroclor 1242	< 80.0	80.0	ug/kg	
Aroclor 1248	< 80.0	80.0	ug/kg	
Aroclor 1254	< 160	160	ug/kg	
Aroclor 1260	< 160	160	ug/kg	
alpha-BHC	< 2.0	2.0	ug/kg	
beta-BHC	< 8.0	8.0	ug/kg	
delta-BHC	< 8.0	8.0	ug/kg	

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Analytical Report

Client: LFR, INC.
Project ID: 009-07992-00/001 John's Manville
Sample ID: BP8 (3')
Sample No: 6-1778-002

Date Collected: 04/26/06
Time Collected: 10:05
Date Received: 04/27/06
Date Reported: 05/08/06

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Pesticides/PCBs	**Method: 8081A/8082**	**Analysis Date: 05/04/06**		
gamma-BHC (Lindane)	< 8.0	8.0	ug/kg	
alpha-Chlordane	< 80.0	80.0	ug/kg	
gamma-Chlordane	< 80.0	80.0	ug/kg	
4,4'-DDD	< 16.0	16.0	ug/kg	
4,4'-DDE	< 16.0	16.0	ug/kg	
4,4'-DDT	< 16.0	16.0	ug/kg	
Dieldrin	< 16.0	16.0	ug/kg	
Endosulfan I	< 8.0	8.0	ug/kg	
Endosulfan II	< 16.0	16.0	ug/kg	
Endosulfan sulfate	< 16.0	16.0	ug/kg	
Endrin	< 16.0	16.0	ug/kg	
Endrin aldehyde	< 16.0	16.0	ug/kg	
Endrin ketone	< 16.0	16.0	ug/kg	
Heptachlor	< 8.0	8.0	ug/kg	
Heptachlor epoxide	< 8.0	8.0	ug/kg	
Methoxychlor	< 80.0	80.0	ug/kg	
Toxaphene	< 160	160	ug/kg	
Total Metals	**Method: 6010B**	**Analysis Date: 05/03/06**		
Antimony	< 1.0	1.0	mg/kg	
Arsenic	1.1	0.2	mg/kg	
Barium	4.7	0.1	mg/kg	
Cadmium	< 0.1	0.1	mg/kg	
Chromium	3.7	0.1	mg/kg	
Lead	1.7	0.2	mg/kg	
Selenium	< 0.2	0.2	mg/kg	
Silver	< 0.1	0.1	mg/kg	
Total Metals	**Method: 7470A**	**Analysis Date: 04/28/06**		
Mercury	< 0.05	0.05	mg/kg	

First Environmental Laboratories, Inc.

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Analytical Report

Client: LFR, INC.

Project ID: 009-07992-00/001 John's Manville

Sample ID: BP9 (15")

Sample No: 6-1778-003

Date Collected: 04/26/06

Time Collected: 10:35

Date Received: 04/27/06

Date Reported: 05/08/06

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Date Analyzed	Method	Flag
pH @ 25°C, 1:10	8.73		Units	05/01/06	4500H+B	

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Analytical Report

Client: LFR, INC.
Project ID: 009-07992-00/001 John's Manville
Sample ID: BP9 (15")
Sample No: 6-1778-003

Date Collected: 04/26/06
Time Collected: 10:35
Date Received: 04/27/06
Date Reported: 05/08/06

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Solids, Total	**Method: 160.3**		**Analysis Date:**	**04/28/06**	
Total Solids		83.01		%	
Volatile Organic Compounds	**Method: 5035A/8260B**		**Analysis Date:**	**05/01/06**	
Acetone		< 100	100	ug/kg	
Benzene		< 5.0	5.0	ug/kg	
Bromodichloromethane		< 5.0	5.0	ug/kg	
Bromoform		< 5.0	5.0	ug/kg	
Bromomethane		< 10.0	10.0	ug/kg	
2-Butanone (MEK)		< 10.0	10.0	ug/kg	
Carbon disulfide		< 5.0	5.0	ug/kg	
Carbon tetrachloride		< 5.0	5.0	ug/kg	
Chlorobenzene		< 5.0	5.0	ug/kg	
Chlorodibromomethane		< 5.0	5.0	ug/kg	
Chloroethane		< 10.0	10.0	ug/kg	
Chloroform		< 5.0	5.0	ug/kg	
Chloromethane		< 10.0	10.0	ug/kg	
1,1-Dichloroethane		< 5.0	5.0	ug/kg	
1,2-Dichloroethane		< 5.0	5.0	ug/kg	
1,1-Dichloroethene		< 5.0	5.0	ug/kg	
cis-1,2-Dichloroethene		< 5.0	5.0	ug/kg	
trans-1,2-Dichloroethene		< 5.0	5.0	ug/kg	
1,2-Dichloropropane		< 5.0	5.0	ug/kg	
cis-1,3-Dichloropropene		< 5.0	5.0	ug/kg	
trans-1,3-Dichloropropene		< 5.0	5.0	ug/kg	
Ethylbenzene		< 5.0	5.0	ug/kg	
2-Hexanone		< 10.0	10.0	ug/kg	
Methyl-tert-butylether (MTBE)		< 5.0	5.0	ug/kg	
4-Methyl-2-pentanone (MIBK)		< 10.0	10.0	ug/kg	
Methylene chloride		< 5.0	5.0	ug/kg	
Styrene		< 5.0	5.0	ug/kg	
1,1,2,2-Tetrachloroethane		< 5.0	5.0	ug/kg	
Tetrachloroethene		< 5.0	5.0	ug/kg	
Toluene		< 5.0	5.0	ug/kg	
1,1,1-Trichloroethane		< 5.0	5.0	ug/kg	
1,1,2-Trichloroethane		< 5.0	5.0	ug/kg	
Trichloroethene		< 5.0	5.0	ug/kg	
Vinyl acetate		< 10.0	10.0	ug/kg	
Vinyl chloride		< 10.0	10.0	ug/kg	
Xylene, Total		< 5.0	5.0	ug/kg	

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Analytical Report

Client:	LFR, INC.	**Date Collected:**	04/26/06
Project ID:	009-07992-00/001 John's Manville	**Time Collected:**	10:35
Sample ID:	BP9 (15")	**Date Received:**	04/27/06
Sample No:	6-1778-003	**Date Reported:**	05/08/06

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Semi-Volatile Compounds **Method: 8270C**		**Analysis Date: 05/02/06**		
Acenaphthylene	< 330	330	ug/kg	
Anthracene	< 330	330	ug/kg	
Benzidine	< 330	330	ug/kg	
Benzo(a)anthracene	< 330	330	ug/kg	
Benzo(a)pyrene	< 90	90	ug/kg	
Benzo(b)fluoranthene	< 330	330	ug/kg	
Benzo(ghi)perylene	< 330	330	ug/kg	
Benzo(k)fluoranthene	< 330	330	ug/kg	
Benzoic acid	< 330	330	ug/kg	
Benzyl alcohol	< 330	330	ug/kg	
bis(2-Chloroethoxy)methane	< 330	330	ug/kg	
bis(2-Chloroethyl)ether	< 330	330	ug/kg	
bis(2-Chloroisopropyl)ether	< 330	330	ug/kg	
bis(2-Ethylhexyl)phthalate	< 330	330	ug/kg	
4-Bromophenyl phenyl ether	< 330	330	ug/kg	
Butyl benzyl phthalate	< 330	330	ug/kg	
Carbazole	< 330	330	ug/kg	
4-Chloroaniline	< 330	330	ug/kg	
4-Chloro-3-methylphenol	< 330	330	ug/kg	
2-Chloronaphthalene	< 330	330	ug/kg	
2-Chlorophenol	< 330	330	ug/kg	
4-Chlorophenyl phenyl ether	< 330	330	ug/kg	
Chrysene	< 330	330	ug/kg	
Di-n-butyl phthalate	< 330	330	ug/kg	
Di-n-octylphthalate	< 330	330	ug/kg	
Dibenzo(a,h)anthracene	< 90	90	ug/kg	
Dibenzofuran	< 330	330	ug/kg	
1,2-Dichlorobenzene	< 330	330	ug/kg	
1,3-Dichlorobenzene	< 330	330	ug/kg	
1,4-Dichlorobenzene	< 330	330	ug/kg	
3,3'-Dichlorobenzidine	< 660	660	ug/kg	
2,4-Dichlorophenol	< 330	330	ug/kg	
Diethyl phthalate	< 330	330	ug/kg	
2,4-Dimethylphenol	< 330	330	ug/kg	
Dimethyl phthalate	< 330	330	ug/kg	
2,4-Dinitrophenol	< 1,600	1600	ug/kg	
2,4-Dinitrotoluene	< 250	250	ug/kg	
2,6-Dinitrotoluene	< 260	260	ug/kg	
Fluoranthene	< 330	330	ug/kg	

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Analytical Report

Client: LFR, INC.
Project ID: 009-07992-00/001 John's Manville
Sample ID: BP9 (15")
Sample No: 6-1778-003

Date Collected: 04/26/06
Time Collected: 10:35
Date Received: 04/27/06
Date Reported: 05/08/06

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Semi-Volatile Compounds — **Method: 8270C**		**Analysis Date: 05/02/06**		
Fluorene	< 330	330	ug/kg	
Hexachlorobenzene	< 330	330	ug/kg	
Hexachlorobutadiene	< 330	330	ug/kg	
Hexachlorocyclopentadiene	< 330	330	ug/kg	
Hexachloroethane	< 330	330	ug/kg	
Indeno(1,2,3-cd)pyrene	< 330	330	ug/kg	
Isophorone	< 330	330	ug/kg	
2-Methylnaphthalene	< 330	330	ug/kg	
2-Methylphenol	< 330	330	ug/kg	
3 & 4-Methylphenol	< 330	330	ug/kg	
Naphthalene	< 330	330	ug/kg	
2-Nitroaniline	< 1,600	1600	ug/kg	
3-Nitroaniline	< 1,600	1600	ug/kg	
4-Nitroaniline	< 1,600	1600	ug/kg	
Nitrobenzene	< 260	260	ug/kg	
2-Nitrophenol	< 1,600	1600	ug/kg	
4-Nitrophenol	< 1,600	1600	ug/kg	
n-Nitrosodiphenylamine	< 330	330	ug/kg	
n-Nitrosodi-n-propylamine	< 330	330	ug/kg	
Pentachlorophenol	< 330	330	ug/kg	
Phenanthrene	< 330	330	ug/kg	
Phenol	< 330	330	ug/kg	
Pyrene	< 330	330	ug/kg	
Pyridine	< 330	330	ug/kg	
1,2,4-Trichlorobenzene	< 330	330	ug/kg	
2,4,5-Trichloropbenol	< 330	330	ug/kg	
2,4,6-Trichlorophenol	< 330	330	ug/kg	
Pesticides/PCBs — **Method: 8081A/8082**		**Analysis Date: 05/04/06**		
Aldrin	< 8.0	8.0	ug/kg	
Aroclor 1016	< 80.0	80.0	ug/kg	
Aroclor 1221	< 80.0	80.0	ug/kg	
Aroclor 1232	< 80.0	80.0	ug/kg	
Aroclor 1242	< 80.0	80.0	ug/kg	
Aroclor 1248	< 80.0	80.0	ug/kg	
Aroclor 1254	< 160	160	ug/kg	
Aroclor 1260	< 160	160	ug/kg	
alpha-BHC	< 2.0	2.0	ug/kg	
beta-BHC	< 8.0	8.0	ug/kg	
delta-BHC	< 8.0	8.0	ug/kg	

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Analytical Report

Client:	LFR, INC.	**Date Collected:**	04/26/06
Project ID:	009-07992-00/001 John's Manville	**Time Collected:**	10:35
Sample ID:	BP9 (15")	**Date Received:**	04/27/06
Sample No:	6-1778-003	**Date Reported:**	05/08/06

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Pesticides/PCBs	**Method: 8081A/8082**	**Analysis Date:**	**05/04/06**	
gamma-BHC (Lindane)	< 8.0	8.0	ug/kg	
alpha-Chlordane	< 80.0	80.0	ug/kg	
gamma-Chlordane	< 80.0	80.0	ug/kg	
4,4'-DDD	< 16.0	16.0	ug/kg	
4,4'-DDE	< 16.0	16.0	ug/kg	
4,4'-DDT	< 16.0	16.0	ug/kg	
Dieldrin	< 16.0	16.0	ug/kg	
Endosulfan I	< 8.0	8.0	ug/kg	
Endosulfan II	< 16.0	16.0	ug/kg	
Endosulfan sulfate	< 16.0	16.0	ug/kg	
Endrin	< 16.0	16.0	ug/kg	
Endrin aldehyde	< 16.0	16.0	ug/kg	
Endrin ketone	< 16.0	16.0	ug/kg	
Heptachlor	< 8.0	8.0	ug/kg	
Heptachlor epoxide	< 8.0	8.0	ug/kg	
Methoxychlor	< 80.0	80.0	ug/kg	
Toxaphene	< 160	160	ug/kg	
Total Metals	**Method: 6010B**	**Analysis Date:**	**05/03/06**	
Antimony	< 1.0	1.0	mg/kg	
Arsenic	1.0	0.2	mg/kg	
Barium	5.2	0.1	mg/kg	
Cadmium	< 0.1	0.1	mg/kg	
Chromium	4.9	0.1	mg/kg	
Lead	1.7	0.2	mg/kg	
Selenium	< 0.2	0.2	mg/kg	
Silver	< 0.1	0.1	mg/kg	
Total Metals	**Method: 7470A**	**Analysis Date:**	**04/28/06**	
Mercury	< 0.05	0.05	mg/kg	

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Analytical Report

Client: LFR, INC.
Project ID: 009-07992-00/001 John's Manville
Sample ID: BP9 (3')
Sample No: 6-1778-004

Date Collected: 04/26/06
Time Collected: 10:40
Date Received: 04/27/06
Date Reported: 05/08/06

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Date Analyzed	Method	Flag
pH @ 25°C, 1:10	9.22		Units	05/01/06	4500H+B	

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Analytical Report

Client:	LFR, INC.	**Date Collected:**	04/26/06
Project ID:	009-07992-00/001 John's Manville	**Time Collected:**	10:40
Sample ID:	BP9 (3')	**Date Received:**	04/27/06
Sample No:	6-1778-004	**Date Reported:**	05/08/06

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Solids, Total — **Method: 160.3**	**Analysis Date: 04/28/06**			
Total Solids	80.46		%	
Volatile Organic Compounds — **Method: 5035A/8260B**	**Analysis Date: 05/01/06**			
Acetone	< 100	100	ug/kg	
Benzene	< 5.0	5.0	ug/kg	
Bromodichloromethane	< 5.0	5.0	ug/kg	
Bromoform	< 5.0	5.0	ug/kg	
Bromomethane	< 10.0	10.0	ug/kg	
2-Butanone (MEK)	< 10.0	10.0	ug/kg	
Carbon disulfide	< 5.0	5.0	ug/kg	
Carbon tetrachloride	< 5.0	5.0	ug/kg	
Chlorobenzene	< 5.0	5.0	ug/kg	
Chlorodibromomethane	< 5.0	5.0	ug/kg	
Chloroethane	< 10.0	10.0	ug/kg	
Chloroform	< 5.0	5.0	ug/kg	
Chloromethane	< 10.0	10.0	ug/kg	
1,1-Dichloroethane	< 5.0	5.0	ug/kg	
1,2-Dichloroethane	< 5.0	5.0	ug/kg	
1,1-Dichloroethene	< 5.0	5.0	ug/kg	
cis-1,2-Dichloroethene	< 5.0	5.0	ug/kg	
trans-1,2-Dichloroethene	< 5.0	5.0	ug/kg	
1,2-Dichloropropane	< 5.0	5.0	ug/kg	
cis-1,3-Dichloropropene	< 5.0	5.0	ug/kg	
trans-1,3-Dichloropropene	< 5.0	5.0	ug/kg	
Ethylbenzene	< 5.0	5.0	ug/kg	
2-Hexanone	< 10.0	10.0	ug/kg	
Methyl-tert-butylether (MTBE)	< 5.0	5.0	ug/kg	
4-Methyl-2-pentanone (MIBK)	< 10.0	10.0	ug/kg	
Methylene chloride	< 5.0	5.0	ug/kg	
Styrene	< 5.0	5.0	ug/kg	
1,1,2,2-Tetrachloroethane	< 5.0	5.0	ug/kg	
Tetrachloroethene	< 5.0	5.0	ug/kg	
Toluene	< 5.0	5.0	ug/kg	
1,1,1-Trichloroethane	< 5.0	5.0	ug/kg	
1,1,2-Trichloroethane	< 5.0	5.0	ug/kg	
Trichloroethene	< 5.0	5.0	ug/kg	
Vinyl acetate	< 10.0	10.0	ug/kg	
Vinyl chloride	< 10.0	10.0	ug/kg	
Xylene, Total	< 5.0	5.0	ug/kg	

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Analytical Report

Client:	LFR, INC.		**Date Collected:**	04/26/06
Project ID:	009-07992-00/001 John's Manville		**Time Collected:**	10:40
Sample ID:	BP9 (3')		**Date Received:**	04/27/06
Sample No:	6-1778-004		**Date Reported:**	05/08/06

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Semi-Volatile Compounds **Method: 8270C**		**Analysis Date:**	**05/02/06**	
Acenaphthylene	< 330	330	ug/kg	
Anthracene	< 330	330	ug/kg	
Benzidine	< 330	330	ug/kg	
Benzo(a)anthracene	< 330	330	ug/kg	
Benzo(a)pyrene	< 90	90	ug/kg	
Benzo(b)fluoranthene	< 330	330	ug/kg	
Benzo(ghi)perylene	< 330	330	ug/kg	
Benzo(k)fluoranthene	< 330	330	ug/kg	
Benzoic acid	< 330	330	ug/kg	
Benzyl alcohol	< 330	330	ug/kg	
bis(2-Chloroethoxy)methane	< 330	330	ug/kg	
bis(2-Chloroethyl)ether	< 330	330	ug/kg	
bis(2-Chloroisopropyl)ether	< 330	330	ug/kg	
bis(2-Ethylhexyl)phthalate	< 330	330	ug/kg	
4-Bromophenyl phenyl ether	< 330	330	ug/kg	
Butyl benzyl phthalate	< 330	330	ug/kg	
Carbazole	< 330	330	ug/kg	
4-Chloroaniline	< 330	330	ug/kg	
4-Chloro-3-methylphenol	< 330	330	ug/kg	
2-Chloronaphthalene	< 330	330	ug/kg	
2-Chlorophenol	< 330	330	ug/kg	
4-Chlorophenyl phenyl ether	< 330	330	ug/kg	
Chrysene	< 330	330	ug/kg	
Di-n-butyl phthalate	< 330	330	ug/kg	
Di-n-octylphthalate	< 330	330	ug/kg	
Dibenzo(a,h)anthracene	< 90	90	ug/kg	
Dibenzofuran	< 330	330	ug/kg	
1,2-Dichlorobenzene	< 330	330	ug/kg	
1,3-Dichlorobenzene	< 330	330	ug/kg	
1,4-Dichlorobenzene	< 330	330	ug/kg	
3,3'-Dichlorobenzidine	< 660	660	ug/kg	
2,4-Dichlorophenol	< 330	330	ug/kg	
Diethyl phthalate	< 330	330	ug/kg	
2,4-Dimethylphenol	< 330	330	ug/kg	
Dimethyl phthalate	< 330	330	ug/kg	
2,4-Dinitrophenol	< 1,600	1600	ug/kg	
2,4-Dinitrotoluene	< 250	250	ug/kg	
2,6-Dinitrotoluene	< 260	260	ug/kg	
Fluoranthene	< 330	330	ug/kg	

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Analytical Report

Client:	LFR, INC.	**Date Collected:**	04/26/06
Project ID:	009-07992-00/001 John's Manville	**Time Collected:**	10:40
Sample ID:	BP9 (3')	**Date Received:**	04/27/06
Sample No:	6-1778-004	**Date Reported:**	05/08/06

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Semi-Volatile Compounds	**Method: 8270C**		**Analysis Date:**	**05/02/06**	
Fluorene		< 330	330	ug/kg	
Hexachlorobenzene		< 330	330	ug/kg	
Hexachlorobutadiene		< 330	330	ug/kg	
Hexachlorocyclopentadiene		< 330	330	ug/kg	
Hexachloroethane		< 330	330	ug/kg	
Indeno(1,2,3-cd)pyrene		< 330	330	ug/kg	
Isophorone		< 330	330	ug/kg	
2-Methylnaphthalene		< 330	330	ug/kg	
2-Methylphenol		< 330	330	ug/kg	
3 & 4-Methylphenol		< 330	330	ug/kg	
Naphthalene		< 330	330	ug/kg	
2-Nitroaniline		< 1,600	1600	ug/kg	
3-Nitroaniline		< 1,600	1600	ug/kg	
4-Nitroaniline		< 1,600	1600	ug/kg	
Nitrobenzene		< 260	260	ug/kg	
2-Nitrophenol		< 1,600	1600	ug/kg	
4-Nitrophenol		< 1,600	1600	ug/kg	
n-Nitrosodiphenylamine		< 330	330	ug/kg	
n-Nitrosodi-n-propylamine		< 330	330	ug/kg	
Pentachlorophenol		< 330	330	ug/kg	
Phenanthrene		< 330	330	ug/kg	
Phenol		< 330	330	ug/kg	
Pyrene		< 330	330	ug/kg	
Pyridine		< 330	330	ug/kg	
1,2,4-Trichlorobenzene		< 330	330	ug/kg	
2,4,5-Trichlorophenol		< 330	330	ug/kg	
2,4,6-Trichlorophenol		< 330	330	ug/kg	
Pesticides/PCBs	**Method: 8081A/8082**		**Analysis Date:**	**05/04/06**	
Aldrin		< 8.0	8.0	ug/kg	
Aroclor 1016		< 80.0	80.0	ug/kg	
Aroclor 1221		< 80.0	80.0	ug/kg	
Aroclor 1232		< 80.0	80.0	ug/kg	
Aroclor 1242		< 80.0	80.0	ug/kg	
Aroclor 1248		< 80.0	80.0	ug/kg	
Aroclor 1254		< 160	160	ug/kg	
Aroclor 1260		< 160	160	ug/kg	
alpha-BHC		< 2.0	2.0	ug/kg	
beta-BHC		< 8.0	8.0	ug/kg	
delta-BHC		< 8.0	8.0	ug/kg	

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Analytical Report

Client:	LFR, INC.	**Date Collected:**	04/26/06
Project ID:	009-07992-00/001 John's Manville	**Time Collected:**	10:40
Sample ID:	BP9 (3')	**Date Received:**	04/27/06
Sample No:	6-1778-004	**Date Reported:**	05/08/06

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Pesticides/PCBs	**Method: 8081A/8082**		**Analysis Date:**	**05/04/06**	
gamma-BHC (Lindane)		< 8.0	8.0	ug/kg	
alpha-Chlordane		< 80.0	80.0	ug/kg	
gamma-Chlordane		< 80.0	80.0	ug/kg	
4,4'-DDD		< 16.0	16.0	ug/kg	
4,4'-DDE		< 16.0	16.0	ug/kg	
4,4'-DDT		< 16.0	16.0	ug/kg	
Dieldrin		< 16.0	16.0	ug/kg	
Endosulfan I		< 8.0	8.0	ug/kg	
Endosulfan II		< 16.0	16.0	ug/kg	
Endosulfan sulfate		< 16.0	16.0	ug/kg	
Endrin		< 16.0	16.0	ug/kg	
Endrin aldehyde		< 16.0	16.0	ug/kg	
Endrin ketone		< 16.0	16.0	ug/kg	
Heptachlor		< 8.0	8.0	ug/kg	
Heptachlor epoxide		< 8.0	8.0	ug/kg	
Methoxychlor		< 80.0	80.0	ug/kg	
Toxaphene		< 160	160	ug/kg	
Total Metals	**Method: 6010B**		**Analysis Date:**	**05/03/06**	
Antimony		< 1.0	1.0	mg/kg	
Arsenic		0.6	0.2	mg/kg	
Barium		4.6	0.1	mg/kg	
Cadmium		< 0.1	0.1	mg/kg	
Chromium		5.7	0.1	mg/kg	
Lead		1.9	0.2	mg/kg	
Selenium		< 0.2	0.2	mg/kg	
Silver		< 0.1	0.1	mg/kg	
Total Metals	**Method: 7470A**		**Analysis Date:**	**04/28/06**	
Mercury		< 0.05	0.05	mg/kg	

First Environmental Laboratories, Inc.

IL ELAP / NELAC Accreditation # 100292

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Analytical Report

Client:	LFR, INC.	**Date Collected:**	04/26/06
Project ID:	009-07992-00/001 John's Manville	**Time Collected:**	10:15
Sample ID:	BP10 (14")	**Date Received:**	04/27/06
Sample No:	6-1778-005	**Date Reported:**	05/08/06

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Date Analyzed	Method	Flag
pH @ 25°C, 1:10	9.11		Units	05/01/06	4500H+B	

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Analytical Report

Client: LFR, INC.
Project ID: 009-07992-00/001 John's Manville
Sample ID: BP10 (14")
Sample No: 6-1778-005

Date Collected: 04/26/06
Time Collected: 10:15
Date Received: 04/27/06
Date Reported: 05/08/06

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Solids, Total — **Method: 160.3** — **Analysis Date: 04/28/06**				
Total Solids	86.48		%	
Volatile Organic Compounds — **Method: 5035A/8260B** — **Analysis Date: 05/02/06**				
Acetone	< 100	100	ug/kg	
Benzene	< 5.0	5.0	ug/kg	
Bromodichloromethane	< 5.0	5.0	ug/kg	
Bromoform	< 5.0	5.0	ug/kg	
Bromomethane	< 10.0	10.0	ug/kg	
2-Butanone (MEK)	< 10.0	10.0	ug/kg	
Carbon disulfide	< 5.0	5.0	ug/kg	
Carbon tetrachloride	< 5.0	5.0	ug/kg	
Chlorobenzene	< 5.0	5.0	ug/kg	
Chlorodibromomethane	< 5.0	5.0	ug/kg	
Chloroethane	< 10.0	10.0	ug/kg	
Chloroform	< 5.0	5.0	ug/kg	
Chloromethane	< 10.0	10.0	ug/kg	
1,1-Dichloroethane	< 5.0	5.0	ug/kg	
1,2-Dicbloroethane	< 5.0	5.0	ug/kg	
1,1-Dichloroethene	< 5.0	5.0	ug/kg	
cis-1,2-Dichloroethene	< 5.0	5.0	ug/kg	
trans-1,2-Dichloroethene	< 5.0	5.0	ug/kg	
1,2-Dichloropropane	< 5.0	5.0	ug/kg	
cis-1,3-Dichloropropene	< 5.0	5.0	ug/kg	
trans-1,3-Dichloropropene	< 5.0	5.0	ug/kg	
Ethylbenzene	< 5.0	5.0	ug/kg	
2-Hexanone	< 10.0	10.0	ug/kg	
Methyl-tert-butylether (MTBE)	< 5.0	5.0	ug/kg	
4-Methyl-2-pentanone (MIBK)	< 10.0	10.0	ug/kg	
Methylene chloride	< 5.0	5.0	ug/kg	
Styrene	< 5.0	5.0	ug/kg	
1,1,2,2-Tetrachloroethane	< 5.0	5.0	ug/kg	
Tetrachloroethene	< 5.0	5.0	ug/kg	
Toluene	< 5.0	5.0	ug/kg	
1,1,1-Trichloroethane	< 5.0	5.0	ug/kg	
1,1,2-Trichloroethane	< 5.0	5.0	ug/kg	
Trichloroethene	< 5.0	5.0	ug/kg	
Vinyl acetate	< 10.0	10.0	ug/kg	
Vinyl chloride	< 10.0	10.0	ug/kg	
Xylene, Total	< 5.0	5.0	ug/kg	

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Analytical Report

Client:	LFR, INC.	**Date Collected:**	04/26/06
Project ID:	009-07992-00/001 John's Manville	**Time Collected:**	10:15
Sample ID:	BP10 (14")	**Date Received:**	04/27/06
Sample No:	6-1778-005	**Date Reported:**	05/08/06

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Semi-Volatile Compounds **Method: 8270C**		**Analysis Date:**	**05/02/06**	
Acenaphthylene	< 330	330	ug/kg	
Anthracene	< 330	330	ug/kg	
Benzidine	< 330	330	ug/kg	
Benzo(a)anthracene	< 330	330	ug/kg	
Benzo(a)pyrene	< 90	90	ug/kg	
Benzo(b)fluoranthene	< 330	330	ug/kg	
Benzo(ghi)perylene	< 330	330	ug/kg	
Benzo(k)fluoranthene	< 330	330	ug/kg	
Benzoic acid	< 330	330	ug/kg	
Benzyl alcohol	< 330	330	ug/kg	
bis(2-Chloroethoxy)methane	< 330	330	ug/kg	
bis(2-Chloroethyl)ether	< 330	330	ug/kg	
bis(2-Chloroisopropyl)ether	< 330	330	ug/kg	
bis(2-Ethylhexyl)phthalate	< 330	330	ug/kg	
4-Bromophenyl phenyl ether	< 330	330	ug/kg	
Butyl benzyl phthalate	< 330	330	ug/kg	
Carbazole	< 330	330	ug/kg	
4-Chloroaniline	< 330	330	ug/kg	
4-Chloro-3-methylphenol	< 330	330	ug/kg	
2-Chloronaphthalene	< 330	330	ug/kg	
2-Chlorophenol	< 330	330	ug/kg	
4-Chlorophenyl phenyl ether	< 330	330	ug/kg	
Chrysene	< 330	330	ug/kg	
Di-n-butyl phthalate	< 330	330	ug/kg	
Di-n-octylphthalate	< 330	330	ug/kg	
Dibenzo(a,h)anthracene	< 90	90	ug/kg	
Dibenzofuran	< 330	330	ug/kg	
1,2-Dichlorobenzene	< 330	330	ug/kg	
1,3-Dichlorobenzene	< 330	330	ug/kg	
1,4-Dichlorobenzene	< 330	330	ug/kg	
3,3'-Dichlorobenzidine	< 660	660	ug/kg	
2,4-Dichlorophenol	< 330	330	ug/kg	
Diethyl phthalate	< 330	330	ug/kg	
2,4-Dimethylphenol	< 330	330	ug/kg	
Dimethyl phthalate	< 330	330	ug/kg	
2,4-Dinitrophenol	< 1,600	1600	ug/kg	
2,4-Dinitrotoluene	< 250	250	ug/kg	
2,6-Dinitrotoluene	< 260	260	ug/kg	
Fluoranthene	< 330	330	ug/kg	

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Analytical Report

Client:	LFR, INC.	**Date Collected:**	04/26/06
Project ID:	009-07992-00/001 John's Manville	**Time Collected:**	10:15
Sample ID:	BP10 (14")	**Date Received:**	04/27/06
Sample No:	6-1778-005	**Date Reported:**	05/08/06

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Semi-Volatile Compounds	**Method: 8270C**		**Analysis Date:**	**05/02/06**	
Fluorene		< 330	330	ug/kg	
Hexachlorobenzene		< 330	330	ug/kg	
Hexachlorobutadiene		< 330	330	ug/kg	
Hexachlorocyclopentadiene		< 330	330	ug/kg	
Hexachloroethane		< 330	330	ug/kg	
Indeno(1,2,3-cd)pyrene		< 330	330	ug/kg	
Isophorone		< 330	330	ug/kg	
2-Methylnaphthalene		< 330	330	ug/kg	
2-Methylphenol		< 330	330	ug/kg	
3 & 4-Methylphenol		< 330	330	ug/kg	
Naphthalene		< 330	330	ug/kg	
2-Nitroaniline		< 1,600	1600	ug/kg	
3-Nitroaniline		< 1,600	1600	ug/kg	
4-Nitroaniline		< 1,600	1600	ug/kg	
Nitrobenzene		< 260	260	ug/kg	
2-Nitrophenol		< 1,600	1600	ug/kg	
4-Nitrophenol		< 1,600	1600	ug/kg	
n-Nitrosodiphenylamine		< 330	330	ug/kg	
n-Nitrosodi-n-propylamine		< 330	330	ug/kg	
Pentachlorophenol		< 330	330	ug/kg	
Phenanthrene		< 330	330	ug/kg	
Phenol		< 330	330	ug/kg	
Pyrene		< 330	330	ug/kg	
Pyridine		< 330	330	ug/kg	
1,2,4-Trichlorobenzene		< 330	330	ug/kg	
2,4,5-Trichlorophenol		< 330	330	ug/kg	
2,4,6-Trichlorophenol		< 330	330	ug/kg	
Pesticides/PCBs	**Method: 8081A/8082**		**Analysis Date:**	**05/04/06**	
Aldrin		< 8.0	8.0	ug/kg	
Aroclor 1016		< 80.0	80.0	ug/kg	
Aroclor 1221		< 80.0	80.0	ug/kg	
Aroclor 1232		< 80.0	80.0	ug/kg	
Aroclor 1242		< 80.0	80.0	ug/kg	
Aroclor 1248		< 80.0	80.0	ug/kg	
Aroclor 1254		< 160	160	ug/kg	
Aroclor 1260		< 160	160	ug/kg	
alpha-BHC		< 2.0	2.0	ug/kg	
beta-BHC		< 8.0	8.0	ug/kg	
delta-BHC		< 8.0	8.0	ug/kg	

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Analytical Report

Client:	LFR, INC.	**Date Collected:**	04/26/06
Project ID:	009-07992-00/001 John's Manville	**Time Collected:**	10:15
Sample ID:	BP10 (14")	**Date Received:**	04/27/06
Sample No:	6-1778-005	**Date Reported:**	05/08/06

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Pesticides/PCBs	**Method: 8081A/8082**		**Analysis Date:**	**05/04/06**	
gamma-BHC (Lindane)		< 8.0	8.0	ug/kg	
alpha-Chlordane		< 80.0	80.0	ug/kg	
gamma-Chlordane		< 80.0	80.0	ug/kg	
4,4'-DDD		< 16.0	16.0	ug/kg	
4,4'-DDE		< 16.0	16.0	ug/kg	
4,4'-DDT		< 16.0	16.0	ug/kg	
Dieldrin		< 16.0	16.0	ug/kg	
Endosulfan I		< 8.0	8.0	ug/kg	
Endosulfan II		< 16.0	16.0	ug/kg	
Endosulfan sulfate		< 16.0	16.0	ug/kg	
Endrin		< 16.0	16.0	ug/kg	
Endrin aldehyde		< 16.0	16.0	ug/kg	
Endrin ketone		< 16.0	16.0	ug/kg	
Heptachlor		< 8.0	8.0	ug/kg	
Heptachlor epoxide		< 8.0	8.0	ug/kg	
Methoxychlor		< 80.0	80.0	ug/kg	
Toxaphene		< 160	160	ug/kg	
Total Metals	**Method: 6010B**		**Analysis Date:**	**05/03/06**	
Antimony		< 1.0	1.0	mg/kg	
Arsenic		1.0	0.2	mg/kg	
Barium		6.2	0.1	mg/kg	
Cadmium		< 0.1	0.1	mg/kg	
Chromium		3.0	0.1	mg/kg	
Lead		1.4	0.2	mg/kg	
Selenium		< 0.2	0.2	mg/kg	
Silver		< 0.1	0.1	mg/kg	
Total Metals	**Method: 7470A**		**Analysis Date:**	**04/28/06**	
Mercury		< 0.05	0.05	mg/kg	

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Analytical Report

Client:	LFR, INC.	**Date Collected:**	04/26/06
Project ID:	009-07992-00/001 John's Manville	**Time Collected:**	10:20
Sample ID:	BP10 (3')	**Date Received:**	04/27/06
Sample No:	6-1778-006	**Date Reported:**	05/08/06

Results are reported on a dry weight basis.

Aualyte	Result	R.L.	Units	Date Analyzed	Method	Flag
pH @ 25°C, 1:10	9.27		Units	05/01/06	4500H+B	

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Analytical Report

Client:	LFR, INC.	**Date Collected:**	04/26/06
Project ID:	009-07992-00/001 John's Manville	**Time Collected:**	10:20
Sample ID:	BP10 (3')	**Date Received:**	04/27/06
Sample No:	6-1778-006	**Date Reported:**	05/08/06

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Solids, Total	**Method: 160.3**		**Analysis Date:**	**04/28/06**	
Total Solids		88.01		%	
Volatile Organic Compounds	**Method: 5035A/8260B**		**Analysis Date:**	**05/01/06**	
Acetone		< 100	100	ug/kg	
Benzene		< 5.0	5.0	ug/kg	
Bromodichloromethane		< 5.0	5.0	ug/kg	
Bromoform		< 5.0	5.0	ug/kg	
Bromomethane		< 10.0	10.0	ug/kg	
2-Butanone (MEK)		< 10.0	10.0	ug/kg	
Carbon disulfide		< 5.0	5.0	ug/kg	
Carbon tetrachloride		< 5.0	5.0	ug/kg	
Chlorobenzene		< 5.0	5.0	ug/kg	
Chlorodibromomethane		< 5.0	5.0	ug/kg	
Chloroethane		< 10.0	10.0	ug/kg	
Chloroform		< 5.0	5.0	ug/kg	
Chloromethane		< 10.0	10.0	ug/kg	
1,1-Dichloroethane		< 5.0	5.0	ug/kg	
1,2-Dichloroethane		< 5.0	5.0	ug/kg	
1,1-Dichloroethene		< 5.0	5.0	ug/kg	
cis-1,2-Dichloroethene		< 5.0	5.0	ug/kg	
trans-1,2-Dichloroethene		< 5.0	5.0	ug/kg	
1,2-Dichloropropane		< 5.0	5.0	ug/kg	
cis-1,3-Dichloropropene		< 5.0	5.0	ug/kg	
trans-1,3-Dichloropropene		< 5.0	5.0	ug/kg	
Ethylbenzene		< 5.0	5.0	ug/kg	
2-Hexanone		< 10.0	10.0	ug/kg	
Methyl-tert-butylether (MTBE)		< 5.0	5.0	ug/kg	
4-Methyl-2-pentanone (MIBK)		< 10.0	10.0	ug/kg	
Methylene chloride		< 5.0	5.0	ug/kg	
Styrene		< 5.0	5.0	ug/kg	
1,1,2,2-Tetrachloroethane		< 5.0	5.0	ug/kg	
Tetrachloroethene		< 5.0	5.0	ug/kg	
Toluene		< 5.0	5.0	ug/kg	
1,1,1-Trichloroethane		< 5.0	5.0	ug/kg	
1,1,2-Trichloroethane		< 5.0	5.0	ug/kg	
Trichloroethene		< 5.0	5.0	ug/kg	
Vinyl acetate		< 10.0	10.0	ug/kg	
Vinyl chloride		< 10.0	10.0	ug/kg	
Xylene, Total		< 5.0	5.0	ug/kg	

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Analytical Report

Client:	LFR, INC.	**Date Collected:**	04/26/06
Project ID:	009-07992-00/001 John's Manville	**Time Collected:**	10:20
Sample ID:	BP10 (3')	**Date Received:**	04/27/06
Sample No:	6-1778-006	**Date Reported:**	05/08/06

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Semi-Volatile Compounds **Method: 8270C**		**Analysis Date: 05/02/06**		
Acenaphthylene	< 330	330	ug/kg	
Anthracene	< 330	330	ug/kg	
Benzidine	< 330	330	ug/kg	
Benzo(a)anthracene	< 330	330	ug/kg	
Benzo(a)pyrene	< 90	90	ug/kg	
Benzo(b)fluoranthene	< 330	330	ug/kg	
Benzo(ghi)perylene	< 330	330	ug/kg	
Benzo(k)fluoranthene	< 330	330	ug/kg	
Benzoic acid	< 330	330	ug/kg	
Benzyl alcohol	< 330	330	ug/kg	
bis(2-Chloroethoxy)methane	< 330	330	ug/kg	
bis(2-Chloroethyl)ether	< 330	330	ug/kg	
bis(2-Chloroisopropyl)ether	< 330	330	ug/kg	
bis(2-Ethylhexyl)phthalate	< 330	330	ug/kg	
4-Bromophenyl phenyl ether	< 330	330	ug/kg	
Butyl benzyl phthalate	< 330	330	ug/kg	
Carbazole	< 330	330	ug/kg	
4-Chloroaniline	< 330	330	ug/kg	
4-Chloro-3-methylphenol	< 330	330	ug/kg	
2-Chloronaphthalene	< 330	330	ug/kg	
2-Chlorophenol	< 330	330	ug/kg	
4-Chlorophenyl phenyl ether	< 330	330	ug/kg	
Chrysene	< 330	330	ug/kg	
Di-n-butyl phthalate	< 330	330	ug/kg	
Di-n-octylphthalate	< 330	330	ug/kg	
Dibenzo(a,h)anthracene	< 90	90	ug/kg	
Dibenzofuran	< 330	330	ug/kg	
1,2-Dichlorobenzene	< 330	330	ug/kg	
1,3-Dichlorobenzene	< 330	330	ug/kg	
1,4-Dichlorobenzene	< 330	330	ug/kg	
3,3'-Dichlorobenzidiue	< 660	660	ug/kg	
2,4-Dichlorophenol	< 330	330	ug/kg	
Diethyl phthalate	< 330	330	ug/kg	
2,4-Dimethylphenol	< 330	330	ug/kg	
Dimethyl phthalate	< 330	330	ug/kg	
2,4-Dinitrophenol	< 1,600	1600	ug/kg	
2,4-Dinitrotoluene	< 250	250	ug/kg	
2,6-Dinitrotoluene	< 260	260	ug/kg	
Fluoranthene	< 330	330	ug/kg	

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Analytical Report

Client:	LFR, INC.	**Date Collected:**	04/26/06
Project ID:	009-07992-00/001 John's Manville	**Time Collected:**	10:20
Sample ID:	BP10 (3')	**Date Received:**	04/27/06
Sample No:	6-1778-006	**Date Reported:**	05/08/06

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Semi-Volatile Compounds	**Method: 8270C**		**Analysis Date:**	**05/02/06**	
Fluorene		< 330	330	ug/kg	
Hexachlorobenzene		< 330	330	ug/kg	
Hexachlorobutadiene		< 330	330	ug/kg	
Hexachlorocyclopentadiene		< 330	330	ug/kg	
Hexachloroethane		< 330	330	ug/kg	
Indeno(1,2,3-cd)pyrene		< 330	330	ug/kg	
Isophorone		< 330	330	ug/kg	
2-Methylnaphthalene		< 330	330	ug/kg	
2-Methylphenol		< 330	330	ug/kg	
3 & 4-Methylphenol		< 330	330	ug/kg	
Naphthalene		< 330	330	ug/kg	
2-Nitroaniline		< 1,600	1600	ug/kg	
3-Nitroaniline		< 1,600	1600	ug/kg	
4-Nitroaniline		< 1,600	1600	ug/kg	
Nitrobenzene		< 260	260	ug/kg	
2-Nitrophenol		< 1,600	1600	ug/kg	
4-Nitrophenol		< 1,600	1600	ug/kg	
n-Nitrosodiphenylamine		< 330	330	ug/kg	
n-Nitrosodi-n-propylamine		< 330	330	ug/kg	
Pentachlorophenol		< 330	330	ug/kg	
Phenanthrene		< 330	330	ug/kg	
Phenol		< 330	330	ug/kg	
Pyrene		< 330	330	ug/kg	
Pyridine		< 330	330	ug/kg	
1,2,4-Trichlorobenzene		< 330	330	ug/kg	
2,4,5-Trichlorophenol		< 330	330	ug/kg	
2,4,6-Trichlorophenol		< 330	330	ug/kg	
Pesticides/PCBs	**Method: 8081A/8082**		**Analysis Date:**	**05/04/06**	
Aldrin		< 8.0	8.0	ug/kg	
Aroclor 1016		< 80.0	80.0	ug/kg	
Aroclor 1221		< 80.0	80.0	ug/kg	
Aroclor 1232		< 80.0	80.0	ug/kg	
Aroclor 1242		< 80.0	80.0	ug/kg	
Aroclor 1248		< 80.0	80.0	ug/kg	
Aroclor 1254		< 160	160	ug/kg	
Aroclor 1260		< 160	160	ug/kg	
alpha-BHC		< 2.0	2.0	ug/kg	
beta-BHC		< 8.0	8.0	ug/kg	
delta-BHC		< 8.0	8.0	ug/kg	

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Analytical Report

Client:	LFR, INC.	**Date Collected:**	04/26/06
Project ID:	009-07992-00/001 John's Manville	**Time Collected:**	10:20
Sample ID:	BP10 (3')	**Date Received:**	04/27/06
Sample No:	6-1778-006	**Date Reported:**	05/08/06

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Pesticides/PCBs	**Method: 8081A/8082**		**Analysis Date:**	**05/04/06**	
gamma-BHC (Lindane)		< 8.0	8.0	ug/kg	
alpha-Chlordane		< 80.0	80.0	ug/kg	
gamma-Chlordane		< 80.0	80.0	ug/kg	
4,4'-DDD		< 16.0	16.0	ug/kg	
4,4'-DDE		< 16.0	16.0	ug/kg	
4,4'-DDT		< 16.0	16.0	ug/kg	
Dieldrin		< 16.0	16.0	ug/kg	
Endosulfan I		< 8.0	8.0	ug/kg	
Endosulfan II		< 16.0	16.0	ug/kg	
Endosulfan sulfate		< 16.0	16.0	ug/kg	
Endrin		< 16.0	16.0	ug/kg	
Endrin aldehyde		< 16.0	16.0	ug/kg	
Endrin ketone		< 16.0	16.0	ug/kg	
Heptachlor		< 8.0	8.0	ug/kg	
Heptachlor epoxide		< 8.0	8.0	ug/kg	
Methoxychlor		< 80.0	80.0	ug/kg	
Toxaphene		< 160	160	ug/kg	
Total Metals	**Method: 6010B**		**Analysis Date:**	**05/03/06**	
Antimony		< 1.0	1.0	mg/kg	
Arsenic		0.7	0.2	mg/kg	
Barium		3.4	0.1	mg/kg	
Cadmium		< 0.1	0.1	mg/kg	
Chromium		3.8	0.1	mg/kg	
Lead		1.4	0.2	mg/kg	
Selenium		< 0.2	0.2	mg/kg	
Silver		< 0.1	0.1	mg/kg	
Total Metals	**Method: 7470A**		**Analysis Date:**	**04/28/06**	
Mercury		< 0.05	0.05	mg/kg	

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Analytical Report

Client: LFR, INC.
Project ID: 009-07992-00/001 John's Manville
Sample ID: BP11 (16")
Sample No: 6-1778-007

Date Collected: 04/26/06
Time Collected: 10:45
Date Received: 04/27/06
Date Reported: 05/08/06

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Date Analyzed	Method	Flag
pH @ 25°C, 1:10	8.73		Units	05/01/06	4500H+B	

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Analytical Report

Client:	LFR, INC.	**Date Collected:**	04/26/06
Project ID:	009-07992-00/001 John's Manville	**Time Collected:**	10:45
Sample ID:	BP11 (16")	**Date Received:**	04/27/06
Sample No:	6-1778-007	**Date Reported:**	05/08/06

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Solids, Total	**Method: 160.3**		**Analysis Date:**	**04/28/06**	
Total Solids		83.17		%	
Volatile Organic Compounds	**Method: 5035A/8260B**		**Analysis Date:**	**05/01/06**	
Acetone		< 100	100	ug/kg	
Benzene		< 5.0	5.0	ug/kg	
Bromodichloromethane		< 5.0	5.0	ug/kg	
Bromoform		< 5.0	5.0	ug/kg	
Bromomethane		< 10.0	10.0	ug/kg	
2-Butanone (MEK)		< 10.0	10.0	ug/kg	
Carbon disulfide		< 5.0	5.0	ug/kg	
Carbon tetrachloride		< 5.0	5.0	ug/kg	
Chlorobenzene		< 5.0	5.0	ug/kg	
Chlorodibromomethane		< 5.0	5.0	ug/kg	
Chloroethane		< 10.0	10.0	ug/kg	
Chloroform		< 5.0	5.0	ug/kg	
Chloromethane		< 10.0	10.0	ug/kg	
1,1-Dichloroethane		< 5.0	5.0	ug/kg	
1,2-Dichloroethane		< 5.0	5.0	ug/kg	
1,1-Dichloroethene		< 5.0	5.0	ug/kg	
cis-1,2-Dichloroethene		< 5.0	5.0	ug/kg	
trans-1,2-Dichloroethene		< 5.0	5.0	ug/kg	
1,2-Dichloropropane		< 5.0	5.0	ug/kg	
cis-1,3-Dichloropropene		< 5.0	5.0	ug/kg	
trans-1,3-Dichloropropene		< 5.0	5.0	ug/kg	
Ethylbenzene		< 5.0	5.0	ug/kg	
2-Hexanone		< 10.0	10.0	ug/kg	
Methyl-tert-butylether (MTBE)		< 5.0	5.0	ug/kg	
4-Methyl-2-pentanone (MIBK)		< 10.0	10.0	ug/kg	
Methylene chloride		< 5.0	5.0	ug/kg	
Styrene		< 5.0	5.0	ug/kg	
1,1,2,2-Tetrachloroethane		< 5.0	5.0	ug/kg	
Tetrachloroethene		< 5.0	5.0	ug/kg	
Toluene		< 5.0	5.0	ug/kg	
1,1,1-Trichloroethane		< 5.0	5.0	ug/kg	
1,1,2-Trichloroethane		< 5.0	5.0	ug/kg	
Trichloroethene		< 5.0	5.0	ug/kg	
Vinyl acetate		< 10.0	10.0	ug/kg	
Vinyl chloride		< 10.0	10.0	ug/kg	
Xylene, Total		< 5.0	5.0	ug/kg	

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Analytical Report

Client:	LFR, INC.	**Date Collected:**	04/26/06
Project ID:	009-07992-00/001 John's Manville	**Time Collected:**	10:45
Sample ID:	BP11 (16")	**Date Received:**	04/27/06
Sample No:	6-1778-007	**Date Reported:**	05/08/06

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Semi-Volatile Compounds **Method: 8270C**		**Analysis Date: 05/02/06**		
Acenaphthylene	< 330	330	ug/kg	
Anthracene	< 330	330	ug/kg	
Benzidine	< 330	330	ug/kg	
Benzo(a)anthracene	< 330	330	ug/kg	
Benzo(a)pyrene	< 90	90	ug/kg	
Benzo(b)fluoranthene	< 330	330	ug/kg	
Benzo(ghi)perylene	< 330	330	ug/kg	
Benzo(k)fluoranthene	< 330	330	ug/kg	
Benzoic acid	< 330	330	ug/kg	
Benzyl alcohol	< 330	330	ug/kg	
bis(2-Chloroethoxy)methane	< 330	330	ug/kg	
bis(2-Chloroethyl)ether	< 330	330	ug/kg	
bis(2-Chloroisopropyl)ether	< 330	330	ug/kg	
bis(2-Ethylhexyl)phthalate	< 330	330	ug/kg	
4-Bromophenyl phenyl ether	< 330	330	ug/kg	
Butyl benzyl phthalate	< 330	330	ug/kg	
Carbazole	< 330	330	ug/kg	
4-Chloroaniline	< 330	330	ug/kg	
4-Chloro-3-methylphenol	< 330	330	ug/kg	
2-Chloronaphthalene	< 330	330	ug/kg	
2-Chlorophenol	< 330	330	ug/kg	
4-Chlorophenyl phenyl ether	< 330	330	ug/kg	
Chrysene	< 330	330	ug/kg	
Di-n-butyl phthalate	< 330	330	ug/kg	
Di-n-octylphthalate	< 330	330	ug/kg	
Dibenzo(a,h)anthracene	< 90	90	ug/kg	
Dibenzofuran	< 330	330	ug/kg	
1,2-Dichlorobenzene	< 330	330	ug/kg	
1,3-Dichlorobenzene	< 330	330	ug/kg	
1,4-Dichlorobenzene	< 330	330	ug/kg	
3,3'-Dichlorobenzidine	< 660	660	ug/kg	
2,4-Dichlorophenol	< 330	330	ug/kg	
Diethyl phthalate	< 330	330	ug/kg	
2,4-Dimethylphenol	< 330	330	ug/kg	
Dimethyl phthalate	< 330	330	ug/kg	
2,4-Dinitrophenol	< 1,600	1600	ug/kg	
2,4-Dinitrotoluene	< 250	250	ug/kg	
2,6-Dinitrotoluene	< 260	260	ug/kg	
Fluoranthene	< 330	330	ug/kg	

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Analytical Report

Client:	LFR, INC.	**Date Collected:**	04/26/06
Project ID:	009-07992-00/001 John's Manville	**Time Collected:**	10:45
Sample ID:	BP11 (16")	**Date Received:**	04/27/06
Sample No:	6-1778-007	**Date Reported:**	05/08/06

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Semi-Volatile Compounds	**Method: 8270C**		**Analysis Date:**	**05/02/06**	
Fluorene		< 330	330	ug/kg	
Hexachlorobenzene		< 330	330	ug/kg	
Hexachlorobutadiene		< 330	330	ug/kg	
Hexachlorocyclopentadiene		< 330	330	ug/kg	
Hexachloroethane		< 330	330	ug/kg	
Indeno(1,2,3-cd)pyrene		< 330	330	ug/kg	
Isophorone		< 330	330	ug/kg	
2-Methylnaphthalene		< 330	330	ug/kg	
2-Methylphenol		< 330	330	ug/kg	
3 & 4-Methylphenol		< 330	330	ug/kg	
Naphthalene		< 330	330	ug/kg	
2-Nitroaniline		< 1,600	1600	ug/kg	
3-Nitroaniline		< 1,600	1600	ug/kg	
4-Nitroaniline		< 1,600	1600	ug/kg	
Nitrobenzene		< 260	260	ug/kg	
2-Nitrophenol		< 1,600	1600	ug/kg	
4-Nitrophenol		< 1,600	1600	ug/kg	
n-Nitrosodiphenylamine		< 330	330	ug/kg	
n-Nitrosodi-n-propylamine		< 330	330	ug/kg	
Pentachlorophenol		< 330	330	ug/kg	
Phenanthrene		< 330	330	ug/kg	
Phenol		< 330	330	ug/kg	
Pyrene		< 330	330	ug/kg	
Pyridine		< 330	330	ug/kg	
1,2,4-Trichlorobenzene		< 330	330	ug/kg	
2,4,5-Trichlorophenol		< 330	330	ug/kg	
2,4,6-Trichlorophenol		< 330	330	ug/kg	
Pesticides/PCBs	**Method: 8081A/8082**		**Analysis Date:**	**05/04/06**	
Aldrin		< 8.0	8.0	ug/kg	
Aroclor 1016		< 80.0	80.0	ug/kg	
Aroclor 1221		< 80.0	80.0	ug/kg	
Aroclor 1232		< 80.0	80.0	ug/kg	
Aroclor 1242		< 80.0	80.0	ug/kg	
Aroclor 1248		< 80.0	80.0	ug/kg	
Aroclor 1254		< 160	160	ug/kg	
Aroclor 1260		< 160	160	ug/kg	
alpha-BHC		< 2.0	2.0	ug/kg	
beta-BHC		< 8.0	8.0	ug/kg	
delta-BHC		< 8.0	8.0	ug/kg	

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Analytical Report

Client: LFR, INC.
Project ID: 009-07992-00/001 John's Manville
Sample ID: BP11 (16")
Sample No: 6-1778-007

Date Collected: 04/26/06
Time Collected: 10:45
Date Received: 04/27/06
Date Reported: 05/08/06

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Pesticides/PCBs — **Method: 8081A/8082**		**Analysis Date: 05/04/06**		
gamma-BHC (Lindane)	< 8.0	8.0	ug/kg	
alpha-Chlordane	< 80.0	80.0	ug/kg	
gamma-Chlordane	< 80.0	80.0	ug/kg	
4,4'-DDD	< 16.0	16.0	ug/kg	
4,4'-DDE	< 16.0	16.0	ug/kg	
4,4'-DDT	< 16.0	16.0	ug/kg	
Dieldrin	< 16.0	16.0	ug/kg	
Endosulfan I	< 8.0	8.0	ug/kg	
Endosulfan II	< 16.0	16.0	ug/kg	
Endosulfan sulfate	< 16.0	16.0	ug/kg	
Endrin	< 16.0	16.0	ug/kg	
Endrin aldehyde	< 16.0	16.0	ug/kg	
Endrin ketone	< 16.0	16.0	ug/kg	
Heptachlor	< 8.0	8.0	ug/kg	
Heptachlor epoxide	< 8.0	8.0	ug/kg	
Methoxychlor	< 80.0	80.0	ug/kg	
Toxaphene	< 160	160	ug/kg	
Total Metals — **Method: 6010B**		**Analysis Date: 05/03/06**		
Antimony	< 1.0	1.0	mg/kg	
Arsenic	0.6	0.2	mg/kg	
Barium	3.2	0.1	mg/kg	
Cadmium	< 0.1	0.1	mg/kg	
Chromium	4.9	0.1	mg/kg	
Lead	1.6	0.2	mg/kg	
Selenium	< 0.2	0.2	mg/kg	
Silver	< 0.1	0.1	mg/kg	
Total Metals — **Method: 7470A**		**Analysis Date: 04/28/06**		
Mercury	< 0.05	0.05	mg/kg	

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Analytical Report

Client: LFR, INC.
Project ID: 009-07992-00/001 John's Manville
Sample ID: BP11 (3')
Sample No: 6-1778-008

Date Collected: 04/26/06
Time Collected: 11:15
Date Received: 04/27/06
Date Reported: 05/08/06

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Date Analyzed	Method	Flag
pH @ 25°C, 1:10	8.91		Units	05/01/06	4500H+B	

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Analytical Report

Client: LFR, INC.
Project ID: 009-07992-00/001 John's Manville
Sample ID: BP11 (3')
Sample No: 6-1778-008

Date Collected: 04/26/06
Time Collected: 11:15
Date Received: 04/27/06
Date Reported: 05/08/06

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Solids, Total — **Method: 160.3**		**Analysis Date: 04/28/06**		
Total Solids	84.67		%	
Volatile Organic Compounds — **Method: 5035A/8260B**		**Analysis Date: 05/01/06**		
Acetone	< 100	100	ug/kg	
Benzene	< 5.0	5.0	ug/kg	
Bromodichloromethane	< 5.0	5.0	ug/kg	
Bromoform	< 5.0	5.0	ug/kg	
Bromomethane	< 10.0	10.0	ug/kg	
2-Butanone (MEK)	< 10.0	10.0	ug/kg	
Carbon disulfide	< 5.0	5.0	ug/kg	
Carbon tetrachloride	< 5.0	5.0	ug/kg	
Chlorobenzene	< 5.0	5.0	ug/kg	
Chlorodibromomethane	< 5.0	5.0	ug/kg	
Chloroethane	< 10.0	10.0	ug/kg	
Chloroform	< 5.0	5.0	ug/kg	
Chloromethane	< 10.0	10.0	ug/kg	
1,1-Dichloroethane	< 5.0	5.0	ug/kg	
1,2-Dichloroethane	< 5.0	5.0	ug/kg	
1,1-Dichloroethene	< 5.0	5.0	ug/kg	
cis-1,2-Dichloroethene	< 5.0	5.0	ug/kg	
trans-1,2-Dichloroethene	< 5.0	5.0	ug/kg	
1,2-Dichloropropane	< 5.0	5.0	ug/kg	
cis-1,3-Dichloropropene	< 5.0	5.0	ug/kg	
trans-1,3-Dichloropropene	< 5.0	5.0	ug/kg	
Ethylbenzene	< 5.0	5.0	ug/kg	
2-Hexanone	< 10.0	10.0	ug/kg	
Methyl-tert-butylether (MTBE)	< 5.0	5.0	ug/kg	
4-Methyl-2-pentanone (MIBK)	< 10.0	10.0	ug/kg	
Methylene chloride	< 5.0	5.0	ug/kg	
Styrene	< 5.0	5.0	ug/kg	
1,1,2,2-Tetrachloroethane	< 5.0	5.0	ug/kg	
Tetrachloroethene	< 5.0	5.0	ug/kg	
Toluene	< 5.0	5.0	ug/kg	
1,1,1-Trichloroethane	< 5.0	5.0	ug/kg	
1,1,2-Trichloroethane	< 5.0	5.0	ug/kg	
Trichloroethene	< 5.0	5.0	ug/kg	
Vinyl acetate	< 10.0	10.0	ug/kg	
Vinyl chloride	< 10.0	10.0	ug/kg	
Xylene, Total	< 5.0	5.0	ug/kg	

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Analytical Report

Client: LFR, INC.
Project ID: 009-07992-00/001 John's Manville
Sample ID: BP11 (3')
Sample No: 6-1778-008

Date Collected: 04/26/06
Time Collected: 11:15
Date Received: 04/27/06
Date Reported: 05/08/06

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Semi-Volatile Compounds **Method: 8270C**		**Analysis Date: 05/02/06**		
Acenaphthylene	< 330	330	ug/kg	
Anthracene	< 330	330	ug/kg	
Benzidine	< 330	330	ug/kg	
Benzo(a)anthracene	< 330	330	ug/kg	
Benzo(a)pyrene	< 90	90	ug/kg	
Benzo(b)fluoranthene	< 330	330	ug/kg	
Benzo(ghi)perylene	< 330	330	ug/kg	
Benzo(k)fluoranthene	< 330	330	ug/kg	
Benzoic acid	< 330	330	ug/kg	
Benzyl alcohol	< 330	330	ug/kg	
bis(2-Chloroethoxy)methane	< 330	330	ug/kg	
bis(2-Chloroethyl)ether	< 330	330	ug/kg	
bis(2-Chloroisopropyl)ether	< 330	330	ug/kg	
bis(2-Ethylhexyl)phthalate	< 330	330	ug/kg	
4-Bromophenyl phenyl ether	< 330	330	ug/kg	
Butyl benzyl phthalate	< 330	330	ug/kg	
Carbazole	< 330	330	ug/kg	
4-Chloroaniline	< 330	330	ug/kg	
4-Chloro-3-methylphenol	< 330	330	ug/kg	
2-Cbloronaphthalene	< 330	330	ug/kg	
2-Chlorophenol	< 330	330	ug/kg	
4-Chlorophenyl phenyl ether	< 330	330	ug/kg	
Chrysene	< 330	330	ug/kg	
Di-n-butyl phthalate	< 330	330	ug/kg	
Di-n-octylphthalate	< 330	330	ug/kg	
Dibenzo(a,h)anthracene	< 90	90	ug/kg	
Dibenzofuran	< 330	330	ug/kg	
1,2-Dichlorobenzene	< 330	330	ug/kg	
1,3-Dichlorobenzene	< 330	330	ug/kg	
1,4-Dichlorobenzene	< 330	330	ug/kg	
3,3'-Dichlorobenzidine	< 660	660	ug/kg	
2,4-Dichlorophenol	< 330	330	ug/kg	
Diethyl phthalate	< 330	330	ug/kg	
2,4-Dimethylphenol	< 330	330	ug/kg	
Dimethyl phthalate	< 330	330	ug/kg	
2,4-Dinitrophenol	< 1,600	1600	ug/kg	
2,4-Dinitrotoluene	< 250	250	ug/kg	
2,6-Dinitrotoluene	< 260	260	ug/kg	
Fluoranthene	< 330	330	ug/kg	

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Analytical Report

Client: LFR, INC.
Project ID: 009-07992-00/001 John's Manville
Sample ID: BP11 (3')
Sample No: 6-1778-008

Date Collected: 04/26/06
Time Collected: 11:15
Date Received: 04/27/06
Date Reported: 05/08/06

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Semi-Volatile Compounds — **Method: 8270C**	**Analysis Date: 05/02/06**			
Fluorene	< 330	330	ug/kg	
Hexachlorobenzene	< 330	330	ug/kg	
Hexachlorobutadiene	< 330	330	ug/kg	
Hexachlorocyclopentadiene	< 330	330	ug/kg	
Hexachloroethane	< 330	330	ug/kg	
Indeno(1,2,3-cd)pyrene	< 330	330	ug/kg	
Isophorone	< 330	330	ug/kg	
2-Methylnaphthalene	< 330	330	ug/kg	
2-Methylphenol	< 330	330	ug/kg	
3 & 4-Methylphenol	< 330	330	ug/kg	
Naphthalene	< 330	330	ug/kg	
2-Nitroaniline	< 1,600	1600	ug/kg	
3-Nitroaniline	< 1,600	1600	ug/kg	
4-Nitroaniline	< 1,600	1600	ug/kg	
Nitrobenzene	< 260	260	ug/kg	
2-Nitrophenol	< 1,600	1600	ug/kg	
4-Nitrophenol	< 1,600	1600	ug/kg	
n-Nitrosodiphenylamine	< 330	330	ug/kg	
n-Nitrosodi-n-propylamine	< 330	330	ug/kg	
Pentachlorophenol	< 330	330	ug/kg	
Phenanthrene	< 330	330	ug/kg	
Phenol	< 330	330	ug/kg	
Pyrene	< 330	330	ug/kg	
Pyridine	< 330	330	ug/kg	
1,2,4-Trichlorobenzene	< 330	330	ug/kg	
2,4,5-Trichlorophenol	< 330	330	ug/kg	
2,4,6-Trichlorophenol	< 330	330	ug/kg	
Pesticides/PCBs — **Method: 8081A/8082**	**Analysis Date: 05/04/06**			
Aldrin	< 8.0	8.0	ug/kg	
Aroclor 1016	< 80.0	80.0	ug/kg	
Aroclor 1221	< 80.0	80.0	ug/kg	
Aroclor 1232	< 80.0	80.0	ug/kg	
Aroclor 1242	< 80.0	80.0	ug/kg	
Aroclor 1248	< 80.0	80.0	ug/kg	
Aroclor 1254	< 160	160	ug/kg	
Aroclor 1260	< 160	160	ug/kg	
alpha-BHC	< 2.0	2.0	ug/kg	
beta-BHC	< 8.0	8.0	ug/kg	
delta-BHC	< 8.0	8.0	ug/kg	

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Analytical Report

Client:	LFR, INC.	**Date Collected:**	04/26/06
Project ID:	009-07992-00/001 John's Manville	**Time Collected:**	11:15
Sample ID:	BP11 (3')	**Date Received:**	04/27/06
Sample No:	6-1778-008	**Date Reported:**	05/08/06

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Pesticides/PCBs	**Method: 8081A/8082**	**Analysis Date:**	**05/04/06**	
gamma-BHC (Lindane)	< 8.0	8.0	ug/kg	
alpha-Chlordane	< 80.0	80.0	ug/kg	
gamma-Chlordane	< 80.0	80.0	ug/kg	
4,4'-DDD	< 16.0	16.0	ug/kg	
4,4'-DDE	< 16.0	16.0	ug/kg	
4,4'-DDT	< 16.0	16.0	ug/kg	
Dieldrin	< 16.0	16.0	ug/kg	
Endosulfan I	< 8.0	8.0	ug/kg	
Endosulfan II	< 16.0	16.0	ug/kg	
Endosulfan sulfate	< 16.0	16.0	ug/kg	
Endrin	< 16.0	16.0	ug/kg	
Endrin aldehyde	< 16.0	16.0	ug/kg	
Endrin ketone	< 16.0	16.0	ug/kg	
Heptachlor	< 8.0	8.0	ug/kg	
Heptachlor epoxide	< 8.0	8.0	ug/kg	
Methoxychlor	< 80.0	80.0	ug/kg	
Toxaphene	< 160	160	ug/kg	
Total Metals	**Method: 6010B**	**Analysis Date:**	**05/03/06**	
Antimony	< 1.0	1.0	mg/kg	
Arsenic	0.5	0.2	mg/kg	
Barium	4.4	0.1	mg/kg	
Cadmium	< 0.1	0.1	mg/kg	
Chromium	4.3	0.1	mg/kg	
Lead	1.4	0.2	mg/kg	
Selenium	< 0.2	0.2	mg/kg	
Silver	< 0.1	0.1	mg/kg	
Total Metals	**Method: 7470A**	**Analysis Date:**	**04/28/06**	
Mercury	< 0.05	0.05	mg/kg	

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Analytical Report

Client:	LFR, INC.	**Date Collected:**	04/26/06
Project ID:	009-07992-00/001 John's Manville	**Time Collected:**	11:20
Sample ID:	BP12 (13")	**Date Received:**	04/27/06
Sample No:	6-1778-009	**Date Reported:**	05/08/06

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Date Analyzed	Method	Flag
pH @ 25°C, 1:10	9.11		Units	05/01/06	4500H+B	

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Analytical Report

Client: LFR, INC.
Project ID: 009-07992-00/001 John's Manville
Sample ID: BP12 (13")
Sample No: 6-1778-009

Date Collected: 04/26/06
Time Collected: 11:20
Date Received: 04/27/06
Date Reported: 05/08/06

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Solids, Total — **Method: 160.3**	**Analysis Date: 04/28/06**			
Total Solids	82.52		%	
Volatile Organic Compounds — **Method: 5035A/8260B**	**Analysis Date: 05/01/06**			
Acetone	< 100	100	ug/kg	
Benzene	< 5.0	5.0	ug/kg	
Bromodichloromethane	< 5.0	5.0	ug/kg	
Bromoform	< 5.0	5.0	ug/kg	
Bromomethane	< 10.0	10.0	ug/kg	
2-Butanone (MEK)	< 10.0	10.0	ug/kg	
Carbon disulfide	< 5.0	5.0	ug/kg	
Carbon tetrachloride	< 5.0	5.0	ug/kg	
Chlorobenzene	< 5.0	5.0	ug/kg	
Chlorodibromomethane	< 5.0	5.0	ug/kg	
Chloroethane	< 10.0	10.0	ug/kg	
Chloroform	< 5.0	5.0	ug/kg	
Chloromethane	< 10.0	10.0	ug/kg	
1,1-Dichloroethane	< 5.0	5.0	ug/kg	
1,2-Dichloroethane	< 5.0	5.0	ug/kg	
1,1-Dichloroethene	< 5.0	5.0	ug/kg	
cis-1,2-Dichloroethene	< 5.0	5.0	ug/kg	
trans-1,2-Dichloroethene	< 5.0	5.0	ug/kg	
1,2-Dichloropropane	< 5.0	5.0	ug/kg	
cis-1,3-Dichloropropene	< 5.0	5.0	ug/kg	
trans-1,3-Dichloropropene	< 5.0	5.0	ug/kg	
Ethylbenzene	< 5.0	5.0	ug/kg	
2-Hexanone	< 10.0	10.0	ug/kg	
Methyl-tert-butylether (MTBE)	< 5.0	5.0	ug/kg	
4-Methyl-2-pentanone (MIBK)	< 10.0	10.0	ug/kg	
Methylene chloride	< 5.0	5.0	ug/kg	
Styrene	< 5.0	5.0	ug/kg	
1,1,2,2-Tetrachloroethane	< 5.0	5.0	ug/kg	
Tetrachloroethene	< 5.0	5.0	ug/kg	
Toluene	< 5.0	5.0	ug/kg	
1,1,1-Trichloroethane	< 5.0	5.0	ug/kg	
1,1,2-Trichloroethane	< 5.0	5.0	ug/kg	
Trichloroethene	< 5.0	5.0	ug/kg	
Vinyl acetate	< 10.0	10.0	ug/kg	
Vinyl chloride	< 10.0	10.0	ug/kg	
Xylene, Total	< 5.0	5.0	ug/kg	

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Analytical Report

Client:	LFR, INC.	**Date Collected:**	04/26/06
Project ID:	009-07992-00/001 John's Manville	**Time Collected:**	11:20
Sample ID:	BP12 (13")	**Date Received:**	04/27/06
Sample No:	6-1778-009	**Date Reported:**	05/08/06

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Semi-Volatile Compounds **Method: 8270C**		**Analysis Date:**	**05/02/06**	
Acenaphthylene	< 330	330	ug/kg	
Anthracene	< 330	330	ug/kg	
Benzidine	< 330	330	ug/kg	
Benzo(a)anthracene	< 330	330	ug/kg	
Benzo(a)pyrene	< 90	90	ug/kg	
Benzo(b)fluoranthene	< 330	330	ug/kg	
Benzo(ghi)perylene	< 330	330	ug/kg	
Benzo(k)fluoranthene	< 330	330	ug/kg	
Benzoic acid	< 330	330	ug/kg	
Benzyl alcohol	< 330	330	ug/kg	
bis(2-Chloroethoxy)methane	< 330	330	ug/kg	
bis(2-Chloroethyl)ether	< 330	330	ug/kg	
bis(2-Chloroisopropyl)ether	< 330	330	ug/kg	
bis(2-Ethylhexyl)phthalate	< 330	330	ug/kg	
4-Bromophenyl phenyl ether	< 330	330	ug/kg	
Butyl benzyl phthalate	< 330	330	ug/kg	
Carbazole	< 330	330	ug/kg	
4-Chloroaniline	< 330	330	ug/kg	
4-Chloro-3-methylphenol	< 330	330	ug/kg	
2-Chloronaphthalene	< 330	330	ug/kg	
2-Chlorophenol	< 330	330	ug/kg	
4-Chlorophenyl phenyl ether	< 330	330	ug/kg	
Chrysene	< 330	330	ug/kg	
Di-n-butyl phthalate	< 330	330	ug/kg	
Di-n-octylphthalate	< 330	330	ug/kg	
Dibenzo(a,h)anthracene	< 90	90	ug/kg	
Dibenzofuran	< 330	330	ug/kg	
1,2-Dichlorobenzene	< 330	330	ug/kg	
1,3-Dichlorobenzene	< 330	330	ug/kg	
1,4-Dichlorobenzene	< 330	330	ug/kg	
3,3'-Dichlorobenzidine	< 660	660	ug/kg	
2,4-Dichlorophenol	< 330	330	ug/kg	
Diethyl phthalate	< 330	330	ug/kg	
2,4-Dimethylphenol	< 330	330	ug/kg	
Dimethyl phthalate	< 330	330	ug/kg	
2,4-Dinitrophenol	< 1,600	1600	ug/kg	
2,4-Dinitrotoluene	< 250	250	ug/kg	
2,6-Dinitrotoluene	< 260	260	ug/kg	
Fluoranthene	< 330	330	ug/kg	

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Analytical Report

Client:	LFR, INC.	**Date Collected:**	04/26/06
Project ID:	009-07992-00/001 John's Manville	**Time Collected:**	11:20
Sample ID:	BP12 (13")	**Date Received:**	04/27/06
Sample No:	6-1778-009	**Date Reported:**	05/08/06

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Semi-Volatile Compounds **Method: 8270C**		**Analysis Date: 05/02/06**		
Fluorene	< 330	330	ug/kg	
Hexachlorobenzene	< 330	330	ug/kg	
Hexachlorobutadiene	< 330	330	ug/kg	
Hexachlorocyclopentadiene	< 330	330	ug/kg	
Hexachloroethane	< 330	330	ug/kg	
Indeno(1,2,3-cd)pyrene	< 330	330	ug/kg	
Isophorone	< 330	330	ug/kg	
2-Methylnaphthalene	< 330	330	ug/kg	
2-Methylphenol	< 330	330	ug/kg	
3 & 4-Methylphenol	< 330	330	ug/kg	
Naphthalene	< 330	330	ug/kg	
2-Nitroaniline	< 1,600	1600	ug/kg	
3-Nitroaniline	< 1,600	1600	ug/kg	
4-Nitroaniline	< 1,600	1600	ug/kg	
Nitrobenzene	< 260	260	ug/kg	
2-Nitrophenol	< 1,600	1600	ug/kg	
4-Nitrophenol	< 1,600	1600	ug/kg	
n-Nitrosodiphenylamine	< 330	330	ug/kg	
n-Nitrosodi-n-propylamine	< 330	330	ug/kg	
Pentachlorophenol	< 330	330	ug/kg	
Phenanthrene	< 330	330	ug/kg	
Phenol	< 330	330	ug/kg	
Pyrene	< 330	330	ug/kg	
Pyridine	< 330	330	ug/kg	
1,2,4-Trichlorobenzene	< 330	330	ug/kg	
2,4,5-Trichlorophenol	< 330	330	ug/kg	
2,4,6-Trichlorophenol	< 330	330	ug/kg	
Pesticides/PCBs **Method: 8081A/8082**		**Analysis Date: 05/04/06**		
Aldrin	< 8.0	8.0	ug/kg	
Aroclor 1016	< 80.0	80.0	ug/kg	
Aroclor 1221	< 80.0	80.0	ug/kg	
Aroclor 1232	< 80.0	80.0	ug/kg	
Aroclor 1242	< 80.0	80.0	ug/kg	
Aroclor 1248	< 80.0	80.0	ug/kg	
Aroclor 1254	< 160	160	ug/kg	
Aroclor 1260	< 160	160	ug/kg	
alpha-BHC	< 2.0	2.0	ug/kg	
beta-BHC	< 8.0	8.0	ug/kg	
delta-BHC	< 8.0	8.0	ug/kg	

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Analytical Report

Client:	LFR, INC.	**Date Collected:**	04/26/06
Project ID:	009-07992-00/001 John's Manville	**Time Collected:**	11:20
Sample ID:	BP12 (13")	**Date Received:**	04/27/06
Sample No:	6-1778-009	**Date Reported:**	05/08/06

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Pesticides/PCBs	**Method: 8081A/8082**	**Analysis Date:**	**05/04/06**	
gamma-BHC (Lindane)	< 8.0	8.0	ug/kg	
alpha-Chlordane	< 80.0	80.0	ug/kg	
gamma-Chlordane	< 80.0	80.0	ug/kg	
4,4'-DDD	< 16.0	16.0	ug/kg	
4,4'-DDE	< 16.0	16.0	ug/kg	
4,4'-DDT	< 16.0	16.0	ug/kg	
Dieldrin	< 16.0	16.0	ug/kg	
Endosulfan I	< 8.0	8.0	ug/kg	
Endosulfan II	< 16.0	16.0	ug/kg	
Endosulfan sulfate	< 16.0	16.0	ug/kg	
Endrin	< 16.0	16.0	ug/kg	
Endrin aldehyde	< 16.0	16.0	ug/kg	
Endrin ketone	< 16.0	16.0	ug/kg	
Heptachlor	< 8.0	8.0	ug/kg	
Heptachlor epoxide	< 8.0	8.0	ug/kg	
Methoxychlor	< 80.0	80.0	ug/kg	
Toxaphene	< 160	160	ug/kg	
Total Metals	**Method: 6010B**	**Analysis Date:**	**05/03/06**	
Antimony	< 1.0	1.0	mg/kg	
Arsenic	0.7	0.2	mg/kg	
Barium	4.6	0.1	mg/kg	
Cadmium	< 0.1	0.1	mg/kg	
Chromium	3.5	0.1	mg/kg	
Lead	1.2	0.2	mg/kg	
Selenium	< 0.2	0.2	mg/kg	
Silver	< 0.1	0.1	mg/kg	
Total Metals	**Method: 7470A**	**Analysis Date:**	**04/28/06**	
Mercury	< 0.05	0.05	mg/kg	

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Analytical Report

Client:	LFR, INC.	**Date Collected:**	04/26/06
Project ID:	009-07992-00/001 John's Manville	**Time Collected:**	11:30
Sample ID:	BP12 (3')	**Date Received:**	04/27/06
Sample No:	6-1778-010	**Date Reported:**	05/08/06

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Date Analyzed	Method	Flag
pH @ 25°C, 1:10	9.33		Units	05/01/06	4500H+B	

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Analytical Report

Client:	LFR, INC.	**Date Collected:**	04/26/06
Project ID:	009-07992-00/001 John's Manville	**Time Collected:**	11:30
Sample ID:	BP12 (3')	**Date Received:**	04/27/06
Sample No:	6-1778-010	**Date Reported:**	05/08/06

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Solids, Total	**Method: 160.3**		**Analysis Date:**	**04/28/06**	
Total Solids		85.24		%	
Volatile Organic Compounds	**Method: 5035A/8260B**		**Analysis Date:**	**05/01/06**	
Acetone		< 100	100	ug/kg	
Benzene		< 5.0	5.0	ug/kg	
Bromodichloromethane		< 5.0	5.0	ug/kg	
Bromoform		< 5.0	5.0	ug/kg	
Bromomethane		< 10.0	10.0	ug/kg	
2-Butanone (MEK)		< 10.0	10.0	ug/kg	
Carbon disulfide		< 5.0	5.0	ug/kg	
Carbon tetrachloride		< 5.0	5.0	ug/kg	
Chlorobenzene		< 5.0	5.0	ug/kg	
Chlorodibromomethane		< 5.0	5.0	ug/kg	
Chloroethane		< 10.0	10.0	ug/kg	
Chloroform		< 5.0	5.0	ug/kg	
Chloromethane		< 10.0	10.0	ug/kg	
1,1-Dichloroethane		< 5.0	5.0	ug/kg	
1,2-Dichloroethane		< 5.0	5.0	ug/kg	
1,1-Dichloroethene		< 5.0	5.0	ug/kg	
cis-1,2-Dichloroethene		< 5.0	5.0	ug/kg	
trans-1,2-Dichloroethene		< 5.0	5.0	ug/kg	
1,2-Dichloropropane		< 5.0	5.0	ug/kg	
cis-1,3-Dichloropropene		< 5.0	5.0	ug/kg	
trans-1,3-Dichloropropene		< 5.0	5.0	ug/kg	
Ethylbenzene		< 5.0	5.0	ug/kg	
2-Hexanone		< 10.0	10.0	ug/kg	
Methyl-tert-butylether (MTBE)		< 5.0	5.0	ug/kg	
4-Methyl-2-pentanone (MIBK)		< 10.0	10.0	ug/kg	
Methylene chloride		< 5.0	5.0	ug/kg	
Styrene		< 5.0	5.0	ug/kg	
1,1,2,2-Tetrachloroethane		< 5.0	5.0	ug/kg	
Tetrachloroethene		< 5.0	5.0	ug/kg	
Toluene		< 5.0	5.0	ug/kg	
1,1,1-Trichloroethane		< 5.0	5.0	ug/kg	
1,1,2-Trichloroethane		< 5.0	5.0	ug/kg	
Trichloroethene		< 5.0	5.0	ug/kg	
Vinyl acetate		< 10.0	10.0	ug/kg	
Vinyl chloride		< 10.0	10.0	ug/kg	
Xylene, Total		< 5.0	5.0	ug/kg	

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Analytical Report

Client: LFR, INC.
Project ID: 009-07992-00/001 John's Manville
Sample ID: BP12 (3')
Sample No: 6-1778-010

Date Collected: 04/26/06
Time Collected: 11:30
Date Received: 04/27/06
Date Reported: 05/08/06

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Semi-Volatile Compounds **Method: 8270C**		**Analysis Date:**	**05/02/06**	
Acenaphthylene	< 330	330	ug/kg	
Anthracene	< 330	330	ug/kg	
Benzidine	< 330	330	ug/kg	
Benzo(a)anthracene	< 330	330	ug/kg	
Benzo(a)pyrene	< 90	90	ug/kg	
Benzo(b)fluoranthene	< 330	330	ug/kg	
Benzo(ghi)perylene	< 330	330	ug/kg	
Benzo(k)fluoranthene	< 330	330	ug/kg	
Benzoic acid	< 330	330	ug/kg	
Benzyl alcohol	< 330	330	ug/kg	
bis(2-Chloroethoxy)methane	< 330	330	ug/kg	
bis(2-Chloroethyl)ether	< 330	330	ug/kg	
bis(2-Chloroisopropyl)ether	< 330	330	ug/kg	
bis(2-Ethylhexyl)phthalate	< 330	330	ug/kg	
4-Bromophenyl phenyl ether	< 330	330	ug/kg	
Butyl benzyl phthalate	< 330	330	ug/kg	
Carbazole	< 330	330	ug/kg	
4-Chloroaniline	< 330	330	ug/kg	
4-Chloro-3-methylphenol	< 330	330	ug/kg	
2-Chloronaphthalene	< 330	330	ug/kg	
2-Chlorophenol	< 330	330	ug/kg	
4-Chlorophenyl phenyl ether	< 330	330	ug/kg	
Chrysene	< 330	330	ug/kg	
Di-n-butyl phthalate	< 330	330	ug/kg	
Di-n-octylphthalate	< 330	330	ug/kg	
Dibenzo(a,h)anthracene	< 90	90	ug/kg	
Dibenzofuran	< 330	330	ug/kg	
1,2-Dichlorobenzene	< 330	330	ug/kg	
1,3-Dichlorobenzene	< 330	330	ug/kg	
1,4-Dichlorobenzene	< 330	330	ug/kg	
3,3'-Dichlorobenzidine	< 660	660	ug/kg	
2,4-Dichlorophenol	< 330	330	ug/kg	
Diethyl phthalate	< 330	330	ug/kg	
2,4-Dimethylphenol	< 330	330	ug/kg	
Dimethyl phthalate	< 330	330	ug/kg	
2,4-Dinitrophenol	< 1,600	1600	ug/kg	
2,4-Dinitrotoluene	< 250	250	ug/kg	
2,6-Dinitrotoluene	< 260	260	ug/kg	
Fluoranthene	< 330	330	ug/kg	

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Analytical Report

Client:	LFR, INC.	**Date Collected:**	04/26/06
Project ID:	009-07992-00/001 John's Manville	**Time Collected:**	11:30
Sample ID:	BP12 (3')	**Date Received:**	04/27/06
Sample No:	6-1778-010	**Date Reported:**	05/08/06

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Semi-Volatile Compounds **Method: 8270C**		**Analysis Date: 05/02/06**		
Fluorene	< 330	330	ug/kg	
Hexachlorobenzene	< 330	330	ug/kg	
Hexachlorobutadiene	< 330	330	ug/kg	
Hexachlorocyclopentadiene	< 330	330	ug/kg	
Hexachloroethane	< 330	330	ug/kg	
Indeno(1,2,3-cd)pyrene	< 330	330	ug/kg	
Isophorone	< 330	330	ug/kg	
2-Methylnaphthalene	< 330	330	ug/kg	
2-Methylphenol	< 330	330	ug/kg	
3 & 4-Methylphenol	< 330	330	ug/kg	
Naphthalene	< 330	330	ug/kg	
2-Nitroaniline	< 1,600	1600	ug/kg	
3-Nitroaniline	< 1,600	1600	ug/kg	
4-Nitroaniline	< 1,600	1600	ug/kg	
Nitrobenzene	< 260	260	ug/kg	
2-Nitrophenol	< 1,600	1600	ug/kg	
4-Nitrophenol	< 1,600	1600	ug/kg	
n-Nitrosodiphenylamine	< 330	330	ug/kg	
n-Nitrosodi-n-propylamine	< 330	330	ug/kg	
Pentachlorophenol	< 330	330	ug/kg	
Phenanthrene	< 330	330	ug/kg	
Phenol	< 330	330	ug/kg	
Pyrene	< 330	330	ug/kg	
Pyridine	< 330	330	ug/kg	
1,2,4-Trichlorobenzene	< 330	330	ug/kg	
2,4,5-Trichlorophenol	< 330	330	ug/kg	
2,4,6-Trichlorophenol	< 330	330	ug/kg	
Pesticides/PCBs **Method: 8081A/8082**		**Analysis Date: 05/04/06**		
Aldrin	< 8.0	8.0	ug/kg	
Aroclor 1016	< 80.0	80.0	ug/kg	
Aroclor 1221	< 80.0	80.0	ug/kg	
Aroclor 1232	< 80.0	80.0	ug/kg	
Aroclor 1242	< 80.0	80.0	ug/kg	
Aroclor 1248	< 80.0	80.0	ug/kg	
Aroclor 1254	< 160	160	ug/kg	
Aroclor 1260	< 160	160	ug/kg	
alpha-BHC	< 2.0	2.0	ug/kg	
beta-BHC	< 8.0	8.0	ug/kg	
delta-BHC	< 8.0	8.0	ug/kg	

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Analytical Report

Client:	LFR, INC.	**Date Collected:**	04/26/06
Project ID:	009-07992-00/001 John's Manville	**Time Collected:**	11:30
Sample ID:	BP12 (3')	**Date Received:**	04/27/06
Sample No:	6-1778-010	**Date Reported:**	05/08/06

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Pesticides/PCBs	**Method: 8081A/8082**	**Analysis Date:**	**05/04/06**	
gamma-BHC (Lindane)	< 8.0	8.0	ug/kg	
alpha-Chlordane	< 80.0	80.0	ug/kg	
gamma-Chlordane	< 80.0	80.0	ug/kg	
4,4'-DDD	< 16.0	16.0	ug/kg	
4,4'-DDE	< 16.0	16.0	ug/kg	
4,4'-DDT	< 16.0	16.0	ug/kg	
Dieldrin	< 16.0	16.0	ug/kg	
Endosulfan I	< 8.0	8.0	ug/kg	
Endosulfan II	< 16.0	16.0	ug/kg	
Endosulfan sulfate	< 16.0	16.0	ug/kg	
Endrin	< 16.0	16.0	ug/kg	
Endrin aldehyde	< 16.0	16.0	ug/kg	
Endrin ketone	< 16.0	16.0	ug/kg	
Heptachlor	< 8.0	8.0	ug/kg	
Heptachlor epoxide	< 8.0	8.0	ug/kg	
Methoxychlor	< 80.0	80.0	ug/kg	
Toxaphene	< 160	160	ug/kg	
Total Metals	**Method: 6010B**	**Analysis Date:**	**05/03/06**	
Antimony	< 1.0	1.0	mg/kg	
Arsenic	1.5	0.2	mg/kg	
Barium	6.3	0.1	mg/kg	
Cadmium	< 0.1	0.1	mg/kg	
Chromium	4.9	0.1	mg/kg	
Lead	1.6	0.2	mg/kg	
Selenium	< 0.2	0.2	mg/kg	
Silver	< 0.1	0.1	mg/kg	
Total Metals	**Method: 7470A**	**Analysis Date:**	**04/28/06**	
Mercury	< 0.05	0.05	mg/kg	

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Analytical Report

Client:	LFR, INC.	**Date Collected:**	04/26/06
Project ID:	009-07992-00/001 John's Manville	**Time Collected:**	11:40
Sample ID:	BP13	**Date Received:**	04/27/06
Sample No:	6-1778-011	**Date Reported:**	05/08/06

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Date Analyzed	Method	Flag
pH @ 25°C, 1:10	7.85		Units	05/01/06	4500H+B	

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Analytical Report

Client:	LFR, INC.	**Date Collected:**	04/26/06
Project ID:	009-07992-00/001 John's Manville	**Time Collected:**	11:40
Sample ID:	BP13	**Date Received:**	04/27/06
Sample No:	6-1778-011	**Date Reported:**	05/08/06

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Solids, Total	**Method: 160.3**		**Analysis Date:**	**04/28/06**	
Total Solids		91.86		%	
Volatile Organic Compounds	**Method: 5035A/8260B**		**Analysis Date:**	**05/01/06**	
Acetone		< 100	100	ug/kg	
Benzene		< 5.0	5.0	ug/kg	
Bromodichloromethane		< 5.0	5.0	ug/kg	
Bromoform		< 5.0	5.0	ug/kg	
Bromomethane		< 10.0	10.0	ug/kg	
2-Butanone (MEK)		< 10.0	10.0	ug/kg	
Carbon disulfide		< 5.0	5.0	ug/kg	
Carbon tetrachloride		< 5.0	5.0	ug/kg	
Chlorobenzene		< 5.0	5.0	ug/kg	
Chlorodibromomethane		< 5.0	5.0	ug/kg	
Chloroethane		< 10.0	10.0	ug/kg	
Chloroform		< 5.0	5.0	ug/kg	
Chloromethane		< 10.0	10.0	ug/kg	
1,1-Dichloroethane		< 5.0	5.0	ug/kg	
1,2-Dichloroethane		< 5.0	5.0	ug/kg	
1,1-Dichloroethene		< 5.0	5.0	ug/kg	
cis-1,2-Dichloroethene		< 5.0	5.0	ug/kg	
trans-1,2-Dichloroethene		< 5.0	5.0	ug/kg	
1,2-Dichloropropane		< 5.0	5.0	ug/kg	
cis-1,3-Dichloropropene		< 5.0	5.0	ug/kg	
trans-1,3-Dichloropropene		< 5.0	5.0	ug/kg	
Ethylbenzene		< 5.0	5.0	ug/kg	
2-Hexanone		< 10.0	10.0	ug/kg	
Methyl-tert-butylether (MTBE)		< 5.0	5.0	ug/kg	
4-Methyl-2-pentanone (MIBK)		< 10.0	10.0	ug/kg	
Methylene chloride		< 5.0	5.0	ug/kg	
Styrene		< 5.0	5.0	ug/kg	
1,1,2,2-Tetrachloroethane		< 5.0	5.0	ug/kg	
Tetrachloroethene		< 5.0	5.0	ug/kg	
Toluene		< 5.0	5.0	ug/kg	
1,1,1-Trichloroethane		< 5.0	5.0	ug/kg	
1,1,2-Trichloroethane		< 5.0	5.0	ug/kg	
Trichloroethene		< 5.0	5.0	ug/kg	
Vinyl acetate		< 10.0	10.0	ug/kg	
Vinyl chloride		< 10.0	10.0	ug/kg	
Xylene, Total		< 5.0	5.0	ug/kg	

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Analytical Report

Client:	LFR, INC.	**Date Collected:**	04/26/06
Project ID:	009-07992-00/001 John's Manville	**Time Collected:**	11:40
Sample ID:	BP13	**Date Received:**	04/27/06
Sample No:	6-1778-011	**Date Reported:**	05/08/06

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Semi-Volatile Compounds **Method: 8270C**		**Analysis Date:**	**05/02/06**	
Acenaphthylene	< 330	330	ug/kg	
Anthracene	< 330	330	ug/kg	
Benzidine	< 330	330	ug/kg	
Benzo(a)anthracene	< 330	330	ug/kg	
Benzo(a)pyrene	< 90	90	ug/kg	
Benzo(b)fluoranthene	< 330	330	ug/kg	
Benzo(ghi)perylene	< 330	330	ug/kg	
Benzo(k)fluoranthene	< 330	330	ug/kg	
Benzoic acid	< 330	330	ug/kg	
Benzyl alcohol	< 330	330	ug/kg	
bis(2-Chloroethoxy)methane	< 330	330	ug/kg	
bis(2-Chloroethyl)ether	< 330	330	ug/kg	
bis(2-Chloroisopropyl)ether	< 330	330	ug/kg	
bis(2-Ethylhexyl)phthalate	< 330	330	ug/kg	
4-Bromophenyl phenyl ether	< 330	330	ug/kg	
Butyl benzyl phthalate	< 330	330	ug/kg	
Carbazole	< 330	330	ug/kg	
4-Cbloroaniline	< 330	330	ug/kg	
4-Chloro-3-methylphenol	< 330	330	ug/kg	
2-Chloronaphthalene	< 330	330	ug/kg	
2-Chlorophenol	< 330	330	ug/kg	
4-Chlorophenyl phenyl ether	< 330	330	ug/kg	
Chrysene	< 330	330	ug/kg	
Di-n-butyl phthalate	< 330	330	ug/kg	
Di-n-octylphthalate	< 330	330	ug/kg	
Dibenzo(a,h)anthracene	< 90	90	ug/kg	
Dibenzofuran	< 330	330	ug/kg	
1,2-Dichlorobenzene	< 330	330	ug/kg	
1,3-Dichlorobenzene	< 330	330	ug/kg	
1,4-Dichlorobenzene	< 330	330	ug/kg	
3,3'-Dichlorobenzidine	< 660	660	ug/kg	
2,4-Dichlorophenol	< 330	330	ug/kg	
Diethyl phthalate	< 330	330	ug/kg	
2,4-Dimethylphenol	< 330	330	ug/kg	
Dimethyl phthalate	< 330	330	ug/kg	
2,4-Dinitrophenol	< 1,600	1600	ug/kg	
2,4-Dinitrotoluene	< 250	250	ug/kg	
2,6-Dinitrotoluene	< 260	260	ug/kg	
Fluoranthene	< 330	330	ug/kg	

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Analytical Report

Client: LFR, INC.
Project ID: 009-07992-00/001 John's Manville
Sample ID: BP13
Sample No: 6-1778-011

Date Collected: 04/26/06
Time Collected: 11:40
Date Received: 04/27/06
Date Reported: 05/08/06

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Semi-Volatile Compounds Method: 8270C	Analysis Date: 05/02/06			
Fluorene	< 330	330	ug/kg	
Hexachlorobenzene	< 330	330	ug/kg	
Hexachlorobutadiene	< 330	330	ug/kg	
Hexachlorocyclopentadiene	< 330	330	ug/kg	
Hexachloroethane	< 330	330	ug/kg	
Indeno(1,2,3-cd)pyrene	< 330	330	ug/kg	
Isophorone	< 330	330	ug/kg	
2-Methylnaphthalene	< 330	330	ug/kg	
2-Methylphenol	< 330	330	ug/kg	
3 & 4-Methylphenol	< 330	330	ug/kg	
Naphthalene	< 330	330	ug/kg	
2-Nitroaniline	< 1,600	1600	ug/kg	
3-Nitroaniline	< 1,600	1600	ug/kg	
4-Nitroaniline	< 1,600	1600	ug/kg	
Nitrobenzene	< 260	260	ug/kg	
2-Nitrophenol	< 1,600	1600	ug/kg	
4-Nitrophenol	< 1,600	1600	ug/kg	
n-Nitrosodiphenylamine	< 330	330	ug/kg	
n-Nitrosodi-n-propylamine	< 330	330	ug/kg	
Pentachlorophenol	< 330	330	ug/kg	
Phenanthrene	< 330	330	ug/kg	
Phenol	< 330	330	ug/kg	
Pyrene	< 330	330	ug/kg	
Pyridine	< 330	330	ug/kg	
1,2,4-Trichlorobenzene	< 330	330	ug/kg	
2,4,5-Trichlorophenol	< 330	330	ug/kg	
2,4,6-Trichlorophenol	< 330	330	ug/kg	
Pesticides/PCBs Method: 8081A/8082	Analysis Date: 05/05/06			
Aldrin	< 8.0	8.0	ug/kg	
Aroclor 1016	< 80.0	80.0	ug/kg	
Aroclor 1221	< 80.0	80.0	ug/kg	
Aroclor 1232	< 80.0	80.0	ug/kg	
Aroclor 1242	< 80.0	80.0	ug/kg	
Aroclor 1248	< 80.0	80.0	ug/kg	
Aroclor 1254	< 160	160	ug/kg	
Aroclor 1260	< 160	160	ug/kg	
alpha-BHC	< 2.0	2.0	ug/kg	
beta-BHC	< 8.0	8.0	ug/kg	
delta-BHC	< 8.0	8.0	ug/kg	

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Analytical Report

Client:	LFR, INC.	**Date Collected:**	04/26/06
Project ID:	009-07992-00/001 John's Manville	**Time Collected:**	11:40
Sample ID:	BP13	**Date Received:**	04/27/06
Sample No:	6-1778-011	**Date Reported:**	05/08/06

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Pesticides/PCBs	**Method: 8081A/8082**		**Analysis Date:**	**05/05/06**	
gamma-BHC (Lindane)		< 8.0	8.0	ug/kg	
alpha-Chlordane		< 80.0	80.0	ug/kg	
gamma-Chlordane		< 80.0	80.0	ug/kg	
4,4'-DDD		< 16.0	16.0	ug/kg	
4,4'-DDE		< 16.0	16.0	ug/kg	
4,4'-DDT		< 16.0	16.0	ug/kg	
Dieldrin		< 16.0	16.0	ug/kg	
Endosulfan I		< 8.0	8.0	ug/kg	
Endosulfan II		< 16.0	16.0	ug/kg	
Endosulfan sulfate		< 16.0	16.0	ug/kg	
Endrin		< 16.0	16.0	ug/kg	
Endrin aldehyde		< 16.0	16.0	ug/kg	
Endrin ketone		< 16.0	16.0	ug/kg	
Heptachlor		< 8.0	8.0	ug/kg	
Heptachlor epoxide		< 8.0	8.0	ug/kg	
Methoxychlor		< 80.0	80.0	ug/kg	
Toxaphene		< 160	160	ug/kg	
Total Metals	**Method: 6010B**		**Analysis Date:**	**05/03/06**	
Antimony		< 1.0	1.0	mg/kg	
Arsenic		0.9	0.2	mg/kg	
Barium		3.5	0.1	mg/kg	
Cadmium		< 0.1	0.1	mg/kg	
Chromium		5.7	0.1	mg/kg	
Lead		1.6	0.2	mg/kg	
Selenium		< 0.2	0.2	mg/kg	
Silver		< 0.1	0.1	mg/kg	
Total Metals	**Method: 7470A**		**Analysis Date:**	**04/28/06**	
Mercury		< 0.05	0.05	mg/kg	

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Analytical Report

Client:	LFR, INC.	**Date Collected:**	04/26/06
Project ID:	009-07992-00/001 John's Manville	**Time Collected:**	12:00
Sample ID:	BP13 3')	**Date Received:**	04/27/06
Sample No:	6-1778-012	**Date Reported:**	05/08/06

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Date Analyzed	Method	Flag
pH @ 25°C, 1:10	8.84		Units	05/01/06	4500H+B	

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Analytical Report

Client:	LFR, INC.	**Date Collected:**	04/26/06
Project ID:	009-07992-00/001 John's Manville	**Time Collected:**	12:00
Sample ID:	BP13 3')	**Date Received:**	04/27/06
Sample No:	6-1778-012	**Date Reported:**	05/08/06

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Solids, Total	**Method: 160.3**		**Analysis Date:**	**04/28/06**	
Total Solids		88.10		%	
Volatile Organic Compounds	**Method: 5035A/8260B**		**Analysis Date:**	**05/01/06**	
Acetone		< 100	100	ug/kg	
Benzene		< 5.0	5.0	ug/kg	
Bromodichloromethane		< 5.0	5.0	ug/kg	
Bromoform		< 5.0	5.0	ug/kg	
Bromomethane		< 10.0	10.0	ug/kg	
2-Butanone (MEK)		< 10.0	10.0	ug/kg	
Carbon disulfide		< 5.0	5.0	ug/kg	
Carbon tetrachloride		< 5.0	5.0	ug/kg	
Chlorobenzene		< 5.0	5.0	ug/kg	
Chlorodibromomethane		< 5.0	5.0	ug/kg	
Chloroethane		< 10.0	10.0	ug/kg	
Chloroform		< 5.0	5.0	ug/kg	
Chloromethane		< 10.0	10.0	ug/kg	
1,1-Dichloroethane		< 5.0	5.0	ug/kg	
1,2-Dichloroethane		< 5.0	5.0	ug/kg	
1,1-Dichloroethene		< 5.0	5.0	ug/kg	
cis-1,2-Dichloroethene		< 5.0	5.0	ug/kg	
trans-1,2-Dichloroethene		< 5.0	5.0	ug/kg	
1,2-Dichloropropane		< 5.0	5.0	ug/kg	
cis-1,3-Dichloropropene		< 5.0	5.0	ug/kg	
trans-1,3-Dichloropropene		< 5.0	5.0	ug/kg	
Ethylbenzene		< 5.0	5.0	ug/kg	
2-Hexanone		< 10.0	10.0	ug/kg	
Methyl-tert-butylether (MTBE)		< 5.0	5.0	ug/kg	
4-Methyl-2-pentanone (MIBK)		< 10.0	10.0	ug/kg	
Methylene chloride		< 5.0	5.0	ug/kg	
Styrene		< 5.0	5.0	ug/kg	
1,1,2,2-Tetrachloroethane		< 5.0	5.0	ug/kg	
Tetrachloroethene		< 5.0	5.0	ug/kg	
Toluene		< 5.0	5.0	ug/kg	
1,1,1-Trichloroethane		< 5.0	5.0	ug/kg	
1,1,2-Trichloroethane		< 5.0	5.0	ug/kg	
Trichloroethene		< 5.0	5.0	ug/kg	
Vinyl acetate		< 10.0	10.0	ug/kg	
Vinyl chloride		< 10.0	10.0	ug/kg	
Xylene, Total		< 5.0	5.0	ug/kg	

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Analytical Report

Client:	LFR, INC.	**Date Collected:**	04/26/06
Project ID:	009-07992-00/001 John's Manville	**Time Collected:**	12:00
Sample ID:	BP13 3')	**Date Received:**	04/27/06
Sample No:	6-1778-012	**Date Reported:**	05/08/06

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Semi-Volatile Compounds **Method: 8270C**		**Analysis Date:**	**05/03/06**	
Acenaphthylene	< 330	330	ug/kg	
Anthracene	< 330	330	ug/kg	
Benzidine	< 330	330	ug/kg	
Benzo(a)anthracene	< 330	330	ug/kg	
Benzo(a)pyrene	< 90	90	ug/kg	
Benzo(b)fluoranthene	< 330	330	ug/kg	
Benzo(ghi)perylene	< 330	330	ug/kg	
Benzo(k)fluoranthene	< 330	330	ug/kg	
Benzoic acid	< 330	330	ug/kg	
Benzyl alcohol	< 330	330	ug/kg	
bis(2-Chloroethoxy)methane	< 330	330	ug/kg	
bis(2-Chloroethyl)ether	< 330	330	ug/kg	
bis(2-Chloroisopropyl)ether	< 330	330	ug/kg	
bis(2-Ethylhexyl)phthalate	< 330	330	ug/kg	
4-Bromophenyl phenyl ether	< 330	330	ug/kg	
Butyl benzyl phthalate	< 330	330	ug/kg	
Carbazole	< 330	330	ug/kg	
4-Chloroaniline	< 330	330	ug/kg	
4-Chloro-3-metbylphenol	< 330	330	ug/kg	
2-Chloronaphthalene	< 330	330	ug/kg	
2-Chlorophenol	< 330	330	ug/kg	
4-Chlorophenyl pbenyl ether	< 330	330	ug/kg	
Chrysene	< 330	330	ug/kg	
Di-n-butyl phthalate	< 330	330	ug/kg	
Di-n-octylphthalate	< 330	330	ug/kg	
Dibenzo(a,h)anthracene	< 90	90	ug/kg	
Dibenzofuran	< 330	330	ug/kg	
1,2-Dichlorobenzene	< 330	330	ug/kg	
1,3-Dichlorobenzene	< 330	330	ug/kg	
1,4-Dichlorobenzene	< 330	330	ug/kg	
3,3'-Dichlorobenzidine	< 660	660	ug/kg	
2,4-Dichlorophenol	< 330	330	ug/kg	
Diethyl phthalate	< 330	330	ug/kg	
2,4-Dimethylphenol	< 330	330	ug/kg	
Dimethyl phthalate	< 330	330	ug/kg	
2,4-Dinitrophenol	< 1,600	1600	ug/kg	
2,4-Dinitrotoluene	< 250	250	ug/kg	
2,6-Dinitrotoluene	< 260	260	ug/kg	
Fluoranthene	< 330	330	ug/kg	

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Analytical Report

Client: LFR, INC.
Project ID: 009-07992-00/001 John's Manville
Sample ID: BP13 3')
Sample No: 6-1778-012

Date Collected: 04/26/06
Time Collected: 12:00
Date Received: 04/27/06
Date Reported: 05/08/06

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Semi-Volatile Compounds	**Method: 8270C**		**Analysis Date:**	**05/03/06**	
Fluorene		< 330	330	ug/kg	
Hexachlorobenzene		< 330	330	ug/kg	
Hexachlorobutadiene		< 330	330	ug/kg	
Hexachlorocyclopentadiene		< 330	330	ug/kg	
Hexachloroethane		< 330	330	ug/kg	
Indeno(1,2,3-cd)pyrene		< 330	330	ug/kg	
Isophorone		< 330	330	ug/kg	
2-Methylnaphthalene		< 330	330	ug/kg	
2-Methylphenol		< 330	330	ug/kg	
3 & 4-Methylphenol		< 330	330	ug/kg	
Naphthalene		< 330	330	ug/kg	
2-Nitroaniline		< 1,600	1600	ug/kg	
3-Nitroaniline		< 1,600	1600	ug/kg	
4-Nitroaniline		< 1,600	1600	ug/kg	
Nitrobenzene		< 260	260	ug/kg	
2-Nitrophenol		< 1,600	1600	ug/kg	
4-Nitrophenol		< 1,600	1600	ug/kg	
n-Nitrosodiphenylamine		< 330	330	ug/kg	
n-Nitrosodi-n-propylamine		< 330	330	ug/kg	
Pentachlorophenol		< 330	330	ug/kg	
Phenanthrene		< 330	330	ug/kg	
Phenol		< 330	330	ug/kg	
Pyrene		< 330	330	ug/kg	
Pyridine		< 330	330	ug/kg	
1,2,4-Trichlorobenzene		< 330	330	ug/kg	
2,4,5-Trichlorophenol		< 330	330	ug/kg	
2,4,6-Trichlorophenol		< 330	330	ug/kg	
Pesticides/PCBs	**Method: 8081A/8082**		**Analysis Date:**	**05/05/06**	
Aldrin		< 8.0	8.0	ug/kg	
Aroclor 1016		< 80.0	80.0	ug/kg	
Aroclor 1221		< 80.0	80.0	ug/kg	
Aroclor 1232		< 80.0	80.0	ug/kg	
Aroclor 1242		< 80.0	80.0	ug/kg	
Aroclor 1248		< 80.0	80.0	ug/kg	
Aroclor 1254		< 160	160	ug/kg	
Aroclor 1260		< 160	160	ug/kg	
alpha-BHC		< 2.0	2.0	ug/kg	
beta-BHC		< 8.0	8.0	ug/kg	
delta-BHC		< 8.0	8.0	ug/kg	

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Analytical Report

Client:	LFR, INC.	**Date Collected:**	04/26/06
Project ID:	009-07992-00/001 John's Manville	**Time Collected:**	12:00
Sample ID:	BP13 3')	**Date Received:**	04/27/06
Sample No:	6-1778-012	**Date Reported:**	05/08/06

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Pesticides/PCBs	**Method: 8081A/8082**		**Analysis Date:**	**05/05/06**	
gamma-BHC (Lindane)		< 8.0	8.0	ug/kg	
alpha-Chlordane		< 80.0	80.0	ug/kg	
gamma-Chlordane		< 80.0	80.0	ug/kg	
4,4'-DDD		< 16.0	16.0	ug/kg	
4,4'-DDE		< 16.0	16.0	ug/kg	
4,4'-DDT		< 16.0	16.0	ug/kg	
Dieldrin		< 16.0	16.0	ug/kg	
Endosulfan I		< 8.0	8.0	ug/kg	
Endosulfan II		< 16.0	16.0	ug/kg	
Endosulfan sulfate		< 16.0	16.0	ug/kg	
Endrin		< 16.0	16.0	ug/kg	
Endrin aldehyde		< 16.0	16.0	ug/kg	
Endrin ketone		< 16.0	16.0	ug/kg	
Heptachlor		< 8.0	8.0	ug/kg	
Heptachlor epoxide		< 8.0	8.0	ug/kg	
Methoxychlor		< 80.0	80.0	ug/kg	
Toxaphene		< 160	160	ug/kg	
Total Metals	**Method: 6010B**		**Analysis Date:**	**05/03/06**	
Antimony		< 1.0	1.0	mg/kg	
Arsenic		0.7	0.2	mg/kg	
Barium		3.7	0.1	mg/kg	
Cadmium		< 0.1	0.1	mg/kg	
Chromium		5.3	0.1	mg/kg	
Lead		1.8	0.2	mg/kg	
Selenium		< 0.2	0.2	mg/kg	
Silver		< 0.1	0.1	mg/kg	
Total Metals	**Method: 7470A**		**Analysis Date:**	**04/28/06**	
Mercury		< 0.05	0.05	mg/kg	

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Analytical Report

Client:	LFR, INC.	**Date Collected:**	04/26/06
Project ID:	009-07992-00/001 John's Manville	**Time Collected:**	10:20
Sample ID:	BP14 (15")	**Date Received:**	04/27/06
Sample No:	6-1778-013	**Date Reported:**	05/08/06

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Date Analyzed	Method	Flag
pH @ 25°C, 1:10	9.21		Units	05/01/06	4500H+B	

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Analytical Report

Client: LFR, INC.
Project ID: 009-07992-00/001 John's Manville
Sample ID: BP14 (15")
Sample No: 6-1778-013

Date Collected: 04/26/06
Time Collected: 10:20
Date Received: 04/27/06
Date Reported: 05/08/06

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Solids, Total	**Method: 160.3**		**Analysis Date:**	**04/28/06**	
Total Solids		90.20		%	
Volatile Organic Compounds	**Method: 5035A/8260B**		**Analysis Date:**	**05/01/06**	
Acetone		< 100	100	ug/kg	
Benzene		< 5.0	5.0	ug/kg	
Bromodichloromethane		< 5.0	5.0	ug/kg	
Bromoform		< 5.0	5.0	ug/kg	
Bromomethane		< 10.0	10.0	ug/kg	
2-Butanone (MEK)		< 10.0	10.0	ug/kg	
Carbon disulfide		< 5.0	5.0	ug/kg	
Carbon tetrachloride		< 5.0	5.0	ug/kg	
Chlorobenzene		< 5.0	5.0	ug/kg	
Chlorodibromomethane		< 5.0	5.0	ug/kg	
Chloroethane		< 10.0	10.0	ug/kg	
Chloroform		< 5.0	5.0	ug/kg	
Chloromethane		< 10.0	10.0	ug/kg	
1,1-Dichloroethane		< 5.0	5.0	ug/kg	
1,2-Dichloroethane		< 5.0	5.0	ug/kg	
1,1-Dichloroethene		< 5.0	5.0	ug/kg	
cis-1,2-Dichloroethene		< 5.0	5.0	ug/kg	
trans-1,2-Dichloroethene		< 5.0	5.0	ug/kg	
1,2-Dichloropropane		< 5.0	5.0	ug/kg	
cis-1,3-Dichloropropene		< 5.0	5.0	ug/kg	
trans-1,3-Dichloropropene		< 5.0	5.0	ug/kg	
Ethylbenzene		< 5.0	5.0	ug/kg	
2-Hexanone		< 10.0	10.0	ug/kg	
Methyl-tert-butylether (MTBE)		< 5.0	5.0	ug/kg	
4-Methyl-2-pentanone (MIBK)		< 10.0	10.0	ug/kg	
Methylene chloride		< 5.0	5.0	ug/kg	
Styrene		< 5.0	5.0	ug/kg	
1,1,2,2-Tetrachloroethane		< 5.0	5.0	ug/kg	
Tetrachloroethene		< 5.0	5.0	ug/kg	
Toluene		< 5.0	5.0	ug/kg	
1,1,1-Trichloroethane		< 5.0	5.0	ug/kg	
1,1,2-Trichloroethane		< 5.0	5.0	ug/kg	
Trichloroethene		< 5.0	5.0	ug/kg	
Vinyl acetate		< 10.0	10.0	ug/kg	
Vinyl chloride		< 10.0	10.0	ug/kg	
Xylene, Total		< 5.0	5.0	ug/kg	

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Analytical Report

Client: LFR, INC.
Project ID: 009-07992-00/001 John's Manville
Sample ID: BP14 (15")
Sample No: 6-1778-013

Date Collected: 04/26/06
Time Collected: 10:20
Date Received: 04/27/06
Date Reported: 05/08/06

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Semi-Volatile Compounds **Method: 8270C**		**Analysis Date:**	**05/03/06**	
Acenaphthylene	< 330	330	ug/kg	
Anthracene	< 330	330	ug/kg	
Benzidine	< 330	330	ug/kg	
Benzo(a)anthracene	< 330	330	ug/kg	
Benzo(a)pyrene	< 90	90	ug/kg	
Benzo(b)fluoranthene	< 330	330	ug/kg	
Benzo(ghi)perylene	< 330	330	ug/kg	
Benzo(k)fluoranthene	< 330	330	ug/kg	
Benzoic acid	< 330	330	ug/kg	
Benzyl alcohol	< 330	330	ug/kg	
bis(2-Chloroethoxy)methane	< 330	330	ug/kg	
bis(2-Chloroethyl)ether	< 330	330	ug/kg	
bis(2-Chloroisopropyl)ether	< 330	330	ug/kg	
bis(2-Ethylhexyl)phthalate	< 330	330	ug/kg	
4-Bromophenyl phenyl ether	< 330	330	ug/kg	
Butyl benzyl phthalate	< 330	330	ug/kg	
Carbazole	< 330	330	ug/kg	
4-Chloroaniline	< 330	330	ug/kg	
4-Chloro-3-methylpbenol	< 330	330	ug/kg	
2-Chloronaphthalene	< 330	330	ug/kg	
2-Chlorophenol	< 330	330	ug/kg	
4-Chlorophenyl phenyl ether	< 330	330	ug/kg	
Chrysene	< 330	330	ug/kg	
Di-n-butyl phthalate	< 330	330	ug/kg	
Di-n-octylphthalate	< 330	330	ug/kg	
Dibenzo(a,h)anthracene	< 90	90	ug/kg	
Dibenzofuran	< 330	330	ug/kg	
1,2-Dichlorobenzene	< 330	330	ug/kg	
1,3-Dichlorobenzene	< 330	330	ug/kg	
1,4-Dichlorobenzene	< 330	330	ug/kg	
3,3'-Dichlorobenzidine	< 660	660	ug/kg	
2,4-Dichlorophenol	< 330	330	ug/kg	
Diethyl phthalate	< 330	330	ug/kg	
2,4-Dimethylphenol	< 330	330	ug/kg	
Dimethyl phthalate	< 330	330	ug/kg	
2,4-Dinitrophenol	< 1,600	1600	ug/kg	
2,4-Dinitrotoluene	< 250	250	ug/kg	
2,6-Dinitrotoluene	< 260	260	ug/kg	
Fluoranthene	< 330	330	ug/kg	

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Analytical Report

Client:	LFR, INC.	**Date Collected:**	04/26/06
Project ID:	009-07992-00/001 John's Manville	**Time Collected:**	10:20
Sample ID:	BP14 (15")	**Date Received:**	04/27/06
Sample No:	6-1778-013	**Date Reported:**	05/08/06

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Semi-Volatile Compounds	**Method: 8270C**		**Analysis Date:**	**05/03/06**	
Fluorene		< 330	330	ug/kg	
Hexachlorobenzene		< 330	330	ug/kg	
Hexachlorobutadiene		< 330	330	ug/kg	
Hexachlorocyclopentadiene		< 330	330	ug/kg	
Hexachloroethane		< 330	330	ug/kg	
Indeno(1,2,3-cd)pyrene		< 330	330	ug/kg	
Isophorone		< 330	330	ug/kg	
2-Methylnaphthalene		< 330	330	ug/kg	
2-Methylphenol		< 330	330	ug/kg	
3 & 4-Methylphenol		< 330	330	ug/kg	
Naphthalene		< 330	330	ug/kg	
2-Nitroaniline		< 1,600	1600	ug/kg	
3-Nitroaniline		< 1,600	1600	ug/kg	
4-Nitroaniline		< 1,600	1600	ug/kg	
Nitrobenzene		< 260	260	ug/kg	
2-Nitrophenol		< 1,600	1600	ug/kg	
4-Nitrophenol		< 1,600	1600	ug/kg	
n-Nitrosodiphenylamine		< 330	330	ug/kg	
n-Nitrosodi-n-propylamine		< 330	330	ug/kg	
Pentachlorophenol		< 330	330	ug/kg	
Phenanthrene		< 330	330	ug/kg	
Phenol		< 330	330	ug/kg	
Pyrene		< 330	330	ug/kg	
Pyridine		< 330	330	ug/kg	
1,2,4-Trichlorobenzene		< 330	330	ug/kg	
2,4,5-Trichlorophenol		< 330	330	ug/kg	
2,4,6-Trichlorophenol		< 330	330	ug/kg	
Pesticides/PCBs	**Method: 8081A/8082**		**Analysis Date:**	**05/05/06**	
Aldrin		< 8.0	8.0	ug/kg	
Aroclor 1016		< 80.0	80.0	ug/kg	
Aroclor 1221		< 80.0	80.0	ug/kg	
Aroclor 1232		< 80.0	80.0	ug/kg	
Aroclor 1242		< 80.0	80.0	ug/kg	
Aroclor 1248		< 80.0	80.0	ug/kg	
Aroclor 1254		< 160	160	ug/kg	
Aroclor 1260		< 160	160	ug/kg	
alpha-BHC		< 2.0	2.0	ug/kg	
beta-BHC		< 8.0	8.0	ug/kg	
delta-BHC		< 8.0	8.0	ug/kg	

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Analytical Report

Client: LFR, INC.
Project ID: 009-07992-00/001 John's Manville
Sample ID: BP14 (15")
Sample No: 6-1778-013

Date Collected: 04/26/06
Time Collected: 10:20
Date Received: 04/27/06
Date Reported: 05/08/06

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Pesticides/PCBs — **Method: 8081A/8082**	**Analysis Date: 05/05/06**			
gamma-BHC (Lindane)	< 8.0	8.0	ug/kg	
alpha-Chlordane	< 80.0	80.0	ug/kg	
gamma-Chlordane	< 80.0	80.0	ug/kg	
4,4'-DDD	< 16.0	16.0	ug/kg	
4,4'-DDE	< 16.0	16.0	ug/kg	
4,4'-DDT	< 16.0	16.0	ug/kg	
Dieldrin	< 16.0	16.0	ug/kg	
Endosulfan I	< 8.0	8.0	ug/kg	
Endosulfan II	< 16.0	16.0	ug/kg	
Endosulfan sulfate	< 16.0	16.0	ug/kg	
Endrin	< 16.0	16.0	ug/kg	
Endrin aldehyde	< 16.0	16.0	ug/kg	
Endrin ketone	< 16.0	16.0	ug/kg	
Heptachlor	< 8.0	8.0	ug/kg	
Heptachlor epoxide	< 8.0	8.0	ug/kg	
Methoxychlor	< 80.0	80.0	ug/kg	
Toxaphene	< 160	160	ug/kg	
Total Metals — **Method: 6010B**	**Analysis Date: 05/03/06**			
Antimony	< 1.0	1.0	mg/kg	
Arsenic	1.2	0.2	mg/kg	
Barium	5.7	0.1	mg/kg	
Cadmium	< 0.1	0.1	mg/kg	
Chromium	11.4	0.1	mg/kg	
Lead	1.6	0.2	mg/kg	
Selenium	< 0.2	0.2	mg/kg	
Silver	< 0.1	0.1	mg/kg	
Total Metals — **Method: 7470A**	**Analysis Date: 04/28/06**			
Mercury	< 0.05	0.05	mg/kg	

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Analytical Report

Client:	LFR, INC.	**Date Collected:**	04/26/06
Project ID:	009-07992-00/001 John's Manville	**Time Collected:**	10:25
Sample ID:	BP14 (3')	**Date Received:**	04/27/06
Sample No:	6-1778-014	**Date Reported:**	05/08/06

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Date Analyzed	Method	Flag
pH @ 25°C, 1:10	8.98		Units	05/01/06	4500H+B	

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Analytical Report

Client:	LFR, INC.	**Date Collected:**	04/26/06
Project ID:	009-07992-00/001 John's Manville	**Time Collected:**	10:25
Sample ID:	BP14 (3')	**Date Received:**	04/27/06
Sample No:	6-1778-014	**Date Reported:**	05/08/06

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Solids, Total	**Method: 160.3**		**Analysis Date:**	**04/28/06**	
Total Solids		88.89		%	
Volatile Organic Compounds	**Method: 5035A/8260B**		**Analysis Date:**	**05/01/06**	
Acetone		< 100	100	ug/kg	
Benzene		< 5.0	5.0	ug/kg	
Bromodichloromethane		< 5.0	5.0	ug/kg	
Bromoform		< 5.0	5.0	ug/kg	
Bromomethane		< 10.0	10.0	ug/kg	
2-Butanone (MEK)		< 10.0	10.0	ug/kg	
Carbon disulfide		< 5.0	5.0	ug/kg	
Carbon tetrachloride		< 5.0	5.0	ug/kg	
Chlorobenzene		< 5.0	5.0	ug/kg	
Chlorodibromomethane		< 5.0	5.0	ug/kg	
Chloroethane		< 10.0	10.0	ug/kg	
Chloroform		< 5.0	5.0	ug/kg	
Chloromethane		< 10.0	10.0	ug/kg	
1,1-Dichloroethane		< 5.0	5.0	ug/kg	
1,2-Dichloroethane		< 5.0	5.0	ug/kg	
1,1-Dichloroethene		< 5.0	5.0	ug/kg	
cis-1,2-Dichloroethene		< 5.0	5.0	ug/kg	
trans-1,2-Dichloroethene		< 5.0	5.0	ug/kg	
1,2-Dichloropropane		< 5.0	5.0	ug/kg	
cis-1,3-Dichloropropene		< 5.0	5.0	ug/kg	
trans-1,3-Dichloropropene		< 5.0	5.0	ug/kg	
Ethylbenzene		< 5.0	5.0	ug/kg	
2-Hexanone		< 10.0	10.0	ug/kg	
Methyl-tert-butylether (MTBE)		< 5.0	5.0	ug/kg	
4-Methyl-2-pentanone (MIBK)		< 10.0	10.0	ug/kg	
Methylene chloride		< 5.0	5.0	ug/kg	
Styrene		< 5.0	5.0	ug/kg	
1,1,2,2-Tetrachloroethane		< 5.0	5.0	ug/kg	
Tetrachloroethene		< 5.0	5.0	ug/kg	
Toluene		< 5.0	5.0	ug/kg	
1,1,1-Trichloroethane		< 5.0	5.0	ug/kg	
1,1,2-Trichloroethane		< 5.0	5.0	ug/kg	
Trichloroethene		< 5.0	5.0	ug/kg	
Vinyl acetate		< 10.0	10.0	ug/kg	
Vinyl chloride		< 10.0	10.0	ug/kg	
Xylene, Total		< 5.0	5.0	ug/kg	

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Analytical Report

Client:	LFR, INC.		**Date Collected:**	04/26/06
Project ID:	009-07992-00/001 John's Manville		**Time Collected:**	10:25
Sample ID:	BP14 (3')		**Date Received:**	04/27/06
Sample No:	6-1778-014		**Date Reported:**	05/08/06

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Semi-Volatile Compounds **Method: 8270C**		**Analysis Date:**	**05/03/06**	
Acenaphthylene	< 330	330	ug/kg	
Anthracene	< 330	330	ug/kg	
Benzidine	< 330	330	ug/kg	
Benzo(a)anthracene	< 330	330	ug/kg	
Benzo(a)pyrene	< 90	90	ug/kg	
Benzo(b)fluoranthene	< 330	330	ug/kg	
Benzo(ghi)perylene	< 330	330	ug/kg	
Benzo(k)fluoranthene	< 330	330	ug/kg	
Benzoic acid	< 330	330	ug/kg	
Benzyl alcohol	< 330	330	ug/kg	
bis(2-Chloroethoxy)methane	< 330	330	ug/kg	
bis(2-Chloroethyl)ether	< 330	330	ug/kg	
bis(2-Chloroisopropyl)ether	< 330	330	ug/kg	
bis(2-Ethylhexyl)phthalate	< 330	330	ug/kg	
4-Bromophenyl phenyl ether	< 330	330	ug/kg	
Butyl benzyl phthalate	< 330	330	ug/kg	
Carbazole	< 330	330	ug/kg	
4-Chloroaniline	< 330	330	ug/kg	
4-Chloro-3-methylphenol	< 330	330	ug/kg	
2-Chloronaphthalene	< 330	330	ug/kg	
2-Chlorophenol	< 330	330	ug/kg	
4-Chlorophenyl phenyl ether	< 330	330	ug/kg	
Chrysene	< 330	330	ug/kg	
Di-n-butyl phthalate	< 330	330	ug/kg	
Di-n-octylphthalate	< 330	330	ug/kg	
Dibenzo(a,h)anthracene	< 90	90	ug/kg	
Dibenzofuran	< 330	330	ug/kg	
1,2-Dichlorobenzene	< 330	330	ug/kg	
1,3-Dichlorobenzene	< 330	330	ug/kg	
1,4-Dichlorobenzene	< 330	330	ug/kg	
3,3'-Dichlorobenzidine	< 660	660	ug/kg	
2,4-Dichlorophenol	< 330	330	ug/kg	
Diethyl phthalate	< 330	330	ug/kg	
2,4-Dimethylphenol	< 330	330	ug/kg	
Dimethyl phthalate	< 330	330	ug/kg	
2,4-Dinitrophenol	< 1,600	1600	ug/kg	
2,4-Dinitrotoluene	< 250	250	ug/kg	
2,6-Dinitrotoluene	< 260	260	ug/kg	
Fluoranthene	< 330	330	ug/kg	

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Analytical Report

Client: LFR, INC.
Project ID: 009-07992-00/001 John's Manville
Sample ID: BP14 (3')
Sample No: 6-1778-014

Date Collected: 04/26/06
Time Collected: 10:25
Date Received: 04/27/06
Date Reported: 05/08/06

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Semi-Volatile Compounds	**Method: 8270C**		**Analysis Date:**	**05/03/06**	
Fluorene		< 330	330	ug/kg	
Hexachlorobenzene		< 330	330	ug/kg	
Hexachlorobutadiene		< 330	330	ug/kg	
Hexachlorocyclopentadiene		< 330	330	ug/kg	
Hexachloroethane		< 330	330	ug/kg	
Indeno(1,2,3-cd)pyrene		< 330	330	ug/kg	
Isophorone		< 330	330	ug/kg	
2-Methylnaphthalene		< 330	330	ug/kg	
2-Methylphenol		< 330	330	ug/kg	
3 & 4-Methylphenol		< 330	330	ug/kg	
Naphthalene		< 330	330	ug/kg	
2-Nitroaniline		< 1,600	1600	ug/kg	
3-Nitroaniline		< 1,600	1600	ug/kg	
4-Nitroaniline		< 1,600	1600	ug/kg	
Nitrobenzene		< 260	260	ug/kg	
2-Nitrophenol		< 1,600	1600	ug/kg	
4-Nitrophenol		< 1,600	1600	ug/kg	
n-Nitrosodiphenylamine		< 330	330	ug/kg	
n-Nitrosodi-n-propylamine		< 330	330	ug/kg	
Pentachlorophenol		< 330	330	ug/kg	
Phenanthrene		< 330	330	ug/kg	
Phenol		< 330	330	ug/kg	
Pyrene		< 330	330	ug/kg	
Pyridine		< 330	330	ug/kg	
1,2,4-Trichlorobenzene		< 330	330	ug/kg	
2,4,5-Trichlorophenol		< 330	330	ug/kg	
2,4,6-Trichlorophenol		< 330	330	ug/kg	
Pesticides/PCBs	**Method: 8081A/8082**		**Analysis Date:**	**05/05/06**	
Aldrin		< 8.0	8.0	ug/kg	
Aroclor 1016		< 80.0	80.0	ug/kg	
Aroclor 1221		< 80.0	80.0	ug/kg	
Aroclor 1232		< 80.0	80.0	ug/kg	
Aroclor 1242		< 80.0	80.0	ug/kg	
Aroclor 1248		< 80.0	80.0	ug/kg	
Aroclor 1254		< 160	160	ug/kg	
Aroclor 1260		< 160	160	ug/kg	
alpha-BHC		< 2.0	2.0	ug/kg	
beta-BHC		< 8.0	8.0	ug/kg	
delta-BHC		< 8.0	8.0	ug/kg	

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Analytical Report

Client: LFR, INC.
Project ID: 009-07992-00/001 John's Manville
Sample ID: BP14 (3')
Sample No: 6-1778-014

Date Collected: 04/26/06
Time Collected: 10:25
Date Received: 04/27/06
Date Reported: 05/08/06

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Pesticides/PCBs	**Method: 8081A/8082**	**Analysis Date:**	**05/05/06**	
gamma-BHC (Lindane)	< 8.0	8.0	ug/kg	
alpha-Chlordane	< 80.0	80.0	ug/kg	
gamma-Chlordane	< 80.0	80.0	ug/kg	
4,4'-DDD	< 16.0	16.0	ug/kg	
4,4'-DDE	< 16.0	16.0	ug/kg	
4,4'-DDT	< 16.0	16.0	ug/kg	
Dieldrin	< 16.0	16.0	ug/kg	
Endosulfan I	< 8.0	8.0	ug/kg	
Endosulfan II	< 16.0	16.0	ug/kg	
Endosulfan sulfate	< 16.0	16.0	ug/kg	
Endrin	< 16.0	16.0	ug/kg	
Endrin aldehyde	< 16.0	16.0	ug/kg	
Endrin ketone	< 16.0	16.0	ug/kg	
Heptachlor	< 8.0	8.0	ug/kg	
Heptachlor epoxide	< 8.0	8.0	ug/kg	
Methoxychlor	< 80.0	80.0	ug/kg	
Toxaphene	< 160	160	ug/kg	
Total Metals	**Method: 6010B**	**Analysis Date:**	**05/03/06**	
Antimony	< 1.0	1.0	mg/kg	
Arsenic	< 0.2	0.2	mg/kg	
Barium	2.4	0.1	mg/kg	
Cadmium	< 0.1	0.1	mg/kg	
Chromium	2.8	0.1	mg/kg	
Lead	0.8	0.2	mg/kg	
Selenium	< 0.2	0.2	mg/kg	
Silver	< 0.1	0.1	mg/kg	
Total Metals	**Method: 7470A**	**Analysis Date:**	**04/28/06**	
Mercury	< 0.05	0.05	mg/kg	

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Laboratories, Inc. IL ELAP / NELAC Accreditation # 100292
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Analytical Report

Client:	LFR, INC.		**Date Collected:**	04/26/06
Project ID:	009-07992-00/001 John's Manville		**Time Collected:**	10:30
Sample ID:	DUP-1		**Date Received:**	04/27/06
Sample No:	6-1778-015		**Date Reported:**	05/08/06

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Date Analyzed	Method	Flag
pH @ 25°C, 1:10	8.92		Units	05/01/06	4500H+B	

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Analytical Report

Client:	LFR, INC.	**Date Collected:**	04/26/06
Project ID:	009-07992-00/001 John's Manville	**Time Collected:**	10:30
Sample ID:	DUP-1	**Date Received:**	04/27/06
Sample No:	6-1778-015	**Date Reported:**	05/08/06

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Solids, Total — **Method: 160.3**	**Analysis Date: 04/28/06**			
Total Solids	80.27		%	
Volatile Organic Compounds — **Method: 5035A/8260B**	**Analysis Date: 05/01/06**			
Acetone	< 100	100	ug/kg	
Benzene	< 5.0	5.0	ug/kg	
Bromodichloromethane	< 5.0	5.0	ug/kg	
Bromoform	< 5.0	5.0	ug/kg	
Bromomethane	< 10.0	10.0	ug/kg	
2-Butanone (MEK)	< 10.0	10.0	ug/kg	
Carbon disulfide	< 5.0	5.0	ug/kg	
Carbon tetrachloride	< 5.0	5.0	ug/kg	
Chlorobenzene	< 5.0	5.0	ug/kg	
Chlorodibromomethane	< 5.0	5.0	ug/kg	
Chloroethane	< 10.0	10.0	ug/kg	
Cbloroform	< 5.0	5.0	ug/kg	
Chloromethane	< 10.0	10.0	ug/kg	
1,1-Dichloroethane	< 5.0	5.0	ug/kg	
1,2-Dichloroethane	< 5.0	5.0	ug/kg	
1,1-Dichloroethene	< 5.0	5.0	ug/kg	
cis-1,2-Dichloroethene	< 5.0	5.0	ug/kg	
trans-1,2-Dichloroethene	< 5.0	5.0	ug/kg	
1,2-Dichloropropane	< 5.0	5.0	ug/kg	
cis-1,3-Dichloropropene	< 5.0	5.0	ug/kg	
trans-1,3-Dichloropropene	< 5.0	5.0	ug/kg	
Ethylbenzene	< 5.0	5.0	ug/kg	
2-Hexanone	< 10.0	10.0	ug/kg	
Methyl-tert-butylether (MTBE)	< 5.0	5.0	ug/kg	
4-Methyl-2-pentanone (MIBK)	< 10.0	10.0	ug/kg	
Methylene chloride	< 5.0	5.0	ug/kg	
Styrene	< 5.0	5.0	ug/kg	
1,1,2,2-Tetrachloroethane	< 5.0	5.0	ug/kg	
Tetrachloroethene	< 5.0	5.0	ug/kg	
Toluene	< 5.0	5.0	ug/kg	
1,1,1-Trichloroethane	< 5.0	5.0	ug/kg	
1,1,2-Trichloroethane	< 5.0	5.0	ug/kg	
Trichloroethene	< 5.0	5.0	ug/kg	
Vinyl acetate	< 10.0	10.0	ug/kg	
Vinyl chloride	< 10.0	10.0	ug/kg	
Xylene, Total	< 5.0	5.0	ug/kg	

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Analytical Report

Client: LFR, INC.
Project ID: 009-07992-00/001 John's Manville
Sample ID: DUP-1
Sample No: 6-1778-015

Date Collected: 04/26/06
Time Collected: 10:30
Date Received: 04/27/06
Date Reported: 05/08/06

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Semi-Volatile Compounds **Method: 8270C**		**Analysis Date: 05/03/06**		
Acenaphthylene	< 330	330	ug/kg	
Anthracene	< 330	330	ug/kg	
Benzidine	< 330	330	ug/kg	
Benzo(a)anthracene	< 330	330	ug/kg	
Benzo(a)pyrene	< 90	90	ug/kg	
Benzo(b)fluoranthene	< 330	330	ug/kg	
Benzo(ghi)perylene	< 330	330	ug/kg	
Benzo(k)fluoranthene	< 330	330	ug/kg	
Benzoic acid	< 330	330	ug/kg	
Benzyl alcohol	< 330	330	ug/kg	
bis(2-Chloroethoxy)methane	< 330	330	ug/kg	
bis(2-Chloroethyl)ether	< 330	330	ug/kg	
bis(2-Chloroisopropyl)ether	< 330	330	ug/kg	
bis(2-Ethylhexyl)phthalate	< 330	330	ug/kg	
4-Bromophenyl phenyl ether	< 330	330	ug/kg	
Butyl benzyl phthalate	< 330	330	ug/kg	
Carbazole	< 330	330	ug/kg	
4-Chloroaniline	< 330	330	ug/kg	
4-Chloro-3-methylphenol	< 330	330	ug/kg	
2-Chloronaphthalene	< 330	330	ug/kg	
2-Chlorophenol	< 330	330	ug/kg	
4-Chlorophenyl phenyl ether	< 330	330	ug/kg	
Chrysene	< 330	330	ug/kg	
Di-n-butyl phthalate	< 330	330	ug/kg	
Di-n-octylphthalate	< 330	330	ug/kg	
Dibenzo(a,h)anthracene	< 90	90	ug/kg	
Dibenzofuran	< 330	330	ug/kg	
1,2-Dichlorobenzene	< 330	330	ug/kg	
1,3-Dichlorobenzene	< 330	330	ug/kg	
1,4-Dichlorobenzene	< 330	330	ug/kg	
3,3'-Dichlorobenzidine	< 660	660	ug/kg	
2,4-Dichlorophenol	< 330	330	ug/kg	
Diethyl phthalate	< 330	330	ug/kg	
2,4-Dimethylphenol	< 330	330	ug/kg	
Dimethyl phthalate	< 330	330	ug/kg	
2,4-Dinitrophenol	< 1,600	1600	ug/kg	
2,4-Dinitrotoluene	< 250	250	ug/kg	
2,6-Dinitrotoluene	< 260	260	ug/kg	
Fluoranthene	< 330	330	ug/kg	

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Analytical Report

Client:	LFR, INC.	**Date Collected:**	04/26/06
Project ID:	009-07992-00/001 John's Manville	**Time Collected:**	10:30
Sample ID:	DUP-1	**Date Received:**	04/27/06
Sample No:	6-1778-015	**Date Reported:**	05/08/06

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Semi-Volatile Compounds **Method: 8270C**		**Analysis Date: 05/03/06**		
Fluorene	< 330	330	ug/kg	
Hexachlorobenzene	< 330	330	ug/kg	
Hexachlorobutadiene	< 330	330	ug/kg	
Hexachlorocyclopentadiene	< 330	330	ug/kg	
Hexachloroethane	< 330	330	ug/kg	
Indeno(1,2,3-cd)pyrene	< 330	330	ug/kg	
Isophorone	< 330	330	ug/kg	
2-Methylnaphthalene	< 330	330	ug/kg	
2-Methylphenol	< 330	330	ug/kg	
3 & 4-Methylphenol	< 330	330	ug/kg	
Naphthalene	< 330	330	ug/kg	
2-Nitroaniline	< 1,600	1600	ug/kg	
3-Nitroaniline	< 1,600	1600	ug/kg	
4-Nitroaniline	< 1,600	1600	ug/kg	
Nitrobenzene	< 260	260	ug/kg	
2-Nitrophenol	< 1,600	1600	ug/kg	
4-Nitrophenol	< 1,600	1600	ug/kg	
n-Nitrosodiphenylamine	< 330	330	ug/kg	
n-Nitrosodi-n-propylamine	< 330	330	ug/kg	
Pentachlorophenol	< 330	330	ug/kg	
Phenanthrene	< 330	330	ug/kg	
Phenol	< 330	330	ug/kg	
Pyrene	< 330	330	ug/kg	
Pyridine	< 330	330	ug/kg	
1,2,4-Trichlorobenzene	< 330	330	ug/kg	
2,4,5-Trichlorophenol	< 330	330	ug/kg	
2,4,6-Trichlorophenol	< 330	330	ug/kg	
Pesticides/PCBs **Method: 8081A/8082**		**Analysis Date: 05/05/06**		
Aldrin	< 8.0	8.0	ug/kg	
Aroclor 1016	< 80.0	80.0	ug/kg	
Aroclor 1221	< 80.0	80.0	ug/kg	
Aroclor 1232	< 80.0	80.0	ug/kg	
Aroclor 1242	< 80.0	80.0	ug/kg	
Aroclor 1248	< 80.0	80.0	ug/kg	
Aroclor 1254	< 160	160	ug/kg	
Aroclor 1260	< 160	160	ug/kg	
alpha-BHC	< 2.0	2.0	ug/kg	
beta-BHC	< 8.0	8.0	ug/kg	
delta-BHC	< 8.0	8.0	ug/kg	

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Analytical Report

Client:	LFR, INC.		**Date Collected:**	04/26/06
Project ID:	009-07992-00/001 John's Manville		**Time Collected:**	10:30
Sample ID:	DUP-1		**Date Received:**	04/27/06
Sample No:	6-1778-015		**Date Reported:**	05/08/06

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Pesticides/PCBs — **Method: 8081A/8082**		**Analysis Date: 05/05/06**		
gamma-BHC (Lindane)	< 8.0	8.0	ug/kg	
alpha-Chlordane	< 80.0	80.0	ug/kg	
gamma-Chlordane	< 80.0	80.0	ug/kg	
4,4'-DDD	< 16.0	16.0	ug/kg	
4,4'-DDE	< 16.0	16.0	ug/kg	
4,4'-DDT	< 16.0	16.0	ug/kg	
Dieldrin	< 16.0	16.0	ug/kg	
Endosulfan I	< 8.0	8.0	ug/kg	
Endosulfan II	< 16.0	16.0	ug/kg	
Endosulfan sulfate	< 16.0	16.0	ug/kg	
Endrin	< 16.0	16.0	ug/kg	
Endrin aldehyde	< 16.0	16.0	ug/kg	
Endrin ketone	< 16.0	16.0	ug/kg	
Heptachlor	< 8.0	8.0	ug/kg	
Heptachlor epoxide	< 8.0	8.0	ug/kg	
Methoxychlor	< 80.0	80.0	ug/kg	
Toxaphene	< 160	160	ug/kg	
Total Metals — **Method: 6010B**		**Analysis Date: 05/03/06**		
Antimony	< 1.0	1.0	mg/kg	
Arsenic	1.0	0.2	mg/kg	
Barium	11.1	0.1	mg/kg	
Cadmium	< 0.1	0.1	mg/kg	
Chromium	2.9	0.1	mg/kg	
Lead	1.1	0.2	mg/kg	
Selenium	< 0.2	0.2	mg/kg	
Silver	< 0.1	0.1	mg/kg	
Total Metals — **Method: 7470A**		**Analysis Date: 04/28/06**		
Mercury	< 0.05	0.05	mg/kg	

CHAIN OF CUSTODY / ANALYSES REQUEST FORM

Project No.: 009-07992-00/001	Project Location: Waukegan, IL	Date: 4/26/06	Serial No.:
Project Name: Johns Manville	~~Field Logbook No.~~: PO#-		
Sampler (Signature): Kathleen E Troyer			Samplers: KET

SAMPLES / ANALYSES

SAMPLE NO.	DATE	TIME	LAB SAMPLE NO.	NO. OF CONTAINERS	SAMPLE TYPE	VOCs-8260/5035	SVOCs-8270	RCRA Metals	Antimony (6010B)	pH (150.1)	PCBs/Pest (8081/8082)	HOLD	RUSH	REMARKS
BP8 (16")	4/26/06	1000	6-1778-001	5		X	X	X	X	X	X			
BP8 (3')		1005	002			X	X	X	X	X	X			
BP9 (15")		1035	003			X	X	X	X	X	X			
BP9 (3')		1040	004			X	X	X	X	X	X			
BP10 (14")		1015	005			X	X	X	X	X	X			
BP10 (3')		1020	006			X	X	X	X	X	X			
BP11 (16")		1045	007			X	X	X	X	X	X			
BP11 (3')		1115	008			X	X	X	X	X	X			
BP12 (13")		1120	009			X	X	X	X	X	X			
BP12 (3')		1130	010			X	X	X	X	X	X			
BP13		1140	011			X	X	X	X	X	X			
BP13 (3')		1200	012			X	X	X	X	X	X			
BP14 (15")		1020	013			X	X	X	X	X	X			
BP14 (3')		1025	014			X	X	X	X	X	X			
DUP-1		1030	015			X	X	X	X	X	X			

RELINQUISHED BY: (Signature) Kathleen E Troyer	DATE 4-27-06	TIME 1055	RECEIVED BY: (Signature) [signature]	DATE 4-27-06	TIME 1055
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME
METHOD OF SHIPMENT:	DATE	TIME	LAB COMMENTS:		

Sample Collector: LEVINE-FRICKE-RECON
630 Tollgate Road, Suite D
Elgin, Illinois 60123-9364
(847) 695-8855

Analytical Laboratory:

Shipping Copy (White) Lab Copy (Green) File Copy (Yellow) Field Copy (Pink)

COC.CDR 101596

EMSL Analytical, Inc.
107 Haddon Avenue, Westmont, NJ 08108 Phone: 800-220-3675 Fax:856-858-4960

EMSL Reference: 040608086

Client: LFR Levine Fricke
630 Tollgate Rd.
Suite D
Elgin, IL 60123
Attention: Wendy Krahn
Fax: 847-695-7799 Phone: 847-695-8855
Project: JOHNS MANVILLE: 009-07992-00-001

Date Received: 04/28/06
Date Analyzed: 05/04/06
Date Reported: 05/05/06

Asbestos Analysis of Vermiculite via EPA 600/R-93/116 Method Utilizing Analytical Electron Microscopy (Section 2.5) with CARB 435 Prep (Milling) Level C for 0.01% Target Analytical Sensitivity

Client Sample ID	EMSL Sample ID	Asbestos Type(s)	# of Asbestos Structures Detected	Analytical Sensitivity %	Asbestos Weight %	Comments
BP8 (3')	040608036-0001	None Detected	0	0.01	<0.01	
BP11 (3')	040608036-0002	None Detected	0	0.01	<0.01	

Debbie Little
Analyst

Stephen Siegel, CIH or Approved EMSL Signatory

EMSL maintains liability limited to cost of analysis. This method requires the laboratory to analyze the sample until the first fiber found compromises 5% of the total mass. Due to the size and mass of different asbestos fibers, the analytical sensitivity will vary between samples and may prevent the laboratory from achieving the target sensitivity on all samples. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL is not responsible for sample collection activities or analytical method limitations. Interpretation and use of results are the responsibility of the client.

EMSL Analytical, Inc.
107 Haddon Ave., Westmont, NJ 08108
Phone: (856) 858-4800 Fax: (856) 858-4960 Email: westmontasblab@EMSL.com

Attn: **Wendy Krahn**
LFR Levine Fricke
630 Tollgate Rd.
Suite D
Elgin, IL 60123

Fax: (847) 695-7799 Phone: (847) 695-8855
Project: JOHNS MANVILLE: 009-07992-00-001

Customer ID: LEVI93
Customer PO: 11100
Received: 04/28/06 9:40 AM
EMSL Order: 040608086

EMSL Proj:
Analysis Date: 5/10/2006
Report Date: 5/10/2006

Qualitative asbestos analysis of soils using the EPA 600/R-93/116 method

Sample	Location	Appearance	Result	Notes
BP8 (16") *040608086-0001*			None Detected	
BP8 (3') *040608086-0002*			None Detected	
BP9 (15") *040608086-0003*			None Detected	
BP9 (3') *040608086-0004*			None Detected	
BP10 (14") *040608086-0005*			None Detected	
BP10 (3') *040608086-0006*			None Detected	
BP11 (16") *040608086-0007*			None Detected	
BP11 (3') *040608086-0008*			None Detected	
BP12 (13") *040608086-0009*			None Detected	

Analyst(s)

Delores Beard (15)

Stephen Siegel, CIH
or other approved signatory

EMSL Analytical, Inc.
107 Haddon Ave., Westmont, NJ 08108
Phone: (856) 858-4800 Fax: (856) 858-4960 Email: westmontasblab@EMSL.com

Attn: Wendy Krahn
LFR Levine Fricke
630 Tollgate Rd.
Suite D
Elgin, IL 60123

Fax: (847) 695-7799 Phone: (847) 695-8855
Project: JOHNS MANVILLE: 009-07992-00-001

Customer ID: LEVI93
Customer PO: 11100
Received: 04/28/06 9:40 AM
EMSL Order: 040608086

EMSL Proj:
Analysis Date: 5/10/2006
Report Date: 5/10/2006

Qualitative asbestos analysis of soils using the EPA 600/R-93/116 method

Sample	Location	Appearance	Result	Notes
BP12 (3') 040608086-0010			None Detected	
BP13 (12") 040608086-0011			None Detected	
BP13 (3') 040608086-0012			None Detected	
BP14 (15") 040608086-0013			None Detected	
BP14 (3') 040608086-0014			None Detected	
DUP-1 040608086-0015			None Detected	

Analyst(s)

Delores Beard (15)

Stephen Siegel, CIH
or other approved signatory

THIS IS THE LAST PAGE OF THE REPORT.

EMSL

Chain of Custody

Asbestos Lab Services

040608086

EMSL Analytical, Inc.
107 Haddon Avenue
Westmont, NJ 08108

Phone: (856) 858-4800
Fax: (856) 858-4960
(856) 427-1608
http://www.emsl.com

Please print all information legibly.

LEVI93

Company:	LFR Inc.	Bill To:	LFR Inc.
Address1:	630 Tollgate Road	Address1:	630 Tollgate Road
Address2:	Suite D	Address2:	Suite D
City, State:	Elgin, IL	City, State:	Elgin, IL
Zip/Post Code:	60123	Zip/Post Code:	60123
Country:	USA	Country:	USA
Contact Name:	Wendy Krahn	Attn:	Wendy Krahn
Phone:	847-695-8855 x112	Phone:	847-695-8855 x112
Fax:	847-695-7799	Fax:	847-695-7799
Email:	wendy.krahn@lfr.com	Email:	wendy.krahn@lfr.com
EMSL Rep:	Paul Nyfield		
Project Name/Number:	Johns Manville: 009-07992-00-001	P.O. Number:	11100

MATRIX		
☐ Air	☐ Soil	☐ Micro-Vac
☐ Bulk	☐ Drinking Water	
☐ Wipe	☐ Wastewater	

TURNAROUND			
☐ 3 Hours	☐ 6 Hours	☐ Same Day or 12 Hours*	☐ 24 Hours (1 day)
☐ 48 Hours (2 days)	☐ 72 Hours (3 days)	☐ 96 Hours (4 days)	☐ 120 Hours (5 days)
☒ 144+ hours (6-10 days)			

TEM AIR, 3 hours, 6 hours, Please call ahead to schedule. There is a premium charge for 3-hour tat, please call 1-800-220-3675 for price prior to sending samples. You will be asked to sign an authorization form for this service.

*12 hours (must arrive by 11:00a.m. Mon -Fri), Please Refer to Price Quote

SAMPLES ACCEPTED FOR ANALYSIS BY EMSL ANALYTICAL INC.

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PCM - Air
- ☐ NIOSH 7400(A) Issue 2: August 1994
- ☐ OSHA w/TWA
- ☐ Other:

PLM - Bulk
- ☐ EPA 600/R-93/116
- ☐ EPA Point Count
- ☐ NY Stratified Point Count
- ☐ PLM NOB (Gravimetric) NYS 198.1
- ☐ NIOSH 9002:
- ☐ EMSL Standard Addition:

SEM Air or Bulk
- ☐ Qualitative
- ☐ Quantitative

TEM Air
- ☐ AHERA 40 CFR, Part 763 Subpart E
- ☐ NIOSH 7402
- ☐ EPA Level II

TEM BULK
- ☐ Drop Mount (Qualitative)
- ☐ Chatfield SOP - 1988-02
- ☐ TEM NOB (Gravimetric) NYS 198.4
- ☐ EMSL Standard Addition:

PLM Soil
- ☒ EPA Protocol (Qualitative)
- ☐ EPA Protocol Quantitative
- ☐ EMSLMSD 9000 Method fibers/gram

TEM WATER
- ☐ EPA 100.1
- ☐ EPA 100.2
- ☐ NYS 198.2

TEM Microvac/Wipe
- ☐ ASTM D 5755-95 (quantative method)
- ☐ Wipe Qualitative

XRD
- ☐ Asbestos
- ☐ Silica NIOSH 7500

OTHER
- ☒ Cal 435 - TEM

040608086

EMSL

Chain of Custody

Asbestos Lab Services

EMSL Analytical, Inc.
107 Haddon Avenue
Westmont, NJ 08108

Phone: (856) 858-4800
Fax: (856) 858-4960
(856) 427-1608
http://www.emsl.com

Please print all information legibly.

Client Sample # (s) BP8 - BP14 + DUP-1

Total Samples #: 15

Relinquished: Kathleen Etmyer Date: 4/27/06 Time: 400 FedEx

Received: DM-FX-940A Date: Time:

Relinquished: Date: Time:

Received: Date: Time:

SAMPLE NUMBER	SAMPLE DESCRIPTION/LOCATION	VOLUME (if applicable)
BP8(16")	Sand PLM (EPA/600R-93/116)	Bags, aprox 4oz each
BP8(3')	Sand PLM + TEM (Carb 435C)	approx 8oz
BP9(15")	Sand PLM	
BP9(3')	Sand PLM	
BP10(14")	Sand PLM	
BP10(3')	Sand PLM	
BP11(16")	Sand PLM	
BP11(3')	Sand PLM + TEM (Carb 435C)	approx 8oz
BP12(13")	Sand PLM	
PB12(3')	Sand PLM	
BP13(12")	Sand PLM	
BP 13(3')	Sand PLM	
BP14(15")	Sand PLM	
BP14(3')	Sand PLM	✓
DUP-1	Sand PLM	

RECEIVED 06 APR 28 AM 9:58

SAMPLES ACCEPTED FOR ANALYSIS BY EMSL ANALYTICAL INC.

Appendix C

Borrow Pit Sand Geotechnical Results

Log of Borehole: BP-1

LFR LEVINE·FRICKE	**Client:** Johns Manville	**Project:** Borrow Pit Soil Borings		**Project No:** 009-07992
	Project Location: Waukegan, IL	**Total Depth:** 36	**Ground Elevation:** 586.5	**Date Start:** 10/14/03
Surface Conditions: Topsoil				**Date End:** 10/14/03
Drilling Contractor: Mid-America		**Driller:** B. Unlandon	**Geologist/Engineer:** W. Teskey	

SAMPLE DATA					SUBSURFACE PROFILE			
Sample Number	Sample Type	Recovery (%)	N Value	Analytical Sample	Depth (ft)	Symbol	Soil Description	Remarks
					0		Ground Surface ***Topsoil*** Black; slightly moist; soft; 20% roots	Boring advanced using 4.25" ID hollow stem augers. Sampled using 2" ID by 2' long split spoons.
1	SS	60	8		1		***Clay (CL)*** Brown; dry; stiff; 10% fine gravel	
					2		***Sand (SP)*** Brown; dry; loose; medium grained Grading to black with 5% cinders	
2	SS	65	27		3		1 inch layer hard, gray fibrous material at 3.6 feet	
					4		***Sand (SP)*** Brown; dry; loose; medium grained	
3	SS	70	16		5		Wet at 5 feet	
					6			
4	SS	70	20		7		***Gravel with Sand (GP)*** Brown and gray; wet; loose; 80% fine gravel; 20% medium to coarse sand	
					8		***Sand (SP)*** Brown; wet; loose; medium grained	
5	SS	80	25		9		Grading to brownish gray at 9.2 feet	
					10		10% fine gravel grades in at 10.5 feet	Beginning at 10 feet, augers were repeatedly flooded with water during advancement to prevent sand heave.
6	SS	50	28		11			
					12			

Log of Borehole: BP-1

LFR LEVINE•FRICKE	Client: Johns Manville	Project: Borrow Pit Soil Borings		Project No: 009-07992
	Project Location: Waukegan, IL	Total Depth: 36	Ground Elevation: 586.5	Date Start: 10/14/03
Surface Conditions: Topsoil				Date End: 10/14/03
Drilling Contractor: Mid-America		Driller: B. Unlandon	Geologist/Engineer: W. Teskey	

SAMPLE DATA					SUBSURFACE PROFILE			
Sample Number	Sample Type	Recovery (%)	N Value	Analytical Sample	Depth (ft)	Symbol	Soil Description	Remarks
							10% fine gravel grades in at 10.5 feet	
7	SS	50	32		13		***Gravel with Sand (GP)*** Brown and gray; wet; loose; 80% fine gravel; 19% sand; 1% coarse gravel	
					14		***Sand (SP)*** Brown; wet; loose; medium grained sand; 2% fine gravel	
8	SS	65	39		15			
9	SS	70	38		16		***Sand (SP)*** Brown and gray; wet ; loose; 75% coarse sand; 24% medium sand; 1% coarse gravel	
					17		***Sand (SP)*** Grayish brown; wet; moderately dense; medium grained	
10	SS	75	64		18–19		4 inch layer coarse sand with 2% fine gravel at 19 feet	
11	SS	60	40		20–21		Grading to gray at 20.5 feet	
12	SS	70	39		22–23			
					24			

Log of Borehole: BP-1

LFR LEVINE•FRICKE	**Client:** Johns Manville	**Project:** Borrow Pit Soil Borings	**Project No:** 009-07992
	Project Location: Waukegan, IL	**Total Depth:** 36 / **Ground Elevation:** 586.5	**Date Start:** 10/14/03
Surface Conditions: Topsoil			**Date End:** 10/14/03
Drilling Contractor: Mid-America		**Driller:** B. Unlandon	**Geologist/Engineer:** W. Teskey

SAMPLE DATA					SUBSURFACE PROFILE			
Sample Number	Sample Type	Recovery (%)	N Value	Analytical Sample	Depth (ft)	Symbol	Soil Description	Remarks
13	SS	100	39		25		1 inch layer fine gravel at 25 feet	A soil sample of the interval from 4 to 26 feet was submitted to the laboratory for sieve analysis.
					26			
14	SS	90	36		27		***Clay (CL)*** Gray; dry; stiff; 5-10% fine gravel; 1% coarse gravel	
					28			
15	SS	30	39		29			
					30			
16	SS	50	30		31			
					32			
17	SS	40	69		33			
					34			
18	SS	20	72		35		1/4 inch layer sand at 34.5 feet (possible cave-in)	Boring filled with bentonite grout to 2 feet below grade using tremmie pipe, and bentonite chips from 2 feet to surface.
					36		End of Borehole	

Log of Borehole: BP-2

LFR LEVINE·FRICKE	Client: Johns Manville	Project: Borrow Pit Soil Borings		Project No: 009-07992
	Project Location: Waukegan, IL	Total Depth: 32	Ground Elevation: 586.2	Date Start: 10/14/03
Surface Conditions: Topsoil				Date End: 10/14/03
Drilling Contractor: Mid-America		Driller: B. Unlandon	Geologist/Engineer: W. Teskey	

SAMPLE DATA

Sample Number	Sample Type	Recovery (%)	N Value	Analytical Sample
1	SS	50	16	
2	SS	40	18	
3	SS	50	23	
4	SS	80	18	
5	SS	20	21	
6	SS	15	15	

SUBSURFACE PROFILE

Depth (ft)	Symbol	Soil Description	Remarks
0		Ground Surface ***Topsoil*** Black; slightly moist; soft; 15% roots	Boring advanced using 4.25" ID hollow stem augers. Sampled using 2" ID by 2' long split spoons.
1		***Clay (CL)*** Brown; dry; stiff; 5% fine gravel	
2		***Sand (SP)*** Brown; dry; loose; medium grained sand, 2% coarse gravel	
3		***Peat*** Black; dry; soft	
4		***Sand (SP)*** Brown; dry; loose; medium grained; 2% fine gravel	
5		Wet at 5.2 feet	
6–7		***Gravel with Sand (GP)*** Brown and gray; wet; loose; 70% fine gravel; 20% medium sand	
8		***Sand (SP)*** Brown; wet; loose; 10% fine gravel Gravel grades out at 8.4	
9			
10		Grading to gray at 10.2	Beginning at 10 feet, augers were repeatedly flooded with water during advancement to prevent sand heave.
11			
12			

Log of Borehole: BP-2

LFR LEVINE•FRICKE	**Client:** Johns Manville	**Project:** Borrow Pit Soil Borings		**Project No:** 009-07992
	Project Location: Waukegan, IL	**Total Depth:** 32	**Ground Elevation:** 586.2	**Date Start:** 10/14/03
Surface Conditions: Topsoil				**Date End:** 10/14/03
Drilling Contractor: Mid-America		**Driller:** B. Unlandon	**Geologist/Engineer:** W. Teskey	

SAMPLE DATA					SUBSURFACE PROFILE			
Sample Number	Sample Type	Recovery (%)	N Value	Analytical Sample	Depth (ft)	Symbol	Soil Description	Remarks
7	SS	50	30		13		***Sand (SP)*** Grayish brown; wet; loose; 80% medium sand; 19% coarse sand; 1% fine gravel	
8	SS	50	49		14, 15		Fine gravel increases to 10% from 14.5 to 15.5 feet	
9	SS	70	37		16, 17		***Sand (SP)*** Grayish brown; wet; moderately dense; medium grained	
10	SS	40	60		18, 19		Grading gray at 19 feet	
11	SS	90	42		20, 21			
12	SS	60	34		22, 23			
					24			

Log of Borehole: BP-2

LFR LEVINE•FRICKE	**Client:** Johns Manville	**Project:** Borrow Pit Soil Borings	**Project No:** 009-07992
	Project Location: Waukegan, IL	**Total Depth:** 32 / **Ground Elevation:** 586.2	**Date Start:** 10/14/03
Surface Conditions: Topsoil			**Date End:** 10/14/03
Drilling Contractor: Mid-America		**Driller:** B. Unlandon	**Geologist/Engineer:** W. Teskey

Sample Number	Sample Type	Recovery (%)	N Value	Analytical Sample	Depth (ft)	Soil Description	Remarks
13	SS	80	35		25–26		A soil sample of the interval from 4 to 27 feet was submitted to the laboratory for sieve analysis.
14	SS	15	88		26–27	1 inch layer fine gravel at 26.9 feet; 1% coarse gravel	
					27	***Clay (CL)*** Gray; dry; hard; 5% fine gravel	Hard drilling began at approximately 27 feet below grade.
15	SS	0	NA		28–30		
16	SS	50	88		30–32		Boring filled with bentonite grout to 2 feet below grade using tremmie pipe, and bentonite chips from 2 feet to surface.
					32	End of Borehole	

Depth scale: 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36

Log of Borehole: BP-3

LFR LEVINE•FRICKE	**Client:** Johns Manville	**Project:** Borrow Pit Soil Borings		**Project No:** 009-07992
	Project Location: Waukegan, IL	**Total Depth:** 28	**Ground Elevation:**	**Date Start:** 10/15/03
Surface Conditions: Shingle Tabs				**Date End:** 10/15/03
Drilling Contractor: Mid-America		**Driller:** B. Unlandon	**Geologist/Engineer:** W. Teskey	

Sample Number	Sample Type	Recovery (%)	N Value	Analytical Sample	Depth (ft)	Symbol	Soil Description	Remarks
					0		Ground Surface ***Shingle Tabs*** Black; dry; hard; loose; 1" to 4" long by 1/4" wide shingles with white/gray/green roofing granules	Boring advanced using 4.25" ID hollow stem augers. Sampled using 2" ID by 2' long split spoons.
					1			
					2			Blind drill 0 to 4 feet.
					3			
					4		***Roofing Material*** Black; dry; hard; soild; with roofing granules	
1	SS	75	23		5		***Sand (SP)*** Brown; wet; loose; coarse sand; 10% fine gravel; 2% roots	
					6		***Sand (SP)*** Brown; wet; moderately dense; medium grained	
2	SS	50	20		7			
					8		Grading to coarse sand; 5% gravel	
3	SS	70	20		9		***Gravel with Sand (GP)*** Brown and gray; wet; loose; 70% coarse grave; 30% medium to coarse sand	
					10		***Sand (SP)*** Brown; wet; moerately dense; medium to coarse grained; 5% fine gravel	Beginning at 10 feet, augers were repeatedly flooded with water during advancement to prevent sand heave.
4	SS	40	24		11		***Gravel with Sand (GP)*** Coarse gravel with 30% medium sand ***Sand with Gravel (SP)*** Brown; wet; loose; 15% fine gravel (possible cave-in)	
					12		***Sand (SP)*** Brown; wet; moderately dense; medium grained sand	

Log of Borehole: BP-3

LFR LEVINE·FRICKE	**Client:** Johns Manville	**Project:** Borrow Pit Soil Borings	**Project No:** 009-07992
	Project Location: Waukegan, IL	**Total Depth:** 28 / **Ground Elevation:** 586	**Date Start:** 10/15/03
Surface Conditions: Shingle Tabs			**Date End:** 10/15/03
Drilling Contractor: Mid-America		**Driller:** B. Unlandon	**Geologist/Engineer:** W. Teskey

SAMPLE DATA					SUBSURFACE PROFILE			
Sample Number	Sample Type	Recovery (%)	N Value	Analytical Sample	Depth (ft)	Symbol	Soil Description	Remarks
5	SS	40	32		13		***Sand (SP)*** Brown; wet; moderately dense; medium grained sand	
6	SS	20	19		14–15			
7	SS	25	23		16–17		***Silt (ML)*** Gray; moist; moderately dense; 2" layer ***Sand with Gravel (SP)*** Brown and gray; wet; loose; 80% coarse to medium sand; 15% coarse to fine gravel	
8	SS	70	44		18–19		***Sand (SP)*** Brown; wet; moderately dense; medium grained 3" layer sand with gravel; medium sand with fine to coarse gravel at 19.3	
9	SS	80	70		20–21			
10	SS	10	68		22–23		2" layer sand with fine gravel at 23.6	A soil sample of the interval from 5 to 23.5 feet was submitted to the laboratory for sieve analysis.
		5			24–25		***Clay (CL)*** Gray; dry; stiff; 5% fine gravel No recovery	

Log of Borehole: BP-3

LFR LEVINE·FRICKE	Client: Johns Manville	Project: Borrow Pit Soil Borings		Project No: 009-07992
	Project Location: Waukegan, IL	Total Depth: 28	Ground Elevation:	Date Start: 10/15/03
Surface Conditions: Shingle Tabs				Date End: 10/15/03
Drilling Contractor: Mid-America		Driller: B. Unlandon	Geologist/Engineer: W. Teskey	

SAMPLE DATA					SUBSURFACE PROFILE			
Sample Number	Sample Type	Recovery (%)	N Value	Analytical Sample	Depth (ft)	Symbol	Soil Description	Remarks
11	SS	5	50+		26		**_Clay with Gravel (CL)_** Gray; slightly moist; dense; 70% silt; 30% fine gravel; 4" layer	
12	SS	5	50+		27		No recovery	
					28		**_Clay with Gravel (ML)_** Gray; dry; dense; 65% silt; 35% fine gravel; 4" layer End of Borehole	Boring filled with bentonite grout to 2 feet below grade using tremmie pipe, and bentonite chips from 2 feet to surface.
					29			
					30			
					31			
					32			
					33			
					34			
					35			
					36			
					37			

Log of Borehole: BP-4

LFR LEVINE·FRICKE	**Client:** Johns Manville	**Project:** Borrow Pit Soil Borings		**Project No:** 009-07992
	Project Location: Waukegan, IL	**Total Depth:** 26	**Ground Elevation:** 586.2	**Date Start:** 10/15/03
Surface Conditions: Topsoil				**Date End:** 10/15/03
Drilling Contractor: Mid-America		**Driller:** B. Unlandon	**Geologist/Engineer:** W. Teskey	

SAMPLE DATA					SUBSURFACE PROFILE			
Sample Number	Sample Type	Recovery (%)	N Value	Analytical Sample	Depth (ft)	Symbol	Soil Description	Remarks
					0		Ground Surface	Boring advanced using 4.25" ID Hollow stem augers. Sampled using 2" ID by 2' long split spoons.
							Topsoil Black; slightly moist; root/grass	
							Clay Brown; dry; stiff	
					1		***Sand (SP)*** Brown; wet	
					2			Blind drilled to 18 ft. Soil types described from auger cuttings
					3			
					4			
					5			
					6			
					7			
					8			
					9			
					10			
					11			
					12			

Log of Borehole: BP-4

LFR LEVINE•FRICKE	**Client:** Johns Manville	**Project:** Borrow Pit Soil Borings		**Project No:** 009-07992
	Project Location: Waukegan, IL	**Total Depth:** 26	**Ground Elevation:** 586.2	**Date Start:** 10/15/03
Surface Conditions: Topsoil				**Date End:** 10/15/03
Drilling Contractor: Mid-America		**Driller:** B. Unlandon	**Geologist/Engineer:** W. Teskey	

Sample Number	Sample Type	Recovery (%)	N Value	Analytical Sample	Depth (ft)	Soil Description	Remarks
					13–19	***Sand (SP)*** Brown; wet	
1	SS	50	34		19	***Sand (SP)*** Brown; wet; moderately dense; fine to medium grained	
2	SS	90	98		21.5	***Sand with Gravel (SP)*** Gray and brown; wet; dense; 80% sand; 20% fine gravel	Hard drilling began at 21.5 feet below grade.
3	SS	2	75+		22	***Clay (CL)*** Gray; dry; stiff; 10% gravel	
						No recovery	
					24		

Log of Borehole: BP-4

LFR LEVINE•FRICKE	**Client:** Johns Manville	**Project:** Borrow Pit Soil Borings	**Project No:** 009-07992
	Project Location: Waukegan, IL	**Total Depth:** 26 / **Ground Elevation:** 586.2	**Date Start:** 10/15/03
Surface Conditions: Topsoil			**Date End:** 10/15/03
Drilling Contractor: Mid-America		**Driller:** B. Unlandon	**Geologist/Engineer:** W. Teskey

SAMPLE DATA					SUBSURFACE PROFILE			
Sample Number	Sample Type	Recovery (%)	N Value	Analytical Sample	Depth (ft)	Symbol	Soil Description	Remarks
					25			
4	SS	5	50+				***Limestone cobbles*** Gray; wet; fractured cobbles; 3-4" layer	
					26		***Clay (CL)*** Gray; dry; dense	Boring filled with bentonite grout to 2 feet below grade using tremmie pipe and bentonite chips from 2 feet to surface.
							End of Borehole	
					27			
					28			
					29			
					30			
					31			
					32			
					33			
					34			
					35			
					36			

TESTING SERVICE CORPORATION

Corporate Office:
360 S. Main Place, Carol Stream, IL 60188-2404
630.462.2600 • Fax 630.653.2988

Local Office:
457 E. Gundersen Drive, Carol Stream, IL 60188-2492
630.653.3920 • Fax 630.653.2726

November 5, 2003

Ms. Wendy Teskey
LFR Levine-Fricke
630 Tollgate Road, Suite D
Elgin, Illinois 60123

Re: Johns Manville
TSC Job L-59,271

Dear Ms. Teskey:

Enclosed on three (3) Gradation Sheets is the result of the analysis you requested for three (3) samples delivered to our office. The gradations for Samples BP-1, BP-2 and BP-3 were tested following current ASTM D422 and included a wash on the #200 sieve.

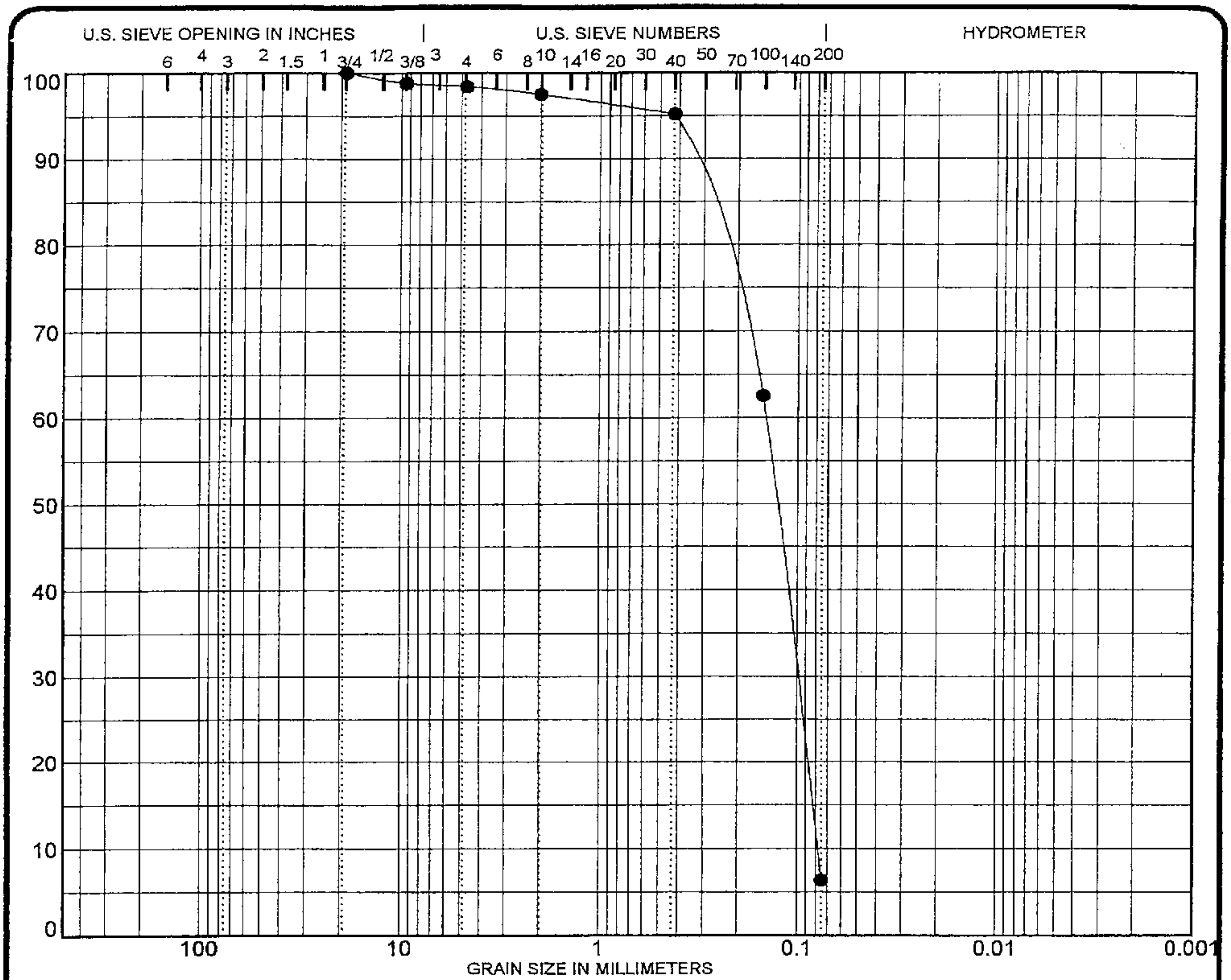
It is a pleasure to assist you on this project. Please call if you have any questions or require additional information.

Respectfully submitted,

TESTING SERVICE CORPORATION

Larry Lockwald
Laboratory Manager

LL:cn
Enc. 3 pages



COBBLES	GRAVEL		SAND			ASTM D 422
	coarse	fine	coarse	medium	fine	

SPECIMEN IDENTIFICATION	SIEVE	% PASS
Sample: BP-1	3"	100.0
	2"	100.0
	1-1/2"	100.0
	1"	100.0
NOTES :	3/4"	100.0
	3/8"	98.8
	#4	98.4
	#10	97.5
	#40	95.2
	#100	62.6
	#200	6.4

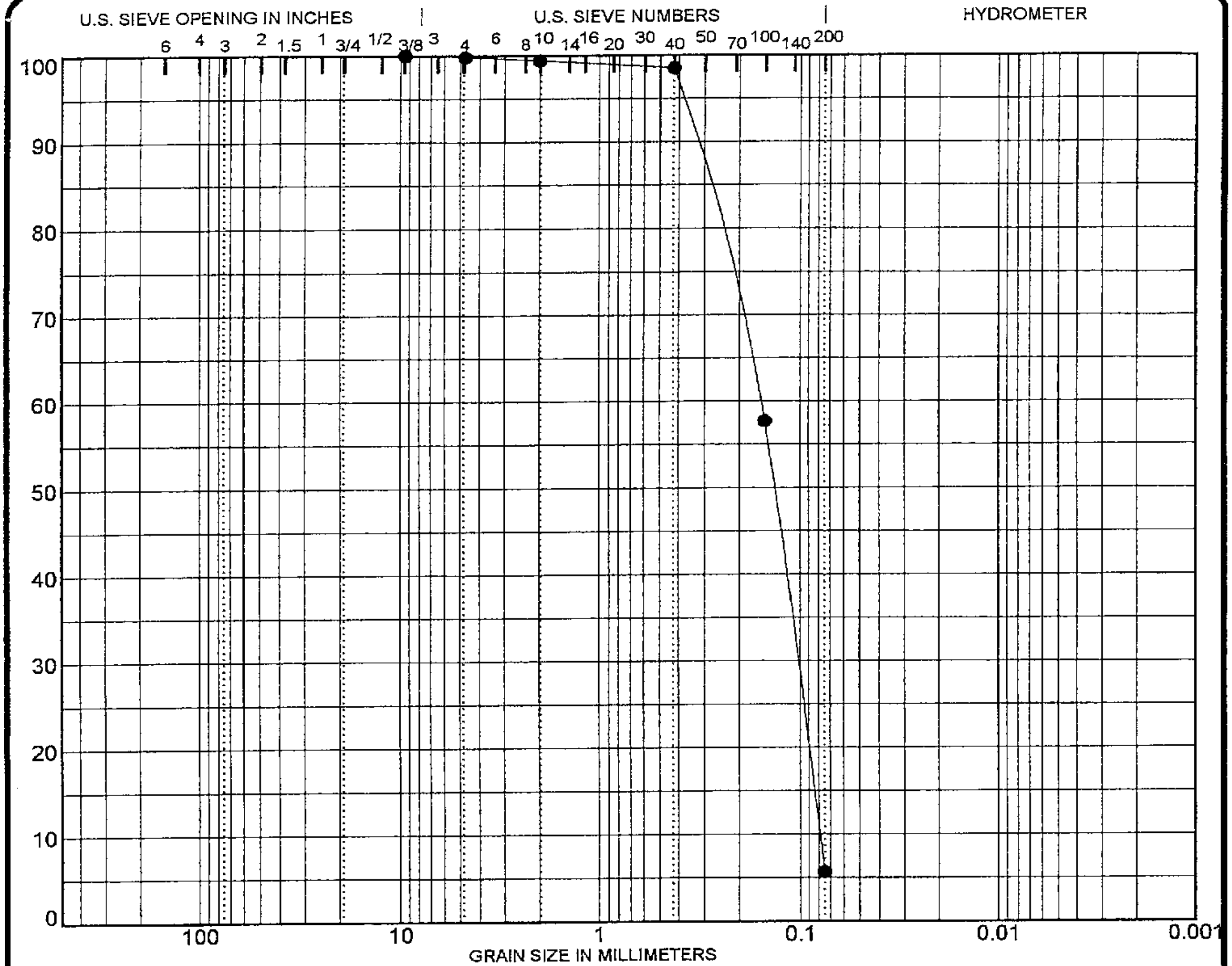
PROJECT **009-07992-00**
LOCATION ,
JOB NO. **L - 59,271**
DATE **October 28, 2003**

A

GRADATION SHEET

Testing Service Corporation
Carol Stream, IL 60188

ASTMD422 59271.GPJ TSC_ALL.GDT 10/28/03



COBBLES	GRAVEL		SAND			ASTM D 422
	coarse	fine	coarse	medium	fine	

SPECIMEN IDENTIFICATION	SIEVE	% PASS
Sample: BP-2	3"	100.0
	2"	100.0
	1-1/2"	100.0
	1"	100.0
NOTES :	3/4"	100.0
	3/8"	100.0
	#4	99.8
	#10	99.4
	#40	98.5
	#100	57.7
	#200	5.7

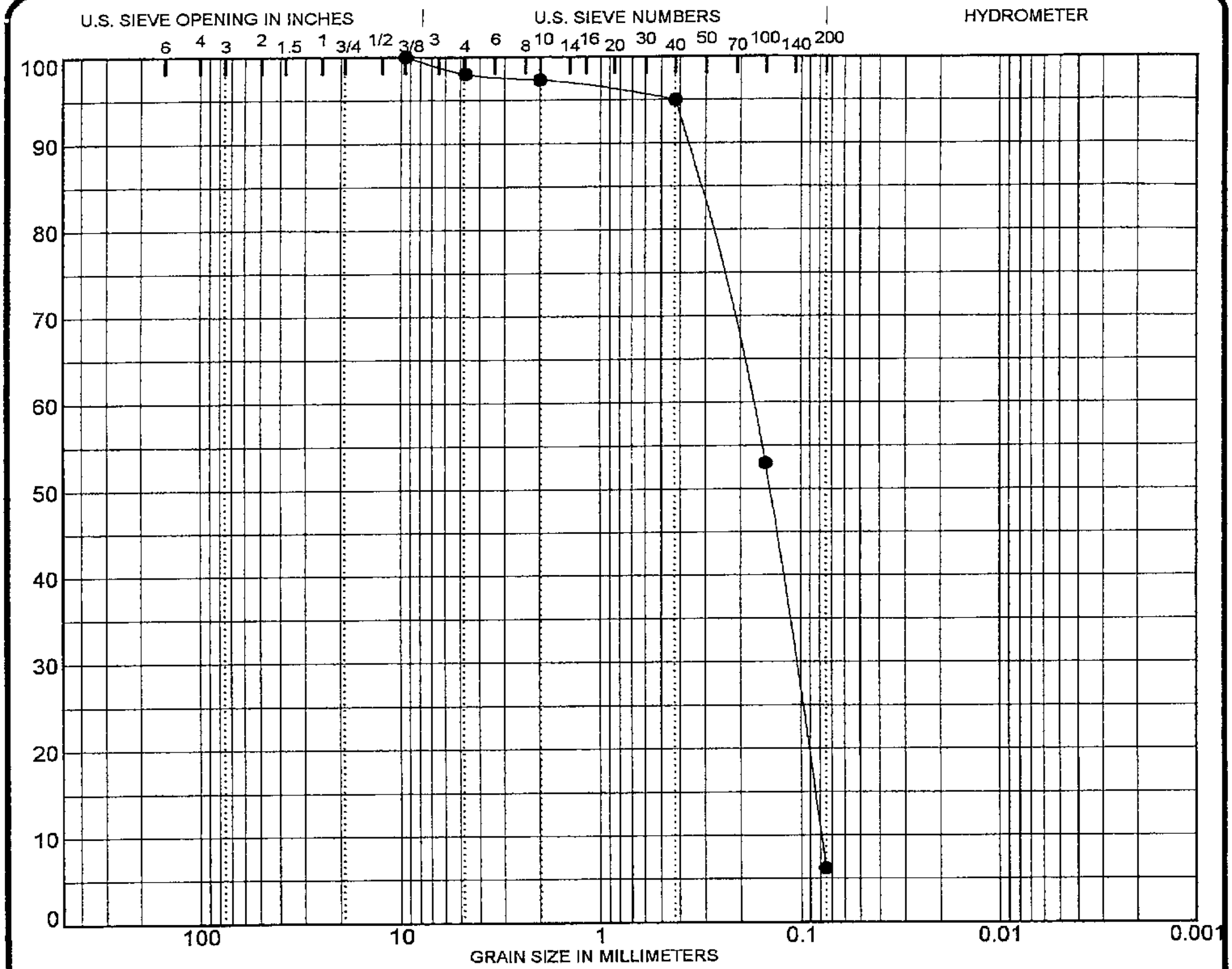
PROJECT **009-07992-00** JOB NO. **L - 59,271**
LOCATION , DATE **October 28, 2003**

B

GRADATION SHEET

Testing Service Corporation
Carol Stream, IL 60188

ASTMD422 59271.GPJ TSC ALL.GDT 10/28/03



COBBLES	GRAVEL		SAND			ASTM D 422
	coarse	fine	coarse	medium	fine	

SPECIMEN IDENTIFICATION	SIEVE	% PASS
Sample: BP-3	3"	100.0
	2"	100.0
	1-1/2"	100.0
	1"	100.0
NOTES :	3/4"	100.0
	3/8"	100.0
	#4	98.0
	#10	97.3
	#40	95.0
	#100	53.0
	#200	6.2

PROJECT 009-07992-00
LOCATION ,

JOB NO. L - 59,271
DATE October 28, 2003

C

GRADATION SHEET

Testing Service Corporation

Carol Stream, IL 60188

ASTMD422 59271.GPJ TSC ALL.GDT 10/28/03

CHAIN OF CUSTODY / ANALYSES REQUEST FORM

Project No.: 009-07992-00	Project Location:	Date:	Serial No.:
Project Name: Johns Manville	Field Logbook No.:		
Sampler (Signature): Wendy Teskey			Samplers:

ANALYSES

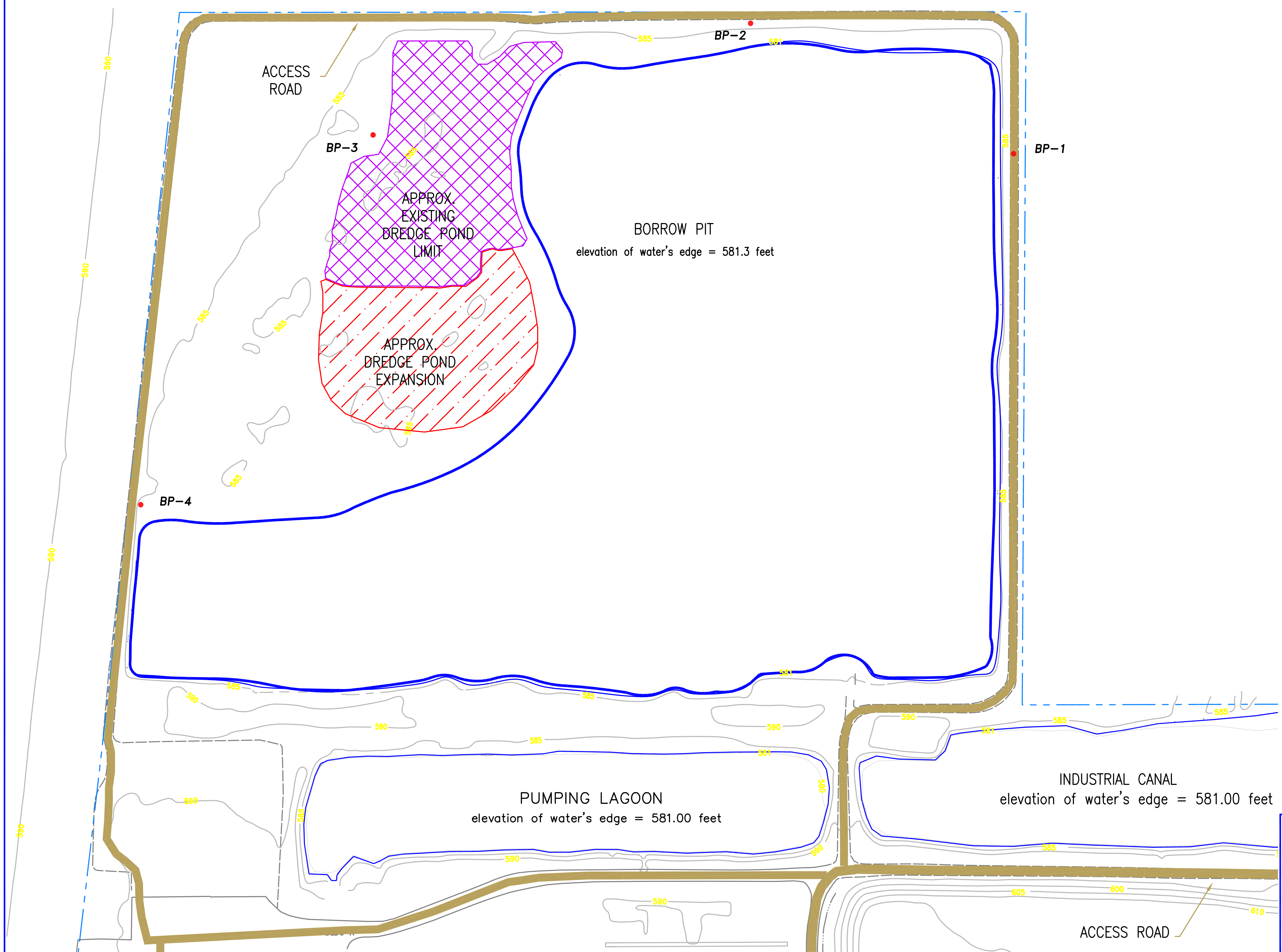
SAMPLE NO.	DATE	TIME	LAB SAMPLE NO.	NO. OF CON-TAINERS	SAMPLE TYPE	Sieve Analysis						HOLD	RUSH	REMARKS
BP-1	10/14/03			1	soil									Follow ASTM D422.
BP-2	10/14/03			↓	↓									At a minimum use
BP-3	10/15/03													Sieve #4, #10, #40, #200

RELINQUISHED BY: (Signature) Wendy Teskey	DATE 10/24/03	TIME 1600	RECEIVED BY: (Signature) [illegible signature]	DATE 10/24/03	TIME
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME
RELINQUISHED BY: (Signature)	DATE	TIME	RECEIVED BY: (Signature)	DATE	TIME
METHOD OF SHIPMENT:	DATE	TIME	LAB COMMENTS:		

Sample Collector: LFR LEVINE-FRICKE-[redacted] Wendy Teskey 630 Tollgate Road, Suite D Elgin, Illinois 60123-9364 (847) 695-8855	Analytical Laboratory: Testing Service Corporation 457 E. Gundersen Drive Carol Stream, IL 60188 630-653-3920

Shipping Copy (White) Lab Copy (Green) File Copy (Yellow) Field Copy (Pink)

COC.CDR 101596



N

GRAPHIC SCALE

0 100' 200'

GEOTECHNICAL TESTING RESULTS FROM AROUND BORROW PIT. RESULTS ARE PRESENTED IN ORDER OF BORINGS BP-1, BP-2, BP-3, AND BP-4.

ELEVATION (FT ASL)	BLOW COUNTS/FT (AT 4 LOCATIONS)
584-586	8, 16, NA, NA
582-584	27, 18, NA, NA
580-582	16, 23, 23, NA
578-580	20, 18, 20, NA
576-578	25, 21, 20, NA
574-576	28, 15, 24, NA
572-574	32, 30, 32, NA
570-572	39, 49, 19, NA
568-570	38, 37, 23, NA
566-568	64, 60, 44, 34
564-566	40, 42, 70, 98
562-564	39, 34, 68, >75
560-562	39, 35, >50, >50
558-560	36, 88, >50, X
556-562	39, NA, X, X
554-556	30, 88, X, X
552-554	69, X, X, X
550-552	72, X, X, X

FINE-MEDIUM GRADE SAND AND GRAVEL ABOVE CLAY.

SAND GRADATION:

SIEVE	%PASS (3 SAMPLES)
#4	98.4, 99.8, 98.0
#10	97.5, 99.4, 97.3
#40	95.2, 98.5, 95.0
#100	62.6, 57.7, 53.0
#200	6.4, 5.7, 6.2

LEGEND

EXISTING GRAVEL ACCESS ROAD

BP-1 GEOTECHNICAL SOIL BORING

Johns Manville

Dredging Area
95% Design
12/01/05 Revision 0

LFR LEVINE·FRICKE

FACD 09-02

T:\JohnsManville\Waukegan\SRP\Drawings\SitePrepSpec-DP-Nov2004.dwg

Appendix D

Clayey Soil Laboratory Analytical Results
(Barrier Layer and Protective Cover)

BARRIER LAYER CLAY RESULTS

DK PILE

Dirt Supplier: DK Contractors

Dirt Pile Location: East Side of Landfill, South of Collection Basin

Number of Loads Supplied: 1295

Number of loads on-site: 1295

Activity Period: 1999 through 2000

Pile Status: Inactive

Does All Soil meet Illinois Title 35 Subtitle G Chapter 1 Subchapter f Part 742 TACO Standard: Yes

Number of Samples: 5 (including re-tests)

Analytical Method: 8260 VOC, 8310 PNA, RCRA Metals = As, Bd, Cd, Cr, Pb, Hg, Se, Ag, SPLP Lead, pH, PCBs

Comments: Some soil was rejected due to the presence of construction debris.

The samples collected on November 18 and 19, 1999 were not analyzed for PCBs or metals by STL (laboratory).

Contractor **DK Contractors**
Sample Identification **E1W041399**
Sample Date **4/13/99**
Report Date **4/26/99**

Compound	Units	Lab Detection Limit	Back Ground Level	Sample Results	Standard Tier 1 Levels (mg/kg) Residential Soil Ingestion	Residential Soil Inhalation	Class I Groundwater
SPLP Lead	mg/L	0.005	NA	ND	NL	NL	0.0075
pH	SU	0.1	NA	9.1	6 - 9	6 - 9	6 - 9
RCRA Metals							
Arsenic	mg/kg	2	13	**8**	0.4	750	31
Barium	mg/kg	0.95	110	45.5	5500	690000	2100
Cadmium	mg/kg	2	0.6	ND	78	1800	430
Chromium	mg/kg	0.95	16.2	13	390	270	28
Lead	mg/kg	4.7	36	15.8	400	NL	NL
Mercury	mg/kg	0.0404	0.06	ND	23	10	8
Selenium	mg/kg	2	0.48	ND	390	NL	2.4
Silver	mg/kg	4.7	0.55	ND	390	NL	110
PCBs (EPA Method 8080)							
PCB 1016	mg/kg	0.02	NA	ND	1	NL	0.5
PCB 1221	mg/kg	0.02	NA	ND	1	NL	0.5
PCB 1232	mg/kg	0.02	NA	ND	1	NL	0.5
PCB 1242	mg/kg	0.02	NA	ND	1	NL	0.5
PCB 1248	mg/kg	0.02	NA	ND	1	NL	0.5
PCB 1254	mg/kg	0.02	NA	ND	1	NL	0.5
PCB 1260	mg/kg	0.02	NA	ND	1	NL	0.5
PNAs (EPA Method 8310)							
Acenaphthene	mg/kg	0.2	NA	ND	4700	NL	570
Acenaphthylene	mg/kg	0.2	NA	ND	NL	NL	NL
Anthracene	mg/kg	0.04	NA	ND	23000	NL	12000
Benzo a anthracene	mg/kg	0.004	NA	ND	0.9	NL	2
Benzo a pyrene	mg/kg	0.004	NA	ND	0.09	NL	8
Benzo b fluoanthene	mg/kg	0.004	NA	ND	0.9	NL	5
Benzo ghi perylene	mg/kg	0.004	NA	ND	NL	NL	NL
Benzo k fluoranthene	mg/kg	0.004	NA	ND	9	NL	49
Chrysene	mg/kg	0.04	NA	ND	88	NL	160
Dibenzo a,h anthracene	mg/kg	0.004	NA	ND	0.09	NL	2
Fluoranthene	mg/kg	0.04	NA	ND	3100	NL	4300
Fluorene	mg/kg	0.04	NA	ND	3100	NL	560
Indeno 1,2,3-cd pyrene	mg/kg	0.004	NA	ND	0.9	NL	14
Naphthalene	mg/kg	0.2	NA	ND	3100	NL	84
Phenanthrene	mg/kg	0.04	NA	ND	NL	NL	NL
Pyrene	mg/kg	0.04	NA	ND	2300	NL	4200
VOCs (EPA Method 8260)							
Acetone	mg/kg	0.01	NA	ND	7800	100000	16
Benzene	mg/kg	0.005	NA	ND	22	0.8	0.03
Bromodichloromethane	mg/kg	0.005	NA	ND	10	3000	0.6
Bromoform	mg/kg	0.005	NA	NT	81	53	0.8
Bromomethane	mg/kg	0.01	NA	ND	110	10	0.2
2-Buthanone	mg/kg	0.01	NA	NT	NL	NL	NL
Carbon disulfide	mg/kg	0.005	NA	NT	7800	720	32
Carbon tetrachloride	mg/kg	0.005	NA	ND	5	0.3	0.07
Chlorobenzene	mg/kg	0.005	NA	ND	1600	130	1
Chlorodibromomethane	mg/kg	0.005	NA	ND	1600	1300	0.4
Chloroethane	mg/kg	1	NA	ND	NL	NL	NL
2- Chloroethyl vinyl ether	mg/kg	NT	NA	NT	NL	NL	NL
Chloroform	mg/kg	0.005	NA	ND	100	0.3	0.6
Chloromethane	mg/kg	0.005	NA	NT	NL	NL	NL
1,1- Dichloroethane	mg/kg	0.005	NA	ND	7800	1300	23
1,2- Dichloroethane	mg/kg	0.005	NA	ND	7	0.4	0.02
1,1- Dichloroethene	mg/kg	0.005	NA	ND	700	1500	0.06
cis- 1,2- Dichloroethene	mg/kg	0.005	NA	ND	780	1200	0.4
trans-1,2-Dichloroethene	mg/kg	0.005	NA	ND	1600	3100	0.7
1,2 Dichloropropane	mg/kg	0.005	NA	ND	9	15	0.03
cis - 1,3 Dichloropropene	mg/kg	0.005	NA	ND	4	0.1	0.004
trans - 1,3 Dichloropropene	mg/kg	0.005	NA	ND	4	0.1	0.004
Ethylbenzene	mg/kg	0.005	NA	ND	7800	400	13
2 - Hexanone	mg/kg	0.02	NA	NT	NL	NL	NL
Methylene chloride	mg/kg	0.005	NA	ND	85	13	0.02
4-Methyl-2-pentanone	mg/kg	0.01	NA	NT	NL	NL	NL
Styrene	mg/kg	0.005	NA	ND	16000	1500	4
1,1,2,2-Tetrachloroethane	mg/kg	0.005	NA	NT	NL	NL	NL
Tetrachloroethene	mg/kg	0.005	NA	ND	12	11	0.06
Toluene	mg/kg	0.005	NA	ND	16000	650	12
1,1,1- Trichloroethane	mg/kg	0.005	NA	ND	NL	1200	2
1,1,2-Trichloroethane	mg/kg	0.005	NA	ND	310	1800	0.02
Tricloroethene	mg/kg	0.005	NA	ND	58	5	0.06
Trichlorofluoromethane	mg/kg	NT	NA	NT	NL	NL	NL
Vinyl Acetate	mg/kg	NT	NA	NT	NL	NL	NL
Vinyl Chloride	mg/kg	0.01	NA	ND	0.3	0.03	0.01
Total Xylenes	mg/kg	0.01	NA	ND	160000	410	150

Notes:
1. NL = Not Listed
2. NA = Not Applicable
3. ND = Not Detected
4. NT = Not Tested
5. Illinois Title 35, Subtitle G, Chapter I, Subchapter f, Part 742 titled Tiered Approach to Corrective Action Objectives supercedes this summary table.

Contractor **DK Contractors**
Sample Identification **E2W111599**
Sample Date **11/18/99**
Report Date **12/1/99**

Compound	Units	Lab Detection Limit	Back Ground Level	Sample Results	Standard Tier 1 Levels (mg/kg) Residential Soil Ingestion	Residential Soil Inhalation	Class I Groundwater
SPLP Lead	mg/L	0.005	NA	ND	NL	NL	0.0075
pH	SU	0.1	NA	8.5	6 - 9	6 - 9	6 - 9
RCRA Metals							
Arsenic	mg/kg	NT	13	NT	0.4	750	31
Barium	mg/kg	NT	110	NT	5500	690000	2100
Cadmium	mg/kg	NT	0.6	NT	78	1800	430
Chromium	mg/kg	NT	16.2	NT	390	270	28
Lead	mg/kg	NT	36	NT	400	NL	NL
Mercury	mg/kg	NT	0.06	NT	23	10	8
Selenium	mg/kg	NT	0.48	NT	390	NL	2.4
Silver	mg/kg	NT	0.55	NT	390	NL	110
PCBs (EPA Method 8080)							
PCB 1016	mg/kg	NT	NA	NT	1	NL	0.5
PCB 1221	mg/kg	NT	NA	NT	1	NL	0.5
PCB 1232	mg/kg	NT	NA	NT	1	NL	0.5
PCB 1242	mg/kg	NT	NA	NT	1	NL	0.5
PCB 1248	mg/kg	NT	NA	NT	1	NL	0.5
PCB 1254	mg/kg	NT	NA	NT	1	NL	0.5
PCB 1260	mg/kg	NT	NA	NT	1	NL	0.5
PNAs (EPA Method 8310)							
Acenaphthene	mg/kg	0.2	NA	ND	4700	NL	570
Acenaphthylene	mg/kg	0.2	NA	ND	NL	NL	NL
Anthracene	mg/kg	0.04	NA	ND	23000	NL	12000
Benzo a anthracene	mg/kg	0.004	NA	ND	0.9	NL	2
Benzo a pyrene	mg/kg	0.004	NA	ND	0.09	NL	8
Benzo b fluoanthene	mg/kg	0.004	NA	ND	0.9	NL	5
Benzo ghi perylene	mg/kg	0.004	NA	ND	NL	NL	NL
Benzo k fluoranthene	mg/kg	0.004	NA	ND	9	NL	49
Chrysene	mg/kg	0.04	NA	ND	88	NL	160
Dibenzo a,h anthracene	mg/kg	0.004	NA	ND	0.09	NL	2
Fluoranthene	mg/kg	0.04	NA	ND	3100	NL	4300
Fluorene	mg/kg	0.04	NA	ND	3100	NL	560
Indeno 1,2,3-cd pyrene	mg/kg	0.004	NA	ND	0.9	NL	14
Naphthalene	mg/kg	0.2	NA	ND	3100	NL	84
Phenanthrene	mg/kg	0.04	NA	ND	NL	NL	NL
Pyrene	mg/kg	0.04	NA	ND	2300	NL	4200
VOCs (EPA Method 8260)							
Acetone	mg/kg	0.01	NA	ND	7800	100000	16
Benzene	mg/kg	0.005	NA	ND	22	0.8	0.03
Bromodichloromethane	mg/kg	0.005	NA	ND	10	3000	0.6
Bromoform	mg/kg	NT	NA	NT	81	53	0.8
Bromomethane	mg/kg	0.01	NA	ND	110	10	0.2
2-Buthanone	mg/kg	NT	NA	NT	NL	NL	NL
Carbon disulfide	mg/kg	NT	NA	NT	7800	720	32
Carbon tetrachloride	mg/kg	0.005	NA	ND	5	0.3	0.07
Chlorobenzene	mg/kg	0.005	NA	ND	1600	130	1
Chlorodibromomethane	mg/kg	0.005	NA	ND	1600	1300	0.4
Chloroethane	mg/kg	0.005	NA	ND	NL	NL	NL
2- Chloroethyl vinyl ether	mg/kg	NT	NA	NT	NL	NL	NL
Chloroform	mg/kg	0.005	NA	ND	100	0.3	0.6
Chloromethane	mg/kg	NT	NA	NT	NL	NL	NL
1,1- Dichloroethane	mg/kg	0.005	NA	ND	7800	1300	23
1,2- Dichloroethane	mg/kg	0.005	NA	ND	7	0.4	0.02
1,1- Dichloroethene	mg/kg	0.005	NA	ND	700	1500	0.06
cis- 1,2- Dichloroethene	mg/kg	0.005	NA	ND	780	1200	0.4
trans-1,2-Dichloroethene	mg/kg	0.005	NA	ND	1600	3100	0.7
1,2 Dichloropropane	mg/kg	0.005	NA	ND	9	15	0.03
cis - 1,3 Dichloropropene	mg/kg	0.005	NA	ND	4	0.1	0.004
trans - 1,3 Dichloropropene	mg/kg	0.005	NA	ND	4	0.1	0.004
Ethylbenzene	mg/kg	0.005	NA	ND	7800	400	13
2 - Hexanone	mg/kg	NT	NA	NT	NL	NL	NL
Methylene chloride	mg/kg	0.005	NA	ND	85	13	0.02
4-Methyl-2-pentanone	mg/kg	NT	NA	NT	NL	NL	NL
Styrene	mg/kg	0.005	NA	ND	16000	1500	4
1,1,2,2-Tetrachloroethane	mg/kg	NT	NA	NT	NL	NL	NL
Tetrachloroethene	mg/kg	0.005	NA	ND	12	11	0.06
Toluene	mg/kg	0.005	NA	0.009	16000	650	12
1,1,1- Trichloroethane	mg/kg	0.005	NA	ND	NL	1200	2
1,1,2-Trichloroethane	mg/kg	0.005	NA	ND	310	1800	0.02
Tricloroethene	mg/kg	0.005	NA	ND	58	5	0.06
Trichlorofluoromethane	mg/kg	NT	NA	NT	NL	NL	NL
Vinyl Acetate	mg/kg	NT	NA	NT	NL	NL	NL
Vinyl Chloride	mg/kg	0.01	NA	ND	0.3	0.03	0.01
Total Xylenes	mg/kg	0.01	NA	ND	160000	410	150

Notes:
1. NL = Not Listed
2. NA = Not Applicable
3. ND = Not Detected
4. NT = Not Tested
5. Illinois Title 35, Subtitle G, Chapter I, Subchapter f, Part 742 titled Tiered Approach to Corrective Action Objectives supercedes this summary table.

Contractor **DK Contractors**
Sample Identification **E1E092499**
Sample Date **11/19/99**
Report Date **12/1/99**

Compound	Units	Lab Detection Limit	Back Ground Level	Sample Results	Standard Tier 1 Levels (mg/kg) Residential Soil Ingestion	Inhalation	Class I Groundwater
SPLP Lead	mg/L	0.005	NA	ND	NL	NL	0.0075
pH	SU	0.1	NA	8.2	6 - 9	6 - 9	6 - 9
RCRA Metals							
Arsenic	mg/kg	NT	13	NT	0.4	750	31
Barium	mg/kg	NT	110	NT	5500	690000	2100
Cadmium	mg/kg	NT	0.6	NT	78	1800	430
Chromium	mg/kg	NT	16.2	NT	390	270	28
Lead	mg/kg	NT	36	NT	400	NL	NL
Mercury	mg/kg	NT	0.06	NT	23	10	8
Selenium	mg/kg	NT	0.48	NT	390	NL	2.4
Silver	mg/kg	NT	0.55	NT	390	NL	110
PCBs (EPA Method 8080)							
PCB 1016	mg/kg	NT	NA	NT	1	NL	0.5
PCB 1221	mg/kg	NT	NA	NT	1	NL	0.5
PCB 1232	mg/kg	NT	NA	NT	1	NL	0.5
PCB 1242	mg/kg	NT	NA	NT	1	NL	0.5
PCB 1248	mg/kg	NT	NA	NT	1	NL	0.5
PCB 1254	mg/kg	NT	NA	NT	1	NL	0.5
PCB 1260	mg/kg	NT	NA	NT	1	NL	0.5
PNAs (EPA Method 8310)							
Acenaphthene	mg/kg	0.2	NA	ND	4700	NL	570
Acenaphthylene	mg/kg	0.2	NA	ND	NL	NL	NL
Anthracene	mg/kg	0.04	NA	ND	23000	NL	12000
Benzo a anthracene	mg/kg	0.004	NA	ND	0.9	NL	2
Benzo a pyrene	mg/kg	0.004	NA	ND	0.09	NL	8
Benzo b fluoanthene	mg/kg	0.004	NA	ND	0.9	NL	5
Benzo ghi perylene	mg/kg	0.004	NA	ND	NL	NL	NL
Benzo k fluoranthene	mg/kg	0.004	NA	ND	9	NL	49
Chrysene	mg/kg	0.04	NA	ND	88	NL	160
Dibenzo a,h anthracene	mg/kg	0.004	NA	ND	0.09	NL	2
Fluoranthene	mg/kg	0.04	NA	ND	3100	NL	4300
Fluorene	mg/kg	0.04	NA	ND	3100	NL	560
Indeno 1,2,3-cd pyrene	mg/kg	0.004	NA	ND	0.9	NL	14
Naphthalene	mg/kg	0.2	NA	ND	3100	NL	84
Phenanthrene	mg/kg	0.04	NA	ND	NL	NL	NL
Pyrene	mg/kg	0.04	NA	ND	2300	NL	4200
VOCs (EPA Method 8260)							
Acetone	mg/kg	0.01	NA	ND	7800	100000	16
Benzene	mg/kg	0.005	NA	0.012	22	0.8	0.03
Bromodichloromethane	mg/kg	0.005	NA	ND	10	3000	0.6
Bromoform	mg/kg	NT	NA	NT	81	53	0.8
Bromomethane	mg/kg	0.01	NA	ND	110	10	0.2
2-Buthanone	mg/kg	NT	NA	NT	NL	NL	NL
Carbon disulfide	mg/kg	NT	NA	NT	7800	720	32
Carbon tetrachloride	mg/kg	0.005	NA	ND	5	0.3	0.07
Chlorobenzene	mg/kg	0.005	NA	ND	1600	130	1
Chlorodibromomethane	mg/kg	0.005	NA	ND	1600	1300	0.4
Chloroethane	mg/kg	0.005	NA	ND	NL	NL	NL
2- Chloroethyl vinyl ether	mg/kg	NT	NA	NT	NL	NL	NL
Chloroform	mg/kg	0.005	NA	ND	100	0.3	0.6
Chloromethane	mg/kg	NT	NA	NT	NL	NL	NL
1,1- Dichloroethane	mg/kg	0.005	NA	ND	7800	1300	23
1,2- Dichloroethane	mg/kg	0.005	NA	ND	7	0.4	0.02
1,1- Dichloroethene	mg/kg	0.005	NA	ND	700	1500	0.06
cis- 1,2- Dichloroethene	mg/kg	0.005	NA	ND	780	1200	0.4
trans-1,2-Dichloroethene	mg/kg	0.005	NA	ND	1600	3100	0.7
1,2 Dichloropropane	mg/kg	0.005	NA	ND	9	15	0.03
cis - 1,3 Dichloropropene	mg/kg	0.005	NA	ND	4	0.1	0.004
trans - 1,3 Dichloropropene	mg/kg	0.005	NA	ND	4	0.1	0.004
Ethylbenzene	mg/kg	0.005	NA	0.012	7800	400	13
2 - Hexanone	mg/kg	NT	NA	NT	NL	NL	NL
Methylene chloride	mg/kg	0.005	NA	ND	85	13	0.02
4-Methyl-2-pentanone	mg/kg	NT	NA	NT	NL	NL	NL
Styrene	mg/kg	0.005	NA	ND	16000	1500	4
1,1,2,2-Tetrachloroethane	mg/kg	NT	NA	NT	NL	NL	NL
Tetrachloroethene	mg/kg	0.005	NA	ND	12	11	0.06
Toluene	mg/kg	0.005	NA	0.04	16000	650	12
1,1,1- Trichloroethane	mg/kg	0.005	NA	ND	NL	1200	2
1,1,2-Trichloroethane	mg/kg	0.005	NA	ND	310	1800	0.02
Tricloroethene	mg/kg	0.005	NA	ND	58	5	0.06
Trichlorofluoromethane	mg/kg	NT	NA	NT	NL	NL	NL
Vinyl Acetate	mg/kg	NT	NA	NT	NL	NL	NL
Vinyl Chloride	mg/kg	0.01	NA	ND	0.3	0.03	0.01
Total Xylenes	mg/kg	0.01	NA	0.04	160000	410	150

Notes:
1. NL = Not Listed
2. NA = Not Applicable
3. ND = Not Detected
4. NT = Not Tested
5. Illinois Title 35, Subtitle G, Chapter I, Subchapter f, Part 742 titled Tiered Approach to Corrective Action Objectives supercedes this summary table.

Contractor **DK Contractors**
Sample Identification **E1E092499**
Sample Date **12/14/99**
Report Date **12/21/99**

Compound	Units	Lab Detection Limit	Back Ground Level	Sample Results	Standard Tier 1 Levels (mg/kg) Residential Soil Ingestion	Inhalation	Class I Groundwater
SPLP Lead	mg/L	0.005	NA	NT	NL	NL	0.0075
pH	SU	0.1	NA	NT	6 - 9	6 - 9	6 - 9
RCRA Metals							
Arsenic	mg/kg	NT	13	NT	0.4	750	31
Barium	mg/kg	NT	110	NT	5500	690000	2100
Cadmium	mg/kg	NT	0.6	NT	78	1800	430
Chromium	mg/kg	NT	16.2	NT	390	270	28
Lead	mg/kg	NT	36	NT	400	NL	NL
Mercury	mg/kg	NT	0.06	NT	23	10	8
Selenium	mg/kg	NT	0.48	NT	390	NL	2.4
Silver	mg/kg	NT	0.55	NT	390	NL	110
PCBs (EPA Method 8080)							
PCB 1016	mg/kg	NT	NA	NT	1	NL	0.5
PCB 1221	mg/kg	NT	NA	NT	1	NL	0.5
PCB 1232	mg/kg	NT	NA	NT	1	NL	0.5
PCB 1242	mg/kg	NT	NA	NT	1	NL	0.5
PCB 1248	mg/kg	NT	NA	NT	1	NL	0.5
PCB 1254	mg/kg	NT	NA	NT	1	NL	0.5
PCB 1260	mg/kg	NT	NA	NT	1	NL	0.5
PNAs (EPA Method 8310)							
Acenaphthene	mg/kg	NT	NA	NT	4700	NL	570
Acenaphthylene	mg/kg	NT	NA	NT	NL	NL	NL
Anthracene	mg/kg	NT	NA	NT	23000	NL	12000
Benzo a anthracene	mg/kg	NT	NA	NT	0.9	NL	2
Benzo a pyrene	mg/kg	NT	NA	NT	0.09	NL	8
Benzo b fluoanthene	mg/kg	NT	NA	NT	0.9	NL	5
Benzo ghi perylene	mg/kg	NT	NA	NT	NL	NL	NL
Benzo k fluoranthene	mg/kg	NT	NA	NT	9	NL	49
Chrysene	mg/kg	NT	NA	NT	88	NL	160
Dibenzo a,h anthracene	mg/kg	NT	NA	NT	0.09	NL	2
Fluoranthene	mg/kg	NT	NA	NT	3100	NL	4300
Fluorene	mg/kg	NT	NA	NT	3100	NL	560
Indeno 1,2,3-cd pyrene	mg/kg	NT	NA	NT	0.9	NL	14
Naphthalene	mg/kg	NT	NA	NT	3100	NL	84
Phenanthrene	mg/kg	NT	NA	NT	NL	NL	NL
Pyrene	mg/kg	NT	NA	NT	2300	NL	4200
VOCs (EPA Method 8260)							
Acetone	mg/kg	0.01	NA	ND	7800	100000	16
Benzene	mg/kg	0.005	NA	ND	22	0.8	0.03
Bromodichloromethane	mg/kg	0.005	NA	ND	10	3000	0.6
Bromoform	mg/kg	NT	NA	NT	81	53	0.8
Bromomethane	mg/kg	0.01	NA	ND	110	10	0.2
2-Buthanone	mg/kg	NT	NA	NT	NL	NL	NL
Carbon disulfide	mg/kg	NT	NA	NT	7800	720	32
Carbon tetrachloride	mg/kg	0.005	NA	ND	5	0.3	0.07
Chlorobenzene	mg/kg	0.005	NA	ND	1600	130	1
Chlorodibromomethane	mg/kg	0.005	NA	ND	1600	1300	0.4
Chloroethane	mg/kg	0.005	NA	ND	NL	NL	NL
2- Chloroethyl vinyl ether	mg/kg	NT	NA	NT	NL	NL	NL
Chloroform	mg/kg	0.005	NA	ND	100	0.3	0.6
Chloromethane	mg/kg	NT	NA	NT	NL	NL	NL
1,1- Dichloroethane	mg/kg	0.005	NA	ND	7800	1300	23
1,2- Dichloroethane	mg/kg	0.005	NA	ND	7	0.4	0.02
1,1- Dichloroethene	mg/kg	0.005	NA	ND	700	1500	0.06
cis- 1,2- Dichloroethene	mg/kg	0.005	NA	ND	780	1200	0.4
trans-1,2-Dichloroethene	mg/kg	0.005	NA	ND	1600	3100	0.7
1,2 Dichloropropane	mg/kg	0.005	NA	ND	9	15	0.03
cis - 1,3 Dichloropropene	mg/kg	0.005	NA	ND	4	0.1	0.004
trans - 1,3 Dichloropropene	mg/kg	0.005	NA	ND	4	0.1	0.004
Ethylbenzene	mg/kg	0.005	NA	ND	7800	400	13
2 - Hexanone	mg/kg	NT	NA	NT	NL	NL	NL
Methylene chloride	mg/kg	0.005	NA	ND	85	13	0.02
4-Methyl-2-pentanone	mg/kg	NT	NA	NT	NL	NL	NL
Styrene	mg/kg	0.005	NA	ND	16000	1500	4
1,1,2,2-Tetrachloroethane	mg/kg	NT	NA	NT	NL	NL	NL
Tetrachloroethene	mg/kg	0.005	NA	ND	12	11	0.06
Toluene	mg/kg	0.005	NA	ND	16000	650	12
1,1,1- Trichloroethane	mg/kg	0.005	NA	ND	NL	1200	2
1,1,2-Trichloroethane	mg/kg	0.005	NA	ND	310	1800	0.02
Tricloroethene	mg/kg	0.005	NA	ND	58	5	0.06
Trichlorofluoromethane	mg/kg	NT	NA	NT	NL	NL	NL
Vinyl Acetate	mg/kg	NT	NA	NT	NL	NL	NL
Vinyl Chloride	mg/kg	0.01	NA	ND	0.3	0.03	0.01
Total Xylenes	mg/kg	0.01	NA	ND	160000	410	150

Notes:
1. NL = Not Listed
2. NA = Not Applicable
3. ND = Not Detected
4. NT = Not Tested
5. Illinois Title 35, Subtitle G, Chapter I, Subchapter f, Part 742 titled Tiered Approach to Corrective Action Objectives supercedes this summary table.

PROTECTIVE COVER CLAY RESULTS

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF:

January 10, 2007

Bill Bow, Principal
LFR Levine-Fricke
630 Tollgate Road, Suite D
Elgin, IL 60123-9364

Dear Mr. Bow:

Per your request in your January 8, 2007 letter, the U.S. Environmental Protection Agency (EPA) hereby approves the use of an off-site clay source (Onyx) for the remedial action at the Johns-Manville Site in Waukegan, Illinois (the borrow area in question is shown in Attachment A to your letter). Given the depth of the samples taken (10 feet), the non-detect PLM results, and the absence of any other contamination, the TEM results indicating the presence of asbestos fibers in samples OZL-6 and OZL-11 in the first round of analyses appeared to be anomalous. Two subsequent TEM analyses of the same samples (OZL-6 and OZL-11) were non-detect for asbestos, leading EPA to conclude that the first round results were indeed anomalous.

If you have any questions concerning this letter, please contact me at (312) 886-4742.

Sincerely,

Brad Bradley

Brad Bradley
Remedial Project Manager

cc: Sandy Bron, Illinois EPA

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Table 1A - Soil Analytical Results - Volatile Organic Compounds
Zion Landfill Clay - 2006 and 2007
Johns Manville - Former Manufacturing Area
Waukegan, Illinois

		Sample ID	OZL-14 (6')	OZL-14 (12')	OZL-14 (12') DUP	OZL-15 (6')	OZL-15 (12')	OZL-16 (6')	OZL-16 (12')	OZL-17 (6')	OZL-17 (6') DUP	OZL-17 (12')	OZL-18 (6')	OZL-18 (12')	OZL-19 (6')	OZL-19 (12')
		Date of Sample Collection:	2/27/2007	2/27/2007	2/27/2007	2/27/2007	2/27/2007	2/27/2007	2/27/2007	2/27/2007	2/27/2007	2/27/2007	2/27/2007	2/27/2007	2/27/2007	2/27/2007
Contaminants of Concern:		Time of Sample Collection:	10:15 AM	10:25 AM	10:35 AM	10:45 AM	10:55 AM	11:05 AM	11:15 AM	11:25 AM	11:30 AM	11:35 AM	11:45 AM	11:55 AM	12:05 PM	12:15 PM
Volatile Organic Compounds	**Units**	**Most Stringent Tier 1 SRO**														
Acetone	ug/kg	25000	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
Benzene	ug/kg	30	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Bromodichloromethane	ug/kg	600	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Bromoform	ug/kg	800	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Bromomethane	ug/kg	200	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
2-Butanone (MEK)	ug/kg	17000	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
Carbon disulfide	ug/kg	32000	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Carbon tetrachloride	ug/kg	70	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Chlorobenzene	ug/kg	1000	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Chlorodibromomethane	ug/kg	400	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Chloroethane *	ug/kg	1500000	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
Chloroform	ug/kg	300	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Chloromethane *	ug/kg	110000	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
1,1-Dichloroethane	ug/kg	23000	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,2-Dichloroethane	ug/kg	20	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,1-Dichloroethene	ug/kg	60	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
cis-1,2-Dichloroethene	ug/kg	400	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
trans-1,2-Dichloroethene	ug/kg	700	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,2-Dichloropropane	ug/kg	30	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
cis-1,3-Dichloropropene	ug/kg	4	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
trans-1,3-Dichloropropene	ug/kg	4	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Ethylbenzene	ug/kg	13000	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
2-Hexanone *	ug/kg	160	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
Methyl-tert-butylether (MTBE)	ug/kg	320	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
4-Methyl-2-pentanone (MIBK) *	ug/kg	---	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
Methylene chloride	ug/kg	20	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Styrene	ug/kg	4000	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,1,2,2-Tetrachloroethane *	ug/kg	3.5	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Tetrachloroethene	ug/kg	60	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Toluene	ug/kg	12000	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,1,1-Trichloroethane	ug/kg	2000	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
1,1,2-Trichloroethane	ug/kg	20	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Trichloroethene	ug/kg	60	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Vinyl acetate	ug/kg	170000	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
Vinyl chloride	ug/kg	10	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
Xylene, Total	ug/kg	150000	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Solids, Total (2540B)	**Units**															
Total Solids	%	---	81.98	88.49	86.41	83.58	88.09	88.95	87.44	90.52	91.2	89.05	83.45	84.62	86.85	85.58

Notes:
ug/kg = micrograms per kilogram (parts per billion)

Sample exceeds laboratory detection limit and most stringent Tier 1 Site Remediation Objective (SRO)

*Result compared to non-TACO SRO
--- = No remediation objective

Table 1A - Soil Analytical Results - Volatile Organic Compounds
Zion Landfill Clay - 2006 and 2007
Johns Manville - Former Manufacturing Area
Waukegan, Illinois

Contaminants of Concern:			Sample ID	OZL-14 (6')	OZL-14 (12')	OZL-14 (12') DUP	OZL-15 (6')	OZL-15 (12')	OZL-16 (6')	OZL-16 (12')	OZL-17 (6')	OZL-17 (6') DUP	OZL-17 (12')	OZL-18 (6')	OZL-18 (12')	OZL-19 (6')	OZL-19 (12')
			Date of Sample Collection:	2/27/2007	2/27/2007	2/27/2007	2/27/2007	2/27/2007	2/27/2007	2/27/2007	2/27/2007	2/27/2007	2/27/2007	2/27/2007	2/27/2007	2/27/2007	2/27/2007
			Time of Sample Collection:	10:15 AM	10:25 AM	10:35 AM	10:45 AM	10:55 AM	11:05 AM	11:15 AM	11:25 AM	11:30 AM	11:35 AM	11:45 AM	11:55 AM	12:05 PM	12:15 PM
Semi-Volatile Compounds (8270C)	**Units**	**Maximum Allowable Concentration for Fill[1]**	**Most Stringent Tier 1 SRO**														
Acenaphthene	ug/kg	570000	570000	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Acenaphthylene*	ug/kg	---	85000	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Anthracene	ug/kg	12000000	12000000	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Benzidine*	ug/kg	---	3	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Benzo(a)anthracene	ug/kg	1800	900	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Benzo(a)pyrene	ug/kg	2100	90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90
Benzo(b)fluoranthene	ug/kg	2100	900	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Benzo(k)fluoranthene	ug/kg	9000	9000	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Benzo(ghi)perylene*	ug/kg	---	3300	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Benzoic acid	ug/kg	400000	400000	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Benzyl alcohol*	ug/kg	---	3000	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
bis(2-Chloroethoxy)methane *	ug/kg	---	---	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
bis(2-Chloroethyl)ether	ug/kg	660	0.4	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
bis(2-Chloroisopropyl)ether *	ug/kg	---	---	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
bis(2-Ethylhexyl)phthalate	ug/kg	46000	35000	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
4-Bromophenyl phenyl ether *	ug/kg	---	---	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Butyl benzyl phthalate	ug/kg	930000	930000	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Carbazole	ug/kg	600	600	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
4-Chloroaniline	ug/kg	700	700	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
4-Chloro-3-methylphenol *	ug/kg	---	---	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
2-Chloronaphthalene*	ug/kg	---	49000	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
2-Chlorophenol	ug/kg	1500	4000	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
4-Chlorophenyl phenyl ether *	ug/kg	---	---	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Chrysene	ug/kg	88000	88000	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Dibenzo(a,h)anthracene	ug/kg	420	90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90	<90
Dibenzofuran*	ug/kg	---	3000	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
1,2-Dichlorobenzene	ug/kg	17000	17000	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
1,3-Dichlorobenzene *	ug/kg	---	---	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
1,4-Dichlorobenzene	ug/kg	2000	2000	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
3,3'-Dichlorobenzidine	ug/kg	1300	7	<660	<660	<660	<660	<660	<660	<660	<660	<660	<660	<660	<660	<660	<660
2,4-Dichlorophenol	ug/kg	480	1000	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Diethyl phthalate	ug/kg	470000	470000	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
2,4-Dimethylphenol	ug/kg	9000	9000	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330

Notes:

ug/kg = micrograms per kilogram (parts per billion)

Sample exceeds laboratory detection limit and the most stringent Tier 1 Site Remediation Objective (SRO)

*Result compared to non-TACO SRO

--- = No remediation objective

1. Concentration obtained from the "Summary of Maximum Allowable Concentrations of Chemical Constituents in Uncontaminated Soil Used as Fill Material at Regulated Fill Operations (35 Ill. Adm. Code 1100.Subpart F)" (Revised August 27, 2012)

2. The constituent was identified above the Most Stringent Tier1 SRO but below the MAC.

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			Date of Sample Collection:	2/27/2007	2/27/2007	2/27/2007	2/27/2007	2/27/2007	2/27/2007	2/27/2007	2/27/2007	2/27/2007	2/27/2007	2/27/2007	2/27/2007	2/27/2007	2/27/2007
			Time of Sample Collection:	10:15 AM	10:25 AM	10:35 AM	10:45 AM	10:55 AM	11:05 AM	11:15 AM	11:25 AM	11:30 AM	11:35 AM	11:45 AM	11:55 AM	12:05 PM	12:15 PM
Semi-Volatile Compounds (Continued)	**Units**	**Maximum Allowable Concentration for Fill[1]**	**Most Stringent Tier 1 SRO**														
Dimethyl phthalate*	ug/kg	---	---	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Di-n-butyl phthalate	ug/kg	2300000	2300000	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
4,6-Dinitro-2-methylphenol *	ug/kg	---	---	<1600	<1600	<1600	<1600	<1600	<1600	<1600	<1600	<1600	<1600	<1600	<1600	<1600	<1600
2,4-Dinitrophenol	ug/kg	3300	200	<1600	<1600	<1600	<1600	<1600	<1600	<1600	<1600	<1600	<1600	<1600	<1600	<1600	<1600
2,4-Dinitrotoluene	ug/kg	250	0.8	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250
2,6-Dinitrotoluene	ug/kg	260	0.7	<260	<260	<260	<260	<260	<260	<260	<260	<260	<260	<260	<260	<260	<260
Di-n-octylphthalate	ug/kg	1600000	1600000	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Fluoranthene	ug/kg	3100000	3100000	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Fluorene	ug/kg	560000	560000	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Hexachlorobenzene	ug/kg	400	400	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Hexachlorobutadiene*	ug/kg	---	2200	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Hexachlorocyclopentadiene	ug/kg	1100	10000	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Hexachloroethane	ug/kg	500	500	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Indeno(1,2,3-cd)pyrene	ug/kg	1600	900	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Isophorone	ug/kg	8000	8000	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
2-Methylnaphthalene *	ug/kg	---	1900	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
2-Methylphenol	ug/kg	15000	15000	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
3 & 4-Methylphenol *	ug/kg	---	2000	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Naphthalene	ug/kg	1800	1800	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
2-Nitroaniline *	ug/kg	---	700	<1600	<1600	<1600	<1600	<1600	<1600	<1600	<1600	<1600	<1600	<1600	<1600	<1600	<1600
3-Nitroaniline *	ug/kg	---	---	<1600	<1600	<1600	<1600	<1600	<1600	<1600	<1600	<1600	<1600	<1600	<1600	<1600	<1600
4-Nitroaniline *	ug/kg	---	140	<1600	<1600	<1600	<1600	<1600	<1600	<1600	<1600	<1600	<1600	<1600	<1600	<1600	<1600
Nitrobenzene	ug/kg	260	100	<260	<260	<260	<260	<260	<260	<260	<260	<260	<260	<260	<260	<260	<260
2-Nitrophenol *	ug/kg	---	---	<1600	<1600	<1600	<1600	<1600	<1600	<1600	<1600	<1600	<1600	<1600	<1600	<1600	<1600
4-Nitrophenol *	ug/kg	---	---	<1600	<1600	<1600	<1600	<1600	<1600	<1600	<1600	<1600	<1600	<1600	<1600	<1600	<1600
n-Nitrosodi-n-propylamine	ug/kg	---	0.05	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
n-Nitrosodimethylamine *	ug/kg	---	0.007	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
n-Nitrosodiphenylamine	ug/kg	---	1000	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Pentachlorophenol	ug/kg	20	30	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Phenanthrene *	ug/kg	---	210000	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Phenol	ug/kg	100000	100000	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Pyrene	ug/kg	2300000	2300000	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
Pyridine *	ug/kg	---	28	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
1,2,4-Trichlorobenzene	ug/kg	5000	5000	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
2,4,5-Trichlorophenol	ug/kg	26000	270000	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330
2,4,6-Trichlorophenol	ug/kg	660	200	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330	<330

Notes:

ug/kg = micrograms per kilogram (parts per billion)

Sample exceeds laboratory detection limit and the most stringent Tier 1 Site Remediation Objective (SRO)

*Result compared to non-TACO SRO

--- = No remediation objective

1. Concentration obtained from the "Summary of Maximum Allowable Concentrations of Chemical Constituents in Uncontaminated Soil Used as Fill Material at Regulated Fill Operations (35 Ill. Adm. Code 1100.Subpart F)" (Revised August 27, 2012)

2. The constituent was identified above the Most Stringent Tier1 SRO but below the MAC.

Table 1A - Soil Analytical Results - Volatile Organic Compounds
Zion Landfill Clay - 2006 and 2007
Johns Manville - Former Manufacturing Area
Waukegan, Illinois

		Sample ID	OZL-14 (6')	OZL-14 (12')	OZL-14 (12') DUP	OZL-15 (6')	OZL-15 (12')	OZL-16 (6')	OZL-16 (12')	OZL-17 (6')	OZL-17 (6') DUP	OZL-17 (12')	OZL-18 (6')	OZL-18 (12')	OZL-19 (6')	OZL-19 (12')
		Date of Sample Collection:	2/27/2007	2/27/2007	2/27/2007	2/27/2007	2/27/2007	2/27/2007	2/27/2007	2/27/2007	2/27/2007	2/27/2007	2/27/2007	2/27/2007	2/27/2007	2/27/2007
Contaminants of Concern:		Time of Sample Collection:	10:15 AM	10:25 AM	10:35 AM	10:45 AM	0.454861111	11:05 AM	11:15 AM	11:25 AM	11:30 AM	11:35 AM	11:45 AM	11:55 AM	12:05 PM	12:15 PM
Pesticides/PCBs (8081A/8082)	**Units**	**Most Stringent Tier 1 SRO**														
Aldrin	ug/kg	40	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0
Aroclor 1016	ug/kg	1000	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0
Aroclor 1221	ug/kg	220	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0
Aroclor 1232	ug/kg	220	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0
Aroclor 1242	ug/kg	220	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0
Aroclor 1248	ug/kg	220	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0
Aroclor 1254	ug/kg	220	<160	<160	<160	<160	<160	<160	<160	<160	<160	<160	<160	<160	<160	<160
Aroclor 1260	ug/kg	220	<160	<160	<160	<160	<160	<160	<160	<160	<160	<160	<160	<160	<160	<160
alpha-BHC	ug/kg	0.5	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
beta-BHC	ug/kg	---	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0
delta-BHC	ug/kg	---	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0
gamma-BHC (Lindane)	ug/kg	9	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0
alpha-Chlordane	ug/kg	1800	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0
gamma-Chlordane	ug/kg	1800	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0
4,4'-DDD	ug/kg	3000	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0
4,4'-DDE	ug/kg	2000	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0
4,4'-DDT	ug/kg	2000	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0
Dieldrin	ug/kg	4	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0
Endosulfan I	ug/kg	18000	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0
Endosulfan II	ug/kg	18000	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0
Endosulfan sulfate	ug/kg	18000	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0
Endrin	ug/kg	1000	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0
Endrin aldehyde	ug/kg	---	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0
Endrin ketone	ug/kg	---	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0	<16.0
Heptachlor	ug/kg	100	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0
Heptachlor epoxide	ug/kg	70	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0
Methoxychlor	ug/kg	160000	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0	<80.0
Toxaphene	ug/kg	600	<160	<160	<160	<160	<160	<160	<160	<160	<160	<160	<160	<160	<160	<160

Notes:

ug/kg = micrograms per kilogram (parts per billion)

Sample exceeds laboratory detection limit and most stringent Tier 1 Site Remediation Objective (SRO)

--- = No remediation objective

Table 1A - Soil Analytical Results - Volatile Organic Compounds
Zion Landfill Clay - 2006 and 2007
Johns Manville - Former Manufacturing Area
Waukegan, Illinois

		Sample ID	OZL-14 (6')	OZL-14 (12')	OZL-14 (12') DUP	OZL-15 (6')	OZL-15 (12')	OZL-16 (6')	OZL-16 (12')	OZL-17 (6')	OZL-17 (6') DUP	OZL-17 (12')	OZL-18 (6')	OZL-18 (12')	OZL-19 (6')	OZL-19 (12')
		Date of Sample Collection:	2/27/2007	2/27/2007	2/27/2007	2/27/2007	2/27/2007	2/27/2007	2/27/2007	2/27/2007	2/27/2007	2/27/2007	2/27/2007	2/27/2007	2/27/2007	2/27/2007
Contaminants of Concern:		Time of Sample Collection:	10:15 AM	10:25 AM	10:35 AM	10:45 AM	0.454861111	11:05 AM	11:15 AM	11:25 AM	11:30 AM	11:35 AM	11:45 AM	11:55 AM	12:05 PM	12:15 PM
Total Metals (6010C)	**Units**	**Most Stringent Tier 1 SRO**														
Antimony	mg/kg	5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Arsenic	mg/kg	13	11.1	8.6	9.1	**13.6**	8.6	6.1	8.7	10.1	5.8	7.9	9.3	7.7	6.7	6.3
Barium	mg/kg	1,800	67.5	46.4	44.8	48.5	46.7	32.9	47.3	49.8	46.9	41.3	51.2	37.6	48.1	46.0
Cadmium	mg/kg	59	0.9	0.9	0.8	1.0	0.7	0.7	0.8	0.7	0.7	0.7	0.8	0.7	0.7	0.7
Chromium	mg/kg	230	25.6	23.5	20.8	25.7	21.0	17.5	19.6	17.8	17.0	16.2	20.4	13.5	17.6	18.6
Lead	mg/kg	107	23.5	13.3	14.4	13.8	10.2	8.4	11.3	11.8	8.6	12.5	12.5	9.8	9.9	10.0
Selenium	mg/kg	2.4	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Silver	mg/kg	39	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Total Mercury (7471B)	**Units**															
Mercury	mg/kg	0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SPLP Metals Method 1312 (6010B)	**Units**															
Lead	mg/L	0.0075	--	--	--	--	--	--	--	--	--	--	--	--	--	--
pH @ 25°C, 1:2 (9045C)	**Units**															
pH @ 25°C, 1:2	pH Units		8.07	8.7	8.72	8.92	8.54	8.68	8.76	8.67	9.06	8.9	8.49	8.26	8.6	8.66

mg/kg = milligrams per kilogram (parts per million)

Sample exceeds laboratory detection limit and most stringent Tier 1 Site Remediation Objective (SRO).

Note: Out of 12 samples the average arsenic level is 8.73 mg/kg which is well below the Most Stringent Tier 1 SRO.

--- = No remediation objective or Not analyzed

Table 1A - Soil Analytical Results - Volatile Organic Compounds
Zion Landfill Clay - 2006 and 2007
Johns Manville - Former Manufacturing Area
Waukegan, Illinois

Contaminants of Concern:	Units	Soil Remediation Objective	OZL-14 (6')	OZL-14 (12')	OZL-14 (12') DUP	OZL-15 (6')	OZL-15 (12')	OZL-16 (6')	OZL-16 (12')	OZL-17 (6')	OZL-17 (6') DUP	OZL-17 (12')	OZL-18 (6')	OZL-18 (12')	OZL-19 (6')	OZL-19 (12')
		Date of Sample Collection:	2/27/2007	2/27/2007	2/27/2007	2/27/2007	2/27/2007	2/27/2007	2/27/2007	2/27/2007	2/27/2007	2/27/2007	2/27/2007	2/27/2007	2/27/2007	2/27/2007
		Time of Sample Collection:	10:15 AM	10:25 AM	10:35 AM	10:45 AM	10:55 AM	11:05 AM	11:15 AM	11:25 AM	11:30 AM	11:35 AM	11:45 AM	11:55 AM	12:05 PM	12:15 PM
Asbestos (PLM)	%	Above Detection	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Asbestos (TEM)	%	Above Detection	--	ND	--	--	--	--	--	ND	--	--	--	--	--	--

Notes:
PLM = Analysis by California Air Resources Board (CARB) Method 435 Level A using Polarized Light Microscopy
TEM = Analysis by CARB Level B using Transmission Electron Microscopy
--- = Not analyzed or Not applicable
ND = None detected
ND / ND = Sample Result / Duplicate Result

First Environmental Laboratories, Inc. IL ELAP / NELAC Accreditation # 100292

1600 Shore Road • Naperville, Illinois 60563 • Phone (630) 778-1200 • Fax (630) 778-1233

March 05, 2007

Mr. Dave Peterson
JOHNS MANVILLE
1871 N. Pershing Road
Waukegan, IL 60087

Project ID: Onyx Zion Landfill Clay
First Environmental File ID: 7-0800
Date Received: February 28, 2007

Dear Mr. Dave Peterson:

The above referenced project was analyzed as directed on the enclosed chain of custody record.

All analyses were performed in accordance with established methods and within established holding times. All Quality Control criteria as outlined in the methods and current IL ELAP/NELAP have been met unless otherwise noted. QA/QC documentation and raw data will remain on file for future reference. Our accreditation number is 100292 and our current certificate is number 001566: effective 07/18/06 through 02/28/07.

I thank you for the opportunity to be of service to you and look forward to working with you again in the future. Should you have any questions regarding any of the enclosed analytical data or need additional information, please contact me at (630) 778-1200.

Sincerely,

W. Mottashed

William Mottashed
Project Manager

First Environmental Laboratories, Inc.
IL ELAP / NELAC Accreditation # 100292
1600 Shore Road • Naperville, Illinois 60563 • Phone (630) 778-1200 • Fax (630) 778-1233

Case Narrative

JOHNS MANVILLE

Project ID: **Onyx Zion Landfill Clay**

First Environmental File ID: **7-0800**

Date Received: **February 28, 2007**

Flag	Description	Flag	Description
<	Analyte not detected at or above the reporting limit.	L+	LCS recovery outside control limits; high bias.
B	Analyte detected in associated method blank.	L-	LCS recovery outside control limits; low bias.
C	Identification confirmed by GC/MS.	M	MS recovery outside control limits; LCS acceptable.
D	Surrogates diluted out; recovery not available.	M+	MS recovery outside control limits high bias; LCS acceptable.
E	Estimated result; concentration exceeds calibration range.	M-	MS recovery outside control limits low bias; LCS acceptable.
F	Field measurement.	N	Analyte is not part of our NELAC accreditation.
		ND	Analyte was not detected using a library search routine; No calibration standard was analyzed.
G	Surrogate recovery outside control limits; matrix effect.	P	Chemical preservation pH adjusted in lab.
H	Analysis holding time exceeded.	Q	The analyte was determined by a GC/MS database search.
J	Estimated result; concentration is less than calib range.	S	Analyte was sub-contracted to another laboratory for analysis.
K	RPD outside control limits.	T	Sample temperature upon receipt exceeded 0-6°C
RL	Routine Reporting Limit (Lowest amount that can be detected when routine weights/volumes are used without dilution.)	W	Reporting limit elevated due to sample matrix.

All quality control criteria, as outlined in the methods, have been met except as noted below or on the following analytical report.

Sample Batch Comments:

Sample acceptance criteria were met.

Method Comments

Lab Number	Sample ID	Comments:
7-0800-003	OZL-14 (12') DUP	*Semi-Volatile Compounds* Surrogate recovery outside control limits; low bias.

First Environmental Laboratories, Inc.

IL ELAP / NELAC Accreditation # 100292

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Analytical Report

Client:	JOHNS MANVILLE	**Date Collected:**	02/27/07
Project ID:	Onyx Zion Landfill Clay	**Time Collected:**	10:15
Sample ID:	OZL-14 (6')	**Date Received:**	02/28/07
Sample No:	7-0800-001	**Date Reported:**	03/05/07

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Solids, Total	**Method: 160.3**		**Analysis Date:**	**03/01/07**	
Total Solids		81.98		%	
Volatile Organic Compounds	**Method: 5035A/8260B**		**Analysis Date:**	**03/01/07**	
Acetone		< 100	100	ug/kg	
Benzene		< 5.0	5.0	ug/kg	
Bromodichloromethane		< 5.0	5.0	ug/kg	
Bromoform		< 5.0	5.0	ug/kg	
Bromomethane		< 10.0	10.0	ug/kg	
2-Butanone (MEK)		< 10.0	10.0	ug/kg	
Carbon disulfide		< 5.0	5.0	ug/kg	
Carbon tetrachloride		< 5.0	5.0	ug/kg	
Chlorobenzene		< 5.0	5.0	ug/kg	
Chlorodibromomethane		< 5.0	5.0	ug/kg	
Chloroethane		< 10.0	10.0	ug/kg	
Chloroform		< 5.0	5.0	ug/kg	
Chloromethane		< 10.0	10.0	ug/kg	
1,1-Dichloroethane		< 5.0	5.0	ug/kg	
1,2-Dichloroethane		< 5.0	5.0	ug/kg	
1,1-Dichloroethene		< 5.0	5.0	ug/kg	
cis-1,2-Dichloroethene		< 5.0	5.0	ug/kg	
trans-1,2-Dichloroethene		< 5.0	5.0	ug/kg	
1,2-Dichloropropane		< 5.0	5.0	ug/kg	
cis-1,3-Dichloropropene		< 5.0	5.0	ug/kg	
trans-1,3-Dichloropropene		< 5.0	5.0	ug/kg	
Ethylbenzene		< 5.0	5.0	ug/kg	
2-Hexanone		< 10.0	10.0	ug/kg	
Methyl-tert-butylether (MTBE)		< 5.0	5.0	ug/kg	
4-Methyl-2-pentanone (MIBK)		< 10.0	10.0	ug/kg	
Methylene chloride		< 5.0	5.0	ug/kg	
Styrene		< 5.0	5.0	ug/kg	
1,1,2,2-Tetrachloroethane		< 5.0	5.0	ug/kg	
Tetrachloroethene		< 5.0	5.0	ug/kg	
Toluene		< 5.0	5.0	ug/kg	
1,1,1-Trichloroethane		< 5.0	5.0	ug/kg	
1,1,2-Trichloroethane		< 5.0	5.0	ug/kg	
Trichloroethene		< 5.0	5.0	ug/kg	
Vinyl acetate		< 10.0	10.0	ug/kg	
Vinyl chloride		< 10.0	10.0	ug/kg	
Xylene, Total		< 5.0	5.0	ug/kg	

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Analytical Report

Client:	JOHNS MANVILLE	**Date Collected:**	02/27/07
Project ID:	Onyx Zion Landfill Clay	**Time Collected:**	10:15
Sample ID:	OZL-14 (6')	**Date Received:**	02/28/07
Sample No:	7-0800-001	**Date Reported:**	03/05/07

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Semi-Volatile Compounds **Method: 8270C**		**Analysis Date:**	**03/02/07**	
Acenaphthene	< 330	330	ug/kg	
Acenaphthylene	< 330	330	ug/kg	
Anthracene	< 330	330	ug/kg	
Benzidine	< 330	330	ug/kg	
Benzo(a)anthracene	< 330	330	ug/kg	
Benzo(a)pyrene	< 90	90	ug/kg	
Benzo(b)fluoranthene	< 330	330	ug/kg	
Benzo(k)fluoranthene	< 330	330	ug/kg	
Benzo(ghi)perylene	< 330	330	ug/kg	
Benzoic acid	< 330	330	ug/kg	
Benzyl alcohol	< 330	330	ug/kg	
bis(2-Chloroethoxy)methane	< 330	330	ug/kg	
bis(2-Chloroethyl)ether	< 330	330	ug/kg	
bis(2-Chloroisopropyl)ether	< 330	330	ug/kg	
bis(2-Ethylhexyl)phthalate	< 330	330	ug/kg	
4-Bromophenyl phenyl ether	< 330	330	ug/kg	
Butyl benzyl phthalate	< 330	330	ug/kg	
Carbazole	< 330	330	ug/kg	
4-Chloroaniline	< 330	330	ug/kg	
4-Chloro-3-methylphenol	< 330	330	ug/kg	
2-Chloronaphthalene	< 330	330	ug/kg	
2-Chlorophenol	< 330	330	ug/kg	
4-Chlorophenyl phenyl ether	< 330	330	ug/kg	
Chrysene	< 330	330	ug/kg	
Di-n-butyl phthalate	< 330	330	ug/kg	
Di-n-octylphthalate	< 330	330	ug/kg	
Dibenzo(a,h)anthracene	< 90	90	ug/kg	
Dibenzofuran	< 330	330	ug/kg	
1,2-Dichlorobenzene	< 330	330	ug/kg	
1,3-Dichlorobenzene	< 330	330	ug/kg	
1,4-Dichlorobenzene	< 330	330	ug/kg	
3,3'-Dichlorobenzidine	< 660	660	ug/kg	
2,4-Dichlorophenol	< 330	330	ug/kg	
Diethyl phthalate	< 330	330	ug/kg	
2,4-Dimethylphenol	< 330	330	ug/kg	
Dimethyl phthalate	< 330	330	ug/kg	
4,6-Dinitro-2-methylphenol	< 1,600	1600	ug/kg	
2,4-Dinitrophenol	< 1,600	1600	ug/kg	
2,4-Dinitrotoluene	< 250	250	ug/kg	

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Analytical Report

Client:	JOHNS MANVILLE	**Date Collected:**	02/27/07
Project ID:	Onyx Zion Landfill Clay	**Time Collected:**	10:15
Sample ID:	OZL-14 (6')	**Date Received:**	02/28/07
Sample No:	7-0800-001	**Date Reported:**	03/05/07

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Semi-Volatile Compounds **Method: 8270C**		**Analysis Date: 03/02/07**		
2,6-Dinitrotoluene	< 260	260	ug/kg	
Fluoranthene	< 330	330	ug/kg	
Fluorene	< 330	330	ug/kg	
Hexachlorobenzene	< 330	330	ug/kg	
Hexachlorobutadiene	< 330	330	ug/kg	
Hexachlorocyclopentadiene	< 330	330	ug/kg	
Hexachloroethane	< 330	330	ug/kg	
Indeno(1,2,3-cd)pyrene	< 330	330	ug/kg	
Isophorone	< 330	330	ug/kg	
2-Methylnaphthalene	< 330	330	ug/kg	
2-Methylphenol	< 330	330	ug/kg	
3 & 4-Methylphenol	< 330	330	ug/kg	
Naphthalene	< 330	330	ug/kg	
2-Nitroaniline	< 1,600	1600	ug/kg	
3-Nitroaniline	< 1,600	1600	ug/kg	
4-Nitroaniline	< 1,600	1600	ug/kg	
Nitrobenzene	< 260	260	ug/kg	
2-Nitrophenol	< 1,600	1600	ug/kg	
4-Nitrophenol	< 1,600	1600	ug/kg	
n-Nitrosodi-n-propylamine	< 330	330	ug/kg	
n-Nitrosodimethylamine	< 330	330	ug/kg	
n-Nitrosodiphenylamine	< 330	330	ug/kg	
Pentachlorophenol	< 330	330	ug/kg	
Phenanthrene	< 330	330	ug/kg	
Phenol	< 330	330	ug/kg	
Pyrene	< 330	330	ug/kg	
Pyridine	< 330	330	ug/kg	
1,2,4-Trichlorobenzene	< 330	330	ug/kg	
2,4,5-Trichlorophenol	< 330	330	ug/kg	
2,4,6-Trichlorophenol	< 330	330	ug/kg	
Pesticides/PCBs **Method: 8081A/8082**		**Analysis Date: 03/02/07**		
Aldrin	< 8.0	8.0	ug/kg	
Aroclor 1016	< 80.0	80.0	ug/kg	
Aroclor 1221	< 80.0	80.0	ug/kg	
Aroclor 1232	< 80.0	80.0	ug/kg	
Aroclor 1242	< 80.0	80.0	ug/kg	
Aroclor 1248	< 80.0	80.0	ug/kg	
Aroclor 1254	< 160	160	ug/kg	
Aroclor 1260	< 160	160	ug/kg	

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Analytical Report

Client:	JOHNS MANVILLE	**Date Collected:**	02/27/07
Project ID:	Onyx Zion Landfill Clay	**Time Collected:**	10:15
Sample ID:	OZL-14 (6')	**Date Received:**	02/28/07
Sample No:	7-0800-001	**Date Reported:**	03/05/07

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Pesticides/PCBs	**Method: 8081A/8082**		**Analysis Date:**	**03/02/07**	
alpha-BHC		< 2.0	2.0	ug/kg	
beta-BHC		< 8.0	8.0	ug/kg	
delta-BHC		< 8.0	8.0	ug/kg	
gamma-BHC (Lindane)		< 8.0	8.0	ug/kg	
alpha-Chlordane		< 80.0	80.0	ug/kg	
gamma-Chlordane		< 80.0	80.0	ug/kg	
4,4'-DDD		< 16.0	16.0	ug/kg	
4,4'-DDE		< 16.0	16.0	ug/kg	
4,4'-DDT		< 16.0	16.0	ug/kg	
Dieldrin		< 16.0	16.0	ug/kg	
Endosulfan I		< 8.0	8.0	ug/kg	
Endosulfan II		< 16.0	16.0	ug/kg	
Endosulfan sulfate		< 16.0	16.0	ug/kg	
Endrin		< 16.0	16.0	ug/kg	
Endrin aldehyde		< 16.0	16.0	ug/kg	
Endrin ketone		< 16.0	16.0	ug/kg	
Heptachlor		< 8.0	8.0	ug/kg	
Heptachlor epoxide		< 8.0	8.0	ug/kg	
Methoxychlor		< 80.0	80.0	ug/kg	
Toxaphene		< 160	160	ug/kg	
Total Metals	**Method: 6010B**		**Analysis Date:**	**03/01/07**	
Antimony		< 1.0	1.0	mg/kg	
Arsenic		11.1	0.2	mg/kg	
Barium		67.5	0.1	mg/kg	
Cadmium		0.9	0.1	mg/kg	
Chromium		25.6	0.1	mg/kg	
Lead		23.5	0.2	mg/kg	
Selenium		< 0.2	0.2	mg/kg	
Silver		< 0.1	0.1	mg/kg	
Total Metals	**Method: 7470A**		**Analysis Date:**	**03/01/07**	
Mercury		< 0.05	0.05	mg/kg	
pH @ 25°C, 1:10	**Method: 4500H+B**		**Analysis Date:**	**03/01/07**	
pH @ 25°C, 1:10		8.07		Units	

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Analytical Report

Client:	JOHNS MANVILLE	**Date Collected:**	02/27/07
Project ID:	Onyx Zion Landfill Clay	**Time Collected:**	10:25
Sample ID:	OZL-14 (12')	**Date Received:**	02/28/07
Sample No:	7-0800-002	**Date Reported:**	03/05/07

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Solids, Total	**Method: 160.3**		**Analysis Date:**	**03/01/07**	
Total Solids		88.49		%	
Volatile Organic Compounds	**Method: 5035A/8260B**		**Analysis Date:**	**03/01/07**	
Acetone		< 100	100	ug/kg	
Benzene		< 5.0	5.0	ug/kg	
Bromodichloromethane		< 5.0	5.0	ug/kg	
Bromoform		< 5.0	5.0	ug/kg	
Bromomethane		< 10.0	10.0	ug/kg	
2-Butanone (MEK)		< 10.0	10.0	ug/kg	
Carbon disulfide		< 5.0	5.0	ug/kg	
Carbon tetrachloride		< 5.0	5.0	ug/kg	
Chlorobenzene		< 5.0	5.0	ug/kg	
Chlorodibromomethane		< 5.0	5.0	ug/kg	
Chloroethane		< 10.0	10.0	ug/kg	
Chloroform		< 5.0	5.0	ug/kg	
Chloromethane		< 10.0	10.0	ug/kg	
1,1-Dichloroethane		< 5.0	5.0	ug/kg	
1,2-Dichloroethane		< 5.0	5.0	ug/kg	
1,1-Dichloroethene		< 5.0	5.0	ug/kg	
cis-1,2-Dichloroethene		< 5.0	5.0	ug/kg	
trans-1,2-Dichloroethene		< 5.0	5.0	ug/kg	
1,2-Dichloropropane		< 5.0	5.0	ug/kg	
cis-1,3-Dichloropropene		< 5.0	5.0	ug/kg	
trans-1,3-Dichloropropene		< 5.0	5.0	ug/kg	
Ethylbenzene		< 5.0	5.0	ug/kg	
2-Hexanone		< 10.0	10.0	ug/kg	
Methyl-tert-butylether (MTBE)		< 5.0	5.0	ug/kg	
4-Methyl-2-pentanone (MIBK)		< 10.0	10.0	ug/kg	
Methylene chloride		< 5.0	5.0	ug/kg	
Styrene		< 5.0	5.0	ug/kg	
1,1,2,2-Tetrachloroethane		< 5.0	5.0	ug/kg	
Tetrachloroethene		< 5.0	5.0	ug/kg	
Toluene		< 5.0	5.0	ug/kg	
1,1,1-Trichloroethane		< 5.0	5.0	ug/kg	
1,1,2-Trichloroethane		< 5.0	5.0	ug/kg	
Trichloroethene		< 5.0	5.0	ug/kg	
Vinyl acetate		< 10.0	10.0	ug/kg	
Vinyl chloride		< 10.0	10.0	ug/kg	
Xylene, Total		< 5.0	5.0	ug/kg	

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Analytical Report

Client:	JOHNS MANVILLE	**Date Collected:**	02/27/07
Project ID:	Onyx Zion Landfill Clay	**Time Collected:**	10:25
Sample ID:	OZL-14 (12')	**Date Received:**	02/28/07
Sample No:	7-0800-002	**Date Reported:**	03/05/07

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Semi-Volatile Compounds **Method: 8270C**		**Analysis Date:**	**03/02/07**	
Acenaphthene	< 330	330	ug/kg	
Acenaphthylene	< 330	330	ug/kg	
Anthracene	< 330	330	ug/kg	
Benzidine	< 330	330	ug/kg	
Benzo(a)anthracene	< 330	330	ug/kg	
Benzo(a)pyrene	< 90	90	ug/kg	
Benzo(b)fluoranthene	< 330	330	ug/kg	
Benzo(k)fluoranthene	< 330	330	ug/kg	
Benzo(ghi)perylene	< 330	330	ug/kg	
Benzoic acid	< 330	330	ug/kg	
Benzyl alcohol	< 330	330	ug/kg	
bis(2-Chloroethoxy)methane	< 330	330	ug/kg	
bis(2-Chloroethyl)ether	< 330	330	ug/kg	
bis(2-Chloroisopropyl)ether	< 330	330	ug/kg	
bis(2-Ethylhexyl)phthalate	< 330	330	ug/kg	
4-Bromophenyl phenyl ether	< 330	330	ug/kg	
Butyl benzyl phthalate	< 330	330	ug/kg	
Carbazole	< 330	330	ug/kg	
4-Chloroaniline	< 330	330	ug/kg	
4-Chloro-3-methylphenol	< 330	330	ug/kg	
2-Chloronaphthalene	< 330	330	ug/kg	
2-Chlorophenol	< 330	330	ug/kg	
4-Chlorophenyl phenyl ether	< 330	330	ug/kg	
Chrysene	< 330	330	ug/kg	
Di-n-butyl phthalate	< 330	330	ug/kg	
Di-n-octylphthalate	< 330	330	ug/kg	
Dibenzo(a,h)anthracene	< 90	90	ug/kg	
Dibenzofuran	< 330	330	ug/kg	
1,2-Dichlorobenzene	< 330	330	ug/kg	
1,3-Dichlorobenzene	< 330	330	ug/kg	
1,4-Dichlorobenzene	< 330	330	ug/kg	
3,3'-Dichlorobenzidine	< 660	660	ug/kg	
2,4-Dichlorophenol	< 330	330	ug/kg	
Diethyl phthalate	< 330	330	ug/kg	
2,4-Dimethylphenol	< 330	330	ug/kg	
Dimethyl phthalate	< 330	330	ug/kg	
4,6-Dinitro-2-methylphenol	< 1,600	1600	ug/kg	
2,4-Dinitrophenol	< 1,600	1600	ug/kg	
2,4-Dinitrotoluene	< 250	250	ug/kg	

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Analytical Report

Client:	JOHNS MANVILLE	**Date Collected:**	02/27/07
Project ID:	Onyx Zion Landfill Clay	**Time Collected:**	10:25
Sample ID:	OZL-14 (12')	**Date Received:**	02/28/07
Sample No:	7-0800-002	**Date Reported:**	03/05/07

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Semi-Volatile Compounds	**Method: 8270C**		**Analysis Date:**	**03/02/07**	
2,6-Dinitrotoluene		< 260	260	ug/kg	
Fluoranthene		< 330	330	ug/kg	
Fluorene		< 330	330	ug/kg	
Hexachlorobenzene		< 330	330	ug/kg	
Hexachlorobutadiene		< 330	330	ug/kg	
Hexachlorocyclopentadiene		< 330	330	ug/kg	
Hexachloroethane		< 330	330	ug/kg	
Indeno(1,2,3-cd)pyrene		< 330	330	ug/kg	
Isophorone		< 330	330	ug/kg	
2-Methylnaphthalene		< 330	330	ug/kg	
2-Methylphenol		< 330	330	ug/kg	
3 & 4-Methylphenol		< 330	330	ug/kg	
Naphthalene		< 330	330	ug/kg	
2-Nitroaniline		< 1,600	1600	ug/kg	
3-Nitroaniline		< 1,600	1600	ug/kg	
4-Nitroaniline		< 1,600	1600	ug/kg	
Nitrobenzene		< 260	260	ug/kg	
2-Nitrophenol		< 1,600	1600	ug/kg	
4-Nitrophenol		< 1,600	1600	ug/kg	
n-Nitrosodi-n-propylamine		< 330	330	ug/kg	
n-Nitrosodimethylamine		< 330	330	ug/kg	
n-Nitrosodiphenylamine		< 330	330	ug/kg	
Pentachlorophenol		< 330	330	ug/kg	
Phenanthrene		< 330	330	ug/kg	
Phenol		< 330	330	ug/kg	
Pyrene		< 330	330	ug/kg	
Pyridine		< 330	330	ug/kg	
1,2,4-Trichlorobenzene		< 330	330	ug/kg	
2,4,5-Trichlorophenol		< 330	330	ug/kg	
2,4,6-Trichlorophenol		< 330	330	ug/kg	
Pesticides/PCBs	**Method: 8081A/8082**		**Analysis Date:**	**03/02/07**	
Aldrin		< 8.0	8.0	ug/kg	
Aroclor 1016		< 80.0	80.0	ug/kg	
Aroclor 1221		< 80.0	80.0	ug/kg	
Aroclor 1232		< 80.0	80.0	ug/kg	
Aroclor 1242		< 80.0	80.0	ug/kg	
Aroclor 1248		< 80.0	80.0	ug/kg	
Aroclor 1254		< 160	160	ug/kg	
Aroclor 1260		< 160	160	ug/kg	

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Analytical Report

Client:	JOHNS MANVILLE	**Date Collected:**	02/27/07
Project ID:	Onyx Zion Landfill Clay	**Time Collected:**	10:25
Sample ID:	OZL-14 (12')	**Date Received:**	02/28/07
Sample No:	7-0800-002	**Date Reported:**	03/05/07

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Pesticides/PCBs	**Method: 8081A/8082**		**Analysis Date:**	**03/02/07**	
alpha-BHC		< 2.0	2.0	ug/kg	
beta-BHC		< 8.0	8.0	ug/kg	
delta-BHC		< 8.0	8.0	ug/kg	
gamma-BHC (Lindane)		< 8.0	8.0	ug/kg	
alpha-Chlordane		< 80.0	80.0	ug/kg	
gamma-Chlordane		< 80.0	80.0	ug/kg	
4,4'-DDD		< 16.0	16.0	ug/kg	
4,4'-DDE		< 16.0	16.0	ug/kg	
4,4'-DDT		< 16.0	16.0	ug/kg	
Dieldrin		< 16.0	16.0	ug/kg	
Endosulfan I		< 8.0	8.0	ug/kg	
Endosulfan II		< 16.0	16.0	ug/kg	
Endosulfan sulfate		< 16.0	16.0	ug/kg	
Endrin		< 16.0	16.0	ug/kg	
Endrin aldehyde		< 16.0	16.0	ug/kg	
Endrin ketone		< 16.0	16.0	ug/kg	
Heptachlor		< 8.0	8.0	ug/kg	
Heptachlor epoxide		< 8.0	8.0	ug/kg	
Methoxychlor		< 80.0	80.0	ug/kg	
Toxaphene		< 160	160	ug/kg	
Total Metals	**Method: 6010B**		**Analysis Date:**	**03/01/07**	
Antimony		< 1.0	1.0	mg/kg	
Arsenic		8.6	0.2	mg/kg	
Barium		46.4	0.1	mg/kg	
Cadmium		0.9	0.1	mg/kg	
Chromium		23.5	0.1	mg/kg	
Lead		13.3	0.2	mg/kg	
Selenium		< 0.2	0.2	mg/kg	
Silver		< 0.1	0.1	mg/kg	
Total Metals	**Method: 7470A**		**Analysis Date:**	**03/01/07**	
Mercury		< 0.05	0.05	mg/kg	
pH @ 25°C, 1:10	**Method: 4500H+B**		**Analysis Date:**	**03/01/07**	
pH @ 25°C, 1:10		8.70		Units	

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Analytical Report

Client:	JOHNS MANVILLE	**Date Collected:**	02/27/07
Project ID:	Onyx Zion Landfill Clay	**Time Collected:**	10:35
Sample ID:	OZL-14 (12') DUP	**Date Received:**	02/28/07
Sample No:	7-0800-003	**Date Reported:**	03/05/07

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Solids, Total	**Method: 160.3**		**Analysis Date:**	**03/01/07**	
Total Solids		86.41		%	
Volatile Organic Compounds	**Method: 5035A/8260B**		**Analysis Date:**	**03/01/07**	
Acetone		< 100	100	ug/kg	
Benzene		< 5.0	5.0	ug/kg	
Bromodichloromethane		< 5.0	5.0	ug/kg	
Bromoform		< 5.0	5.0	ug/kg	
Bromomethane		< 10.0	10.0	ug/kg	
2-Butanone (MEK)		< 10.0	10.0	ug/kg	
Carbon disulfide		< 5.0	5.0	ug/kg	
Carbon tetrachloride		< 5.0	5.0	ug/kg	
Chlorobenzene		< 5.0	5.0	ug/kg	
Chlorodibromomethane		< 5.0	5.0	ug/kg	
Chloroethane		< 10.0	10.0	ug/kg	
Chloroform		< 5.0	5.0	ug/kg	
Chloromethane		< 10.0	10.0	ug/kg	
1,1-Dichloroethane		< 5.0	5.0	ug/kg	
1,2-Dichloroethane		< 5.0	5.0	ug/kg	
1,1-Dichloroethene		< 5.0	5.0	ug/kg	
cis-1,2-Dichloroethene		< 5.0	5.0	ug/kg	
trans-1,2-Dichloroethene		< 5.0	5.0	ug/kg	
1,2-Dichloropropane		< 5.0	5.0	ug/kg	
cis-1,3-Dichloropropene		< 5.0	5.0	ug/kg	
trans-1,3-Dichloropropene		< 5.0	5.0	ug/kg	
Ethylbenzene		< 5.0	5.0	ug/kg	
2-Hexanone		< 10.0	10.0	ug/kg	
Methyl-tert-butylether (MTBE)		< 5.0	5.0	ug/kg	
4-Methyl-2-pentanone (MIBK)		< 10.0	10.0	ug/kg	
Methylene chloride		< 5.0	5.0	ug/kg	
Styrene		< 5.0	5.0	ug/kg	
1,1,2,2-Tetrachloroethane		< 5.0	5.0	ug/kg	
Tetrachloroethene		< 5.0	5.0	ug/kg	
Toluene		< 5.0	5.0	ug/kg	
1,1,1-Trichloroethane		< 5.0	5.0	ug/kg	
1,1,2-Trichloroethane		< 5.0	5.0	ug/kg	
Trichloroethene		< 5.0	5.0	ug/kg	
Vinyl acetate		< 10.0	10.0	ug/kg	
Vinyl chloride		< 10.0	10.0	ug/kg	
Xylene, Total		< 5.0	5.0	ug/kg	

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Analytical Report

Client:	JOHNS MANVILLE	**Date Collected:**	02/27/07
Project ID:	Onyx Zion Landfill Clay	**Time Collected:**	10:35
Sample ID:	OZL-14 (12') DUP	**Date Received:**	02/28/07
Sample No:	7-0800-003	**Date Reported:**	03/05/07

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Semi-Volatile Compounds **Method: 8270C**		**Analysis Date:**	**03/02/07**	
Acenaphthene	< 330	330	ug/kg	
Acenaphthylene	< 330	330	ug/kg	
Anthracene	< 330	330	ug/kg	
Benzidine	< 330	330	ug/kg	
Benzo(a)anthracene	< 330	330	ug/kg	
Benzo(a)pyrene	< 90	90	ug/kg	
Benzo(b)fluoranthene	< 330	330	ug/kg	
Benzo(k)fluoranthene	< 330	330	ug/kg	
Benzo(ghi)perylene	< 330	330	ug/kg	
Benzoic acid	< 330	330	ug/kg	
Benzyl alcohol	< 330	330	ug/kg	
bis(2-Chloroethoxy)methane	< 330	330	ug/kg	
bis(2-Chloroethyl)ether	< 330	330	ug/kg	
bis(2-Chloroisopropyl)ether	< 330	330	ug/kg	
bis(2-Ethylhexyl)phthalate	< 330	330	ug/kg	
4-Bromophenyl phenyl ether	< 330	330	ug/kg	
Butyl benzyl phthalate	< 330	330	ug/kg	
Carbazole	< 330	330	ug/kg	
4-Chloroaniline	< 330	330	ug/kg	
4-Chloro-3-methylphenol	< 330	330	ug/kg	
2-Chloronaphthalene	< 330	330	ug/kg	
2-Chlorophenol	< 330	330	ug/kg	
4-Chlorophenyl phenyl ether	< 330	330	ug/kg	
Chrysene	< 330	330	ug/kg	
Di-n-butyl phthalate	< 330	330	ug/kg	
Di-n-octylphthalate	< 330	330	ug/kg	
Dibenzo(a,h)anthracene	< 90	90	ug/kg	
Dibenzofuran	< 330	330	ug/kg	
1,2-Dichlorobenzene	< 330	330	ug/kg	
1,3-Dichlorobenzene	< 330	330	ug/kg	
1,4-Dichlorobenzene	< 330	330	ug/kg	
3,3'-Dichlorobenzidine	< 660	660	ug/kg	
2,4-Dichlorophenol	< 330	330	ug/kg	
Diethyl phthalate	< 330	330	ug/kg	
2,4-Dimethylphenol	< 330	330	ug/kg	
Dimethyl phthalate	< 330	330	ug/kg	
4,6-Dinitro-2-methylphenol	< 1,600	1600	ug/kg	
2,4-Dinitrophenol	< 1,600	1600	ug/kg	
2,4-Dinitrotoluene	< 250	250	ug/kg	

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1600 Shore Road • Naperville, Illinois 60563 • Phone (630) 778-1200 • Fax (630) 778-1233

Analytical Report

Client: JOHNS MANVILLE
Project ID: Onyx Zion Landfill Clay
Sample ID: OZL-14 (12') DUP
Sample No: 7-0800-003

Date Collected: 02/27/07
Time Collected: 10:35
Date Received: 02/28/07
Date Reported: 03/05/07

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Semi-Volatile Compounds	**Method: 8270C**		**Analysis Date:**	**03/02/07**	
2,6-Dinitrotoluene		< 260	260	ug/kg	
Fluoranthene		< 330	330	ug/kg	
Fluorene		< 330	330	ug/kg	
Hexachlorobenzene		< 330	330	ug/kg	
Hexachlorobutadiene		< 330	330	ug/kg	
Hexachlorocyclopentadiene		< 330	330	ug/kg	
Hexachloroethane		< 330	330	ug/kg	
Indeno(1,2,3-cd)pyrene		< 330	330	ug/kg	
Isophorone		< 330	330	ug/kg	
2-Methylnaphthalene		< 330	330	ug/kg	
2-Methylphenol		< 330	330	ug/kg	
3 & 4-Methylphenol		< 330	330	ug/kg	
Naphthalene		< 330	330	ug/kg	
2-Nitroaniline		< 1,600	1600	ug/kg	
3-Nitroaniline		< 1,600	1600	ug/kg	
4-Nitroaniline		< 1,600	1600	ug/kg	
Nitrobenzene		< 260	260	ug/kg	
2-Nitrophenol		< 1,600	1600	ug/kg	
4-Nitrophenol		< 1,600	1600	ug/kg	
n-Nitrosodi-n-propylamine		< 330	330	ug/kg	
n-Nitrosodimethylamine		< 330	330	ug/kg	
n-Nitrosodiphenylamine		< 330	330	ug/kg	
Pentachlorophenol		< 330	330	ug/kg	
Phenanthrene		< 330	330	ug/kg	
Phenol		< 330	330	ug/kg	
Pyrene		< 330	330	ug/kg	
Pyridine		< 330	330	ug/kg	
1,2,4-Trichlorobenzene		< 330	330	ug/kg	
2,4,5-Trichlorophenol		< 330	330	ug/kg	
2,4,6-Trichlorophenol		< 330	330	ug/kg	
Pesticides/PCBs	**Method: 8081A/8082**		**Analysis Date:**	**03/02/07**	
Aldrin		< 8.0	8.0	ug/kg	
Aroclor 1016		< 80.0	80.0	ug/kg	
Aroclor 1221		< 80.0	80.0	ug/kg	
Aroclor 1232		< 80.0	80.0	ug/kg	
Aroclor 1242		< 80.0	80.0	ug/kg	
Aroclor 1248		< 80.0	80.0	ug/kg	
Aroclor 1254		< 160	160	ug/kg	
Aroclor 1260		< 160	160	ug/kg	

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Analytical Report

Client: JOHNS MANVILLE
Project ID: Onyx Zion Landfill Clay
Sample ID: OZL-14 (12') DUP
Sample No: 7-0800-003

Date Collected: 02/27/07
Time Collected: 10:35
Date Received: 02/28/07
Date Reported: 03/05/07

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Pesticides/PCBs	**Method: 8081A/8082**		**Analysis Date:**	**03/02/07**	
alpha-BHC		< 2.0	2.0	ug/kg	
beta-BHC		< 8.0	8.0	ug/kg	
delta-BHC		< 8.0	8.0	ug/kg	
gamma-BHC (Lindane)		< 8.0	8.0	ug/kg	
alpha-Chlordane		< 80.0	80.0	ug/kg	
gamma-Chlordane		< 80.0	80.0	ug/kg	
4,4'-DDD		< 16.0	16.0	ug/kg	
4,4'-DDE		< 16.0	16.0	ug/kg	
4,4'-DDT		< 16.0	16.0	ug/kg	
Dieldrin		< 16.0	16.0	ug/kg	
Endosulfan I		< 8.0	8.0	ug/kg	
Endosulfan II		< 16.0	16.0	ug/kg	
Endosulfan sulfate		< 16.0	16.0	ug/kg	
Endrin		< 16.0	16.0	ug/kg	
Endrin aldehyde		< 16.0	16.0	ug/kg	
Endrin ketone		< 16.0	16.0	ug/kg	
Heptachlor		< 8.0	8.0	ug/kg	
Heptachlor epoxide		< 8.0	8.0	ug/kg	
Methoxychlor		< 80.0	80.0	ug/kg	
Toxaphene		< 160	160	ug/kg	
Total Metals	**Method: 6010B**		**Analysis Date:**	**03/01/07**	
Antimony		< 1.0	1.0	mg/kg	
Arsenic		9.1	0.2	mg/kg	
Barium		44.8	0.1	mg/kg	
Cadmium		0.8	0.1	mg/kg	
Chromium		20.8	0.1	mg/kg	
Lead		14.4	0.2	mg/kg	
Selenium		< 0.2	0.2	mg/kg	
Silver		< 0.1	0.1	mg/kg	
Total Metals	**Method: 7470A**		**Analysis Date:**	**03/01/07**	
Mercury		< 0.05	0.05	mg/kg	
pH @ 25°C, 1:10	**Method: 4500H+B**		**Analysis Date:**	**03/01/07**	
pH @ 25°C, 1:10		8.72		Units	

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Analytical Report

Client: JOHNS MANVILLE
Project ID: Onyx Zion Landfill Clay
Sample ID: OZL-15 (6')
Sample No: 7-0800-004

Date Collected: 02/27/07
Time Collected: 10:45
Date Received: 02/28/07
Date Reported: 03/05/07

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Solids, Total	**Method: 160.3**		**Analysis Date:**	**03/01/07**	
Total Solids		83.58		%	
Volatile Organic Compounds	**Method: 5035A/8260B**		**Analysis Date:**	**03/01/07**	
Acetone		< 100	100	ug/kg	
Benzene		< 5.0	5.0	ug/kg	
Bromodichloromethane		< 5.0	5.0	ug/kg	
Bromoform		< 5.0	5.0	ug/kg	
Bromomethane		< 10.0	10.0	ug/kg	
2-Butanone (MEK)		< 10.0	10.0	ug/kg	
Carbon disulfide		< 5.0	5.0	ug/kg	
Carbon tetrachloride		< 5.0	5.0	ug/kg	
Chlorobenzene		< 5.0	5.0	ug/kg	
Chlorodibromomethane		< 5.0	5.0	ug/kg	
Chloroethane		< 10.0	10.0	ug/kg	
Chloroform		< 5.0	5.0	ug/kg	
Chloromethane		< 10.0	10.0	ug/kg	
1,1-Dichloroethane		< 5.0	5.0	ug/kg	
1,2-Dichloroethane		< 5.0	5.0	ug/kg	
1,1-Dichloroethene		< 5.0	5.0	ug/kg	
cis-1,2-Dichloroethene		< 5.0	5.0	ug/kg	
trans-1,2-Dichloroethene		< 5.0	5.0	ug/kg	
1,2-Dichloropropane		< 5.0	5.0	ug/kg	
cis-1,3-Dichloropropene		< 5.0	5.0	ug/kg	
trans-1,3-Dichloropropene		< 5.0	5.0	ug/kg	
Ethylbenzene		< 5.0	5.0	ug/kg	
2-Hexanone		< 10.0	10.0	ug/kg	
Methyl-tert-butylether (MTBE)		< 5.0	5.0	ug/kg	
4-Methyl-2-pentanone (MIBK)		< 10.0	10.0	ug/kg	
Methylene chloride		< 5.0	5.0	ug/kg	
Styrene		< 5.0	5.0	ug/kg	
1,1,2,2-Tetrachloroethane		< 5.0	5.0	ug/kg	
Tetrachloroethene		< 5.0	5.0	ug/kg	
Toluene		< 5.0	5.0	ug/kg	
1,1,1-Trichloroethane		< 5.0	5.0	ug/kg	
1,1,2-Trichloroethane		< 5.0	5.0	ug/kg	
Trichloroethene		< 5.0	5.0	ug/kg	
Vinyl acetate		< 10.0	10.0	ug/kg	
Vinyl chloride		< 10.0	10.0	ug/kg	
Xylene, Total		< 5.0	5.0	ug/kg	

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Analytical Report

Client:	JOHNS MANVILLE		**Date Collected:**	02/27/07
Project ID:	Onyx Zion Landfill Clay		**Time Collected:**	10:45
Sample ID:	OZL-15 (6')		**Date Received:**	02/28/07
Sample No:	7-0800-004		**Date Reported:**	03/05/07

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Semi-Volatile Compounds **Method: 8270C**		**Analysis Date:**	**03/02/07**	
Acenaphthene	< 330	330	ug/kg	
Acenaphthylene	< 330	330	ug/kg	
Anthracene	< 330	330	ug/kg	
Benzidine	< 330	330	ug/kg	
Benzo(a)anthracene	< 330	330	ug/kg	
Benzo(a)pyrene	< 90	90	ug/kg	
Benzo(b)fluoranthene	< 330	330	ug/kg	
Benzo(k)fluoranthene	< 330	330	ug/kg	
Benzo(ghi)perylene	< 330	330	ug/kg	
Benzoic acid	< 330	330	ug/kg	
Benzyl alcohol	< 330	330	ug/kg	
bis(2-Chloroethoxy)methane	< 330	330	ug/kg	
bis(2-Chloroethyl)ether	< 330	330	ug/kg	
bis(2-Chloroisopropyl)ether	< 330	330	ug/kg	
bis(2-Ethylhexyl)phthalate	< 330	330	ug/kg	
4-Bromophenyl phenyl ether	< 330	330	ug/kg	
Butyl benzyl phthalate	< 330	330	ug/kg	
Carbazole	< 330	330	ug/kg	
4-Chloroaniline	< 330	330	ug/kg	
4-Chloro-3-methylphenol	< 330	330	ug/kg	
2-Chloronaphthalene	< 330	330	ug/kg	
2-Chlorophenol	< 330	330	ug/kg	
4-Chlorophenyl phenyl ether	< 330	330	ug/kg	
Chrysene	< 330	330	ug/kg	
Di-n-butyl phthalate	< 330	330	ug/kg	
Di-n-octylphthalate	< 330	330	ug/kg	
Dibenzo(a,h)anthracene	< 90	90	ug/kg	
Dibenzofuran	< 330	330	ug/kg	
1,2-Dichlorobenzene	< 330	330	ug/kg	
1,3-Dichlorobenzene	< 330	330	ug/kg	
1,4-Dichlorobenzene	< 330	330	ug/kg	
3,3'-Dichlorobenzidine	< 660	660	ug/kg	
2,4-Dichlorophenol	< 330	330	ug/kg	
Diethyl phthalate	< 330	330	ug/kg	
2,4-Dimethylphenol	< 330	330	ug/kg	
Dimethyl phthalate	< 330	330	ug/kg	
4,6-Dinitro-2-methylphenol	< 1,600	1600	ug/kg	
2,4-Dinitrophenol	< 1,600	1600	ug/kg	
2,4-Dinitrotoluene	< 250	250	ug/kg	

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Analytical Report

Client:	JOHNS MANVILLE	**Date Collected:**	02/27/07
Project ID:	Onyx Zion Landfill Clay	**Time Collected:**	10:45
Sample ID:	OZL-15 (6')	**Date Received:**	02/28/07
Sample No:	7-0800-004	**Date Reported:**	03/05/07

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Semi-Volatile Compounds	**Method: 8270C**		**Analysis Date:**	**03/02/07**	
2,6-Dinitrotoluene		< 260	260	ug/kg	
Fluoranthene		< 330	330	ug/kg	
Fluorene		< 330	330	ug/kg	
Hexachlorobenzene		< 330	330	ug/kg	
Hexachlorobutadiene		< 330	330	ug/kg	
Hexachlorocyclopentadiene		< 330	330	ug/kg	
Hexachloroethane		< 330	330	ug/kg	
Indeno(1,2,3-cd)pyrene		< 330	330	ug/kg	
Isophorone		< 330	330	ug/kg	
2-Methylnaphthalene		< 330	330	ug/kg	
2-Methylphenol		< 330	330	ug/kg	
3 & 4-Methylphenol		< 330	330	ug/kg	
Naphthalene		< 330	330	ug/kg	
2-Nitroaniline		< 1,600	1600	ug/kg	
3-Nitroaniline		< 1,600	1600	ug/kg	
4-Nitroaniline		< 1,600	1600	ug/kg	
Nitrobenzene		< 260	260	ug/kg	
2-Nitrophenol		< 1,600	1600	ug/kg	
4-Nitrophenol		< 1,600	1600	ug/kg	
n-Nitrosodi-n-propylamine		< 330	330	ug/kg	
n-Nitrosodimethylamine		< 330	330	ug/kg	
n-Nitrosodiphenylamine		< 330	330	ug/kg	
Pentachlorophenol		< 330	330	ug/kg	
Phenanthrene		< 330	330	ug/kg	
Phenol		< 330	330	ug/kg	
Pyrene		< 330	330	ug/kg	
Pyridine		< 330	330	ug/kg	
1,2,4-Trichlorobenzene		< 330	330	ug/kg	
2,4,5-Trichlorophenol		< 330	330	ug/kg	
2,4,6-Trichlorophenol		< 330	330	ug/kg	
Pesticides/PCBs	**Method: 8081A/8082**		**Analysis Date:**	**03/02/07**	
Aldrin		< 8.0	8.0	ug/kg	
Aroclor 1016		< 80.0	80.0	ug/kg	
Aroclor 1221		< 80.0	80.0	ug/kg	
Aroclor 1232		< 80.0	80.0	ug/kg	
Aroclor 1242		< 80.0	80.0	ug/kg	
Aroclor 1248		< 80.0	80.0	ug/kg	
Aroclor 1254		< 160	160	ug/kg	
Aroclor 1260		< 160	160	ug/kg	

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Analytical Report

Client:	JOHNS MANVILLE	**Date Collected:**	02/27/07
Project ID:	Onyx Zion Landfill Clay	**Time Collected:**	10:45
Sample ID:	OZL-15 (6')	**Date Received:**	02/28/07
Sample No:	7-0800-004	**Date Reported:**	03/05/07

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Pesticides/PCBs	**Method: 8081A/8082**		**Analysis Date:**	**03/02/07**	
alpha-BHC		< 2.0	2.0	ug/kg	
beta-BHC		< 8.0	8.0	ug/kg	
delta-BHC		< 8.0	8.0	ug/kg	
gamma-BHC (Lindane)		< 8.0	8.0	ug/kg	
alpha-Chlordane		< 80.0	80.0	ug/kg	
gamma-Chlordane		< 80.0	80.0	ug/kg	
4,4'-DDD		< 16.0	16.0	ug/kg	
4,4'-DDE		< 16.0	16.0	ug/kg	
4,4'-DDT		< 16.0	16.0	ug/kg	
Dieldrin		< 16.0	16.0	ug/kg	
Endosulfan I		< 8.0	8.0	ug/kg	
Endosulfan II		< 16.0	16.0	ug/kg	
Endosulfan sulfate		< 16.0	16.0	ug/kg	
Endrin		< 16.0	16.0	ug/kg	
Endrin aldehyde		< 16.0	16.0	ug/kg	
Endrin ketone		< 16.0	16.0	ug/kg	
Heptachlor		< 8.0	8.0	ug/kg	
Heptachlor epoxide		< 8.0	8.0	ug/kg	
Methoxychlor		< 80.0	80.0	ug/kg	
Toxaphene		< 160	160	ug/kg	
Total Metals	**Method: 6010B**		**Analysis Date:**	**03/01/07**	
Antimony		< 1.0	1.0	mg/kg	
Arsenic		13.6	0.2	mg/kg	
Barium		48.5	0.1	mg/kg	
Cadmium		1.0	0.1	mg/kg	
Chromium		25.7	0.1	mg/kg	
Lead		13.8	0.2	mg/kg	
Selenium		< 0.2	0.2	mg/kg	
Silver		< 0.1	0.1	mg/kg	
Total Metals	**Method: 7470A**		**Analysis Date:**	**03/01/07**	
Mercury		< 0.05	0.05	mg/kg	
pH @ 25°C, 1:10	**Method: 4500H+B**		**Analysis Date:**	**03/01/07**	
pH @ 25°C, 1:10		8.92		Units	

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Analytical Report

Client:	JOHNS MANVILLE	**Date Collected:**	02/27/07
Project ID:	Onyx Zion Landfill Clay	**Time Collected:**	10:55
Sample ID:	OZL-15 (12')	**Date Received:**	02/28/07
Sample No:	7-0800-005	**Date Reported:**	03/05/07

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Solids, Total	**Method: 160.3**		**Analysis Date:**	**03/01/07**	
Total Solids		88.09		%	
Volatile Organic Compounds	**Method: 5035A/8260B**		**Analysis Date:**	**03/01/07**	
Acetone		< 100	100	ug/kg	
Benzene		< 5.0	5.0	ug/kg	
Bromodichloromethane		< 5.0	5.0	ug/kg	
Bromoform		< 5.0	5.0	ug/kg	
Bromomethane		< 10.0	10.0	ug/kg	
2-Butanone (MEK)		< 10.0	10.0	ug/kg	
Carbon disulfide		< 5.0	5.0	ug/kg	
Carbon tetrachloride		< 5.0	5.0	ug/kg	
Chlorobenzene		< 5.0	5.0	ug/kg	
Chlorodibromomethane		< 5.0	5.0	ug/kg	
Chloroethane		< 10.0	10.0	ug/kg	
Chloroform		< 5.0	5.0	ug/kg	
Chloromethane		< 10.0	10.0	ug/kg	
1,1-Dichloroethane		< 5.0	5.0	ug/kg	
1,2-Dichloroethane		< 5.0	5.0	ug/kg	
1,1-Dichloroethene		< 5.0	5.0	ug/kg	
cis-1,2-Dichloroethene		< 5.0	5.0	ug/kg	
trans-1,2-Dichloroethene		< 5.0	5.0	ug/kg	
1,2-Dichloropropane		< 5.0	5.0	ug/kg	
cis-1,3-Dichloropropene		< 5.0	5.0	ug/kg	
trans-1,3-Dichloropropene		< 5.0	5.0	ug/kg	
Ethylbenzene		< 5.0	5.0	ug/kg	
2-Hexanone		< 10.0	10.0	ug/kg	
Methyl-tert-butylether (MTBE)		< 5.0	5.0	ug/kg	
4-Methyl-2-pentanone (MIBK)		< 10.0	10.0	ug/kg	
Methylene chloride		< 5.0	5.0	ug/kg	
Styrene		< 5.0	5.0	ug/kg	
1,1,2,2-Tetrachloroethane		< 5.0	5.0	ug/kg	
Tetrachloroethene		< 5.0	5.0	ug/kg	
Toluene		< 5.0	5.0	ug/kg	
1,1,1-Trichloroethane		< 5.0	5.0	ug/kg	
1,1,2-Trichloroethane		< 5.0	5.0	ug/kg	
Trichloroethene		< 5.0	5.0	ug/kg	
Vinyl acetate		< 10.0	10.0	ug/kg	
Vinyl chloride		< 10.0	10.0	ug/kg	
Xylene, Total		< 5.0	5.0	ug/kg	

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Analytical Report

Client:	JOHNS MANVILLE	**Date Collected:**	02/27/07
Project ID:	Onyx Zion Landfill Clay	**Time Collected:**	10:55
Sample ID:	OZL-15 (12')	**Date Received:**	02/28/07
Sample No:	7-0800-005	**Date Reported:**	03/05/07

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Semi-Volatile Compounds **Method: 8270C**		**Analysis Date:**	**03/02/07**	
Acenaphthene	< 330	330	ug/kg	
Acenaphthylene	< 330	330	ug/kg	
Anthracene	< 330	330	ug/kg	
Benzidine	< 330	330	ug/kg	
Benzo(a)anthracene	< 330	330	ug/kg	
Benzo(a)pyrene	< 90	90	ug/kg	
Benzo(b)fluoranthene	< 330	330	ug/kg	
Benzo(k)fluoranthene	< 330	330	ug/kg	
Benzo(ghi)perylene	< 330	330	ug/kg	
Benzoic acid	< 330	330	ug/kg	
Benzyl alcohol	< 330	330	ug/kg	
bis(2-Chloroethoxy)methane	< 330	330	ug/kg	
bis(2-Chloroethyl)ether	< 330	330	ug/kg	
bis(2-Chloroisopropyl)ether	< 330	330	ug/kg	
bis(2-Ethylhexyl)phthalate	< 330	330	ug/kg	
4-Bromophenyl phenyl ether	< 330	330	ug/kg	
Butyl benzyl phthalate	< 330	330	ug/kg	
Carbazole	< 330	330	ug/kg	
4-Chloroaniline	< 330	330	ug/kg	
4-Chloro-3-methylphenol	< 330	330	ug/kg	
2-Chloronaphthalene	< 330	330	ug/kg	
2-Chlorophenol	< 330	330	ug/kg	
4-Chlorophenyl phenyl ether	< 330	330	ug/kg	
Chrysene	< 330	330	ug/kg	
Di-n-butyl phthalate	< 330	330	ug/kg	
Di-n-octylphthalate	< 330	330	ug/kg	
Dibenzo(a,h)anthracene	< 90	90	ug/kg	
Dibenzofuran	< 330	330	ug/kg	
1,2-Dichlorobenzene	< 330	330	ug/kg	
1,3-Dichlorobenzene	< 330	330	ug/kg	
1,4-Dichlorobenzene	< 330	330	ug/kg	
3,3'-Dichlorobenzidine	< 660	660	ug/kg	
2,4-Dichlorophenol	< 330	330	ug/kg	
Diethyl phthalate	< 330	330	ug/kg	
2,4-Dimethylphenol	< 330	330	ug/kg	
Dimethyl phthalate	< 330	330	ug/kg	
4,6-Dinitro-2-methylphenol	< 1,600	1600	ug/kg	
2,4-Dinitrophenol	< 1,600	1600	ug/kg	
2,4-Dinitrotoluene	< 250	250	ug/kg	

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Analytical Report

Client: JOHNS MANVILLE
Project ID: Onyx Zion Landfill Clay
Sample ID: OZL-15 (12')
Sample No: 7-0800-005

Date Collected: 02/27/07
Time Collected: 10:55
Date Received: 02/28/07
Date Reported: 03/05/07

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Semi-Volatile Compounds — **Method: 8270C**	**Analysis Date: 03/02/07**			
2,6-Dinitrotoluene	< 260	260	ug/kg	
Fluoranthene	< 330	330	ug/kg	
Fluorene	< 330	330	ug/kg	
Hexachlorobenzene	< 330	330	ug/kg	
Hexachlorobutadiene	< 330	330	ug/kg	
Hexachlorocyclopentadiene	< 330	330	ug/kg	
Hexachloroethane	< 330	330	ug/kg	
Indeno(1,2,3-cd)pyrene	< 330	330	ug/kg	
Isophorone	< 330	330	ug/kg	
2-Methylnaphthalene	< 330	330	ug/kg	
2-Methylphenol	< 330	330	ug/kg	
3 & 4-Methylphenol	< 330	330	ug/kg	
Naphthalene	< 330	330	ug/kg	
2-Nitroaniline	< 1,600	1600	ug/kg	
3-Nitroaniline	< 1,600	1600	ug/kg	
4-Nitroaniline	< 1,600	1600	ug/kg	
Nitrobenzene	< 260	260	ug/kg	
2-Nitrophenol	< 1,600	1600	ug/kg	
4-Nitrophenol	< 1,600	1600	ug/kg	
n-Nitrosodi-n-propylamine	< 330	330	ug/kg	
n-Nitrosodimethylamine	< 330	330	ug/kg	
n-Nitrosodiphenylamine	< 330	330	ug/kg	
Pentachlorophenol	< 330	330	ug/kg	
Phenanthrene	< 330	330	ug/kg	
Phenol	< 330	330	ug/kg	
Pyrene	< 330	330	ug/kg	
Pyridine	< 330	330	ug/kg	
1,2,4-Trichlorobenzene	< 330	330	ug/kg	
2,4,5-Trichlorophenol	< 330	330	ug/kg	
2,4,6-Trichlorophenol	< 330	330	ug/kg	
Pesticides/PCBs — **Method: 8081A/8082**	**Analysis Date: 03/02/07**			
Aldrin	< 8.0	8.0	ug/kg	
Aroclor 1016	< 80.0	80.0	ug/kg	
Aroclor 1221	< 80.0	80.0	ug/kg	
Aroclor 1232	< 80.0	80.0	ug/kg	
Aroclor 1242	< 80.0	80.0	ug/kg	
Aroclor 1248	< 80.0	80.0	ug/kg	
Aroclor 1254	< 160	160	ug/kg	
Aroclor 1260	< 160	160	ug/kg	

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Analytical Report

Client:	JOHNS MANVILLE	**Date Collected:**	02/27/07
Project ID:	Onyx Zion Landfill Clay	**Time Collected:**	10:55
Sample ID:	OZL-15 (12')	**Date Received:**	02/28/07
Sample No:	7-0800-005	**Date Reported:**	03/05/07

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Pesticides/PCBs	**Method: 8081A/8082**		**Analysis Date:**	**03/02/07**	
alpha-BHC		< 2.0	2.0	ug/kg	
beta-BHC		< 8.0	8.0	ug/kg	
delta-BHC		< 8.0	8.0	ug/kg	
gamma-BHC (Lindane)		< 8.0	8.0	ug/kg	
alpha-Chlordane		< 80.0	80.0	ug/kg	
gamma-Chlordane		< 80.0	80.0	ug/kg	
4,4'-DDD		< 16.0	16.0	ug/kg	
4,4'-DDE		< 16.0	16.0	ug/kg	
4,4'-DDT		< 16.0	16.0	ug/kg	
Dieldrin		< 16.0	16.0	ug/kg	
Endosulfan I		< 8.0	8.0	ug/kg	
Endosulfan II		< 16.0	16.0	ug/kg	
Endosulfan sulfate		< 16.0	16.0	ug/kg	
Endrin		< 16.0	16.0	ug/kg	
Endrin aldehyde		< 16.0	16.0	ug/kg	
Endrin ketone		< 16.0	16.0	ug/kg	
Heptachlor		< 8.0	8.0	ug/kg	
Heptachlor epoxide		< 8.0	8.0	ug/kg	
Methoxychlor		< 80.0	80.0	ug/kg	
Toxaphene		< 160	160	ug/kg	
Total Metals	**Method: 6010B**		**Analysis Date:**	**03/01/07**	
Antimony		< 1.0	1.0	mg/kg	
Arsenic		8.6	0.2	mg/kg	
Barium		46.7	0.1	mg/kg	
Cadmium		0.7	0.1	mg/kg	
Chromium		21.0	0.1	mg/kg	
Lead		10.2	0.2	mg/kg	
Selenium		< 0.2	0.2	mg/kg	
Silver		< 0.1	0.1	mg/kg	
Total Metals	**Method: 7470A**		**Analysis Date:**	**03/01/07**	
Mercury		< 0.05	0.05	mg/kg	
pH @ 25°C, 1:10	**Method: 4500H+B**		**Analysis Date:**	**03/01/07**	
pH @ 25°C, 1:10		8.54		Units	

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Analytical Report

Client:	JOHNS MANVILLE	**Date Collected:**	02/27/07
Project ID:	Onyx Zion Landfill Clay	**Time Collected:**	11:05
Sample ID:	OZL-16 (6')	**Date Received:**	02/28/07
Sample No:	7-0800-006	**Date Reported:**	03/05/07

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Solids, Total	**Method: 160.3**		**Analysis Date:**	**03/01/07**	
Total Solids		88.95		%	
Volatile Organic Compounds	**Method: 5035A/8260B**		**Analysis Date:**	**03/01/07**	
Acetone		< 100	100	ug/kg	
Benzene		< 5.0	5.0	ug/kg	
Bromodichloromethane		< 5.0	5.0	ug/kg	
Bromoform		< 5.0	5.0	ug/kg	
Bromomethane		< 10.0	10.0	ug/kg	
2-Butanone (MEK)		< 10.0	10.0	ug/kg	
Carbon disulfide		< 5.0	5.0	ug/kg	
Carbon tetrachloride		< 5.0	5.0	ug/kg	
Chlorobenzene		< 5.0	5.0	ug/kg	
Chlorodibromomethane		< 5.0	5.0	ug/kg	
Chloroethane		< 10.0	10.0	ug/kg	
Chloroform		< 5.0	5.0	ug/kg	
Chloromethane		< 10.0	10.0	ug/kg	
1,1-Dichloroethane		< 5.0	5.0	ug/kg	
1,2-Dichloroethane		< 5.0	5.0	ug/kg	
1,1-Dichloroethene		< 5.0	5.0	ug/kg	
cis-1,2-Dichloroethene		< 5.0	5.0	ug/kg	
trans-1,2-Dichloroethene		< 5.0	5.0	ug/kg	
1,2-Dichloropropane		< 5.0	5.0	ug/kg	
cis-1,3-Dichloropropene		< 5.0	5.0	ug/kg	
trans-1,3-Dichloropropene		< 5.0	5.0	ug/kg	
Ethylbenzene		< 5.0	5.0	ug/kg	
2-Hexanone		< 10.0	10.0	ug/kg	
Methyl-tert-butylether (MTBE)		< 5.0	5.0	ug/kg	
4-Methyl-2-pentanone (MIBK)		< 10.0	10.0	ug/kg	
Methylene chloride		< 5.0	5.0	ug/kg	
Styrene		< 5.0	5.0	ug/kg	
1,1,2,2-Tetrachloroethane		< 5.0	5.0	ug/kg	
Tetrachloroethene		< 5.0	5.0	ug/kg	
Toluene		< 5.0	5.0	ug/kg	
1,1,1-Trichloroethane		< 5.0	5.0	ug/kg	
1,1,2-Trichloroethane		< 5.0	5.0	ug/kg	
Trichloroethene		< 5.0	5.0	ug/kg	
Vinyl acetate		< 10.0	10.0	ug/kg	
Vinyl chloride		< 10.0	10.0	ug/kg	
Xylene, Total		< 5.0	5.0	ug/kg	

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Analytical Report

Client:	JOHNS MANVILLE	**Date Collected:**	02/27/07
Project ID:	Onyx Zion Landfill Clay	**Time Collected:**	11:05
Sample ID:	OZL-16 (6')	**Date Received:**	02/28/07
Sample No:	7-0800-006	**Date Reported:**	03/05/07

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Semi-Volatile Compounds **Method: 8270C**		**Analysis Date: 03/02/07**		
Acenaphthene	< 330	330	ug/kg	
Acenaphthylene	< 330	330	ug/kg	
Anthracene	< 330	330	ug/kg	
Benzidine	< 330	330	ug/kg	
Benzo(a)anthracene	< 330	330	ug/kg	
Benzo(a)pyrene	< 90	90	ug/kg	
Benzo(b)fluoranthene	< 330	330	ug/kg	
Benzo(k)fluoranthene	< 330	330	ug/kg	
Benzo(ghi)perylene	< 330	330	ug/kg	
Benzoic acid	< 330	330	ug/kg	
Benzyl alcohol	< 330	330	ug/kg	
bis(2-Chloroethoxy)methane	< 330	330	ug/kg	
bis(2-Chloroethyl)ether	< 330	330	ug/kg	
bis(2-Chloroisopropyl)ether	< 330	330	ug/kg	
bis(2-Ethylhexyl)phthalate	< 330	330	ug/kg	
4-Bromophenyl phenyl ether	< 330	330	ug/kg	
Butyl benzyl phthalate	< 330	330	ug/kg	
Carbazole	< 330	330	ug/kg	
4-Chloroaniline	< 330	330	ug/kg	
4-Chloro-3-methylphenol	< 330	330	ug/kg	
2-Chloronaphthalene	< 330	330	ug/kg	
2-Chlorophenol	< 330	330	ug/kg	
4-Chlorophenyl phenyl ether	< 330	330	ug/kg	
Chrysene	< 330	330	ug/kg	
Di-n-butyl phthalate	< 330	330	ug/kg	
Di-n-octylphthalate	< 330	330	ug/kg	
Dibenzo(a,h)anthracene	< 90	90	ug/kg	
Dibenzofuran	< 330	330	ug/kg	
1,2-Dichlorobenzene	< 330	330	ug/kg	
1,3-Dichlorobenzene	< 330	330	ug/kg	
1,4-Dichlorobenzene	< 330	330	ug/kg	
3,3'-Dichlorobenzidine	< 660	660	ug/kg	
2,4-Dichlorophenol	< 330	330	ug/kg	
Diethyl phthalate	< 330	330	ug/kg	
2,4-Dimethylphenol	< 330	330	ug/kg	
Dimethyl phthalate	< 330	330	ug/kg	
4,6-Dinitro-2-methylphenol	< 1,600	1600	ug/kg	
2,4-Dinitrophenol	< 1,600	1600	ug/kg	
2,4-Dinitrotoluene	< 250	250	ug/kg	

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Analytical Report

Client: JOHNS MANVILLE
Project ID: Onyx Zion Landfill Clay
Sample ID: OZL-16 (6')
Sample No: 7-0800-006

Date Collected: 02/27/07
Time Collected: 11:05
Date Received: 02/28/07
Date Reported: 03/05/07

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Semi-Volatile Compounds	**Method: 8270C**		**Analysis Date:**	**03/02/07**	
2,6-Dinitrotoluene		< 260	260	ug/kg	
Fluoranthene		< 330	330	ug/kg	
Fluorene		< 330	330	ug/kg	
Hexachlorobenzene		< 330	330	ug/kg	
Hexachlorobutadiene		< 330	330	ug/kg	
Hexachlorocyclopentadiene		< 330	330	ug/kg	
Hexachloroethane		< 330	330	ug/kg	
Indeno(1,2,3-cd)pyrene		< 330	330	ug/kg	
Isophorone		< 330	330	ug/kg	
2-Methylnaphthalene		< 330	330	ug/kg	
2-Methylphenol		< 330	330	ug/kg	
3 & 4-Methylphenol		< 330	330	ug/kg	
Naphthalene		< 330	330	ug/kg	
2-Nitroaniline		< 1,600	1600	ug/kg	
3-Nitroaniline		< 1,600	1600	ug/kg	
4-Nitroaniline		< 1,600	1600	ug/kg	
Nitrobenzene		< 260	260	ug/kg	
2-Nitrophenol		< 1,600	1600	ug/kg	
4-Nitrophenol		< 1,600	1600	ug/kg	
n-Nitrosodi-n-propylamine		< 330	330	ug/kg	
n-Nitrosodimethylamine		< 330	330	ug/kg	
n-Nitrosodiphenylamine		< 330	330	ug/kg	
Pentachlorophenol		< 330	330	ug/kg	
Phenanthrene		< 330	330	ug/kg	
Phenol		< 330	330	ug/kg	
Pyrene		< 330	330	ug/kg	
Pyridine		< 330	330	ug/kg	
1,2,4-Trichlorobenzene		< 330	330	ug/kg	
2,4,5-Trichlorophenol		< 330	330	ug/kg	
2,4,6-Trichlorophenol		< 330	330	ug/kg	
Pesticides/PCBs	**Method: 8081A/8082**		**Analysis Date:**	**03/02/07**	
Aldrin		< 8.0	8.0	ug/kg	
Aroclor 1016		< 80.0	80.0	ug/kg	
Aroclor 1221		< 80.0	80.0	ug/kg	
Aroclor 1232		< 80.0	80.0	ug/kg	
Aroclor 1242		< 80.0	80.0	ug/kg	
Aroclor 1248		< 80.0	80.0	ug/kg	
Aroclor 1254		< 160	160	ug/kg	
Aroclor 1260		< 160	160	ug/kg	

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Analytical Report

Client:	JOHNS MANVILLE	**Date Collected:**	02/27/07
Project ID:	Onyx Zion Landfill Clay	**Time Collected:**	11:05
Sample ID:	OZL-16 (6')	**Date Received:**	02/28/07
Sample No:	7-0800-006	**Date Reported:**	03/05/07

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Pesticides/PCBs	**Method: 8081A/8082**	**Analysis Date:**	**03/02/07**	
alpha-BHC	< 2.0	2.0	ug/kg	
beta-BHC	< 8.0	8.0	ug/kg	
delta-BHC	< 8.0	8.0	ug/kg	
gamma-BHC (Lindane)	< 8.0	8.0	ug/kg	
alpha-Chlordane	< 80.0	80.0	ug/kg	
gamma-Chlordane	< 80.0	80.0	ug/kg	
4,4'-DDD	< 16.0	16.0	ug/kg	
4,4'-DDE	< 16.0	16.0	ug/kg	
4,4'-DDT	< 16.0	16.0	ug/kg	
Dieldrin	< 16.0	16.0	ug/kg	
Endosulfan I	< 8.0	8.0	ug/kg	
Endosulfan II	< 16.0	16.0	ug/kg	
Endosulfan sulfate	< 16.0	16.0	ug/kg	
Endrin	< 16.0	16.0	ug/kg	
Endrin aldehyde	< 16.0	16.0	ug/kg	
Endrin ketone	< 16.0	16.0	ug/kg	
Heptachlor	< 8.0	8.0	ug/kg	
Heptachlor epoxide	< 8.0	8.0	ug/kg	
Methoxychlor	< 80.0	80.0	ug/kg	
Toxaphene	< 160	160	ug/kg	
Total Metals	**Method: 6010B**	**Analysis Date:**	**03/01/07**	
Antimony	< 1.0	1.0	mg/kg	
Arsenic	6.1	0.2	mg/kg	
Barium	32.9	0.1	mg/kg	
Cadmium	0.7	0.1	mg/kg	
Chromium	17.5	0.1	mg/kg	
Lead	8.4	0.2	mg/kg	
Selenium	< 0.2	0.2	mg/kg	
Silver	< 0.1	0.1	mg/kg	
Total Metals	**Method: 7470A**	**Analysis Date:**	**03/01/07**	
Mercury	< 0.05	0.05	mg/kg	
pH @ 25°C, 1:10	**Method: 4500H+B**	**Analysis Date:**	**03/01/07**	
pH @ 25°C, 1:10	8.68		Units	

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Analytical Report

Client:	JOHNS MANVILLE	**Date Collected:**	02/27/07
Project ID:	Onyx Zion Landfill Clay	**Time Collected:**	11:15
Sample ID:	OZL-16 (12')	**Date Received:**	02/28/07
Sample No:	7-0800-007	**Date Reported:**	03/05/07

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Solids, Total	**Method: 160.3**		**Analysis Date:**	**03/01/07**	
Total Solids		87.44		%	
Volatile Organic Compounds	**Method: 5035A/8260B**		**Analysis Date:**	**03/01/07**	
Acetone		< 100	100	ug/kg	
Benzene		< 5.0	5.0	ug/kg	
Bromodichloromethane		< 5.0	5.0	ug/kg	
Bromoform		< 5.0	5.0	ug/kg	
Bromomethane		< 10.0	10.0	ug/kg	
2-Butanone (MEK)		< 10.0	10.0	ug/kg	
Carbon disulfide		< 5.0	5.0	ug/kg	
Carbon tetrachloride		< 5.0	5.0	ug/kg	
Chlorobenzene		< 5.0	5.0	ug/kg	
Chlorodibromomethane		< 5.0	5.0	ug/kg	
Chloroethane		< 10.0	10.0	ug/kg	
Chloroform		< 5.0	5.0	ug/kg	
Chloromethane		< 10.0	10.0	ug/kg	
1,1-Dichloroethane		< 5.0	5.0	ug/kg	
1,2-Dichloroethane		< 5.0	5.0	ug/kg	
1,1-Dichloroethene		< 5.0	5.0	ug/kg	
cis-1,2-Dichloroethene		< 5.0	5.0	ug/kg	
trans-1,2-Dichloroethene		< 5.0	5.0	ug/kg	
1,2-Dichloropropane		< 5.0	5.0	ug/kg	
cis-1,3-Dichloropropene		< 5.0	5.0	ug/kg	
trans-1,3-Dichloropropene		< 5.0	5.0	ug/kg	
Ethylbenzene		< 5.0	5.0	ug/kg	
2-Hexanone		< 10.0	10.0	ug/kg	
Methyl-tert-butylether (MTBE)		< 5.0	5.0	ug/kg	
4-Methyl-2-pentanone (MIBK)		< 10.0	10.0	ug/kg	
Methylene chloride		< 5.0	5.0	ug/kg	
Styrene		< 5.0	5.0	ug/kg	
1,1,2,2-Tetrachloroethane		< 5.0	5.0	ug/kg	
Tetrachloroethene		< 5.0	5.0	ug/kg	
Toluene		< 5.0	5.0	ug/kg	
1,1,1-Trichloroethane		< 5.0	5.0	ug/kg	
1,1,2-Trichloroethane		< 5.0	5.0	ug/kg	
Trichloroethene		< 5.0	5.0	ug/kg	
Vinyl acetate		< 10.0	10.0	ug/kg	
Vinyl chloride		< 10.0	10.0	ug/kg	
Xylene, Total		< 5.0	5.0	ug/kg	

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Analytical Report

Client:	JOHNS MANVILLE	**Date Collected:**	02/27/07
Project ID:	Onyx Zion Landfill Clay	**Time Collected:**	11:15
Sample ID:	OZL-16 (12')	**Date Received:**	02/28/07
Sample No:	7-0800-007	**Date Reported:**	03/05/07

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Semi-Volatile Compounds **Method: 8270C**		**Analysis Date:**	**03/02/07**	
Acenaphthene	< 330	330	ug/kg	
Acenaphthylene	< 330	330	ug/kg	
Anthracene	< 330	330	ug/kg	
Benzidine	< 330	330	ug/kg	
Benzo(a)anthracene	< 330	330	ug/kg	
Benzo(a)pyrene	< 90	90	ug/kg	
Benzo(b)fluoranthene	< 330	330	ug/kg	
Benzo(k)fluoranthene	< 330	330	ug/kg	
Benzo(ghi)perylene	< 330	330	ug/kg	
Benzoic acid	< 330	330	ug/kg	
Benzyl alcohol	< 330	330	ug/kg	
bis(2-Chloroethoxy)methane	< 330	330	ug/kg	
bis(2-Chloroethyl)ether	< 330	330	ug/kg	
bis(2-Chloroisopropyl)ether	< 330	330	ug/kg	
bis(2-Ethylhexyl)phthalate	< 330	330	ug/kg	
4-Bromophenyl phenyl ether	< 330	330	ug/kg	
Butyl benzyl phthalate	< 330	330	ug/kg	
Carbazole	< 330	330	ug/kg	
4-Chloroaniline	< 330	330	ug/kg	
4-Chloro-3-methylphenol	< 330	330	ug/kg	
2-Chloronaphthalene	< 330	330	ug/kg	
2-Chlorophenol	< 330	330	ug/kg	
4-Chlorophenyl phenyl ether	< 330	330	ug/kg	
Chrysene	< 330	330	ug/kg	
Di-n-butyl phthalate	< 330	330	ug/kg	
Di-n-octylphthalate	< 330	330	ug/kg	
Dibenzo(a,h)anthracene	< 90	90	ug/kg	
Dibenzofuran	< 330	330	ug/kg	
1,2-Dichlorobenzene	< 330	330	ug/kg	
1,3-Dichlorobenzene	< 330	330	ug/kg	
1,4-Dichlorobenzene	< 330	330	ug/kg	
3,3'-Dichlorobenzidine	< 660	660	ug/kg	
2,4-Dichlorophenol	< 330	330	ug/kg	
Diethyl phthalate	< 330	330	ug/kg	
2,4-Dimethylphenol	< 330	330	ug/kg	
Dimethyl phthalate	< 330	330	ug/kg	
4,6-Dinitro-2-methylphenol	< 1,600	1600	ug/kg	
2,4-Dinitrophenol	< 1,600	1600	ug/kg	
2,4-Dinitrotoluene	< 250	250	ug/kg	

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Analytical Report

Client: JOHNS MANVILLE
Project ID: Onyx Zion Landfill Clay
Sample ID: OZL-16 (12')
Sample No: 7-0800-007

Date Collected: 02/27/07
Time Collected: 11:15
Date Received: 02/28/07
Date Reported: 03/05/07

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Semi-Volatile Compounds	**Method: 8270C**		**Analysis Date:**	**03/02/07**	
2,6-Dinitrotoluene		< 260	260	ug/kg	
Fluoranthene		< 330	330	ug/kg	
Fluorene		< 330	330	ug/kg	
Hexachlorobenzene		< 330	330	ug/kg	
Hexachlorobutadiene		< 330	330	ug/kg	
Hexachlorocyclopentadiene		< 330	330	ug/kg	
Hexachloroethane		< 330	330	ug/kg	
Indeno(1,2,3-cd)pyrene		< 330	330	ug/kg	
Isophorone		< 330	330	ug/kg	
2-Methylnaphthalene		< 330	330	ug/kg	
2-Methylphenol		< 330	330	ug/kg	
3 & 4-Methylphenol		< 330	330	ug/kg	
Naphthalene		< 330	330	ug/kg	
2-Nitroaniline		< 1,600	1600	ug/kg	
3-Nitroaniline		< 1,600	1600	ug/kg	
4-Nitroaniline		< 1,600	1600	ug/kg	
Nitrobenzene		< 260	260	ug/kg	
2-Nitrophenol		< 1,600	1600	ug/kg	
4-Nitrophenol		< 1,600	1600	ug/kg	
n-Nitrosodi-n-propylamine		< 330	330	ug/kg	
n-Nitrosodimethylamine		< 330	330	ug/kg	
n-Nitrosodiphenylamine		< 330	330	ug/kg	
Pentachlorophenol		< 330	330	ug/kg	
Phenanthrene		< 330	330	ug/kg	
Phenol		< 330	330	ug/kg	
Pyrene		< 330	330	ug/kg	
Pyridine		< 330	330	ug/kg	
1,2,4-Trichlorobenzene		< 330	330	ug/kg	
2,4,5-Trichlorophenol		< 330	330	ug/kg	
2,4,6-Trichlorophenol		< 330	330	ug/kg	
Pesticides/PCBs	**Method: 8081A/8082**		**Analysis Date:**	**03/02/07**	
Aldrin		< 8.0	8.0	ug/kg	
Aroclor 1016		< 80.0	80.0	ug/kg	
Aroclor 1221		< 80.0	80.0	ug/kg	
Aroclor 1232		< 80.0	80.0	ug/kg	
Aroclor 1242		< 80.0	80.0	ug/kg	
Aroclor 1248		< 80.0	80.0	ug/kg	
Aroclor 1254		< 160	160	ug/kg	
Aroclor 1260		< 160	160	ug/kg	

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Analytical Report

Client:	JOHNS MANVILLE	**Date Collected:**	02/27/07
Project ID:	Onyx Zion Landfill Clay	**Time Collected:**	11:15
Sample ID:	OZL-16 (12')	**Date Received:**	02/28/07
Sample No:	7-0800-007	**Date Reported:**	03/05/07

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Pesticides/PCBs	**Method: 8081A/8082**		**Analysis Date:**	**03/02/07**	
alpha-BHC		< 2.0	2.0	ug/kg	
beta-BHC		< 8.0	8.0	ug/kg	
delta-BHC		< 8.0	8.0	ug/kg	
gamma-BHC (Lindane)		< 8.0	8.0	ug/kg	
alpha-Chlordane		< 80.0	80.0	ug/kg	
gamma-Chlordane		< 80.0	80.0	ug/kg	
4,4'-DDD		< 16.0	16.0	ug/kg	
4,4'-DDE		< 16.0	16.0	ug/kg	
4,4'-DDT		< 16.0	16.0	ug/kg	
Dieldrin		< 16.0	16.0	ug/kg	
Endosulfan I		< 8.0	8.0	ug/kg	
Endosulfan II		< 16.0	16.0	ug/kg	
Endosulfan sulfate		< 16.0	16.0	ug/kg	
Endrin		< 16.0	16.0	ug/kg	
Endrin aldehyde		< 16.0	16.0	ug/kg	
Endrin ketone		< 16.0	16.0	ug/kg	
Heptachlor		< 8.0	8.0	ug/kg	
Heptachlor epoxide		< 8.0	8.0	ug/kg	
Methoxychlor		< 80.0	80.0	ug/kg	
Toxaphene		< 160	160	ug/kg	
Total Metals	**Method: 6010B**		**Analysis Date:**	**03/01/07**	
Antimony		< 1.0	1.0	mg/kg	
Arsenic		8.7	0.2	mg/kg	
Barium		47.3	0.1	mg/kg	
Cadmium		0.8	0.1	mg/kg	
Chromium		19.6	0.1	mg/kg	
Lead		11.3	0.2	mg/kg	
Selenium		< 0.2	0.2	mg/kg	
Silver		< 0.1	0.1	mg/kg	
Total Metals	**Method: 7470A**		**Analysis Date:**	**03/01/07**	
Mercury		< 0.05	0.05	mg/kg	
pH @ 25°C, 1:10	**Method: 4500H+B**		**Analysis Date:**	**03/01/07**	
pH @ 25°C, 1:10		8.76		Units	

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Analytical Report

Client:	JOHNS MANVILLE	**Date Collected:**	02/27/07
Project ID:	Onyx Zion Landfill Clay	**Time Collected:**	11:25
Sample ID:	OZL-17 (6')	**Date Received:**	02/28/07
Sample No:	7-0800-008	**Date Reported:**	03/05/07

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Solids, Total	**Method: 160.3**		**Analysis Date:**	**03/01/07**	
Total Solids		90.52		%	
Volatile Organic Compounds	**Method: 5035A/8260B**		**Analysis Date:**	**03/01/07**	
Acetone		< 100	100	ug/kg	
Benzene		< 5.0	5.0	ug/kg	
Bromodichloromethane		< 5.0	5.0	ug/kg	
Bromoform		< 5.0	5.0	ug/kg	
Bromomethane		< 10.0	10.0	ug/kg	
2-Butanone (MEK)		< 10.0	10.0	ug/kg	
Carbon disulfide		< 5.0	5.0	ug/kg	
Carbon tetrachloride		< 5.0	5.0	ug/kg	
Chlorobenzene		< 5.0	5.0	ug/kg	
Chlorodibromomethane		< 5.0	5.0	ug/kg	
Chloroethane		< 10.0	10.0	ug/kg	
Chloroform		< 5.0	5.0	ug/kg	
Chloromethane		< 10.0	10.0	ug/kg	
1,1-Dichloroethane		< 5.0	5.0	ug/kg	
1,2-Dichloroethane		< 5.0	5.0	ug/kg	
1,1-Dichloroethene		< 5.0	5.0	ug/kg	
cis-1,2-Dichloroethene		< 5.0	5.0	ug/kg	
trans-1,2-Dichloroethene		< 5.0	5.0	ug/kg	
1,2-Dichloropropane		< 5.0	5.0	ug/kg	
cis-1,3-Dichloropropene		< 5.0	5.0	ug/kg	
trans-1,3-Dichloropropene		< 5.0	5.0	ug/kg	
Ethylbenzene		< 5.0	5.0	ug/kg	
2-Hexanone		< 10.0	10.0	ug/kg	
Methyl-tert-butylether (MTBE)		< 5.0	5.0	ug/kg	
4-Methyl-2-pentanone (MIBK)		< 10.0	10.0	ug/kg	
Methylene chloride		< 5.0	5.0	ug/kg	
Styrene		< 5.0	5.0	ug/kg	
1,1,2,2-Tetrachloroethane		< 5.0	5.0	ug/kg	
Tetrachloroethene		< 5.0	5.0	ug/kg	
Toluene		< 5.0	5.0	ug/kg	
1,1,1-Trichloroethane		< 5.0	5.0	ug/kg	
1,1,2-Trichloroethane		< 5.0	5.0	ug/kg	
Trichloroethene		< 5.0	5.0	ug/kg	
Vinyl acetate		< 10.0	10.0	ug/kg	
Vinyl chloride		< 10.0	10.0	ug/kg	
Xylene, Total		< 5.0	5.0	ug/kg	

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Analytical Report

Client:	JOHNS MANVILLE	**Date Collected:**	02/27/07
Project ID:	Onyx Zion Landfill Clay	**Time Collected:**	11:25
Sample ID:	OZL-17 (6')	**Date Received:**	02/28/07
Sample No:	7-0800-008	**Date Reported:**	03/05/07

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Semi-Volatile Compounds	**Method: 8270C**		**Analysis Date:**	**03/02/07**	
Acenaphthene		< 330	330	ug/kg	
Acenaphthylene		< 330	330	ug/kg	
Anthracene		< 330	330	ug/kg	
Benzidine		< 330	330	ug/kg	
Benzo(a)anthracene		< 330	330	ug/kg	
Benzo(a)pyrene		< 90	90	ug/kg	
Benzo(b)fluoranthene		< 330	330	ug/kg	
Benzo(k)fluoranthene		< 330	330	ug/kg	
Benzo(ghi)perylene		< 330	330	ug/kg	
Benzoic acid		< 330	330	ug/kg	
Benzyl alcohol		< 330	330	ug/kg	
bis(2-Chloroethoxy)methane		< 330	330	ug/kg	
bis(2-Chloroethyl)ether		< 330	330	ug/kg	
bis(2-Chloroisopropyl)ether		< 330	330	ug/kg	
bis(2-Ethylhexyl)phthalate		< 330	330	ug/kg	
4-Bromophenyl phenyl ether		< 330	330	ug/kg	
Butyl benzyl phthalate		< 330	330	ug/kg	
Carbazole		< 330	330	ug/kg	
4-Chloroaniline		< 330	330	ug/kg	
4-Chloro-3-methylphenol		< 330	330	ug/kg	
2-Chloronaphthalene		< 330	330	ug/kg	
2-Chlorophenol		< 330	330	ug/kg	
4-Chlorophenyl phenyl ether		< 330	330	ug/kg	
Chrysene		< 330	330	ug/kg	
Di-n-butyl phthalate		< 330	330	ug/kg	
Di-n-octylphthalate		< 330	330	ug/kg	
Dibenzo(a,h)anthracene		< 90	90	ug/kg	
Dibenzofuran		< 330	330	ug/kg	
1,2-Dichlorobenzene		< 330	330	ug/kg	
1,3-Dichlorobenzene		< 330	330	ug/kg	
1,4-Dichlorobenzene		< 330	330	ug/kg	
3,3'-Dichlorobenzidine		< 660	660	ug/kg	
2,4-Dichlorophenol		< 330	330	ug/kg	
Diethyl phthalate		< 330	330	ug/kg	
2,4-Dimethylphenol		< 330	330	ug/kg	
Dimethyl phthalate		< 330	330	ug/kg	
4,6-Dinitro-2-methylphenol		< 1,600	1600	ug/kg	
2,4-Dinitrophenol		< 1,600	1600	ug/kg	
2,4-Dinitrotoluene		< 250	250	ug/kg	

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Analytical Report

Client: JOHNS MANVILLE
Project ID: Onyx Zion Landfill Clay
Sample ID: OZL-17 (6')
Sample No: 7-0800-008

Date Collected: 02/27/07
Time Collected: 11:25
Date Received: 02/28/07
Date Reported: 03/05/07

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Semi-Volatile Compounds	**Method: 8270C**		**Analysis Date:**	**03/02/07**	
2,6-Dinitrotoluene		< 260	260	ug/kg	
Fluoranthene		< 330	330	ug/kg	
Fluorene		< 330	330	ug/kg	
Hexachlorobenzene		< 330	330	ug/kg	
Hexachlorobutadiene		< 330	330	ug/kg	
Hexachlorocyclopentadiene		< 330	330	ug/kg	
Hexachloroethane		< 330	330	ug/kg	
Indeno(1,2,3-cd)pyrene		< 330	330	ug/kg	
Isophorone		< 330	330	ug/kg	
2-Methylnaphthalene		< 330	330	ug/kg	
2-Methylphenol		< 330	330	ug/kg	
3 & 4-Methylphenol		< 330	330	ug/kg	
Naphthalene		< 330	330	ug/kg	
2-Nitroaniline		< 1,600	1600	ug/kg	
3-Nitroaniline		< 1,600	1600	ug/kg	
4-Nitroaniline		< 1,600	1600	ug/kg	
Nitrobenzene		< 260	260	ug/kg	
2-Nitrophenol		< 1,600	1600	ug/kg	
4-Nitrophenol		< 1,600	1600	ug/kg	
n-Nitrosodi-n-propylamine		< 330	330	ug/kg	
n-Nitrosodimethylamine		< 330	330	ug/kg	
n-Nitrosodiphenylamine		< 330	330	ug/kg	
Pentachlorophenol		< 330	330	ug/kg	
Phenanthrene		< 330	330	ug/kg	
Phenol		< 330	330	ug/kg	
Pyrene		< 330	330	ug/kg	
Pyridine		< 330	330	ug/kg	
1,2,4-Trichlorobenzene		< 330	330	ug/kg	
2,4,5-Trichlorophenol		< 330	330	ug/kg	
2,4,6-Trichlorophenol		< 330	330	ug/kg	
Pesticides/PCBs	**Method: 8081A/8082**		**Analysis Date:**	**03/02/07**	
Aldrin		< 8.0	8.0	ug/kg	
Aroclor 1016		< 80.0	80.0	ug/kg	
Aroclor 1221		< 80.0	80.0	ug/kg	
Aroclor 1232		< 80.0	80.0	ug/kg	
Aroclor 1242		< 80.0	80.0	ug/kg	
Aroclor 1248		< 80.0	80.0	ug/kg	
Aroclor 1254		< 160	160	ug/kg	
Aroclor 1260		< 160	160	ug/kg	

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Analytical Report

Client:	JOHNS MANVILLE	**Date Collected:**	02/27/07
Project ID:	Onyx Zion Landfill Clay	**Time Collected:**	11:25
Sample ID:	OZL-17 (6')	**Date Received:**	02/28/07
Sample No:	7-0800-008	**Date Reported:**	03/05/07

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Pesticides/PCBs	**Method: 8081A/8082**		**Analysis Date:**	**03/02/07**	
alpha-BHC		< 2.0	2.0	ug/kg	
beta-BHC		< 8.0	8.0	ug/kg	
delta-BHC		< 8.0	8.0	ug/kg	
gamma-BHC (Lindane)		< 8.0	8.0	ug/kg	
alpha-Chlordane		< 80.0	80.0	ug/kg	
gamma-Chlordane		< 80.0	80.0	ug/kg	
4,4'-DDD		< 16.0	16.0	ug/kg	
4,4'-DDE		< 16.0	16.0	ug/kg	
4,4'-DDT		< 16.0	16.0	ug/kg	
Dieldrin		< 16.0	16.0	ug/kg	
Endosulfan I		< 8.0	8.0	ug/kg	
Endosulfan II		< 16.0	16.0	ug/kg	
Endosulfan sulfate		< 16.0	16.0	ug/kg	
Endrin		< 16.0	16.0	ug/kg	
Endrin aldehyde		< 16.0	16.0	ug/kg	
Endrin ketone		< 16.0	16.0	ug/kg	
Heptachlor		< 8.0	8.0	ug/kg	
Heptachlor epoxide		< 8.0	8.0	ug/kg	
Methoxychlor		< 80.0	80.0	ug/kg	
Toxaphene		< 160	160	ug/kg	
Total Metals	**Method: 6010B**		**Analysis Date:**	**03/01/07**	
Antimony		< 1.0	1.0	mg/kg	
Arsenic		10.1	0.2	mg/kg	
Barium		49.8	0.1	mg/kg	
Cadmium		0.7	0.1	mg/kg	
Chromium		17.8	0.1	mg/kg	
Lead		11.8	0.2	mg/kg	
Selenium		< 0.2	0.2	mg/kg	
Silver		< 0.1	0.1	mg/kg	
Total Metals	**Method: 7470A**		**Analysis Date:**	**03/01/07**	
Mercury		< 0.05	0.05	mg/kg	
pH @ 25°C, 1:10	**Method: 4500H+B**		**Analysis Date:**	**03/01/07**	
pH @ 25°C, 1:10		8.67		Units	

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Analytical Report

Client:	JOHNS MANVILLE	**Date Collected:**	02/27/07
Project ID:	Onyx Zion Landfill Clay	**Time Collected:**	11:30
Sample ID:	OZL-17 (6') DUP	**Date Received:**	02/28/07
Sample No:	7-0800-009	**Date Reported:**	03/05/07

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Solids, Total	**Method: 160.3**		**Analysis Date:**	**03/01/07**	
Total Solids		91.2		%	
Volatile Organic Compounds	**Method: 5035A/8260B**		**Analysis Date:**	**03/01/07**	
Acetone		< 100	100	ug/kg	
Benzene		< 5.0	5.0	ug/kg	
Bromodichloromethane		< 5.0	5.0	ug/kg	
Bromoform		< 5.0	5.0	ug/kg	
Bromomethane		< 10.0	10.0	ug/kg	
2-Butanone (MEK)		< 10.0	10.0	ug/kg	
Carbon disulfide		< 5.0	5.0	ug/kg	
Carbon tetrachloride		< 5.0	5.0	ug/kg	
Chlorobenzene		< 5.0	5.0	ug/kg	
Chlorodibromomethane		< 5.0	5.0	ug/kg	
Chloroethane		< 10.0	10.0	ug/kg	
Chloroform		< 5.0	5.0	ug/kg	
Chloromethane		< 10.0	10.0	ug/kg	
1,1-Dichloroethane		< 5.0	5.0	ug/kg	
1,2-Dichloroethane		< 5.0	5.0	ug/kg	
1,1-Dichloroethene		< 5.0	5.0	ug/kg	
cis-1,2-Dichloroethene		< 5.0	5.0	ug/kg	
trans-1,2-Dichloroethene		< 5.0	5.0	ug/kg	
1,2-Dichloropropane		< 5.0	5.0	ug/kg	
cis-1,3-Dichloropropene		< 5.0	5.0	ug/kg	
trans-1,3-Dichloropropene		< 5.0	5.0	ug/kg	
Ethylbenzene		< 5.0	5.0	ug/kg	
2-Hexanone		< 10.0	10.0	ug/kg	
Methyl-tert-butylether (MTBE)		< 5.0	5.0	ug/kg	
4-Methyl-2-pentanone (MIBK)		< 10.0	10.0	ug/kg	
Methylene chloride		< 5.0	5.0	ug/kg	
Styrene		< 5.0	5.0	ug/kg	
1,1,2,2-Tetrachloroethane		< 5.0	5.0	ug/kg	
Tetrachloroethene		< 5.0	5.0	ug/kg	
Toluene		< 5.0	5.0	ug/kg	
1,1,1-Trichloroethane		< 5.0	5.0	ug/kg	
1,1,2-Trichloroethane		< 5.0	5.0	ug/kg	
Trichloroethene		< 5.0	5.0	ug/kg	
Vinyl acetate		< 10.0	10.0	ug/kg	
Vinyl chloride		< 10.0	10.0	ug/kg	
Xylene, Total		< 5.0	5.0	ug/kg	

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Analytical Report

Client:	JOHNS MANVILLE		**Date Collected:**	02/27/07
Project ID:	Onyx Zion Landfill Clay		**Time Collected:**	11:30
Sample ID:	OZL-17 (6') DUP		**Date Received:**	02/28/07
Sample No:	7-0800-009		**Date Reported:**	03/05/07

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Semi-Volatile Compounds **Method: 8270C**		**Analysis Date:**	**03/02/07**	
Acenaphthene	< 330	330	ug/kg	
Acenaphthylene	< 330	330	ug/kg	
Anthracene	< 330	330	ug/kg	
Benzidine	< 330	330	ug/kg	
Benzo(a)anthracene	< 330	330	ug/kg	
Benzo(a)pyrene	< 90	90	ug/kg	
Benzo(b)fluoranthene	< 330	330	ug/kg	
Benzo(k)fluoranthene	< 330	330	ug/kg	
Benzo(ghi)perylene	< 330	330	ug/kg	
Benzoic acid	< 330	330	ug/kg	
Benzyl alcohol	< 330	330	ug/kg	
bis(2-Chloroethoxy)methane	< 330	330	ug/kg	
bis(2-Chloroethyl)ether	< 330	330	ug/kg	
bis(2-Chloroisopropyl)ether	< 330	330	ug/kg	
bis(2-Ethylhexyl)phthalate	< 330	330	ug/kg	
4-Bromophenyl phenyl ether	< 330	330	ug/kg	
Butyl benzyl phthalate	< 330	330	ug/kg	
Carbazole	< 330	330	ug/kg	
4-Chloroaniline	< 330	330	ug/kg	
4-Chloro-3-methylphenol	< 330	330	ug/kg	
2-Chloronaphthalene	< 330	330	ug/kg	
2-Chlorophenol	< 330	330	ug/kg	
4-Chlorophenyl phenyl ether	< 330	330	ug/kg	
Chrysene	< 330	330	ug/kg	
Di-n-butyl phthalate	< 330	330	ug/kg	
Di-n-octylphthalate	< 330	330	ug/kg	
Dibenzo(a,h)anthracene	< 90	90	ug/kg	
Dibenzofuran	< 330	330	ug/kg	
1,2-Dichlorobenzene	< 330	330	ug/kg	
1,3-Dichlorobenzene	< 330	330	ug/kg	
1,4-Dichlorobenzene	< 330	330	ug/kg	
3,3'-Dichlorobenzidine	< 660	660	ug/kg	
2,4-Dichlorophenol	< 330	330	ug/kg	
Diethyl phthalate	< 330	330	ug/kg	
2,4-Dimethylphenol	< 330	330	ug/kg	
Dimethyl phthalate	< 330	330	ug/kg	
4,6-Dinitro-2-methylphenol	< 1,600	1600	ug/kg	
2,4-Dinitrophenol	< 1,600	1600	ug/kg	
2,4-Dinitrotoluene	< 250	250	ug/kg	

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Analytical Report

Client:	JOHNS MANVILLE	**Date Collected:**	02/27/07
Project ID:	Onyx Zion Landfill Clay	**Time Collected:**	11:30
Sample ID:	OZL-17 (6') DUP	**Date Received:**	02/28/07
Sample No:	7-0800-009	**Date Reported:**	03/05/07

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Semi-Volatile Compounds	**Method: 8270C**		**Analysis Date:**	**03/02/07**	
2,6-Dinitrotoluene		< 260	260	ug/kg	
Fluoranthene		< 330	330	ug/kg	
Fluorene		< 330	330	ug/kg	
Hexachlorobenzene		< 330	330	ug/kg	
Hexachlorobutadiene		< 330	330	ug/kg	
Hexachlorocyclopentadiene		< 330	330	ug/kg	
Hexachloroethane		< 330	330	ug/kg	
Indeno(1,2,3-cd)pyrene		< 330	330	ug/kg	
Isophorone		< 330	330	ug/kg	
2-Methylnaphthalene		< 330	330	ug/kg	
2-Methylphenol		< 330	330	ug/kg	
3 & 4-Methylphenol		< 330	330	ug/kg	
Naphthalene		< 330	330	ug/kg	
2-Nitroaniline		< 1,600	1600	ug/kg	
3-Nitroaniline		< 1,600	1600	ug/kg	
4-Nitroaniline		< 1,600	1600	ug/kg	
Nitrobenzene		< 260	260	ug/kg	
2-Nitrophenol		< 1,600	1600	ug/kg	
4-Nitrophenol		< 1,600	1600	ug/kg	
n-Nitrosodi-n-propylamine		< 330	330	ug/kg	
n-Nitrosodimethylamine		< 330	330	ug/kg	
n-Nitrosodiphenylamine		< 330	330	ug/kg	
Pentachlorophenol		< 330	330	ug/kg	
Phenanthrene		< 330	330	ug/kg	
Phenol		< 330	330	ug/kg	
Pyrene		< 330	330	ug/kg	
Pyridine		< 330	330	ug/kg	
1,2,4-Trichlorobenzene		< 330	330	ug/kg	
2,4,5-Trichlorophenol		< 330	330	ug/kg	
2,4,6-Trichlorophenol		< 330	330	ug/kg	
Pesticides/PCBs	**Method: 8081A/8082**		**Analysis Date:**	**03/02/07**	
Aldrin		< 8.0	8.0	ug/kg	
Aroclor 1016		< 80.0	80.0	ug/kg	
Aroclor 1221		< 80.0	80.0	ug/kg	
Aroclor 1232		< 80.0	80.0	ug/kg	
Aroclor 1242		< 80.0	80.0	ug/kg	
Aroclor 1248		< 80.0	80.0	ug/kg	
Aroclor 1254		< 160	160	ug/kg	
Aroclor 1260		< 160	160	ug/kg	

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Analytical Report

Client:	JOHNS MANVILLE	**Date Collected:**	02/27/07
Project ID:	Onyx Zion Landfill Clay	**Time Collected:**	11:30
Sample ID:	OZL-17 (6') DUP	**Date Received:**	02/28/07
Sample No:	7-0800-009	**Date Reported:**	03/05/07

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Pesticides/PCBs	**Method: 8081A/8082**		**Analysis Date:**	**03/02/07**	
alpha-BHC		< 2.0	2.0	ug/kg	
beta-BHC		< 8.0	8.0	ug/kg	
delta-BHC		< 8.0	8.0	ug/kg	
gamma-BHC (Lindane)		< 8.0	8.0	ug/kg	
alpha-Chlordane		< 80.0	80.0	ug/kg	
gamma-Chlordane		< 80.0	80.0	ug/kg	
4,4'-DDD		< 16.0	16.0	ug/kg	
4,4'-DDE		< 16.0	16.0	ug/kg	
4,4'-DDT		< 16.0	16.0	ug/kg	
Dieldrin		< 16.0	16.0	ug/kg	
Endosulfan I		< 8.0	8.0	ug/kg	
Endosulfan II		< 16.0	16.0	ug/kg	
Endosulfan sulfate		< 16.0	16.0	ug/kg	
Endrin		< 16.0	16.0	ug/kg	
Endrin aldehyde		< 16.0	16.0	ug/kg	
Endrin ketone		< 16.0	16.0	ug/kg	
Heptachlor		< 8.0	8.0	ug/kg	
Heptachlor epoxide		< 8.0	8.0	ug/kg	
Methoxychlor		< 80.0	80.0	ug/kg	
Toxaphene		< 160	160	ug/kg	
Total Metals	**Method: 6010B**		**Analysis Date:**	**03/01/07**	
Antimony		< 1.0	1.0	mg/kg	
Arsenic		5.8	0.2	mg/kg	
Barium		46.9	0.1	mg/kg	
Cadmium		0.7	0.1	mg/kg	
Chromium		17.0	0.1	mg/kg	
Lead		8.6	0.2	mg/kg	
Selenium		< 0.2	0.2	mg/kg	
Silver		< 0.1	0.1	mg/kg	
Total Metals	**Method: 7470A**		**Analysis Date:**	**03/01/07**	
Mercury		< 0.05	0.05	mg/kg	
pH @ 25°C, 1:10	**Method: 4500H+B**		**Analysis Date:**	**03/01/07**	
pH @ 25°C, 1:10		9.06		Units	

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Analytical Report

Client:	JOHNS MANVILLE	**Date Collected:**	02/27/07
Project ID:	Onyx Zion Landfill Clay	**Time Collected:**	11:35
Sample ID:	OZL-17 (12')	**Date Received:**	02/28/07
Sample No:	7-0800-010	**Date Reported:**	03/05/07

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Solids, Total	**Method: 160.3**		**Analysis Date:**	**03/01/07**	
Total Solids		89.05		%	
Volatile Organic Compounds	**Method: 5035A/8260B**		**Analysis Date:**	**03/01/07**	
Acetone		< 100	100	ug/kg	
Benzene		< 5.0	5.0	ug/kg	
Bromodichloromethane		< 5.0	5.0	ug/kg	
Bromoform		< 5.0	5.0	ug/kg	
Bromomethane		< 10.0	10.0	ug/kg	
2-Butanone (MEK)		< 10.0	10.0	ug/kg	
Carbon disulfide		< 5.0	5.0	ug/kg	
Carbon tetrachloride		< 5.0	5.0	ug/kg	
Chlorobenzene		< 5.0	5.0	ug/kg	
Chlorodibromomethane		< 5.0	5.0	ug/kg	
Chloroethane		< 10.0	10.0	ug/kg	
Chloroform		< 5.0	5.0	ug/kg	
Chloromethane		< 10.0	10.0	ug/kg	
1,1-Dichloroethane		< 5.0	5.0	ug/kg	
1,2-Dichloroethane		< 5.0	5.0	ug/kg	
1,1-Dichloroethene		< 5.0	5.0	ug/kg	
cis-1,2-Dichloroethene		< 5.0	5.0	ug/kg	
trans-1,2-Dichloroethene		< 5.0	5.0	ug/kg	
1,2-Dichloropropane		< 5.0	5.0	ug/kg	
cis-1,3-Dichloropropene		< 5.0	5.0	ug/kg	
trans-1,3-Dichloropropene		< 5.0	5.0	ug/kg	
Ethylbenzene		< 5.0	5.0	ug/kg	
2-Hexanone		< 10.0	10.0	ug/kg	
Methyl-tert-butylether (MTBE)		< 5.0	5.0	ug/kg	
4-Methyl-2-pentanone (MIBK)		< 10.0	10.0	ug/kg	
Methylene chloride		< 5.0	5.0	ug/kg	
Styrene		< 5.0	5.0	ug/kg	
1,1,2,2-Tetrachloroethane		< 5.0	5.0	ug/kg	
Tetrachloroethene		< 5.0	5.0	ug/kg	
Toluene		< 5.0	5.0	ug/kg	
1,1,1-Trichloroethane		< 5.0	5.0	ug/kg	
1,1,2-Trichloroethane		< 5.0	5.0	ug/kg	
Trichloroethene		< 5.0	5.0	ug/kg	
Vinyl acetate		< 10.0	10.0	ug/kg	
Vinyl chloride		< 10.0	10.0	ug/kg	
Xylene, Total		< 5.0	5.0	ug/kg	

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Analytical Report

Client:	JOHNS MANVILLE	**Date Collected:**	02/27/07
Project ID:	Onyx Zion Landfill Clay	**Time Collected:**	11:35
Sample ID:	OZL-17 (12')	**Date Received:**	02/28/07
Sample No:	7-0800-010	**Date Reported:**	03/05/07

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Semi-Volatile Compounds **Method: 8270C**		**Analysis Date:**	**03/02/07**	
Acenaphthene	< 330	330	ug/kg	
Acenaphthylene	< 330	330	ug/kg	
Anthracene	< 330	330	ug/kg	
Benzidine	< 330	330	ug/kg	
Benzo(a)anthracene	< 330	330	ug/kg	
Benzo(a)pyrene	< 90	90	ug/kg	
Benzo(b)fluoranthene	< 330	330	ug/kg	
Benzo(k)fluoranthene	< 330	330	ug/kg	
Benzo(ghi)perylene	< 330	330	ug/kg	
Benzoic acid	< 330	330	ug/kg	
Benzyl alcohol	< 330	330	ug/kg	
bis(2-Chloroethoxy)methane	< 330	330	ug/kg	
bis(2-Chloroethyl)ether	< 330	330	ug/kg	
bis(2-Chloroisopropyl)ether	< 330	330	ug/kg	
bis(2-Ethylhexyl)phthalate	< 330	330	ug/kg	
4-Bromophenyl phenyl ether	< 330	330	ug/kg	
Butyl benzyl phthalate	< 330	330	ug/kg	
Carbazole	< 330	330	ug/kg	
4-Chloroaniline	< 330	330	ug/kg	
4-Chloro-3-methylphenol	< 330	330	ug/kg	
2-Chloronaphthalene	< 330	330	ug/kg	
2-Chlorophenol	< 330	330	ug/kg	
4-Chlorophenyl phenyl ether	< 330	330	ug/kg	
Chrysene	< 330	330	ug/kg	
Di-n-butyl phthalate	< 330	330	ug/kg	
Di-n-octylphthalate	< 330	330	ug/kg	
Dibenzo(a,h)anthracene	< 90	90	ug/kg	
Dibenzofuran	< 330	330	ug/kg	
1,2-Dichlorobenzene	< 330	330	ug/kg	
1,3-Dichlorobenzene	< 330	330	ug/kg	
1,4-Dichlorobenzene	< 330	330	ug/kg	
3,3'-Dichlorobenzidine	< 660	660	ug/kg	
2,4-Dichlorophenol	< 330	330	ug/kg	
Diethyl phthalate	< 330	330	ug/kg	
2,4-Dimethylphenol	< 330	330	ug/kg	
Dimethyl phthalate	< 330	330	ug/kg	
4,6-Dinitro-2-methylphenol	< 1,600	1600	ug/kg	
2,4-Dinitrophenol	< 1,600	1600	ug/kg	
2,4-Dinitrotoluene	< 250	250	ug/kg	

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Analytical Report

Client: JOHNS MANVILLE
Project ID: Onyx Zion Landfill Clay
Sample ID: OZL-17 (12')
Sample No: 7-0800-010

Date Collected: 02/27/07
Time Collected: 11:35
Date Received: 02/28/07
Date Reported: 03/05/07

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Semi-Volatile Compounds	**Method: 8270C**		**Analysis Date:**	**03/02/07**	
2,6-Dinitrotoluene		< 260	260	ug/kg	
Fluoranthene		< 330	330	ug/kg	
Fluorene		< 330	330	ug/kg	
Hexachlorobenzene		< 330	330	ug/kg	
Hexachlorobutadiene		< 330	330	ug/kg	
Hexachlorocyclopentadiene		< 330	330	ug/kg	
Hexachloroethane		< 330	330	ug/kg	
Indeno(1,2,3-cd)pyrene		< 330	330	ug/kg	
Isophorone		< 330	330	ug/kg	
2-Methylnaphthalene		< 330	330	ug/kg	
2-Methylphenol		< 330	330	ug/kg	
3 & 4-Methylphenol		< 330	330	ug/kg	
Naphthalene		< 330	330	ug/kg	
2-Nitroaniline		< 1,600	1600	ug/kg	
3-Nitroaniline		< 1,600	1600	ug/kg	
4-Nitroaniline		< 1,600	1600	ug/kg	
Nitrobenzene		< 260	260	ug/kg	
2-Nitrophenol		< 1,600	1600	ug/kg	
4-Nitrophenol		< 1,600	1600	ug/kg	
n-Nitrosodi-n-propylamine		< 330	330	ug/kg	
n-Nitrosodimethylamine		< 330	330	ug/kg	
n-Nitrosodiphenylamine		< 330	330	ug/kg	
Pentachlorophenol		< 330	330	ug/kg	
Phenanthrene		< 330	330	ug/kg	
Phenol		< 330	330	ug/kg	
Pyrene		< 330	330	ug/kg	
Pyridine		< 330	330	ug/kg	
1,2,4-Trichlorobenzene		< 330	330	ug/kg	
2,4,5-Trichlorophenol		< 330	330	ug/kg	
2,4,6-Trichlorophenol		< 330	330	ug/kg	
Pesticides/PCBs	**Method: 8081A/8082**		**Analysis Date:**	**03/02/07**	
Aldrin		< 8.0	8.0	ug/kg	
Aroclor 1016		< 80.0	80.0	ug/kg	
Aroclor 1221		< 80.0	80.0	ug/kg	
Aroclor 1232		< 80.0	80.0	ug/kg	
Aroclor 1242		< 80.0	80.0	ug/kg	
Aroclor 1248		< 80.0	80.0	ug/kg	
Aroclor 1254		< 160	160	ug/kg	
Aroclor 1260		< 160	160	ug/kg	

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Analytical Report

Client:	JOHNS MANVILLE	**Date Collected:**	02/27/07
Project ID:	Onyx Zion Landfill Clay	**Time Collected:**	11:35
Sample ID:	OZL-17 (12')	**Date Received:**	02/28/07
Sample No:	7-0800-010	**Date Reported:**	03/05/07

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Pesticides/PCBs	**Method: 8081A/8082**		**Analysis Date:**	**03/02/07**	
alpha-BHC		< 2.0	2.0	ug/kg	
beta-BHC		< 8.0	8.0	ug/kg	
delta-BHC		< 8.0	8.0	ug/kg	
gamma-BHC (Lindane)		< 8.0	8.0	ug/kg	
alpha-Chlordane		< 80.0	80.0	ug/kg	
gamma-Chlordane		< 80.0	80.0	ug/kg	
4,4'-DDD		< 16.0	16.0	ug/kg	
4,4'-DDE		< 16.0	16.0	ug/kg	
4,4'-DDT		< 16.0	16.0	ug/kg	
Dieldrin		< 16.0	16.0	ug/kg	
Endosulfan I		< 8.0	8.0	ug/kg	
Endosulfan II		< 16.0	16.0	ug/kg	
Endosulfan sulfate		< 16.0	16.0	ug/kg	
Endrin		< 16.0	16.0	ug/kg	
Endrin aldehyde		< 16.0	16.0	ug/kg	
Endrin ketone		< 16.0	16.0	ug/kg	
Heptachlor		< 8.0	8.0	ug/kg	
Heptachlor epoxide		< 8.0	8.0	ug/kg	
Methoxychlor		< 80.0	80.0	ug/kg	
Toxaphene		< 160	160	ug/kg	
Total Metals	**Method: 6010B**		**Analysis Date:**	**03/01/07**	
Antimony		< 1.0	1.0	mg/kg	
Arsenic		7.9	0.2	mg/kg	
Barium		41.3	0.1	mg/kg	
Cadmium		0.7	0.1	mg/kg	
Chromium		16.2	0.1	mg/kg	
Lead		12.5	0.2	mg/kg	
Selenium		< 0.2	0.2	mg/kg	
Silver		< 0.1	0.1	mg/kg	
Total Metals	**Method: 7470A**		**Analysis Date:**	**03/01/07**	
Mercury		< 0.05	0.05	mg/kg	
pH @ 25°C, 1:10	**Method: 4500H+B**		**Analysis Date:**	**03/01/07**	
pH @ 25°C, 1:10		8.90		Units	

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Analytical Report

Client:	JOHNS MANVILLE	**Date Collected:**	02/27/07
Project ID:	Onyx Zion Landfill Clay	**Time Collected:**	11:45
Sample ID:	OZL-18 (6')	**Date Received:**	02/28/07
Sample No:	7-0800-011	**Date Reported:**	03/05/07

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Solids, Total	**Method: 160.3**		**Analysis Date:**	**03/01/07**	
Total Solids		83.45		%	
Volatile Organic Compounds	**Method: 5035A/8260B**		**Analysis Date:**	**03/01/07**	
Acetone		< 100	100	ug/kg	
Benzene		< 5.0	5.0	ug/kg	
Bromodichloromethane		< 5.0	5.0	ug/kg	
Bromoform		< 5.0	5.0	ug/kg	
Bromomethane		< 10.0	10.0	ug/kg	
2-Butanone (MEK)		< 10.0	10.0	ug/kg	
Carbon disulfide		< 5.0	5.0	ug/kg	
Carbon tetrachloride		< 5.0	5.0	ug/kg	
Chlorobenzene		< 5.0	5.0	ug/kg	
Chlorodibromomethane		< 5.0	5.0	ug/kg	
Chloroethane		< 10.0	10.0	ug/kg	
Chloroform		< 5.0	5.0	ug/kg	
Chloromethane		< 10.0	10.0	ug/kg	
1,1-Dichloroethane		< 5.0	5.0	ug/kg	
1,2-Dichloroethane		< 5.0	5.0	ug/kg	
1,1-Dichloroethene		< 5.0	5.0	ug/kg	
cis-1,2-Dichloroethene		< 5.0	5.0	ug/kg	
trans-1,2-Dichloroethene		< 5.0	5.0	ug/kg	
1,2-Dichloropropane		< 5.0	5.0	ug/kg	
cis-1,3-Dichloropropene		< 5.0	5.0	ug/kg	
trans-1,3-Dichloropropene		< 5.0	5.0	ug/kg	
Ethylbenzene		< 5.0	5.0	ug/kg	
2-Hexanone		< 10.0	10.0	ug/kg	
Methyl-tert-butylether (MTBE)		< 5.0	5.0	ug/kg	
4-Methyl-2-pentanone (MIBK)		< 10.0	10.0	ug/kg	
Methylene chloride		< 5.0	5.0	ug/kg	
Styrene		< 5.0	5.0	ug/kg	
1,1,2,2-Tetrachloroethane		< 5.0	5.0	ug/kg	
Tetrachloroethene		< 5.0	5.0	ug/kg	
Toluene		< 5.0	5.0	ug/kg	
1,1,1-Trichloroethane		< 5.0	5.0	ug/kg	
1,1,2-Trichloroethane		< 5.0	5.0	ug/kg	
Trichloroethene		< 5.0	5.0	ug/kg	
Vinyl acetate		< 10.0	10.0	ug/kg	
Vinyl chloride		< 10.0	10.0	ug/kg	
Xylene, Total		< 5.0	5.0	ug/kg	

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Analytical Report

Client:	JOHNS MANVILLE	**Date Collected:**	02/27/07
Project ID:	Onyx Zion Landfill Clay	**Time Collected:**	11:45
Sample ID:	OZL-18 (6')	**Date Received:**	02/28/07
Sample No:	7-0800-011	**Date Reported:**	03/05/07

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Semi-Volatile Compounds **Method: 8270C**		**Analysis Date:**	**03/02/07**	
Acenaphthene	< 330	330	ug/kg	
Acenaphthylene	< 330	330	ug/kg	
Anthracene	< 330	330	ug/kg	
Benzidine	< 330	330	ug/kg	
Benzo(a)anthracene	< 330	330	ug/kg	
Benzo(a)pyrene	< 90	90	ug/kg	
Benzo(b)fluoranthene	< 330	330	ug/kg	
Benzo(k)fluoranthene	< 330	330	ug/kg	
Benzo(ghi)perylene	< 330	330	ug/kg	
Benzoic acid	< 330	330	ug/kg	
Benzyl alcohol	< 330	330	ug/kg	
bis(2-Chloroethoxy)methane	< 330	330	ug/kg	
bis(2-Chloroethyl)ether	< 330	330	ug/kg	
bis(2-Chloroisopropyl)ether	< 330	330	ug/kg	
bis(2-Ethylhexyl)phthalate	< 330	330	ug/kg	
4-Bromophenyl phenyl ether	< 330	330	ug/kg	
Butyl benzyl phthalate	< 330	330	ug/kg	
Carbazole	< 330	330	ug/kg	
4-Chloroaniline	< 330	330	ug/kg	
4-Chloro-3-methylphenol	< 330	330	ug/kg	
2-Chloronaphthalene	< 330	330	ug/kg	
2-Chlorophenol	< 330	330	ug/kg	
4-Chlorophenyl phenyl ether	< 330	330	ug/kg	
Chrysene	< 330	330	ug/kg	
Di-n-butyl phthalate	< 330	330	ug/kg	
Di-n-octylphthalate	< 330	330	ug/kg	
Dibenzo(a,h)anthracene	< 90	90	ug/kg	
Dibenzofuran	< 330	330	ug/kg	
1,2-Dichlorobenzene	< 330	330	ug/kg	
1,3-Dichlorobenzene	< 330	330	ug/kg	
1,4-Dichlorobenzene	< 330	330	ug/kg	
3,3'-Dichlorobenzidine	< 660	660	ug/kg	
2,4-Dichlorophenol	< 330	330	ug/kg	
Diethyl phthalate	< 330	330	ug/kg	
2,4-Dimethylphenol	< 330	330	ug/kg	
Dimethyl phthalate	< 330	330	ug/kg	
4,6-Dinitro-2-methylphenol	< 1,600	1600	ug/kg	
2,4-Dinitrophenol	< 1,600	1600	ug/kg	
2,4-Dinitrotoluene	< 250	250	ug/kg	

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Analytical Report

Client:	JOHNS MANVILLE	**Date Collected:**	02/27/07
Project ID:	Onyx Zion Landfill Clay	**Time Collected:**	11:45
Sample ID:	OZL-18 (6')	**Date Received:**	02/28/07
Sample No:	7-0800-011	**Date Reported:**	03/05/07

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Semi-Volatile Compounds	**Method: 8270C**		**Analysis Date:**	**03/02/07**	
2,6-Dinitrotoluene		< 260	260	ug/kg	
Fluoranthene		< 330	330	ug/kg	
Fluorene		< 330	330	ug/kg	
Hexachlorobenzene		< 330	330	ug/kg	
Hexachlorobutadiene		< 330	330	ug/kg	
Hexachlorocyclopentadiene		< 330	330	ug/kg	
Hexachloroethane		< 330	330	ug/kg	
Indeno(1,2,3-cd)pyrene		< 330	330	ug/kg	
Isophorone		< 330	330	ug/kg	
2-Methylnaphthalene		< 330	330	ug/kg	
2-Methylphenol		< 330	330	ug/kg	
3 & 4-Methylphenol		< 330	330	ug/kg	
Naphthalene		< 330	330	ug/kg	
2-Nitroaniline		< 1,600	1600	ug/kg	
3-Nitroaniline		< 1,600	1600	ug/kg	
4-Nitroaniline		< 1,600	1600	ug/kg	
Nitrobenzene		< 260	260	ug/kg	
2-Nitrophenol		< 1,600	1600	ug/kg	
4-Nitrophenol		< 1,600	1600	ug/kg	
n-Nitrosodi-n-propylamine		< 330	330	ug/kg	
n-Nitrosodimethylamine		< 330	330	ug/kg	
n-Nitrosodiphenylamine		< 330	330	ug/kg	
Pentachlorophenol		< 330	330	ug/kg	
Phenanthrene		< 330	330	ug/kg	
Phenol		< 330	330	ug/kg	
Pyrene		< 330	330	ug/kg	
Pyridine		< 330	330	ug/kg	
1,2,4-Trichlorobenzene		< 330	330	ug/kg	
2,4,5-Trichlorophenol		< 330	330	ug/kg	
2,4,6-Trichlorophenol		< 330	330	ug/kg	
Pesticides/PCBs	**Method: 8081A/8082**		**Analysis Date:**	**03/02/07**	
Aldrin		< 8.0	8.0	ug/kg	
Aroclor 1016		< 80.0	80.0	ug/kg	
Aroclor 1221		< 80.0	80.0	ug/kg	
Aroclor 1232		< 80.0	80.0	ug/kg	
Aroclor 1242		< 80.0	80.0	ug/kg	
Aroclor 1248		< 80.0	80.0	ug/kg	
Aroclor 1254		< 160	160	ug/kg	
Aroclor 1260		< 160	160	ug/kg	

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Analytical Report

Client:	JOHNS MANVILLE	**Date Collected:**	02/27/07
Project ID:	Onyx Zion Landfill Clay	**Time Collected:**	11:45
Sample ID:	OZL-18 (6')	**Date Received:**	02/28/07
Sample No:	7-0800-011	**Date Reported:**	03/05/07

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Pesticides/PCBs	**Method: 8081A/8082**		**Analysis Date:**	**03/02/07**	
alpha-BHC		< 2.0	2.0	ug/kg	
beta-BHC		< 8.0	8.0	ug/kg	
delta-BHC		< 8.0	8.0	ug/kg	
gamma-BHC (Lindane)		< 8.0	8.0	ug/kg	
alpha-Chlordane		< 80.0	80.0	ug/kg	
gamma-Chlordane		< 80.0	80.0	ug/kg	
4,4'-DDD		< 16.0	16.0	ug/kg	
4,4'-DDE		< 16.0	16.0	ug/kg	
4,4'-DDT		< 16.0	16.0	ug/kg	
Dieldrin		< 16.0	16.0	ug/kg	
Endosulfan I		< 8.0	8.0	ug/kg	
Endosulfan II		< 16.0	16.0	ug/kg	
Endosulfan sulfate		< 16.0	16.0	ug/kg	
Endrin		< 16.0	16.0	ug/kg	
Endrin aldehyde		< 16.0	16.0	ug/kg	
Endrin ketone		< 16.0	16.0	ug/kg	
Heptachlor		< 8.0	8.0	ug/kg	
Heptachlor epoxide		< 8.0	8.0	ug/kg	
Methoxychlor		< 80.0	80.0	ug/kg	
Toxaphene		< 160	160	ug/kg	
Total Metals	**Method: 6010B**		**Analysis Date:**	**03/01/07**	
Antimony		< 1.0	1.0	mg/kg	
Arsenic		9.3	0.2	mg/kg	
Barium		51.2	0.1	mg/kg	
Cadmium		0.8	0.1	mg/kg	
Chromium		20.4	0.1	mg/kg	
Lead		12.5	0.2	mg/kg	
Selenium		< 0.2	0.2	mg/kg	
Silver		< 0.1	0.1	mg/kg	
Total Metals	**Method: 7470A**		**Analysis Date:**	**03/01/07**	
Mercury		< 0.05	0.05	mg/kg	
pH @ 25°C, 1:10	**Method: 4500H+B**		**Analysis Date:**	**03/01/07**	
pH @ 25°C, 1:10		8.49		Units	

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Analytical Report

Client:	JOHNS MANVILLE	**Date Collected:**	02/27/07
Project ID:	Onyx Zion Landfill Clay	**Time Collected:**	11:55
Sample ID:	OZL-18 (12')	**Date Received:**	02/28/07
Sample No:	7-0800-012	**Date Reported:**	03/05/07

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Solids, Total	**Method: 160.3**		**Analysis Date:**	**03/01/07**	
Total Solids		84.62		%	
Volatile Organic Compounds	**Method: 5035A/8260B**		**Analysis Date:**	**03/01/07**	
Acetone		< 100	100	ug/kg	
Benzene		< 5.0	5.0	ug/kg	
Bromodichloromethane		< 5.0	5.0	ug/kg	
Bromoform		< 5.0	5.0	ug/kg	
Bromomethane		< 10.0	10.0	ug/kg	
2-Butanone (MEK)		< 10.0	10.0	ug/kg	
Carbon disulfide		< 5.0	5.0	ug/kg	
Carbon tetrachloride		< 5.0	5.0	ug/kg	
Chlorobenzene		< 5.0	5.0	ug/kg	
Chlorodibromomethane		< 5.0	5.0	ug/kg	
Chloroethane		< 10.0	10.0	ug/kg	
Chloroform		< 5.0	5.0	ug/kg	
Chloromethane		< 10.0	10.0	ug/kg	
1,1-Dichloroethane		< 5.0	5.0	ug/kg	
1,2-Dichloroethane		< 5.0	5.0	ug/kg	
1,1-Dichloroethene		< 5.0	5.0	ug/kg	
cis-1,2-Dichloroethene		< 5.0	5.0	ug/kg	
trans-1,2-Dichloroethene		< 5.0	5.0	ug/kg	
1,2-Dichloropropane		< 5.0	5.0	ug/kg	
cis-1,3-Dichloropropene		< 5.0	5.0	ug/kg	
trans-1,3-Dichloropropene		< 5.0	5.0	ug/kg	
Ethylbenzene		< 5.0	5.0	ug/kg	
2-Hexanone		< 10.0	10.0	ug/kg	
Methyl-tert-butylether (MTBE)		< 5.0	5.0	ug/kg	
4-Methyl-2-pentanone (MIBK)		< 10.0	10.0	ug/kg	
Methylene chloride		< 5.0	5.0	ug/kg	
Styrene		< 5.0	5.0	ug/kg	
1,1,2,2-Tetrachloroethane		< 5.0	5.0	ug/kg	
Tetrachloroethene		< 5.0	5.0	ug/kg	
Toluene		< 5.0	5.0	ug/kg	
1,1,1-Trichloroethane		< 5.0	5.0	ug/kg	
1,1,2-Trichloroethane		< 5.0	5.0	ug/kg	
Trichloroethene		< 5.0	5.0	ug/kg	
Vinyl acetate		< 10.0	10.0	ug/kg	
Vinyl chloride		< 10.0	10.0	ug/kg	
Xylene, Total		< 5.0	5.0	ug/kg	

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Analytical Report

Client: JOHNS MANVILLE
Project ID: Onyx Zion Landfill Clay
Sample ID: OZL-18 (12')
Sample No: 7-0800-012

Date Collected: 02/27/07
Time Collected: 11:55
Date Received: 02/28/07
Date Reported: 03/05/07

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Semi-Volatile Compounds	**Method: 8270C**		**Analysis Date:**	**03/02/07**	
Acenaphthene		< 330	330	ug/kg	
Acenaphthylene		< 330	330	ug/kg	
Anthracene		< 330	330	ug/kg	
Benzidine		< 330	330	ug/kg	
Benzo(a)anthracene		< 330	330	ug/kg	
Benzo(a)pyrene		< 90	90	ug/kg	
Benzo(b)fluoranthene		< 330	330	ug/kg	
Benzo(k)fluoranthene		< 330	330	ug/kg	
Benzo(ghi)perylene		< 330	330	ug/kg	
Benzoic acid		< 330	330	ug/kg	
Benzyl alcohol		< 330	330	ug/kg	
bis(2-Chloroethoxy)methane		< 330	330	ug/kg	
bis(2-Chloroethyl)ether		< 330	330	ug/kg	
bis(2-Chloroisopropyl)ether		< 330	330	ug/kg	
bis(2-Ethylhexyl)phthalate		< 330	330	ug/kg	
4-Bromophenyl phenyl ether		< 330	330	ug/kg	
Butyl benzyl phthalate		< 330	330	ug/kg	
Carbazole		< 330	330	ug/kg	
4-Chloroaniline		< 330	330	ug/kg	
4-Chloro-3-methylphenol		< 330	330	ug/kg	
2-Chloronaphthalene		< 330	330	ug/kg	
2-Chlorophenol		< 330	330	ug/kg	
4-Chlorophenyl phenyl ether		< 330	330	ug/kg	
Chrysene		< 330	330	ug/kg	
Di-n-butyl phthalate		< 330	330	ug/kg	
Di-n-octylphthalate		< 330	330	ug/kg	
Dibenzo(a,h)anthracene		< 90	90	ug/kg	
Dibenzofuran		< 330	330	ug/kg	
1,2-Dichlorobenzene		< 330	330	ug/kg	
1,3-Dichlorobenzene		< 330	330	ug/kg	
1,4-Dichlorobenzene		< 330	330	ug/kg	
3,3'-Dichlorobenzidine		< 660	660	ug/kg	
2,4-Dichlorophenol		< 330	330	ug/kg	
Diethyl phthalate		< 330	330	ug/kg	
2,4-Dimethylphenol		< 330	330	ug/kg	
Dimethyl phthalate		< 330	330	ug/kg	
4,6-Dinitro-2-methylphenol		< 1,600	1600	ug/kg	
2,4-Dinitrophenol		< 1,600	1600	ug/kg	
2,4-Dinitrotoluene		< 250	250	ug/kg	

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Analytical Report

Client: JOHNS MANVILLE
Project ID: Onyx Zion Landfill Clay
Sample ID: OZL-18 (12')
Sample No: 7-0800-012

Date Collected: 02/27/07
Time Collected: 11:55
Date Received: 02/28/07
Date Reported: 03/05/07

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Semi-Volatile Compounds	**Method: 8270C**		**Analysis Date:**	**03/02/07**	
2,6-Dinitrotoluene		< 260	260	ug/kg	
Fluoranthene		< 330	330	ug/kg	
Fluorene		< 330	330	ug/kg	
Hexachlorobenzene		< 330	330	ug/kg	
Hexachlorobutadiene		< 330	330	ug/kg	
Hexachlorocyclopentadiene		< 330	330	ug/kg	
Hexachloroethane		< 330	330	ug/kg	
Indeno(1,2,3-cd)pyrene		< 330	330	ug/kg	
Isophorone		< 330	330	ug/kg	
2-Methylnaphthalene		< 330	330	ug/kg	
2-Methylphenol		< 330	330	ug/kg	
3 & 4-Methylphenol		< 330	330	ug/kg	
Naphthalene		< 330	330	ug/kg	
2-Nitroaniline		< 1,600	1600	ug/kg	
3-Nitroaniline		< 1,600	1600	ug/kg	
4-Nitroaniline		< 1,600	1600	ug/kg	
Nitrobenzene		< 260	260	ug/kg	
2-Nitrophenol		< 1,600	1600	ug/kg	
4-Nitrophenol		< 1,600	1600	ug/kg	
n-Nitrosodi-n-propylamine		< 330	330	ug/kg	
n-Nitrosodimethylamine		< 330	330	ug/kg	
n-Nitrosodiphenylamine		< 330	330	ug/kg	
Pentachlorophenol		< 330	330	ug/kg	
Phenanthrene		< 330	330	ug/kg	
Phenol		< 330	330	ug/kg	
Pyrene		< 330	330	ug/kg	
Pyridine		< 330	330	ug/kg	
1,2,4-Trichlorobenzene		< 330	330	ug/kg	
2,4,5-Trichlorophenol		< 330	330	ug/kg	
2,4,6-Trichlorophenol		< 330	330	ug/kg	
Pesticides/PCBs	**Method: 8081A/8082**		**Analysis Date:**	**03/03/07**	
Aldrin		< 8.0	8.0	ug/kg	
Aroclor 1016		< 80.0	80.0	ug/kg	
Aroclor 1221		< 80.0	80.0	ug/kg	
Aroclor 1232		< 80.0	80.0	ug/kg	
Aroclor 1242		< 80.0	80.0	ug/kg	
Aroclor 1248		< 80.0	80.0	ug/kg	
Aroclor 1254		< 160	160	ug/kg	
Aroclor 1260		< 160	160	ug/kg	

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Analytical Report

Client:	JOHNS MANVILLE	**Date Collected:**	02/27/07
Project ID:	Onyx Zion Landfill Clay	**Time Collected:**	11:55
Sample ID:	OZL-18 (12')	**Date Received:**	02/28/07
Sample No:	7-0800-012	**Date Reported:**	03/05/07

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Pesticides/PCBs	**Method: 8081A/8082**		**Analysis Date:**	**03/03/07**	
alpha-BHC		< 2.0	2.0	ug/kg	
beta-BHC		< 8.0	8.0	ug/kg	
delta-BHC		< 8.0	8.0	ug/kg	
gamma-BHC (Lindane)		< 8.0	8.0	ug/kg	
alpha-Chlordane		< 80.0	80.0	ug/kg	
gamma-Chlordane		< 80.0	80.0	ug/kg	
4,4'-DDD		< 16.0	16.0	ug/kg	
4,4'-DDE		< 16.0	16.0	ug/kg	
4,4'-DDT		< 16.0	16.0	ug/kg	
Dieldrin		< 16.0	16.0	ug/kg	
Endosulfan I		< 8.0	8.0	ug/kg	
Endosulfan II		< 16.0	16.0	ug/kg	
Endosulfan sulfate		< 16.0	16.0	ug/kg	
Endrin		< 16.0	16.0	ug/kg	
Endrin aldehyde		< 16.0	16.0	ug/kg	
Endrin ketone		< 16.0	16.0	ug/kg	
Heptachlor		< 8.0	8.0	ug/kg	
Heptachlor epoxide		< 8.0	8.0	ug/kg	
Methoxychlor		< 80.0	80.0	ug/kg	
Toxaphene		< 160	160	ug/kg	
Total Metals	**Method: 6010B**		**Analysis Date:**	**03/01/07**	
Antimony		< 1.0	1.0	mg/kg	
Arsenic		7.7	0.2	mg/kg	
Barium		37.6	0.1	mg/kg	
Cadmium		0.7	0.1	mg/kg	
Chromium		13.5	0.1	mg/kg	
Lead		9.8	0.2	mg/kg	
Selenium		< 0.2	0.2	mg/kg	
Silver		< 0.1	0.1	mg/kg	
Total Metals	**Method: 7470A**		**Analysis Date:**	**03/01/07**	
Mercury		< 0.05	0.05	mg/kg	
pH @ 25°C, 1:10	**Method: 4500H+B**		**Analysis Date:**	**03/01/07**	
pH @ 25°C, 1:10		8.26		Units	

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Analytical Report

Client:	JOHNS MANVILLE	**Date Collected:**	02/27/07
Project ID:	Onyx Zion Landfill Clay	**Time Collected:**	12:05
Sample ID:	OZL-19 (6')	**Date Received:**	02/28/07
Sample No:	7-0800-013	**Date Reported:**	03/05/07

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Solids, Total	**Method: 160.3**		**Analysis Date:**	**03/01/07**	
Total Solids		86.85		%	
Volatile Organic Compounds	**Method: 5035A/8260B**		**Analysis Date:**	**03/01/07**	
Acetone		< 100	100	ug/kg	
Benzene		< 5.0	5.0	ug/kg	
Bromodichloromethane		< 5.0	5.0	ug/kg	
Bromoform		< 5.0	5.0	ug/kg	
Bromomethane		< 10.0	10.0	ug/kg	
2-Butanone (MEK)		< 10.0	10.0	ug/kg	
Carbon disulfide		< 5.0	5.0	ug/kg	
Carbon tetrachloride		< 5.0	5.0	ug/kg	
Chlorobenzene		< 5.0	5.0	ug/kg	
Chlorodibromomethane		< 5.0	5.0	ug/kg	
Chloroethane		< 10.0	10.0	ug/kg	
Chloroform		< 5.0	5.0	ug/kg	
Chloromethane		< 10.0	10.0	ug/kg	
1,1-Dichloroethane		< 5.0	5.0	ug/kg	
1,2-Dichloroethane		< 5.0	5.0	ug/kg	
1,1-Dichloroethene		< 5.0	5.0	ug/kg	
cis-1,2-Dichloroethene		< 5.0	5.0	ug/kg	
trans-1,2-Dichloroethene		< 5.0	5.0	ug/kg	
1,2-Dichloropropane		< 5.0	5.0	ug/kg	
cis-1,3-Dichloropropene		< 5.0	5.0	ug/kg	
trans-1,3-Dichloropropene		< 5.0	5.0	ug/kg	
Ethylbenzene		< 5.0	5.0	ug/kg	
2-Hexanone		< 10.0	10.0	ug/kg	
Methyl-tert-butylether (MTBE)		< 5.0	5.0	ug/kg	
4-Methyl-2-pentanone (MIBK)		< 10.0	10.0	ug/kg	
Methylene chloride		< 5.0	5.0	ug/kg	
Styrene		< 5.0	5.0	ug/kg	
1,1,2,2-Tetrachloroethane		< 5.0	5.0	ug/kg	
Tetrachloroethene		< 5.0	5.0	ug/kg	
Toluene		< 5.0	5.0	ug/kg	
1,1,1-Trichloroethane		< 5.0	5.0	ug/kg	
1,1,2-Trichloroethane		< 5.0	5.0	ug/kg	
Trichloroethene		< 5.0	5.0	ug/kg	
Vinyl acetate		< 10.0	10.0	ug/kg	
Vinyl chloride		< 10.0	10.0	ug/kg	
Xylene, Total		< 5.0	5.0	ug/kg	

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Analytical Report

Client:	JOHNS MANVILLE	**Date Collected:**	02/27/07
Project ID:	Onyx Zion Landfill Clay	**Time Collected:**	12:05
Sample ID:	OZL-19 (6')	**Date Received:**	02/28/07
Sample No:	7-0800-013	**Date Reported:**	03/05/07

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Semi-Volatile Compounds **Method: 8270C**		**Analysis Date:**	**03/03/07**	
Acenaphthene	< 330	330	ug/kg	
Acenaphthylene	< 330	330	ug/kg	
Anthracene	< 330	330	ug/kg	
Benzidine	< 330	330	ug/kg	
Benzo(a)anthracene	< 330	330	ug/kg	
Benzo(a)pyrene	< 90	90	ug/kg	
Benzo(b)fluoranthene	< 330	330	ug/kg	
Benzo(k)fluoranthene	< 330	330	ug/kg	
Benzo(ghi)perylene	< 330	330	ug/kg	
Benzoic acid	< 330	330	ug/kg	
Benzyl alcohol	< 330	330	ug/kg	
bis(2-Chloroethoxy)methane	< 330	330	ug/kg	
bis(2-Chloroethyl)ether	< 330	330	ug/kg	
bis(2-Chloroisopropyl)ether	< 330	330	ug/kg	
bis(2-Ethylhexyl)phthalate	< 330	330	ug/kg	
4-Bromophenyl phenyl ether	< 330	330	ug/kg	
Butyl benzyl phthalate	< 330	330	ug/kg	
Carbazole	< 330	330	ug/kg	
4-Chloroaniline	< 330	330	ug/kg	
4-Chloro-3-methylphenol	< 330	330	ug/kg	
2-Chloronaphthalene	< 330	330	ug/kg	
2-Chlorophenol	< 330	330	ug/kg	
4-Chlorophenyl phenyl ether	< 330	330	ug/kg	
Chrysene	< 330	330	ug/kg	
Di-n-butyl phthalate	< 330	330	ug/kg	
Di-n-octylphthalate	< 330	330	ug/kg	
Dibenzo(a,h)anthracene	< 90	90	ug/kg	
Dibenzofuran	< 330	330	ug/kg	
1,2-Dichlorobenzene	< 330	330	ug/kg	
1,3-Dichlorobenzene	< 330	330	ug/kg	
1,4-Dichlorobenzene	< 330	330	ug/kg	
3,3'-Dichlorobenzidine	< 660	660	ug/kg	
2,4-Dichlorophenol	< 330	330	ug/kg	
Diethyl phthalate	< 330	330	ug/kg	
2,4-Dimethylphenol	< 330	330	ug/kg	
Dimethyl phthalate	< 330	330	ug/kg	
4,6-Dinitro-2-methylphenol	< 1,600	1600	ug/kg	
2,4-Dinitrophenol	< 1,600	1600	ug/kg	
2,4-Dinitrotoluene	< 250	250	ug/kg	

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Analytical Report

Client:	JOHNS MANVILLE	**Date Collected:**	02/27/07
Project ID:	Onyx Zion Landfill Clay	**Time Collected:**	12:05
Sample ID:	OZL-19 (6')	**Date Received:**	02/28/07
Sample No:	7-0800-013	**Date Reported:**	03/05/07

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Semi-Volatile Compounds — **Method: 8270C**		**Analysis Date: 03/03/07**		
2,6-Dinitrotoluene	< 260	260	ug/kg	
Fluoranthene	< 330	330	ug/kg	
Fluorene	< 330	330	ug/kg	
Hexachlorobenzene	< 330	330	ug/kg	
Hexachlorobutadiene	< 330	330	ug/kg	
Hexachlorocyclopentadiene	< 330	330	ug/kg	
Hexachloroethane	< 330	330	ug/kg	
Indeno(1,2,3-cd)pyrene	< 330	330	ug/kg	
Isophorone	< 330	330	ug/kg	
2-Methylnaphthalene	< 330	330	ug/kg	
2-Methylphenol	< 330	330	ug/kg	
3 & 4-Methylphenol	< 330	330	ug/kg	
Naphthalene	< 330	330	ug/kg	
2-Nitroaniline	< 1,600	1600	ug/kg	
3-Nitroaniline	< 1,600	1600	ug/kg	
4-Nitroaniline	< 1,600	1600	ug/kg	
Nitrobenzene	< 260	260	ug/kg	
2-Nitrophenol	< 1,600	1600	ug/kg	
4-Nitrophenol	< 1,600	1600	ug/kg	
n-Nitrosodi-n-propylamine	< 330	330	ug/kg	
n-Nitrosodimethylamine	< 330	330	ug/kg	
n-Nitrosodiphenylamine	< 330	330	ug/kg	
Pentachlorophenol	< 330	330	ug/kg	
Phenanthrene	< 330	330	ug/kg	
Phenol	< 330	330	ug/kg	
Pyrene	< 330	330	ug/kg	
Pyridine	< 330	330	ug/kg	
1,2,4-Trichlorobenzene	< 330	330	ug/kg	
2,4,5-Trichlorophenol	< 330	330	ug/kg	
2,4,6-Trichlorophenol	< 330	330	ug/kg	
Pesticides/PCBs — **Method: 8081A/8082**		**Analysis Date: 03/03/07**		
Aldrin	< 8.0	8.0	ug/kg	
Aroclor 1016	< 80.0	80.0	ug/kg	
Aroclor 1221	< 80.0	80.0	ug/kg	
Aroclor 1232	< 80.0	80.0	ug/kg	
Aroclor 1242	< 80.0	80.0	ug/kg	
Aroclor 1248	< 80.0	80.0	ug/kg	
Aroclor 1254	< 160	160	ug/kg	
Aroclor 1260	< 160	160	ug/kg	

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Analytical Report

Client: JOHNS MANVILLE
Project ID: Onyx Zion Landfill Clay
Sample ID: OZL-19 (6')
Sample No: 7-0800-013

Date Collected: 02/27/07
Time Collected: 12:05
Date Received: 02/28/07
Date Reported: 03/05/07

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Pesticides/PCBs	**Method: 8081A/8082**		**Analysis Date:**	**03/03/07**	
alpha-BHC		< 2.0	2.0	ug/kg	
beta-BHC		< 8.0	8.0	ug/kg	
delta-BHC		< 8.0	8.0	ug/kg	
gamma-BHC (Lindane)		< 8.0	8.0	ug/kg	
alpha-Chlordane		< 80.0	80.0	ug/kg	
gamma-Chlordane		< 80.0	80.0	ug/kg	
4,4'-DDD		< 16.0	16.0	ug/kg	
4,4'-DDE		< 16.0	16.0	ug/kg	
4,4'-DDT		< 16.0	16.0	ug/kg	
Dieldrin		< 16.0	16.0	ug/kg	
Endosulfan I		< 8.0	8.0	ug/kg	
Endosulfan II		< 16.0	16.0	ug/kg	
Endosulfan sulfate		< 16.0	16.0	ug/kg	
Endrin		< 16.0	16.0	ug/kg	
Endrin aldehyde		< 16.0	16.0	ug/kg	
Endrin ketone		< 16.0	16.0	ug/kg	
Heptachlor		< 8.0	8.0	ug/kg	
Heptachlor epoxide		< 8.0	8.0	ug/kg	
Methoxychlor		< 80.0	80.0	ug/kg	
Toxaphene		< 160	160	ug/kg	
Total Metals	**Method: 6010B**		**Analysis Date:**	**03/01/07**	
Antimony		< 1.0	1.0	mg/kg	
Arsenic		6.7	0.2	mg/kg	
Barium		48.1	0.1	mg/kg	
Cadmium		0.7	0.1	mg/kg	
Chromium		17.6	0.1	mg/kg	
Lead		9.9	0.2	mg/kg	
Selenium		< 0.2	0.2	mg/kg	
Silver		< 0.1	0.1	mg/kg	
Total Metals	**Method: 7470A**		**Analysis Date:**	**03/01/07**	
Mercury		< 0.05	0.05	mg/kg	
pH @ 25°C, 1:10	**Method: 4500H+B**		**Analysis Date:**	**03/01/07**	
pH @ 25°C, 1:10		8.60		Units	

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Analytical Report

Client:	JOHNS MANVILLE	**Date Collected:**	02/27/07
Project ID:	Onyx Zion Landfill Clay	**Time Collected:**	12:15
Sample ID:	OZL-19 (12')	**Date Received:**	02/28/07
Sample No:	7-0800-014	**Date Reported:**	03/05/07

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Solids, Total	**Method: 160.3**		**Analysis Date:**	**03/01/07**	
Total Solids		85.58		%	
Volatile Organic Compounds	**Method: 5035A/8260B**		**Analysis Date:**	**03/01/07**	
Acetone		< 100	100	ug/kg	
Benzene		< 5.0	5.0	ug/kg	
Bromodichloromethane		< 5.0	5.0	ug/kg	
Bromoform		< 5.0	5.0	ug/kg	
Bromomethane		< 10.0	10.0	ug/kg	
2-Butanone (MEK)		< 10.0	10.0	ug/kg	
Carbon disulfide		< 5.0	5.0	ug/kg	
Carbon tetrachloride		< 5.0	5.0	ug/kg	
Chlorobenzene		< 5.0	5.0	ug/kg	
Chlorodibromomethane		< 5.0	5.0	ug/kg	
Chloroethane		< 10.0	10.0	ug/kg	
Chloroform		< 5.0	5.0	ug/kg	
Chloromethane		< 10.0	10.0	ug/kg	
1,1-Dichloroethane		< 5.0	5.0	ug/kg	
1,2-Dichloroethane		< 5.0	5.0	ug/kg	
1,1-Dichloroethene		< 5.0	5.0	ug/kg	
cis-1,2-Dichloroethene		< 5.0	5.0	ug/kg	
trans-1,2-Dichloroethene		< 5.0	5.0	ug/kg	
1,2-Dichloropropane		< 5.0	5.0	ug/kg	
cis-1,3-Dichloropropene		< 5.0	5.0	ug/kg	
trans-1,3-Dichloropropene		< 5.0	5.0	ug/kg	
Ethylbenzene		< 5.0	5.0	ug/kg	
2-Hexanone		< 10.0	10.0	ug/kg	
Methyl-tert-butylether (MTBE)		< 5.0	5.0	ug/kg	
4-Methyl-2-pentanone (MIBK)		< 10.0	10.0	ug/kg	
Methylene chloride		< 5.0	5.0	ug/kg	
Styrene		< 5.0	5.0	ug/kg	
1,1,2,2-Tetrachloroethane		< 5.0	5.0	ug/kg	
Tetrachloroethene		< 5.0	5.0	ug/kg	
Toluene		< 5.0	5.0	ug/kg	
1,1,1-Trichloroethane		< 5.0	5.0	ug/kg	
1,1,2-Trichloroethane		< 5.0	5.0	ug/kg	
Trichloroethene		< 5.0	5.0	ug/kg	
Vinyl acetate		< 10.0	10.0	ug/kg	
Vinyl chloride		< 10.0	10.0	ug/kg	
Xylene, Total		< 5.0	5.0	ug/kg	

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Analytical Report

Client:	JOHNS MANVILLE	**Date Collected:**	02/27/07
Project ID:	Onyx Zion Landfill Clay	**Time Collected:**	12:15
Sample ID:	OZL-19 (12')	**Date Received:**	02/28/07
Sample No:	7-0800-014	**Date Reported:**	03/05/07

Results are reported on a dry weight basis.

Analyte	Result	R.L.	Units	Flags
Semi-Volatile Compounds **Method: 8270C**		**Analysis Date:**	**03/03/07**	
Acenaphthene	< 330	330	ug/kg	
Acenaphthylene	< 330	330	ug/kg	
Anthracene	< 330	330	ug/kg	
Benzidine	< 330	330	ug/kg	
Benzo(a)anthracene	< 330	330	ug/kg	
Benzo(a)pyrene	< 90	90	ug/kg	
Benzo(b)fluoranthene	< 330	330	ug/kg	
Benzo(k)fluoranthene	< 330	330	ug/kg	
Benzo(ghi)perylene	< 330	330	ug/kg	
Benzoic acid	< 330	330	ug/kg	
Benzyl alcohol	< 330	330	ug/kg	
bis(2-Chloroethoxy)methane	< 330	330	ug/kg	
bis(2-Chloroethyl)ether	< 330	330	ug/kg	
bis(2-Chloroisopropyl)ether	< 330	330	ug/kg	
bis(2-Ethylhexyl)phthalate	< 330	330	ug/kg	
4-Bromophenyl phenyl ether	< 330	330	ug/kg	
Butyl benzyl phthalate	< 330	330	ug/kg	
Carbazole	< 330	330	ug/kg	
4-Chloroaniline	< 330	330	ug/kg	
4-Chloro-3-methylphenol	< 330	330	ug/kg	
2-Chloronaphthalene	< 330	330	ug/kg	
2-Chlorophenol	< 330	330	ug/kg	
4-Chlorophenyl phenyl ether	< 330	330	ug/kg	
Chrysene	< 330	330	ug/kg	
Di-n-butyl phthalate	< 330	330	ug/kg	
Di-n-octylphthalate	< 330	330	ug/kg	
Dibenzo(a,h)anthracene	< 90	90	ug/kg	
Dibenzofuran	< 330	330	ug/kg	
1,2-Dichlorobenzene	< 330	330	ug/kg	
1,3-Dichlorobenzene	< 330	330	ug/kg	
1,4-Dichlorobenzene	< 330	330	ug/kg	
3,3'-Dichlorobenzidine	< 660	660	ug/kg	
2,4-Dichlorophenol	< 330	330	ug/kg	
Diethyl phthalate	< 330	330	ug/kg	
2,4-Dimethylphenol	< 330	330	ug/kg	
Dimethyl phthalate	< 330	330	ug/kg	
4,6-Dinitro-2-methylphenol	< 1,600	1600	ug/kg	
2,4-Dinitrophenol	< 1,600	1600	ug/kg	
2,4-Dinitrotoluene	< 250	250	ug/kg	

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Analytical Report

Client:	JOHNS MANVILLE	**Date Collected:**	02/27/07
Project ID:	Onyx Zion Landfill Clay	**Time Collected:**	12:15
Sample ID:	OZL-19 (12')	**Date Received:**	02/28/07
Sample No:	7-0800-014	**Date Reported:**	03/05/07

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Semi-Volatile Compounds	**Method: 8270C**		**Analysis Date:**	**03/03/07**	
2,6-Dinitrotoluene		< 260	260	ug/kg	
Fluoranthene		< 330	330	ug/kg	
Fluorene		< 330	330	ug/kg	
Hexachlorobenzene		< 330	330	ug/kg	
Hexachlorobutadiene		< 330	330	ug/kg	
Hexachlorocyclopentadiene		< 330	330	ug/kg	
Hexachloroethane		< 330	330	ug/kg	
Indeno(1,2,3-cd)pyrene		< 330	330	ug/kg	
Isophorone		< 330	330	ug/kg	
2-Methylnaphthalene		< 330	330	ug/kg	
2-Methylphenol		< 330	330	ug/kg	
3 & 4-Methylphenol		< 330	330	ug/kg	
Naphthalene		< 330	330	ug/kg	
2-Nitroaniline		< 1,600	1600	ug/kg	
3-Nitroaniline		< 1,600	1600	ug/kg	
4-Nitroaniline		< 1,600	1600	ug/kg	
Nitrobenzene		< 260	260	ug/kg	
2-Nitrophenol		< 1,600	1600	ug/kg	
4-Nitrophenol		< 1,600	1600	ug/kg	
n-Nitrosodi-n-propylamine		< 330	330	ug/kg	
n-Nitrosodimethylamine		< 330	330	ug/kg	
n-Nitrosodiphenylamine		< 330	330	ug/kg	
Pentachlorophenol		< 330	330	ug/kg	
Phenanthrene		< 330	330	ug/kg	
Phenol		< 330	330	ug/kg	
Pyrene		< 330	330	ug/kg	
Pyridine		< 330	330	ug/kg	
1,2,4-Trichlorobenzene		< 330	330	ug/kg	
2,4,5-Trichlorophenol		< 330	330	ug/kg	
2,4,6-Trichlorophenol		< 330	330	ug/kg	
Pesticides/PCBs	**Method: 8081A/8082**		**Analysis Date:**	**03/03/07**	
Aldrin		< 8.0	8.0	ug/kg	
Aroclor 1016		< 80.0	80.0	ug/kg	
Aroclor 1221		< 80.0	80.0	ug/kg	
Aroclor 1232		< 80.0	80.0	ug/kg	
Aroclor 1242		< 80.0	80.0	ug/kg	
Aroclor 1248		< 80.0	80.0	ug/kg	
Aroclor 1254		< 160	160	ug/kg	
Aroclor 1260		< 160	160	ug/kg	

First Environmental Laboratories, Inc.

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Analytical Report

Client:	JOHNS MANVILLE	**Date Collected:**	02/27/07
Project ID:	Onyx Zion Landfill Clay	**Time Collected:**	12:15
Sample ID:	OZL-19 (12')	**Date Received:**	02/28/07
Sample No:	7-0800-014	**Date Reported:**	03/05/07

Results are reported on a dry weight basis.

Analyte		Result	R.L.	Units	Flags
Pesticides/PCBs	**Method: 8081A/8082**		**Analysis Date:**	**03/03/07**	
alpha-BHC		< 2.0	2.0	ug/kg	
beta-BHC		< 8.0	8.0	ug/kg	
delta-BHC		< 8.0	8.0	ug/kg	
gamma-BHC (Lindane)		< 8.0	8.0	ug/kg	
alpha-Chlordane		< 80.0	80.0	ug/kg	
gamma-Chlordane		< 80.0	80.0	ug/kg	
4,4'-DDD		< 16.0	16.0	ug/kg	
4,4'-DDE		< 16.0	16.0	ug/kg	
4,4'-DDT		< 16.0	16.0	ug/kg	
Dieldrin		< 16.0	16.0	ug/kg	
Endosulfan I		< 8.0	8.0	ug/kg	
Endosulfan II		< 16.0	16.0	ug/kg	
Endosulfan sulfate		< 16.0	16.0	ug/kg	
Endrin		< 16.0	16.0	ug/kg	
Endrin aldehyde		< 16.0	16.0	ug/kg	
Endrin ketone		< 16.0	16.0	ug/kg	
Heptachlor		< 8.0	8.0	ug/kg	
Heptachlor epoxide		< 8.0	8.0	ug/kg	
Methoxychlor		< 80.0	80.0	ug/kg	
Toxaphene		< 160	160	ug/kg	
Total Metals	**Method: 6010B**		**Analysis Date:**	**03/01/07**	
Antimony		< 1.0	1.0	mg/kg	
Arsenic		6.3	0.2	mg/kg	
Barium		46.0	0.1	mg/kg	
Cadmium		0.7	0.1	mg/kg	
Chromium		18.6	0.1	mg/kg	
Lead		10.0	0.2	mg/kg	
Selenium		< 0.2	0.2	mg/kg	
Silver		< 0.1	0.1	mg/kg	
Total Metals	**Method: 7470A**		**Analysis Date:**	**03/01/07**	
Mercury		< 0.05	0.05	mg/kg	
pH @ 25°C, 1:10	**Method: 4500H+B**		**Analysis Date:**	**03/01/07**	
pH @ 25°C, 1:10		8.66		Units	

First Environmental Laboratories, Inc.

First Environmental Laboratories
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24 Hr. Pager (708) 569-7507
E-mail: info@firstenv.com
IEPA Certification# 100292

CHAIN OF CUSTODY RECORD

Company Name: JOHNS MANVILLE
Street Address: 1871 N. PERSHING RD.
City: WAUKEGAN State: IL Zip: 60087
Phone: (847) 360-4339 Fax: (847) 360-4558 e-mail: dmpete@concentric.net
Send Report To: DAVE PETERSON Via: Fax ☐ e-mail ☒
Sampled By: DMP

Project I.D.: ONYX ZION LANDFILL CLAY
P.O. #:

Matrix Codes: S = Soil W = Water O = Other

Analyses

Date/Time Taken	Sample Description	Matrix	VOCs 8260/5035	SVOCs 8270	RCRA METALS	ANTIMONY	pH	PESTICIDES 8081A	PCBs 8082		Comments	Lab I.D.
2/27/07 10:15	OZL-14 (6')	SOIL	X	X	X	X	X	X	X			7-0800-001
10:25	OZL-14 (12')											002
10:35	OZL-14 (12') DUP											003
10:45	OZL-15 (6')											004
10:55	OZL-15 (12')											005
11:05	OZL-16 (6')											006
11:15	OZL-16 (12')											007
11:25	OZL-17 (6')											008
11:30	OZL-17 (6') DUP											009
11:35	OZL-17 (12')											010
11:45	OZL-18 (6')											011
11:55	OZL-18 (12')											012

FOR LAB USE ONLY:

Cooler Temperature: 0.1-6ºC Yes__ No.__ ________ºC
Received within 6 hrs. of collection:______
Ice Present: Yes__ No__

Sample Refrigerated: Yes__ No__
Refrigerator Temperature:_______ºC
5035 Vials Frozen: Yes__ No__
Freezer Temperature:______ºC

Containers Received Preserved: ☐ Yes ☐ No

Notes and Special Instructions: RUSH SAMPLES - 3 DAY TURN

Relinquished By: [signature] Date/Time 2/28/07 1115 Received By: [signature] Date/Time 2-28-07 1120
Relinquished By: ________ Date/Time ________ Received By: ________ Date/Time ________

Rev. 4/06

EMSL Analytical, Inc.

107 Haddon Avenue, Westmont, NJ 08108 Phone: 800-220-3675 Fax:856-858-4960

Client: Johns Manville
1871 N. Pershing Road
Waukegan, IL 60087

EMSL Reference: 040704003

Date Received: 02/28/07
Date Analyzed: 03/01/07
Date Reported: 03/02/07

Attention: David M. Peterson, PE, PC
Fax: 847-360-4558 Phone:847-360-4439
Project:

Asbestos Analysis of Soil via EPA 600/R-93/116 Method Utilizing Analytical Electron Microscopy (Section 2.5) with CARB 435 Prep (Milling) Level C for 0.01% Target Analytical Sensitivity

Client Sample ID	*EMSL Sample ID*	*Asbestos Type(s)*	*# of Asbestos Structures Detected*	*Analytical Sensitivity %*	*Asbestos Weight* **%**	*Comments*
OZL-14(12')	040704003-0002	**None Detected**	0	0.01	**<0.01**	
OZL-17(6')	040704003-0008	**Chrysotile**	1	0.01	**<0.01**	

Debbie Little
Analyst

Stephen Siegel
Stephen Siegel, CIH or Approved EMSL Signatory

EMSL Analytical, Inc.
107 Haddon Ave., Westmont, NJ 08108
Phone: (856) 858-4800 Fax: (856) 858-4960 Email: westmontasblab@EMSL.com

Attn: **David M. Peterson, PE, PC**
Johns Manville
1871 N. Pershing Road
Waukegan, IL 60087

Fax: (847) 360-4558 Phone: (847) 360-4439
Project:

Customer ID: JOVI77
Customer PO:
Received: 02/28/07 9:40 AM
EMSL Order: 040704003

EMSL Proj:
Analysis Date: 3/2/2007
Report Date: 3/2/2007

Asbestos Analysis via Polarized Light Microscopy, Qualitative

Sample	Location	Appearance	Result	Notes
OZL-14 (6') *040704003-0001*			**None Detected**	
OZL-14 (12') *040704003-0002*			**None Detected**	
OZL-14 (12') DUP *040704003-0003*			**None Detected**	
OZL-15 (6') *040704003-0004*			**None Detected**	
OZL-15 (12') *040704003-0005*			**None Detected**	
OZL-16 (6') *040704003-0006*			**None Detected**	
OZL-16 (12') *040704003-0007*			**None Detected**	
OZL-17 (6') *040704003-0008*			**None Detected**	
OZL-17 (6') DUP *040704003-0009*			**None Detected**	

Analyst(s)

Delores Beard (14)

Stephen Siegel, CIH
or other approved signatory

EMSL Analytical, Inc.
107 Haddon Ave., Westmont, NJ 08108
Phone: (856) 858-4800 Fax: (856) 858-4960 Email: westmontasblab@EMSL.com

Attn: **David M. Peterson, PE, PC**
Johns Manville
1871 N. Pershing Road
Waukegan, IL 60087

Fax: (847) 360-4558 Phone: (847) 360-4439
Project:

Customer ID: JOVI77
Customer PO:
Received: 02/28/07 9:40 AM
EMSL Order: 040704003

EMSL Proj:
Analysis Date: 3/2/2007
Report Date: 3/2/2007

Asbestos Analysis via Polarized Light Microscopy, Qualitative

Sample	Location	Appearance	Result	Notes
OZL-17 (12') *040704003-0010*			**None Detected**	
OZL-18 (6') *040704003-0011*			**None Detected**	
OZL-18 (12') *040704003-0012*			**None Detected**	
OZL-19 (6') *040704003-0013*			**None Detected**	
OZL-19 (12') *040704003-0014*			**None Detected**	

Analyst(s)

Delores Beard (14)

Stephen Siegel, CIH
or other approved signatory

CHAIN OF CUSTODY RECORD

First Environmental Laboratories, Inc.

First Environmental Laboratories
1600 Shore Road, Suite D
Naperville, Illinois 60563
Phone: (630) 778-1200 • Fax: (630) 778-1233
24 Hr. Pager (708) 569-7507
E-mail: info@firstenv.com
IEPA Certification# 100292

Company Name: JOHNS MANVILLE
Street Address: 1871 N. PERSHING RD
City: WAUKEGAN State: IL Zip: 60087
Phone: (847) 360-4439 Fax: (847) 360-4558
Send Report To: DAVE PETERSON AT dmpete@concentric.net
Sampled By: DMP

Project I.D.: ONYX ZION LANDFILL CLAY
P.O. #.:

Matrix Codes: S = Soil W = Water O = Other

Analyses

Date/Time Taken	Sample Description	Matrix	VOCs 8260/5035	SVOCs 8270	RCRA METALS	ANTIMONY	pH	PESTICIDES 8081A	PCBs 8082		Comments	Lab I.D.
2/27/07 12:05	OZL-19 (6')	SOIL	X	X	X	X	X	X	X			7-0800-013
↓ 12:15	OZL-19 (12'	↓	↓	↓	↓	↓	↓	↓	↓			014

FOR LAB USE ONLY:

Cooler Temperature: 0.1-6ºC Yes__ No.__ ______ºC
Received within 6 hrs. of collection:______
Ice Present: Yes__ No__

Sample Refrigerated: Yes__ No__
Refrigerator Temperature:______ºC
5035 Vials Frozen: Yes__ No__
Freezer Temperature:______ºC

Containers Received Preserved: ☐ Yes ☐ No

Notes and Special Instructions: RUSH SAMPLES - 3 DAY TURN

Relinquished By: [signature] Date/Time 2/28/07 1115 Received By: [signature] Date/Time 2-28-07 1120

Relinquished By: Date/Time Received By: Date/Time

Rev. 7/05

Appendix E

Clayey Soil Geotechnical Results
(Barrier Layer and Protective Cover)

BARRIER LAYER CLAY RESULTS

May 6, 2003

TSC
TESTING SERVICE CORPORATION

Corporate Office:
360 S. Main Place, Carol Stream, IL 60188-2404
630.462.2600 • Fax 630.653.2988

Local Office:
457 E. Gundersen Drive, Carol Stream, IL 60188-2492
630.653.3920 • Fax 630.653.2726

Ms. Wendy Teskey
LFR Levine Fricke
630 Tollgate Road, Suite D
Elgin, Illinois 60123

Re: Laboratory Analysis
TSC Job L-57,606

Dear Ms. Teskey:

Included in this report is the result of the analysis you requested for six (6) Shelby Tube samples delivered to our office.

Sample ID	% Moisture	P.C.F. Dry	K_T (cm/sec)	Description
LMW-03 ST-01	20.4	107.2	3.9×10^{-8}	Brown & gray silty CLAY, little sand, trace gravel (CL)
C-22 * ST-02	11.3	117.3	1.4×10^{-5}	Brown & gray clayey SAND, little gravel (SC)
C-14 ST-03	18.0	105.5	6.1×10^{-8}	Brown & gray silty CLAY, little sand and gravel (CL)
C-9-10 ST-04	13.1	119.8	3.4×10^{-7}	Brown & gray silty CLAY, some sand, little gravel (CL)
C-67-68 ST-05	9.6	120.9	1.8×10^{-7}	Brown, black & gray sandy CLAY, little gravel (CL)
C-65-66 ST-06	17.6	105.7	3.2×10^{-5}	Brown silty CLAY, some sand, trace gravel (CL)

*NOTE: The bottom ten inches of Sample C-22 was of a gray sand (SP) not suitable for an ASTM D5084 permeability analysis.

The analysis was performed following current ASTM D5084 methodology.

It is a pleasure to assist you on this project. Please call if you have any questions or require additional information.

Respectfully submitted,

TESTING SERVICE CORPORATION

Larry Lockwald
Laboratory Manager

LL:cn

A comparison of the average water elevations within the shallow, unconfined aquifer located above the Wadsworth Till with the average water elevations found within the deep sand and gravel/Silurian Dolomite (see Table 3) shows that there is a downward gradient from the shallow sand to these underlying units. As Table 3 shows, the downward gradient in the vicinity of the On-Site Landfill ranges from 0.03 foot per foot (LMW-14) to 0.06 foot per foot (LMW-18).

4.2.5 Vertical Flow Velocity

Table 4 shows the calculated vertical flow velocity from the shallow, unconfined aquifer to the underlying sand and gravel/Silurian Dolomite, through the lower permeability Wadsworth Till. Velocities range from 0.02 to 0.04 feet per year. Taking into account the thickness of the Wadsworth Till in the vicinity of the On-Site Landfill, groundwater travel times through the till range from approximately 2,300 to 4,100 years. This calculation is strictly for groundwater itself; migration through the till for any potential contaminants would be further reduced by adsorption and attenuation.

4.2.6 Definition of Uppermost Aquifer

Based upon the geology and hydrogeology in the vicinity of the On-Site Landfill, the uppermost aquifer is defined from the surface to the upper section of the underlying Silurian Dolomite bedrock. This includes two significant water bearing zones, the shallow, unconfined aquifer located within the beach sand complex above the Wadsworth Till and the aquifer that includes the sand and gravel outwash and underlying Silurian Dolomite. These aquifers are separated by the Wadsworth Till that is an average thickness of 79 feet in the vicinity of the On-Site Landfill. The till exhibits an average hydraulic conductivity of 6.52E-08 cm/s, thus travel times for groundwater passing through the till are on the order of 2,300 to 4,100 years.

4.3 On-Site Landfill Characterization

4.3.1 On-site Landfill Interim Cover

The results of the soil borings that were advanced in April 2003 across the two fill areas show that interim cover thickness varies widely across both Fill Area 1 and Fill Area 2. The clay cover ranged from 1 foot to 10.5 feet in thickness in Fill Area 1. The approximate average thickness was 3 to 4 feet. The clay fill in Fill Area 2 ranged from 2 feet to 15 feet in thickness. Figure 6 shows the locations of the soil borings. Figures 15, 16 and 17 present three cross sections of the fill areas to graphically depict the clay cover thickness, the waste layer and the interface between the on-site landfill and the closed CERCLA landfill. Figure 18 presents the variation in thickness of clay cover across the landfill graphically by plotting the clay thickness contours.

Permeability of the clay cover was tested in Fill Area 1 at four locations (ST-1 through ST-4) and in Fill Area 2 at two locations (ST-4 and ST-5), which are shown in Figure

7. The permeability of the interim cover overlying Fill Area 1 ranged from 3.9×10^{-8} centimeter/second (cm/s) to 3.4×10^{-7} cm/s. The bottom 10" of one of the four samples from Fill Area 1 (ST-2) contained gray sand material unsuitable for conducting the permeability test. Disregarding the results from the ST-2 sample, the average permeability of the cover in Fill Area 1 was estimated to be 1.47×10^{-7} cm/s. Of the two samples from Fill Area 2, the sample from location ST-6 consisted of silty clay with some (30-55%) sand and trace gravel, and was not considered representative of the clay fill across Fill Area 2 and was not used in the analysis. From the results of the analysis of the sample from ST-5, the permeability of the cover in Fill Area 2 was determined to be 1.8×10^{-7} cm/sec. The analysis was performed following ASTM Method D-5084. The laboratory report showing the results of the permeability testing is presented in Appendix E.

4.3.2 On-Site Landfill Subsurface Characterization

Fill Area 1:

The 1992 historical topographic survey of the on-site landfill was compared with the survey completed in late 1998. No waste or interim cover has been placed since that time. It was estimated that between 30 feet and 40 feet of waste material and soil cover had been placed in the southeast portion of Fill Area 1 (vicinity of SB-01 and SB-02). Lesser amounts of material were placed towards the western limits of Fill Area 1 (vicinity of LF-SB03 and LF-SB04).

The boring log for LF-SB02 showed the presence of calcium silicate from 18 feet to 36 feet bgs. Calcium silicate is the inert material that makes up the T-12 insulation that was manufactured at the Waukegan plant through 1998. Consistent with the composition of T-12 insulation, synthetic fibers were also found in the boring. These fibers were tested at an independent laboratory, Scilab Boston, Inc. (Scilab), which confirmed that the material did not contain asbestos. The Scilab results are included in Appendix G. Multiple attempts to reach similar depths in the area of LF-SB01 were met with subsurface refusal at depths between 10 feet and 13 feet bgs (see boring log). The boring at LF-SB02 was terminated in T-12 waste material at 36 feet bgs (approximately 596 feet AMSL).

Greater than 95% clay was encountered from the surface down to 13 feet bgs in LF-SB01 (maximum depth of boring) and down to 18 feet bgs in LF-SB02 (depth at which T-12 was encountered). This was consistent with the Waukegan plant's operations during the 1992 to 1998 time period, when JM was placing sufficient cover material to prevent surficial exposure of the waste T-12 material.

In the vicinity of LF-SB03 and LF-SB04, very little waste material was encountered. At LF-SB03, the cover for the former CERCLA landfill underlying the Site was encountered at 11.5 feet bgs. Except for an isolated shingle "wafer" that was encountered at 8 feet bgs, only clay was found above the former CERCLA landfill. At LF-SB04, the cover of the former CERCLA landfill was encountered at approximately

Note:
Figure adapted from Aerial Survey dated 1998, generated by Harrington Associates.

JOHNS MANVILLE
On-Site Landfill
Permeability Test Locations

LFR
LEVINE•FRICKE

Figure 7

T:\Johns Manville\7992.00Waukegan\2ndESD\On-SiteLandfillClosure\CoverEquivalentDocuments\Drawings\Figure07.dwg

PROTECTIVE COVER CLAY RESULTS

SUMMARY OF LABORATORY TEST RESULTS FOR
CLAY CLOSURE MATERIAL (BORROW SOURCE)

JOHNS MANVILLE
WAUKEGAN PLANT

FEBRUARY 2009

			Grain Size Analysis		Atterberg Limits			Sampled Water	Modified Proctor Density		Coefficient	Permeability	
Date Sampled	Sample Number	Sample Location	%Fines <#200	%Clay <.005	Liquid Limit	Plastic Limit	Plasticity Index	Content (%)	Max. Dry Density (pcf)	Optimum Water (%)	Permeability (cm/sec)	Compaction (%)	U.S.C.S.
5/14/08	JM-TP-1	Test Pit No. 1	78.7	38.0	30.1	13.3	16.8	15.6	128.0	9.8			CL
5/14/08	JM-TP-2	Test Pit No. 2	67.0	25.0	24.0	12.1	11.9	13.7	130.1	8.4	9.2×10^{-7}	89.5	CL
5/14/08	JM-TP-3	Test Pit No. 3	82.1	37.5	29.7	14.3	15.4	16.9	127.9	10.4			CL
5/14/08	JM-TP-4	Test Pit No. 4	83.8	35.0	28.3	13.4	14.9	17.8	128.2	10.6	6.2×10^{-8}	92.3	CL
5/14/08	JM-TP-5	Test Pit No. 5	75.5	32.0	28.9	13.8	15.1	15.1	126.0	11.2	5.1×10^{-7}	90.2	CL
5/14/08	JM-TP-6	Test Pit No. 6	81.0	28.0	26.8	13.1	13.7	16.5	128.9	10.0			CL
5/14/08	JM-TP-7	Test Pit No. 7	53.7	19.0	27.6	14.9	12.7	14.5	128.3	9.8	7.6×10^{-8}	92.4	CL
5/14/08	JM-TP-8	Test Pit No. 8	51.0	16.5	23.1	12.8	10.3	10.8	131.1	9.8	7.4×10^{-8}	89.1	CL
Minimum:			**51.0**	**16.5**	**23.1**	**12.1**	**10.3**	**10.8**	**126.0**	**8.4**	**9.2×10^{-7}**	**89.1**	
Maximum:			**83.8**	**38.0**	**30.1**	**14.9**	**16.8**	**17.8**	**131.1**	**11.2**	**6.2×10^{-8}**	**92.4**	
Average:			**71.6**	**28.9**	**27.3**	**13.5**	**13.8**	**15.1**	**128.6**	**10.0**	**3.3×10^{-7}**	**90.7**	
Project Requirements:			**$\geq$50.0**								**$\leq 7.0 \times 10^{-6}$**		**CL/CH**

CQM, INC.

SIEVE ANALYSIS OF COARSE TO FINE AGGREGATES (ASTM D422)

GENERAL DATA:

Client:	**Johns Manville Waukegan Plant**
Project:	**Waukegen Plant**
Location Sampled:	**Test Pit #1**
Sample No:	**JM-TP-1**
Depth of Sample:	
Date Received:	**5/16/08**
Sample Designated For:	**Clay Cover Material**
Source of Sample:	
Munsell Color Code:	**10YR 4/2**
Date Sampled:	**5/14/08**

LABORATORY DATA:

Date Tested:	May 16-21,2008
Test Performed By:	JRP

24 Hrs. Turn Around:	NO
Washed Gradation:	YES

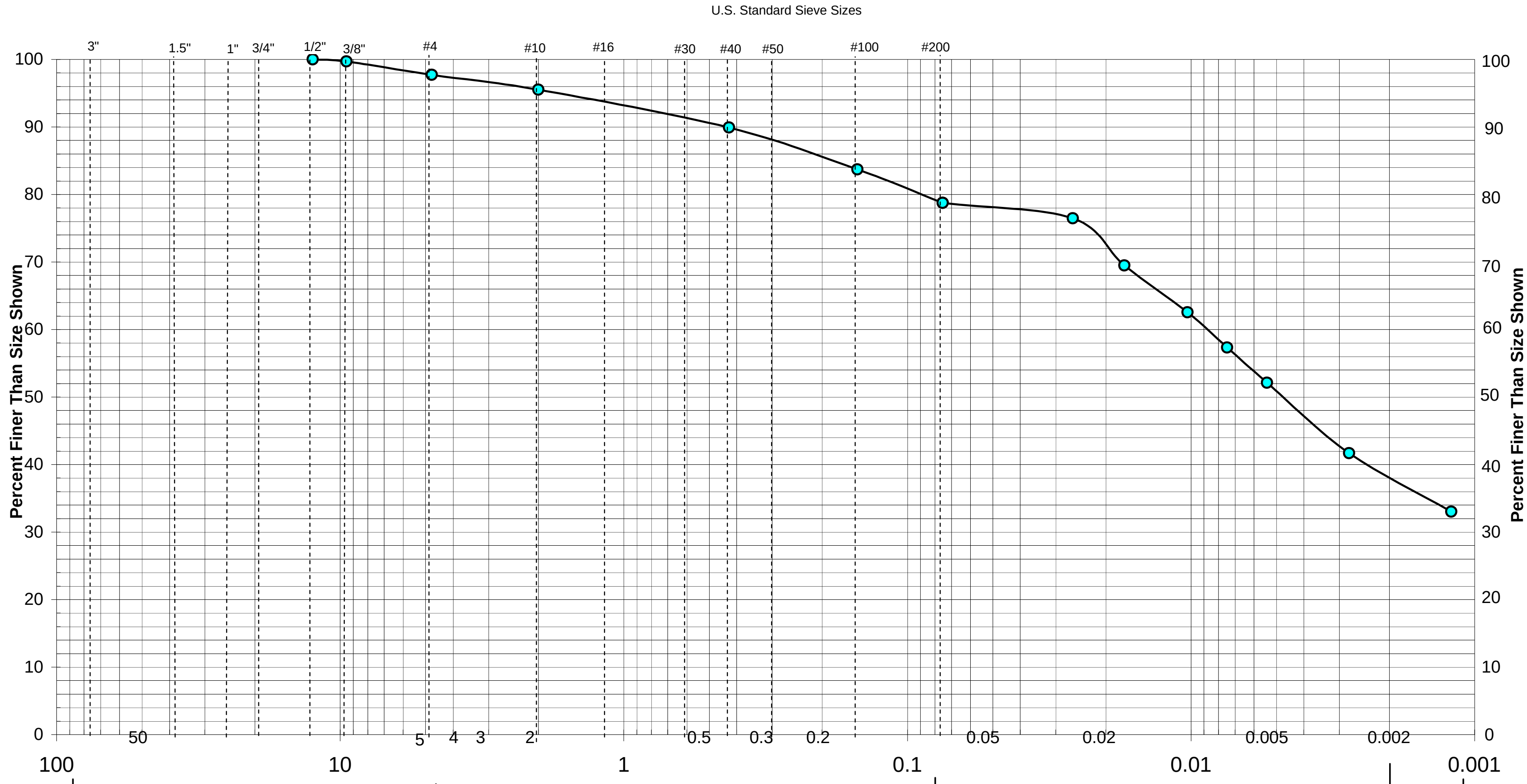
Dry Weight of Soil (gms): 597.0

Sieve Size	Weight Retained	% Retained	% Passing	Project Specification % Passing by Weight	Source of Specification
3"					Project Specification
1 1/2"					
1"					
3/4"					
1/2"	0.0	0.0	100.0		
3/8"	1.7	0.3	99.7		
#4	11.9	2.0	97.7		
#10	12.9	2.2	95.5		
#40	33.3	5.6	89.9		
#100	37.1	6.2	83.7		
#200	30.0	5.0	78.7	50-100	

REVIEWED BY:	
DATE REVIEWED:	

Remarks:

GRAIN SIZE DISTRIBUTION CURVE



Gravel		Sand				
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
	2.3%	2.2%	5.6%	11.2%	40.7%	38.0%

Soil Classification: LEAN CLAY W/SAND, dark grayish brown (CL)			
Location Sampled: Test Pit #1	Elevation or Depth:	Date Sampled: 5/14/08	
Sample Number: JM-TP-1	Sampled Moisture Content (%): 15.6	Report No.: TP-1	
Sample Source:	***CQM, INC.***		
Atterberg Limits: LL= 30.1, PL= 13.3, PI= 16.8	Client: **Johns Manville Waukegan Plant**		
Munsell Color Code: 10YR 4/2	Project: **Waukegen Plant**	Page:	2
Date Received: 5/16/08	Prepared by: Michael R. Andraschko	Date:	6/6/08
Coefficients: Cc= Cu=	Checked by:	Date:	

CQM, INC.

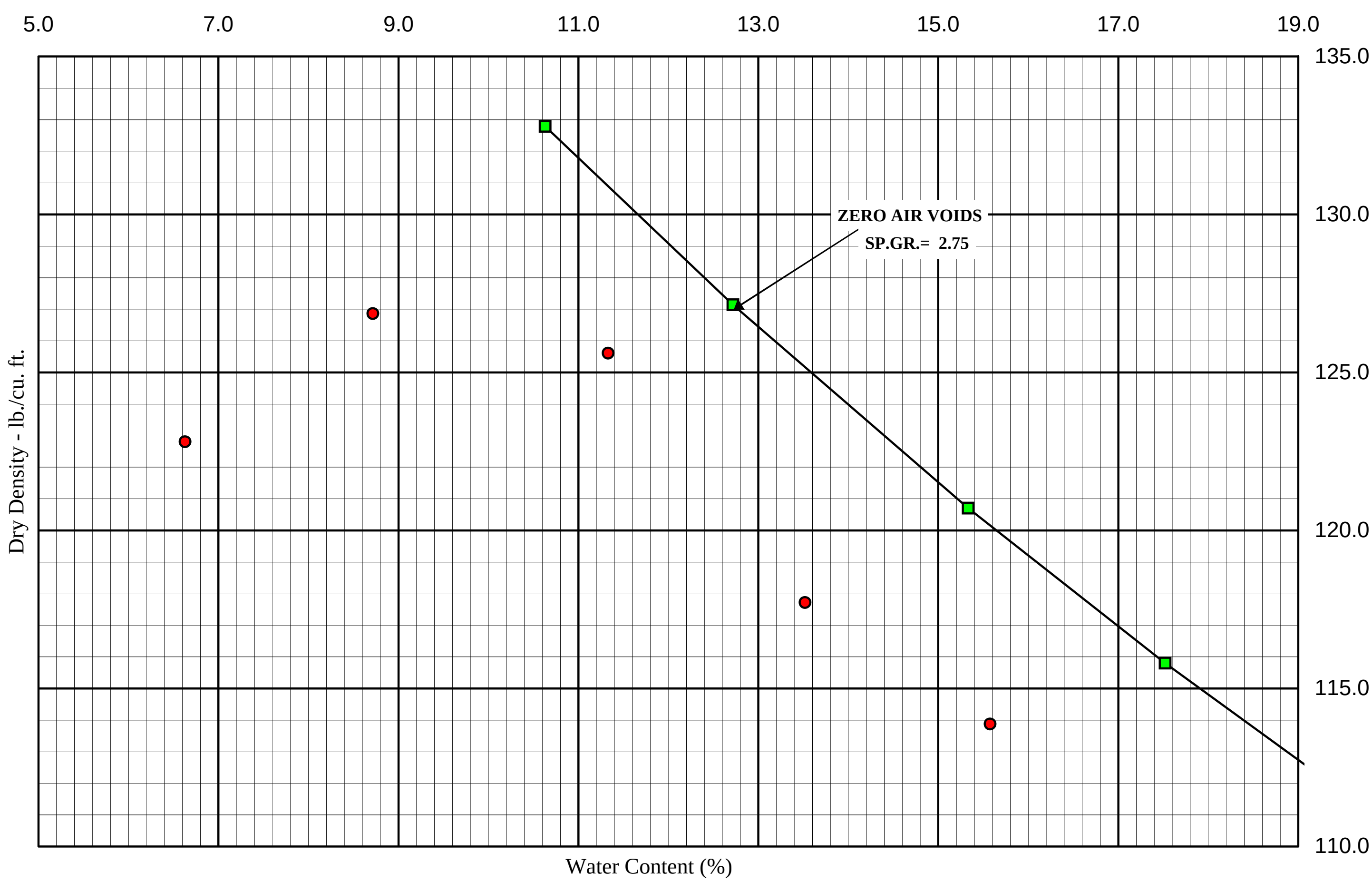
MOISTURE - DENSITY RELATIONS OF SOIL

GENERAL DATA:

Client:	Johns Manville Waukegan Plant		
Project:	Waukegan Plant		
Contractor:		**Sampled From:**	Test Pit 1
Sample No:	JM-TP-1	**Date Received:**	5/16/08
Tested By:	TKA	**Reviewed By:**	

LABORATORY DATA:

Method of Test:	ASTM D1557 - Method "A"				
Soil Classification:	LEAN CLAY W/SAND, dark grayish brown (CL)				
Munsell Color Code:	10YR 4/2	**Atterberg Limits:**	**LL=30.1**	**PL=13.3**	**PI=16.8**
Maximum Dry Density (lb/cu.ft.):	128.0	**Optimum Moisture (%):**	9.8	**Wet Density (lb/cu.ft.):**	140.5



CQM, INC.

SIEVE ANALYSIS OF COARSE TO FINE AGGREGATES (ASTM D422)

GENERAL DATA:

Client:	**Johns Manville Waukegan Plant**
Project:	**Waukegen Plant**
Location Sampled:	**Test Pit #2**
Sample No:	**JM-TP-2**
Depth of Sample:	
Date Received:	**5/16/08**
Sample Designated For:	**Clay Cover Material**
Source of Sample:	
Munsell Color Code:	**10YR 4/2**
Date Sampled:	**5/14/08**

LABORATORY DATA:

Date Tested:	May 16-21,2008
Test Performed By:	JRP

24 Hrs. Turn Around:	NO
Washed Gradation:	YES

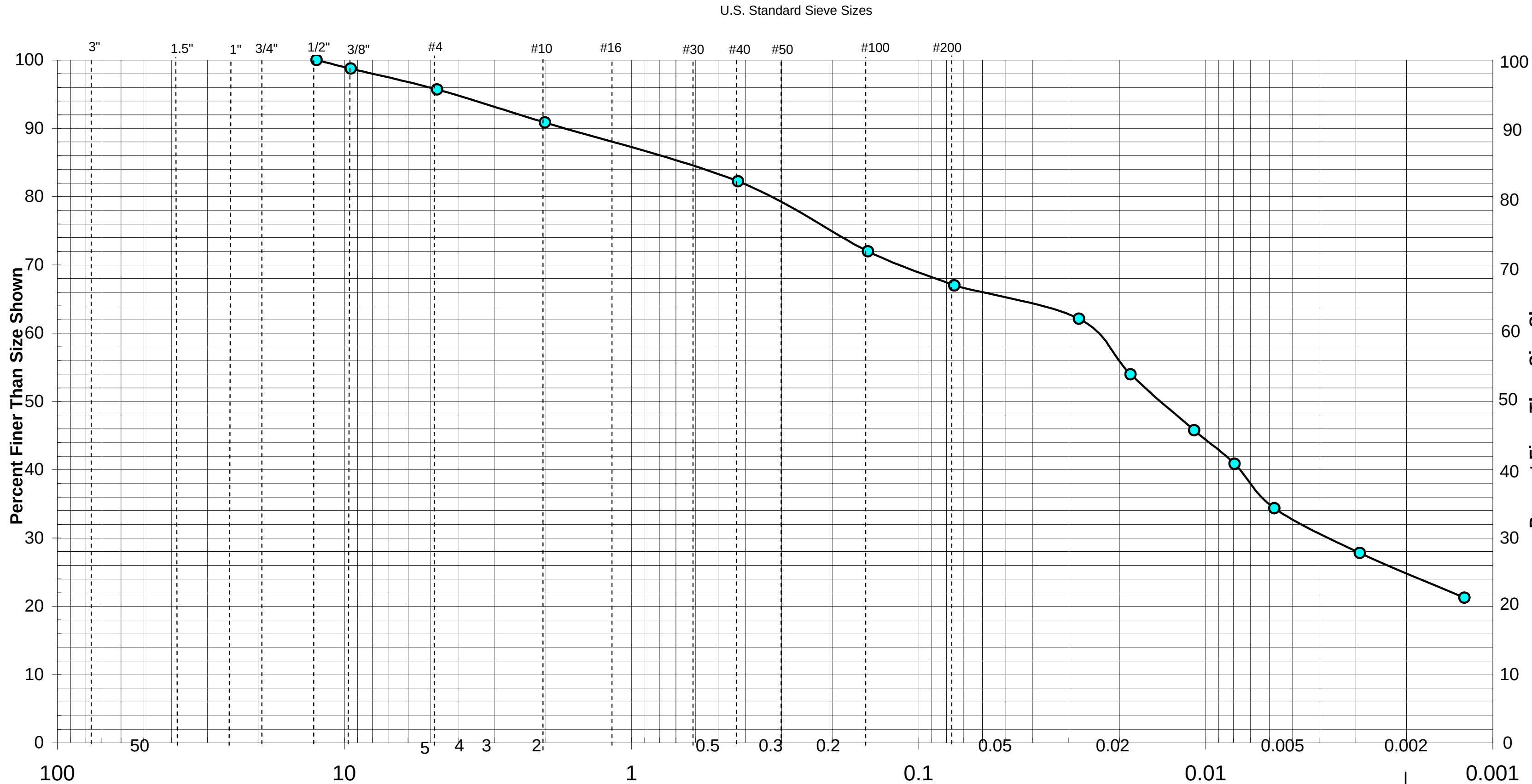
Dry Weight of Soil (gms): 512.5

Sieve Size	Weight Retained	% Retained	% Passing	Project Specification % Passing by Weight	Source of Specification
3"					Project Specification
1 1/2"					
1"					
3/4"					
1/2"	0.0	0.0	100.0		
3/8"	6.3	1.2	98.8		
#4	15.7	3.1	95.7		
#10	24.9	4.9	90.8		
#40	44.1	8.6	82.2		
#100	52.1	10.2	72.0		
#200	25.4	5.0	67.0	50-100	

REVIEWED BY:	
DATE REVIEWED:	

Remarks:

GRAIN SIZE DISTRIBUTION CURVE



Gravel		Sand				
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
	4.3%	4.9%	8.6%	15.2%	42.0%	25.0%

Soil Classification: SANDY LEAN CLAY, a little gravel, dark grayish brown (CL)

Location Sampled: Test Pit #2		Elevation or Depth:	Date Sampled: 5/14/08
Sample Number: JM-TP-2		Sampled Moisture Content (%): 13.7	Report No.: TP-2
Sample Source:		***CQM, INC.***	
Atterberg Limits: LL= 24.0	PL= 12.1 / PI= 11.9	Client: **Johns Manville Waukegan Plant**	
Munsell Color Code: 10YR 4/2		Project: **Waukegen Plant**	Page: 2
Date Received: 5/16/08		Prepared by: Michael R. Andraschko	Date: 6/6/08
Coefficients: Cc=	Cu=	Checked by:	Date:

CQM, INC.

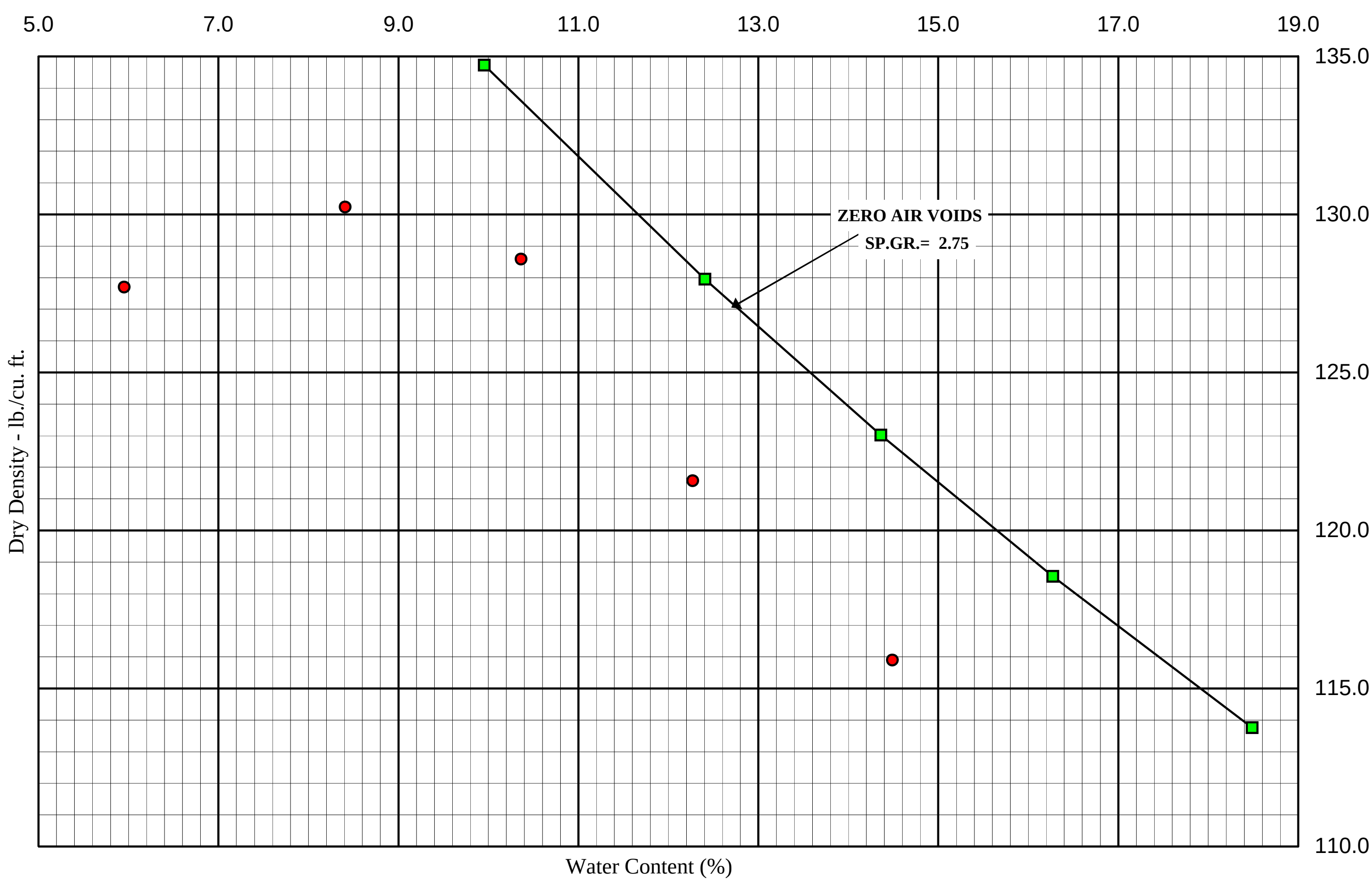
MOISTURE - DENSITY RELATIONS OF SOIL

GENERAL DATA:

Client:	Johns Manville Waukegan Plant		
Project:	Waukegan Plant		
Contractor:		**Sampled From:**	Test Pit 2
Sample No:	JM-TP-2	**Date Received:**	5/16/08
Tested By:	TKA	**Reviewed By:**	

LABORATORY DATA:

Method of Test:	ASTM D1557 - Method "A"				
Soil Classification:	SANDY LEAN CLAY, dark grayish brown (CL)				
Munsell Color Code:	10YR 4/2	**Atterberg Limits:**	**LL=24.0**	**PL=12.1**	**PI=11.9**
Maximum Dry Density (lb/cu.ft.):	130.1	**Optimum Moisture (%):**	8.4	**Wet Density (lb/cu.ft.):**	141.0



CQM, INC.
2679 Continental Drive
Green Bay, WI 54311
(920) 465-3911

Client: Johns Manville Waukegan Plant
Project: Waukegan Plant
Prepared by: Jon L. Novak **Date:** 6/6/08
Checked by: **Date:**

REPORT OF:

FALLING HEAD PERMEABILITY TEST

ASTM: D5084

GENERAL DATA:

Sample Location:	Test Pit 2	
Sample Number:	JM-TP-2	
Date Sampled:	5/14/08	
Date Received:	5/16/08	

LABORATORY DATA:

		PROJECT SPECIFICATIONS
Method of Test:	Flex Wall - Remolded	
Length of Sample (inches):	4.079	
Diameter of Sample (inches):	3.983	
Dates Tested:	May 23-June 4, 2008	
Moisture Content (%)	10.2	
Dry Density (pcf):	116.4	
% Compaction:	89.5	
Soil Classification:	LEAN CLAY W/SAND, dark grayish brown (CL)	
Max. Head Differential (ft.)	6.0	
Confining Pressure (Effective psi):	2.0	
Hydraulic Gradient:	13-18	
Trial No.:	9-12	
Water Temperature:	21°C	
Coefficient of Permeability (cm/sec):	9.2×10^{-7}	7.0×10^{-6} or slower

REMARKS:

CQM, INC.

SIEVE ANALYSIS OF COARSE TO FINE AGGREGATES (ASTM D422)

GENERAL DATA:

Client:	**Johns Manville Waukegan Plant**
Project:	**Waukegen Plant**
Location Sampled:	**Test Pit #3**
Sample No:	**JM-TP-3**
Depth of Sample:	
Date Received:	**5/16/08**
Sample Designated For:	**Clay Cover Material**
Source of Sample:	
Munsell Color Code:	**10YR 4/2**
Date Sampled:	**5/14/08**

LABORATORY DATA:

Date Tested:	May 16-21,2008
Test Performed By:	JRP

24 Hrs. Turn Around:	NO
Washed Gradation:	YES

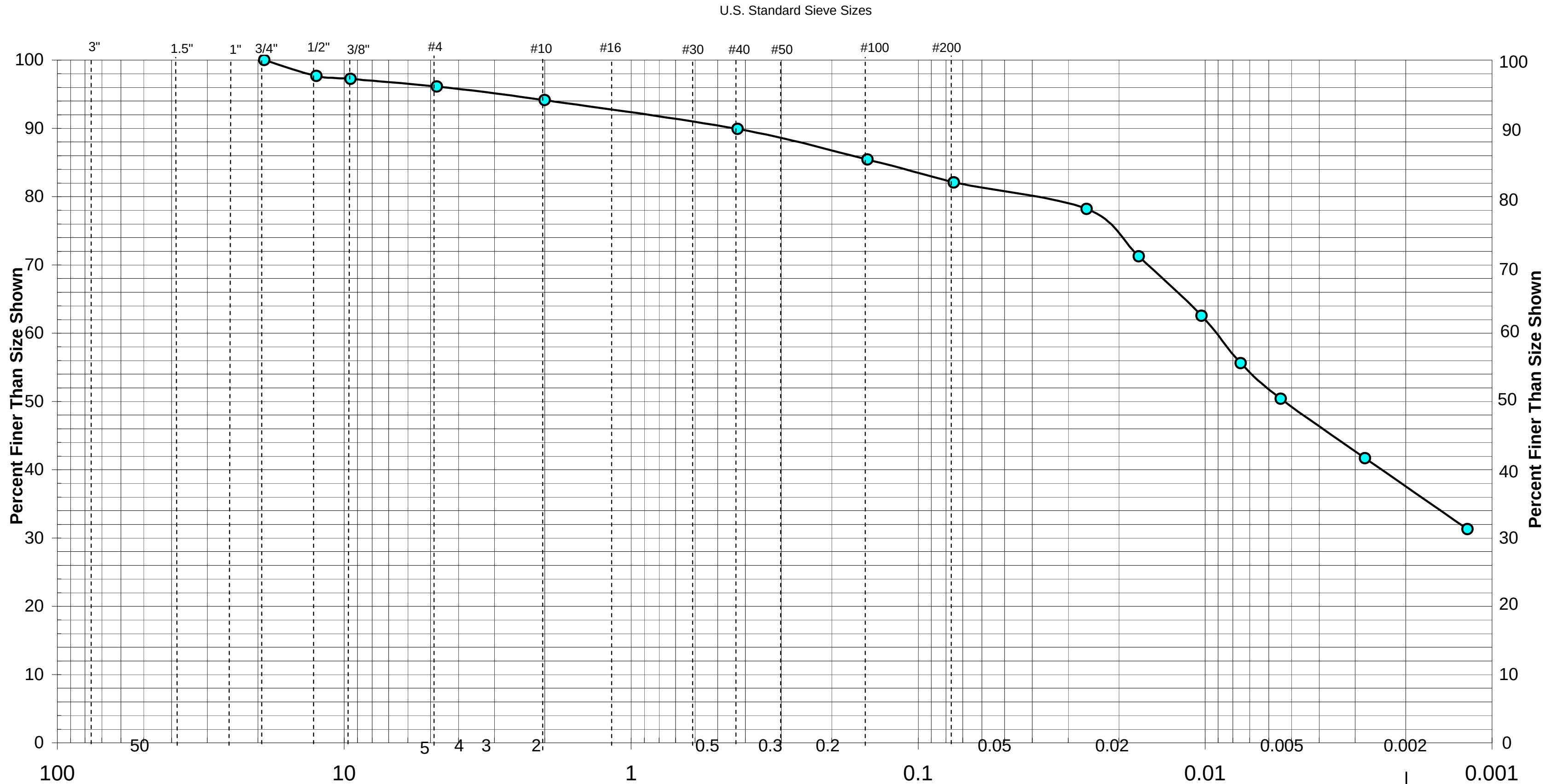
Dry Weight of Soil (gms): 485.3

Sieve Size	Weight Retained	% Retained	% Passing	Project Specification % Passing by Weight	Source of Specification
3"					Project Specification
1 1/2"					
1"					
3/4"	0.0	0.0	100.0		
1/2"	11.2	2.3	97.7		
3/8"	2.1	0.4	97.3		
#4	5.6	1.2	96.1		
#10	9.5	2.0	94.1		
#40	20.5	4.2	89.9		
#100	21.7	4.5	85.5		
#200	16.4	3.4	82.1	50-100	

REVIEWED BY:	
DATE REVIEWED:	

Remarks:

GRAIN SIZE DISTRIBUTION CURVE



Gravel		Sand				
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
	3.9%	2.0%	4.2%	7.9%	44.6%	37.5%

Soil Classification: LEAN CLAY W/SAND, a little gravel, dark grayish brown (CL)			
Location Sampled: Test Pit #3		Elevation or Depth:	Date Sampled: 5/14/08
Sample Number: JM-TP-3		Sampled Moisture Content (%): 16.9	Report No.: TP-3
Sample Source:		***CQM, INC.***	
Atterberg Limits: LL= 29.7	PL= 14.3 / PI= 15.4	Client: **Johns Manville Waukegan Plant**	
Munsell Color Code: 10YR 4/2		Project: **Waukegen Plant**	Page: 2
Date Received: 5/16/08		Prepared by: Michael R. Andraschko	Date: 6/6/08
Coefficients: Cc=	Cu=	Checked by:	Date:

CQM, INC.

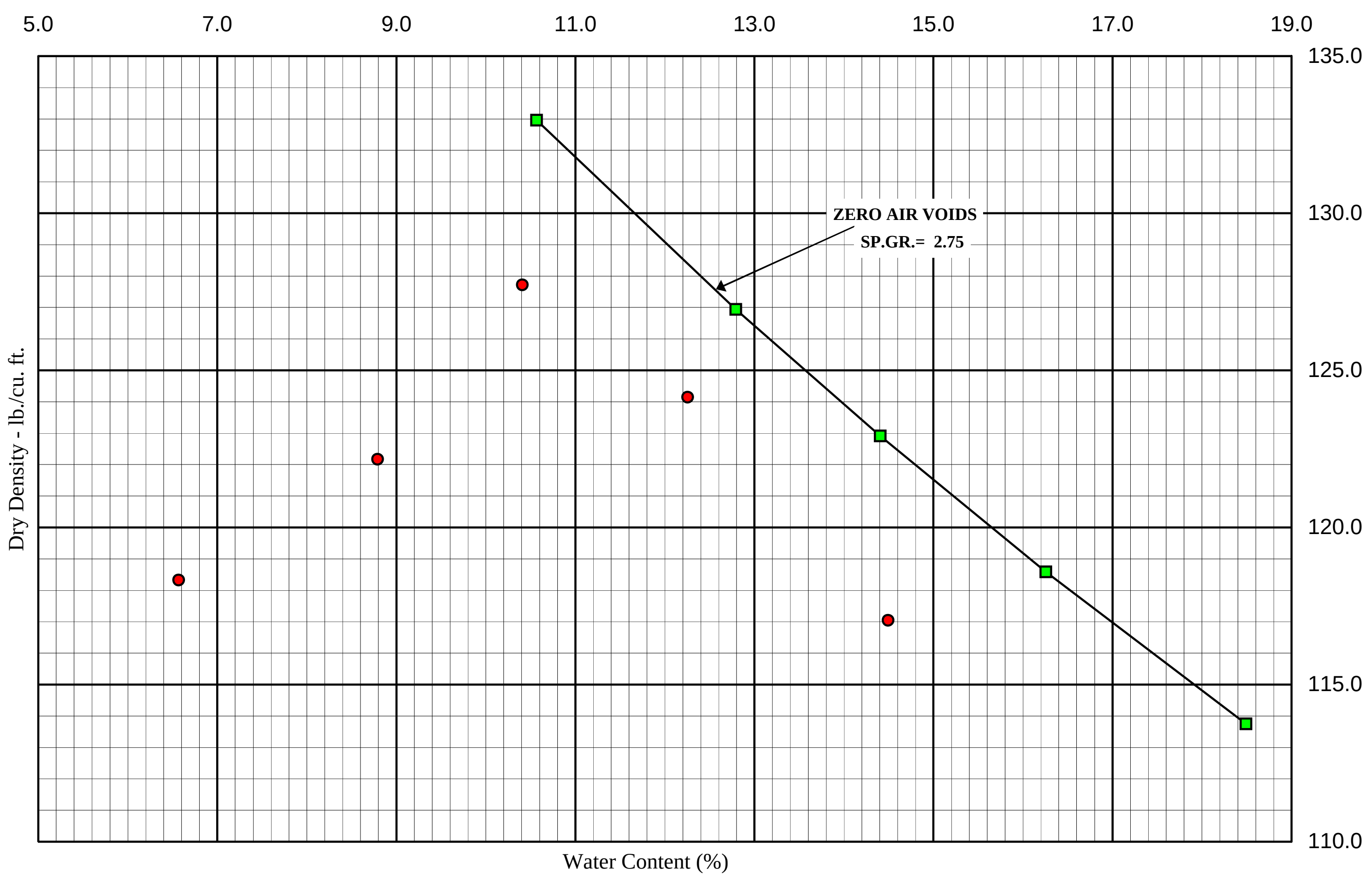
MOISTURE - DENSITY RELATIONS OF SOIL

GENERAL DATA:

Client:	Johns Manville Waukegan Plant		
Project:	Waukegan Plant		
Contractor:		**Sampled From:**	Test Pit 3
Sample No:	JM-TP-3	**Date Received:**	5/16/08
Tested By:	TKA	**Reviewed By:**	

LABORATORY DATA:

Method of Test:	ASTM D1557 - Method "A"				
Soil Classification:	LEAN CLAY W/SAND, dark grayish brown (CL)				
Munsell Color Code:	10YR 4/2	**Atterberg Limits:**	**LL=29.7**	**PL=14.3**	**PI=15.4**
Maximum Dry Density (lb/cu.ft.):	127.9	**Optimum Moisture (%):**	10.4	**Wet Density (lb/cu.ft.):**	141.2



CQM, INC.

SIEVE ANALYSIS OF COARSE TO FINE AGGREGATES (ASTM D422)

GENERAL DATA:

Client:	**Johns Manville Waukegan Plant**
Project:	**Waukegen Plant**
Location Sampled:	**Test Pit #4**
Sample No:	**JM-TP-4**
Depth of Sample:	
Date Received:	**5/16/08**
Sample Designated For:	**Clay Cover Material**
Source of Sample:	
Munsell Color Code:	**10YR 4/2**
Date Sampled:	**5/14/08**

LABORATORY DATA:

Date Tested:	May 16-21,2008
Test Performed By:	JRP

24 Hrs. Turn Around:	NO
Washed Gradation:	YES

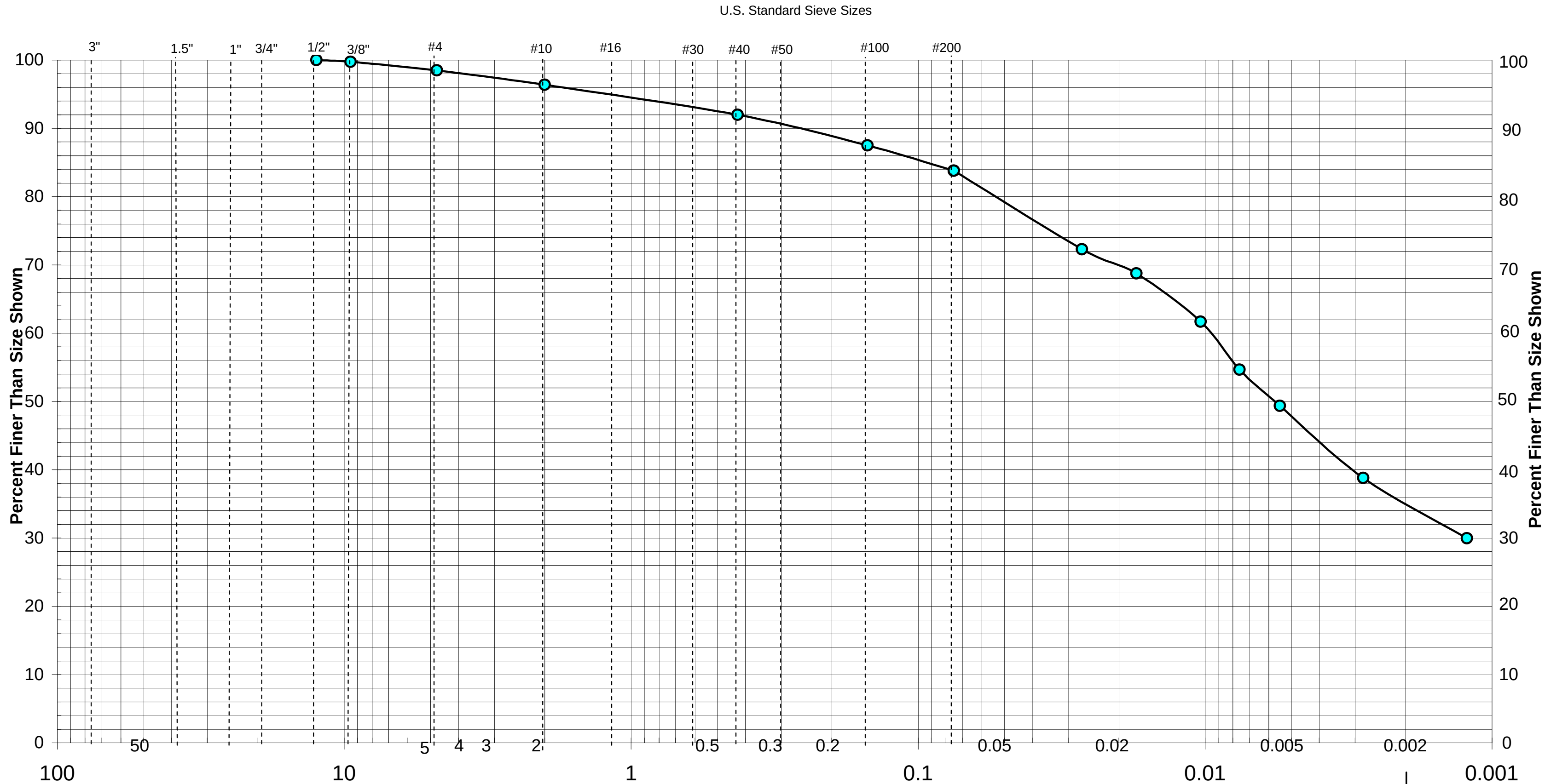
Dry Weight of Soil (gms): 502.0

Sieve Size	Weight Retained	% Retained	% Passing	Project Specification % Passing by Weight	Source of Specification
3"					Project Specification
1 1/2"					
1"					
3/4"					
1/2"	0.0	0.0	100.0		
3/8"	1.2	0.2	99.8		
#4	6.7	1.3	98.5		
#10	10.7	2.1	96.4		
#40	22.0	4.4	92.0		
#100	22.5	4.5	87.5		
#200	18.5	3.7	83.8	50-100	

REVIEWED BY:	
DATE REVIEWED:	

Remarks:

GRAIN SIZE DISTRIBUTION CURVE



Gravel		Sand				
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
	1.5%	2.1%	4.4%	8.2%	48.8%	35.0%

Soil Classification: LEAN CLAY W/SAND, dark grayish brown (CL)			
Location Sampled: Test Pit #4	Elevation or Depth:	Date Sampled: 5/14/08	
Sample Number: JM-TP-4	Sampled Moisture Content (%): 17.8	Report No.: TP-4	
Sample Source:	***CQM, INC.***		
Atterberg Limits: LL= 28.3 / PL= 13.4 / PI= 14.9	Client: **Johns Manville Waukegan Plant**		
Munsell Color Code: 10YR 4/2	Project: **Waukegen Plant**	Page:	2
Date Received: 5/16/08	Prepared by: Michael R. Andraschko	Date:	6/6/08
Coefficients: Cc= / Cu=	Checked by:	Date:	

CQM, INC.

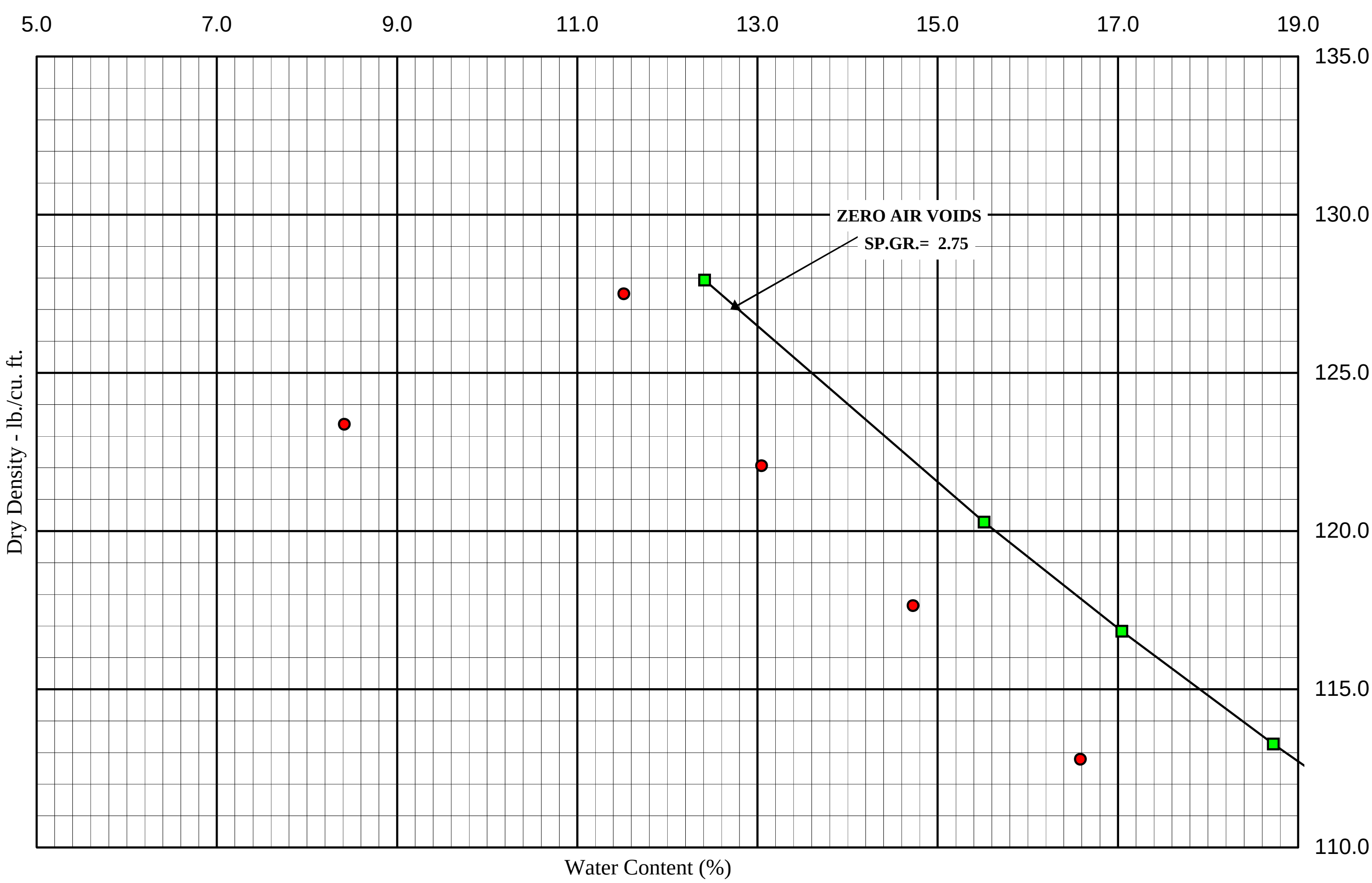
MOISTURE - DENSITY RELATIONS OF SOIL

GENERAL DATA:

Client:	Johns Manville Waukegan Plant		
Project:	Waukegan Plant		
Contractor:		**Sampled From:**	Test Pit 4
Sample No:	JM-TP-4	**Date Received:**	5/16/08
Tested By:	TKA	**Reviewed By:**	

LABORATORY DATA:

Method of Test:	ASTM D1557 - Method "A"				
Soil Classification:	LEAN CLAY W/SAND, dark grayish brown (CL)				
Munsell Color Code:	10YR 4/2	**Atterberg Limits:**	**LL=28.3**	**PL=13.4**	**PI=14.9**
Maximum Dry Density (lb/cu.ft.):	128.2	**Optimum Moisture (%):**	10.6	**Wet Density (lb/cu.ft.):**	141.8



CQM, INC.
2679 Continental Drive
Green Bay, WI 54311
(920) 465-3911

Client: Johns Manville Waukegan Plant
Project: Waukegan Plant
Prepared by: Jon L. Novak **Date:** 6/9/08
Checked by: **Date:**

REPORT OF:

FALLING HEAD PERMEABILITY TEST

ASTM: D5084

GENERAL DATA:

Sample Location:	Test Pit 4
Sample Number:	JM-TP-4
Date Sampled:	5/14/08
Date Received:	5/16/08

LABORATORY DATA:

		PROJECT SPECIFICATIONS
Method of Test:	Flex Wall - Remolded	
Length of Sample (inches):	3.995	
Diameter of Sample (inches):	4.018	
Dates Tested:	May 21-28, 2008	
Moisture Content (%)	13.8	
Dry Density (pcf):	118.3	
% Compaction:	92.3	
Soil Classification:	LEAN CLAY W/SAND, dark grayish brown (CL)	
Max. Head Differential (ft.)	6.0	
Confining Pressure (Effective psi):	2.0	
Hydraulic Gradient:	16-18	
Trial No.:	3-6	
Water Temperature:	21°C	
Coefficient of Permeability (cm/sec):	6.2×10^{-8}	7.0×10^{-6} or slower

REMARKS:

CQM, INC.

SIEVE ANALYSIS OF COARSE TO FINE AGGREGATES (ASTM D422)

GENERAL DATA:

Client:	**Johns Manville Waukegan Plant**
Project:	**Waukegen Plant**
Location Sampled:	**Test Pit #5**
Sample No:	**JM-TP-5**
Depth of Sample:	
Date Received:	**5/16/08**
Sample Designated For:	**Clay Cover Material**
Source of Sample:	
Munsell Color Code:	**10YR 4/2**
Date Sampled:	**5/14/08**

LABORATORY DATA:

Date Tested:	May 16-21,2008
Test Performed By:	JRP

24 Hrs. Turn Around:	NO
Washed Gradation:	YES

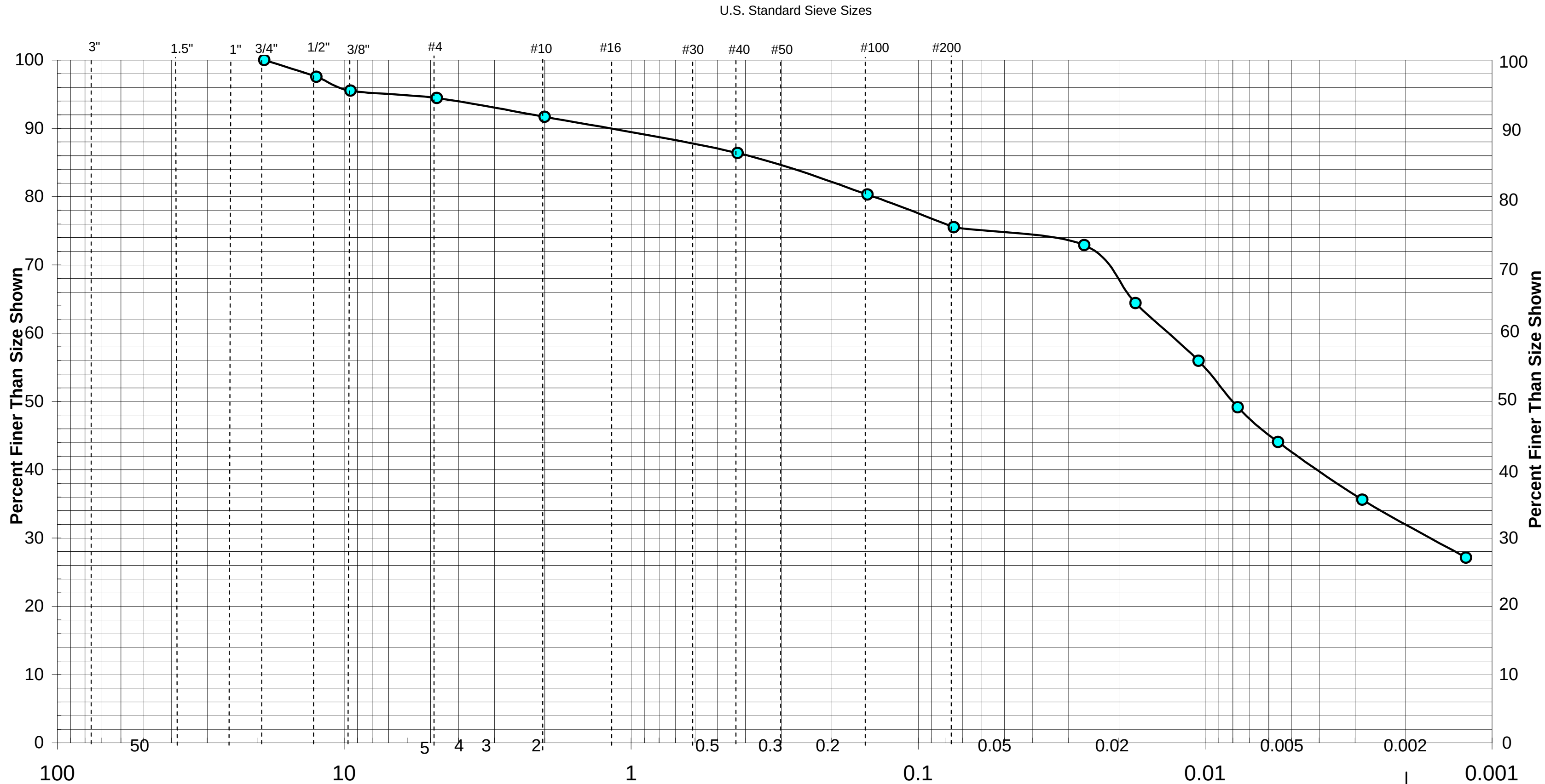
Dry Weight of Soil (gms): 618.9

Sieve Size	Weight Retained	% Retained	% Passing	Project Specification % Passing by Weight	Source of Specification
3"					Project Specification
1 1/2"					
1"					
3/4"	0.0	0.0	100.0		
1/2"	15.3	2.5	97.5		
3/8"	12.5	2.0	95.5		
#4	6.7	1.1	94.4		
#10	16.5	2.7	91.7		
#40	32.8	5.3	86.4		
#100	37.7	6.1	80.3		
#200	29.7	4.8	75.5	50-100	

REVIEWED BY:	
DATE REVIEWED:	

Remarks:

GRAIN SIZE DISTRIBUTION CURVE



Gravel		Sand			Silt	Clay
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
	5.6%	2.7%	5.3%	10.9%	43.5%	32.0%

Soil Classification: LEAN CLAY W/SAND, a little gravel, dark grayish brown (CL)				
Location Sampled: Test Pit #5		Elevation or Depth:	Date Sampled: 5/14/08	
Sample Number: JM-TP-5		Sampled Moisture Content (%): 15.1	Report No.: TP-5	
Sample Source:		***CQM, INC.***		
Atterberg Limits: LL= 28.9	PL= 13.8 / PI= 15.1	Client: **Johns Manville Waukegan Plant**		
Munsell Color Code: 10YR 4/2		Project: **Waukegen Plant**	Page:	2
Date Received: 5/16/08		Prepared by: Michael R. Andraschko	Date:	6/6/08
Coefficients: Cc=	Cu=	Checked by:	Date:	

CQM, INC.

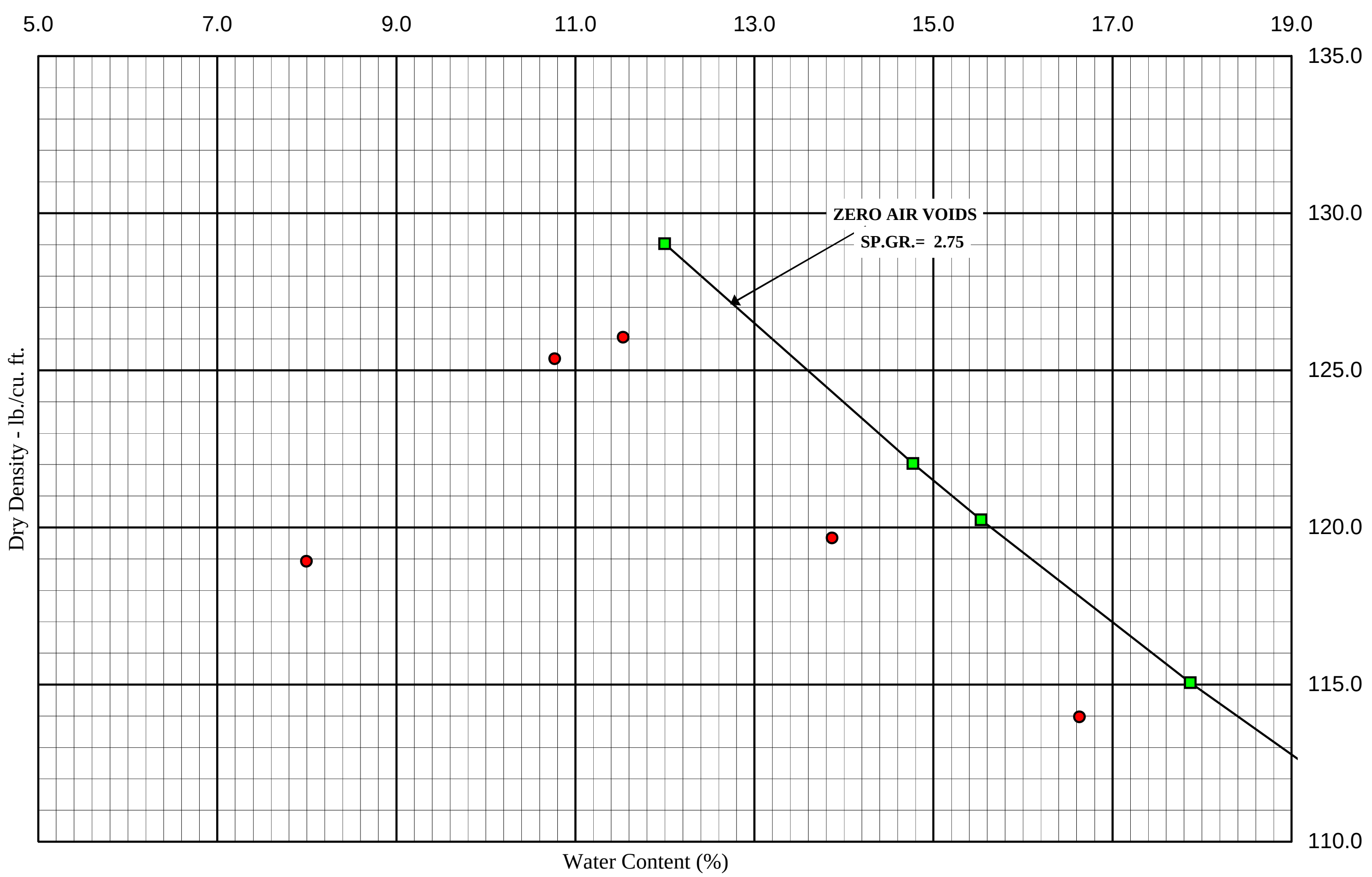
MOISTURE - DENSITY RELATIONS OF SOIL

GENERAL DATA:

Client:	Johns Manville Waukegan Plant		
Project:	Waukegan Plant		
Contractor:		**Sampled From:**	Test Pit 5
Sample No:	JM-TP-5	**Date Received:**	5/16/08
Tested By:	TKA	**Reviewed By:**	

LABORATORY DATA:

Method of Test:	ASTM D1557 - Method "A"				
Soil Classification:	LEAN CLAY W/SAND, dark grayish brown (CL)				
Munsell Color Code:	10YR 4/2	**Atterberg Limits:**	**LL=28.9**	**PL=13.8**	**PI=15.1**
Maximum Dry Density (lb/cu.ft.):	126.0	**Optimum Moisture (%):**	11.2	**Wet Density (lb/cu.ft.):**	140.1



6/16/2008 TLS P-JMTP5RRR.xls

CQM, INC.
2679 Continental Drive
Green Bay, WI 54311
(920) 465-3911

Client: Johns Manville Waukegan Plant
Project: Waukegan Plant
Prepared by: Jon L. Novak **Date:** 6/9/08
Checked by: **Date:**

REPORT OF:

FALLING HEAD PERMEABILITY TEST

ASTM: D5084

GENERAL DATA:

Sample Location:	Test Pit 5
Sample Number:	JM-TP-5
Date Sampled:	5/14/08
Date Received:	5/16/08

LABORATORY DATA:

		PROJECT SPECIFICATIONS
Method of Test:	Flex Wall - Remolded	
Length of Sample (inches):	4.049	
Diameter of Sample (inches):	3.995	
Dates Tested:	May 23-June 4, 2008	
Moisture Content (%)	13.5	
Dry Density (pcf):	113.7	
% Compaction:	90.2	
Soil Classification:	LEAN CLAY W/SAND, dark grayish brown (CL)	
Max. Head Differential (ft.)	6.0	
Confining Pressure (Effective psi):	2.0	
Hydraulic Gradient:	12-18	
Trial No.:	8-11	
Water Temperature:	21°C	
Coefficient of Permeability (cm/sec):	5.1×10^{-7}	7.0×10^{-6} or slower

REMARKS:

CQM, INC.

SIEVE ANALYSIS OF COARSE TO FINE AGGREGATES (ASTM D422)

GENERAL DATA:

Client:	**Johns Manville Waukegan Plant**
Project:	**Waukegen Plant**
Location Sampled:	**Test Pit #6**
Sample No:	**JM-TP-6**
Depth of Sample:	
Date Received:	**5/16/08**
Sample Designated For:	**Clay Cover Material**
Source of Sample:	
Munsell Color Code:	**10YR 4/2**
Date Sampled:	**5/14/08**

LABORATORY DATA:

Date Tested:	May 16-21,2008
Test Performed By:	JRP

24 Hrs. Turn Around:	NO
Washed Gradation:	YES

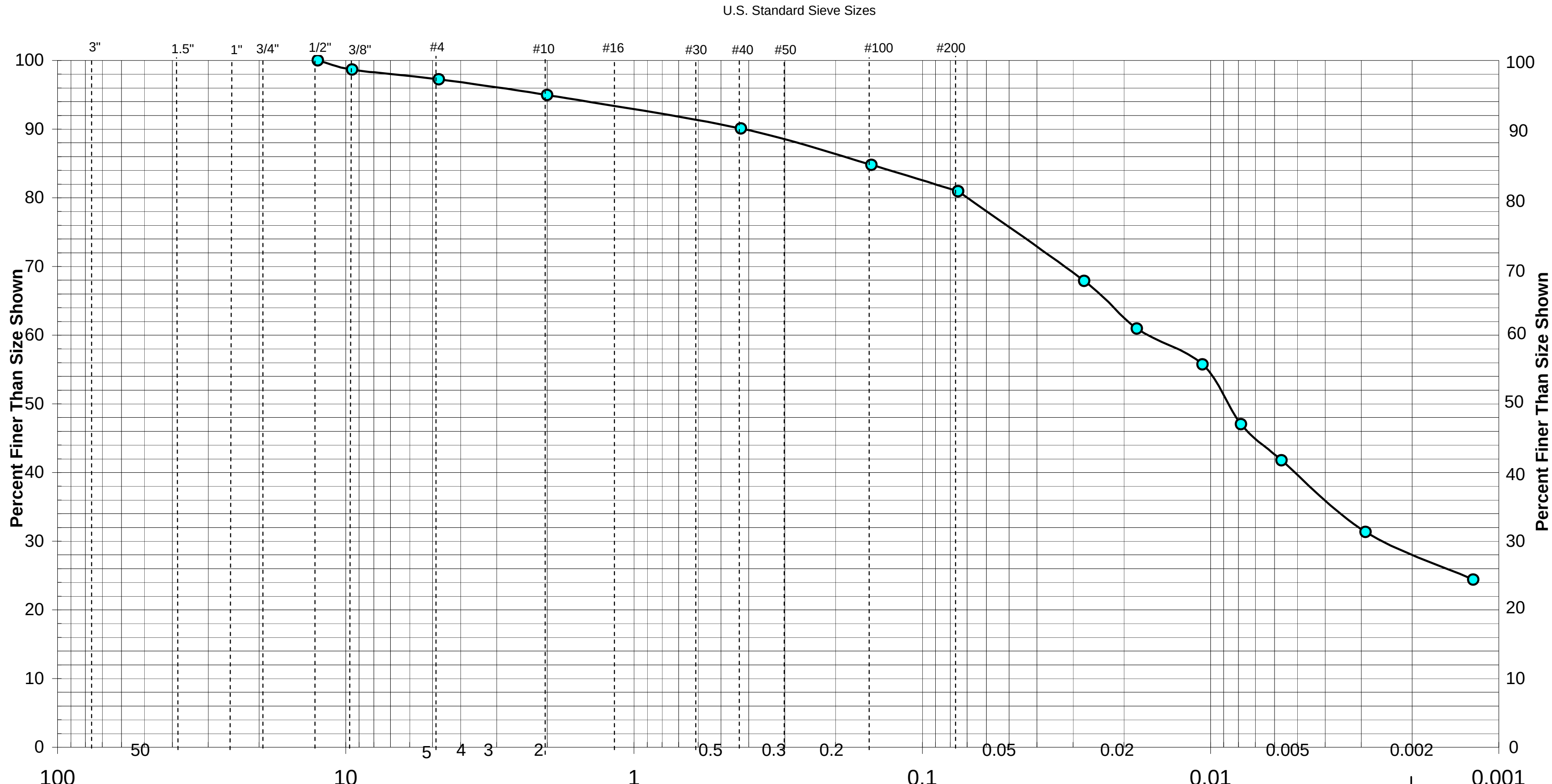
Dry Weight of Soil (gms): 565.9

Sieve Size	Weight Retained	% Retained	% Passing	Project Specification % Passing by Weight	Source of Specification
3"					Project Specification
1 1/2"					
1"					
3/4"					
1/2"	0.0	0.0	100.0		
3/8"	7.5	1.3	98.7		
#4	8.0	1.4	97.3		
#10	13.0	2.3	95.0		
#40	27.6	4.9	90.1		
#100	30.1	5.3	84.8		
#200	21.6	3.8	81.0	50-100	

REVIEWED BY:	
DATE REVIEWED:	

Remarks:

GRAIN SIZE DISTRIBUTION CURVE



Gravel		Sand			Silt	Clay
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
	2.7%	2.3%	4.9%	9.1%	53.0%	28.0%

Soil Classification: LEAN CLAY W/SAND, dark grayish brown (CL)			
Location Sampled: Test Pit #6	Elevation or Depth:		Date Sampled: 5/14/08
Sample Number: JM-TP-6	Sampled Moisture Content (%): 16.5		Report No.: TP-6
Sample Source:	***CQM, INC.***		
Atterberg Limits: LL= 26.8 PL= 13.1 PI= 13.7	Client: **Johns Manville Waukegan Plant**		
Munsell Color Code: 10YR 4/2	Project: **Waukegen Plant**	Page:	2
Date Received: 5/16/08	Prepared by: Michael R. Andraschko	Date:	6/6/08
Coefficients: Cc= Cu=	Checked by:	Date:	

CQM, INC.

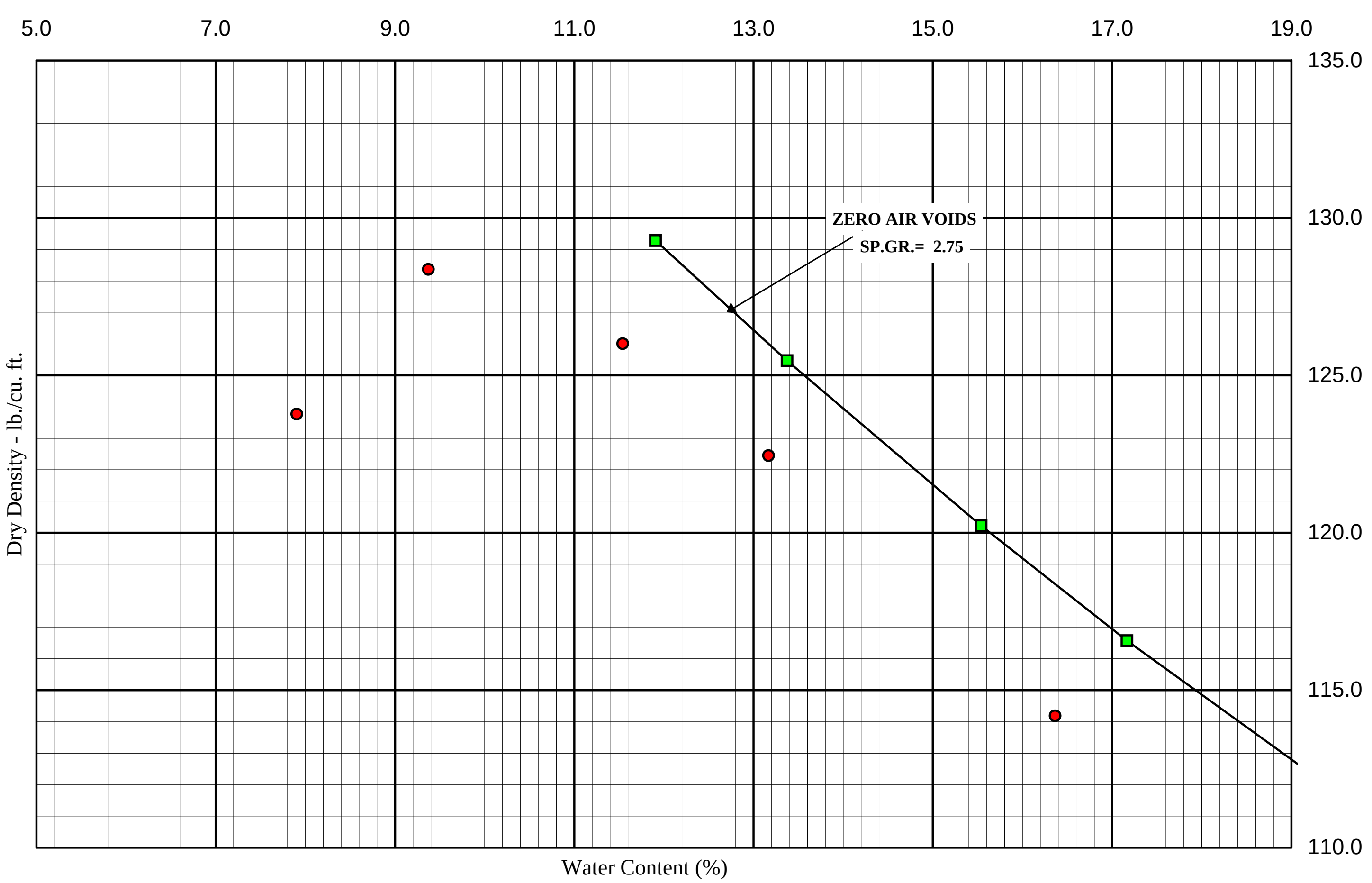
MOISTURE - DENSITY RELATIONS OF SOIL

GENERAL DATA:

Client:	Johns Manville Waukegan Plant		
Project:	Waukegan Plant		
Contractor:		**Sampled From:**	Test Pit 6
Sample No:	JM-TP-6	**Date Received:**	5/16/08
Tested By:	TKA	**Reviewed By:**	

LABORATORY DATA:

Method of Test:	ASTM D1557 - Method "A"				
Soil Classification:	LEAN CLAY W/SAND, dark grayish brown (CL)				
Munsell Color Code:	10YR 4/2	**Atterberg Limits:**	**LL=26.8**	**PL=13.1**	**PI=13.7**
Maximum Dry Density (lb/cu.ft.):	128.9	**Optimum Moisture (%):**	10.0	**Wet Density (lb/cu.ft.):**	141.8



CQM, INC.

SIEVE ANALYSIS OF COARSE TO FINE AGGREGATES (ASTM D422)

GENERAL DATA:

Client:	**Johns Manville Waukegan Plant**
Project:	**Waukegen Plant**
Location Sampled:	**Test Pit #7**
Sample No:	**JM-TP-7**
Depth of Sample:	
Date Received:	**5/16/08**
Sample Designated For:	**Clay Cover Material**
Source of Sample:	
Munsell Color Code:	**10YR 3/3**
Date Sampled:	**5/14/08**

LABORATORY DATA:

Date Tested:	May 16-21,2008
Test Performed By:	JRP

24 Hrs. Turn Around:	NO
Washed Gradation:	YES

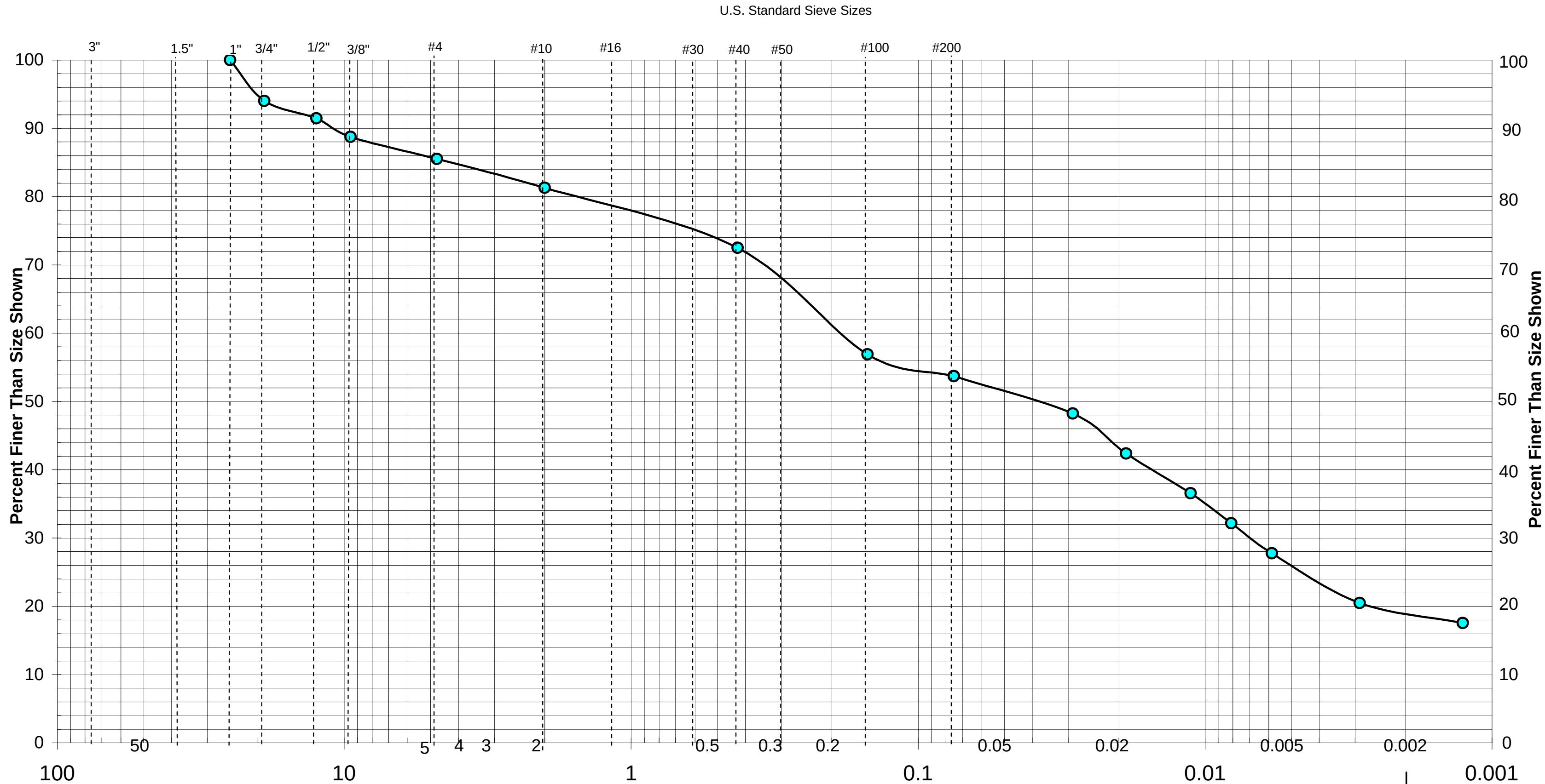
Dry Weight of Soil (gms): 600.9

Sieve Size	Weight Retained	% Retained	% Passing	Project Specification % Passing by Weight	Source of Specification
3"					Project Specification
1 1/2"					
1"	0.0	0.0	100.0		
3/4"	35.9	6.0	94.0		
1/2"	15.3	2.5	91.5		
3/8"	16.4	2.7	88.8		
#4	20.1	3.3	85.5		
#10	25.3	4.2	81.3		
#40	53.1	8.8	72.5		
#100	93.8	15.6	56.9		
#200	19.4	3.2	53.7	50-100	

REVIEWED BY:	
DATE REVIEWED:	

Remarks:

GRAIN SIZE DISTRIBUTION CURVE



Gravel		Sand			Silt	Clay
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
6.0%	8.5%	4.2%	8.8%	18.8%	34.7%	19.0%

Soil Classification: SANDY LEAN CLAY, a little gravel, dark brown (CL)

Location Sampled: Test Pit #7	Elevation or Depth:	Date Sampled: 5/14/08	
Sample Number: JM-TP-7	Sampled Moisture Content (%): 14.5	Report No.: TP-7	
Sample Source:	***CQM, INC.***		
Atterberg Limits: LL= 27.6 · PL= 14.9 · PI= 12.7	Client: **Johns Manville Waukegan Plant**		
Munsell Color Code: 10YR 3/3	Project: **Waukegen Plant**	Page:	2
Date Received: 5/16/08	Prepared by: Michael R. Andraschko	Date:	6/6/08
Coefficients: Cc= · Cu=	Checked by:	Date:	

CQM, INC.

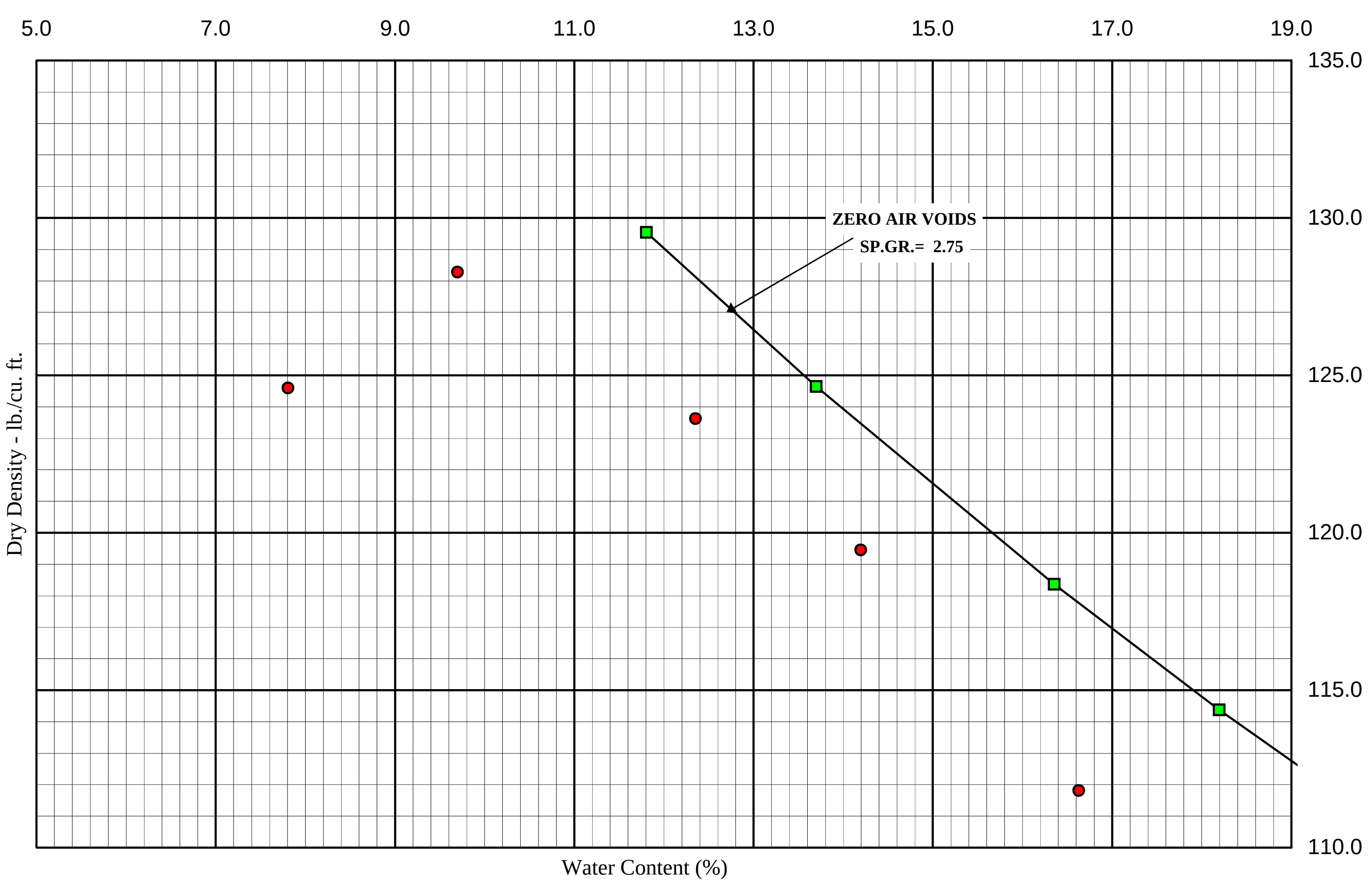
MOISTURE - DENSITY RELATIONS OF SOIL

GENERAL DATA:

Client:	Johns Manville Waukegan Plant		
Project:	Waukegan Plant		
Contractor:		**Sampled From:**	Test Pit 7
Sample No:	JM-TP-7	**Date Received:**	5/16/08
Tested By:	TKA	**Reviewed By:**	

LABORATORY DATA:

Method of Test:	ASTM D1557 - Method "A"				
Soil Classification:	SANDY LEAN CLAY, dark brown (CL)				
Munsell Color Code:	10YR 3/3	**Atterberg Limits:**	**LL=27.6**	**PL=14.9**	**PI=12.7**
Maximum Dry Density (lb/cu.ft.):	128.3	**Optimum Moisture (%):**	9.8	**Wet Density (lb/cu.ft.):**	140.9



6/16/2008 TLS P-JMTP7RRR.xls

CQM, INC. 2679 Continental Drive Green Bay, WI 54311 (920) 465-3911	**Client:** Johns Manville Waukegan Plant **Project:** Waukegan Plant **Prepared by:** Jon L. Novak **Date:** 6/9/08 **Checked by:** ________ **Date:** ________

REPORT OF:

FALLING HEAD PERMEABILITY TEST

ASTM: D5084

GENERAL DATA:

Sample Location:	Test Pit 7	
Sample Number:	JM-TP-7	
Date Sampled:	5/14/08	
Date Received:	5/16/08	

LABORATORY DATA:

		PROJECT SPECIFICATIONS
Method of Test:	Flex Wall - Remolded	
Length of Sample (inches):	3.925	
Diameter of Sample (inches):	3.999	
Dates Tested:	May 23-29, 2008	
Moisture Content (%)	12.1	
Dry Density (pcf):	118.6	
% Compaction:	92.4	
Soil Classification:	SANDY LEAN CLAY, W/GRAVEL, dark brown (CL)	
Max. Head Differential (ft.)	6.0	
Confining Pressure (Effective psi):	2.0	
Hydraulic Gradient:	15-17	
Trial No.:	3-6	
Water Temperature:	21°C	
Coefficient of Permeability (cm/sec):	7.6×10^{-8}	7.0×10^{-6} or slower

REMARKS:

CQM, INC.

SIEVE ANALYSIS OF COARSE TO FINE AGGREGATES (ASTM D422)

GENERAL DATA:

Client:	**Johns Manville Waukegan Plant**
Project:	**Waukegen Plant**
Location Sampled:	**Test Pit #8**
Sample No:	**JM-TP-8**
Depth of Sample:	
Date Received:	**5/16/08**
Sample Designated For:	**Clay Cover Material**
Source of Sample:	
Munsell Color Code:	**10YR 3/3**
Date Sampled:	**5/14/08**

LABORATORY DATA:

Date Tested:	May 16-21,2008
Test Performed By:	JRP

24 Hrs. Turn Around:	NO
Washed Gradation:	YES

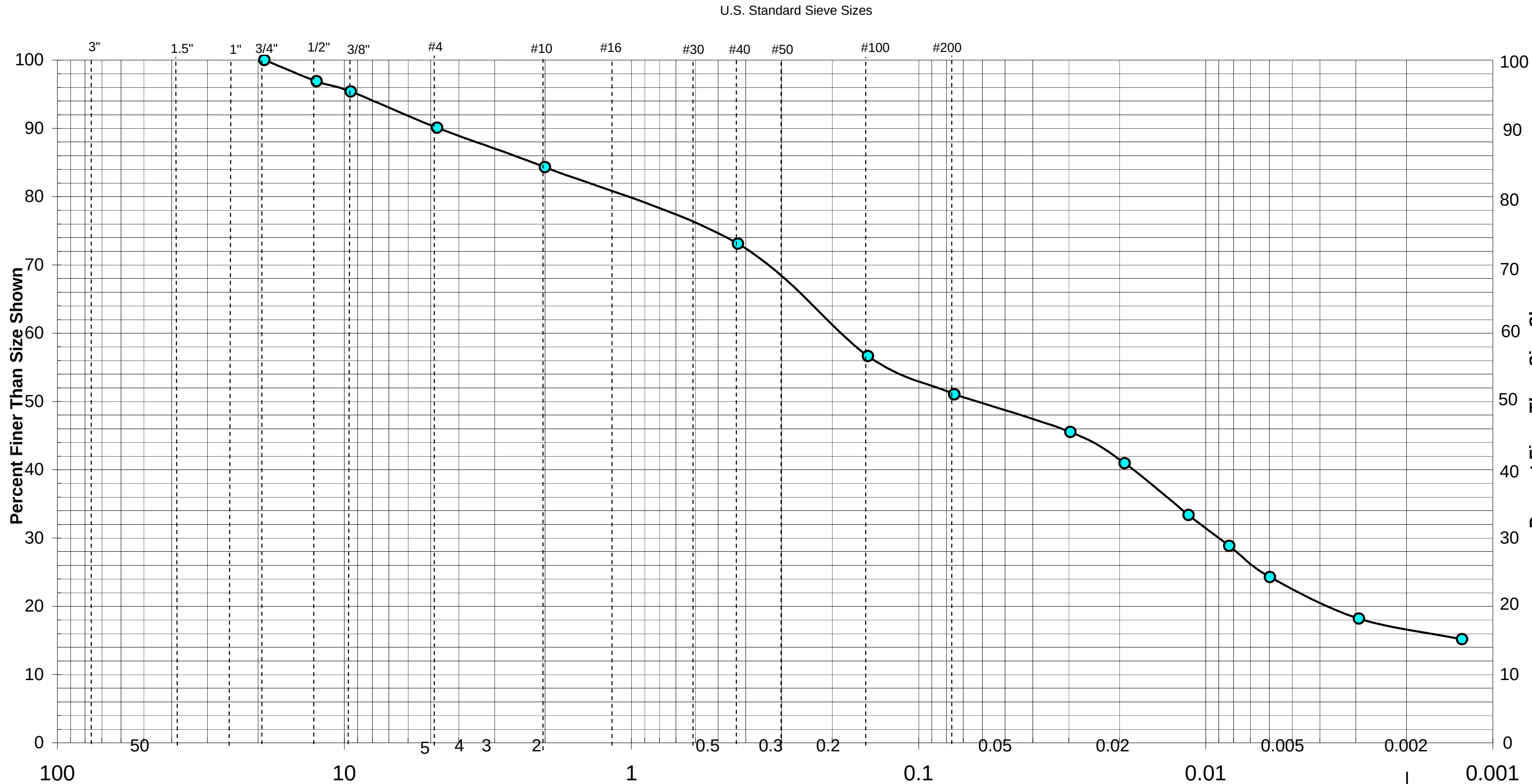
Dry Weight of Soil (gms): 575.6

Sieve Size	Weight Retained	% Retained	% Passing	Project Specification % Passing by Weight	Source of Specification
3"					Project Specification
1 1/2"					
1"					
3/4"	0.0	0.0	100.0		
1/2"	17.9	3.1	96.9		
3/8"	8.7	1.5	95.4		
#4	30.5	5.3	90.1		
#10	33.3	5.8	84.3		
#40	64.5	11.2	73.1		
#100	94.7	16.5	56.6		
#200	32.2	5.6	51.0	50-100	

REVIEWED BY:	
DATE REVIEWED:	

Remarks:

GRAIN SIZE DISTRIBUTION CURVE



Gravel		Sand			Silt	Clay
Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
	9.9%	5.8%	11.2%	22.1%	34.5%	16.5%

Soil Classification: SANDY LEAN CLAY, a little gravel, dark brown (CL)			
Location Sampled: Test Pit #8		Elevation or Depth:	Date Sampled: 5/14/08
Sample Number: JM-TP-8		Sampled Moisture Content (%): 10.8	Report No.: TP-8
Sample Source:		***CQM, INC.***	
Atterberg Limits:	LL= 23.1 / PL= 12.8 / PI= 10.3	Client: **Johns Manville Waukegan Plant**	
Munsell Color Code: 10YR 3/3		Project: **Waukegen Plant**	Page: 2
Date Received: 5/16/08		Prepared by: Michael R. Andraschko	Date: 6/6/08
Coefficients: Cc=	Cu=	Checked by:	Date:

CQM, INC.

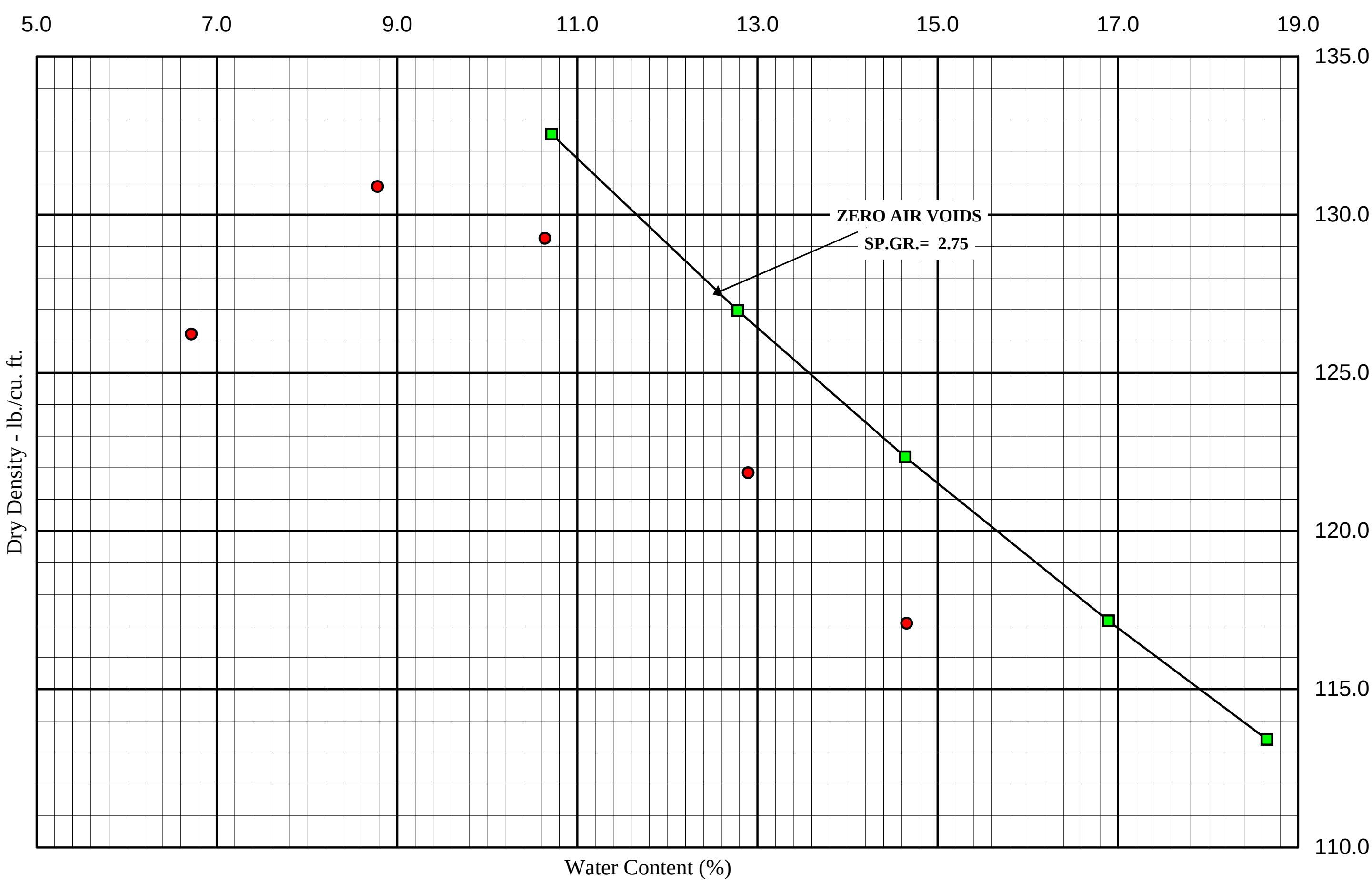
MOISTURE - DENSITY RELATIONS OF SOIL

GENERAL DATA:

Client:	Johns Manville Waukegan Plant		
Project:	Waukegan Plant		
Contractor:		**Sampled From:**	Test Pit 8
Sample No:	JM-TP-8	**Date Received:**	5/16/08
Tested By:	TKA	**Reviewed By:**	

LABORATORY DATA:

Method of Test:	ASTM D1557 - Method "A"						
Soil Classification:	LEAN CLAY W/SAND, dark brown (CL)						
Munsell Color Code:	10YR 3/3		**Atterberg Limits:**		**LL=23.1**	**PL=12.8**	**PI=10.3**
Maximum Dry Density (lb/cu.ft.):	131.1	**Optimum Moisture (%):**	9.1			**Wet Density (lb/cu.ft.):**	143.0



CQM, INC.
2679 Continental Drive
Green Bay, WI 54311
(920) 465-3911

Client: Johns Manville Waukegan Plant
Project: Waukegan Plant
Prepared by: Jon L. Novak **Date:** 6/9/08
Checked by: **Date:**

REPORT OF:

FALLING HEAD PERMEABILITY TEST

ASTM: D5084

GENERAL DATA:

Sample Location:	Test Pit 8	
Sample Number:	JM-TP-8	
Date Sampled:	5/14/08	
Date Received:	5/16/08	

LABORATORY DATA:

		PROJECT SPECIFICATIONS
Method of Test:	Flex Wall - Remolded	
Length of Sample (inches):	4.108	
Diameter of Sample (inches):	3.938	
Dates Tested:	May 23-29, 2008	
Moisture Content (%)	13.3	
Dry Density (pcf):	116.8	
% Compaction:	89.1	
Soil Classification:	SANDY LEAN CLAY, a little gravel, dark brown (CL)	
Max. Head Differential (ft.)	6.0	
Confining Pressure (Effective psi):	2.0	
Hydraulic Gradient:	16-17	
Trial No.:	3-6	
Water Temperature:	21°C	
Coefficient of Permeability (cm/sec):	7.4×10^{-8}	7.0×10^{-6} or slower

REMARKS:

Appendix F

Barrier Layer Compaction Testing Results

CLIENT: JOHNS MANVILLE - AREA 1 AND 2
PROJECT NAME: FINAL COVER CONSTRUCTION
LOCATION AND SOIL TYPE: AREA 1 BARRIER LAYER
IN-PLACE MOISTURE DENSITY TESTING
DENSITY METER: TROXLER 3440
PROBE DEPTH: 6 INCHES
MAXIMUM PROCTOR DENSITY: 130.1 PCF @ 8.4% MOISTURE
COMPACTION REQUIREMENTS: 90% OF MODIFIED PROCTOR DENSITY
@ 2-6% ABOVE OPTIMUM

Test No.	Date Tested	Coordinates North	East	Lift No.	Moisture (%)	Dry Density (PCF)	Compaction (%)
1	8/18/08	2083750	1126100	1	10.6	128.7	98.9
2	8/18/08	2083640	1126090	1	11.8	121.4	93.3
3	8/20/08	2083775	1126150	1	10.8	123.2	94.7
4	8/20/08	2083750	1126250	1	10.5	122.2	93.9
5	8/21/08	2083800	1126450	1	10.4	123.1	94.6
6	8/21/08	2083800	1126500	1	11.0	122.1	93.9
7	8/18/08	2083700	1126050	2	11.8	125.4	96.4
8	8/18/08	2083615	1126130	2	11.5	126.5	97.2
9	8/26/08	2083800	1126400	2	11.0	117.3	90.2
10	8/26/08	2083800	1126500	2	11.1	123.2	94.7
11	8/26/08	2083800	1126600	2	11.0	125.6	96.5

CLIENT: JOHNS MANVILLE - AREA 1 AND 2
PROJECT NAME: FINAL COVER CONSTRUCTION
LOCATION AND SOIL TYPE: AREA 2 BARRIER LAYER
IN-PLACE MOISTURE DENSITY TESTING
DENSITY METER: TROXLER 3440
PROBE DEPTH: 6 INCHES
MAXIMUM PROCTOR DENSITY: 130.1 PCF @ 8.4% MOISTURE
COMPACTION REQUIREMENTS: 90% OF MODIFIED PROCTOR DENSITY
@ 2-6% ABOVE OPTIMUM

Test No.	Date Tested	Coordinates North	Coordinates East	Lift No.	Moisture (%)	Dry Density (PCF)	Compaction (%)
1	8/22/08	2084150	1126250	1	11.5	119.1	91.5
2	8/22/08	2084150	1126350	1	11.1	117.8	90.5
3	8/22/08	2084150	1126450	1	11.5	119.0	91.5
4	8/22/08	2084050	1126450	1	10.6	117.7	90.5
5	8/22/08	2084150	1126550	1	12.0	119.7	92.0
6	8/22/08	2084050	1126550	1	12.8	121.6	93.5
7	8/22/08	2084150	1126650	1	10.8	125.5	96.5
8	8/22/08	2084050	1126650	1	12.4	119.4	91.8
9	8/27/08	2084150	1126200	2	10.5	125.8	96.7
10	8/27/08	2084100	1126200	2	12.5	124.3	95.5
11	8/27/08	2084150	1126300	2	11.5	126.2	97.0
12	8/27/08	2084100	1126300	2	11.1	122.5	94.2
13	8/27/08	2084150	1126400	2	10.4	123.7	95.1
14	8/27/08	2084100	1126400	2	12.0	123.2	94.7
15	8/27/08	2084150	1126500	2	11.1	122.5	94.2
16	8/27/08	2084100	1126500	2	11.6	126.2	97.0
17	8/27/08	2084150	1126600	2	11.3	125.0	96.1
18	8/27/08	2084100	1126600	2	11.3	126.7	97.4

Appendix G

Protective Layer Compaction Testing Results

CLIENT: JOHNS MANVILLE - AREA 1 AND 2
PROJECT NAME: FINAL COVER CONSTRUCTION
LOCATION AND SOIL TYPE: AREA 1 PROTECTIVE COVER
IN-PLACE MOISTURE DENSITY TESTING
DENSITY METER: TROXLER 3440
PROBE DEPTH: 6 INCHES
MAXIMUM PROCTOR DENSITY: 130.1 PCF @ 8.4% MOISTURE
COMPACTION REQUIREMENTS: 90% OF MODIFIED PROCTOR DENSITY
@ 2-6% ABOVE OPTIMUM

Test No.	Date Tested	Coordinates North	Coordinates East	Lift No.	Moisture (%)	Dry Density (PCF)	Compaction (%)
1	9/10/08	2083700	1125400	1	12.2	121.3	93.2
2	9/10/08	2083600	1125400	1	14.2	118.4	91.0
3	9/10/08	2083800	1125500	1	14.0	117.2	90.1
4	9/10/08	2083700	1125500	1	13.9	117.3	90.2
5	9/10/08	2083600	1125500	1	13.0	122.3	94.0
6	8/29/08	2083800	1125600	1	14.2	118.4	91.0
7	8/29/08	2083700	1125600	1	13.5	120.5	92.6
8	9/2/08	2083600	1125600	1	10.5	119.9	92.2
9	9/10/08	2083500	1125600	1	12.8	120.2	92.4
10	8/29/08	2083800	1125700	1	13.3	120.8	92.9
11	8/29/08	2083700	1125700	1	11.3	122.5	94.2
12	8/29/08	2083600	1125700	1	12.9	121.1	93.1
13	9/10/08	2083500	1125700	1	12.8	120.4	92.5
14	8/28/08	2083800	1125800	1	13.0	117.4	90.2
15	8/28/08	2083700	1125800	1	11.9	119.2	91.6
16	9/2/08	2083600	1125800	1	10.8	128.3	98.6
17	9/10/08	2083500	1125800	1	13.2	120.7	92.8
18	8/28/08	2083800	1125900	1	10.8	120.2	92.4
19	8/28/08	2083700	1125900	1	12.1	120.4	92.5
20	8/28/08	2083600	1125900	1	13.0	121.4	93.3
21	9/10/08	2083500	1125900	1	13.2	120.7	92.8

CLIENT:	**JOHNS MANVILLE - AREA 1 AND 2**
PROJECT NAME:	**FINAL COVER CONSTRUCTION**
LOCATION AND SOIL TYPE:	**AREA 1 PROTECTIVE COVER**
	IN-PLACE MOISTURE DENSITY TESTING
DENSITY METER:	**TROXLER 3440**
PROBE DEPTH:	**6 INCHES**
MAXIMUM PROCTOR DENSITY:	**130.1 PCF @ 8.4% MOISTURE**
COMPACTION REQUIREMENTS:	**90% OF MODIFIED PROCTOR DENSITY**
	@ 2-6% ABOVE OPTIMUM

Test No.	Date Tested	Coordinates North	East	Lift No.	Moisture (%)	Dry Density (PCF)	Compaction (%)
22	8/27/08	2083900	1126000	1	12.1	123.9	95.2
23	8/28/08	2083800	1126000	1	11.7	123.0	94.5
24	8/28/08	2083700	1126000	1	13.2	118.2	90.9
25	8/28/08	2083600	1126000	1	13.5	120.5	92.6
26	9/10/08	2083500	1126000	1	13.7	118.9	91.4
27	9/3/08	2083800	1126100	1	13.4	120.6	92.7
28	9/3/08	2083700	1126100	1	13.9	118.5	91.1
29	9/3/08	2083600	1126100	1	12.9	118.4	91.0
30	9/10/08	2083500	1126100	1	11.8	123.1	94.6
31	9/3/08	2083800	1126200	1	13.9	118.8	91.3
32	9/3/08	2083700	1126200	1	13.6	118.7	91.2
33	9/3/08	2083600	1126200	1	13.9	118.5	91.1
34	9/10/08	2083500	1126200	1	13.0	121.1	93.1
35	9/3/08	2083800	1126300	1	14.0	118.7	91.2
36	9/3/08	2083700	1126300	1	13.5	118.4	91.0
37	9/3/08	2083600	1126300	1	13.8	120.3	92.5
38	9/10/08	2083500	1126300	1	12.7	123.7	95.1
39	9/8/08	2083800	1126400	1	14.1	119.0	91.5
40	9/8/08	2083700	1126400	1	13.6	120.2	92.4
41	9/10/08	2083600	1126400	1	14.3	118.1	90.8
42	9/10/08	2083500	1126400	1	13.3	118.9	91.4

CLIENT: JOHNS MANVILLE - AREA 1 AND 2
PROJECT NAME: FINAL COVER CONSTRUCTION
LOCATION AND SOIL TYPE: AREA 1 PROTECTIVE COVER
IN-PLACE MOISTURE DENSITY TESTING
DENSITY METER: TROXLER 3440
PROBE DEPTH: 6 INCHES
MAXIMUM PROCTOR DENSITY: 130.1 PCF @ 8.4% MOISTURE
COMPACTION REQUIREMENTS: 90% OF MODIFIED PROCTOR DENSITY
@ 2-6% ABOVE OPTIMUM

Test No.	Date Tested	Coordinates North	Coordinates East	Lift No.	Moisture (%)	Dry Density (PCF)	Compaction (%)
43	9/10/08	2083800	1126500	1	12.0	117.6	90.4
44	9/10/08	2083700	1126500	1	13.2	120.7	92.8
45	9/10/08	2083600	1126500	1	14.4	118.2	90.9
46	9/19/08	2083500	1126500	1	14.1	117.1	90.0
47	9/10/08	2083800	1126600	1	14.3	118.5	91.1
48	9/10/08	2083700	1126600	1	13.0	121.1	93.1
49	9/19/08	2083600	1126600	1	12.8	119.1	91.5
50	9/10/08	2083650	1125350	2	13.2	120.7	92.8
51	9/10/08	2083750	1125450	2	13.3	121.0	93.0
52	9/10/08	2083650	1125450	2	13.5	120.5	92.6
53	9/10/08	2083550	1125450	2	12.7	121.6	93.5
54	9/2/08	2083750	1125550	2	13.2	117.5	90.3
55	9/2/08	2083650	1125550	2	13.7	120.0	92.2
56	9/2/08	2083550	1125550	2	12.5	122.6	94.2
57	8/29/08	2083750	1125650	2	13.0	122.3	94.0
58	8/29/08	2083650	1125650	2	12.2	121.3	93.2
59	9/2/08	2083550	1125650	2	11.8	124.0	95.3
60	8/29/08	2083750	1125750	2	12.3	120.3	92.5
61	8/29/08	2083650	1125750	2	12.7	118.4	91.0
62	9/2/08	2083550	1125750	2	11.4	125.0	96.1
63	8/28/08	2083850	1125850	2	12.9	123.1	94.6

CLIENT:	**JOHNS MANVILLE - AREA 1 AND 2**
PROJECT NAME:	**FINAL COVER CONSTRUCTION**
LOCATION AND SOIL TYPE:	**AREA 1 PROTECTIVE COVER** **IN-PLACE MOISTURE DENSITY TESTING**
DENSITY METER:	**TROXLER 3440**
PROBE DEPTH:	**6 INCHES**
MAXIMUM PROCTOR DENSITY:	**130.1 PCF @ 8.4% MOISTURE**
COMPACTION REQUIREMENTS:	**90% OF MODIFIED PROCTOR DENSITY** **@ 2-6% ABOVE OPTIMUM**

Test No.	Date Tested	Coordinates North	Coordinates East	Lift No.	Moisture (%)	Dry Density (PCF)	Compaction (%)
64	8/28/08	2083750	1125850	2	12.2	123.1	94.6
65	8/28/08	2083650	1125850	2	13.1	121.6	93.5
66	8/28/08	2083550	1125850	2	12.1	125.4	96.4
67	8/28/08	2083850	1125950	2	11.9	117.7	90.5
68	8/28/08	2083750	1125950	2	12.3	119.6	91.9
69	8/28/08	2083650	1125950	2	12.8	121.4	93.3
70	9/2/08	2083550	1125950	2	10.6	126.2	97.0
71	8/28/08	2083850	1126050	2	12.8	119.1	91.5
72	8/28/08	2083750	1126050	2	11.3	122.5	94.2
73	8/28/08	2083650	1126050	2	12.7	121.6	93.5
74	9/10/08	2083550	1126050	2	10.8	124.3	95.5
75	9/3/08	2083850	1126150	2	12.1	120.4	92.5
76	9/3/08	2083750	1126150	2	13.4	121.5	93.4
77	9/3/08	2083650	1126150	2	13.3	121.0	93.0
78	9/10/08	2083550	1126150	2	12.0	120.6	92.7
79	9/3/08	2083850	1126250	2	13.6	118.3	90.9
80	9/3/08	2083750	1126250	2	13.7	118.8	91.3
81	9/3/08	2083650	1126250	2	14.4	118.6	91.2
82	9/10/08	2083550	1126250	2	10.4	127.1	97.7
83	9/12/08	2083450	1126250	2	10.4	118.3	90.9
84	9/8/08	2083850	1126350	2	12.8	120.6	92.7

CLIENT: JOHNS MANVILLE - AREA 1 AND 2
PROJECT NAME: FINAL COVER CONSTRUCTION
LOCATION AND SOIL TYPE: AREA 1 PROTECTIVE COVER
IN-PLACE MOISTURE DENSITY TESTING
DENSITY METER: TROXLER 3440
PROBE DEPTH: 6 INCHES
MAXIMUM PROCTOR DENSITY: 130.1 PCF @ 8.4% MOISTURE
COMPACTION REQUIREMENTS: 90% OF MODIFIED PROCTOR DENSITY @ 2-6% ABOVE OPTIMUM

Test No.	Date Tested	Coordinates North	Coordinates East	Lift No.	Moisture (%)	Dry Density (PCF)	Compaction (%)
85	9/3/08	2083750	1126350	2	13.9	117.1	90.0
86	9/3/08	2083650	1126350	2	12.9	120.2	92.4
87	9/10/08	2083550	1126350	2	13.2	120.7	92.8
88	9/12/08	2083450	1126350	2	12.1	118.3	90.9
89	9/10/08	2083850	1126450	2	13.3	117.4	90.2
90	9/10/08	2083750	1126450	2	14.4	118.1	90.8
91	9/10/08	2083650	1126450	2	12.9	120.4	92.5
92	9/10/08	2083550	1126450	2	13.3	120.8	92.9
93	9/10/08	2083850	1126550	2	14.2	118.6	91.2
94	9/10/08	2083750	1126550	2	12.6	117.4	90.2
95	9/10/08	2083650	1126550	2	13.7	117.3	90.2
96	9/10/08	2083550	1126550	2	13.2	120.7	92.8
97	9/11/08	2083700	1125400	3	12.4	122.2	93.9
98	9/11/08	2083600	1125400	3	14.1	117.9	90.6
99	9/11/08	2083800	1125500	3	13.4	117.9	90.6
100	9/11/08	2083700	1125500	3	12.0	120.9	92.9
101	9/11/08	2083600	1125500	3	13.0	119.5	91.9
102	8/29/08	2083800	1125600	3	13.3	121.0	93.0
103	8/29/08	2083700	1125600	3	12.7	121.6	93.5
104	9/2/08	2083600	1125600	3	11.1	119.1	91.5
105	9/12/08	2083500	1125600	3	13.6	120.9	92.9

CLIENT: JOHNS MANVILLE - AREA 1 AND 2
PROJECT NAME: FINAL COVER CONSTRUCTION
LOCATION AND SOIL TYPE: AREA 1 PROTECTIVE COVER
IN-PLACE MOISTURE DENSITY TESTING
DENSITY METER: TROXLER 3440
PROBE DEPTH: 6 INCHES
MAXIMUM PROCTOR DENSITY: 130.1 PCF @ 8.4% MOISTURE
COMPACTION REQUIREMENTS: 90% OF MODIFIED PROCTOR DENSITY
@ 2-6% ABOVE OPTIMUM

Test No.	Date Tested	Coordinates North	Coordinates East	Lift No.	Moisture (%)	Dry Density (PCF)	Compaction (%)
106	8/29/08	2083800	1125700	3	12.5	120.9	92.9
107	8/29/08	2083700	1125700	3	13.0	122.3	94.0
108	8/29/08	2083600	1125700	3	12.2	123.6	95.0
109	9/12/08	2083500	1125700	3	13.8	120.9	92.9
110	8/29/08	2083800	1125800	3	13.3	120.4	92.5
111	8/29/08	2083700	1125800	3	12.1	120.8	92.9
112	8/29/08	2083600	1125800	3	12.9	121.7	93.5
113	9/12/08	2083500	1125800	3	14.4	118.3	90.9
114	8/28/08	2083800	1125900	3	12.9	122.7	94.3
115	8/28/08	2083700	1125900	3	12.8	121.1	93.1
116	8/29/08	2083600	1125900	3	13.3	121.0	93.0
117	9/12/08	2083500	1125900	3	13.1	121.9	93.7
118	8/27/08	2083900	1126000	3	12.2	122.5	94.2
119	8/28/08	2083800	1126000	3	11.5	125.4	96.4
120	8/28/08	2083700	1126000	3	11.9	120.4	92.5
121	8/29/08	2083600	1126000	3	13.5	119.9	92.2
122	9/17/08	2083500	1126000	3	11.9	118.0	90.7
123	9/3/08	2083800	1126100	3	12.6	119.6	91.9
124	9/3/08	2083700	1126100	3	13.4	120.6	92.7
125	9/3/08	2083600	1126100	3	12.7	120.8	92.9
126	9/17/08	2083500	1126100	3	11.8	120.1	92.3

CLIENT: JOHNS MANVILLE - AREA 1 AND 2
PROJECT NAME: FINAL COVER CONSTRUCTION
LOCATION AND SOIL TYPE: AREA 1 PROTECTIVE COVER
IN-PLACE MOISTURE DENSITY TESTING
DENSITY METER: TROXLER 3440
PROBE DEPTH: 6 INCHES
MAXIMUM PROCTOR DENSITY: 130.1 PCF @ 8.4% MOISTURE
COMPACTION REQUIREMENTS: 90% OF MODIFIED PROCTOR DENSITY
@ 2-6% ABOVE OPTIMUM

Test No.	Date Tested	Coordinates North	Coordinates East	Lift No.	Moisture (%)	Dry Density (PCF)	Compaction (%)
127	9/17/08	2083800	1126200	3	11.0	118.1	90.8
128	9/17/08	2083700	1126200	3	11.5	118.4	91.0
129	9/17/08	2083600	1126200	3	11.6	120.5	92.6
130	9/17/08	2083500	1126200	3	13.2	118.2	90.9
131	9/18/08	2083800	1126300	3	10.6	125.8	96.7
132	9/17/08	2083700	1126300	3	12.6	120.0	92.2
133	9/17/08	2083600	1126300	3	10.8	122.9	94.5
134	9/17/08	2083500	1126300	3	11.9	124.6	95.8
135	9/17/08	2083800	1126400	3	11.2	118.8	91.3
136	9/18/08	2083700	1126400	3	13.1	118.7	91.2
137	9/17/08	2083600	1126400	3	10.6	126.3	97.1
138	9/17/08	2083500	1126400	3	10.6	123.9	95.2
139	9/17/08	2083800	1126500	3	11.4	122.7	94.3
140	9/17/08	2083700	1126500	3	11.1	124.4	95.6
141	9/18/08	2083600	1126500	3	13.4	120.2	92.4
142	9/18/08	2083500	1126500	3	13.1	120.2	92.4
143	9/17/08	2083800	1126600	3	13.3	118.2	90.9
144	9/17/08	2083700	1126600	3	12.1	120.3	92.5
145	9/19/08	2083600	1126600	3	12.6	119.2	91.6
146	9/11/08	2083650	1125350	4	13.6	118.6	91.2
147	9/11/08	2083750	1125450	4	12.1	119.6	91.9

CLIENT: JOHNS MANVILLE - AREA 1 AND 2
PROJECT NAME: FINAL COVER CONSTRUCTION
LOCATION AND SOIL TYPE: AREA 1 PROTECTIVE COVER
IN-PLACE MOISTURE DENSITY TESTING
DENSITY METER: TROXLER 3440
PROBE DEPTH: 6 INCHES
MAXIMUM PROCTOR DENSITY: 130.1 PCF @ 8.4% MOISTURE
COMPACTION REQUIREMENTS: 90% OF MODIFIED PROCTOR DENSITY
@ 2-6% ABOVE OPTIMUM

Test No.	Date Tested	Coordinates North	Coordinates East	Lift No.	Moisture (%)	Dry Density (PCF)	Compaction (%)
148	9/11/08	2083650	1125450	4	14.3	119.0	91.5
149	9/11/08	2083550	1125450	4	12.5	117.5	90.3
150	9/11/08	2083750	1125550	4	12.8	119.6	91.9
151	9/11/08	2083650	1125550	4	12.5	121.3	93.2
152	9/11/08	2083550	1125550	4	12.5	117.5	90.3
153	9/12/08	2083750	1125650	4	13.4	117.8	90.5
154	9/12/08	2083650	1125650	4	13.3	117.8	90.5
155	9/12/08	2083550	1125650	4	13.8	120.9	92.9
156	9/12/08	2083750	1125750	4	13.3	117.5	90.3
157	9/12/08	2083650	1125750	4	12.7	122.1	93.9
158	9/12/08	2083550	1125750	4	12.4	121.9	93.7
159	9/12/08	2083850	1125850	4	12.7	124.1	95.4
160	9/12/08	2083750	1125850	4	10.7	128.4	98.7
161	9/12/08	2083650	1125850	4	11.6	126.9	97.5
162	9/12/08	2083550	1125850	4	12.7	124.1	95.4
163	9/17/08	2083850	1125950	4	12.4	123.2	94.7
164	9/17/08	2083750	1125950	4	13.3	120.7	92.8
165	9/17/08	2083650	1125950	4	12.7	120.9	92.9
166	9/17/08	2083550	1125950	4	12.3	121.9	93.7
167	9/18/08	2083850	1126050	4	11.1	120.9	92.9
168	9/18/08	2083750	1126050	4	13.9	121.7	93.5

CLIENT: JOHNS MANVILLE - AREA 1 AND 2
PROJECT NAME: FINAL COVER CONSTRUCTION
LOCATION AND SOIL TYPE: AREA 1 PROTECTIVE COVER
IN-PLACE MOISTURE DENSITY TESTING
DENSITY METER: TROXLER 3440
PROBE DEPTH: 6 INCHES
MAXIMUM PROCTOR DENSITY: 130.1 PCF @ 8.4% MOISTURE
COMPACTION REQUIREMENTS: 90% OF MODIFIED PROCTOR DENSITY
@ 2-6% ABOVE OPTIMUM

Test No.	Date Tested	Coordinates North	Coordinates East	Lift No.	Moisture (%)	Dry Density (PCF)	Compaction (%)
169	9/17/08	2083650	1126050	4	11.4	123.2	94.7
170	9/17/08	2083550	1126050	4	12.2	120.4	92.5
171	9/18/08	2083850	1126150	4	12.6	121.1	93.1
172	9/18/08	2083750	1126150	4	13.0	122.3	94.0
173	9/17/08	2083650	1126150	4	13.3	119.3	91.7
174	9/18/08	2083550	1126150	4	12.1	120.2	92.4
175	9/18/08	2083850	1126250	4	13.9	120.4	92.5
176	9/18/08	2083750	1126250	4	10.9	122.9	94.5
177	9/17/08	2083650	1126250	4	12.8	123.1	94.6
178	9/17/08	2083550	1126250	4	13.8	119.4	91.8
179	9/17/08	2083450	1126250	4	14.2	118.6	91.2
180	9/18/08	2083850	1126350	4	11.7	120.4	92.5
181	9/18/08	2083750	1126350	4	12.8	122.1	93.9
182	9/17/08	2083650	1126350	4	13.3	120.4	92.5
183	9/17/08	2083550	1126350	4	13.8	121.3	93.2
184	9/17/08	2083450	1126350	4	11.1	119.2	91.6
185	9/18/08	2083850	1126450	4	11.3	120.5	92.6
186	9/18/08	2083750	1126450	4	12.8	122.3	94.0
187	9/18/08	2083650	1126450	4	12.1	123.0	94.5
188	9/17/08	2083550	1126450	4	13.1	119.0	91.5
189	9/18/08	2083850	1126550	4	11.7	121.1	93.1

CLIENT: JOHNS MANVILLE - AREA 1 AND 2
PROJECT NAME: FINAL COVER CONSTRUCTION
LOCATION AND SOIL TYPE: AREA 1 PROTECTIVE COVER
IN-PLACE MOISTURE DENSITY TESTING
DENSITY METER: TROXLER 3440
PROBE DEPTH: 6 INCHES
MAXIMUM PROCTOR DENSITY: 130.1 PCF @ 8.4% MOISTURE
COMPACTION REQUIREMENTS: 90% OF MODIFIED PROCTOR DENSITY
@ 2-6% ABOVE OPTIMUM

Test No.	Date Tested	Coordinates North	Coordinates East	Lift No.	Moisture (%)	Dry Density (PCF)	Compaction (%)
190	9/18/08	2083750	1126550	4	10.8	124.4	95.6
191	9/19/08	2083650	1126550	4	12.8	119.9	92.2
192	9/19/08	2083550	1126550	4	14.2	117.9	90.6
193	9/11/08	2083700	1125400	5	13.3	118.8	91.3
194	9/11/08	2083600	1125400	5	14.4	118.8	91.3
195	9/11/08	2083800	1125500	5	13.0	121.2	93.2
196	9/11/08	2083700	1125500	5	12.7	120.0	92.2
197	9/11/08	2083600	1125500	5	12.9	120.4	92.5
198	9/12/08	2083800	1125600	5	12.5	117.9	90.6
199	9/12/08	2083700	1125600	5	13.1	121.9	93.7
200	9/12/08	2083600	1125600	5	12.5	122.4	94.1
201	9/12/08	2083500	1125600	5	14.4	118.3	90.9
202	9/12/08	2083800	1125700	5	10.4	127.2	97.8
203	9/12/08	2083700	1125700	5	13.3	121.0	93.0
204	9/12/08	2083600	1125700	5	12.5	122.4	94.1
205	9/12/08	2083500	1125700	5	13.3	120.6	92.7
206	9/12/08	2083800	1125800	5	12.5	123.8	95.2
207	9/12/08	2083700	1125800	5	12.8	120.8	92.9
208	9/12/08	2083600	1125800	5	13.0	122.1	93.9
209	9/12/08	2083500	1125800	5	11.7	121.1	93.1
210	9/12/08	2083800	1125900	5	14.4	117.5	90.3

CLIENT: JOHNS MANVILLE - AREA 1 AND 2
PROJECT NAME: FINAL COVER CONSTRUCTION
LOCATION AND SOIL TYPE: AREA 1 PROTECTIVE COVER
IN-PLACE MOISTURE DENSITY TESTING
DENSITY METER: TROXLER 3440
PROBE DEPTH: 6 INCHES
MAXIMUM PROCTOR DENSITY: 130.1 PCF @ 8.4% MOISTURE
COMPACTION REQUIREMENTS: 90% OF MODIFIED PROCTOR DENSITY
@ 2-6% ABOVE OPTIMUM

Test No.	Date Tested	Coordinates North	Coordinates East	Lift No.	Moisture (%)	Dry Density (PCF)	Compaction (%)
211	9/12/08	2083700	1125900	5	10.9	124.4	95.6
212	9/12/08	2083600	1125900	5	10.4	124.8	95.9
213	9/12/08	2083500	1125900	5	12.7	122.3	94.0
214	8/27/08	2083900	1126000	5	11.2	125.3	96.3
215	9/17/08	2083800	1126000	5	10.5	123.7	95.1
216	9/17/08	2083700	1126000	5	10.8	124.3	95.5
217	9/17/08	2083600	1126000	5	11.9	121.9	93.7
218	9/17/08	2083500	1126000	5	12.0	121.1	93.1
219	9/22/08	2083800	1126100	5	11.4	124.4	95.6
220	9/19/08	2083700	1126100	5	13.6	119.5	91.9
221	9/19/08	2083600	1126100	5	12.5	118.6	91.2
222	9/17/08	2083500	1126100	5	11.9	118.0	90.7
223	9/22/08	2083800	1126200	5	13.9	118.1	90.8
224	9/19/08	2083700	1126200	5	14.1	118.1	90.8
225	9/19/08	2083600	1126200	5	12.3	122.1	93.9
226	9/18/08	2083500	1126200	5	13.5	119.2	91.6
227	9/22/08	2083800	1126300	5	12.7	117.5	90.3
228	9/19/08	2083700	1126300	5	13.5	118.0	90.7
229	9/19/08	2083600	1126300	5	11.9	121.2	93.2
230	9/17/08	2083500	1126300	5	13.5	117.8	90.5
231	9/22/08	2083800	1126400	5	11.1	121.2	93.2

CLIENT: JOHNS MANVILLE - AREA 1 AND 2
PROJECT NAME: FINAL COVER CONSTRUCTION
LOCATION AND SOIL TYPE: AREA 1 PROTECTIVE COVER
IN-PLACE MOISTURE DENSITY TESTING
DENSITY METER: TROXLER 3440
PROBE DEPTH: 6 INCHES
MAXIMUM PROCTOR DENSITY: 130.1 PCF @ 8.4% MOISTURE
COMPACTION REQUIREMENTS: 90% OF MODIFIED PROCTOR DENSITY
@ 2-6% ABOVE OPTIMUM

Test No.	Date Tested	Coordinates North	Coordinates East	Lift No.	Moisture (%)	Dry Density (PCF)	Compaction (%)
232	9/19/08	2083700	1126400	5	14.0	117.6	90.4
233	9/19/08	2083600	1126400	5	12.1	120.7	92.8
234	9/17/08	2083500	1126400	5	13.2	118.3	90.9
235	9/22/08	2083800	1126500	5	11.7	120.1	92.3
236	9/19/08	2083700	1126500	5	12.0	119.1	91.5
237	9/19/08	2083600	1126500	5	12.4	122.0	93.8
238	9/17/08	2083500	1126500	5	13.1	117.1	90.0
239	9/22/08	2083800	1126600	5	12.1	120.3	92.5
240	9/22/08	2083700	1126600	5	13.5	119.2	91.6
241	9/22/08	2083600	1126600	5	11.7	121.5	93.4

CLIENT: JOHNS MANVILLE - AREA 1 AND 2
PROJECT NAME: FINAL COVER CONSTRUCTION
LOCATION AND SOIL TYPE: AREA 2 PROTECTIVE COVER
IN-PLACE MOISTURE DENSITY TESTING
DENSITY METER: TROXLER 3440
PROBE DEPTH: 6 INCHES
MAXIMUM PROCTOR DENSITY: 130.1 PCF @ 8.4% MOISTURE
COMPACTION REQUIREMENTS: 90% OF MODIFIED PROCTOR DENSITY
@ 2-6% ABOVE OPTIMUM

Test No.	Date Tested	Coordinates North	Coordinates East	Lift No.	Moisture (%)	Dry Density (PCF)	Compaction (%)
1	9/24/08	2084300	1126200	1	10.4	125.7	96.6
2	9/24/08	2084200	1126200	1	13.5	118.0	90.7
3	9/24/08	2084100	1126200	1	12.0	121.1	93.1
4	9/23/08	2084600	1126300	1	11.9	119.5	91.9
5	9/23/08	2084500	1126300	1	11.0	122.9	94.5
6	9/23/08	2084400	1126300	1	11.7	125.9	96.8
7	9/24/08	2084300	1126300	1	11.9	124.1	95.4
8	9/24/08	2084200	1126300	1	10.5	127.1	97.7
9	9/24/08	2084100	1126300	1	11.8	120.8	92.9
10	9/23/08	2084500	1126400	1	12.2	117.5	90.3
11	9/23/08	2084400	1126400	1	11.9	124.6	95.8
12	9/24/08	2084300	1126400	1	12.9	122.8	94.4
13	9/24/08	2084200	1126400	1	10.6	126.5	97.2
14	9/24/08	2084100	1126400	1	11.2	124.4	95.6
15	9/23/08	2084500	1126500	1	14.3	118.0	90.7
16	9/23/08	2084400	1126500	1	12.0	119.6	91.9
17	9/24/08	2084300	1126500	1	12.1	121.3	93.2
18	9/24/08	2084200	1126500	1	10.9	123.8	95.2
19	9/24/08	2084100	1126500	1	11.5	119.4	91.8
20	9/23/08	2084500	1126600	1	12.1	121.3	93.2
21	9/23/08	2084400	1126600	1	12.3	120.9	92.9

CLIENT: JOHNS MANVILLE - AREA 1 AND 2
PROJECT NAME: FINAL COVER CONSTRUCTION
LOCATION AND SOIL TYPE: AREA 2 PROTECTIVE COVER
IN-PLACE MOISTURE DENSITY TESTING
DENSITY METER: TROXLER 3440
PROBE DEPTH: 6 INCHES
MAXIMUM PROCTOR DENSITY: 130.1 PCF @ 8.4% MOISTURE
COMPACTION REQUIREMENTS: 90% OF MODIFIED PROCTOR DENSITY
@ 2-6% ABOVE OPTIMUM

Test No.	Date Tested	Coordinates North	Coordinates East	Lift No.	Moisture (%)	Dry Density (PCF)	Compaction (%)
22	9/24/08	2084300	1126600	1	11.6	121.5	93.4
23	9/24/08	2084200	1126600	1	12.1	123.5	94.9
24	9/24/08	2084100	1126600	1	10.7	123.8	95.2
25	9/23/08	2084550	1126250	2	11.0	123.1	94.6
26	9/23/08	2084450	1126250	2	10.8	125.8	96.7
27	9/23/08	2084350	1126250	2	10.4	124.7	95.8
28	9/24/08	2084250	1126250	2	11.4	118.5	91.1
29	9/24/08	2084150	1126250	2	12.1	119.5	91.9
30	9/23/08	2084750	1126350	2	13.1	118.8	91.3
31	9/23/08	2084650	1126350	2	11.5	121.8	93.6
32	9/23/08	2084550	1126350	2	11.3	126.1	96.9
33	9/23/08	2084450	1126350	2	10.5	123.6	95.0
34	9/23/08	2084350	1126350	2	11.3	126.1	96.9
35	9/24/08	2084250	1126350	2	11.8	126.4	97.2
36	9/24/08	2084150	1126350	2	12.8	121.2	93.2
37	9/23/08	2084450	1126450	2	12.0	124.9	96.0
38	9/23/08	2084350	1126450	2	12.8	121.2	93.2
39	9/24/08	2084250	1126450	2	11.4	126.0	96.8
40	9/24/08	2084150	1126450	2	12.3	124.0	95.3
41	9/23/08	2084450	1126550	2	10.7	128.4	98.7
42	9/23/08	2084350	1126550	2	10.5	123.6	95.0

CLIENT: JOHNS MANVILLE - AREA 1 AND 2
PROJECT NAME: FINAL COVER CONSTRUCTION
LOCATION AND SOIL TYPE: AREA 2 PROTECTIVE COVER
IN-PLACE MOISTURE DENSITY TESTING
DENSITY METER: TROXLER 3440
PROBE DEPTH: 6 INCHES
MAXIMUM PROCTOR DENSITY: 130.1 PCF @ 8.4% MOISTURE
COMPACTION REQUIREMENTS: 90% OF MODIFIED PROCTOR DENSITY
@ 2-6% ABOVE OPTIMUM

Test No.	Date Tested	Coordinates North	Coordinates East	Lift No.	Moisture (%)	Dry Density (PCF)	Compaction (%)
43	9/24/08	2084250	1126550	2	11.4	122.2	93.9
44	9/24/08	2084150	1126550	2	12.1	126.4	97.2
45	9/25/08	2084300	1126200	3	11.7	122.4	94.1
46	9/25/08	2084200	1126200	3	13.5	117.7	90.5
47	9/25/08	2084100	1126200	3	13.6	117.9	90.6
48	9/25/08	2084600	1126300	3	12.3	123.0	94.5
49	9/25/08	2084500	1126300	3	14.1	117.6	90.4
50	9/25/08	2084400	1126300	3	12.6	119.1	91.5
51	9/25/08	2084300	1126300	3	10.9	124.6	95.8
52	9/25/08	2084200	1126300	3	13.6	119.1	91.5
53	9/25/08	2084100	1126300	3	13.4	119.9	92.2
54	9/25/08	2084500	1126400	3	11.4	123.9	95.2
55	9/25/08	2084400	1126400	3	13.5	119.5	91.9
56	9/25/08	2084300	1126400	3	12.7	120.0	92.2
57	9/25/08	2084200	1126400	3	11.7	117.3	90.2
58	9/25/08	2084100	1126400	3	12.0	123.9	95.2
59	9/25/08	2084500	1126500	3	13.0	120.3	92.5
60	9/25/08	2084400	1126500	3	12.2	121.7	93.5
61	9/25/08	2084300	1126500	3	12.2	121.9	93.7
62	9/25/08	2084200	1126500	3	10.5	122.4	94.1
63	9/25/08	2084100	1126500	3	11.7	122.4	94.1

CLIENT: JOHNS MANVILLE - AREA 1 AND 2
PROJECT NAME: FINAL COVER CONSTRUCTION
LOCATION AND SOIL TYPE: AREA 2 PROTECTIVE COVER
IN-PLACE MOISTURE DENSITY TESTING
DENSITY METER: TROXLER 3440
PROBE DEPTH: 6 INCHES
MAXIMUM PROCTOR DENSITY: 130.1 PCF @ 8.4% MOISTURE
COMPACTION REQUIREMENTS: 90% OF MODIFIED PROCTOR DENSITY
@ 2-6% ABOVE OPTIMUM

Test No.	Date Tested	Coordinates North	Coordinates East	Lift No.	Moisture (%)	Dry Density (PCF)	Compaction (%)
64	9/25/08	2084500	1126600	3	12.1	125.0	96.1
65	9/25/08	2084400	1126600	3	11.3	123.5	94.9
66	9/25/08	2084300	1126600	3	13.3	117.6	90.4
67	9/25/08	2084200	1126600	3	12.6	119.5	91.9
68	9/25/08	2084100	1126600	3	11.5	122.8	94.4
69	9/25/08	2084550	1126250	4	12.1	120.4	92.5
70	9/25/08	2084450	1126250	4	13.2	118.0	90.7
71	9/25/08	2084350	1126250	4	12.9	117.1	90.0
72	9/25/08	2084250	1126250	4	13.1	121.8	93.6
73	9/25/08	2084150	1126250	4	13.0	118.3	90.9
74	9/25/08	2084750	1126350	4	12.0	123.6	95.0
75	9/25/08	2084650	1126350	4	11.8	121.7	93.5
76	9/25/08	2084550	1126350	4	12.3	123.0	94.5
77	9/25/08	2084450	1126350	4	12.6	121.4	93.3
78	9/25/08	2084350	1126350	4	10.6	122.5	94.2
79	9/25/08	2084250	1126350	4	12.3	118.5	91.1
80	9/25/08	2084150	1126350	4	12.6	122.9	94.5
81	9/25/08	2084450	1126450	4	12.8	119.7	92.0
82	9/25/08	2084350	1126450	4	13.5	119.5	91.9
83	9/25/08	2084250	1126450	4	10.6	124.2	95.5
84	9/25/08	2084150	1126450	4	10.6	129.6	99.6

CLIENT: JOHNS MANVILLE - AREA 1 AND 2
PROJECT NAME: FINAL COVER CONSTRUCTION
LOCATION AND SOIL TYPE: AREA 2 PROTECTIVE COVER
IN-PLACE MOISTURE DENSITY TESTING
DENSITY METER: TROXLER 3440
PROBE DEPTH: 6 INCHES
MAXIMUM PROCTOR DENSITY: 130.1 PCF @ 8.4% MOISTURE
COMPACTION REQUIREMENTS: 90% OF MODIFIED PROCTOR DENSITY
@ 2-6% ABOVE OPTIMUM

Test No.	Date Tested	Coordinates North	Coordinates East	Lift No.	Moisture (%)	Dry Density (PCF)	Compaction (%)
85	9/25/08	2084050	1126450	4	11.9	125.0	96.1
86	9/25/08	2084450	1126550	4	12.3	118.0	90.7
87	9/25/08	2084350	1126550	4	12.6	122.2	93.9
88	9/25/08	2084250	1126550	4	11.2	117.9	90.6
89	9/25/08	2084150	1126550	4	12.3	124.2	95.5
90	9/25/08	2084050	1126550	4	12.1	125.0	96.1
91	9/25/08	2084300	1126200	5	12.6	123.0	94.5
92	9/25/08	2084200	1126200	5	12.2	124.0	95.3
93	9/25/08	2084100	1126200	5	10.6	120.9	92.9
94	9/25/08	2084600	1126300	5	10.6	129.6	99.6
95	9/25/08	2084500	1126300	5	11.6	125.1	96.2
96	9/25/08	2084400	1126300	5	11.9	121.2	93.2
97	9/25/08	2084300	1126300	5	12.1	125.0	96.1
98	9/25/08	2084200	1126300	5	12.3	118.0	90.7
99	9/25/08	2084100	1126300	5	11.5	122.7	94.3
100	9/25/08	2084500	1126400	5	12.9	120.8	92.9
101	9/25/08	2084400	1126400	5	12.5	120.4	92.5
102	9/25/08	2084300	1126400	5	12.4	121.4	93.3
103	9/25/08	2084200	1126400	5	11.8	119.6	91.9
104	9/25/08	2084100	1126400	5	11.6	124.1	95.4
105	9/25/08	2084500	1126500	5	13.9	118.5	91.1

CLIENT:	**JOHNS MANVILLE - AREA 1 AND 2**
PROJECT NAME:	**FINAL COVER CONSTRUCTION**
LOCATION AND SOIL TYPE:	**AREA 2 PROTECTIVE COVER**
	IN-PLACE MOISTURE DENSITY TESTING
DENSITY METER:	**TROXLER 3440**
PROBE DEPTH:	**6 INCHES**
MAXIMUM PROCTOR DENSITY:	**130.1 PCF @ 8.4% MOISTURE**
COMPACTION REQUIREMENTS:	**90% OF MODIFIED PROCTOR DENSITY**
	@ 2-6% ABOVE OPTIMUM

Test No.	Date Tested	Coordinates North	Coordinates East	Lift No.	Moisture (%)	Dry Density (PCF)	Compaction (%)
106	9/25/08	2084400	1126500	5	13.1	121.0	93.0
107	9/25/08	2084300	1126500	5	11.6	126.4	97.2
108	9/25/08	2084200	1126500	5	12.7	121.6	93.5
109	9/25/08	2084100	1126500	5	14.3	117.8	90.5
110	9/25/08	2084500	1126600	5	11.8	120.1	92.3
111	9/25/08	2084400	1126600	5	11.1	123.9	95.2
112	9/25/08	2084300	1126600	5	12.1	125.0	96.1
113	9/25/08	2084200	1126600	5	13.4	120.0	92.2
114	9/25/08	2084100	1126600	5	10.5	122.4	94.1

CLIENT:	**JOHNS MANVILLE - AREA 1 AND 2**
PROJECT NAME:	**FINAL COVER CONSTRUCTION**
LOCATION AND SOIL TYPE:	**AREA 2 EAST CHANNEL**
	IN-PLACE MOISTURE DENSITY TESTING
DENSITY METER:	**TROXLER 3440**
PROBE DEPTH:	**6 INCHES**
MAXIMUM PROCTOR DENSITY:	**130.1 PCF @ 8.4% MOISTURE**
COMPACTION REQUIREMENTS:	**90% OF MODIFIED PROCTOR DENSITY**
	@ 2-6% ABOVE OPTIMUM

Test No.	Date Tested	Coordinates North	Coordinates East	Lift No.	Moisture (%)	Dry Density (PCF)	Compaction (%)
1	8/21/08	2084250	1126636	1	11.9	123.9	95.2
2	8/21/08	2084300	1126640	1	12.0	125.4	96.4
3	8/21/08	2084350	1126642	1	13.6	121.3	93.2
4	8/21/08	2084325	1126638	2	13.5	119.9	92.2
5	8/21/08	2084375	1126643	2	14.1	120.7	92.8
6	8/21/08	2084260	1126636	3	13.0	121.7	93.5
7	8/21/08	2084300	1126640	3	10.6	126.3	97.1
8	9/3/08	2084350	1126642	3	13.4	120.6	92.7

Appendix H

Field Reports

CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client:	Johns Manville Waukegan Plant	Date:	8/18/08
Project:	Fill Area 1 & 2 Capping Activities	Day:	MONDAY
Engineer's Rep:	Chris R. Goffard	Page:	1 of 2
Contractor's Rep:	Jeff O'Malley	Rprt No.:	1
Signed:	Chris Goffard		

RESIDENT INSPECTION REPORT

Weather Conditions	Temperature		Sky	Rain	Snow	Project Site Conditions
	Low	High				
	75°	84°	SUNNY			Dry / Muddy

Field Book No.: 1 Page #s 1

Contractor(s) on Site:
LAKE COUNTY GRADING

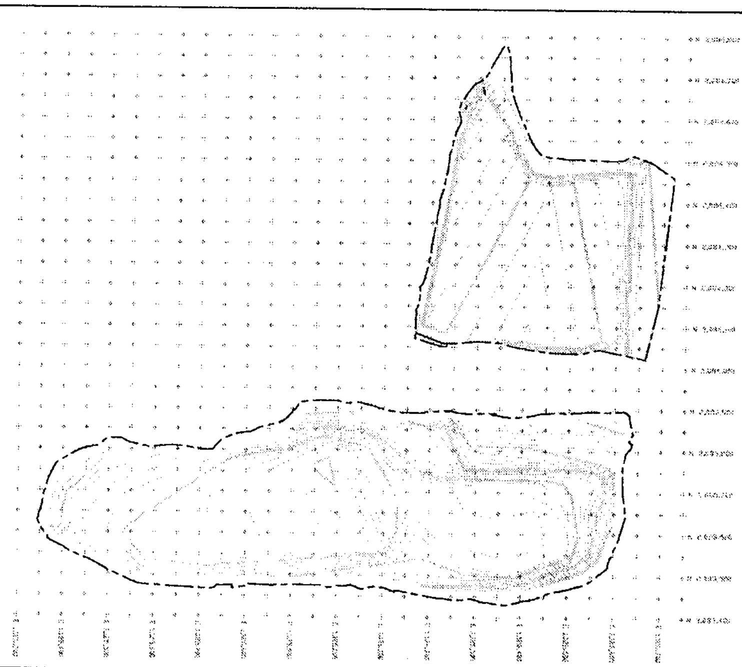
Report of Observation of Work and Comments:

9:45 CRG ARRIVED ON SITE TO DENSITY TEST AREA 1 BARRIER LAYER AND START BARRIER LAYER DOCUMENTATION

LAKE COUNTY GRADING ON SITE GRADING AREA 1 BARRIER LAYER WITH A DOZER EQUIPPED WITH GPS AND EXCAVATING AREA 2 EAST CHANNEL

- DENSITY TESTED AREA 1 CLAY PLACED TO ACHIEVE BARRIER LAYER ELEVATION
  - PROCTOR UTILIZED 130.1 PCF @ 8.4 OPTIMUM MOISTURE
  - SPEC = 90% MODIFIED PROCTOR @ 2.0% - 6.0% ABOVE OPTIMUM
  - DENSITY TESTS PASSED
- DOCUMENTED AREA 1 BARRIER LAYER WITH GPS
- DURING THE COURSE OF THE DAY LAKE COUNTY GRADING UTILIZED A WATER TRUCK TO MINIMIZE DUST

Sketch:



CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client:	Johns Manville Waukegan Plant	**Date:**	8/18/08
Project:	Fill Area 1 & 2 Capping Activities	**Day:**	MONDAY
Engineer's Rep:	Chris R. Goffard	**Page:**	2 of 2
Contractor's Rep:	Jeff O'Malley	**Rprt No.:**	1

RESIDENT INSPECTION REPORT

Report of Observation of Work and Comments:

5:00 LAKE COUNTY GRADING SHUT DOWN
7:15 CRG off SITE

Number of Men:
Foreman 1
Operators 9
Laborers 1

Equipment:
1- John Deere 325 BackHoe
1- John Deere 350 BackHoe
1- cat D8R Dozer
2- John Deere Dozers with GPS
4- cat 0SS Road Trucks
2- water Trucks
3- cat 627 scrapers
1- smooth Drum Roller
1- Disk
1- cat 825 sheepsfoot compactor.

CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client: Johns Manville Waukegan Plant
Project: Fill Area 1 & 2 Capping Activities
Engineer's Rep: Chris R. Goffard
Contractor's Rep: Jeff O'Malley
Signed: Chris Goffard

Date: 8/19/08
Day: TUESDAY
Page: 1 of 2
Rprt No.: 2

RESIDENT INSPECTION REPORT

Weather Conditions	Temperature		Sky	Rain	Snow	Project Site Conditions
	Low	High				
	68°	84°	CLOUDY			Dry / Muddy

Project Site Conditions: Dry (circled)

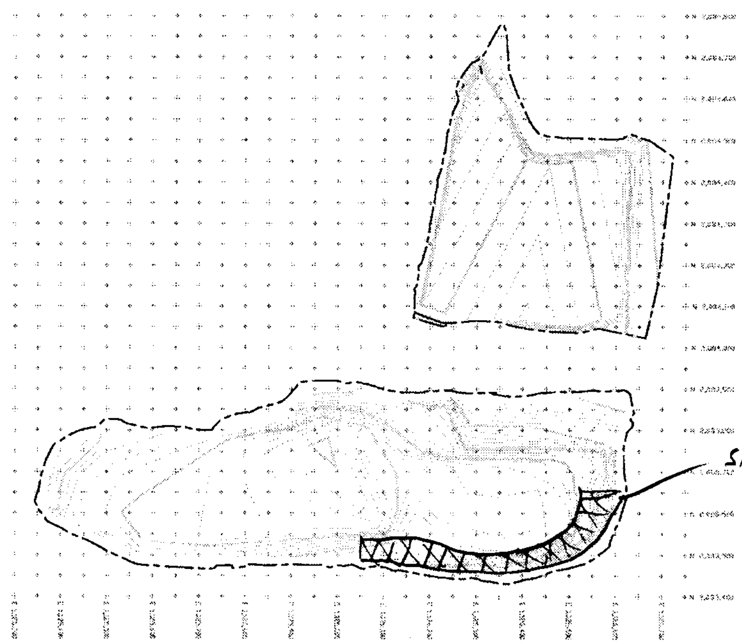
Field Book No.: 1 Page #s 2

Contractor(s) on Site:
LAKE COUNTY GRADING

Report of Observation of Work and Comments:

3:00 CRG ON SITE TO CONTINUE AREA 1 BARRIER LAYER DOCUMENTATION
- STAKED AREA 1 LIMITS OF WASTE POINTS
LAKE COUNTY GRADING STARTED SAND PLACEMENT ON AREA 1 WITH OFF ROAD
TRUCKS AND A JOHN DEERE 850C DOZER EQUIPPED WITH GPS
5:00 LAKE COUNTY GRADING SHUT DOWN
6:45 CRG OFF SITE

Sketch:



SAND PLACEMENT TODAY

CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client:	Johns Manville Waukegan Plant	Date:	8/19/08
Project:	Fill Area 1 & 2 Capping Activities	Day:	Tuesday
Engineer's Rep:	Chris R. Goffard	Page:	2 of 2
Contractor's Rep:	Jeff O'Malley	Rprt No.:	2

RESIDENT INSPECTION REPORT

Report of Observation of Work and Comments:

Number of Men:

Foreman 1

Operators 9

Laborers 1

Equipment:

1-John Deere 325 BackHoe
1-John Deere 350 BackHoe
1-cat D8R Dozer
3-John Deere Dozers with GPS
4-cat 085 Road Trucks
2- water Trucks
3- cat 627 scrapers
1- smooth Drum Roller
1- Disk
1-cat 825 sheepsfoot compactor

CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client: Johns Manville Waukegan Plant
Project: Fill Area 1 & 2 Capping Activities
Engineer's Rep: Chris R. Goffard
Contractor's Rep: Jeff O'Malley
Signed: Chris Goffard

Date: 8/20/08
Day: Wednesday
Page: 1 of 2
Rprt No.: 3

RESIDENT INSPECTION REPORT

Weather Conditions	Temperature Low	Temperature High	Sky	Rain	Snow	Project Site Conditions
	70°	84°	Cloudy			Dry / Muddy

Field Book No.: 1 Page #s 3

Contractor(s) on Site:

Report of Observation of Work and Comments:

7:10 CRG ARRIVED ON SITE TO CONTINUE BARRIER LAYER DOCUMENTATION AND DENSITY TEST PLACED FILL MATERIAL TO ACHIEVE DESIGN ELEVATION

7:30 INFORMED DENNY THE AREA 1 LIMITS OF WASTE POINTS ARE STAKED

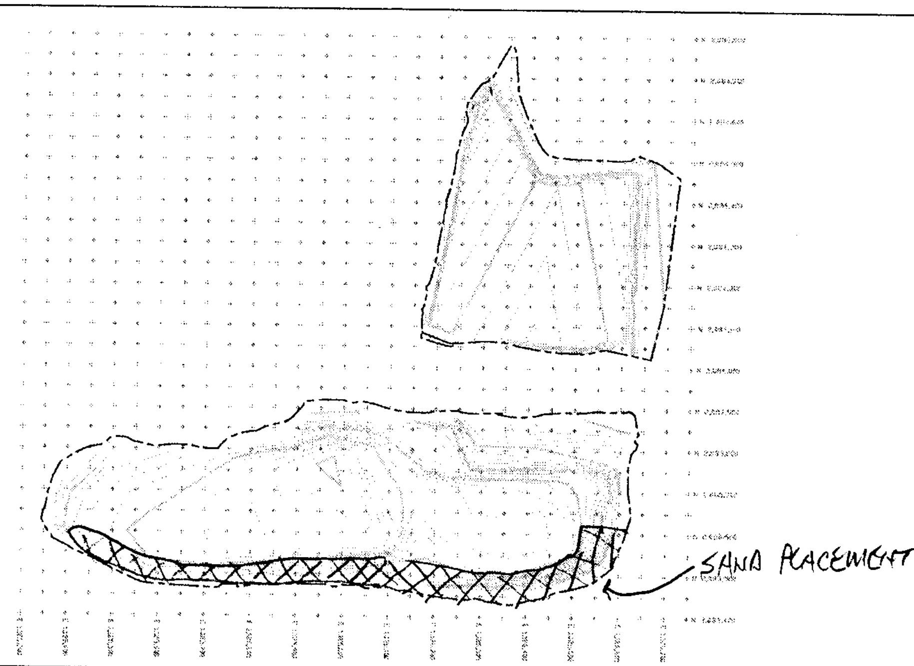
9:00 REVIEWED AREA 1 BARRIER LAYER SURFACE WITH DENNY - LOOKS GOOD

LAKE COUNTY GRADING ON SITE CONTINUING AREA 1 SAND PLACEMENT WITH OFF ROAD TRUCKS AND 1 JOHN DEERE 850C DOZER EQUIPPED WITH GPS

- PERFORMED DENSITY TESTS ON AREA 1 BARRIER LAYER MATERIAL (PLACED)
  - TESTS PASSED

DURING THE COURSE OF THE DAY LAKE COUNTY GRADING UTILIZED A WATER TRUCK TO WATER THE HAUL ROADS / MINIMIZE DUST

Sketch:



CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client:	Johns Manville Waukegan Plant	**Date:**	8/20/08
Project:	Fill Area 1 & 2 Capping Activities	**Day:**	Wednesday
Engineer's Rep:	Chris R. Goffard	**Page:**	2 of 2
Contractor's Rep:	Jeff O'Malley	**Rprt No.:**	3

RESIDENT INSPECTION REPORT

Report of Observation of Work and Comments:

5:00 Lake County Grading shut down
5:30 CRG off site

Number of Men:
Foreman 1
Operators 9
Laborers 1

Equipment:
1-John Deere 325 BackHoe
1-John Deere 350 Back Hoe
1-cat D8R Dozer
2-John Deere Dozers with GPS
4-cat 086 Road Trucks
2-water Trucks
3-cat 627 scrapers
1-smooth Drum roller
1-Disk
1-cat 825 sheepsfoot compactor

CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client:	Johns Manville Waukegan Plant	**Date:**	8/21/08
Project:	Fill Area 1 & 2 Capping Activities	**Day:**	THURSDAY
Engineer's Rep:	Chris R. Goffard	**Page:**	1 of 2
Contractor's Rep:	Jeff O'Malley	**Rprt No.:**	4
Signed:	Chris Goffard		

RESIDENT INSPECTION REPORT

Weather Conditions	Temperature		Sky	Rain	Snow	Project Site Conditions
	Low	High				
	71°	82°	CLOUDY			Dry / Muddy

Field Book No.: 1 Page #s 5 - 7

Contractor(s) on Site:

Report of Observation of Work and Comments:

6:30 CRG ARRIVED ON SITE TO DENSITY TEST PLACED BARRIER LAYER SOILS AND STAKE AREA 2 NORTH DRAINAGE CHANNEL

AREA 1:

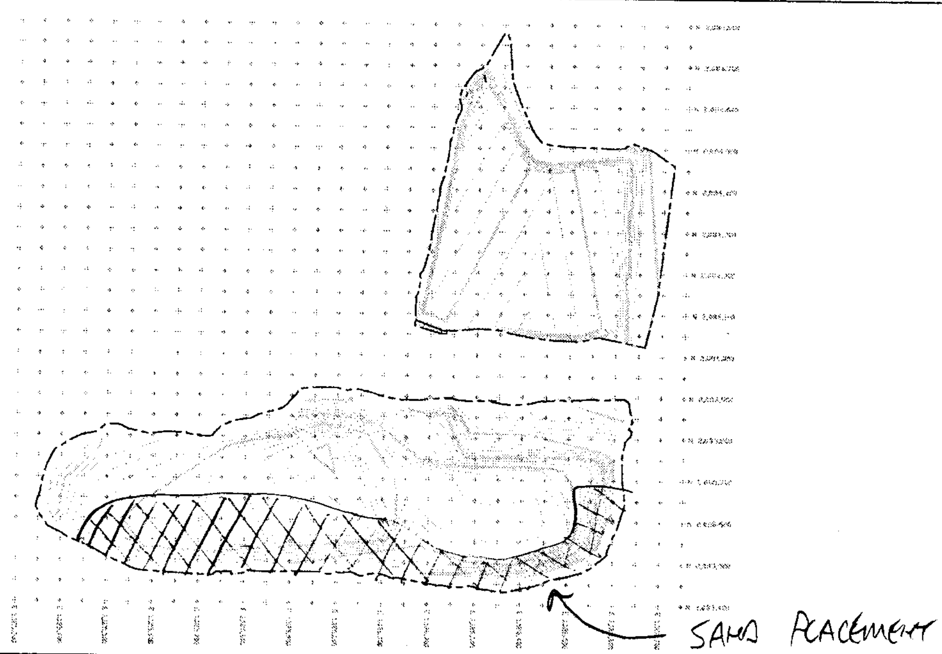
LAKE COUNTY GRADING ON SITE PLACING SAND ON THE SOUTH TOP AREA WITH OFF ROAD TRUCKS AND GRADING TO MINIMUM 1.0 FOOT

NOTE: THE LAKE COUNTY GRADING SUPERINTENDANT PLACED LATH ON A 50-FOOT GRID AND PLACED ORANGE RIBBON AT 1.2 FEET FOR SAND THICKNESS CONTROL. THE JOHN DEERE 850C DOZER WAS ALSO EQUIPPED WITH GPS FOR GRADING 1.0 THICKNESS

AREA 2:

LAKE COUNTY GRADING REMOVING CLAY SOILS ABOVE DESIGN GRADE

Sketch:



1/27/05 KML F-112-1.xls

Front

CQM, INC.

2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client:	Johns Manville Waukegan Plant	**Date:**	8/21/08
Project:	Fill Area 1 & 2 Capping Activities	**Day:**	THURSDAY
Engineer's Rep:	Chris R. Goffard	**Page:**	2 of 2
Contractor's Rep:	Jeff O'Malley	**Rprt No.:**	4

RESIDENT INSPECTION REPORT

Report of Observation of Work and Comments:

AND PLACING IN NORTH EAST CORNER OF AREA 1
FILL AREA. AS THE MATERIAL WAS PLACED LAKE
COUNTY GRADING UTILIZED A SHEEPSFOOT COMPACTOR
TO COMPACT THE MATERIAL IN LIFTS
LAKE COUNTY GRADING ALSO PLACED CLAY IN
EAST CHANNEL AREA
- DENSITY TESTED PLACED CLAY IN EAST
CHANNEL - TESTS PASSED
DURING THE COURSE OF THE DAY LAKE COUNTY
GRADING UTILIZED TWO WATER TRUCKS TO
WATER HAUL ROADS / MINIMIZE DUST
3:15 STARTED TO LIGHTLY RAIN
3:50 STOPPED - CONTRACTOR DID NOT STOP
4:00 LOOKED AT AREA 2 NORTH CHANNEL GRADES
5:00 LAKE COUNTY GRADING SHUT DOWN
5:30 CRG OFF SITE

Number of Men:
Foreman 1
Operators 9
Laborers 1

Equipment:
1- JOHN DEERE 325 BACKHOE
1- JOHN DEERE 350 BACKHOE
1- CAT D8R DOZER
2- JOHN DEERE DOZERS WITH GPS
4- CAT OFF ROAD TRUCKS
2- WATER TRUCKS
3- CAT 627 SCRAPERS
1- SMOOTH DRUM ROLLER
1- DISK
1- CAT 825 SHEEPSFOOT COMPACTOR

CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client: Johns Manville Waukegan Plant
Project: Fill Area 1 & 2 Capping Activities
Engineer's Rep: Chris R. Goffard
Contractor's Rep: Jeff O'Malley
Signed: Chris Goffard

Date: 8/22/08
Day: Friday
Page: 1 of 2
Rprt No.: 5

RESIDENT INSPECTION REPORT

Weather Conditions	Temperature		Sky	Rain	Snow	Project Site Conditions
	Low	High				
	74°	84°		/		Dry / Muddy

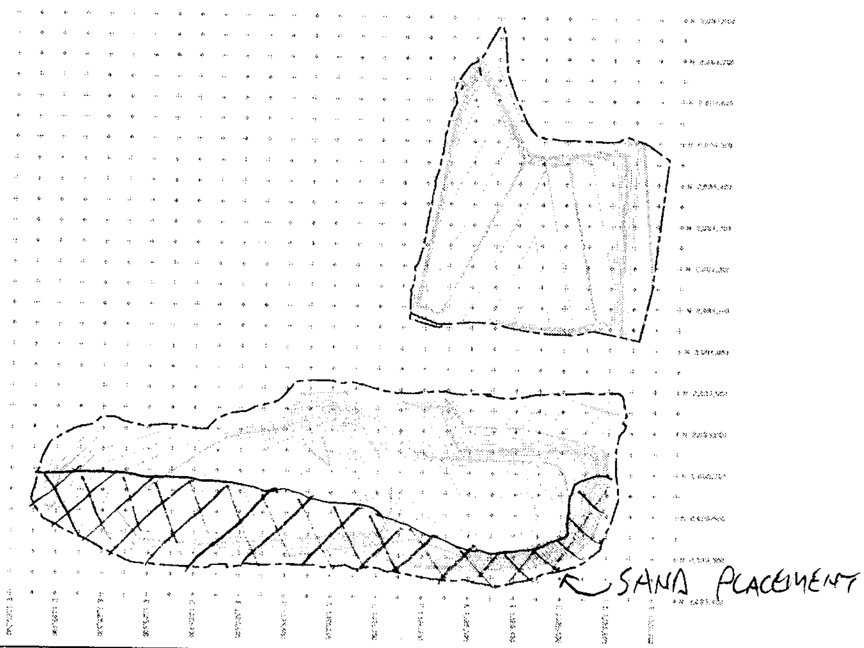
Field Book No.: 1 Page #s 8 - 9

Contractor(s) on Site:

Report of Observation of Work and Comments:

6:40 CRG ARRIVED ON SITE TO START SAND THICKNESS DOCUMENTATION AND DENSITY TEST PLACED BARRIER LAYER MATERIAL
7:20 CALLED CQM TO PERFORM SAND VOLUME CALCULATION FOR AREA 1
419,236 S.F. (SURFACE AREA)
1.0 = 15,527 C.Y.
LAKE COUNTY GRADING ON SITE EXCAVATING CLAY FROM THE EAST CLAY STOCKPILE AND PLACING ON AREA 1 NORTH EAST CORNER (± 8' FILL AREA)
- AFTER THE MATERIAL WAS PLACED LAKE COUNTY GRADING UTILIZED A CAT 825 SHEEPSFOOT COMPACTER TO COMPACT THE MATERIAL IN LIFTS
1:15 STARTED TO RAIN / CONTRACTOR SHUT DOWN
1:25 CALLED DENNY TO PROVIDE PROJECT UPDATE

Sketch:



CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client: Johns Manville Waukegan Plant
Project: Fill Area 1 & 2 Capping Activities
Engineer's Rep: Chris R. Goffard
Contractor's Rep: Jeff O'Malley

Date: 8/22/08
Day: Friday
Page: 2 of 2
Rprt No.: 5

RESIDENT INSPECTION REPORT

Report of Observation of Work and Comments:

1:30 CRG off site

Number of Men:

Foreman 1

Operators 9

Laborers 1

Equipment:

1- John Deere 325 Backhoe
1- John Deere 350 Backhoe
1- CAT D6R Dozer
2- John Deere Dozers with GPS
4- CAT off road trucks
2- water truck
3- CAT 627 Scrapers
1- Smooth Drum Roller
1- Disk
1- CAT 825 Sheepsfoot Compactor

CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client:	Johns Manville Waukegan Plant	**Date:**	8/25/06
Project:	Fill Area 1 & 2 Capping Activities	**Day:**	MONDAY
Engineer's Rep:	Chris R. Goffard	**Page:**	1 of 2
Contractor's Rep:	Jeff O'Malley	**Rprt No.:**	6
Signed:	[signature]		

RESIDENT INSPECTION REPORT

Weather Conditions	Temperature		Sky	Rain	Snow	Project Site Conditions
	Low	High				
	68°	80°	CLEAR			Dry / Muddy

Field Book No.: 1 Page #s 10 – 11

Contractor(s) on Site:

Report of Observation of Work and Comments:

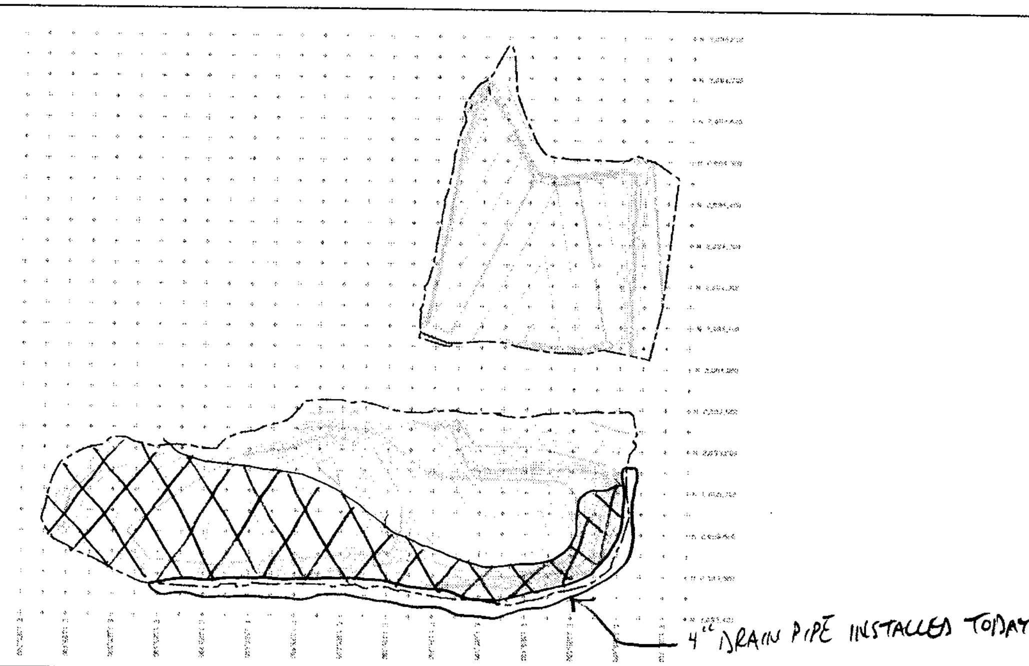
7:45 CRG ARRIVED ON SITE TO SURVEY AREA 1 BARRIER LAYER GRADES, SAND THICKNESSES, AND DENSITY TEST PLACED BARRIER LAYER MATERIAL
- LAKE COUNTY GRADING ON SITE PLACING SAND ON AREA 1 WITH OFF ROAD TRUCKS AND GRADING TO 1.0 WITH GPS EQUIPPED DOZER

8:00 DENNY ON SITE TO OBSERVE CONSTRUCTION ACTIVITIES

8:00 LAKE COUNTY GRADING PIPE CREW ON SITE TO INSTALL AREA 1 4" PERIMETER TOE DRAIN
- LAKE COUNTY GRADING ALSO ON SITE GRADING AREA 2 BARRIER LAYER

DURING THE COURSE OF THE DAY LAKE COUNTY GRADING WATERED THE HAUL ROAD ON A FULL TIME BASIS TO MINIMIZE DUST

Sketch:



1/27/05 KML F-112-1.xls

Front

CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client: Johns Manville Waukegan Plant
Project: Fill Area 1 & 2 Capping Activities
Engineer's Rep: Chris R. Goffard
Contractor's Rep: Jeff O'Malley

Date: 6/25/08
Day: MONDAY
Page: 2 of 2
Rprt No.: 6

RESIDENT INSPECTION REPORT

Report of Observation of Work and Comments:

5:00 LAKE COUNTY GRADING SHUT DOWN
5:00 - 6:15 CRG DOCUMENTED AREA 1 NORTH EAST
CORNER BARRIER LAYER POINTS
6:15 CRG OFF SITE

Number of Men:		PIPE CREW
Foreman	1	1
Operators	9	1
Laborers	1	2

Equipment:

1- JOHN DEERE 325 BACKHOE
1- JOHN DEERE 350 BACKHOE
1- CAT D6R DOZER
2- JOHN DEERE DOZERS WITH GPS
4- CAT OFF ROAD TRUCKS
2- WATER TRUCKS
3- CAT 627 SCRAPERS
1- SMOOTH DRUM ROLLER
1- DISK
1- CAT 825 SHEEPSFOOT COMPACTOR

CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client:	Johns Manville Waukegan Plant	**Date:**	8/26/08
Project:	Fill Area 1 & 2 Capping Activities	**Day:**	TUESDAY
Engineer's Rep:	Chris R. Goffard	**Page:**	1 of 2
Contractor's Rep:	Jeff O'Malley	**Rprt No.:**	7
Signed:	Chris Goffard		

RESIDENT INSPECTION REPORT

Weather Conditions	Temperature		Sky	Rain	Snow	Project Site Conditions
	Low	High				
	64°	80°	SUNNY			Dry / Muddy

Field Book No.: 1 Page #s 12-13

Contractor(s) on Site:

Report of Observation of Work and Comments:

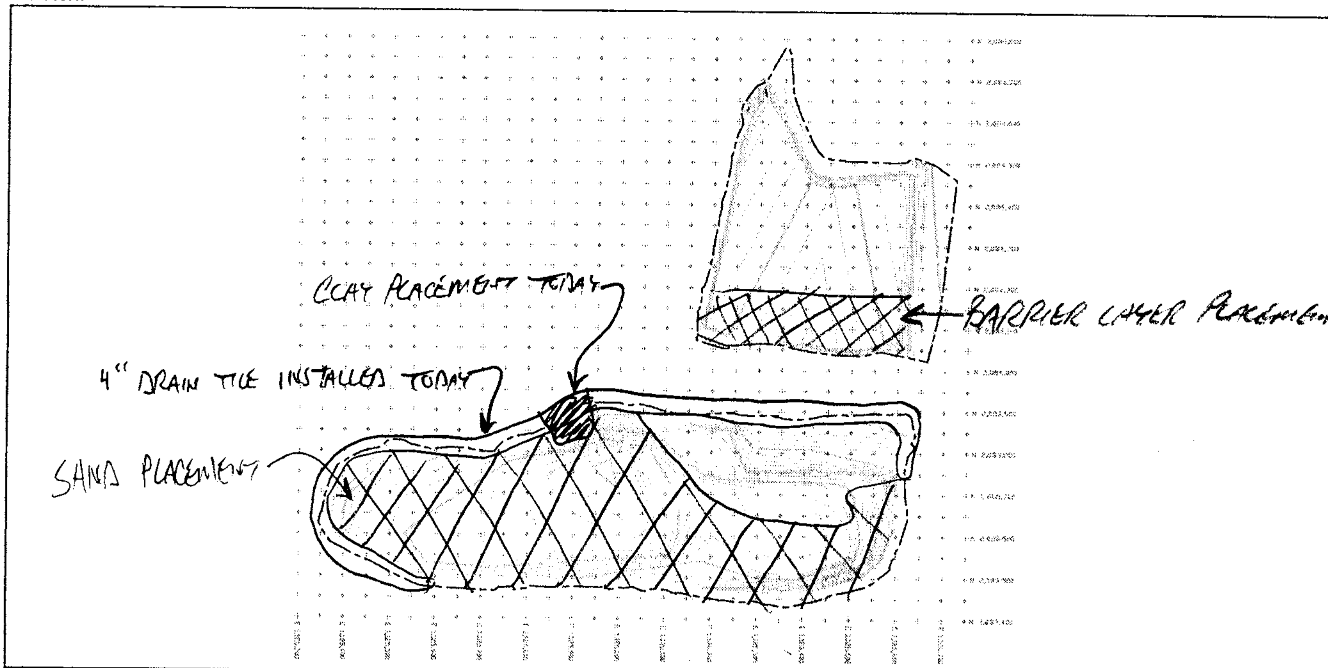
6:20 CRG ARRIVED ON SITE TO PERFORM DOCUMENTATION SURVEYS AND DENSITY TEST PLACED BARRIER LAYER MATERIAL

- LAKE COUNTY GRADING ON SITE PLACING SAND ON AREA 1 WITH OFF ROAD TRUCKS AND GRADING TO 1.0 WITH A DOZER EQUIPPED WITH GPS
- ON AREA 2 LAKE COUNTY GRADING PLACING BARRIER LAYER MATERIAL WITH SCRAPERS AND COMPACTING WITH A 825 SHEEPSFOOT COMPACTOR

8:00 TESTED FILL MATERIAL (BARRIER LAYER) ON AREA 1 IN NORTHEAST CORNER - TESTS PASSED

- DALE PETERSEN ON SITE TO OBSERVE CONSTRUCTION ACTIVITIES AND ANSWER CONSTRUCTION QUESTIONS
- LAKE COUNTY GRADING PIPE CREW ON SITE TO COMPLETE AREA 1 TOE DRAIN INSTALLATION

Sketch:



CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client: Johns Manville Waukegan Plant
Project: Fill Area 1 & 2 Capping Activities
Engineer's Rep: Chris R. Goffard
Contractor's Rep: Jeff O'Malley

Date: 8/26/08
Day: TUESDAY
Page: 2 of 2
Rprt No.: 7

RESIDENT INSPECTION REPORT

Report of Observation of Work and Comments:

NOTE: ALL THE DRAIN PIPING WAS SCREENED FOR X-Y-Z
DURING THE COURSE OF THE DAY LAKE COUNTY GRADING
UTILIZED THE WATER TRUCK TO KEEP THE DUST DOWN
2:30 LAKE COUNTY GRADING STARTED CLAY PLACEMENT
ON AREA 1 NORTH SIDE
- DURING THE COURSE OF THE DAY CRG DOCUMENTED
MORE SAND THICKNESSES ON AREA 1
5:00 LAKE COUNTY GRADING SHUT DOWN
5:10 CRG OFF SITE

Number of Men:		PIPE CREW
Foreman	1	1
Operators	9	1
Laborers	1	2

Equipment:
SAME

8/14/2008 KML F-112-1.xls

Back

CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client: Johns Manville Waukegan Plant
Project: Fill Area 1 & 2 Capping Activities
Engineer's Rep: Chris R. Goffard
Contractor's Rep: Jeff O'Malley
Signed: Chris Goffard

Date: 8/27/08
Day: WEDNESDAY

Rprt No.: 8

RESIDENT INSPECTION REPORT

Weather Conditions	Temperature Low	Temperature High	Sky	Rain	Snow	Project Site Conditions
	64°	80°	SUNNY			Dry / Muddy

Field Book No.: 1 Page #s 14-15

Contractor(s) on Site:

Report of Observation of Work and Comments:

6:20 CRG ARRIVED ON SITE TO TOPO AREA 1 TOP OF SAND (AS-BUILT) AND DENSITY TEST AREA 2 BARRIER LAYER

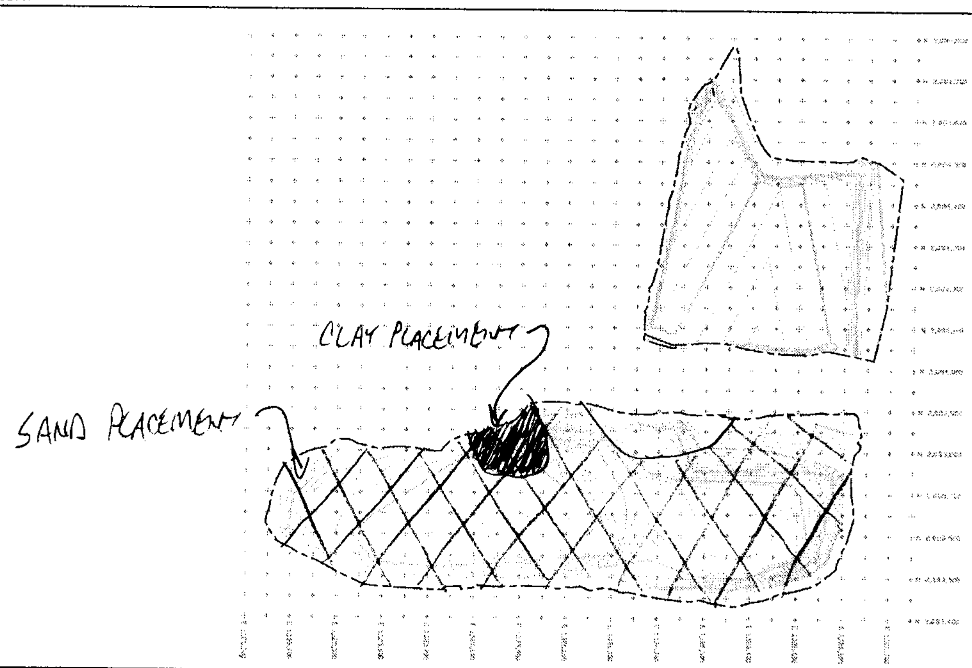
- LAKE COUNTY GRADING ON SITE PLACING SAND ON AREA 1 WITH OFF ROAD TRUCKS AND GRADING TO 1.0 WITH A GPS EQUIPPED DOZER
- LAKE COUNTY GRADING ALSO PLACING CLAY ON AREA 1 (SOUTH SIDE) WITH SCRAPERS AND COMPACTING WITH A CAT 825C SHEEPSFOOT COMPACTOR

7:30 SURVEYED AREA 1 WEST 1/2 TOP OF SAND FOR AS-BUILT

12:30 DENSITY TESTED AREA 2 BARRIER LAYER (SURFACE)
— TESTS PASSED

DURING THE COURSE OF THE DAY LAKE COUNTY GRADING UTILIZED A GPS EQUIPPED DOZER TO GRADE AREA 2 BARRIER LAYER

Sketch:



CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client:	Johns Manville Waukegan Plant	**Date:**	8/27/08
Project:	Fill Area 1 & 2 Capping Activities	**Day:**	WEDNESDAY
Engineer's Rep:	Chris R. Goffard	**Page:**	2 of 2
Contractor's Rep:	Jeff O'Malley	**Rprt No.:**	8

RESIDENT INSPECTION REPORT

Report of Observation of Work and Comments:

1:30 DENSITY TESTED AREA 2 CLAY PLACEMENT
(PROTECTIVE MATERIAL) - TESTS PASSED
1:30 DAVE PETERSON ON SITE TO OBSERVE CONSTRUCTION
ACTIVITIES
DURING THE COURSE OF THE DAY LAKE COUNTY GRADING
UTILIZED A WATER TRUCK TO WATER HAUL
ROADS / MINIMIZE DUST
5:00 LAKE COUNTY GRADING SHUT DOWN
5:30 CRG OFF SITE

Number of Men:
Foreman 1
Operators 9
Laborers 1

Equipment:
SAME

CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client:	Johns Manville Waukegan Plant	**Date:**	8/28/08
Project:	Fill Area 1 & 2 Capping Activities	**Day:**	Thursday
Engineer's Rep:	Chris R. Goffard	**Page:**	1 of 2
Contractor's Rep:	Jeff O'Malley	**Rprt No.:**	9
Signed:	Chris Goffard		

RESIDENT INSPECTION REPORT

Weather Conditions	Temperature		Sky	Rain	Snow	Project Site Conditions
	Low	High				
	66°	80°	CLOUDY			Dry / Muddy

Field Book No.: 1 Page #s 16

Contractor(s) on Site:

Report of Observation of Work and Comments:

6:15 CRG ARRIVED ON SITE TO COMPLETE AREA 1 SAND DOCUMENTATION / TOPO SURVEY AND START AREA 2 BARRIER LAYER DOCUMENTATION

6:30 LAKE COUNTY GRADING ON SITE TO CONTINUE SAND PLACEMENT ON AREA 1 WITH OFF ROAD TRUCKS AND A JOHN DEERE DOZER EQUIPPED WITH GPS

- LAKE COUNTY GRADING ALSO ON SITE TO CONTINUE CLAY PLACEMENT ON AREA 1 WITH SCRAPERS, DOZERS, AND 1 CAT 825C SHEEPSFOOT COMPACTOR

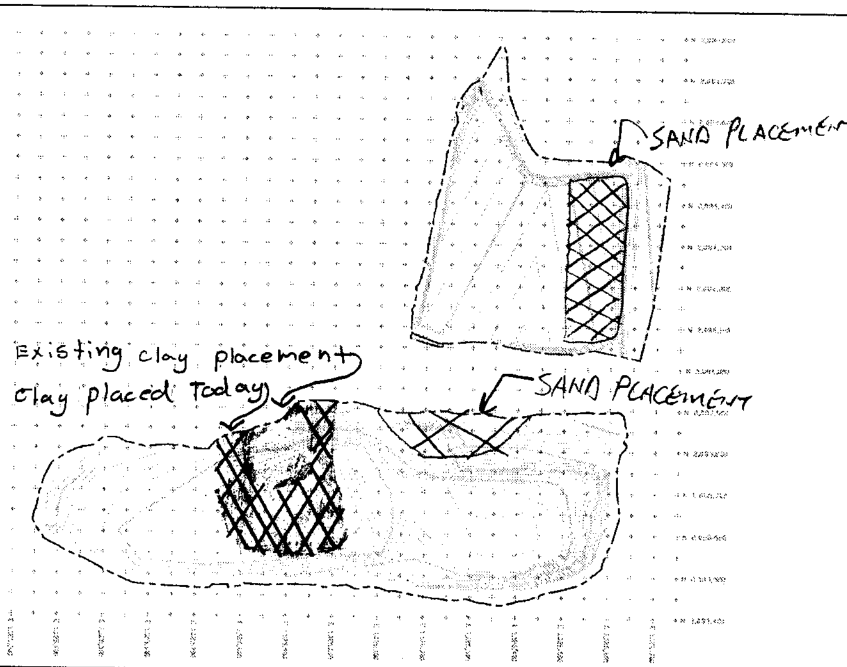
NOTE: THE CLAY WAS EXCAVATED FROM A STOCKPILE LOCATED EAST OF THE EAST HAUL ROAD

8:00 DUSTIN FROM CQM, INC. ON SITE TO ASSIST WITH AREA 1 DENSITY TESTING

9:30 AREA 1 SAND PLACEMENT COMPLETE

9:30 STARTED SAND PLACEMENT ON AREA 2

Sketch:



CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client:	Johns Manville Waukegan Plant	Date:	8/28/08
Project:	Fill Area 1 & 2 Capping Activities	Day:	THURSDAY
Engineer's Rep:	Chris R. Goffard	Page:	2 of 2
Contractor's Rep:	Jeff O'Malley	Rprt No.:	9

RESIDENT INSPECTION REPORT

Report of Observation of Work and Comments:

10:00 - 11:30 LIGHT RAIN
1:00 PROJECT MEETING
- PROJECT PROGRESSING SMOOTHLY
2:15 TIM AMBROSIUS, CQM, INC. PROJECT MANAGER ON SITE - PLEASED WITH PROJECT
5:00 LAKE COUNTY GRADING SHUT DOWN
5:30 CRG/AUSTIN OFF SITE

Number of Men:		pipe crew
Foreman	1	1
Operators	9	1
Laborers	1	2

Equipment:

1- John Deere 325 BackHoe
1- John Deere 350 BackHoe
1- cat D8R Dozer
2- John Deere Dozers with GPS
4- cat off Road Trucks
1- water Truck
1- cat 825c Sheepfoot compactor
4- cat 627 Scrapers
1- smooth Drum Roller
1- Disk

CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client: Johns Manville Waukegan Plant
Project: Fill Area 1 & 2 Capping Activities
Engineer's Rep: Chris R. Goffard
Contractor's Rep: Jeff O'Malley
Signed: [signature]

Date: 8/29/08
Day: FRIDAY

Rprt No.: 10

RESIDENT INSPECTION REPORT

Weather Conditions	Temperature		Sky	Rain	Snow	Project Site Conditions
	Low	High				
	68°	82°	SUNNY			Dry Muddy

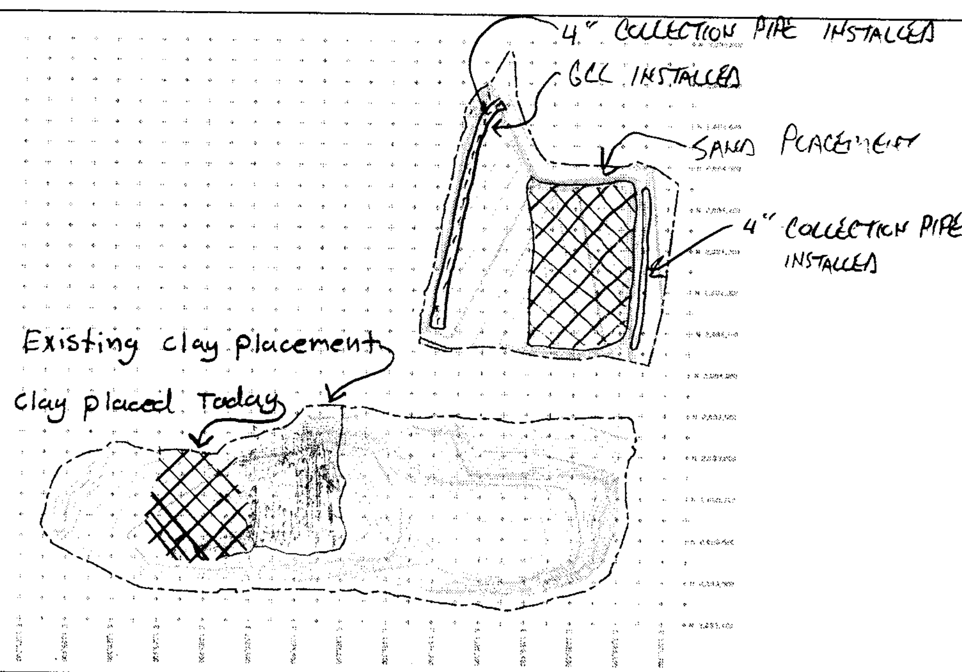
Field Book No.: 1 Page #s 17

Contractor(s) on Site:

Report of Observation of Work and Comments:

6:20 CRG ARRIVED ON SITE TO CONTINUE AREA 2 BARRIER LAYER DOCUMENTATION
6:30 DUSTIN ARRIVED ON SITE TO CONTINUE AREA 1 PROTECTIVE LAYER DENSITY TESTING
LAKE COUNTY GRADING ON SITE TO CONTINUE CLAY PLACEMENT (PROTECTIVE LAYER) ON AREA 1 WITH SCRAPERS, DOZERS, AND 1 SHEEPSFOOT COMPACTOR
ON AREA 2 LAKE COUNTY GRADING CONTINUE TO PLACE SAND WITH OFF ROAD TRUCKS AND GRADE TO 1.0' ON AREAS OF DOCUMENTED BARRIER LAYER
LAKE COUNTY PIPE CREW ON SITE TO INSTALL AREA 2 4" COLLECTION PIPE AND GCL MATERIAL
1:30 SURVEYED LIMITS OF GCL PLACEMENT (AS-BUILT)

Sketch:



CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client:	Johns Manville Waukegan Plant	**Date:**	8/29/09
Project:	Fill Area 1 & 2 Capping Activities	**Day:**	FRIDAY
Engineer's Rep:	Chris R. Goffard	**Page:**	2 of 2
Contractor's Rep:	Jeff O'Malley	**Rprt No.:**	10

RESIDENT INSPECTION REPORT

AFT CREW

Report of Observation of Work and Comments:

PERFORMED 19 DENSITY TESTS ON AREA 1 PROTECTIVE LAYER MATERIAL – TESTS PASSED
2:30 LAKE COUNTY GRADING SHUT DOWN
3:00 CRG / DUSTIN OFF SITE

Number of Men:

Foreman /	1
Operators 9	1
Laborers 1	2

Equipment:

7 – cat 627 scrapers
2 – John Deere Dozers with GPS
1 – cat D8R Dozer
4 – off Road Trucks
1 – Disk
1 – smooth Drum roller
1 – water Truck
1 – John Deere 325 Back Hoe
1 – John Deere 350 Back Hoe
1 – cat 825C sheepsfoot compactor

CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client: Johns Manville Waukegan Plant
Project: Fill Area 1 & 2 Capping Activities
Engineer's Rep: Chris R. Goffard
Contractor's Rep: Jeff O'Malley
Signed: [signature]

Date: 9/2/08
Day: TUESDAY
Page: 1 of 2
Rprt No.: 11

RESIDENT INSPECTION REPORT

Weather Conditions	Temperature Low	Temperature High	Sky	Rain	Snow	Project Site Conditions
	72°	90°	CLEAR			Dry / Muddy

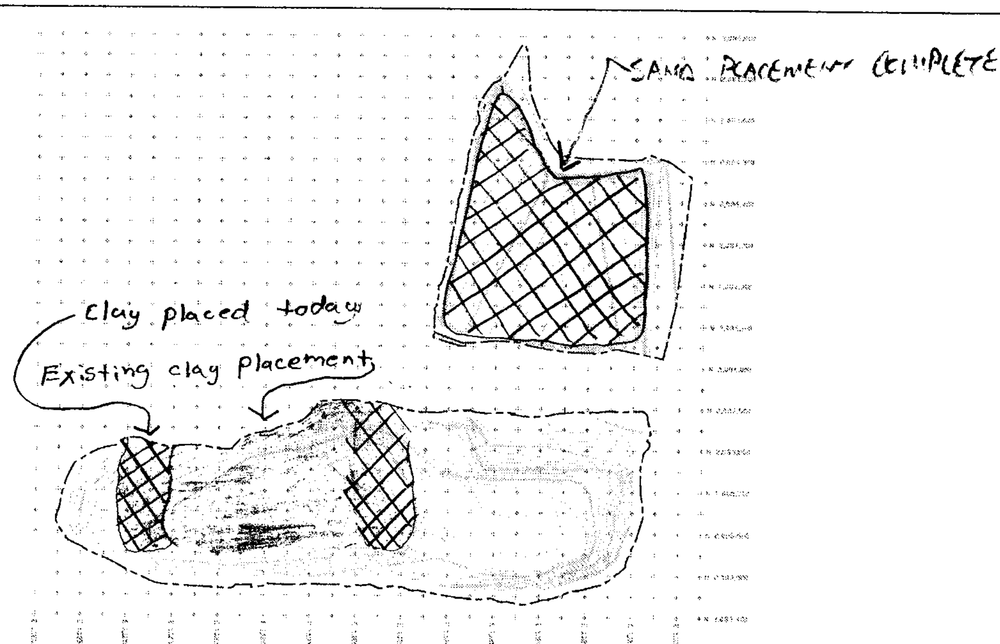
Field Book No.: 1 Page #s 18-19

Contractor(s) on Site:

Report of Observation of Work and Comments:

7:00 CRG ARRIVED ON SITE TO COMPLETE AREA 2 BARRIER LAYER DOCUMENTATION
7:00 DUSTIN ON SITE TO CONTINUE DENSITY TESTING AREA 1 PROTECTIVE LAYER
MATERIAL (CLAY)
LAKE COUNTY GRADING ON SITE PLACING PROTECTIVE MATERIAL ON AREA 1
WITH 4 SCRAPERS, 2 DOZERS, AND 1 825C SHEEPSFOOT COMPACTOR
ON AREA 2 LAKE COUNTY GRADING PLACING SAND WITH 3 OFF ROAD TRUCKS AND
GRADING TO 1.0 WITH A GPS EQUIPPED DOZER
8:30 DENNY ON SITE OBSERVING CONSTRUCTION ACTIVITIES
10:00 DAVE P. ON SITE TO OVERSEE PROJECT / ANSWER CONSTRUCTION RELATED QUESTIONS
12:30 LAKE COUNTY GRADING PLACING ADDITIONAL SAND AT LOW AREAS IN NORTH EAST CORNER
OF AREA 1

Sketch:



CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client:	Johns Manville Waukegan Plant	**Date:**	9/2/08
Project:	Fill Area 1 & 2 Capping Activities	**Day:**	TUESDAY
Engineer's Rep:	Chris R. Goffard	**Page:**	2 of 2
Contractor's Rep:	Jeff O'Malley	**Rprt No.:**	11

RESIDENT INSPECTION REPORT

Report of Observation of Work and Comments:

4:00 AREA 2 SAND PLACEMENT COMPLETE
DURING THE COURSE OF THE DAY LAKE COUNTY GRADING
UTILIZED A WATER TRUCK TO WATER THE HAUL ROADS/
MINIMIZE DUST
5:00 SCRAPERS / COMPACTOR SHUT DOWN
5:00 LAKE COUNTY GRADING UTILIZED OFF ROAD TRUCKS
TO HAUL TOPSOIL FROM A STOCKPILE EAST OF THE EAST
HAUL ROAD AND STAGE EAST OF AREA 2 EAST CHANNEL
5:30 OFF ROAD TRUCKS SHUT DOWN
5:40 CRG / DUSTIN OFF SITE

Number of Men:
Foreman 1
Operators 12
Laborers 1

Equipment:
7- cat 627 scrapers
2- John Deere Dozers with GPS
1- cat D8R Dozer
4- off Road Trucks
1- Disk
1- smooth Drum roller
1- water Truck
1- John Deere 325 Back hoe
1- John Deere 350 Back Hoe
1- cat 825c sheepsfoot compactor

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Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client: Johns Manville Waukegan Plant
Project: Fill Area 1 & 2 Capping Activities
Engineer's Rep: Chris R. Goffard
Contractor's Rep: Jeff O'Malley
Signed: Chris Goffard

Date: 9/3/08
Day: WEDNESDAY
Page: 1 of 2
Rprt No.: 12

RESIDENT INSPECTION REPORT

Weather Conditions	Temperature		Sky	Rain	Snow	Project Site Conditions
	Low	High				
	68°	76°	CLOUDY			Dry / Muddy

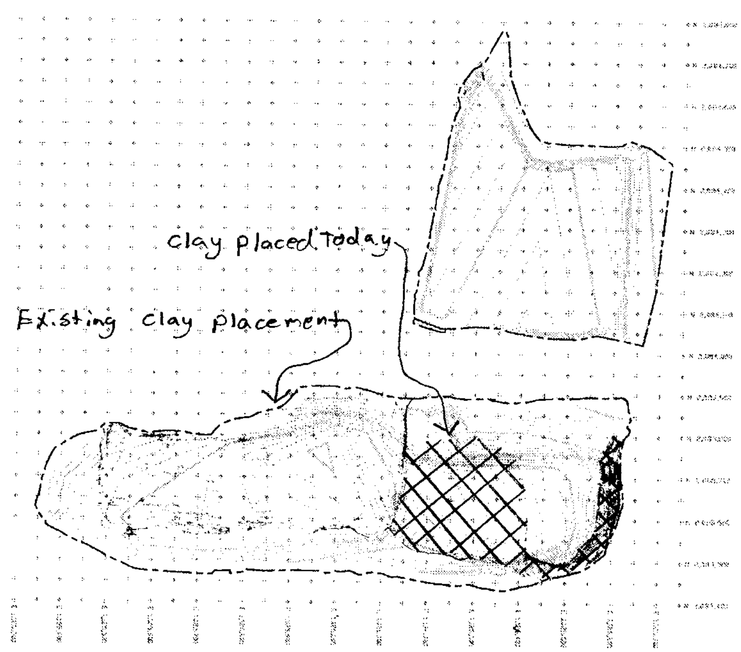
Field Book No.: 1 Page #s 20

Contractor(s) on Site:

Report of Observation of Work and Comments:

6:30 CRG ARRIVED ON SITE TO DOCUMENT AREA 2 SAND THICKNESS
6:30 DUSTIN ARRIVED ON SITE TO CONTINUE DENSITY TESTING AREA 1 PROTECTIVE LAYER MATERIAL (CLAY)
LAKE COUNTY GRADING ON SITE PLACING PROTECTIVE LAYER MATERIAL (CLAY) ON AREA 1 WITH 1 SCRAPERS, DOZERS, AND 1 SHEEPSFOOT COMPACTOR
8:30 - 11:30 DOCUMENTED AREA 2 SAND THICKNESS
12:30 - 3:15 SURVEYED REMAINING SAND STOCKPILE WHICH WAS UTILIZED FOR AREA 1 AND 2 SAND SOURCE
PERFORMED 24 DENSITY TESTS ON AREA 1 PROTECTIVE LAYER
- TESTS PASSED

Sketch:



CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client:	Johns Manville Waukegan Plant	**Date:**	9/3/08
Project:	Fill Area 1 & 2 Capping Activities	**Day:**	WEDNESDAY
Engineer's Rep:	Chris R. Goffard	**Page:**	2 of 2
Contractor's Rep:	Jeff O'Malley	**Rprt No.:**	12

RESIDENT INSPECTION REPORT

Report of Observation of Work and Comments:

4:30 SCRAPERS GRADED THE HAUL ROADS FOR DRAINAGE
5:00 LAKE COUNTY GRADING SHUT DOWN
5:10 CRG/AUSTIN OFF SITE

Number of Men:
Foreman 1
Operators 10
Laborers 1

Equipment:
7- cat 627 scrapes.
2- Jhon Deere 850 Dozers with GPS
1- cat D8R Dozer
4- off Road Trucks
1- Disk
1- smooth Drum roller
1- water truck
1- John Deere 325 Back Hoe
1- John Deere 350 Back Hoe
1- cat 825c sheepsfoot compactor

CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client: Johns Manville Waukegan Plant
Project: Fill Area 1 & 2 Capping Activities
Engineer's Rep: Chris R. Goffard
Contractor's Rep: Jeff O'Malley
Signed: Chris Goffard

Date: 9/4/08
Day: THURSDAY
Page: 1 of 2
Rprt No.: 13

RESIDENT INSPECTION REPORT

Weather Conditions	Temperature Low	Temperature High	Sky	Rain	Snow	Project Site Conditions
	64°	68°	CLOUDY	/		Dry / Muddy

Field Book No.: 1   Page #s 21

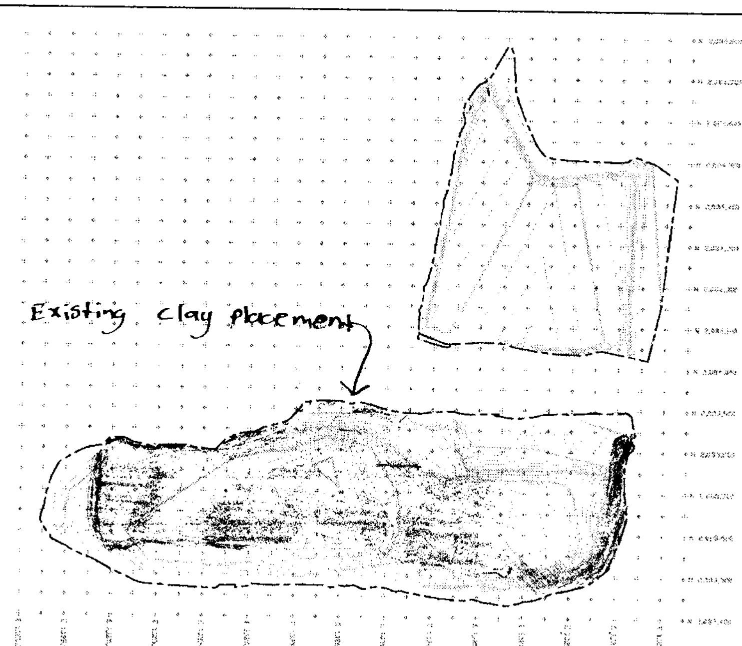
Contractor(s) on Site:

Report of Observation of Work and Comments:

6:30 CRG ARRIVED ON SITE TO COMPLETE AREA 2 SAND THICKNESS DOCUMENTATION
- SITE IS WET AND MUDDY FROM OVERNIGHT AND CURRENT RAIN
6:40 SPOKE WITH JEFF - HE STATED LAKE COUNTY GRADING IS NOT WORKING TODAY DUE TO WET PROJECT CONDITIONS
1:00 PROJECT MEETING

RAINED OUT

Sketch:



CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client:	Johns Manville Waukegan Plant	**Date:**	9/4/08
Project:	Fill Area 1 & 2 Capping Activities	**Day:**	THURSDAY
Engineer's Rep:	Chris R. Goffard	**Page:**	2 of 2
Contractor's Rep:	Jeff O'Malley	**Rprt No.:**	13

RESIDENT INSPECTION REPORT

Report of Observation of Work and Comments:

RAINED OUT / 0

Number of Men:
Foreman 1
Operators 10
Laborers 1

Equipment:
7- cat 627 scrapers
2- John Deere Dozers with GPS
1- cat D8R Dozer
4-088 Road Trucks
1 Disk
1- water Truck
1-John Deere 325 Back Hoe
1-John Deere 350 Back Hoe
1-cat 825c sheepsfoot compactor

CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client: Johns Manville Waukegan Plant
Project: Fill Area 1 & 2 Capping Activities
Engineer's Rep: Chris R. Goffard
Contractor's Rep: Jeff O'Malley
Signed: Chris Goffard

Date: 9/5/08
Day: FRIDAY
Page: 1 of 2
Rprt No.: 14

RESIDENT INSPECTION REPORT

Weather Conditions	Temperature		Sky	Rain	Snow	Project Site Conditions
	Low	High				
	60°	70°	CLOUDY			Dry / Muddy

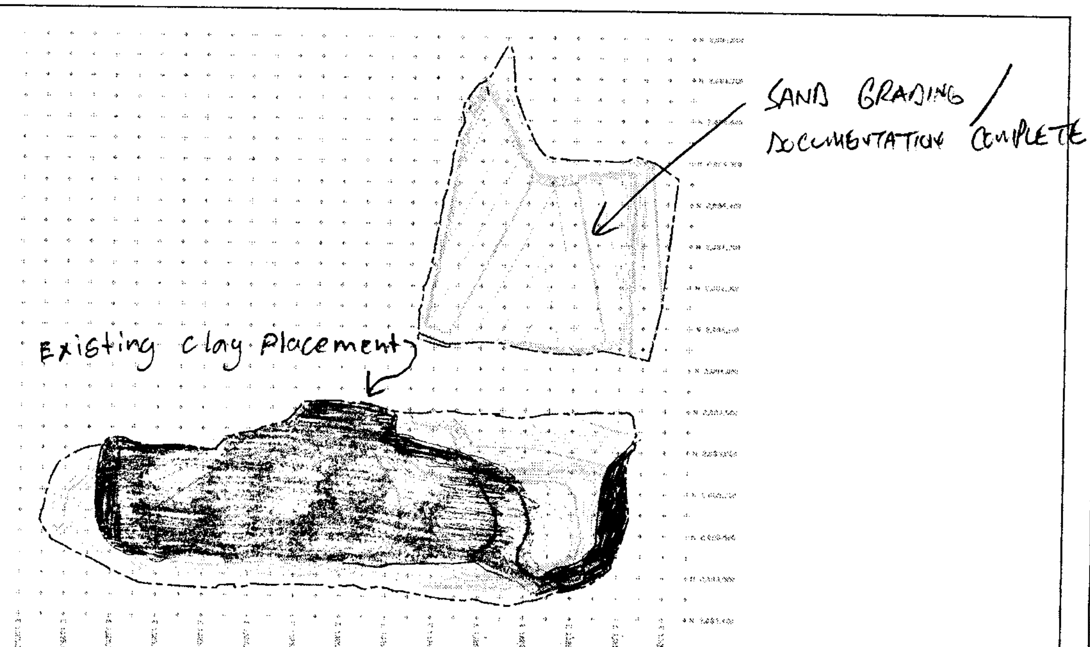
Field Book No.: 1 Page #s 23

Contractor(s) on Site:

Report of Observation of Work and Comments:

6:30 CRG ARRIVED ON SITE TO DOCUMENT AREA 2 WEST SIDE SAND THICKNESS
AFTER LAKE COUNTY GRADING COMPLETES REMOVING EXTRA SAND
- SITE IS WET AND MUDDY FROM THURSDAY / THURSDAY NIGHT HEAVY RAINS
7:00 LAKE COUNTY GRADING ON SITE GRADING / STOCKPILING AREA 2 EXTRA SAND
IN THE SW CORNER
12:00 AREA 2 SAND GRADING COMPLETE - SAND DOCUMENTATION COMPLETE
12:00 CRG OFF SITE

Sketch:



CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client:	Johns Manville Waukegan Plant	**Date:**	9/5/08
Project:	Fill Area 1 & 2 Capping Activities	**Day:**	FRIDAY
Engineer's Rep:	Chris R. Goffard	**Page:**	2 of 2
Contractor's Rep:	Jeff O'Malley	**Rprt No.:**	14

RESIDENT INSPECTION REPORT

Report of Observation of Work and Comments:

Number of Men:

Foreman 1

Operators 1

Laborers

Surveyor 1

Equipment:

1- JOHN DEERE 850 DOZER
WITH GPS

CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client: Johns Manville Waukegan Plant
Project: Fill Area 1 & 2 Capping Activities
Engineer's Rep: Chris R. Goffard
Contractor's Rep: Jeff O'Malley
Signed: Chris Goffard

Date: 9/8/08
Day: MONDAY
Page: 1 of 2
Rprt No.: 15

RESIDENT INSPECTION REPORT

Weather Conditions	Temperature Low	Temperature High	Sky	Rain	Snow	Project Site Conditions
	68°	72°				Dry / Muddy

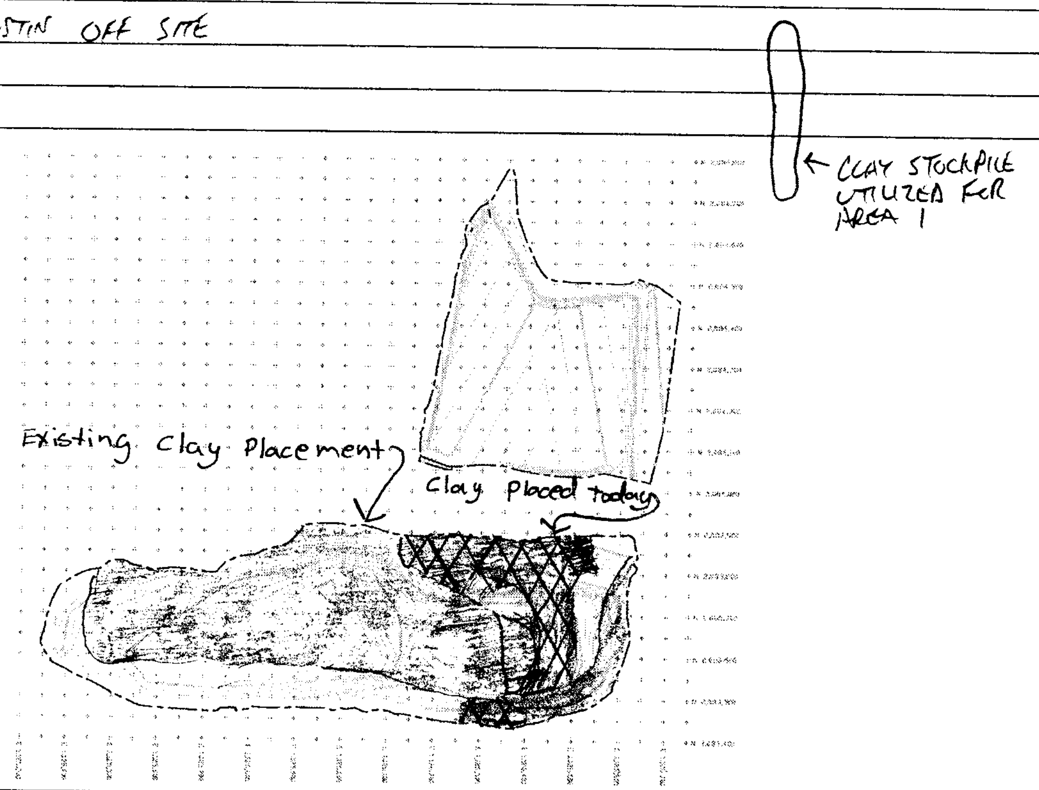
Field Book No.: 1 Page #s 24

Contractor(s) on Site:

Report of Observation of Work and Comments:

7:30 CRG / AUSTIN ARRIVED ON SITE TO DENSITY TEST AREA 1 PROTECTIVE LAYER AND SURVEY COLLECTION PIPE OUTLETS
LAKE COUNTY GRADING ON SITE PLACING CLAY (PROTECTIVE LAYER) ON AREA 1 WITH 6 SCRAPERS, 2 DOZERS, AND 1 SHEEPSFOOT 825C COMPACTOR
9:00 SURVEYED AREA 1 & 2 COLLECTION PIPE OUTLETS
11:30 START OF LIGHT RAIN
12:00 STEADY RAIN / SCRAPERS START TO GRADE THE AREA IN PREPARATION OF RAIN
12:15 SCRAPERS PARKED
12:45 CRG / AUSTIN OFF SITE

Sketch:



CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client: Johns Manville Waukegan Plant
Project: Fill Area 1 & 2 Capping Activities
Engineer's Rep: Chris R. Goffard
Contractor's Rep: Jeff O'Malley

Date: 9/8/08
Day: MONDAY
Page: 2 of 2
Rprt No.: 15

RESIDENT INSPECTION REPORT

Report of Observation of Work and Comments:

12:00 RAINED OUT!

Number of Men:
Foreman 1
Operators 10
Laborers 1

Equipment:
4-cat 985 Road Trucks
7-cat 627 Scrapers
1-Disk
1-water Truck
1-cat D8R Dozer
1-cat 850c sheepsfoot compactor
1-John Deer 350 Backhoe
2-John Deer 850 Dozers with GPS

CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client:	Johns Manville Waukegan Plant	**Date:**	9/9/08
Project:	Fill Area 1 & 2 Capping Activities	**Day:**	TUESDAY
Engineer's Rep:	Chris R. Goffard	**Page:**	1 of 2
Contractor's Rep:	Jeff O'Malley	**Rprt No.:**	16
Signed:	Chris Goffard		

RESIDENT INSPECTION REPORT

Weather Conditions	Temperature		Sky	Rain	Snow	Project Site Conditions
	Low	High				
	52°	65°	CLEAR			Dry / Muddy

Field Book No.: 1 Page #s 25

Contractor(s) on Site:

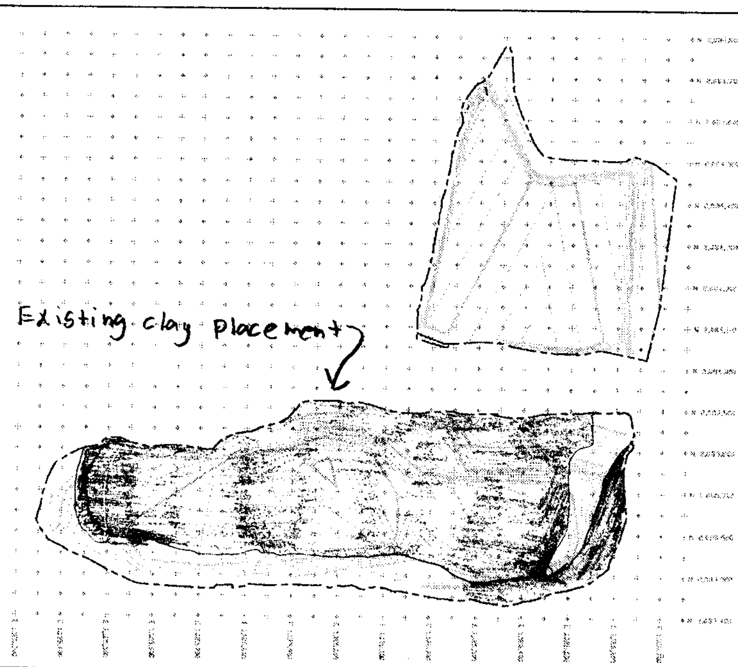
Report of Observation of Work and Comments:

6:30 CRG / AUSTIN ARRIVED ON SITE TO DENSITY TEST AREA 1 PROTECTIVE LAYER
- SITE IS WET & MUDDY FROM LAST NIGHTS RAIN (± 1")

LAKE COUNTY GRADING ON SITE UTILIZING A JOHN DEERE 850 DOZER TO BACKDRAG AREA 1 TO ASSIST IN DRYING THE SURFACE
- JEFF STATED LAKE COUNTY GRADING IS NOT WORKING TODAY DUE TO WET SITE CONDITIONS

RAINED OUT!

Sketch:



1/27/05 KML F-112-1.xls

Front

CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client:	Johns Manville Waukegan Plant	**Date:**	9/9/08
Project:	Fill Area 1 & 2 Capping Activities	**Day:**	TUESDAY
Engineer's Rep:	Chris R. Goffard	**Page:**	2 of 2
Contractor's Rep:	Jeff O'Malley	**Rprt No.:**	16

RESIDENT INSPECTION REPORT

Report of Observation of Work and Comments:

Number of Men:
Foreman 1
Operators 1
Laborers

Equipment:
4- cat 088 Road Trucks
7- cat 627 scrapers
1- Disk
1-water Truck
1-cat 850c sheepsfoot compactor
1- cat D8R Dozer
2- John Deere 850 Dozes with GPS

RAINED OUT

CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client:	Johns Manville Waukegan Plant	**Date:**	9/10/08
Project:	Fill Area 1 & 2 Capping Activities	**Day:**	WEDNESDAY
Engineer's Rep:	Chris R. Goffard	**Page:**	1 of 2
Contractor's Rep:	Jeff O'Malley	**Rprt No.:**	17
Signed:	Chris Goffard		

RESIDENT INSPECTION REPORT

Weather Conditions	Temperature		Sky	Rain	Snow	Project Site Conditions
	Low	High				
	53°	70°	Partly cloudy			Dry / Muddy

Field Book No.: 1　　Page #s 26-30

Contractor(s) on Site:

Report of Observation of Work and Comments:

6:30 CRG / AUSTIN ARRIVED ON SITE TO DENSITY TEST AREA 1 PROTECTIVE LAYER (CLAY MATERIAL) AND SURVEY NEW WELLS BY EAST HAUL ROAD

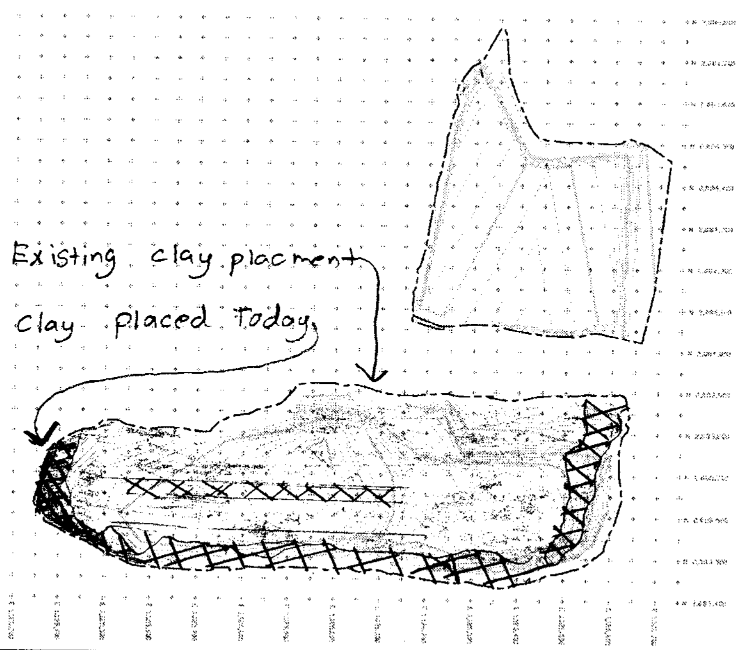
6:30 LAKE COUNTY GRADING ON SITE PLACING PROTECTIVE MATERIAL ON AREA 1 WITH 6 SCRAPERS, 2 DOZERS, AND 1 CATERPILLAR 825C SHEEPSFOOT COMPACTOR

9:00 DENSITY TESTED PLACED PROTECTIVE MATERIAL - TESTS PASSED COMPACTION / MOISTURE REQUIREMENTS

2:10 DENNY AND DALE ON SITE TO OBSERVE CONSTRUCTION ACTIVITIES - PLEASED WITH ACTIVITIES / PROGRESS

DURING THE COURSE OF THE DAY LAKE COUNTY GRADING UTILIZED A WATER TRUCK TO WATER THE HAUL ROADS / MINIMIZE DUST

Sketch:



CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client:	Johns Manville Waukegan Plant	**Date:**	9/10/08
Project:	Fill Area 1 & 2 Capping Activities	**Day:**	WEDNESDAY
Engineer's Rep:	Chris R. Goffard	**Page:**	2 of 2
Contractor's Rep:	Jeff O'Malley	**Rprt No.:**	17

RESIDENT INSPECTION REPORT

Report of Observation of Work and Comments:

PERFORMED MORE DENSITY TESTS IN THE AFTERNOON -
TESTS PASSED
5:00 LAKE COUNTY GRADING SHUT DOWN
5:30 CRG / DUSTIN OFF SITE

Number of Men:
Foreman 1
Operators 10
Laborers 1

Equipment:
7- cat 627 scrapers
4- cat off Road Trucks
1- Disk
1- water Truck
1- cat D8R Dozer
1- cat 850c sheepsfoot compactor
2- John Deere 850 Dozers with GPS

CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client: Johns Manville Waukegan Plant
Project: Fill Area 1 & 2 Capping Activities
Engineer's Rep: Chris R. Goffard
Contractor's Rep: Jeff O'Malley
Signed: [signature]

Date: 9/11/08
Day: THURSDAY
Page: 1 of 2
Rprt No.: 18

RESIDENT INSPECTION REPORT

Weather Conditions	Temperature		Sky	Rain	Snow	Project Site Conditions
	Low	High				
	60°	78°	SUNNY			Dry / Muddy

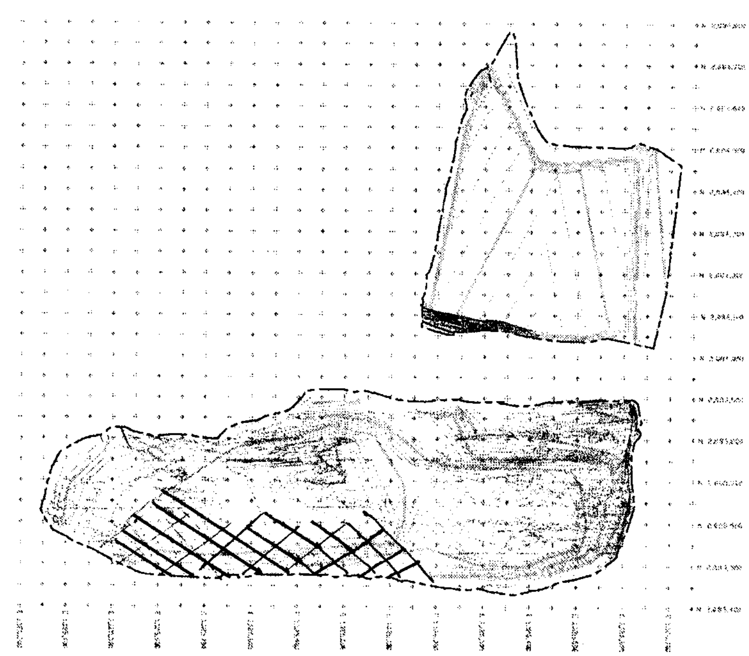
Field Book No.: 1 Page #s 31

Contractor(s) on Site:

Report of Observation of Work and Comments:

6:30 CRG/DUSTIN ARRIVED ON SITE TO DENSITY TEST AREA 1 PROTECTIVE LAYER (CLAY MATERIAL)
6:30 LAKE COUNTY GRADING ON SITE PLACING PROTECTIVE LAYER MATERIAL ON AREA 1 WITH 7 SCRAPERS, 2 DOZERS, AND 1 CATERPILLAR 825C SHEEPSFOOT COMPACTOR
8:00 LAKE COUNTY GRADING PLACED PROTECTIVE LAYER MATERIAL IN THE SOUTH WEST CORNER OF AREA 2
9:30 CALLED PAT @ CQM, INC. FOR PROJECT UPDATE
9:30 DENSITY TESTED AREA 1 WEST SIDE
- TESTS PASSED COMPACTION/MOISTURE REQUIREMENTS

Sketch:



CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client:	Johns Manville Waukegan Plant	Date:	9/11/08
Project:	Fill Area 1 & 2 Capping Activities	Day:	THURSDAY
Engineer's Rep:	Chris R. Goffard	Page:	2 of 2
Contractor's Rep:	Jeff O'Malley	Rprt No.:	18

RESIDENT INSPECTION REPORT

Report of Observation of Work and Comments:

3:00 All Moister and compactions passed on area 1 cover.

4:45 Lake county grading off site
5:30 DrO off site.

Number of Men:
Foreman 1
Operators 10
Laborers 1

Equipment:
7- cat 627 scrapers
4- cat off Road Trucks
1- cat 800 C sheepsfoot compactor
1- cat D8R Dozer
1- Disk
1- water Truck
2- John Deere 850 Dozers with GPS

CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client: Johns Manville Waukegan Plant
Project: Fill Area 1 & 2 Capping Activities
Engineer's Rep: ~~Chris R. Goffard~~ DUSTIN DRAGER
Contractor's Rep: Jeff O'Malley
Signed: Dustin Drager

Date: 9/12/08
Day: FRIDAY
Page: 1 of 2
Rprt No.: 19

RESIDENT INSPECTION REPORT

Weather Conditions	Temperature		Sky	Rain	Snow	Project Site Conditions
	Low	High				
			cloudy	yes		Dry / Muddy

Field Book No.: Page #s

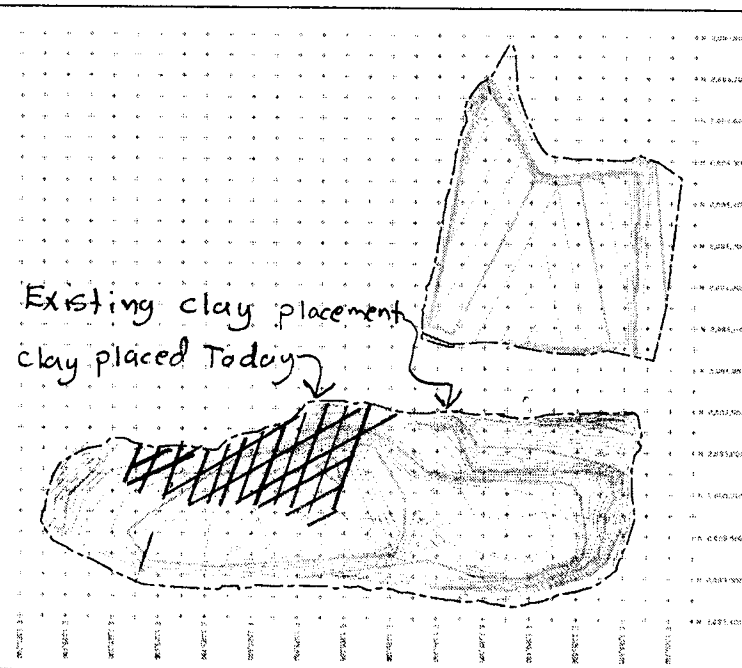
Contractor(s) on Site:

Report of Observation of Work and Comments:

6:30 – DLD Arived on site to perform Density Test on Area 1 cover.
-Lake county Grading on site with 7-cat 627 scrapers placing clay on area 1 cover in 8in Lifts and compacting.

11:30 – started to sprinkle.
1:30 – started to rain. Talked to contractor they were going to stop for awhile.
2:15 – Lake county Grading back to work.
4:00 – Lake county Grading off site do to working conditions were Bad.

Sketch:



CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client:	Johns Manville Waukegan Plant	**Date:**	9/12/08
Project:	Fill Area 1 & 2 Capping Activities	**Day:**	FRIDAY
Engineer's Rep:	Chris R. Goffard	**Page:**	2 of 2
Contractor's Rep:	Jeff O'Malley	**Rprt No.:**	19

RESIDENT INSPECTION REPORT

Report of Observation of Work and Comments:

4:30 DLD off site.

Number of Men:

Foreman 1

Operators 9

Laborers 1

Equipment:

7- cat 627 scrapers
4- cat off Road Trucks
1- water truck
1- Disk
1- cat D8R Dozer
1- cat 850c sheeps foot compactor
2- John Deere 850 Dozers with GPS

CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client:	Johns Manville Waukegan Plant	**Date:**	9/15/08
Project:	Fill Area 1 & 2 Capping Activities	**Day:**	MONDAY
Engineer's Rep:	Chris R. Goffard	**Page:**	1 of 2
Contractor's Rep:	Jeff O'Malley	**Rprt No.:**	20
Signed:	Chris Goffard		

RESIDENT INSPECTION REPORT

Weather Conditions	Temperature		Sky	Rain	Snow	Project Site Conditions
	Low	High				
						Dry / Muddy

Field Book No.: Page #s

Contractor(s) on Site:

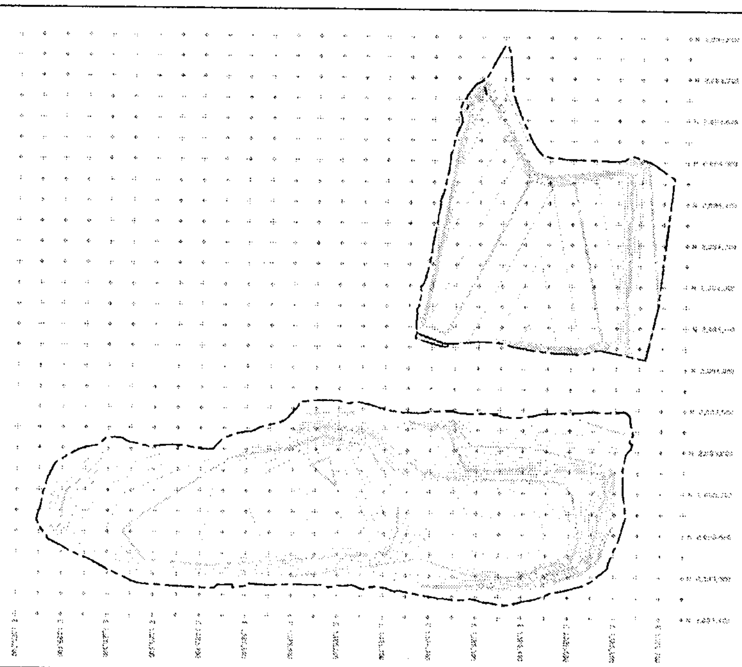
Report of Observation of Work and Comments:

CONTRACTOR NOT WORKING DUE TO WET SITE CONDITIONS

RAINED OUT /

O

Sketch:



1/27/05 KML F-112-1.xls

Front

CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client: Johns Manville Waukegan Plant
Project: Fill Area 1 & 2 Capping Activities
Engineer's Rep: Chris R. Goffard
Contractor's Rep: Jeff O'Malley

Date: 9/15/08
Day: Monday
Page: 2 of 2
Rprt No.: 20

RESIDENT INSPECTION REPORT

Report of Observation of Work and Comments:

RAINED OUT /

0

Number of Men:
Foreman
Operators
Laborers

Equipment:

CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client:	Johns Manville Waukegan Plant	**Date:**	9/16/08
Project:	Fill Area 1 & 2 Capping Activities	**Day:**	TUESDAY
Engineer's Rep:	Chris R. Goffard	**Page:**	1 of 2
Contractor's Rep:	Jeff O'Malley	**Rprt No.:**	21
Signed:	Chris Goffard		

RESIDENT INSPECTION REPORT

Weather Conditions	Temperature		Sky	Rain	Snow	Project Site Conditions
	Low	High				
						Dry / Muddy

Field Book No.: Page #s

Contractor(s) on Site:

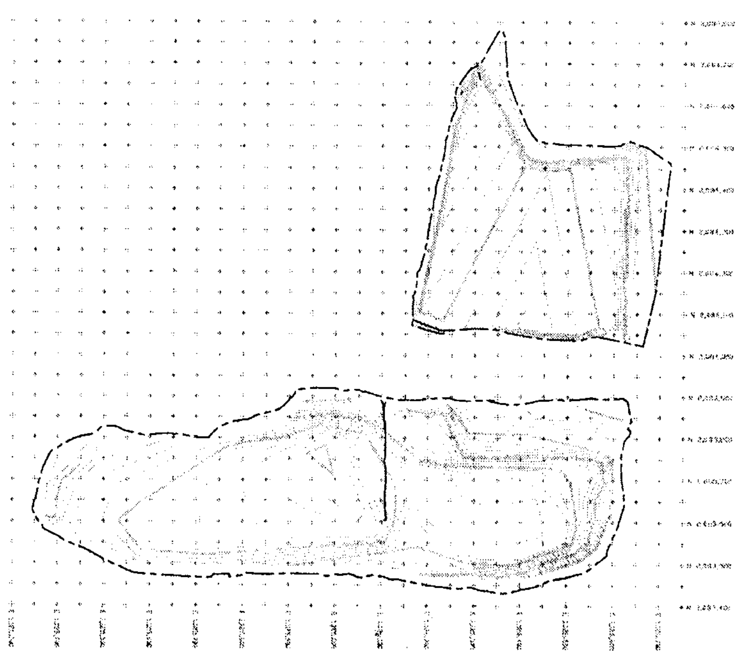
Report of Observation of Work and Comments:

CONTRACTOR ON SITE UTILIZING TWO DOZERS TO BACKDRAG AREA 1 TO ASSIST IN DRYING

NO CLAY PLACEMENT TODAY DUE TO WET SITE CONDITIONS

RAINED OUT /

Sketch:



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Fax (920) 465-3913

Client:	Johns Manville Waukegan Plant	**Date:**	9/16/08
Project:	Fill Area 1 & 2 Capping Activities	**Day:**	TUESDAY
Engineer's Rep:	Chris R. Goffard	**Page:**	2 of 2
Contractor's Rep:	Jeff O'Malley	**Rprt No.:**	21

RESIDENT INSPECTION REPORT

Report of Observation of Work and Comments:

RAINED OUT / 0

Number of Men:	
Foreman	
Operators	
Laborers	
Equipment:	

CQM, INC.
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Client:	Johns Manville Waukegan Plant	**Date:**	9/17/08
Project:	Fill Area 1 & 2 Capping Activities	**Day:**	WEDNESDAY
Engineer's Rep:	Chris R. Goffard	**Page:**	1 of 2
Contractor's Rep:	Jeff O'Malley	**Rprt No.:**	22
Signed:	Chris Goffard		

RESIDENT INSPECTION REPORT

Weather Conditions	Temperature		Sky	Rain	Snow	Project Site Conditions
	Low	High				
	60	76°	SUNNY			Dry / Muddy

Field Book No.: 1 Page #s 32-34

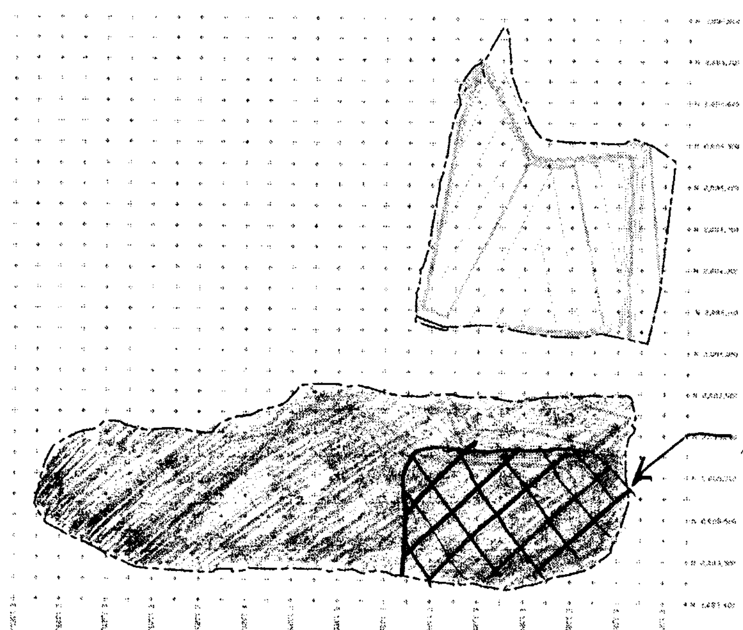
Contractor(s) on Site:

Report of Observation of Work and Comments:

6:50 CRG ARRIVED ON SITE TO DENSITY TEST AREA 1 PROTECTIVE LAYER (CLAY) PLACEMENT
- LAKE COUNTY GRADING ON SITE UTILIZING 7 SCRAPERS TO PLACE CLAY ON AREA 1 THEN GRADE / COMPACT WITH A CATERPILLAR 825C SHEEPSFOOT COMPACTOR. THE MATERIAL WAS EXCAVATED FROM A STOCKPILE LOCATED EAST OF THE EAST HAUL ROAD
- LAKE COUNTY GRADING ALSO ON SITE UTILIZING A WATER TRUCK TO WATER THE HAUL ROADS / MINIMIZE DUST

7:15 DAVE PETERSON ON SITE TO OBSERVE CLAY PLACEMENT
DURING THE COURSE OF THE MORNING / AFTERNOON THE PLACED CLAY WAS TESTED FOR COMPACTION / MOISTURE CONTENT

Sketch:



AREA CLAY PLACED TODAY

CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client: Johns Manville Waukegan Plant
Project: Fill Area 1 & 2 Capping Activities
Engineer's Rep: Chris R. Goffard
Contractor's Rep: Jeff O'Malley

Date: 9/17/08
Day: WEDNESDAY
Page: 2 of 2
Rprt No.: 22

RESIDENT INSPECTION REPORT

Report of Observation of Work and Comments:

PERFORMED 37 DENSITY TESTS
- TESTS PASSED
5:00 SCRAPERS / DOZERS SHUT DOWN
6:00 CATERPILLAR 825C SHEEPSFOOT COMPACTOR
SHUT DOWN
5:00 CRG OFF SITE

Number of Men:
Foreman 1
Operators 10
Laborers
SCREENER 1

Equipment:
7 - CATERPILLAR 627 SCRAPERS
1 - CATERPILLAR 825C SHEEPSFOOT COMPACTOR
2 - JOHN DEERE 850 DOZERS

CQM, INC.
2679 Continental Drive
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(920) 465-3911
Fax (920) 465-3913

Client: Johns Manville Waukegan Plant
Project: Fill Area 1 & 2 Capping Activities
Engineer's Rep: Chris R. Goffard
Contractor's Rep: Jeff O'Malley
Signed: [signature]

Date: 9/16/06
Day: THURSDAY
Page: 1 of 2
Rprt No.: 23

RESIDENT INSPECTION REPORT

Weather Conditions	Temperature Low	Temperature High	Sky	Rain	Snow	Project Site Conditions
	62°	76°	SUNNY			Dry / Muddy

Field Book No.: 1 Page #s 35 - 37

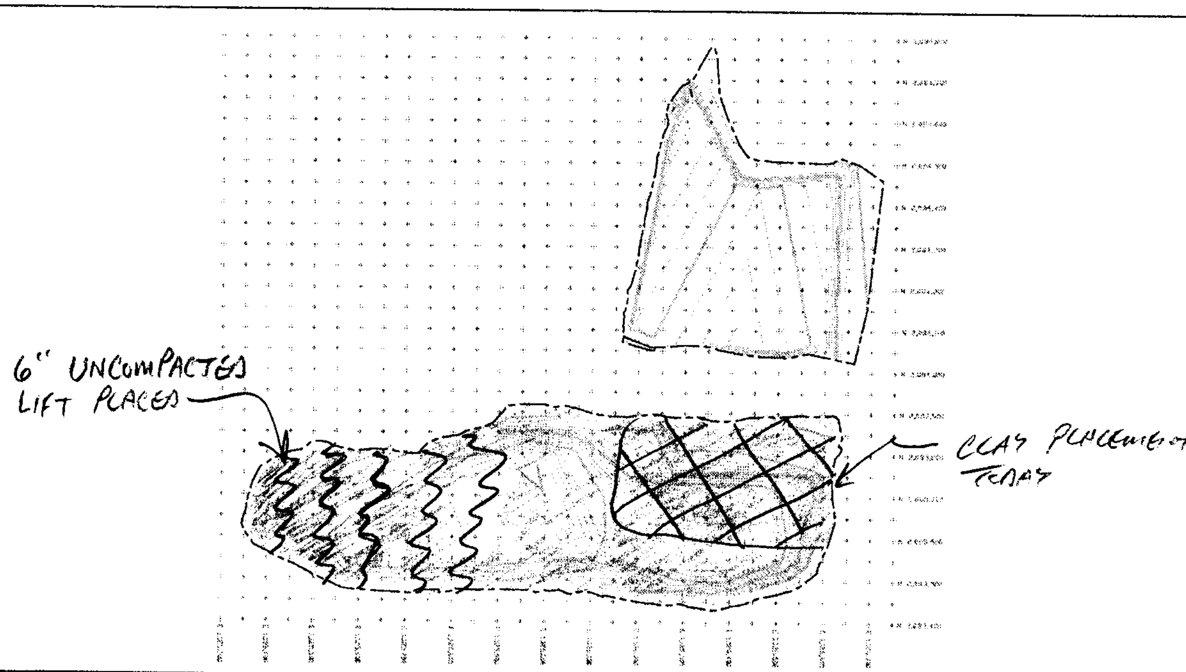
Contractor(s) on Site:

Report of Observation of Work and Comments:

6:30 CRG ARRIVED ON SITE TO COMPLETE AREA 1 PROTECTIVE LAYER DENSITY TESTING
- LAKE COUNTY GRADING ON SITE PLACING PROTECTIVE LAYER MATERIAL ON THE EAST 1/2 OF AREA 1 WITH 3 SCRAPERS AND A CATERPILLAR 825C SHEEPFOOT COMPACTOR
- LAKE COUNTY GRADING ALSO ON SITE UTILIZING 4 SCRAPERS AND 2 DOZERS TO START PLACEMENT OF THE TOP 6" LOOSE LIFT OF PROTECTIVE LAYER MATERIAL
- LAKE COUNTY GRADING UTILIZING A WATER TRUCK TO WATER THE HAUL ROADS / KEEP DUST TO A MINIMUM

10:00 7 SCRAPERS WERE UTILIZED TO PLACE 6" UNCOMPACTED LIFT

Sketch:



CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client:	Johns Manville Waukegan Plant	**Date:**	9/18/08
Project:	Fill Area 1 & 2 Capping Activities	**Day:**	THURSDAY
Engineer's Rep:	Chris R. Goffard	**Page:**	2 of 2
Contractor's Rep:	Jeff O'Malley	**Rprt No.:**	23

RESIDENT INSPECTION REPORT

Report of Observation of Work and Comments:

10:30 DENSITY TESTED AREA 1 EAST END
- PERFORMED 19 DENSITY TEST / ALL PASSED

1:00 PROJECT MEETING
3:00 2 SCRAPERS STARTED TO PLACE CLAY ON EAST 1/2 OF AREA 1 TO ACHIEVE COMPACTED PROTECTIVE LAYER GRADE
5:00 LAKE COUNTY GRADING SHUT DOWN
5:00 CRG OFF SITE

Number of Men:
Foreman 1
Operators 10
Laborers
SURVEYOR 1

Equipment:
2 - CATERPILLAR 627 SCRAPERS
1 - CATERPILLAR 825 C SHEEPSFOOT COMPACTOR
2 - JOHN DEERE 850 DOZERS
1 - CATERPILLAR D8 DOZER

CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client: Johns Manville Waukegan Plant
Project: Fill Area 1 & 2 Capping Activities
Engineer's Rep: Chris R. Goffard
Contractor's Rep: Jeff O'Malley
Signed: Chris Goffard

Date: 9/19/08
Day: FRIDAY

Rprt No.: 24

RESIDENT INSPECTION REPORT

Weather Conditions	Temperature Low	Temperature High	Sky	Rain	Snow	Project Site Conditions
	62°	78°	SUNNY			Dry / Muddy

Field Book No.: 1   Page #s 38

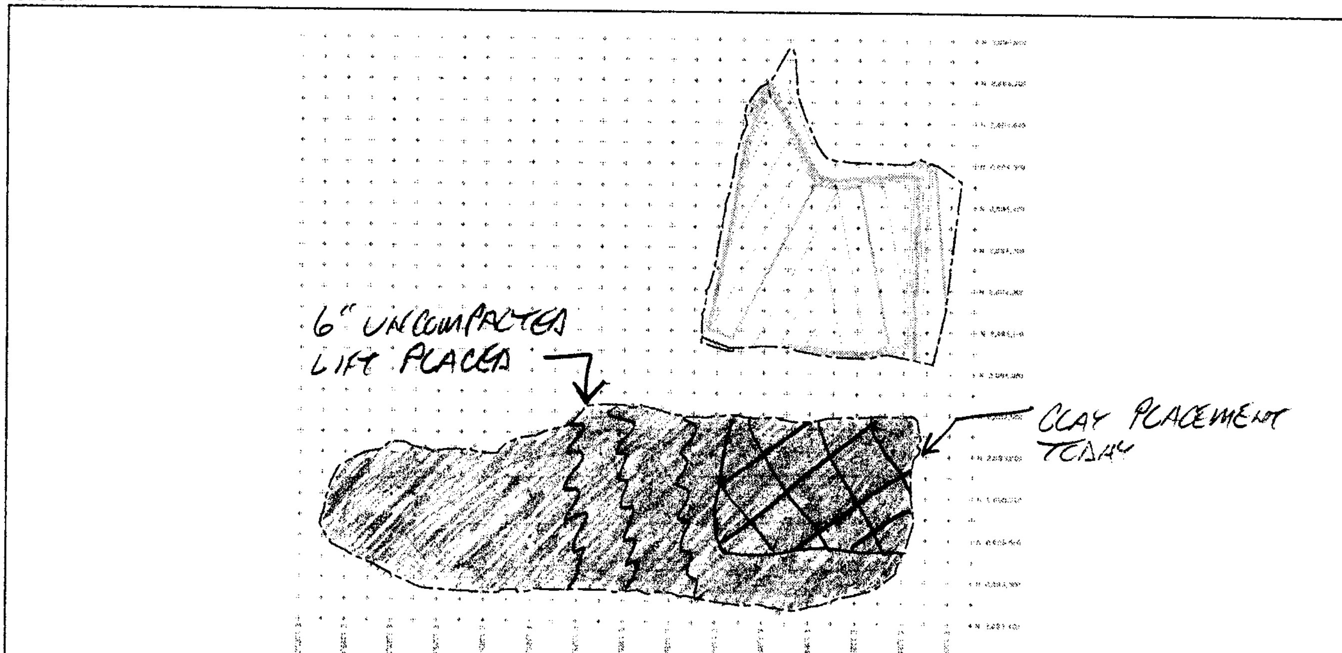
Contractor(s) on Site:

Report of Observation of Work and Comments:

6:30 CRG ARRIVED ON SITE TO CONTINUE AREA 1 DENSITY TESTING IN NORTHEAST CORNER

- LAKE COUNTY GRADING ON SITE PLACING PROTECTIVE LAYER MATERIAL ON AREA 1 IN NORTHEAST CORNER TO MEET REQUIRED COMPACTION THICKNESS
- LAKE COUNTY GRADING ALSO ON SITE PLACING LOOSE 6" TOP LIFT OF PROTECTIVE LAYER ON AREA 1. AFTER THE TOP 6" LIFT WAS PLACED AND GRADED THE LAKE COUNTY GRADING SURVEYOR CHECKED THE DOCUMENTATION POINTS WITH A GPS
- DURING THE COURSE OF THE DAY ALL HAUL ROADS WERE WATERED TO MINIMIZE DUST BY LAKE COUNTY GRADING
- PERFORMED 15 DENSITY TESTS ON AREA 1 PROTECTIVE LAYER
  - ALL TESTS PASSED COMPACTION / MOISTURE REQUIREMENTS

Sketch:



CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client:	Johns Manville Waukegan Plant	**Date:**	9/19/08
Project:	Fill Area 1 & 2 Capping Activities	**Day:**	FRIDAY
Engineer's Rep:	Chris R. Goffard	**Page:**	2 of 2
Contractor's Rep:	Jeff O'Malley	**Rprt No.:**	25

RESIDENT INSPECTION REPORT

Report of Observation of Work and Comments:

2:20 GAVE DAVE P. A PROJECT UPDATE AND DISCUSSED WORK SCHEDULE FOR NEXT WEEK
2:30 CRG OFF SITE
5:00 LAKE COUNTY GRADING SHUT DOWN

Number of Men:
Foreman 1
Operators 9
Laborers
SCRUTTER 1

Equipment:
6 - CATERPILLAR 627 SCRAPERS
1 - CATERPILLAR 825C SHEEPSFOOT COMPACTOR
2 - JOHN DEERE 850 DOZERS
1 - CATERPILLAR D8 DOZER
1 - WATER TRUCK

CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client:	Johns Manville Waukegan Plant	**Date:**	9/22/08
Project:	Fill Area 1 & 2 Capping Activities	**Day:**	MONDAY
Engineer's Rep:	Chris R. Goffard	**Page:**	1 of 2
Contractor's Rep:	Jeff O'Malley	**Rprt No.:**	25
Signed:	[signature]		

RESIDENT INSPECTION REPORT

Weather Conditions	Temperature Low	Temperature High	Sky	Rain	Snow	Project Site Conditions
	62°	74°	CLEAR			Dry / Muddy

Field Book No.: 1 Page #s 39-40

Contractor(s) on Site:

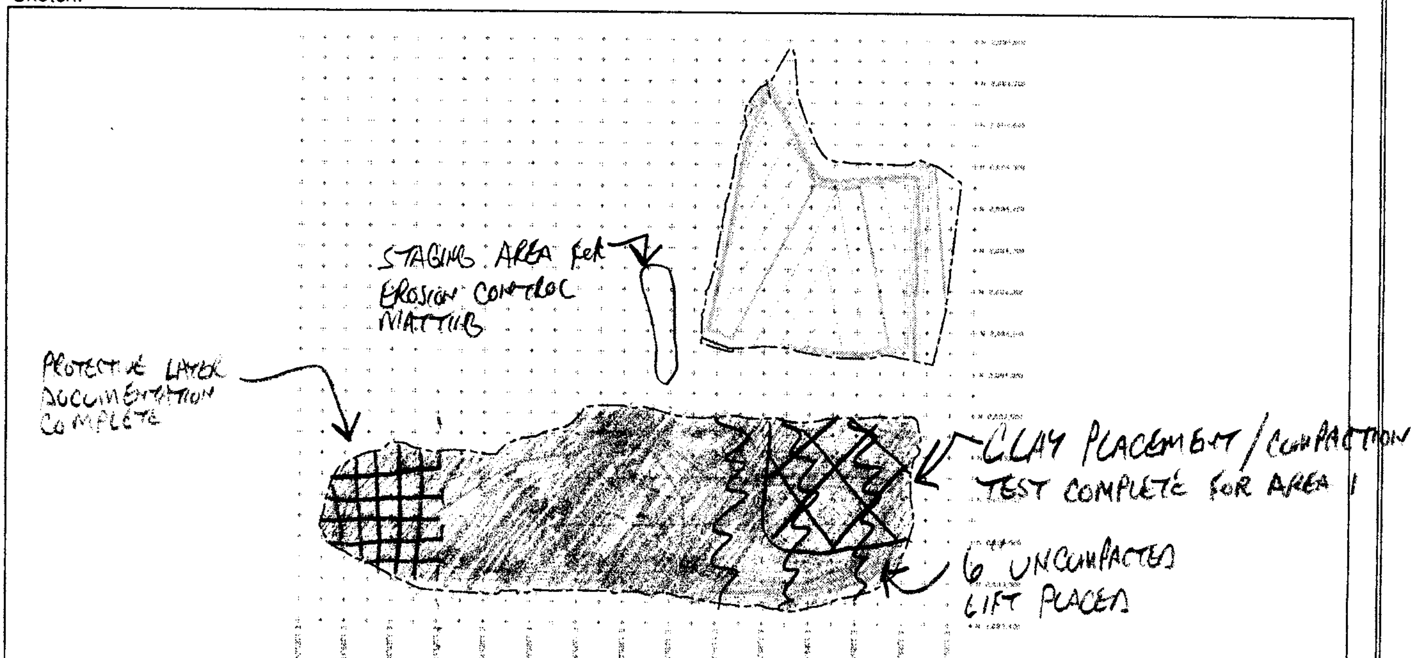
Report of Observation of Work and Comments:

7:10 CRG ARRIVED ON SITE TO CONTINUE AREA 1 DENSITY TESTING IN NORTHEAST CORNER
- LAKE COUNTY GRADING ON SITE PLACING PROTECTIVE LAYER FILL MATERIAL ON AREA 1 IN THE NORTHEAST CORNER TO ACHIEVE COMPACTION THICKNESS

7:30 A SEMI LOAD OF EROSION CONTROL MATTING WAS DELIVERED AND UNLOADED ON THE CRUSHED CONCRETE LOCATED NORTH OF AREA 1
- LAKE COUNTY GRADING ALSO ON SITE UTILIZING A JOHN DEERE 850 DOZER TO GRADE THE WEST 1/2 OF AREA 1 FOR TUESDAY DOCUMENTATION

9:00 AREA 1 DENSITY TESTS COMPLETE
- DENSITY TESTS PASSED COMPACTION AND MOISTURE REQUIREMENTS

Sketch:



CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client:	Johns Manville Waukegan Plant	**Date:**	9/22/08
Project:	Fill Area 1 & 2 Capping Activities	**Day:**	MONDAY
Engineer's Rep:	Chris R. Goffard	**Page:**	2 of 2
Contractor's Rep:	Jeff O'Malley	**Rprt No.:**	25

RESIDENT INSPECTION REPORT

Report of Observation of Work and Comments:

12:00 LAKE COUNTY GRADING PLACING LOOSE 6" TOP LIFT OF PROTECTIVE MATERIAL ON AREA 1 EAST END

3:15 - 4:45 DOCUMENT AREA 1 WEST END TOP OF PROTECTIVE LAYER

5:00 LAKE COUNTY GRADING SHUT DOWN

5:00 CRG OFF SITE

Number of Men:

Foreman 1

Operators 10

Laborers

SURVEYOR 1

Equipment:

6 - CATERPILLAR 627 SCRAPERS

1 - CATERPILLAR 825C SHEEPSFOOT COMPACTOR

2 - JOHN DEERE 850 DOZERS

1 - CATERPILLAR D8 DOZER

1 - WATER TRUCK

CQM, INC. 2679 Continental Drive Green Bay, WI 54311-6627 (920) 465-3911 Fax (920) 465-3913	**Client:** Johns Manville Waukegan Plant **Project:** Fill Area 1 & 2 Capping Activities **Engineer's Rep:** Chris R. Goffard **Contractor's Rep:** Jeff O'Malley **Signed:** Chris Goffard **Date:** 9/23/08 **Day:** TUESDAY **Page:** 1 of 2 **Rprt No.:** 26

RESIDENT INSPECTION REPORT

Weather Conditions	Temperature		Sky	Rain	Snow	Project Site Conditions
	Low	High				
	60°	78°	SUNNY			Dry / Muddy

Field Book No.: 1 Page #s 41-42

Contractor(s) on Site:

Report of Observation of Work and Comments:

6:30 CRG ARRIVED ON SITE TO CONTINUE AREA 1 TOP OF PROTECTIVE LAYER DOCUMENTATION AND ASSIST DUSTIN WITH AREA 2 COMPACTION TESTS

7:00 DUSTIN ON SITE TO ASSIST WITH AREA 2 PROTECTIVE LAYER (CLAY) COMPACTION TESTS

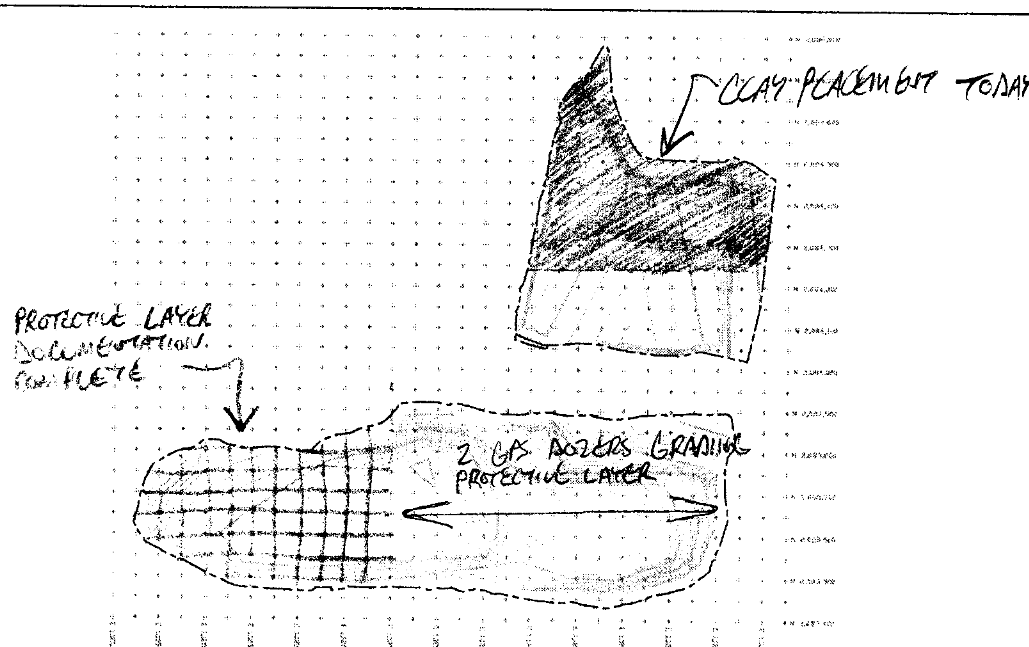
· LAKE COUNTY GRADING ON SITE GRADING THE EAST 1/2 OF AREA 1 WITH 2 DOZERS TO DESIGN PROTECTIVE LAYER GRADES

· LAKE COUNTY GRADING ALSO ON SITE TO START AREA 2 PROTECTIVE LAYER PLACEMENT STARTING ON THE NORTH END WORKING SOUTH

8:00-10:00 DOCUMENTED MORE PROTECTIVE LAYER GRADES ON THE WEST END OF AREA 1

11:00 INFORMED JEFF AREA 1 WEST AREA PROTECTIVE LAYER GRADES ARE GOOD - HE CAN START SEEDING ACTIVITIES ON DOCUMENTED AREA

Sketch:



CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client: Johns Manville Waukegan Plant
Project: Fill Area 1 & 2 Capping Activities
Engineer's Rep: Chris R. Goffard
Contractor's Rep: Jeff O'Malley

Date: 9/23/08
Day: TUESDAY

Rprt No.: 26

RESIDENT INSPECTION REPORT

Report of Observation of Work and Comments:

12:00 LAKE COUNTY GRADING CONTINUE TO PLACE LOOSE TOP 6" LIFT ON AREA 1 EAST END
1:10 DENNY ON SITE TO OBSERVE CONSTRUCTION ACTIVITIES - PLEASED WITH PROGRESS
1:45 INFORMED JEFF CQM, INC. WILL CONTINUE AREA 1 PROTECTIVE LAYER DOCUMENTATION ON THURSDAY
3:30 DAVE ON SITE - PLEASED WITH CONSTRUCTION ACTIVITIES
DENSITY TESTED NORTH END OF AREA 2
- TESTS PASSED COMPACTION / MOISTURE REQUIREMENTS
4:30 SCRAPERS SHUT DOWN
5:00 DOZER AND SHEEPSFOOT COMPACTOR SHUT DOWN
5:00 2 DOZER ON AREA 1 EAST 1/2 GRADING DESIGN PROTECTIVE LAYER SHUT DOWN
5:00 DUSTIN OFF SITE
5:00 CRG OFF SITE

Number of Men:
Foreman 1
Operators 10
Laborers
SURVEYOR 1

Equipment:
6 - CATERPILLAR 627 SCRAPERS
1 - CATERPILLAR 825C SHEEPSFOOT COMPACTOR
2 - JOHN DEERE 850 DOZERS
1 - CATERPILLAR D8 DOZER
1 - WATER TRUCK

CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client:	Johns Manville Waukegan Plant	**Date:**	9/24/08
Project:	Fill Area 1 & 2 Capping Activities	**Day:**	WEDNESDAY
Engineer's Rep:	Chris R. Goffard	**Page:**	1 of 2
Contractor's Rep:	Jeff O'Malley	**Rprt No.:**	27
Signed:	Chris Goffard		

RESIDENT INSPECTION REPORT

Weather Conditions	Temperature		Sky	Rain	Snow	Project Site Conditions
	Low	High				
	60°	80°	SUNNY			Dry / Muddy

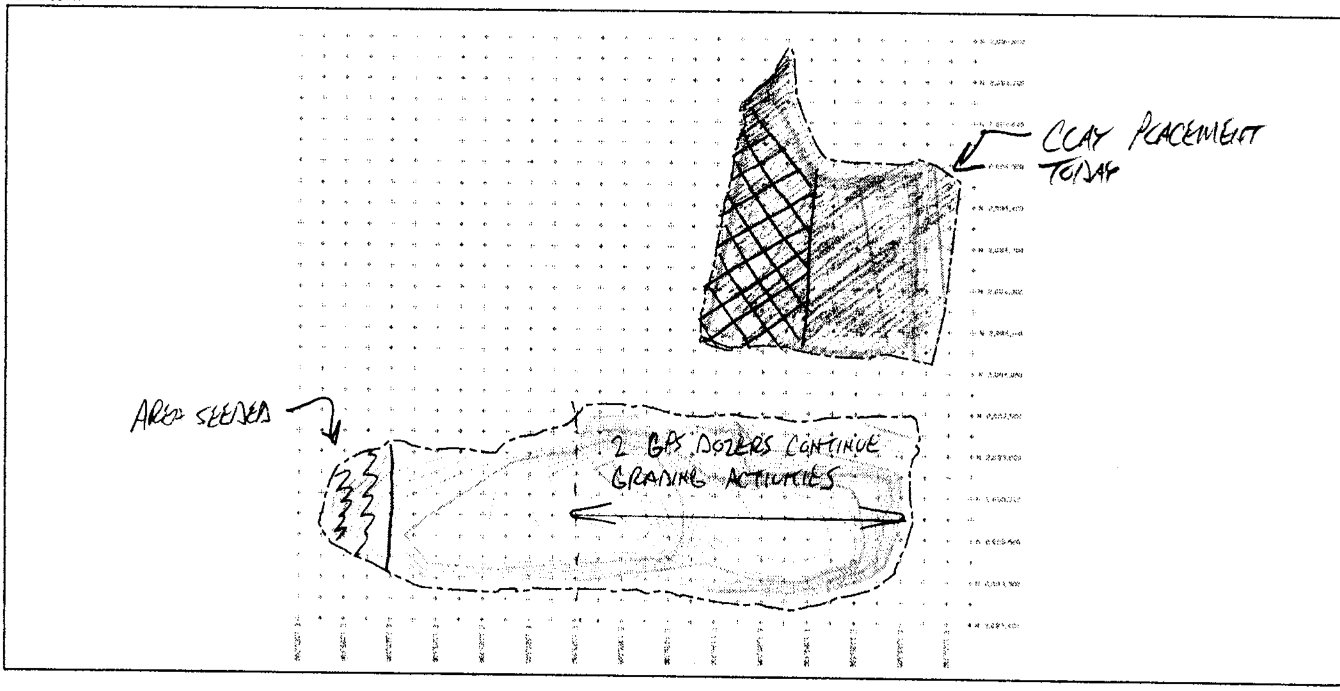
Field Book No.: 1 Page #s 43 - 45

Contractor(s) on Site:
ROCK ENTERPRIZES - LANDSCAPING CONTRACTOR

Report of Observation of Work and Comments:

6:30 CRG ARRIVED ON SITE TO CONTINUE AREA 2 DENSITY TESTING
LAKE COUNTY GRADING ON SITE PLACING PROTECTIVE LAYER (CLAY) MATERIAL ON AREA 2 WITH SCRAPERS, 1 D8 DOZER, AND 1 CATERPILLAR 825C SHEEPFOOT COMPACTOR
LAKE COUNTY GRADING ALSO ON SITE UTILIZING 2 JOHN DEERE 850 DOZERS TO GRADE THE EAST AREA OF AREA 1
7:30 LANDSCAPING CONTRACTOR ON SITE TO START SEEDING ACTIVITIES ON THE WEST END OF AREA 1 AND WORK EAST
8:15 CALLED TJA FOR PROJECT UPDATE
8:45 DAVE ON SITE TO OBSERVE CONSTRUCTION ACTIVITIES / ANSWER QUESTIONS

Sketch:



CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client: Johns Manville Waukegan Plant
Project: Fill Area 1 & 2 Capping Activities
Engineer's Rep: Chris R. Goffard
Contractor's Rep: Jeff O'Malley

Date: 9/24/08
Day: WEDNESDAY

Rprt No.: 27

RESIDENT INSPECTION REPORT

Report of Observation of Work and Comments:

AREA 1 SEED MIX

PURITY	ITEM DESCRIPTION	GERM
35.28%	RYE GRAIN, HI-RYE 500 BRAND	85%
31.36%	TALL FESCUE, KENTUCKY-31	85%
18.62%	PERENNIAL RYE GRASS	90%
12.63%	CREEPING RED FESCUE	85%

GROWMARK INC.
1701 TOWANDA AVENUE
BLOOMINGTON, IL 61702
NOTE: PRIOR TO SEEDING THE SURFACE WAS PULVERIZED
12:30 AREA 2 SAND SURFACE COVERED WITH SAND
3:45 WALKED AREA 1 TOP OF PROTECTIVE LAYER SURFACE WITH JEFF - THE SURFACE LOOKS GOOD / CQM, INC. WILL DOCUMENT THURSDAY MORNING
4:20 SCRAPER SHUT DOWN DUE TO LIGHT RAIN
4:20 DOZERS / SHEEPSFOOT COMPACTOR SHUT DOWN
5:00 CRG OFF SITE

Number of Men:
Foreman 1
Operators 10
Laborers
SURVEYOR 1

Equipment:
5 - CATERPILLAR 627 SCRAPERS
1 - CATERPILLAR 825C SHEEPSFOOT COMPACTOR
2 - JOHN DEERE 850 DOZERS
1 - CATERPILLAR D8 DOZER
1 - WATERTRUCK

CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client: Johns Manville Waukegan Plant
Project: Fill Area 1 & 2 Capping Activities
Engineer's Rep: Chris R. Goffard
Contractor's Rep: Jeff O'Malley
Signed: [signature]

Date: 9/25/06
Day: THURSDAY
Page: 1 of 2
Rprt No.: 28

RESIDENT INSPECTION REPORT

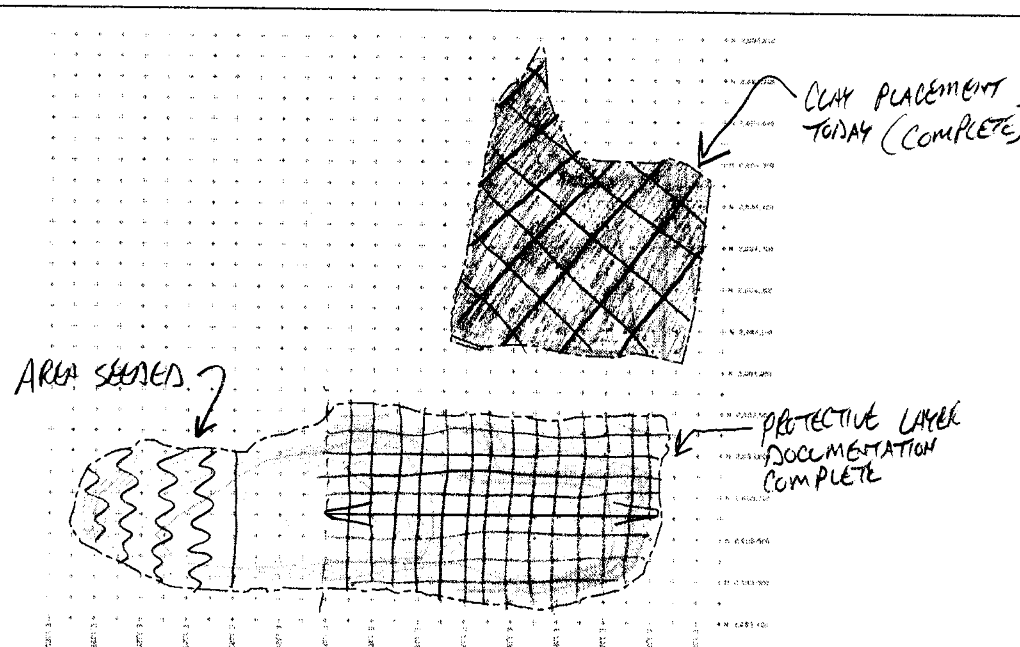
Weather Conditions	Temperature		Sky	Rain	Snow	Project Site Conditions
	Low	High				
	64°	79°	SUNNY			Dry / Muddy

Field Book No.: Page #s

Contractor(s) on Site:
ROCK ENTERPRIZES – LANDSCAPING CONTRACTOR

Report of Observation of Work and Comments:
6:40 CRG ARRIVED ON SITE TO DOCUMENT AREA 1 EAST 1/2 TOP OF PROTECTIVE LAYER WITH A GPS UNIT
7:30 DUSTIN (CQM INC. PROJECT TECHNICIAN) ON SITE TO ASSIST WITH AREA 2 PROTECTIVE LAYER COMPACTION TESTS
LAKE COUNTY GRADING ON SITE TO CONTINUE PROTECTIVE LAYER (CLAY) PLACEMENT ON AREA 2 WITH SCRAPERS, DOZERS, AND 1 825C SHEEPSFOOT COMPACTOR
ROCK ENTERPRIZES ON SITE WITH 8 PEOPLE TO CONTINUE SURFACE PREPARATION (PULVERIZING), FERTILIZATION, SEEDING, AND PLACEMENT OF EROSION CONTROL MATTING. AFTER THE EROSION CONTROL MATTING WAS PLACED, STAPLES WERE UTILIZED TO FASTEN THE MATTING TO THE SURFACE

Sketch:



CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client: Johns Manville Waukegan Plant
Project: Fill Area 1 & 2 Capping Activities
Engineer's Rep: Chris R. Goffard
Contractor's Rep: Jeff O'Malley

Date: 9/25/08
Day: FRIDAY
Page: 2 of 2
Rprt No.: 28

RESIDENT INSPECTION REPORT

Report of Observation of Work and Comments:

8:00 - 12:00 DOCUMENTED AREA 1 TOP OF PROTECTIVE
LAYER GRADES WITH A GPS UNIT
12:00 REVIEWED GRADES
1:00 - 2:15 PROJECT MEETING
DURING THE COURSE OF THE MORNING AND AFTERNOON
DUSTIN TESTED THE COMPACTED PROTECTIVE LAYER MATERIAL -
DENSITY TESTS PASSED
3:20 CALLED DAVE - GAVE HIM PROJECT UPDATE
5:00 LAKE COUNTY GRADING SHUT DOWN
5:00 CRG OFF SITE

Number of Men:
Foreman 1
Operators 10
Laborers
SCREENER 1

Equipment:
6 - CATERPILLAR 627 SCRAPERS
1 - CATERPILLAR 825C SHEEPSFOOT COMPACTOR
2 - JOHN DEERE 850 DOZERS
1 - CATERPILLAR D8 DOZER
1 - WATER TRUCK

CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client:	Johns Manville Waukegan Plant	**Date:**	9/26/08
Project:	Fill Area 1 & 2 Capping Activities	**Day:**	FRIDAY
Engineer's Rep:	Chris R. Goffard	**Page:**	1 of 2
Contractor's Rep:	Jeff O'Malley	**Rprt No.:**	29
Signed:			

RESIDENT INSPECTION REPORT

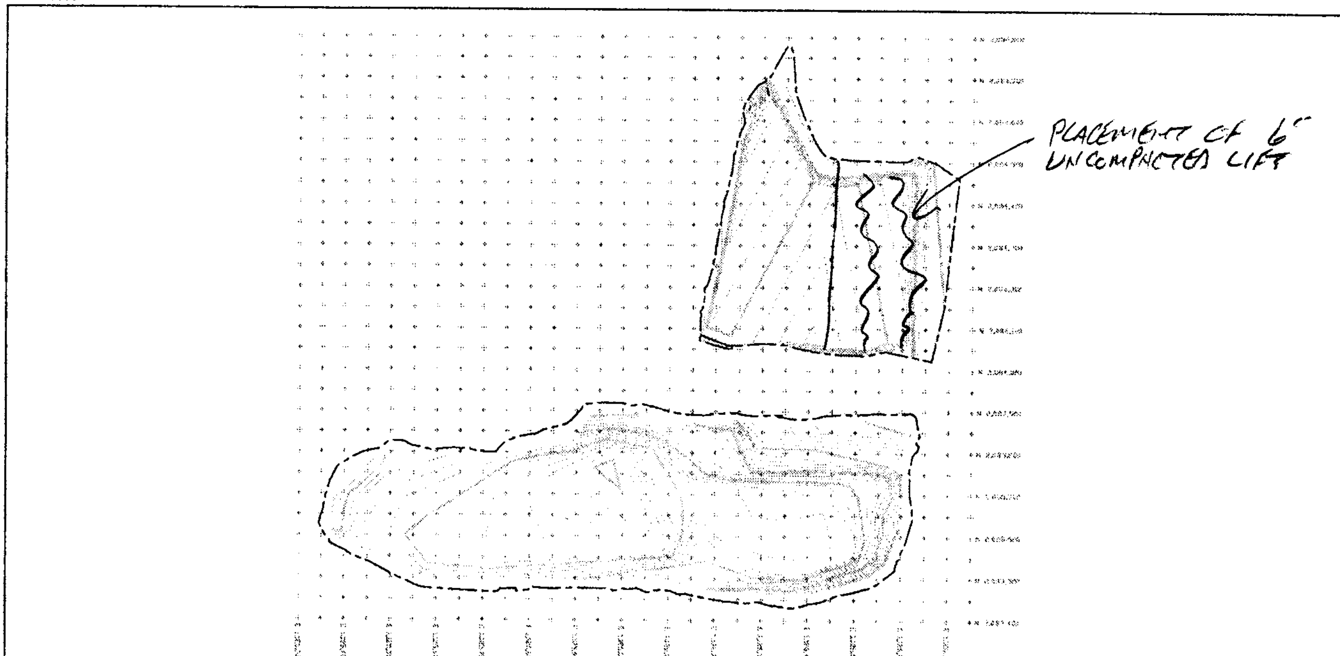
Weather Conditions	Temperature		Sky	Rain	Snow	Project Site Conditions
	Low	High				
	60°	78°	SUNNY			Dry / Muddy

Field Book No.: 1 Page #s 47

Contractor(s) on Site:
ROCK ENTERPRIZES – LANDSCAPING CONTRACTOR

Report of Observation of Work and Comments:
6:35 CRG ARRIVED ON SITE TO DOCUMENT CONSTRUCTION ACTIVITIES
LAKE COUNTY GRADING ON SITE PLACING THE TOP LOOSE 6" LIFT OF PROTECTIVE MATERIAL ON AREA 2 WITH 3 SCRAPERS AND 2 DOZERS
LAKE COUNTY GRADING SURVEYOR ALSO ON SITE STAKING AREA 2 DESIGN PROTECTIVE LAYER GRADES
8:45 GAVE LAKE COUNTY SURVEYOR HARD COPY OF GRADE TABLE WHICH WAS PREVIOUSLY EMAILED
9:30 DENNY ON SITE TO OBSERVE CONSTRUCTION ACTIVITIES

Sketch:



CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client:	Johns Manville Waukegan Plant	Date:	9/26/08
Project:	Fill Area 1 & 2 Capping Activities	Day:	Friday
Engineer's Rep:	Chris R. Goffard	Page:	2 of 2
Contractor's Rep:	Jeff O'Malley	Rprt No.:	29

RESIDENT INSPECTION REPORT

Report of Observation of Work and Comments:

Number of Men:

Foreman 1

Operators 5

Laborers
Schuebeck 1

Equipment:

3- CATERPILLAR 627 SCRAPERS
2- JOHN DEERE 850 DOZERS

CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client:	Johns Manville Waukegan Plant	**Date:**	9/29/08
Project:	Fill Area 1 & 2 Capping Activities	**Day:**	MONDAY
Engineer's Rep:	Chris R. Goffard	**Page:**	1 of 2
Contractor's Rep:	Jeff O'Malley	**Rprt No.:**	30
Signed:	Chris Goffard		

RESIDENT INSPECTION REPORT

Weather Conditions	Temperature Low	Temperature High	Sky	Rain	Snow	Project Site Conditions
	60°	68°	CLEAR	✓		Dry / Muddy

Field Book No.: 1 Page #s 48

Contractor(s) on Site:
ROCK ENTERPRIZES - LANDSCAPING CONTRACTOR

Report of Observation of Work and Comments:

7:00 CRG ARRIVED ON SITE TO DOCUMENT CONSTRUCTION ACTIVITIES AND SURVEY AREA 1 (AS-BUILT TOPO) AND EAST CLAY STOCKPILE PRIOR TO CLAY EXCAVATION FOR SETTLING BASIN CAP

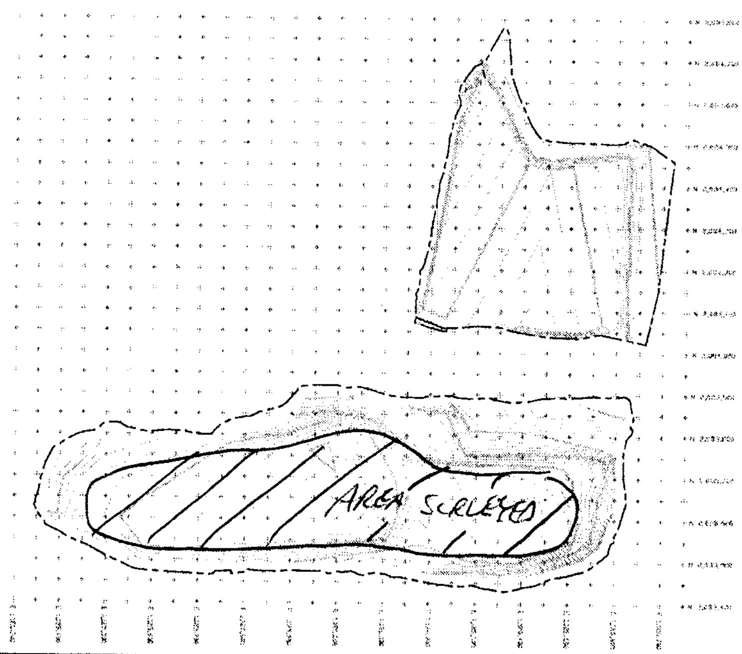
SURVEYED THE FOLLOWING ITEMS:
- SETTLING BASIN SOUTH CRUSHED CONCRETE (SLOPE)
- EAST STOCKPILE TOPO PRIOR TO SETTLING BASIN EXCAVATION
- AREA 1 TOP AREA AS-BUILT TOPO

LAKE COUNTY GRADING ON SITE GRADING AREA 2 TOP OF PROTECTIVE LAYER WITH 1 JOHN DEERE 850 DOZER

10:30 STARTED TO RAIN

10:45 LANDSCAPING CONTRACTOR SHUT DOWN

Sketch:



CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client:	Johns Manville Waukegan Plant	Date:	9/29/08
Project:	Fill Area 1 & 2 Capping Activities	Day:	MONDAY
Engineer's Rep:	Chris R. Goffard	Page:	2 of 2
Contractor's Rep:	Jeff O'Malley	Rprt No.:	30

RESIDENT INSPECTION REPORT

Report of Observation of Work and Comments:

11:00 LAKE COUNTY GRADING SHUT DOWN

Number of Men:

Foreman 1

Operators 1

Laborers

Equipment:

1- JOHN DEERE 850 DOZER

1- WATER TRUCK

CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client: Johns Manville Waukegan Plant
Project: Fill Area 1 & 2 Capping Activities
Engineer's Rep: Chris R. Goffard
Contractor's Rep: Jeff O'Malley
Signed: Chris Goffard

Date: 9/30/08
Day: TUESDAY
Page: 1 of 2
Rprt No.: 31

RESIDENT INSPECTION REPORT

Weather Conditions	Temperature		Sky	Rain	Snow	Project Site Conditions
	Low	High				
	50°	66°	CLOUDY			Dry / Muddy

Field Book No.: 1 Page #s 48A

Contractor(s) on Site:

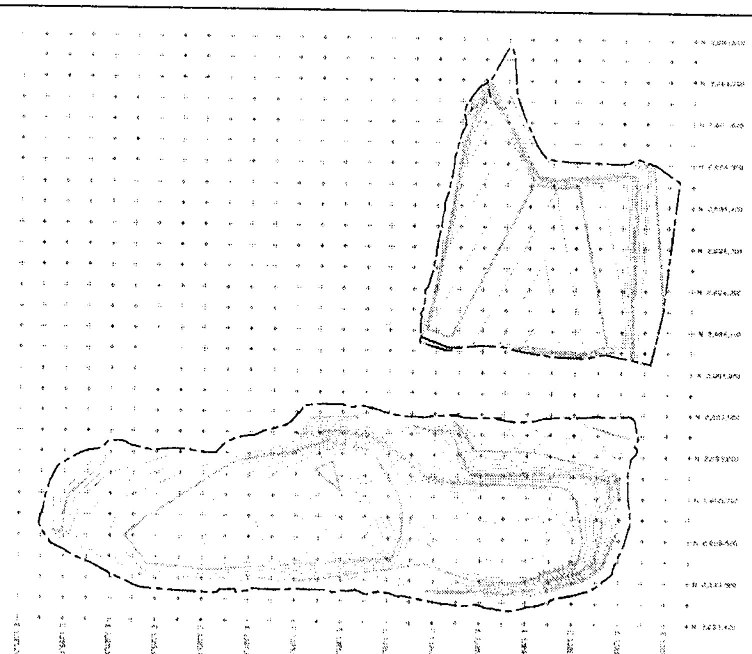
Report of Observation of Work and Comments:

NO WORK TODAY DUE TO WET SITE CONDITIONS

RAINED OUT!

- CRG SCREENED PERIMETER OF SETTLING BASIN TODAY

Sketch:



CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client:	Johns Manville Waukegan Plant	**Date:**	
Project:	Fill Area 1 & 2 Capping Activities	**Day:**	
Engineer's Rep:	Chris R. Goffard	**Page:** of	
Contractor's Rep:	Jeff O'Malley	**Rprt No.:**	

RESIDENT INSPECTION REPORT

Report of Observation of Work and Comments:

Number of Men:

Foreman

Operators

Laborers

Equipment:

CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client:	Johns Manville Waukegan Plant	**Date:**	10/1/08
Project:	Fill Area 1 & 2 Capping Activities	**Day:**	Wednesday
Engineer's Rep:	Chris R. Goffard	**Page:**	1 of 2
Contractor's Rep:	Jeff O'Malley	**Rprt No.:**	32
Signed:	Chris Goffard		

RESIDENT INSPECTION REPORT

Weather Conditions	Temperature Low	Temperature High	Sky	Rain	Snow	Project Site Conditions
	44°	58°	Cloudy			Dry / Muddy

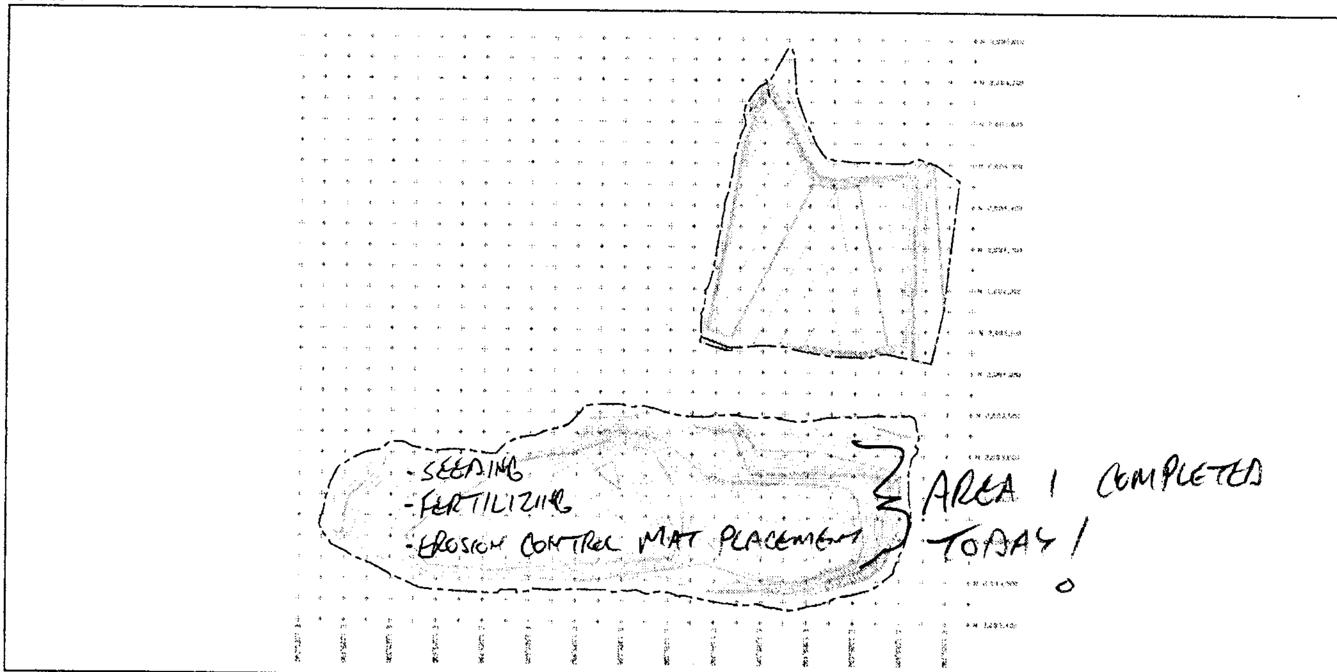
Field Book No.: 1 Page #s 49-50

Contractor(s) on Site:
ROCK ENTERPRIZE – LANDSCAPING CONTRACTOR

Report of Observation of Work and Comments:

6:40 CRG ARRIVED ON SITE TO DOCUMENT CONSTRUCTION ACTIVITIES
7:00 LAKE COUNTY GRADING ON SITE GRADING AREA 2 PROTECTIVE LAYER
WITH 1 - JOHN DEERE 850 DOZER
- LAKE COUNTY SURVEYOR ON SITE CHECKING GRADES
11:00 PROJECT MEETING
12:00 CALLED TJA FOR PROJECT UPDATE
3:20 JEFF STATED AREA 2 WILL BE READY FOR DOCUMENTATION THURSDAY MORNING
3:30 AREA 1 SEEDING, FERTILIZING, AND EROSION CONTROL MAT PLACEMENT
COMPLETE
3:45 CRG OFF SITE

Sketch:



CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client: Johns Manville Waukegan Plant
Project: Fill Area 1 & 2 Capping Activities
Engineer's Rep: Chris R. Goffard
Contractor's Rep: Jeff O'Malley

Date: 10/1/08
Day: WEDNESDAY
Page: 2 of 2
Rprt No.: 32

RESIDENT INSPECTION REPORT

Report of Observation of Work and Comments:

Number of Men:
Foreman - 1
Operators
Laborers
SCREENER - 1

Equipment:
1 - JOHN DEERE 850 DOZER
1 - WATER TRUCK

CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client:	Johns Manville Waukegan Plant	**Date:**	10/2/08
Project:	Fill Area 1 & 2 Capping Activities	**Day:**	THURSDAY
Engineer's Rep:	Chris R. Goffard	**Page:**	1 of 2
Contractor's Rep:	Jeff O'Malley	**Rprt No.:**	33
Signed:	Chris Goffard		

RESIDENT INSPECTION REPORT

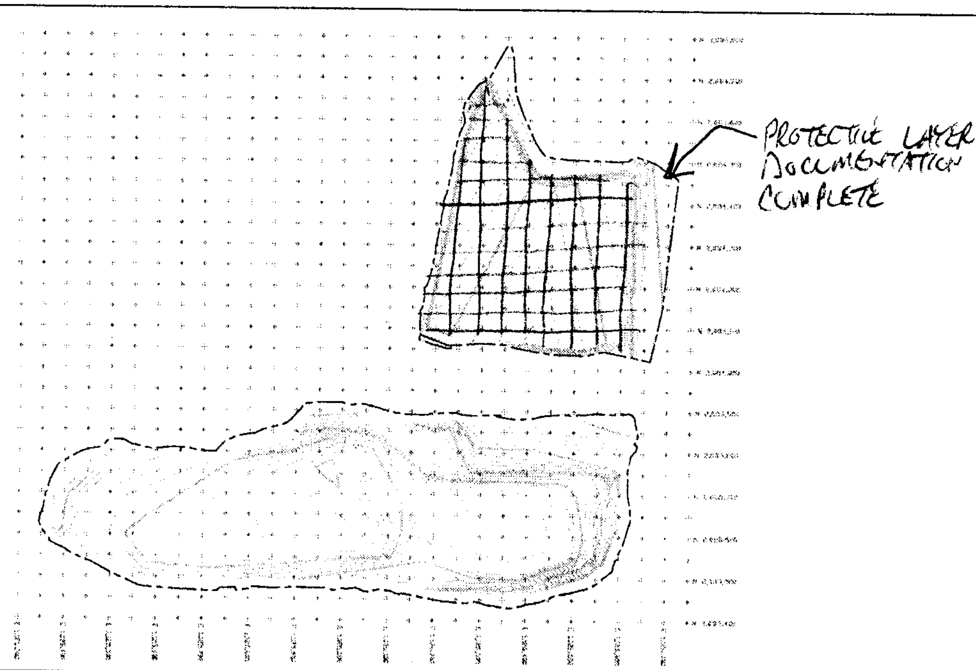
Weather Conditions	Temperature Low	Temperature High	Sky	Rain	Snow	Project Site Conditions
	50°	63	CLOUDY			Dry / Muddy

Field Book No.: 1 Page #s 51

Contractor(s) on Site:
ROCK ENTERPRIZE - LANDSCAPING CONTRACTOR

Report of Observation of Work and Comments:
6:45 CRG ARRIVED ON SITE TO DOCUMENT AREA 2 PROTECTIVE LAYER GRADES
WITH A GPS UNIT
- LAKE COUNTY GRADING ON SITE GRADING AREA 2 PERIMETER OUTSIDE LIMITS
OF WASTE WITH A JOHN DEERE 850 DOZER
7:00 - 11:00 DOCUMENTED AREA 2 PROTECTIVE LAYER GRADE TABLE POINTS
11:30 STAKED LIMITS OF GCL PLACEMENT TO VERIFY CENTER OF DRAINAGE
SWALE IS LOCATED OVER AS-BUILT GCL
11:45 WALKED CENTER OF DRAINAGE SWALE - IT IS LOCATED OVER GCL PLACEMENT
12:00 SURVEYED AREA 1 ACCESS RAMP ON NORTH SIDE OF LIMITS OF WASTE
12:30 REVIEWED AREA 2 GRADE TABLE

Sketch:



CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client:	Johns Manville Waukegan Plant	**Date:**	10/2/08
Project:	Fill Area 1 & 2 Capping Activities	**Day:**	THURSDAY
Engineer's Rep:	Chris R. Goffard	**Page:**	2 of 2
Contractor's Rep:	Jeff O'Malley	**Rprt No.:**	33

RESIDENT INSPECTION REPORT

Report of Observation of Work and Comments:

Number of Men:
Foreman
Operators
Laborers

Equipment:

CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client:	Johns Manville Waukegan Plant	**Date:**	10/3/08
Project:	Fill Area 1 & 2 Capping Activities	**Day:**	FRIDAY
Engineer's Rep:	Chris R. Goffard	**Page:**	1 of 2
Contractor's Rep:	Jeff O'Malley	**Rprt No.:**	34
Signed:	Chris Goffard		

RESIDENT INSPECTION REPORT

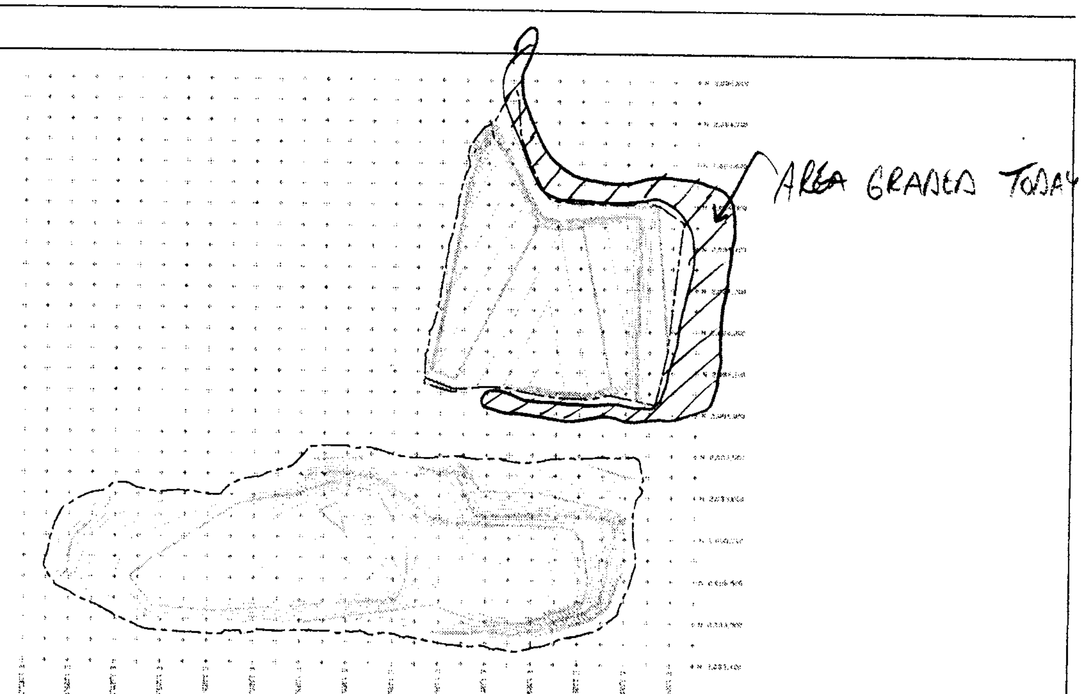
Weather Conditions	Temperature		Sky	Rain	Snow	Project Site Conditions
	Low	High				
						Dry / Muddy

Field Book No.: — Page #s —

Contractor(s) on Site:
ROCK ENTERPRIZE - LANDSCAPING CONTRACTOR

Report of Observation of Work and Comments:
- CRG NOT ON SITE -
CRG SPOKE WITH JEFF AND HE STATED LAKE COUNTY GRADING UTILIZED A JOHN DEERE 750 DOZER TO GRADE THE AREA OUTSIDE AREA 2 LIMITS OF WASTE
- JEFF ALSO STATED LANDSCAPING CONTRACTOR ON SITE WORKING ON AREA 2 SEEDING, FERTILIZING, AND PLACEMENT OF EROSION CONTROL MATTING

Sketch:



1/27/05 KML F-112-1.xls

Front

CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client:	Johns Manville Waukegan Plant	**Date:**	10/3/08
Project:	Fill Area 1 & 2 Capping Activities	**Day:**	FRIDAY
Engineer's Rep:	Chris R. Goffard	**Page:**	2 of 2
Contractor's Rep:	Jeff O'Malley	**Rprt No.:**	34

RESIDENT INSPECTION REPORT

Report of Observation of Work and Comments:

Number of Men:

Foreman 1

Operators 1

Laborers
SURVEYOR 1

Equipment:

1-JOHN DEERE 750 DOZER

CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client: Johns Manville Waukegan Plant
Project: Fill Area 1 & 2 Capping Activities
Engineer's Rep: Chris R. Goffard
Contractor's Rep: Jeff O'Malley
Signed: [signature]

Date: 10/6/08
Day: MONDAY
Page: 1 of 2
Rprt No.: 35

RESIDENT INSPECTION REPORT

Weather Conditions	Temperature Low	Temperature High	Sky	Rain	Snow	Project Site Conditions
	58°	68°	SUNNY			Dry / Muddy

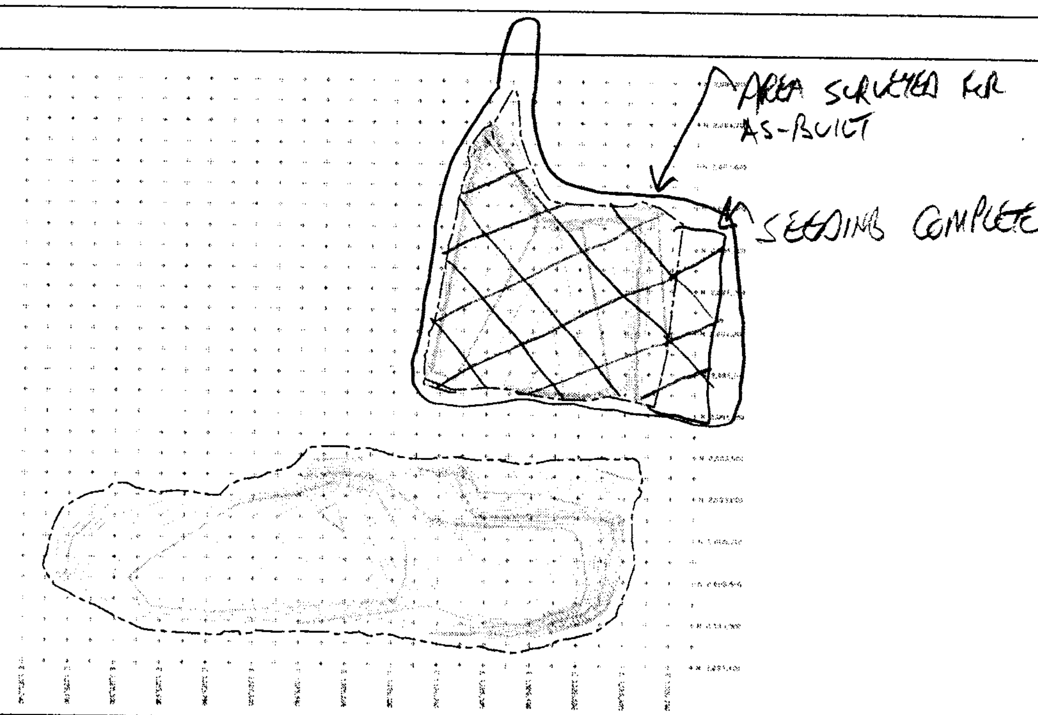
Field Book No.: 1   Page #s 52

Contractor(s) on Site:
ROCK ENTERPRIZE - LANDSCAPING CONTRACTOR

Report of Observation of Work and Comments:
7:40 CRG ARRIVED ON SITE TO PERFORM AREA 2 AS-BUILT SURVEY WITH
A GPS UNIT AND DOCUMENT CONSTRUCTION ACTIVITIES
LANDSCAPING CONTRACTOR ON SITE COMPLETING AREA 2 SURFACE PREPARATION,
SEEDING, FERTILIZING, AND PLACEMENT OF EROSION CONTROL MATTING
8:00 - 11:30 COMPLETED AREA 2 AS-BUILT SURVEY

PROJECT COMPLETE

Sketch:



CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client:	Johns Manville Waukegan Plant	**Date:**	10/6/08
Project:	Fill Area 1 & 2 Capping Activities	**Day:**	MONDAY
Engineer's Rep:	Chris R. Goffard	**Page:**	2 of 2
Contractor's Rep:	Jeff O'Malley	**Rprt No.:**	34

RESIDENT INSPECTION REPORT

Report of Observation of Work and Comments:

Number of Men:

Foreman

Operators

Laborers

Equipment:

MON 8/18/00 75° - ~~90°~~ 84° SUNNY

9:45 CRG ARRIVED ON SITE TO OBSERVE TEST BARRIER LAYER & SCALES

- CAT CUT? GRADING MATERIAL AND REMOVED TO KEEP AREA ...

- WORKING ON AREA 1 BARRIER LAYER GRADING

- AREA 2 ~~AREA~~ CHANNEL EXCAVATION

TROXLER 3440
S/N 22746

STANDARD CNT
MS: 646
DS: 2619

MODIFIED PROCTOR = 130.1 PCF @ 8.4 OPT. *
128.9 PCF @ 10.0 OPT.
SPEC. = 90% @ 2% - 6% ABOVE OPT.

STANDARD PROCTOR 121.0 PCF @ 12.1 OPT.

SPEC. = 92% @ OPTIMUM - 4% ABOVE

LOCATION	LIFT	DD	WD	% MOI	% C
21	SURFACE	125.4	140.2	11.8	96.4
20	1' DOWN	118.8	134.7	13.4	91.3
26	SURFACE	126.5	141.0	11.5	97.2
25	1' DOWN	121.4	135.7	11.8	93.3
23	SURFACE	128.7	142.3	10.6	98.9

PLACED: 8" (1 TEST)

7:15 OFF SITE

TUES. 8/19/08 CLOUDY 68-84°

3:00 ON SITE TO CONTINUE SCREEN BARRIER LOCATION AREA !

- STAKED AREA / LIMITS OF GRADE & SOME REMAINING BARRIER LAYER POINTS

8:30 CALLED JOHN HUME BACK & GAVE HIM GROUND ELEVATIONS & LIMITS OF GRADE POINTS IN TABLE W/OUT DESIGN ELEVATIONS - HE WILL CHECK & CALL BACK

6:45 OFF SITE

WED 8/20/08 CLEAR 70-84°

7:10 - ON SITE TO SURVEY BARRIER LAYER POINTS & DENSITY TEST

- DENNY CLINTON (JOHN'S ONSITE ENGINEER ON SITE)

7:30 SPOKE W/ DENNY & UPDATED HIM W/ LIMITS OF WASTE POINTS

- CALL JOHN HOME FOR DESIGN ELEVATIONS

7:45 CALLED JOHN HOME @ LFR TO ASK FOR LOW DESIGN ELEVATIONS

8:30 CALLED JOHN HOME BACK & GAVE HIM GROUND ELEVATION @ LIMITS OF WASTE POINTS ON TABLE WITHOUT DESIGN ELEVATIONS - HE WILL CHECK & CALL BACK

8:43 JOHN CALLED BACK - THE GROUND ELEVATION SURVEYED 8/19/08 ARE OK - NOT LOW - STACK 1' SAND & 3' PROTECTIVE SOIL

10:30 CALLED JOHN @ LFR TO ASK ABOUT 2 POINTS

9:00 REVIEWED BARRIER LAYER AS-BUILT SURFACE W/ DENNY - HE IS OK WITH IT / ADJUST A COUPLE CONTOURS ON COMPUTER

- AREA 1 CLEAR

EQUIPMENT

1- JOHN DEERE 850C DOZER W/ GPS

1- OFF ROAD TRUCK

LAKE COUNTY GRADING ON SITE PLACING SAND @ SOUTH TOE OF AREA 1 WITH OFF ROAD TRUCK AND PUSHING UP-SLOPE / GRADING TO 1-FOOT USING A JOHN DEERE 850C DOZER W/ GPS

11:35 CALLED JOHN HOME BACK @ LFR (HE LEFT MESSAGE TO CALL)

- HE SAID 1521 @ 626.91 GROUND IS OK AND 1522 @ 627.33 IS OK

- NOTE 1522 DID NOT HAVE A DESIGN ELEVATION

- I TOLD JOHN I DID NOT FEEL COMFORTABLE DECIDING IF GRADES ARE ACCEPTABLE OUT OF DESIGN TOLERANCE - HE APPRECIATED THE CALL

12:15 THERMAL DENSITY RESULTS of POINTS
1521 + 1522

12:20 CHECKED GPS WITH LAKE COUNTY
SURVEYOR (RAY) + ELEVATION WERE
WITHIN 0.01 (RIGHT ON) //
00

- LAKE COUNTY GRADING WATERING HAUL ROADS

2083800 N 1126450 E
" " 1126 500 E
550

(4)

TROXLER 3440
S/N 22746

STANDARD COUNT
MS: 658
DS: 2621

MODIFIED PROCTOR: 130.1 PCF @ 8.4 OPT
SPEC. = 90% C, 2%-6% ABOVE OPT

AREA 1 BARRIER

LOCATION	LIFT	DD	WD	%M	%C
2083790 N ~~1126 240 E~~	27 6" Nuc	123.2	136.5	10.8	94.7
2083760 N 1126194 E	31 6" Nuc	122.2	135.6	10.5	94.3

5:30 OFF SITE

5 CQA
5 SCRAPE

THUR 3/21/CC CLEAR 71° - 82°

6:30 CRB ARRIVED ON SITE TO OBSERVE TEST AREA 2 DITCH GENERAL GRADE AND ADJACENT SAND GRADES

AREA 1

LAKE COUNTY GRADING ON SITE PLACING SAND ON THE ENTIRE SLOPE WITH A JOHN DEERE 850C DOZER AND OFF ROAD TRUCK

AREA 2

LAKE COUNTY GRADING REMOVING CLAY MATERIAL ABOVE DESIGN GRADE & PLACING THE MATERIAL IN NORTH EAST CORNER OF AREA 1

LAKE COUNTY GRADING ALSO PLACING CLAY IN THE EAST CHANNEL AREA AND COMPACTING IN 6" LIFTS

7:05 DENNY CLINTON ON SITE

TROXLER 3440
S/N 22746

STANDARD COUNT
MS = 656
DS = 2652

MAXIMUM PROCTOR = 130.1 PCF @ 8.4 OPT
SPEC = 90% @ 2% - 6% ABOVE OPT. (10.4 MIN)

AREA 1 BARRIER

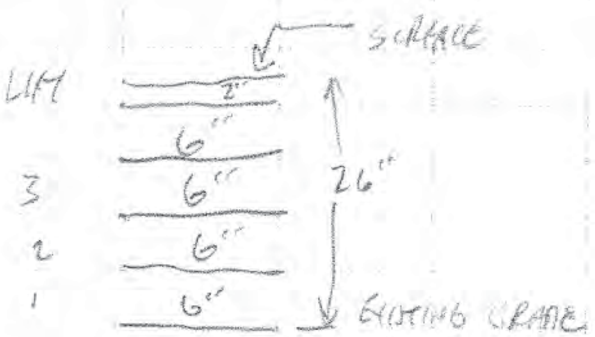
LOCATION	LIFT	DD	WD	% M	% C
2088800N 1126450E	40 6" FROM SURFACE	123.1	135.9	10.4	94.6
1126500E	44 6" FROM SURFACE	122.1	135.6	11.0	93.9

7:30 DENNY TESTED 6" BELOW SURFACE SO LAKE COUNTY GRADING COULD PLACE FINAL 6" LIFT

10:00 USIEPA ON SITE

- DURING THE COURSE OF THE MORNING LAKE COUNTY GRADING WORKED ON PLACING/ GRADING SAND ON AREA 1 TOP

- ONE DOZER WAS UTILIZED TO GRADE AREA 2



AREA 2 CHANNEL

LOCATION	LIFT	DD	WD	%M	%C
	3	121.7	137.6	13.0	93.6
	2	119.9	136.1	13.5	92.2
	1	123.9	138.6	11.9	95.2
	1	125.4	140.4	12.0	96.4
	3	126.3	139.7	10.6	97.1
	2	120.7	137.7	14.1	92.7
	1	121.3	137.8	13.6	93.2

1:00 PROJECT MEETING CANCELLED PER DENNIS BECAUSE HE IS STILL MEETING W/ USIEPA

1:00 MIKE - LAKE COUNTY GRADING PM ON SITE FOR MEETING

3:15 STARTED TO RAIN

3:30 STOPPED

(7)

4:00 [illegible] C [illegible] BACK

4:15 LAKE COUNTY GRAPPLE [illegible]
[illegible] CASING ON AREA 1

SEARCH 3
CGA 16

5:30 CHAPTER
2 HEAD ON GRAPE TABLE

[illegible]

100 CUBIC [illegible] STOCKPILE 400 CY

FR - 8/22/08 74°-80°

6:40 CRB ARRIVED ON SITE TO RECEIVE TEST AREA 2 PLACED FILL WITHIN 6" OF SURFACE AND START SAND DOC. FOR AREA 1

7:10 SPOKE W/DENNY - HE IS CONCERNED WITH SAND VOLUMES - MAY RUN OUT

7:20 CALCULATED BJ @ COMPLETE FOR AREA 1
AREA 1 AREA INSIDE LIMITS OF WASTE
419,236 SURFACE AREA (SAND)
419,236 ÷ 27 = 15,527 CY SAND @ 1.0

18,633 CY SAND @ 1.2

3,106 CY EXTRA

DRAWINGS SHOW 51,400 CY SAND

7:30 DENNY ASKED TO HAVE SOME SURVEY SHOTS S-E OF AREA 2 ON THE ROAD / DITCH AREA

7:30 JEFF OMALLEY STATE LAKE COUNTY GRADING PLANS ON PLACING FILL ON AREA 1 NE CORNER AND AFTER AREA 2 IS DENSITY TESTED, PLACE FILL ON AREA 2

LAKE COUNTY GRADING ON SITE EXCAVATING CLAY FROM THE EAST CLAY STOCKPILE WITH A JOHN DEERE 350D BACKHOE AND PLACING IN THE NORTH EAST CORNER OF AREA 1 AS FILL

TROXLER 3440
S/N 22746
MS = 662
DS = 2637

M. PROCTOR: 130.1 PCF @ 8.4 OPT.
SPEC: 90% @ 2-6% OVER OPT. (10.4 MIN)

AREA 2 BARRIER

LOCATION	LIFT	DD	WD	% M	% C
5	"	119.1	132.8	11.5	91.6
12	6' FROM SUBGRADE	117.8	130.9	11.1	90.5
14	"	119.0	132.6	11.5	91.4
21	"	119.7	134.1	12.0	92.0
26		125.5	139.1	10.8	96.5
27	"	119.4	134.2	12.4	91.8
22	"	121.6	137.2	12.8	93.5
17	"	117.7	130.2	10.6	90.5

AREA 1 NE CORNER FILL (9)

LOCATION	LIFT	DD	WD	% M	% C
44	6' FROM SUBGRADE	118.3	133.2	12.6	90.9
40	↓	123.1	139.0	12.9	~~94.6~~ 94.6
35		120.5	137.5	14.2	92.6
	↓	120.8	137.6	13.9	92.9

1:15 STARTED TO RAIN

1:15 CONTRACTOR SHUT DOWN

1:25 CALLED DEREK
- AREA 1 TESTS PASSED
- OK BE BACK NEXT WEEK

1:30 OFF SITE

MON 8/25/08 65-80° CLEAR

7:45 CRL ARRIVED ON SITE TO DENNY TEST AREA 1 NE CORNER & SCREENED DOCUMENT BARRIER LAYER (AREA 1 NE CORNER) & AREA 2

EQUIPMENT ON SITE
- SAME

(10)

LAKE COUNTY GRADING ON SITE PLACING SAND ON AREA 1 W/ OFF ROAD TRUCK & GRADING W/ A DOZER
[illegible] W/ GPS

[illegible] LAYER PLACING WILL LATER ON AREA 1 FOR SAND THICKNESS CONTROL

8:00 DENNY ON SITE
- PIPE CREW ON SITE TO INSTALL AREA 1 PERIMETER DRAIN PIPE

8:30 MET JUNIOR - PIPE INSTALLER FOREMAN
- PROJECT PARAMETERS
  - NEED A TEE @ MAX 200' INCREMENTS
  - PIPE NEEDS TO DRAIN - NO FLAT SPOTS / LOCATIONS
- PIPE NEEDS TO BE SCREENED PRIOR TO BACKFILLING
- DENNY APPROVED PLACING DRAIN PIPE ON INSIDE LIMITS OF GRADE STAKES - THE STAKES WILL HOLD THE PIPE IN PLACE

11:30 WALKED AREA 2 NORTH DRAINAGE CHANNEL WITH DENNY, DALE, JEFF + RAY - DENNY SAID TO HEAD AT NORTH END AREA TO MAKE DRAIN - DO NOT CHANGE EAST SIDE DUE TO TEST PIT DATA

3:00 WALKED AREA 2 DITCH W/ DALE - HE WANTS TO CONSTRUCT DITCH AS DESIGNED AND GRADE AN ADDITIONAL ± 200' FOR ADEQUATE DRAINAGE

3:47 LCG UTILIZED A SMOOTH DRUM ROLLER TO ROLL NE CORNER WHERE FILL WAS PLACED

- DURING THE COURSE OF THE DAY LCG UTILIZED A WATER TRUCK TO WATER THE HAUL ROADS / MINIMIZE THE DUST

IN THE AFTERNOON LCG UTILIZED SCRAPER TO PLACE BARRIER LAYER MATERIAL ON AREA 2

5:00 - 6:15 DEP. BARRA PARTS

6:20 CF [illegible]

5 [illegible] SCRAPERS
5 CGA

TB 8/26/08 SUNNY 64°-80°

6:20 CLG ON SITE TO DOCUMENT BARRIER LAYER GRADES & DENSITY TEST

LCG ON SITE PLACING SAND ON AREA 1 W/ OFF ROAD TRUCKS & GRADING TO C.O W/ 6A DOZER

- ON AREA 2 LCG ARE UTILIZING SCRAPER TO PLACE BARRIER LAYER MATERIAL / COMPACTING W/ SHEEPSFOOT COMPACTOR

7:15 JEFF STARTED CLAY PLACEMENT LIMIT STAKES TOMORROW ON AREA 1

8:00 TESTED AREA 1 RE GRADE FILL AREA

LCG PIPING CREW ON SITE PLACING PERIMETER DRAIN PIPE

CREW 1 OPERATOR
1 FOREMAN
2 LABOR
1-CAT 312B BACKHOE

1141
1143
1147
1502
✓1567
1571
1572
1576

2:30 START OF CLAY PLACEMENT ON AREA 1 / NORTH SIDE. THE CLAY WAS PLACED @ THE TOE OF SLOPE (OUTSIDE THE LIMITS OF WASTE) AND DOZED UP ONTO THE CAP AREA

TROXLER 3440
S/N 22746
STANDARD COUNT
MC = 662
DS = 2632

10.4 MC

AREA 1 NE CORNER BLDG

LOCATION	LIFT	DD	WD	% M	% C
86	SURFACE	117.3	130.2	11.0	90.2
90	SURFACE	123.2	136.9	11.1	94.7
94	SURFACE	125.6	139.4	11.0	96.5

(13)

5:10 OFF SITE

WED. 8/27/08 64° - 80°

6:20 CRG ARRIVED ON SITE TO TOPO AREA 1 TOP OF SAND (AS-BUILT) & POSSIBLY DOCUMENT AREA 2 BARRIER LAYER AREA 2

LCB ON SITE PLACING SAND ON AREA 2 WITH OFF ROAD TRUCKS & GRADING TO 1.0

- LCB ALSO PLACING CLAY ON THE SOUTH SIDE OF AREA 2 WITH SCRAPERS AND DOZING INTO PLACE / COMPACTING W/ A CAT SHEEPSFOOT 825C COMPACTOR

AREA 1 SAND TOPO TO PICK UP BREAK POINTS (AS-BUILT) / PRIOR TO CLAY PLACEMENT

JOB: JM1 SAND TOPO 8-27-08. CRD

12:30 DENSITY TESTED AREA 2 SOUTH BARRIER LAYER FILL AREA (SURFACE) - TEST PASSED

1:30 DENSITY TESTED AREA 1 PROTECTIVE MATERIAL PLACEMENT ON SOUTH SIDE - TEST PASSED

TRACTOR 3440
S/N 22746
MS 663
DS 2642

PROCTOR = 130.1 PCF @ 8.4 OM
SPEC = 90% C 2%-6% ABOVE OM.

LOCATION	LIFT	DD	WD	% M	% C
29	SURFACE	125.8	139.0	10.5	96.7
35		126.2	140.7	11.5	97.0
40		123.7	136.6	10.4	95.0
45		122.5	136.1	11.1	94.1
50		125.0	139.1	11.3	96.1
30		124.3	139.9	12.5	95.6
36		122.5	136.1	11.1	94.1
41		123.2	138.0	12.0	94.7
46		126.2	140.5	11.6	97.0
51	SURFACE	126.7	141.0	11.3	97.4

AREA 1

15

LOCATION	LIFT	DD	WD	% M	% C
118	1	123.9	138.8	12.1	95.2
214	3	122.5	137.4	12.2	94.1
310	5	125.3	139.3	11.2	96.3

6:30 OFF SITE

THUR 8/28/08 CLOUDY 66°-80°

6:15 CCG ARRIVED ON SITE AREA 2 BARRIER LAYER & COMPLETE AREA 1 SAND DOC & SAND TOPO

6:30 LAKE COUNTY PLACING SAND ON AREA 1

8:00 DUSTIN ON SITE TO ASSIST W/ DENSITY TESTS

9:30 AREA 1 SAND PLACEMENT COMPLETE/

7:00 DOCUMENTED AREA 2 BARRIER LAYER

9:30 STARTED SAND PLACEMENT ON AREA 2

6:30 LCG PLACING CLAY ON AREA 1 W/ SCRAPER AND COMPACTING W/A 825C SHEEPSFOOT COMPACTOR

1:00 PROJECT MEETING

2:30 MEETING W/ DENNY DALE, & TIM TO DISCUSS MH IN BASIN AREA

10:00 - 11:30 LIGHT RAIN

5:30 OFF SITE

3/29/18

FRI. 68 - 82° SCAT

6:20 CRG ARRIVED ON SITE TO DOCUMENT MORE BARRIER LAYER ON AREA 2

LCG ON SITE PLACING CLAY ON AREA 1 WITH SCRAPERS -

LCG ON SITE PLACING SAND ON AREA 2 WITH ON ROAD TRUCKS

PIPE CREW ON SITE TO INSTALL AREA 2 PIPING / GCL MATERIAL. DALE NOT CONCERNED WITH TEE DRAIN PIPING % SLOPE AS LONG AS IT DRAINS

1543 - 1576

1541
1542
1543

2:30 LCG SHUT DOWN
2:30 3:00 CRG / DESTIN OFF SITE

TUES. 9/2/08 72° - 90° CLOUDY

7:00 OBS ARRIVED ON SITE TO DOCUMENT MORE OF AREA 2 BL

- DUSTIN ON SITE TO CONTINUE DENSITY TESTING AREA 1 PROTECTIVE LAYER CLAY MATERIAL

LCG ON SITE PLACING PROTECTIVE MATERIAL ON AREA 1 WITH 4 SCRAPERS & COMPACTING THE MATERIAL

ON AREA 2 LCG PLACING SAND WITH 3 OFF ROAD TRUCKS & GRADING TO 1.0

- 8:00 SCREENED 3 SAND POINTS ON AREA 1

8:30 SPOKE W/ DEMPT ABOUT TOE DRAIN PIPES DRAINING

10:00 ANNE PETERSON ON SITE

3750 N 6100E } TOE

3800 N 6250E CREST
3850 N 6200E CREST

11:00 SCREENED AREA 1 SANDS TOE OF SLOPE IN NE CORNER

12:30 EMAILED FILE TO BET

12:30 LCG PLACED ADDITIONAL SAND @ AREA 1 NE TOE AREA (CLAY) WITH OFF ROAD TRUCK

SAND V. 15,684 CY BY AREA
SAND V. BY AREA
S.F. = 431,446 S.F. × 1.0
15,979 CY

AREA 2
EAST DITCH TEST PITS w/DACE (?)
8/28/08

② 247 2084104.4 N 1126631.7 E 591.28 (BOTTOM)
① 248 2084045.7N 1126631.7 E 591.76 (BOTTOM)

4:50 DUG 2 TEST PITS IN EAST DITCH
w/ BACKHOE FOR BOTTOM OF CLAY ELEVATION

④ 211 2084430.7 1126646.1E 590.25 592.52
③ 212 2084301.8N 1126644.0E 590.53 592.96

4:00 AREA 2 SAND PLACEMENT COMPLETE

DACES TO POINTS FOR CLAY THICKNESS
10/6/08
2084104.6N 1126631.8E 591.28 593.66
2084045.7N 1126632.0E 591.76 ~~593.89~~
593.97
10/23/08

THICKNESS
2.27
2.43

4 POINTS FOR CLAY THICKNESS IN EAST DRAINAGE CHANNEL

TOP OF TOPSOIL ELEVATION

2.38
2.21

5:40 OFF SITE

593.66
591.28
2.38

593.89
591.76
2.13

WED 9/3/08 CLEAR 65° - 76°

6:30 CBS ARRIVED ON SITE TO DOCUMENT AREA 2 SAND THICKNESS (CBS SURVEY)

7:00 DESTINY ON SITE TO ... TEST

LCG ON SITE PLACING CLAY ON AREA 1 WITH 7 SCRAPERS, 1 DOZER, & 1 SHEEPSFOOT COMPACTION

8:30 - 11:30 DOCUMENTING AREA 1 SAND

12:00 MEETING W/ DAVE & JEFF REGARDING SAND OVER GCL AREA - DAVE WANTS IT BACK DRAGGED TO THE EAST

- WATER TRUCK WATERING HAUL ROAD

11:30 DAVE GAVE JEFF APPROVAL TO PLACE THE CLAY IN 18" LIFTS

12:30 - 3:15 TOPPED SAND STOCKPILE
125 - 181

SCRAPER ROUND TIME
15 TRIPS · 7 SCRAPERS = 105 CY
8:07
7875 CY / DAY

2:00 NOTICED AREA 2 WEST AREA SAND with GCL IS TO THICK - LCG STATED DENNY SAID THEY COULD GO FROM EDGE OF GCL STRAIGHT ACROSS - DAVE WILL CHECK W/ DENNY
JEFF WANTS CHAINS DRAGGED TO REMOVE SAND - DAVE WILL TALK TO DENNY

4:30 SCRAPERS PANNED THE AREA IN PREP. FOR RAIN
5:10 OFF SITE

THUR. 9/4/08 64°-68° RAIN

6:30 CRG ARRIVED ON SITE TO COMPLETE AREA 2 SAND BCC

- SITE IS WET & MUDDY FROM OVERNIGHT RAIN

6:40 SPOKE W/ JEFF - CCG NOT WORKING TODAY DUE TO RAIN

9:00 5020 CY REMAINING FOR SAND STOCKPILE PER BJ

AREA 1 AS-BUILT SAND 15,684 CY
STOCKPILE AS-BUILT SAND 5,020

20,704 CY
- 29,983 CY DESIGN STOCKPILE

9,279 CY FOR AREA 2
- 6675
2604 CY ?

- GCC WEST LIMITS

4121.8N	6179.5E
4214.9	6199.2E
4299.4	6215.8E
4378.5	6232.0E
4443.3	6243.7E
4511.7	6257.9E
4545.1	6261.9E
4570.9	6278.0E
4659.2	6308.2E

AREA 1 429.78C (BARRIER LAYER)

DELETE JM 2 SAND AKC 8-29-09 - CRD

FRI. 9/5/08 CLOUDY 60-70°

6:30 CRG ARRIVED ON SITE TO DOCUMENT AREA 2 WEST SIDE SAND THICKNESS WITH GPS AFTER LCG REMOVES EXCESS SAND

- SITE IS WET & MUDDY FROM 9/4/08 HEAVY RAIN

7:00 - LCG ON SITE TO REMOVE SAND ON AREA 2 WEST DITCH AREA

12:00 SAND REMOVED & STOCKPILED IN SW CORNER OF AREA 2
- POINTS DOCUMENTED FOR SAND THICKNESS COMPLETE FOR AREA 2

1 FOREMAN
1 SURVEYOR
1 OPERATOR

J.D. 850C DOZER

12:00 OFF SITE

MON. 9/8/08 CLOUDY 68-72°

7:30 OBS ARRIVED ON SITE TO SURVEY TOE DRAIN OUTLETS & OTHER ITEMS

7:45 DUSTIN ON SITE TO DENSITY TEST PLACED PROTECTIVE MATERIAL (CLAY) ON AREA 1 & 2

~~CLAY PLACEMENT STARTED ON AREA 4 SW AREA W/ TRACK & SCRAPER~~

11:30 START OF LIGHT RAIN
12:00 STEADY RAIN / SCRAPERS START TO GRADE AREA IN PREP. OF RAIN

(24)

(RANGE FINDER)

5320N	5860E	68 YARDS SOUTH
5117N	5628E	78 YARDS EAST

BOUY LOCATION
2085116N 1125862

1245 OFF SITE

TUE. 9/9/08 52°-65° CLEAR

6:30 CLG ARRIVED ON SITE FOR AREA 1 DEWATER TESTING

6:30 DUSTIN ON SITE TO ASSIST W/DEWATER TESTING

SITE IS WET & MUDDY FROM LAST NIGHTS RAIN (~ 1")

- LCG ON SITE WITH ONE OPERATOR & 1 LABORER TO BACKDRAG AREA 2
- LCG ANTICIPATES CLEARING WETLANDS

6136 CY ABOUT AREA 2 SAND volume

RAINED OUT!

- CRG / DUSTIN STARTED TO SURVEY WITNESSES & CROSS-SECTION ON SOUTH BERM
- BORE LOCATION
2085116N 1125860E

JOB: JIM WITNESSES 9-9-08

- SCREENED BERM X-SECTION WHERE PIPE WILL CROSS
- SCREENED WITNESSES
- SCREENED WATER PARAMETER

4:45 off SITE

- SCREENED WITNESSES TODAY

WED 9/10/08 52° - 68°

6:30 CRG ARRIVED ON SITE TO DENSITY TEST AREA 1 CLAY PLACEMENT W/AUSTIN & SURVEY NEW WELLS BY E. HAUL ROAD

6:30 AUSTIN ON SITE TO DENSITY TEST AREA 1 PROTECTIVE MATERIAL

- LAKE COUNTY GRADING ON SITE TO PLACE CLAY ON AREA 1 WITH 7 SCRAPERS

6:50 JEFF STATED LAKE COUNTY GRADING WILL PLACE CLAY, COMPACT THE MATERIAL, AND PLACE THE REMAINING CLAY MATERIAL, AND COMPACT

- WATER TRUCK ON SITE WATERING HAUL ROADS

2:10 DISCUSSED W/DALE & DENNIS AREA 1 NE CORNER. DENNIS WANTS THE SURFACE WATER TO RUN OFF THE NORTH SLOPE - NOT EAST
- FILL WILL BE REQUIRED TO MAKE THE WATER DRAIN NORTH - WILL DISCUSS @ NEXT MEETING ALONG W/ EXTENDING 2 DRAIN PIPE EXTENSION TO THE NORTH

- DENNIS ASKED ABOUT COMPACTION
- CRG STATED LCG IS PLACING / COMPACTING THEN PLACING AGAIN UNTIL 3' IS PLACED. THEN LCG WILL DIG DOWN TO NECESSARY ELEVATION FOR DENSITY TEST. THIS METHOD IS UTILIZED TO PREVENT AUSTIN IN THE MIDDLE OF HEAVY EQUIPMENT (SAFETY)
- ALL TESTS TODAY HAVE PASSED

(WELL SURVEY 6 HOURS)
(AREA 1 SURVEY 1 HOUR)

5:30 OFF SITE
CRG / AUSTIN

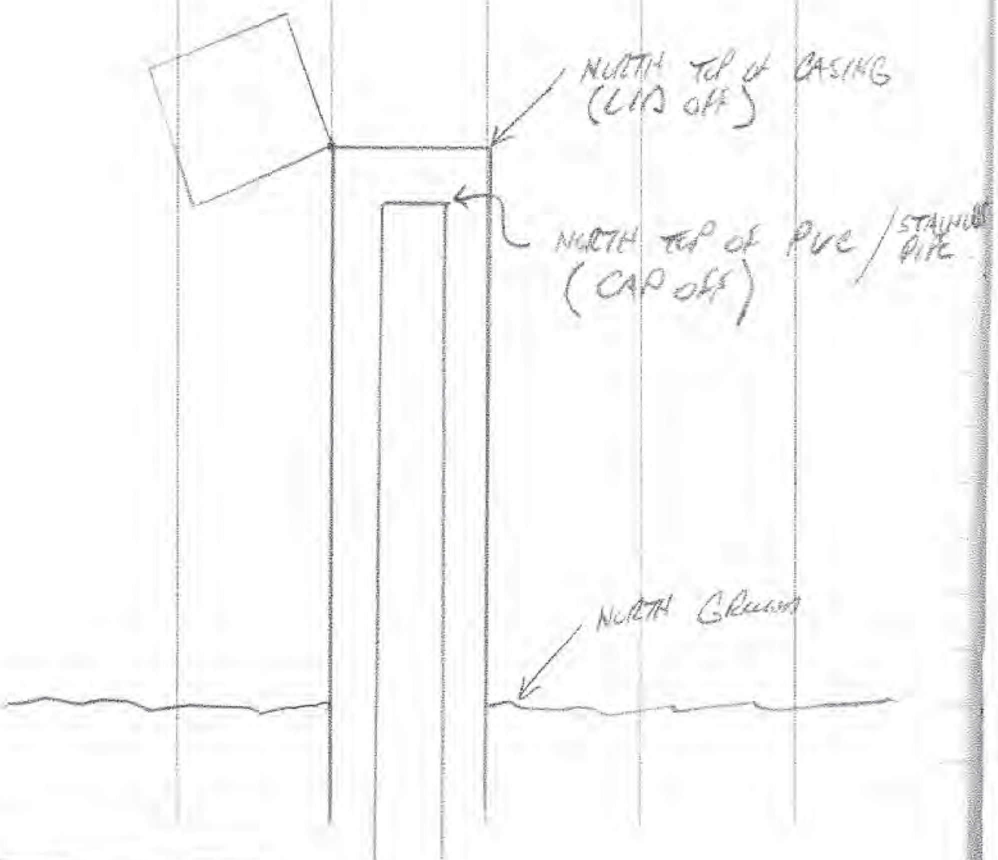
9/10/08

- AS-BUILT SURVEY OF MONITORING WELL

JOB: JM MW AS-BUILT 9-10-08.CRD

SBIRS OK

- WELL SURVEY
  - NORTH GROUND
  - NORTH TOP OF CASING (LID OFF)
  - NORTH TOP OF PVC (CAP OFF)



27

LMW 17 X

2	NORTH GROUND			593.89
3	NORTH CASING	2084550.7N	1126777.1E	597.08
4	NORTH PVC			596.97

LMW-25

5	NORTH GROUND			592.65
6	NORTH CASING	2084334.3N	1126757.2	595.28
8	NORTH PVC			595.02

LMW-26

9	NORTH GROUND			592.50
10	NORTH CASING	2084328.4N	1126756.4	595.15
11	NORTH PVC			594.92

SMW-07A

~~MW-7A~~ (MARKED ON WELL AS MW 7A)

12	NORTH GROUND			591.58
13	NORTH CASING	2084202.2N	1126755.3E	593.66
14	NORTH STAINLESS PIPE			593.98

LMW-24

15	NORTH GROUND			591.67
16	NORTH CASING	2084135.1N	1126739.3E	593.94
17	NORTH PVC			593.75

LMW 23				
18	NORTH GRND			591.80
19	NORTH CASING	2084129.2N	1126739.2E	594.05
20	NORTH PVC			593.82
SMW 08AR				
21	NORTH GRND			592.11
22	NORTH CASING	2083885.6N	1126749.1E	594.44
23	NORTH STAINLESS PIPE			594.47
SMW 09				
24	NORTH GRND			591.67
25	NORTH CASING	2083890.4N	1126749.6E	592.34
26	NORTH STAINLESS PIPE			592.76
LMW 14				
27	NORTH GRND			592.06
28	NORTH CASING	2083878.7N	1126749.9E	594.59
29	NORTH PVC			594.50
SMW 10A				
30	NORTH GRND			590.69
31	NORTH CASING	2083668.8N	1126760.7E	592.17
32	NORTH STAINLESS PIPE			592.63
SMW 11A				
33	NORTH GRND			590.48
34	NORTH CASING	2083668.1N	1126765.3E	591.89
35	NORTH STAINLESS PIPE			592.36
LMW 11				
36	NORTH GRND			588.81
37	NORTH CASING	2083456.9N	1126767.1E	591.29
38	NORTH STAINLESS PIPE			591.09
LMW 12				
39	NORTH GRND			588.65
40	NORTH CASING	2083462.9N	1126767.8E	591.67
41	NORTH STAINLESS PIPE			591.58
LMW-22 X				
42	NORTH GRND			589.31
43	NORTH CASING	2083319.5N	1126580.6E	591.96
44	NORTH PVC			591.72
LMW 21 X				
45	NORTH GRND			589.33
46	NORTH CASING	2083319.3N	1126574.4E	591.91
47	NORTH PVC			591.65

LMW 20 X

48 NORTH GROUND			589.86
49 NORTH CASING	2083318.2N	1126152.1E	592.31
50 NORTH PVC			592.10

LMW 19

51 NORTH GROUND			589.92
52 NORTH CASING	2083318.7N	1126146.5E	592.42
53 NORTH PVC			592.19

LMW 18 X

54 NORTH GROUND			589.70
55 NORTH CASING	2083322.5N	1125828.6E	591.86
56 NORTH PVC			591.86

LBW 02

57 NORTH GROUND			590.30
58 NORTH CASING	2083322.4N	1125777.3E	592.78
59 NORTH STAINLESS PIPE			592.54

SMW 13

60 NORTH GROUND			589.16
61 NORTH CASING	2083322.1N	1125767.6E	590.51
62 NORTH STAINLESS PIPE			590.95

SMW 12

63 NORTH GROUND			589.48
64 NORTH CASING	2083321.7N	1125761.1E	591.21
65 NORTH STAINLESS STEEL			591.65

UMW 32

NORTH GROUND			591.45
NORTH CASING	2084439.1N	1124209.4E	593.86
NORTH PVC			593.74

LMW 16

NORTH GROUND			591.16
NORTH CASING	2084440.3N	1124217.8E	593.75
NORTH PVC			593.61

UMW 19

NORTH GROUND			591.45
NORTH CASING	2084444.0N	1124210.5E	594.05
NORTH STAINLESS PIPE			593.91

LMW 13

NORTH GROUND			590.60
NORTH CASING	2083268.5N	1122120.7E	593.16
NORTH PVC			593.06

UMW 28

NORTH GROUND				590.28
NORTH CASING	2083283.4N	1122110.0E		593.31
NORTH STAINLESS PIPE				593.10

30

5:30 off site

CRG/[illegible]

THUR. 9/11/08 ~~CLOUDY~~ SUNNY 60°-78°

6:30 CRG / DUSTIN ARRIVED ON SITE TO CONTINUE AREA 1 DENSITY TESTING PROTECTIVE LAYER MATERIAL

6:30 LCG ON SITE PLACING PROTECTIVE LAYER (CLAY) ON AREA 1 WITH 7 SCRAPERS, 2 DOZERS, AND 1 SHEEPSFOOT COMPACTOR

9:30 CALLED PAT & COLIN TO GIVE PROJECT UPDATE

8:00 LCG STARTED AREA 2 CLAY PLACEMENT IN SE CORNER w/ 2 SCRAPERS

11:30 DALE STATED THE STOCKPILE NEXT TO THE SITE ENTRANCE CONSISTS MAINLY OF CLAY WITH SOME GRAVEL MIXED IN TO CLASSIFY AS CLAY MATERIAL FOR THE TOP UNCOMPACTED 6" OF AREA 1+2

① - DO NOT NEED DUSTIN FROM NOW
② - ~~POSSIBLE~~ NEED SURVEY (2 DAYS)
③ - RECEIVED LEAD TRUCK REVIEW
- HAVE NEED A FINAL REVIEW?

CALLED TIM FOR SURVEY ON NOT USED
1- WAIT UNTIL GPS ACQUIRED
2- SURVEY w/ CONTRACTOR GPS
3- TOTAL STATION w/ DUSTIN

1:30 NEW THURMAN SET MATS ON GEOTEXTILE FOR POTENTIAL BRIDGE

2:40 CHECKED BM 3 w/ LCG
- OK .06

3:00 LEAVE CROCH SITE

WED. 9/17/08 SUNNY 60°-76°

6:50 CPG ARRIVED ON SITE TO DELINEATE TEST AREA 1

- LCG ON SITE UTILIZING 7 SCRAPERS, 2 DOZER, AND 1 825C SHEEPSFOOT COMPACTOR TO PLACE CLAY ON AREA 1

- LCG ALSO UTILIZING A WATER TRUCK TO WATER HAUL ROADS

7:15 DAVE PETERSON ON SITE TO OBSERVE CLAY PLACEMENT

1:00 INFORMED JEFF HE COULD NOT PLACE CLAY ON WET AREAS LOCATED ON EAST TOP - HE WILL BACKDRAG WET MATERIAL

1:30 DAVE ON SITE TO OBSERVE CONSTRUCTION ACTIVITIES

TROXLER 3440
S/N 22746
STANDARD C →
MD = 652
DS = 2627

PROCTOR = 130.1 @ 8.4
SPEC = 2% - 6% ABOVE OPT.
MOISTURE = 10.4 - 14.4

LOCATION	LIFT	DD	WD	% w	% C
259	4	123.2	138.5	12.4	94.7
260		120.7	136.8	13.3	92.8
261		120.9	136.2	12.7	92.9
262	4	121.9	136.9	12.3	93.7
311	5	123.7	136.7	10.5	95.1
312		124.3	137.8	10.8	95.6
313		121.9	136.4	11.9	93.7
314	5	121.1	135.6	12.0	93.1
222	3	120.1	134.3	11.8	92.3
218	3	118.0	132.0	11.9	90.7
223	3	118.1	131.1	11.0	90.8
224		118.4	132.0	11.5	91.0
225		120.5	134.5	11.6	92.6
226	3	118.2	133.8	13.2	90.9

Location	Lift	DD	WD	% M	% C
227	3				
228		120.0	135.1	12.6	92.3
229		122.9	136.2	10.8	94.5
230	3	124.6	139.4	11.9	95.8
231	3	118.8	132.1	11.2	91.3
✓ 232					
233		126.3	139.8	10.6	97.1
234	3	123.9	137.0	10.6	95.2
263	4				
264					
265					
266	4	120.4	135.2	12.2	92.6
267	4				
268					
269					
270	4				
274		119.4	135.8	13.8	91.8
279		121.3	138.1	13.8	92.7
284		119.0	134.6	13.1	91.5
288	4				

Location	Lift	DD	WD	% M	% C
235	3	122.7	136.7	11.4	94.3
236		124.4	138.2	11.1	95.6
✓ 237					
238	3				
239	3	120.3	134.9	12.1	92.5
240	3	118.2	134.0	13.3	90.9
241	3				
	S. Suite	Density	Test		
275	4	118.6	135.5	14.2	91.1
280	4	119.2	132.3	11.1	91.6
318	5	118.0	132.0	11.9	90.7
330		118.3	133.9	13.2	90.9
326		117.8	133.7	13.5	90.6
322					
334	5	117.1	132.4	13.1	90.0

LOCAT	LIFT	DD	WD	%M	%C
265	4	123.2	137.2	11.4	94.7
269		119.3	135.2	13.3	91.7
273		122.9	136.3	10.9	94.4
277		120.4	136.3	13.3	92.5
283					
28[illegible]	4				

4:00 WATER TRUCK SHUT DOWN

4:10 INFORMED JEFF THE TOP OF PROTECTIVE LAYER FOR AREA 1 NEEDS TO BE COMPLETE PRIOR TO COMM ACCORDINGLY – I WILL NOT PIECE MEAL IT! – WILL DO IN 2 SHIFTS FOR AREA 1

DENSITY TESTED AREA EAST 1/2 DURING THE COURSE OF THE MORNING / AFTERNOON

- PERFORMED 37 DENSITY TESTS
  - TESTS PASSED

5:00 SCRAPERS / DOZERS SHUT DOWN

6:00 SHEEPSFOOT COMPACTOR SHUT DOWN

5:00 CRG OFF SITE

THUR 9/18/08 62° - 76°

6:30 CRG ARRIVED ON SITE TO COMPLETE AREA 1 DENSITY TESTS

- LCG ON SITE PLACING CLAY ON THE EAST 1/2 WITH 3 SCRAPERS, 1 DOZER, & 1 SHEEPSFOOT COMPACTOR
- LCG UTILIZING 4 SCRAPERS AND 2 DOZER TO START PLACEMENT OF TOP 6" UNCOMPACTED CLAY MATERIAL, PLACEMENT WILL START ON THE WEST END OF AREA 1 AND WORK EAST

- LCG UTILIZING WATER TRUCK TO WATER HAUL ROADS

9:30 INFORMED JEFF THE AREA 1 WEST END WAS TO ROUGH TO DOCUMENT / COULD DOCUMENT AFTER IT IS SEEDED AS OPTION

10:00 7 SCRAPERS WERE UTILIZED TO PLACE 6" LIFT ON WEST 1/2 OF AREA 1

8:00 - LCG ON SITE W/ BACKHOE TO PLACE MATS ON BASIN GEOTEXTILE (TEST AREA)

1:00 PROJECT MEETING

2:30 CALLED AMY + DUSTIN TO CANCEL FAMILY SCALES

2:30 COMPACTOR PARKED

3:00 2 SCRAPERS STARTED TO PLACE CLAY ON EAST 1/2 OF AREA 1 TO ACHIEVE COMPACTED PROTECTIVE COVER THICKNESS

TROXLER 3440
S/N 22746

STANDARD COUNT
MS 655
DS 2663

PROCTOR = 130.1 @ 8.4 OPT.
SPEC. = 90% @ 2% - 6% ABOVE OPT.

LOCATN	LIFT	WD	DD	% M	% C	
145	1	134.3	119.1	12.8	91.6	9/19
✓ 142	1	133.6	117.1	14.1	90.0	9/19
237	3	136.4	120.2	13.4	92.4	
238		136.6	120.2	13.1	92.4	
241		134.2	119.2	12.6	91.6	9/19
232		134.2	118.7	13.1	91.2	
227	3	139.2	125.8	10.6	96.7	
270	4	120.2	134.8	12.1	92.4	
322	5	119.2	135.2	13.5	91.6	
✓ 288	4	117.9	134.7	14.2	90.7	9/19

LOCATN	LIFT	WD	DD	% M	% C
283	4	137.9	123.0	12.1	94.5
287	4	134.3	119.9	12.8	92.1 9/19/08
264	4	121.7	135.6	13.9	93.5
268		122.3	138.2	13.0	94.0
272		123.1	138.9	12.8	94.6
277		122.1	137.7	12.8	93.9
282		122.3	138.0	12.8	94.0
286	4	124.4	137.8	10.8	95.6
263	4	120.9	134.2	11.1	92.9
267		121.1	136.3	12.6	93.1
271		120.4	137.1	13.9	92.5
276		120.4	134.5	11.7	92.5
281		120.5	134.2	11.3	92.6
285	4	121.1	135.3	11.7	93.0

LOCATION	LIFT	UA	DA	% M	% C	
315	5	138.6	124.4	11.4	95.6	9/22 9/19/08
316	↓	135.8	119.5	13.6	91.9	
1 317	5	133.5	118.6	12.5	91.2	
319	5	134.5	118.1	13.9	90.8	9/22
320	↓	134.8	118.1	14.1	90.8	
2 321	5	137.2	122.1	12.3	93.9	
		DA	UA			
323	5	117.5	132.5	12.7	90.3	9/22
324	↓	118.0	133.9	13.5	90.7	
325	5	121.2	135.7	11.9	93.2	
327	5	121.2	134.7	11.1	93.2	9/22
328	↓	117.6	134.0	14.0	90.4	
329	5	120.7	133.3	12.1	92.8	
331	5	120.1	134.1	11.7	92.3	9/22
332	↓	119.1	133.4	12.0	91.5	
333	5	122.0	137.2	12.4	93.8	
335	5	120.3	134.9	12.1	92.5	~~9/19/08~~ 9/22/08
336	↓	119.2	135.4	13.5	91.6	
337	5	121.5	135.7	11.7	93.4	~~9/19/08~~ 9/22/08

FRI. 9/19/08 62° - 78° SUNNY

6:30 CRB ARRIVED ON SITE TO COMPLETE AREA 1 DENSITY TESTING IN NE CORNER

- LCG ON SITE PLACING PROTECTIVE LAYER (CLAY) IN NE CORNER TO ACHIEVE COMPACTED LAYER THICKNESS (2.5') WITH 5 SCRAPERS
- LCG ALSO ON SITE PLACING THE TOP LOOSE 6" LIFT WITH SCRAPER AND DOZER

- LCG WATERING HAUL ROAD

- LCG SURVEYOR ON SITE CHECKING TOP OF PROTECTIVE LAYER GRADES ON WEST 1/2 OF AREA 1

12:00 SPOKE WITH DALE ABOUT CRB INVOICE ITEMIZED - HE IS OK W/ IT

- DALE ALSO WANTS TO DENSITY TEST THE SETTLING BASIN THE WEEK OF SEPT. 29
- REQUIREMENTS: - 18"
- 90% OF STANDARD
- NO MOISTURE REQUIREMENTS
- CALLED TIM / HE SAID TO DO IT

TROXLER 3440
S/N 22746
STANDARD COUNT
M = 662
D = 2651

2:15 WALKED EAST TOE OF SLOPE W/ JEFF
- DISCUSSED ADDING MORE CLAY MATERIAL / COMPACTION

2:20 SPOKE W/ DALE ABOUT PROJECT UPDATE

2:30 OFF SITE

MON. 9/22/08 62°-74°

7:10 CRG ARRIVED ON SITE TO COMPLETE AREA 1 DENSITY TESTING IN NE CORNER & START AREA 2 DENSITY TESTING

- LCG ON SITE PLACING CLAY W/ 4 SCRAPERS ON AREA 1 IN NE CORNER TO ACHIEVE 2.5' COMPACTED THICKNESS/ GRADING / COMPACTING

- LCG ON SITE PLACING CLAY W/2 SCRAPERS ON AREA 2 EAST SIDE

7:30 A SEMI LOAD OF EROSION CONTROL MATTING WAS DELIVERED & UNLOADED IN SE CORNER OF SETTLING BASIN (ON CRUSHED CONCRETE)

16' X 108'
NORTH AMERICAN GREEN
EROSION CONTROL MATTING

262-806-6039 DON SMITH CELL
657-3475 OFFICE

TROXLER 3440
S/N 22746
STANDARD CNT
M1 662
DJ 2631

9:00 AREA 1 DENSITY TESTS COMPLETE

9:15 SPOKE W/ DALE PETERSON ABOUT TOP OF PROTECTIVE LAYER SURFACE PRIOR TO DOCUMENTATION SURVEY. HE SAID AS LONG AS IT DRAINS TO SURVEY IT.

12:00 LCG WORKING ON PLACING LOOSE 6" TOP LIFT OF PROTECTIVE MATERIAL ON AREA 1 EAST END

- LCG WATERING HAUL ROADS / MINIMIZE DUST

- LCG & DALE P. RAN BACKHOE ON CLAMP WATER IN SETTLING BASIN TO ORIENT SEDIMENT.

2:15 SPOKE W/ DAVE ABOUT RAISING POINTS ON AREA E. END FOR BETTER DRAINAGE - HE WAS OK W/ THIS - FIGURE VOLUME

62 CUBIC YARDS

2:30 INFORMED JEFF TO RAISE POINTS: 1197
1199
1203
1105
} 0.5

3:00 STAKED 4 POINTS W/ LCG SURVEYOR

3:15 - 4:45 DOCUMENTED PROTECTIVE LAYER WITH LCG QA WORK ON WEST END OF AREA 1

4:50 OFF SITE

TUES. 9/23/KE 60° - 78° SUNNY

6:30 CRG ARRIVED ON SITE TO CONTINUE AREA 1 TOP OF PROTECTIVE LAYER DOCUMENTATION WITH LCG GPS UNIT AND ASSIST DUSTIN WITH AREA 2 DENSITY TESTING

DUSTIN ON SITE (FROM GREEN BAY) TO HELP W/ AREA 2 DENSITY TESTING

- LCG ON SITE GRADING THE TOP LOOSE 6" LIFT ON THE WEST 1/2 OF AREA 1 W/ 2 DOZERS

7:00 LCG ON SITE TO START AREA 2 CLAY PLACEMENT W/ 5 SCRAPERS, 1 D8 DOZER 1 SHEEPSFOOT COMPACTOR

- LCG ON SITE WATERING HAUL ROADS W/ WATER TRUCK ON A FULL TIME BASIS

EQUIPMENT ON SITE

6 - CATERPILLAR 627 SCRAPER
2 - JOHN DEERE 850 DOZER
1 - CATERPILLAR 850C SHEEPSFOOT COMPACTOR
1 - CATERPILLAR D8 DOZER
1 - WATER TRUCK

7:20 FIRST LOAD OF SAND WAS PLACED IN SETTLING BASIN TO FILL IN LOW AREA (TDM) 2 CAT D400D OFF ROAD TRUCK

8:00 SPOKE WITH DALE ABOUT AREA 1 PROTECTIVE LAYER DOCUMENTATION. I TOLD DALE THE SURFACE IS ROUGH & THE ELEVATION COULD CHANGE AFTER SEEDING PREPARATION ACTIVITIES, HE SAID JOHN MANNICK IS OK WITH THIS. I ALSO TOLD HIM WE COULD ALSO SURVEY THE CREST OF SLOPE & TOE OF SLOPE FOR AS-BUILT BEFORE THE DOCUMENTATION REPORT - HE SAID GOOD IDEA

8:00 - 10:00 DOCUMENTED GRADE OF AREA 1

10:45 TOLD DALE AREA WEST OF LOW GRADING ARE (SIC) READY TO BE SEEDED - HE DID NOT HAVE ANY ISSUES

11:00 INFORMED JEFF GRADES ARE [illegible] READY TO BE SURVEYED / AREA 1 WESTERN

1:10 DENNY ON SITE TO OBSERVE CONSTRUCTION ACTIVITIES - PLEASED WITH PROCEDURE
- PLACE CLAY IN 3 LIFTS ACROSS AREA 2 OK AS LONG AS WE GET COMPACTION

10:00 LCG SURVEYOR CHECKED AREA 1 EAST 1/2 TOP OF PROTECTIVE LAYER GRADES

1:45 INFORMED JEFF I WILL WALK AREA 1 WITH HIM WED. AFTERNOON TO REVIEW SURFACE PRIOR TO DOCUMENTATION SURVEY ~~SCHEDULED~~ THURSDAY MORNING

3:00 DAVE ON SITE - PLEASED WITH CONSTRUCTION ACTIVITIES

4:30 SCRAPERS SHUT DOWN
5:00 REMAINING EQUIPMENT SHUT DOWN

5:00 [illegible]

Off Site

6:30-7:30 ICED KNEE - IT WAS SORE + SWOLLEN DURING THE DAY [SUBMITTED]
- TOOK IBUPROFEN

WED 9/24/08 SUNNY 60-80°

6:30 CRB ARRIVED ON SITE TO CONTINUE AREA 2 DENSITY TESTING

- AUSTIN NOT ON SITE

- LCG ON SITE PLACING CLAY ON AREA 2 WITH 5 SCRAPERS, 1 D8 DOZER, AND 1 CATERPILLAR 825C SHEEPSFOOT COMPACTOR

- LCG ON SITE UTILIZING 2 850 DOZER TO CONTINUE GRADING AREA 1 EAST 1/2

- LCG ON SITE UTILIZING 1 WATER TRUCK TO WATER THE HAUL ROADS ON A FULL TIME BASIS

- LCG SURVEYOR ON SITE CHECKING AREA 1 EAST 1/2 BARRIER LAYER GRADES WITH GPS UNIT

8:15 CALLED TJA - GAVE HIM PROJECT UPDATE
- ALSO INFORMED HIM I TWISTED MY KNEE LAST WEEK SOMETIME - SORE OVER THE WEEKEND & ICED IT LAST NIGHT - DID NOT INFORM JM - TJA SAID TO WATCH IT & GO IN IF NEED BE

TROXLER 3440
S/N 22746
MS: 661
DS: 2644

LOCATION	LIFT	DD	WD	%M	%C
54	1	125.7	138.7	10.4	96.6
60		124.1	138.8	11.9	95.4
65		122.8	138.6	12.9	94.4
70		121.3	135.9	12.1	93.2
75		121.5	135.7	11.6	93.4
55		118.0	133.9	13.5	90.7
61		127.1	140.4	10.5	97.7
66		126.5	140.0	10.6	97.3
71		123.8	137.4	10.9	95.2
76		123.5	138.4	12.1	95.0
56		121.1	135.6	12.0	93.1
62		120.8	135.0	11.8	92.8
67		124.4	138.4	11.2	95.7
72		119.4	133.2	11.5	91.8
77	1	123.8	137.0	10.7	95.2

LOCATION	UNIT	DA	WA	% M	% C
83	2	118.5	132.0	11.4	91.0
90		126.4	141.3	11.8	97.2
94		126.0	140.3	11.4	96.8
99		122.2	136.2	11.4	93.9
~~104~~					
84		119.5	134.1	12.1	91.9
91		121.2	136.8	12.8	93.2
95		124.0	139.2	12.3	95.3
100		126.4	141.6	12.1	97.1
~~105~~					
96		121.5	135.5	11.5	93.4
101		120.6	135.5	12.3	92.7
~~106~~	2				

LOCATION	UNIT	DA	WA	% M	% C
110	3				
111					
116					
121					
126					
112					
117					
122					
127					
107					
113					
118					
123					
128					
108					
114					
119					
124					
129	3				

LOCATION	WET	DD	W/C	[illegible]	% C
109					
115					
120					
125					
130					

8:00 LANDSCAPING CONTRACTOR ON SITE TO START SEEDING
AREA 1 WEST CERTIFIED AREA

9:30 DENNY ASKED TO HAVE ADDITIONAL AREA SEEDED

10:30 CALLED TIM -
① HE WILL REVIEW LAKE MICHIGAN HISTORIC HIGH WATER LEVEL
② IF WE DID ANY COMAO WORK WE WOULD WORK UNDER [illegible] ARCHITECTURAL FIRM
③ WE COULD DO SURFACE WATER PLAN / MAKE SURE AREAS DRAIN

DON [illegible] ADVANCED [illegible]
11:05 [illegible] CLAY [illegible]
- CONTAMINATION FACTOR
362-0818
MEETING TOMORROW [illegible] [illegible] [illegible]

12:30 AREA 2 COVERED WITH CLAY

3:45 WALKED AREA 1 EAST 1/2 WITH JEFF -
IT LOOKS GOOD TO DOCUMENT ON THURSDAY

3:50 [illegible] ON SITE / SAW THE AREA 1 SURFACE
LOOKS GOOD

THUR. 9/25/08 64° - 79° SUNNY

6:40 CRB ARRIVED ON SITE TO DOCUMENT AREA 1 EAST 1/2 TOP of PROTECTIVE LAYER ELEVATIONS WITH LCG GPS UNIT

7:30 - DUSTIN ON SITE TO CONTINUE AREA 2 DENSITY TESTING

LCG ON SITE TO CONTINUE PROTECTIVE LAYER (OCAP) PLACEMENT ON AREA 2 WITH SCRAPERS, 2 DOZERS, AND 1 SHEEPSFOOT COMPACTOR

ROCK LANDSCAPING ON SITE TO CONTINUE PULVERIZING THE SURFACE / SEEDING / PLACING EROSION CONTROL MATTING ON AREA 1

8:00 - 12:00 DOCUMENTING AREA 1 W/ LCG GPS

12:00 - 1:00 REVIEWED AREA 1 SURVEY DATA

1:00 - 2:15 PROJECT MEETING

(46)

TROXLER 3440
S/N 22746
STANDARD COUNT
MD 662
DS 2642

LOCATION	LIFT	WD	DD	% M	% C
107	3	136.7	122.4	11.7	94.1
108		133.6	117.7	13.5	90.5
109		133.7	117.9	13.6	90.6
110 ~~110~~		136.0	119.9	13.4	92.2
111 ~~111~~		135.2	119.1	13.6	91.5
~~112~~		138.1	124.6	10.9	95.7
~~113~~					
~~					
110 ~~~~	3				

3:20 CALLED DAVE - GAGE NM PROJECT CHARGE

5:00 OFF SITE

FRI - 9/26/08 SUNNY 60 - 70

6:35 CRB ARRIVED ON SITE TO DOCUMENT CONSTRUCTION ACTIVITIES

- LAKE COUNTY GRADING ON SITE PLACING THE TOP LOOSE 6" LIFT OF PROTECTIVE LAYER MATERIAL ON AREA 2 WITH 3 SCRAPERS AND 2 DOZERS

- ROCK EXCAVATING ON SITE TO CONTINUE SEEDING AREA 1

7:45 JEFF POINTED OUT WASTE MATERIAL PUMPING OUT NEW DITCH AREA NORTH OF AREA 2

8:30 INFORMED DENNIS

8:45 GALE JEFF AREA 2 GRADE TABLE HARD COPY - THEY WERE EMAILED TO ROBERT PREVIOUSLY

9:00 LOOKED & WENT AREA NORTH OF AREA 2 WITH DENNIS & JEFF
- DENNIS STATED TO CAP IT WITH 2' OF CLAY & MOVE DITCH TO THE NORTH TO GO AROUND IT - KEEP TRACK OF TIME & CLAY FOR THEM

WET SPOT THAT PUMPED THROUGH (SLUDGE)
2084607.2N 1126390.9E 589.33

12:30 OFF SITE

MON 9/29/08 CLEAR 60°-65°

7:10 CRG ARRIVED ON SITE TO START DENSITY TESTING THE SETTLING BASIN CLAY PLACEMENT AND TOPO NUMEROUS PROJECT ITEMS

- LCG ON SITE GRADING AREA 2 WITH 1 JOHN DEERE 650 DOZER

9:?? LCG STARTED SETTLING BASIN CLAY PLACEMENT WITH 2 627 SCRAPERS AND 1 - DOZER

10:30 STARTED TO RAIN
10:45 - ROCK CONTRACTOR SHUT DOWN
11:00 LCG SHUT DOWN

SURVEY JOBS:

- JM SETTLING BASIN 9-29-08
 - TOPO OF SOUTH HAUL ROAD AREA, FROM SAND BY SETTLEMENT PLATES TO TOE OF SOUTH BERM

- JM STOCKPILE TOPO 9-29-08
 - TOPO OF CLAY STOCKPILE EAST OF EAST ACCESS ROAD AFTER AREA 1, 2, AND THE AREA NORTH OF AREA 2 WAS COMPLETED / PRIOR TO SETTLING BASIN CLAY PLACEMENT

- JM AREA 1 TOPO 9-29-08
 - TOPO OF TOE AREA AND BREAKLINE SO PAT CAN LAYOUT PROPOSED ACCESS ROAD - THIS JOB IS NOT DONE - STARTED TO RAIN!

TUES. 9/30/08 50-65° CLEAR

6:30 CRG ARRIVED ON SITE TO DOCUMENT/ TEST SETTLING BASIN CLAY PLACEMENT

- SITE IS WET & MUDDY FROM LAST NIGHT RAINS
- JEM STATED LCG NOT WORKING TODAY DUE TO WET SITE CONDITIONS

- CRG WILL DO WALKING SURVEYING TODAY

9:00 MET W/ GREG FROM RYAN CENTRAL TO DISCUSS MH IN SETTLING BASIN

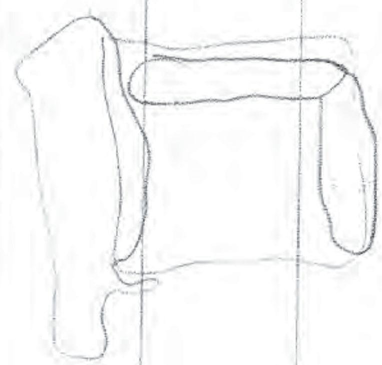
- LANDSCAPERS ON SITE WORKING ON AREA & SEEDING

WAUKEGAN PLANT SURVEY

SURVEY JOBS:

IN SETTLING BASIN 9-30-08

- TOPO FOR SOUTH CRUSHED CONCRETE, EAST CRUSHED CONCRETE, NORTH CRUSHED CONCRETE AREA - WEST SCALE AREA, WEST SEEDING AREA



2:45 OFF SITE

TO DO PAPER WORK

WED. 10/1/08 44° - 58° CLOUDY

6:40 CRG ARRIVED ON SITE TO DOCUMENT / DENSITY TEST, IF ENOUGH MATERIAL IS PLACED, FOR THE SETTLING BASIN

7:00 LCB ON SITE GRADING AREA 2 WITH A JOHN DEERE 850 DOZER

LCB ALSO ON SITE PLACING CLAY ON THE SETTLING BASIN WITH 4 - 627 SCRAPERS AND 1 - JOHN DEERE 750 DOZER STARTING IN THE SW CORNER

- CRG ALSO ON SITE TO SURVEY NUMEROUS ITEMS: 1. STAKE AREA 1 PROFILE & ACCESS ROAD
2. FINISH AREA 1 TOPO
3. START AREA 2 DOC. SURVEY

1 - CAT 815 SHEEPSFOOT COMPACTOR
4 - CAT 627 SCRAPERS
1 - JOHN DEERE 750 DOZER

SURVEY JOBS: JM AREA 1 TOPO 10-1-08

EAST STOCKPILE ORIGINAL VOLUME
127,595 CY
102,479 CY CUT (AREA 1+2)

25,116 CY REMAINING

AREA 1 DESIGN PROTECTIVE LAYER
51,700 CY

AREA 2
21,925 CY

73,625 CY

9:30: SPOKE W/ DALE ABOUT SETTLING BASIN PROCTOR
- USE 90% STANDARD PROCTOR

11:00 PROJECT MEETING
12:00 CALLED TJA FOR PROJECT UPDATE

SETTLING BASIN

TROXLER 3440
S/N 22746
STANDARD C[illegible]
MI - 665
DS: 2621

PROCTOR = 121.0 CM.L CAT.

1245 HAVE GAGE AND SPEC.

SPEC. = 90% STANDARD PROCTOR / NO MOISTURE SPEC.
8" COMPACTED LIFT
7" COMPACTED LIFT
= 15" COMPACTED CLAY THICKNESS

LOCATION	LIFT	WD	DD	% M	% C
1	1 (8")	137.9	126.3	9.2	100
2	2 (15")	134.0	117.2	14.3	96.8
127	1	139.8	125.4	11.5	100.0
3	2	134.8	118.8	13.4	98.2
128	1	138.3	125.6	10.2	100
	2				
4		123.9	108.9	13.7	90.0
5		138.9	124.5	11.6	100.0

2:20 CALLED PAT / [illegible]
- RAN SCRAPER ON FIRST 100' THEN RAN COMPACTOR

2:30 4 SCRAPERS SHUT DOWN

- SCREENED 5 MIL MULCH SOIL AREA 1 & SCREENED 1 MIL ON AREA 2

3:40 OFF SITE

0 - AREA 1 TOPO
1 - AREA 1 & 2 MIL AS-BUILT SCREEN
3 4 - DENSITY TEST SETTLING BASIN
- AREA 1 ROAD LAYOUT

THUR | OCTOBER 2, 2008 CLOUDY 45° - 65°

6:45 CBS ARRIVED ON SITE TO ACCURATELY AREA 2 PROTECTIVE LAYER W/ GPS UNIT

7:00 - 11:00 ACCURATELY GRADE TAKE POINTS ON AREA 2

LLB ON SITE GRADING WITHIN AREA 2 LIMITS OF WASTE WITH A JOHN DEERE 750 DOZER

- PERIMETER DRAINAGE CHANNEL TO WET TO COMPLETE GRADING

- CBS WILL DOCUMENT BREAK LINES / WITHIN LIMITS OF WASTE MONDAY WHEN EVERYTHING IS COMPLETE

11:20 STAKED GCL LIMITS TO VERIFY & DITCH IS OVER GCL - OK

11:30 SCREENED AREA 1 ACCESS RAMP ON N. SIDE

51

SCREEN JOBS: JM AREA 2 DOC 10-2-08
JM AREA 1 RAMP TOPO 10-2-08

CARMONY

MONDAY PM [illegible]

12:30 OFF SITE

MON 10/6/08 58° - 68° CLOUDY

7:40 CEB ARRIVED ON SITE TO SCREEN AREA 2 AS-BUILT AND DENSITY TEST SETTLING BASIN CLAY PLACEMENT

- LCG ON SITE PLACING CLAY ON THE SETTLING BASIN SOUTH END WITH 4 - CATERPILLAR 627 SCRAPERS AND 1 JOHN DEERE 750 DOZER.

ROCK ENTERPRIZE LANDSCAPING CONTRACTOR ON SITE COMPLETING AREA 2 SEEDING, FERTILIZING, AND PLACEMENT OF EROSION CONTROL MATTING

10:45 SPOKE W/ DAVE ABOUT EXISTING DITCH WEST OF BATT HALL ROAD BY AREA 2 - HE WILL LOOK @ IT

SCREEN JB JM AREA 2 TOPO 10-6-08
AREA 2 TOPO AND EAST CHANNEL AS-BUILT SCREEN

Appendix I

Photographs

Photograph No. 1 August 20, 2008
Photographer: Chris R. Goffard Signature:
A John Deere 3500 backhoe was utilized to excavate excess barrier layer material on Area 2 Final Cover. Viewing northeast.

Photograph No. 2 August 20, 2008
Photographer: Chris R. Goffard Signature:
A Caterpillar 825C sheepsfoot compactor was utilized to compact the barrier layer material on Area 1 Final Cover. Viewing northeast.

Photograph No. 3 August 20, 2008
Photographer: Chris R. Goffard Signature: Chris R. Goffard
Adding moisture to the barrier layer material prior to compaction on Area 1 Final Cover. Viewing south.

Photograph No. 4 August 26, 2008
Photographer: Chris R. Goffard Signature: Chris R. Goffard
Grading and compaction of barrier layer material on Area 2 Final Cover. Viewing east.

Photograph No. 5 August 21, 2008
Photographer: Chris R. Goffard Signature:
Barrier layer surface complete on the west half of Area 1 Final Cover. Viewing west.

Photograph No. 6 August 26, 2008
Photographer: Chris R. Goffard Signature:
Sand drainage layer material placement on Area 1 Final Cover. Viewing east.

Photograph No. 7 August 26, 2008
Photographer: Chris R. Goffard Signature: Chris R. Goffard
A Caterpillar 312B backhoe was utilized to place sand drainage layer material over the perimeter 4-inch collection pipe on Area 1 Final Cover. Viewing west.

Photograph No. 8 August 26, 2008
Photographer: Chris R. Goffard Signature: Chris R. Goffard
Grading and compaction of barrier layer material on Area 2 Final Cover. Viewing south.

Photograph No. 9 August 27, 2008
Photographer: Chris R. Goffard Signature: Chris R. Goffard
A John Deere 850 dozer was utilized to grade sand drainage layer material on Area 1 Final Cover. Viewing south.

Photograph No. 10 August 28, 2008
Photographer: Chris R. Goffard Signature: Chris R. Goffard
A Bomag smooth drum roller was utilized to prepare the surface prior to sand drainage layer placement on Area 2 Final Cover. Viewing north.

Photograph No. 11 August 29, 2008
Photographer: Chris R. Goffard Signature:
A Caterpillar 312B backhoe was utilized to place sand drainage layer material over the perimeter 4-inch collection pipe on Area 2 final cover. Viewing north.

Photograph No. 12 August 29, 2008
Photographer: Chris R. Goffard Signature:
Placement of GCL material along with 4-inch collection pipe in the Area 2 Final Cover west swale. Viewing north.

Photograph No. 13 September 2, 2008
Photographer: Chris R. Goffard Signature: Chris R. Goffard
A John Deere 850 dozer was utilized to grade sand drainage layer material on Area 2 Final Cover. Viewing west.

Photograph No. 14 September 11, 2008
Photographer: Chris R. Goffard Signature: Chris R. Goffard
Sand drainage layer placement complete on Area 2 Final Cover. Viewing southeast.

Photograph No. 15 September 11, 2008
Photographer: Chris R. Goffard Signature: Chris R. Goffard
A Caterpillar 825C sheepsfoot compactor was utilized to compact the protective layer material on Area 1 Final Cover. Viewing east.

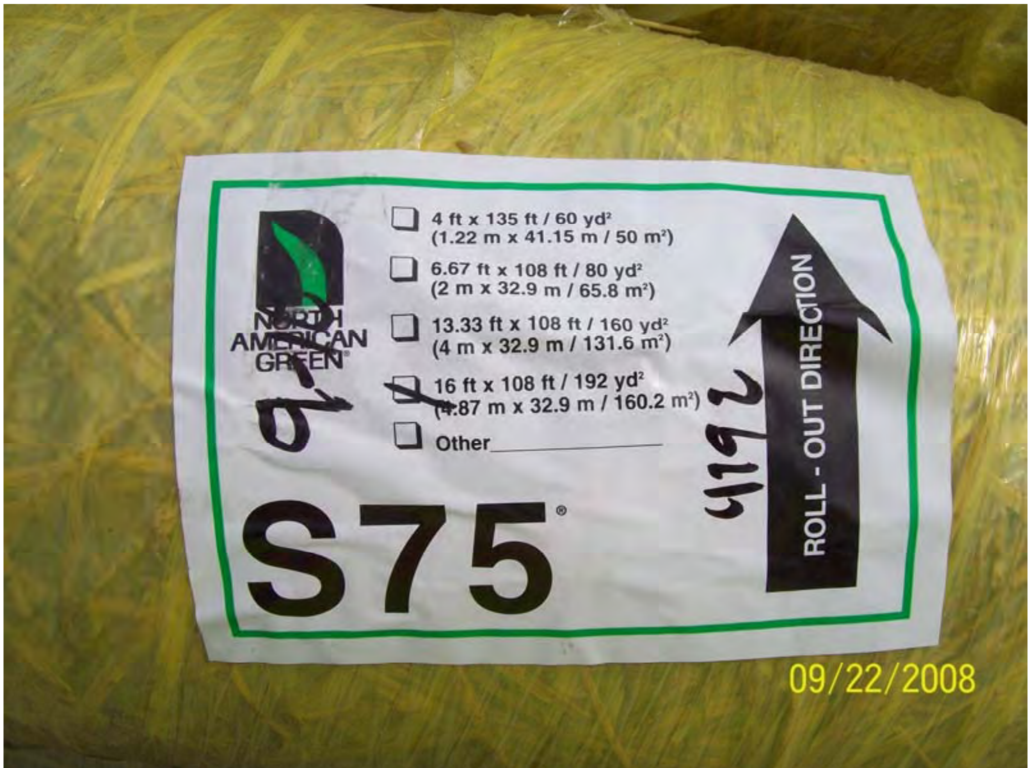
Photograph No. 16 September 11, 2008
Photographer: Chris R. Goffard Signature: Chris R. Goffard
A Troxler model 3440 nuclear density gauge was utilized for determining in-place density and moisture content. Each protective layer penetration was backfilled with granular bentonite. Viewing west.

Photograph No. 17 September 11, 2008
Photographer: Chris R. Goffard Signature: Chris R. Goffard
Placement of protective layer material on Area 1 Final Cover utilizing Caterpillar 627 scrapers. Viewing east.

Photograph No. 18 September 22, 2008
Photographer: Chris R. Goffard Signature: Chris R. Goffard
A John Deere 850 dozer equipped with a GPS unit was utilized to grade the protective layer material on Area 1 Final Cover. Viewing west.

Photograph No. 19 September 23, 2008
Photographer: Chris R. Goffard Signature:
Placement of protective layer material on Area 2 Final Cover utilizing Caterpillar 627 scrapers. Viewing east.

Photograph No. 20 September 24, 2008
Photographer: Chris R. Goffard Signature:
Seed mixture utilized on Area 1 and Area 2 Final Cover.



Photograph No. 21 September 22, 2008
Photographer: Chris R. Goffard Signature: Chris R. Goffard
Erosion control matting utilized on Area 1 and Area 2 Final Cover.

Photograph No. 22 September 25, 2008
Photographer: Chris R. Goffard Signature: Chris R. Goffard
Scarifying the surface prior to seeding on Area 1 Final Cover. Viewing west.

Photograph No. 23 September 25, 2008
Photographer: Chris R. Goffard Signature: Chris R. Goffard
Placement of erosion control matting on Area 1 Final Cover. Viewing west.

Photograph No. 24 October 6, 2008
Photographer: Chris R. Goffard Signature: Chris R. Goffard
Seeding complete for the CERCLA Cap east channel located east of Area 2 Final Cover. Viewing north.

Photograph No. 25 October 15, 2008
Photographer: Chris R. Goffard Signature:
Seeding complete on Area 1 Final Cover. Viewing west.

Photograph No. 26 October 22, 2008
Photographer: Chris R. Goffard Signature:
Seeding complete on Area 2 Final Cover. Viewing east.

Photograph No. 27 November 4, 2008
Photographer: Chris R. Goffard Signature: Chris R. Goffard
Placement of woven geotextile on the access road for Area 1 Final Cover. Viewing west.

Photograph No. 28 November 4, 2008
Photographer: Chris R. Goffard Signature: Chris R. Goffard
Placement of CA6 aggregate material on the access road for Area 1 Final Cover. Viewing west.

Photograph No. 29 November 11, 2008
Photographer: Chris R. Goffard Signature: Chris R. Goffard
Access road complete on Area 1 Final Cover. Viewing east.

Photograph No. 30 November 11, 2008
Photographer: Chris R. Goffard Signature: Chris R. Goffard
Access road complete between Area 1 and Area 2 Final Cover. Viewing east.

Photo 1	
Date: August 2005	
Site: JM Waukegan	
Project: On-Site Landfill	
Direction Facing: West	OSL status before capping commenced.

Photo 2	
Date: September 2005	
Site: JM Waukegan	
Project: On-Site Landfill	
Direction Facing: NW	OSL status before capping commenced.

Photo 3	
Date: 09/02/08	
Site: JM Waukegan	
Project: On-Site Landfill	
Direction Facing: North	OSL capping progress.

Photo 4	
Date: November 2008	
Site: JM Waukegan	
Project: On-Site Landfill	
Direction Facing: East	OSL capping work completed, vegetative cover established.

Appendix J

Sand Data Validation Summaries

Laboratory Report Data Review - QC Review Checklist

Laboratory Report ID:	**040515950**		
Laboratory Name:	EMSL Analytical, Inc.	Report Package Date:	8/22/2005
Project Name:	Johns Manville	Review Date:	1/29/2018
Project Number:	009-07992-00-001		
Reviewer Name:	Eric Thomas/Matt Kyrias		
Parameters:	Asbestos		
Method IDs:	EPA 600/R-93/116		
Matrix:	Solids		

***Attach copy of lab report showing sample IDs and corresponding lab IDs (Att 1)**	**Yes**	**No**	**N/A**	**Comment**
Report Completeness & Sample Log-In Condition				
1 Was a signature page with appropriate authority signature provided?	X			
2 Was there a case narrative noting all known problems or anomolies?			X	
3 Were all samples received under chain-of-custody (seals used) and within appropriate temperature?	X			
4 Were all departures from standard conditions narrated (i.e., preservation acceptable, no headspace)?	X			
5 Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X			
6 Are all laboratory ID numbers cross-referenced to the corresponding QC data (batch IDs provided)?			X	
7 Were reference methods provided and cited appropriately?	X			
8 Were samples prepared and analyzed within holding times?	X			
Date Collected: 8/17/2005 Date Received: 8/18/2005				
9 Were all soil results reported on a dry-weight basis?			X	
10 Was a percent moisture result reported for all soil and sediment samples?			X	
11 Is there a QAPP or SAP available as a reference for the project performed?	X			
12 Are non-detects identified as ND at RL with a "U", or other?	X			
13 Are laboratory flags defined?			X	
Laboratory Method Blanks and Trip Blanks				
1 Were appropriate types of laboratory method blanks analyzed?	X			
2 Was the method blank free of contamination (i.e., less than the MDL or RL)?	X			
3 Did the method blank contamination affect the final results? If so, note on page 2.			X	
4 Was a trip blank required and submitted with the samples?			X	
5 Was the trip blank free of contamination (i.e., less than the MDL or RL)?			X	
6 Did the trip blank contamination affect the final results? If so, note on page 2.			X	
Surrogates				
1 Were surrogates added prior to extraction for all appropriate methods?			X	
2 Were surrogate percent recoveries within laboratory control limits?			X	
3 Did the surrogate percent recoveries affect the final results? If so, note on page 2.			X	
Laboratory Control Samples				
1 Were LCS performed for all appropriate methods?			X	
2 Were LCS percent recoveries within laboratory control limits?			X	
3 Did the LCS percent recoveries affect the final results? If so, note on page 2.			X	
4 Were the LCS/LCSD RPD values within laboratory control limits?			X	
Matrix Spikes				
1 Were MS/MSDs performed on a project sample selected by the laboratory?			X	
Sample used/methods:				
2 Were MS/MSD percent recoveries within laboratory control limits?			X	
3 Did the MS/MSD percent recoveries affect the final results? If yes, note in Comment seciton.			X	
4 Were the MS/MSD RPD values within laboratory control limits?			X	
Field and Laboratory Duplicates				
1 Was a field duplicate submitted with this SDG?		X		
Field Duplicate ID:				
2 Was the RPD values less than review criteria?			X	
3 Did the field duplicate RPD results affect the final results? If so, note in Comments section.			X	

Comments

Comment No.	***Description (data usability; note any estimated and/or rejected data):***
1	**Field duplicates were submitted for this field sampling program per the required QAPP frequency.**
2	
3	
4	
5	
6	

Signature of Validator:	
Signature of Senior Review:	

****Attachment 1: Cross-reference of field IDs with Laboratory IDs.***

*****Attachment 2: Final results from the database***

Laboratory Report Data Review - QC Review Checklist

		Laboratory Report ID:	**5-2529**
Laboratory Name:	First Environmental Laboratories, Inc.	Report Package Date:	8/24/2005
Project Name:	Johns Manville	Review Date:	1/29/2018
Project Number:	009-07992-00-001		
Reviewer Name:	Eric Thomas/Matt Kyrias		
Parameters:	VOC's, SVOC's, RCRA Metals, pH, Pesticides, PCBs		
Method IDs:	160.3, 7470A, 5035A/8260B, 6010B-3050B, 8270C-3540C, 8081A/8082-		
Matrix:	Solids		

***Attach copy of lab report showing sample IDs and corresponding lab IDs (Att 1)**	**Yes**	**No**	**N/A**	**Comment**
Report Completeness & Sample Log-In Condition				
1 Was a signature page with appropriate authority signature provided?	X			
2 Was there a case narrative noting all known problems or anomolies?	X			
3 Were all samples received under chain-of-custody (seals used) and within appropriate temperature?	X			
4 Were all departures from standard conditions narrated (i.e., preservation acceptable, no headspace)?	X			
5 Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X			
6 Are all laboratory ID numbers cross-referenced to the corresponding QC data (batch IDs provided)?			X	
7 Were reference methods provided and cited appropriately?	X			
8 Were samples prepared and analyzed within holding times?	X			
Date Collected: 8/17/2005 Date Received: 8/17/2005				
9 Were all soil results reported on a dry-weight basis?	X			
10 Was a percent moisture result reported for all soil and sediment samples?	X			
11 Is there a QAPP or SAP available as a reference for the project performed?	X			
12 Are non-detects identified as ND at RL with a "U", or other?	X			
13 Are laboratory flags defined?			X	
Laboratory Method Blanks and Trip Blanks				
1 Were appropriate types of laboratory method blanks analyzed?	X			
2 Was the method blank free of contamination (i.e., less than the MDL or RL)?	X			
3 Did the method blank contamination affect the final results? If so, note on page 2.			X	
4 Was a trip blank required and submitted with the samples?			X	
5 Was the trip blank free of contamination (i.e., less than the MDL or RL)?			X	
6 Did the trip blank contamination affect the final results? If so, note on page 2.			X	
Surrogates				
1 Were surrogates added prior to extraction for all appropriate methods?			X	
2 Were surrogate percent recoveries within laboratory control limits?			X	
3 Did the surrogate percent recoveries affect the final results? If so, note on page 2.			X	
Laboratory Control Samples				
1 Were LCS performed for all appropriate methods?			X	
2 Were LCS percent recoveries within laboratory control limits?			X	
3 Did the LCS percent recoveries affect the final results? If so, note on page 2.			X	
4 Were the LCS/LCSD RPD values within laboratory control limits?			X	
Matrix Spikes				
1 Were MS/MSDs performed on a project sample selected by the laboratory?			X	
Sample used/methods:				
2 Were MS/MSD percent recoveries within laboratory control limits?			X	
3 Did the MS/MSD percent recoveries affect the final results? If yes, note in Comment seciton.			X	
4 Were the MS/MSD RPD values within laboratory control limits?			X	
Field and Laboratory Duplicates				
1 Was a field duplicate submitted with this SDG?		X		
Field Duplicate ID:				
2 Was the RPD values less than review criteria?			X	
3 Did the field duplicate RPD results affect the final results? If so, note in Comments section.			X	

Comments

Comment No.	***Description (data usability; note any estimated and/or rejected data):***
1	**Field duplicates were submitted for this field sampling program per the required QAPP frequency.**
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Signature of Validator:	
Signature of Senior Review:	

***Attachment 1: Cross-reference of field IDs with Laboratory IDs.**

****Attachment 2: Final results from the database**

Laboratory Report Data Review - QC Review Checklist

Laboratory Report ID:			**040516267**			
Laboratory Name:	EMSL Analytical, Inc.		Report Package Date:			8/24/2005
Project Name:	Johns Manville		Review Date:			1/29/2018
Project Number:	009-07992-00-001					
Reviewer Name:	Eric Thomas/Matt Kyrias					
Parameters:	Asbestos					
Method IDs:	EPA 600/R-93/116					
Matrix:	Solids					

***Attach copy of lab report showing sample IDs and corresponding lab IDs (Att 1)**	**Yes**	**No**	**N/A**	**Comment**
Report Completeness & Sample Log-In Condition				
1 Was a signature page with appropriate authority signature provided?	X			
2 Was there a case narrative noting all known problems or anomolies?	X			
3 Were all samples received under chain-of-custody (seals used) and within appropriate temperature?	X			
4 Were all departures from standard conditions narrated (i.e., preservation acceptable, no headspace)?	X			
5 Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X			
6 Are all laboratory ID numbers cross-referenced to the corresponding QC data (batch IDs provided)?			X	
7 Were reference methods provided and cited appropriately?	X			
8 Were samples prepared and analyzed within holding times?	X			
Date Collected: 8/22/2005 Date Received: 8/23/2005				
9 Were all soil results reported on a dry-weight basis?			X	
10 Was a percent moisture result reported for all soil and sediment samples?			X	
11 Is there a QAPP or SAP available as a reference for the project performed?	X			
12 Are non-detects identified as ND at RL with a "U", or other?	X			
13 Are laboratory flags defined?			X	
Laboratory Method Blanks and Trip Blanks				
1 Were appropriate types of laboratory method blanks analyzed?	X			
2 Was the method blank free of contamination (i.e., less than the MDL or RL)?	X			
3 Did the method blank contamination affect the final results? If so, note on page 2.			X	
4 Was a trip blank required and submitted with the samples?			X	
5 Was the trip blank free of contamination (i.e., less than the MDL or RL)?			X	
6 Did the trip blank contamination affect the final results? If so, note on page 2.			X	
Surrogates				
1 Were surrogates added prior to extraction for all appropriate methods?			X	
2 Were surrogate percent recoveries within laboratory control limits?			X	
3 Did the surrogate percent recoveries affect the final results? If so, note on page 2.			X	
Laboratory Control Samples				
1 Were LCS performed for all appropriate methods?			X	
2 Were LCS percent recoveries within laboratory control limits?			X	
3 Did the LCS percent recoveries affect the final results? If so, note on page 2.			X	
4 Were the LCS/LCSD RPD values within laboratory control limits?			X	
Matrix Spikes				
1 Were MS/MSDs performed on a project sample selected by the laboratory?			X	
Sample used/methods:				
2 Were MS/MSD percent recoveries within laboratory control limits?			X	
3 Did the MS/MSD percent recoveries affect the final results? If yes, note in Comment seciton.			X	
4 Were the MS/MSD RPD values within laboratory control limits?			X	
Field and Laboratory Duplicates				
1 Was a field duplicate submitted with this SDG?		X		
Field Duplicate ID:				
2 Was the RPD values less than review criteria?			X	
3 Did the field duplicate RPD results affect the final results? If so, note in Comments section.			X	

Comments

Comment No.	***Description (data usability; note any estimated and/or rejected data):***
1	**Field duplicates were submitted for this field sampling program per the required QAPP frequency.**
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Signature of Validator:	
Signature of Senior Review:	

***Attachment 1: Cross-reference of field IDs with Laboratory IDs.**

****Attachment 2: Final results from the database**

Laboratory Report Data Review - QC Review Checklist

	Laboratory Report ID:	**5-2613**	
Laboratory Name:	First Environmental Laboratories, Inc.	Report Package Date:	8/25/2005
Project Name:	Johns Manville	Review Date:	1/29/2018
Project Number:	009-07992-00-001		
Reviewer Name:	Eric Thomas/Matt Kyrias		
Parameters:	VOC's, SVOC's, RCRA Metals, Antimony, pH, Pesticides, PCBs		
Method IDs:	160.3, 5035A/8260B, 8270C-3540C, 8081A/8082-3540C, 7470A, 6010B-		
Matrix:	Solids		

***Attach copy of lab report showing sample IDs and corresponding lab IDs (Att 1)**	**Yes**	**No**	**N/A**	**Comment**
Report Completeness & Sample Log-In Condition				
1 Was a signature page with appropriate authority signature provided?	X			
2 Was there a case narrative noting all known problems or anomolies?	X			
3 Were all samples received under chain-of-custody (seals used) and within appropriate temperature?	X			
4 Were all departures from standard conditions narrated (i.e., preservation acceptable, no headspace)?	X			
5 Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X			
6 Are all laboratory ID numbers cross-referenced to the corresponding QC data (batch IDs provided)?			X	
7 Were reference methods provided and cited appropriately?	X			
8 Were samples prepared and analyzed within holding times?	X			
Date Collected: 8/22/2005 Date Received: 8/22/2005				
9 Were all soil results reported on a dry-weight basis?	X			
10 Was a percent moisture result reported for all soil and sediment samples?	X			
11 Is there a QAPP or SAP available as a reference for the project performed?	X			
12 Are non-detects identified as ND at RL with a "U", or other?	X			
13 Are laboratory flags defined?		X		
Laboratory Method Blanks and Trip Blanks				
1 Were appropriate types of laboratory method blanks analyzed?	X			
2 Was the method blank free of contamination (i.e., less than the MDL or RL)?	X			
3 Did the method blank contamination affect the final results? If so, note on page 2.			X	
4 Was a trip blank required and submitted with the samples?			X	
5 Was the trip blank free of contamination (i.e., less than the MDL or RL)?			X	
6 Did the trip blank contamination affect the final results? If so, note on page 2.			X	
Surrogates				
1 Were surrogates added prior to extraction for all appropriate methods?	X			
2 Were surrogate percent recoveries within laboratory control limits?	X			
3 Did the surrogate percent recoveries affect the final results? If so, note on page 2.			X	
Laboratory Control Samples				
1 Were LCS performed for all appropriate methods?			X	
2 Were LCS percent recoveries within laboratory control limits?			X	
3 Did the LCS percent recoveries affect the final results? If so, note on page 2.			X	
4 Were the LCS/LCSD RPD values within laboratory control limits?			X	
Matrix Spikes				
1 Were MS/MSDs performed on a project sample selected by the laboratory?			X	
Sample used/methods:				
2 Were MS/MSD percent recoveries within laboratory control limits?			X	
3 Did the MS/MSD percent recoveries affect the final results? If yes, note in Comment seciton.			X	
4 Were the MS/MSD RPD values within laboratory control limits?			X	
Field and Laboratory Duplicates				
1 Was a field duplicate submitted with this SDG?		X		
Field Duplicate ID:				
2 Was the RPD values less than review criteria?			X	
3 Did the field duplicate RPD results affect the final results? If so, note in Comments section.			X	

Comments

Comment No.	***Description (data usability; note any estimated and/or rejected data):***
1	**Field duplicates were submitted for this field sampling program per the required QAPP frequency.**
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Signature of Validator:	Eric Thomas
Signature of Senior Review:	

Attachment 1: Cross-reference of field IDs with Laboratory IDs.

****Attachment 2: Final results from the database***

Laboratory Report Data Review - QC Review Checklist

Laboratory Report ID:		**040608086**			
Laboratory Name:	EMSL Analytical, Inc.	Report Package Date:			5/5/06
Project Name:	Johns Manville	Review Date:			1/29/2018
Project Number:	009-07992-00-001				
Reviewer Name:	Eric Thomas/Matt Kyrias				
Parameters:	Asbestos				
Method IDs:	EPA 600/R-93/116				
Matrix:	Solids				

***Attach copy of lab report showing sample IDs and corresponding lab IDs (Att 1)**	**Yes**	**No**	**N/A**	**Comment**
Report Completeness & Sample Log-In Condition				
1 Was a signature page with appropriate authority signature provided?	X			
2 Was there a case narrative noting all known problems or anomolies?			X	
3 Were all samples received under chain-of-custody (seals used) and within appropriate temperature?	X			
4 Were all departures from standard conditions narrated (i.e., preservation acceptable, no headspace)?	X			
5 Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X			
6 Are all laboratory ID numbers cross-referenced to the corresponding QC data (batch IDs provided)?			X	
7 Were reference methods provided and cited appropriately?	X			
8 Were samples prepared and analyzed within holding times?	X			
Date Collected: 4/27/2006 Date Received: 4/28/2006				
9 Were all soil results reported on a dry-weight basis?			X	
10 Was a percent moisture result reported for all soil and sediment samples?			X	
11 Is there a QAPP or SAP available as a reference for the project performed?	X			
12 Are non-detects identified as ND at RL with a "U", or other?	X			
13 Are laboratory flags defined?			X	
Laboratory Method Blanks and Trip Blanks				
1 Were appropriate types of laboratory method blanks analyzed?	X			
2 Was the method blank free of contamination (i.e., less than the MDL or RL)?	X			
3 Did the method blank contamination affect the final results? If so, note on page 2.			X	
4 Was a trip blank required and submitted with the samples?			X	
5 Was the trip blank free of contamination (i.e., less than the MDL or RL)?			X	
6 Did the trip blank contamination affect the final results? If so, note on page 2.			X	
Surrogates				
1 Were surrogates added prior to extraction for all appropriate methods?			X	
2 Were surrogate percent recoveries within laboratory control limits?			X	
3 Did the surrogate percent recoveries affect the final results? If so, note on page 2.			X	
Laboratory Control Samples				
1 Were LCS performed for all appropriate methods?			X	
2 Were LCS percent recoveries within laboratory control limits?			X	
3 Did the LCS percent recoveries affect the final results? If so, note on page 2.			X	
4 Were the LCS/LCSD RPD values within laboratory control limits?			X	
Matrix Spikes				
1 Were MS/MSDs performed on a project sample selected by the laboratory?			X	
Sample used/methods:				
2 Were MS/MSD percent recoveries within laboratory control limits?			X	
3 Did the MS/MSD percent recoveries affect the final results? If yes, note in Comment seciton.			X	
4 Were the MS/MSD RPD values within laboratory control limits?			X	
Field and Laboratory Duplicates				
1 Was a field duplicate submitted with this SDG?		X		
Field Duplicate ID:				
2 Was the RPD values less than review criteria?			X	
3 Did the field duplicate RPD results affect the final results? If so, note in Comments section.			X	

Comments

Comment No.	***Description (data usability; note any estimated and/or rejected data):***
1	**Field duplicates were submitted for this field sampling program per the required QAPP frequency.**
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Signature of Validator:	Eric Thomas
Signature of Senior Review:	Tat Elithara

Attachment 1: Cross-reference of field IDs with Laboratory IDs.
****Attachment 2: Final results from the database***

Laboratory Report Data Review - QC Review Checklist

	Laboratory Report ID:	**6-1778**			
Laboratory Name:	First Environmental Laboratories, Inc.	Report Package Date:			5/8/06
Project Name:	Johns Manville	Review Date:			1/29/2018
Project Number:	009-07992-00-001				
Reviewer Name:	Eric Thomas/Matt Kyrias				
Parameters:	VOC's, SVOC's, RCRA Metals, Antimony, pH, Pesticides, PCBs				
Method IDs:	160.3, 5035A/8260B, 8270C, 8081A/8082, 7470A, 6010B, 4500H+B				
Matrix:	Solids				

***Attach copy of lab report showing sample IDs and corresponding lab IDs (Att 1)**	**Yes**	**No**	**N/A**	**Comment**
Report Completeness & Sample Log-In Condition				
1 Was a signature page with appropriate authority signature provided?	X			
2 Was there a case narrative noting all known problems or anomolies?	X			
3 Were all samples received under chain-of-custody (seals used) and within appropriate temperature?	X			
4 Were all departures from standard conditions narrated (i.e., preservation acceptable, no headspace)?	X			
5 Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X			
6 Are all laboratory ID numbers cross-referenced to the corresponding QC data (batch IDs provided)?			X	
7 Were reference methods provided and cited appropriately?	X			
8 Were samples prepared and analyzed within holding times?	X			
Date Collected: 4/26/2006 Date Received: 4/27/2006				
9 Were all soil results reported on a dry-weight basis?	X			
10 Was a percent moisture result reported for all soil and sediment samples?	X			
11 Is there a QAPP or SAP available as a reference for the project performed?	X			
12 Are non-detects identified as ND at RL with a "U", or other?	X			
13 Are laboratory flags defined?		X		
Laboratory Method Blanks and Trip Blanks				
1 Were appropriate types of laboratory method blanks analyzed?	X			
2 Was the method blank free of contamination (i.e., less than the MDL or RL)?	X			
3 Did the method blank contamination affect the final results? If so, note on page 2.			X	
4 Was a trip blank required and submitted with the samples?			X	
5 Was the trip blank free of contamination (i.e., less than the MDL or RL)?			X	
6 Did the trip blank contamination affect the final results? If so, note on page 2.			X	
Surrogates				
1 Were surrogates added prior to extraction for all appropriate methods?	X			
2 Were surrogate percent recoveries within laboratory control limits?	X			
3 Did the surrogate percent recoveries affect the final results? If so, note on page 2.		X		
Laboratory Control Samples				
1 Were LCS performed for all appropriate methods?			X	
2 Were LCS percent recoveries within laboratory control limits?			X	
3 Did the LCS percent recoveries affect the final results? If so, note on page 2.			X	
4 Were the LCS/LCSD RPD values within laboratory control limits?			X	
Matrix Spikes				
1 Were MS/MSDs performed on a project sample selected by the laboratory?			X	
Sample used/methods:				
2 Were MS/MSD percent recoveries within laboratory control limits?			X	
3 Did the MS/MSD percent recoveries affect the final results? If yes, note in Comment seciton.			X	
4 Were the MS/MSD RPD values within laboratory control limits?			X	
Field and Laboratory Duplicates				
1 Was a field duplicate submitted with this SDG?	X			
Field Duplicate ID: DUP-1				
2 Was the RPD values less than review criteria?	X			
3 Did the field duplicate RPD results affect the final results? If so, note in Comments section.		X		

Comments

Comment No.	***Description (data usability; note any estimated and/or rejected data):***
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Signature of Validator:	Eric Thomas
Signature of Senior Review:	Tat Ebihara

****Attachment 1: Cross-reference of field IDs with Laboratory IDs.***

*****Attachment 2: Final results from the database***

Laboratory Report Data Review - QC Review Checklist

	Laboratory Report ID:	**040511079**	
Laboratory Name:	EMSL Analytical, Inc.	Report Package Date:	6/30/05
Project Name:	Johns Manville	Review Date:	1/29/2018
Project Number:	009-07992-00-001		
Reviewer Name:	Eric Thomas/Matt Kyrias		
Parameters:	Asbestos		
Method IDs:	EPA 600/R-93/116		
Matrix:	Solids		

***Attach copy of lab report showing sample IDs and corresponding lab IDs (Att 1)**	**Yes**	**No**	**N/A**	**Comment**
Report Completeness & Sample Log-In Condition				
1 Was a signature page with appropriate authority signature provided?		X		**Fax copy**
2 Was there a case narrative noting all known problems or anomolies?			X	
3 Were all samples received under chain-of-custody (seals used) and within appropriate temperature?	X			
4 Were all departures from standard conditions narrated (i.e., preservation acceptable, no headspace)?	X			
5 Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X			
6 Are all laboratory ID numbers cross-referenced to the corresponding QC data (batch IDs provided)?			X	
7 Were reference methods provided and cited appropriately?	X			
8 Were samples prepared and analyzed within holding times?	X			
Date Collected: 6/22/2005 Date Received: 6/30/2005				
9 Were all soil results reported on a dry-weight basis?			X	
10 Was a percent moisture result reported for all soil and sediment samples?			X	
11 Is there a QAPP or SAP available as a reference for the project performed?	X			
12 Are non-detects identified as ND at RL with a "U", or other?	X			
13 Are laboratory flags defined?			X	
Laboratory Method Blanks and Trip Blanks				
1 Were appropriate types of laboratory method blanks analyzed?	X			
2 Was the method blank free of contamination (i.e., less than the MDL or RL)?	X			
3 Did the method blank contamination affect the final results? If so, note on page 2.			X	
4 Was a trip blank required and submitted with the samples?			X	
5 Was the trip blank free of contamination (i.e., less than the MDL or RL)?			X	
6 Did the trip blank contamination affect the final results? If so, note on page 2.			X	
Surrogates				
1 Were surrogates added prior to extraction for all appropriate methods?			X	
2 Were surrogate percent recoveries within laboratory control limits?			X	
3 Did the surrogate percent recoveries affect the final results? If so, note on page 2.			X	
Laboratory Control Samples				
1 Were LCS performed for all appropriate methods?			X	
2 Were LCS percent recoveries within laboratory control limits?			X	
3 Did the LCS percent recoveries affect the final results? If so, note on page 2.			X	
4 Were the LCS/LCSD RPD values within laboratory control limits?			X	
Matrix Spikes				
1 Were MS/MSDs performed on a project sample selected by the laboratory?			X	
Sample used/methods:				
2 Were MS/MSD percent recoveries within laboratory control limits?			X	
3 Did the MS/MSD percent recoveries affect the final results? If yes, note in Comment seciton.			X	
4 Were the MS/MSD RPD values within laboratory control limits?			X	
Field and Laboratory Duplicates				
1 Was a field duplicate submitted with this SDG?		X		
Field Duplicate ID:				
2 Was the RPD values less than review criteria?			X	
3 Did the field duplicate RPD results affect the final results? If so, note in Comments section.			X	

Comments

Comment No.	*Description (data usability; note any estimated and/or rejected data):*
1	**Field duplicates were submitted for this field sampling program per the required QAPP frequency.**
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Signature of Validator:	
Signature of Senior Review:	

****Attachment 1: Cross-reference of field IDs with Laboratory IDs.***

*****Attachment 2: Final results from the database***

Laboratory Report Data Review - QC Review Checklist

	Laboratory Report ID:	**5-1589**			
Laboratory Name:	First Environmental Laboratories, Inc.	Report Package Date:			6/30/05
Project Name:	Johns Manville	Review Date:			1/29/2018
Project Number:	009-07992-00-001				
Reviewer Name:	Eric Thomas/Matt Kyrias				
Parameters:	VOC's, SVOC's, RCRA Metals, Antimony, pH, Pesticides, PCBs				
Method IDs:	160.3, 5035A/8260B, 8270C-3540C, 8081A/8082-3540C, 7470A, 6010B-				
Matrix:	Solids				

***Attach copy of lab report showing sample IDs and corresponding lab IDs (Att 1)**	**Yes**	**No**	**N/A**	**Comment**
Report Completeness & Sample Log-In Condition				
1 Was a signature page with appropriate authority signature provided?	X			
2 Was there a case narrative noting all known problems or anomolies?	X			
3 Were all samples received under chain-of-custody (seals used) and within appropriate temperature?	X			
4 Were all departures from standard conditions narrated (i.e., preservation acceptable, no headspace)?	X			
5 Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X			
6 Are all laboratory ID numbers cross-referenced to the corresponding QC data (batch IDs provided)?			X	
7 Were reference methods provided and cited appropriately?	X			
8 Were samples prepared and analyzed within holding times?	X			
Date Collected: 6/22/2005 Date Received: 6/23/2005				
9 Were all soil results reported on a dry-weight basis?	X			
10 Was a percent moisture result reported for all soil and sediment samples?	X			
11 Is there a QAPP or SAP available as a reference for the project performed?	X			
12 Are non-detects identified as ND at RL with a "U", or other?	X			
13 Are laboratory flags defined?			X	
Laboratory Method Blanks and Trip Blanks				
1 Were appropriate types of laboratory method blanks analyzed?	X			
2 Was the method blank free of contamination (i.e., less than the MDL or RL)?	X			
3 Did the method blank contamination affect the final results? If so, note on page 2.			X	
4 Was a trip blank required and submitted with the samples?			X	
5 Was the trip blank free of contamination (i.e., less than the MDL or RL)?			X	
6 Did the trip blank contamination affect the final results? If so, note on page 2.			X	
Surrogates				
1 Were surrogates added prior to extraction for all appropriate methods?	X			
2 Were surrogate percent recoveries within laboratory control limits?	X			
3 Did the surrogate percent recoveries affect the final results? If so, note on page 2.		X		
Laboratory Control Samples				
1 Were LCS performed for all appropriate methods?			X	
2 Were LCS percent recoveries within laboratory control limits?			X	
3 Did the LCS percent recoveries affect the final results? If so, note on page 2.			X	
4 Were the LCS/LCSD RPD values within laboratory control limits?			X	
Matrix Spikes				
1 Were MS/MSDs performed on a project sample selected by the laboratory?			X	
Sample used/methods:				
2 Were MS/MSD percent recoveries within laboratory control limits?			X	
3 Did the MS/MSD percent recoveries affect the final results? If yes, note in Comment seciton.			X	
4 Were the MS/MSD RPD values within laboratory control limits?			X	
Field and Laboratory Duplicates				
1 Was a field duplicate submitted with this SDG?		X		
Field Duplicate ID:				
2 Was the RPD values less than review criteria?			X	
3 Did the field duplicate RPD results affect the final results? If so, note in Comments section.			X	

Comments

Comment No.	***Description (data usability; note any estimated and/or rejected data):***
1	**Field duplicates were submitted for this field sampling program per the required QAPP frequency.**
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Signature of Validator:	Eric Thomas
Signature of Senior Review:	[illegible]

Attachment 1: Cross-reference of field IDs with Laboratory IDs.

****Attachment 2: Final results from the database***

Appendix K

Clay Data Validation Summaries

Laboratory Report Data Review - QC Review Checklist

	Laboratory Report ID:	**7-0800**	
Laboratory Name:	First Environmental Laboratories, Inc.	Report Package Date:	3/5/2007
Project Name:	Johns Manville	Review Date:	4/13/2018
Project Number:			
Reviewer Name:	Matt Kyrias		
Parameters:	VOC's, SVOC's, RCRA Metals, Antimony, pH, Pesticides, PCB's		
Method IDs:	2540B, 5035A/8260B, 8270C-3540C, 8081A/8082-3540C, 6010C-3050B,		
Matrix:	Solids		

***Attach copy of lab report showing sample IDs and corresponding lab IDs (Att 1)**	**Yes**	**No**	**N/A**	**Comment**
Report Completeness & Sample Log-In Condition				
1 Was a signature page with appropriate authority signature provided?	X			
2 Was there a case narrative noting all known problems or anomolies?	X			
3 Were all samples received under chain-of-custody (seals used) and within appropriate temperature?	X			
4 Were all departures from standard conditions narrated (i.e., preservation acceptable, no headspace)?	X			
5 Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X			
6 Are all laboratory ID numbers cross-referenced to the corresponding QC data (batch IDs provided)?	X			
7 Were reference methods provided and cited appropriately?	X			
8 Were samples prepared and analyzed within holding times?	X			
Date Collected: 2/27/2007 Date Received: 2/28/2007				
9 Were all soil results reported on a dry-weight basis?	X			
10 Was a percent moisture result reported for all soil and sediment samples?	X			
11 Is there a QAPP or SAP available as a reference for the project performed?	X			
12 Are non-detects identified as ND at RL with a "U", or other?	X			
13 Are laboratory flags defined?	X			
Laboratory Method Blanks and Trip Blanks				
1 Were appropriate types of laboratory method blanks analyzed?	X			
2 Was the method blank free of contamination (i.e., less than the MDL or RL)?	X			
3 Did the method blank contamination affect the final results? If so, note on page 2.			X	
4 Was a trip blank required and submitted with the samples?			X	
5 Was the trip blank free of contamination (i.e., less than the MDL or RL)?			X	
6 Did the trip blank contamination affect the final results? If so, note on page 2.			X	
Surrogates				
1 Were surrogates added prior to extraction for all appropriate methods?	X			
2 Were surrogate percent recoveries within laboratory control limits?	X			
3 Did the surrogate percent recoveries affect the final results? If so, note on page 2.			X	
Laboratory Control Samples				
1 Were LCS performed for all appropriate methods?			X	
2 Were LCS percent recoveries within laboratory control limits?			X	
3 Did the LCS percent recoveries affect the final results? If so, note on page 2.			X	
4 Were the LCS/LCSD RPD values within laboratory control limits?			X	
Matrix Spikes				
1 Were MS/MSDs performed on a project sample selected by the laboratory?			X	
Sample used/methods:				
2 Were MS/MSD percent recoveries within laboratory control limits?			X	
3 Did the MS/MSD percent recoveries affect the final results? If yes, note in Comment seciton.			X	
4 Were the MS/MSD RPD values within laboratory control limits?			X	
Field and Laboratory Duplicates				
1 Was a field duplicate submitted with this SDG?	X			
Field Duplicate ID: OZL-14 (12') DUP and OZL-17 (6') DUP				
2 Was the RPD values less than review criteria?			X	
3 Did the field duplicate RPD results affect the final results? If so, note in Comments section.			X	

Comments

Comment No.	***Description (data usability; note any estimated and/or rejected data):***
1	**Field duplicates were collected for this field sampling program per the required QAPP frequency.**
2	**Lab Number 7-0800-003 Sample ID OZL-12 (12') DUP *Semi-Volatile Compounds* Surrogate recovery outside control limits; low bias**
3	
4	
5	
6	

Signature of Validator:	
Signature of Senior Review:	

Attachment 1: Cross-reference of field IDs with Laboratory IDs.

****Attachment 2: Final results from the database***

Laboratory Report Data Review - QC Review Checklist

	Laboratory Report ID:	**040704003**			
Laboratory Name:	EMSL Analytical, Inc.	Report Package Date:			3/2/2007
Project Name:	Johns Manville	Review Date:			4/13/2018
Project Number:					
Reviewer Name:	Matt Kyrias				
Parameters:	Asbestos				
Method IDs:	PLM EPA 600/R-93/116 and TEM CARB 435C				
Matrix:	Solids				
***Attach copy of lab report showing sample IDs and corresponding lab IDs (Att 1)**		**Yes**	**No**	**N/A**	**Comment**
Report Completeness & Sample Log-In Condition					
1 Was a signature page with appropriate authority signature provided?		X			
2 Was there a case narrative noting all known problems or anomolies?		X			
3 Were all samples received under chain-of-custody (seals used) and within appropriate temperature?		X			
4 Were all departures from standard conditions narrated (i.e., preservation acceptable, no headspace)?		X			
5 Are all field sample ID numbers cross-referenced to the laboratory ID numbers?		X			
6 Are all laboratory ID numbers cross-referenced to the corresponding QC data (batch IDs provided)?		X			
7 Were reference methods provided and cited appropriately?		X			
8 Were samples prepared and analyzed within holding times?		X			
Date Collected: 2/27/2007	Date Received: 2/28/2007				
9 Were all soil results reported on a dry-weight basis?		X			
10 Was a percent moisture result reported for all soil and sediment samples?		X			
11 Is there a QAPP or SAP available as a reference for the project performed?		X			
12 Are non-detects identified as ND at RL with a "U", or other?		X			
13 Are laboratory flags defined?		X			
Laboratory Method Blanks and Trip Blanks					
1 Were appropriate types of laboratory method blanks analyzed?		X			
2 Was the method blank free of contamination (i.e., less than the MDL or RL)?		X			
3 Did the method blank contamination affect the final results? If so, note on page 2.				X	
4 Was a trip blank required and submitted with the samples?				X	
5 Was the trip blank free of contamination (i.e., less than the MDL or RL)?				X	
6 Did the trip blank contamination affect the final results? If so, note on page 2.				X	
Surrogates					
1 Were surrogates added prior to extraction for all appropriate methods?		X			
2 Were surrogate percent recoveries within laboratory control limits?		X			
3 Did the surrogate percent recoveries affect the final results? If so, note on page 2.				X	
Laboratory Control Samples					
1 Were LCS performed for all appropriate methods?				X	
2 Were LCS percent recoveries within laboratory control limits?				X	
3 Did the LCS percent recoveries affect the final results? If so, note on page 2.				X	
4 Were the LCS/LCSD RPD values within laboratory control limits?				X	
Matrix Spikes					
1 Were MS/MSDs performed on a project sample selected by the laboratory?				X	
Sample used/methods:					
2 Were MS/MSD percent recoveries within laboratory control limits?				X	
3 Did the MS/MSD percent recoveries affect the final results? If yes, note in Comment seciton.				X	
4 Were the MS/MSD RPD values within laboratory control limits?				X	
Field and Laboratory Duplicates					
1 Was a field duplicate submitted with this SDG?		X			
Field Duplicate ID:	OZL-14 (12') DUP and OZL-17 (6') DUP				
2 Was the RPD values less than review criteria?				X	
3 Did the field duplicate RPD results affect the final results? If so, note in Comments section.				X	

Comments

Comment No.	***Description (data usability; note any estimated and/or rejected data):***
1	**Field duplicates were collected for this field sampling program per the required QAPP frequency.**
2	
3	
4	
5	
6	

Signature of Validator:	
Signature of Senior Review:	

***Attachment 1: Cross-reference of field IDs with Laboratory IDs.**

****Attachment 2: Final results from the database**

Appendix L

Asbestos Landfill Disposal Manifests

STATE OF ILLINOIS

ENVIRONMENTAL PROTECTION AGENCY DIVISION OF LAND POLLUTION CONTROL

P.O. BOX 19276 SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761

State Form LPC 62 8/81 IL532-0610

FOR SHIPMENT OF HAZARDOUS AND SPECIAL WASTE

PLEASE TYPE (Form designed for use on elite (12-pitch) typewriter.) EPA Form 8700-22 (Rev. 6-89) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: ILD 005443544
Manifest Document No.:
2. Page 1 of
Information in the shaded areas is not required by Federal law, but is required by Illinois law.

3. Generator's Name and Mailing Address / Location If Different
Johns Manville
1871 N. Pershing Road
Waukegan, Il. 60087

4. "24 HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS"

A. Illinois Manifest Document Number: IL 10030492 FEE PAID IF APPLICABLE
B. Generator's IL ID Number: 0971900014

5. Transporter 1 Company Name: Veolia Waste Services
6. US EPA ID Number:
C. Transporter's ID Number: 0716
D. Transporter's Phone: (847) 623-3870

7. Transporter 2 Company Name:
8. US EPA ID Number:
E. Transporter's ID Number:
F. Transporter's Phone: ( )

9. Designated Facility Name and Site Address
Veolia ES Zion Landfill
701 Green Bay Road, 60099
10. US EPA ID Number:
G. Facility's IL ID Number: 0978020002
H. Facility's Phone: 847 731-5110

GENERATOR

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Asbestos, 9, NA, 2212, III, RQ	1	CM	20	Y	EPA HW Number
b.					EPA HW Number
c.					EPA HW Number
d.					EPA HW Number

J. Additional Description for Materials Listed Above
Approval Code SZL 003164

K. Handling Codes for Wastes Listed Above in Item #14

15. Special Handling Instructions and Additional Information
Do Not Create Dust

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; **OR**, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: Dan Hibbard
Signature: Dan Hibbard
Date: Month 08 Day 14 Year 08

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Gilbert Cartwright
Signature: Gilbert Cartwright
Date: Month 08 Day 14 Year 08

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name:
Signature:
Date: Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.
Printed/Typed Name: K Thuot
Signature: K Th
Date: Month 08 Day 14 Year 08

This Agency is authorized to require, pursuant to Illinois Revised Statute, 1989, Chapter 111 1/2, Section 1004 and 1021, that this information be submitted to the Agency. Failure to provide this information may result in a civil penalty against the owner or operator not to exceed $25,000 per day of violation. Falsification of this information may result in a fine up to $50,000 per day of violation and imprisonment up to 5 years. This form has been approved by the Forms Management Center.

In case of a spill call the Illinois Office of Emergency Response at 217/782-7860 and the National Response Center at 800/424-8802 or 202/426-2675.

COPY 2. TSD MAIL TO IEPA

STATE OF ILLINOIS

ENVIRONMENTAL PROTECTION AGENCY DIVISION OF LAND POLLUTION CONTROL

P.O. BOX 19276 SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761

FOR SHIPMENT OF HAZARDOUS AND SPECIAL WASTE

State Form LPC 62 8/81 IL532-0610

PLEASE TYPE (Form designed for use on elite (12-pitch) typewriter.) EPA Form 8700-22 (Rev. 6-89) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. ILD 005443544 Manifest Document No

2. Page 1 of 1

Information in the shaded areas is not required by Federal law, but is required by Illinois law.

3. Generator's Name and Mailing Address Location If Different
Johns Manville
1871 North Pershing Road, Waukegan, IL. 60087

4. *24 HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS* (847) 360-4400

A. Illinois Manifest Document Number IL10030431 FEE PAID IF APPLICABLE

B. Generator's IL ID Number 0971900014

5. Transporter 1 Company Name Veolia Waste Services 6. US EPA ID Number N/A

C. Transporter's ID Number 0716

D. Transporter's Phone 847 623-3870

7. Transporter 2 Company Name 8. US EPA ID Number

E. Transporter's ID Number

F. Transporter's Phone ( )

9. Designated Facility Name and Site Address
~~Onyx Zion Landfill~~ Veolia ES Zion LndFill
701 Greenbay Road
Zion, IL. 60099

10. US EPA ID Number N/A

G. Facility's IL ID Number 0978020002

H. Facility's Phone 847 731-5110

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. ~~Non Hazardous, Non DOT Regulated Petroleum Impacted Material, NOS~~ DH 8-15-08	1	DT	~~15~~	~~Y~~	EPA HW Number
b. Asbestos, 9, NA, 2212, III, RQ	1	CM	20	Y	EPA HW Number
c.					EPA HW Number
d.					EPA HW Number

J. Additional Description for Materials Listed Above
~~Approval Code: SZL 002179~~ DH 8-15-08
Approval Code SZL 003164

K. Handling Codes for Wastes Listed Above In Item #14

15. Special Handling Instructions and Additional Information
Do Not Create Dust

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

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Printed/Typed Name ~~XXXXX~~ Dan Hibbard Signature Dan Hibbard Date Month Day Year 08 18 08

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name Joey Gnatt Signature Date Month Day Year 081808

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name Signature Date Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.
Printed/Typed Name K Thelot Signature Date Month Day Year 8 18 08

In case of a spill call the Illinois Office of Emergency Response at 217/782-7860 and the National Response Center at 800/424-8802 or 202/426-2675.

COPY 2. TSD MAIL TO IEPA

STATE OF ILLINOIS

ENVIRONMENTAL PROTECTION AGENCY DIVISION OF LAND POLLUTION CONTROL

P.O. BOX 19276 SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761

FOR SHIPMENT OF HAZARDOUS AND SPECIAL WASTE

State Form LPC 62 8/81 IL532-0610

PLEASE TYPE (Form designed for use on elite (12-pitch) typewriter) EPA Form 8700-22 (Rev. 6-89) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: ILD 005443544
Manifest Document No.:
2. Page 1 of 1

Information in the shaded areas is not required by Federal law, but is required by Illinois law.

3. Generator's Name and Mailing Address / Location If Different
Johns Manville
1871 North XXXXXXXXX Pershing Rd. Waukegan, IL. 60087

4. "24 HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS" (847) 360-4400

5. Transporter 1 Company Name: ~~Veolia Waste Services~~
6. US EPA ID Number: N/A

7. Transporter 2 Company Name:
8. US EPA ID Number:

9. Designated Facility Name and Site Address
~~Onyx~~ Zion Landfill (Veolia ES Landfill)
701 Greenbay Road
Zion, IL. 60099
10. US EPA ID Number: N/A

A. Illinois Manifest Document Number: IL 10030434 FEE PAID IF APPLICABLE
B. Generator's IL ID Number: 0971190014
C. Transporter's ID Number: 0716
D. Transporter's Phone: 847) 623-3870
E. Transporter's ID Number:
F. Transporter's Phone ( )
G. Facility's IL ID Number: 0978020009
H. Facility's Phone: 847) 731-5110

	11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a.	~~Non Hazardous, Non DOT Regulated Petroleum Impacted Material, NOS~~ AH 8-15-08	~~1~~	~~DT~~	~~15~~	~~Y~~	EPA HW Number
b.	Asbestos, 9, NA, 2212, III, RQ	1	CM	20	Y	EPA HW Number
c.						EPA HW Number
d.						EPA HW Number

J. Additional Description for Materials Listed Above
~~Approval Code: SZL 002179~~ AH 8/15/08
Approval Code SZL 003164 ~~SOIL~~

K. Handling Codes for Wastes Listed Above In Item #14

15. Special Handling Instructions and Additional Information
Do Not Create Dust

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

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Printed/Typed Name: XXXXXXXXXXXXXX Dan Hibbard
Signature: Dan Hibbard
Date (Month Day Year): 08 18 08

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: William Udewicz
Signature: William
Date (Month Day Year): 08 18 08

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name:
Signature:
Date (Month Day Year):

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.
Printed/Typed Name: K. Havlot
Signature: KH
Date (Month Day Year): 8 18 08

GENERATOR / TRANSPORTER / FACILITY

...Office of Emergency Response at 217/782-7860 and the National Response Center at 800/424-8802 or 202/426-2675.

This Agency is authorized to require, pursuant to Illinois Revised Statute, 1989, Chapter 111 1/2, Section 1004 and 1021, that this information be submitted to the Agency. Failure to provide this information may result in a civil penalty against the owner or operator not to exceed $25,000 per day of violation. Falsification of this information may result in a fine up to $50,000 per day of violation and imprisonment up to 5 years. This form has been approved by the Forms Management Center.

COPY 2. TSD MAIL TO IEPA

STATE OF ILLINOIS

ENVIRONMENTAL PROTECTION AGENCY DIVISION OF LAND POLLUTION CONTROL

P.O. BOX 19276 SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761

FOR SHIPMENT OF HAZARDOUS AND SPECIAL WASTE

State Form LPC 62 8/81 IL532-0610

PLEASE TYPE (Form designed for use on elite (12-pitch) typewriter.) EPA Form 8700-22 (Rev. 6-89) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. ILD 005443544 Manifest Document No.

2. Page 1 of 1

Information in the shaded areas is not required by Federal law, but is required by Illinois law.

3. Generator's Name and Mailing Address Location If Different
Johns Manville
1871 North Pershing Road , Waukegan IL 60087
(847) 360-4400

4. "24 HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS"

A. Illinois Manifest Document Number IL10030439 FEE PAID IF APPLICABLE

B. Generator's IL ID Number 0971190014

5. Transporter 1 Company Name Veolia Waste Services

6. US EPA ID Number N/A

C. Transporter's ID Number 0716

D. Transporter's Phone 847) 623-3870

7. Transporter 2 Company Name

8. US EPA ID Number

E. Transporter's ID Number

F. Transporter's Phone ( )

9. Designated Facility Name and Site Address
~~XXXXXXXXXXXXXXXX1~~ Veolia ES Zion Landfill
701 Greenbay Road
Zion, IL 60099

10. US EPA ID Number N/A

G. Facility's IL ID Number 0978020002

H. Facility's Phone 847) 731-5110

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. ~~Non Hazardous, Non DOT Regulated Petroleum Impacted Material, NOS~~ DW 8-15-08	1	DT	15	Y	EPA HW Number
b. Asbestos , 9, NA, 2212, III, RQ	1	CM	20	Y	EPA HW Number
c.					EPA HW Number
d.					EPA HW Number

J. Additional Description for Materials Listed Above DW 8-15-08
~~Approval Code: SZL 002179~~
SOXX
Approval Code SZL 003164

K. Handling Codes for Wastes Listed Above In Item #14

15. Special Handling Instructions and Additional Information

Do Not Create Dust

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

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Printed/Typed Name ~~XXXXXXXXXXXXX~~ Dan Hibbard Signature Dan Hibbard Date Month Day Year 08 19 08

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name JOSEPH K FICK Signature Date Month Day Year 08 15 08

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name Signature Date Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.
Printed/Typed Name K Thuot Signature Date Month Day Year 08 19 08

GENERATOR / TRANSPORTER / FACILITY

COPY 2. TSD MAIL TO IEPA

STATE OF ILLINOIS

ENVIRONMENTAL PROTECTION AGENCY DIVISION OF LAND POLLUTION CONTROL

P.O. BOX 19276 SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761

State Form LPC 62 8/81 IL532-0610

FOR SHIPMENT OF HAZARDOUS AND SPECIAL WASTE

PLEASE TYPE (Form designed for use on elite (12-pitch) typewriter) **EPA Form 8700-22 (Rev. 6-89)** Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. ILD 005443544 Manifest Document No 2. Page 1 of

Information in the shaded areas is not required by Federal law, but is required by Illinois law

3. Generator's Name and Mailing Address Location If Different

Johns Manville
1871 N. Pershing Road
Waukegan, IL. 60087

4. 24 HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS*

5. Transporter 1 Company Name TSI 6. US EPA ID Number

7. Transporter 2 Company Name 8. US EPA ID Number

9. Designated Facility Name and Site Address 10. US EPA ID Number

Veolia ES Zion Landfill
701 Green Bay Road
Zion, IL. 60099

A. Illinois Manifest Document Number IL11097307 FEE PAID IF APPLICABLE

B. Generator's IL ID Number 0971190001 4

C. Transporter's ID Number 4306

D. Transporter's Phone 800) 782-4073

E. Transporter's ID Number

F. Transporter's Phone ( )

G. Facility's IL ID Number 0971802000 2

H. Facility's Phone 847-731-5110

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Assbestos, 9 , NA, 2212, III, RQ	1	CM	30	Y	EPA HW Number
b.					EPA HW Number
c.					EPA HW Number
d.					EPA HW Number

J. Additional Description for Materials Listed Above

Approval Code ~~XXX~~ SZL 003164

K. Handling Codes for Wastes Listed Above In Item #14

15. Special Handling Instructions and Additional Information

Do Not Create Dust

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed /Typed Name: Dan Hibbard Signature: Dan Hibbard Date Month Day Year: 08 19 08

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed /Typed Name: David Kafe Signature: [signature] Date Month Day Year: 08 19 08

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed /Typed Name Signature Date Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.

Printed /Typed Name: K. Thuot Signature: KT Date Month Day Year: 08 19 08

This Agency is authorized to require, pursuant to Illinois Revised Statute, 1989, Chapter 111 1/2, Section 1004 and 1021, that this information be submitted to the Agency. Failure to provide this information may result in a civil penalty against the owner or operator not to exceed $25,000 per day of violation. Falsification of this information may result in a fine up to $50,000 per day of violation and imprisonment up to 5 years. This form has been approved by the Forms Management Center

In case of a spill call the Illinois Office of Emergency Response at 217/782-7860 and the National Response Center at 800/424-8802 or 202/426-2675.

COPY 2 TSD MAIL TO IEPA

STATE OF ILLINOIS

ENVIRONMENTAL PROTECTION AGENCY DIVISION OF LAND POLLUTION CONTROL

P.O. BOX 19276 SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761

FOR SHIPMENT OF HAZARDOUS AND SPECIAL WASTE

State Form LPC 62 8/81 IL532-0610

PLEASE TYPE (Form designed for use on elite (12-pitch) typewriter.) EPA Form 8700-22 (Rev. 6-89) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: ILD 005443544 Manifest Document No

2. Page 1 of

Information in the shaded areas is not required by Federal law, but is required by Illinois law.

3. Generator's Name and Mailing Address Location If Different
JOHNS MANVILLE
1871 N. PERSHING RD, WAUKEGAN IL 60087

4. "24 HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS"

5. Transporter 1 Company Name: Veolia Waste Services 6013
6. US EPA ID Number

7. Transporter 2 Company Name
8. US EPA ID Number

9. Designated Facility Name and Site Address
~~Onyx~~ ZION LANDFILL (Veolia ES)
701 GREEN BAY
ZION IL 60099

10. US EPA ID Number: NOT APPLICABLE

A. Illinois Manifest Document Number: IL 10030453 FEE PAID IF APPLICABLE
B. Generator's IL ID Number: 0971900014
C. Transporter's ID Number: 0716
D. Transporter's Phone (847) 623-3870
E. Transporter's ID Number
F. Transporter's Phone ( )
G. Facility's IL ID Number: 0978020002
H. Facility's Phone (847) 731-5110

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. ASBESTOS, 9, NA 2212, III, RQ	1	CM	20	Y	EPA HW Number
b.					EPA HW Number
c.					EPA HW Number
d.					EPA HW Number

GENERATOR

J. Additional Description for Materials Listed Above
APPROVAL CODE: ~~02026~~ 52L003164 AM 8/18/08

K. Handling Codes for Wastes Listed Above In Item #14

15. Special Handling Instructions and Additional Information
DO NOT CREATE DUST

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

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Printed/Typed Name	Signature	Date Month Day Year
~~David M. Petersen~~ Dan Hibbard	Dan Hibbard	08 19 08

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date Month Day Year
Carlos M	Carlos M	08 19 08

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.

Printed/Typed Name	Signature	Date Month Day Year
P Shebesta	P. Shebesta	08 19 08

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COPY 2. TSD MAIL TO IEPA

STATE OF ILLINOIS ENVIRONMENTAL PROTECTION AGENCY DIVISION OF LAND POLLUTION CONTROL

P.O. BOX 19276 SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761

FOR SHIPMENT OF HAZARDOUS AND SPECIAL WASTE

State Form LPC 62 8/81 IL532-0610

PLEASE TYPE (Form designed for use on elite (12-pitch) typewriter.) **EPA Form 8700-22 (Rev. 6-89)** Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: ILD 005443544 | Manifest Document No.
2. Page 1 of 1

Information in the shaded areas is not required by Federal law, but is required by Illinois law.

3. Generator's Name and Mailing Address / Location If Different
Johns Manville
1871 North Pershing Road, Waukegan, IL. 60087

4. *24 HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS* (847) 360-4400

5. Transporter 1 Company Name: Veolia Waste Services
6. US EPA ID Number: N/A

7. Transporter 2 Company Name:
8. US EPA ID Number:

9. Designated Facility Name and Site Address
~~[illegible]~~ Veolia ES Zion Lndfill
701 Greenbay Road
Zion, IL. 60099
10. US EPA ID Number: N/A

A. Illinois Manifest Document Number: IL 10030436 FEE PAID IF APPLICABLE
B. Generator's IL ID Number: 0971190014
C. Transporter's ID Number: 0716
D. Transporter's Phone: 847 623-3870
E. Transporter's ID Number:
F. Transporter's Phone ( )
G. Facility's IL ID Number: 0978020002
H. Facility's Phone: 847 731-5110

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. ~~Non-Hazardous, Non-DOT Regulated Petroleum Impacted Material, NOS~~ [initials] 8-15-08	1	DT	15	Y	EPA HW Number
b. Asbestos, 9, NA, 2212, III, RQ	1	CM	20	Y	EPA HW Number
c.					EPA HW Number
d.					EPA HW Number

J. Additional Description for Materials Listed Above
~~Approval Code: SZL 002179~~ [initials] 8-15-08
SOIL
Approval Code SZL 003164

K. Handling Codes for Wastes Listed Above In Item #14

15. Special Handling Instructions and Additional Information

Do Not Create Dust

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: ~~[illegible]~~ Dan Hibbard | Signature: Dan Hibbard | Date Month Day Year: 08 19 08

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Carlos M | Signature: Carlos M | Date Month Day Year: 08 19 08

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name: | Signature: | Date Month Day Year:

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.
Printed/Typed Name: K. Flaudt | Signature: [signature] | Date Month Day Year: 8 19 08

This Agency is authorized to require, pursuant to Illinois Revised Statute, 1989, Chapter 111 1/2, Section 1004 and 1021, that this information be submitted to the Agency. Failure to provide this information may result in a civil penalty against the owner or operator not to exceed $25,000 per day of violation. Falsification of this information may result in a fine up to $50,000 per day of violation and imprisonment up to 5 years. This form has been approved by the Forms Management Center.

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STATE OF ILLINOIS

ENVIRONMENTAL PROTECTION AGENCY DIVISION OF LAND POLLUTION CONTROL

P.O. BOX 19276 SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761

State Form LPC 62 8/81 IL532-0610

FOR SHIPMENT OF HAZARDOUS AND SPECIAL WASTE

PLEASE TYPE (Form designed for use on elite (12-pitch) typewriter.) EPA Form 8700-22 (Rev. 6-89) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. ILD 005443544 Manifest Document No.

2. Page 1 of 1

Information in the shaded areas is not required by Federal law, but is required by Illinois law.

3. Generator's Name and Mailing Address Location If Different
Johns Manville
1871 North Pershing Road, Waukegan, IL. 60087

4. *24 HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS* (847) 360-4400

5. Transporter 1 Company Name: Veolia Waste Services
6. US EPA ID Number: 7260IT N/A

7. Transporter 2 Company Name
8. US EPA ID Number

9. Designated Facility Name and Site Address
~~XXXXXXXXXXXXXXXX~~ Veolia ES Zion Landfill
701 Greenbay Road
Zion, IL. 60099
10. US EPA ID Number: N/A

A. Illinois Manifest Document Number IL10030437 FEE PAID IF APPLICABLE

B. Generator's IL ID Number 0971190014

C. Transporter's ID Number 0716

D. Transporter's Phone 847) 623-3870

E. Transporter's ID Number

F. Transporter's Phone ( )

G. Facility's IL ID Number 0978020002

H. Facility's Phone 847 731-5110

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. ~~Non-Hazardous, Non DOT Regulated Petroleum Impacted Material, NOS~~ 8-15-08 [initials]	1	DT	~~15~~	Y	EPA HW Number
b. Asbestos, 9, NA, 2212, III, RQ	1	CM	20	Y	EPA HW Number
c.					EPA HW Number
d.					EPA HW Number

J. Additional Description for Materials Listed Above [initials] 8-15-08
~~Approval Code: SZL 002179~~
SOIL
Approval Code SZL 003164

K. Handling Codes for Wastes Listed Above In Item #14

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Printed/Typed Name	Signature	Date Month	Day	Year
~~XXXXXXXXXXXX~~ Dan Hibbard	Dan Hibbard	08	19	08

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date Month	Day	Year
JOSEPH K FILL	[signature]	08	19	08

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date Month	Day	Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.

Printed/Typed Name	Signature	Date Month	Day	Year
P. Shebesta	P. Shebeste	08	19	08

In case of a spill call the Illinois Office of Emergency Response at 217/782-7860 and the National Response Center at 800/424-8802 or 202/426-2675.

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COPY 2. TSD MAIL TO IEPA

(RCRA HAZARDOUS AND PCB WASTES ONLY)

STATE OF ILLINOIS

ENVIRONMENTAL PROTECTION AGENCY DIVISION OF LAND POLLUTION CONTROL

P.O. BOX 19276 SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761

State Form LPC 62 8/81 IL532-0610

FOR SHIPMENT OF HAZARDOUS AND SPECIAL WASTE

PLEASE TYPE (Form designed for use on elite (12-pitch) typewriter) EPA Form 8700-22 (Rev. 6-89) Form Approved OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. ILD 005443544 Manifest Document No.

2. Page 1 of

Information in the shaded areas is not required by Federal law, but is required by Illinois law

3. Generator's Name and Mailing Address Location If Different

Johns Manville
1871 N. Pershing Road
Waukegan, IL. 60087

4. *24 HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS*

A. Illinois Manifest Document Number IL11097320 FEE PAID IF APPLICABLE

B. Generator's IL ID Number 0971190014

C. Transporter's ID Number 0716

D. Transporter's Phone 847 623-3870

5. Transporter 1 Company Name: Veolia Waste Services

6. US EPA ID Number

7. Transporter 2 Company Name

8. US EPA ID Number

E. Transporter's ID Number

F. Transporter's Phone ( )

9. Designated Facility Name and Site Address

Veolia ES Zion Landfill
701 Green Bay Road
Zion, IL. 60099

10. US EPA ID Number

G. Facility's IL ID Number 0978020002

H. Facility's Phone 847 731-5110

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Asbestos, 9, NA, 2212, III, RQ	1	CM	20	Y	EPA HW Number
b.					EPA HW Number
c.					EPA HW Number
d.					EPA HW Number

J. Additional Description for Materials Listed Above

Approval Code SZL 003164

K. Handling Codes for Wastes Listed Above In Item #14

15. Special Handling Instructions and Additional Information

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Printed /Typed Name: Dan Hibbard Signature: Dan Hibbard Date Month Day Year 08 19 08

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed /Typed Name: Joe Fick Signature: [signature] Date Month Day Year 08 19 08

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed /Typed Name Signature Date Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.

Printed/Typed Name: K. Thuot Signature: [signature] Date Month Day Year 08 19 08

GENERATOR / TRANSPORTER / FACILITY

In case of a spill call the Illinois Office of Emergency Response at 217 / 782-7860 and the National Response Center at 800 / 424-8802 or 202 / 426-2675.

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STATE OF ILLINOIS

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P.O. BOX 19276 SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761

State Form LPC 62 8/81 IL532-0610

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UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. ILD 005443544 | Manifest Document No. | 2. Page 1 of | Information in the shaded areas is not required by Federal law, but is required by Illinois law.

3. Generator's Name and Mailing Address: Johns Manville, 1871 N. Pershing Road, Waukegan, IL. 60087 | Location If Different

4. *24 HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS*

5. Transporter 1 Company Name: TSI 55 | 6. US EPA ID Number

7. Transporter 2 Company Name | 8. US EPA ID Number

9. Designated Facility Name and Site Address: Veolia ES Zion Landfill, 701 Green Bay Road, Zion, IL. 60099 | 10. US EPA ID Number

A. Illinois Manifest Document Number IL11097304 FEE PAID IF APPLICABLE

B. Generator's IL ID Number 0971900014

C. Transporter's ID Number 4306

D. Transporter's Phone (800 788-4023

E. Transporter's ID Number

F. Transporter's Phone ( )

G. Facility's IL ID Number 0978020002

H. Facility's Phone 847 731-5110

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Asbestos, 9, NA, 2212, III, RQ	1	CM	~~[illegible]~~ 20	Y	EPA HW Number
b.					EPA HW Number
c.					EPA HW Number
d.					EPA HW Number

J. Additional Description for Materials Listed Above

Approval Code SZL 003164

K. Handling Codes for Wastes Listed Above In Item #14

15. Special Handling Instructions and Additional Information

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Printed/Typed Name	Signature	Date Month Day Year
Dan Hibbard	Dan Hibbard	06 20 08

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date Month Day Year
David Pfaff	D Pfaff	06 20 08

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.

Printed/Typed Name	Signature	Date Month Day Year
C. Lynaen	C. Lynaen	8 2008

GENERATOR / TRANSPORTER / FACILITY

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STATE OF ILLINOIS

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UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. ILD 005443544 Manifest Document No.

2. Page 1 of

Information in the shaded areas is not required by Federal law, but is required by Illinois law.

3. Generator's Name and Mailing Address Location If Different
Johns Manville
1871 N. Pershing Road
Waukegan IL 60087

4. "24 HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS"

5. Transporter 1 Company Name: Veolia Waste Services
6. US EPA ID Number: 6015-20

7. Transporter 2 Company Name
8. US EPA ID Number

9. Designated Facility Name and Site Address
Veolia ES Zion,Landfill
701 Green Bay Road
Zion, IL 60099

10. US EPA ID Number

A. Illinois Manifest Document Number IL11097318 FEE PAID IF APPLICABLE

B. Generator's IL ID Number 0971190001 14

C. Transporter's ID Number 0716

D. Transporter's Phone 847 623-3870

E. Transporter's ID Number

F. Transporter's Phone ( )

G. Facility's IL ID Number 0978020002

H. Facility's Phone 847 731-5110

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Asbestos, 9, NA, 2212, III, RQ	1	CM	20	Y	EPA HW Number
b.					EPA HW Number
c.					EPA HW Number
d.					EPA HW Number

GENERATOR

J. Additional Description for Materials Listed Above

Approval Code SZL 003164

K. Handling Codes for Wastes Listed Above In Item #14

15. Special Handling Instructions and Additional Information

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Printed /Typed Name	Signature	Date Month Day Year
Dan Hibbard	Dan Hibbard	08 20 08

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed /Typed Name	Signature	Date Month Day Year
Gilbert Cartwright	Gilbert Cartwright	08 20 08

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed /Typed Name	Signature	Date Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.

Printed /Typed Name	Signature	Date Month Day Year
C. Lyngqu...	C. Lyngqu...	8 20 08

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1. Generator's US EPA ID No. ILD 005443544 Manifest Document No.

2. Page 1 of

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3. Generator's Name and Mailing Address
Johns Manville
1871 N. Pershing Road
Waukegan, IL 60087

Location If Different

4. "24 HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS"

5. Transporter 1 Company Name: Veolia Waste Services
6. US EPA ID Number: 6015-20

7. Transporter 2 Company Name
8. US EPA ID Number

9. Designated Facility Name and Site Address
Veolia ES Zion Landfill
701 Green Bay Road
Zion, IL. 60099

10. US EPA ID Number

A. Illinois Manifest Document Number: IL11097317 FEE PAID IF APPLICABLE

B. Generator's IL ID Number: 0971190014

C. Transporter's ID Number: 0716

D. Transporter's Phone: 847 623-3870

E. Transporter's ID Number

F. Transporter's Phone ( )

G. Facility's IL ID Number: 0978020002

H. Facility's Phone: 847 731-5110

11. US DOT Description *(Including Proper Shipping Name, Hazard Class, and ID Number)*	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Asbestos, 9, NA, 2212, III, RQ	1	CM	20	Y	EPA HW Number
b.					EPA HW Number
c.					EPA HW Number
d.					EPA HW Number

J. Additional Description for Materials Listed Above

Approval Code SZL 003164

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15. Special Handling Instructions and Additional Information

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Printed/Typed Name	Signature	Date Month Day Year
Dan Hibbard	Dan Hibbard	08 20 08

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date Month Day Year
Gilbert Cartwright	Gilbert Cartwright	08 20 08

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Date Month Day Year
C. Lynaeu	C. Lynaeu	8 20 08

GENERATOR / TRANSPORTER / FACILITY

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COPY 2. TSD MAIL TO IEPA
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UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: ILD 005443544

Manifest Document No.:

2. Page 1 of

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3. Generator's Name and Mailing Address (Location If Different)

Johns Manville
1871 N. Pershing Road
Waukegan, IL 60087

4. "24 HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS"

5. Transporter 1 Company Name: Veolia Waste Services

6. US EPA ID Number: 6015-20

7. Transporter 2 Company Name:

8. US EPA ID Number:

9. Designated Facility Name and Site Address

Veolia ES Zion Landfill
701 Green Bay Road
Zion, IL. 60099

10. US EPA ID Number:

A. Illinois Manifest Document Number: IL11097319 FEE PAID IF APPLICABLE

B. Generator's IL ID Number: 0971190014

C. Transporter's ID Number: 0716

D. Transporter's Phone: 847 623-3870

E. Transporter's ID Number:

F. Transporter's Phone ( )

G. Facility's IL ID Number: 0978020002

H. Facility's Phone: 847 731-5110

11. US DOT Description *(Including Proper Shipping Name, Hazard Class, and ID Number)*	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Asbestos, 9, NA, 2212, III, RQ	1	CM	20	Y	EPA HW Number
b.					EPA HW Number
c.					EPA HW Number
d.					EPA HW Number

J. Additional Description for Materials Listed Above

Approval Code SZL 003164

K. Handling Codes for Wastes Listed Above In Item #14

15. Special Handling Instructions and Additional Information

Do Not Create Dust

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Printed /Typed Name	Signature	Date (Month Day Year)
Dan Hibbard	Dan Hibbard	08 20 08

GENERATOR

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed /Typed Name	Signature	Date (Month Day Year)
Gilbert Cartwright	Gilbert Cartwright	08 20 08

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed /Typed Name	Signature	Date (Month Day Year)

TRANSPORTER

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.

Printed /Typed Name	Signature	Date (Month Day Year)
C. Lynnaen	C. Lynnaen	8 20 08

FACILITY

In case of a spill call the Illinois Office of Emergency Response at 217 / 782-7860 and the National Response Center at 800 / 424-8802 or 202 / 426-2675.

This Agency is authorized to require, pursuant to Illinois Revised Statute, 1989, Chapter 111 1/2, Section 1004 and 1021, that this information be submitted to the Agency. Failure to provide this information may result in a civil penalty against the owner or operator not to exceed $25,000 per day of violation. Falsification of this information may result in a fine up to $50,000 per day of violation and imprisonment up to 5 years. This form has been approved by the Forms Management Center.

COPY 2. TSD MAIL TO IEPA (RCRA HAZARDOUS AND PCB WASTES ONLY)

STATE OF ILLINOIS

P.O. BOX 19276 SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761

State Form LPC 62 8/81 IL532-0610

FOR SHIPMENT OF HAZARDOUS AND SPECIAL WASTE

PLEASE TYPE (Form designed for use on elite (12-pitch) typewriter.) EPA Form 8700-22 (Rev. 6-89) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. ILD 005443544 Manifest Document No.

2. Page 1 of

Information in the shaded areas is not required by Federal law, but is required by Illinois law.

3. Generator's Name and Mailing Address Location If Different

Johns Manville
1871 N. Persging Road
Waukegan IL 60087

A. Illinois Manifest Document Number IL11097316 FEE PAID IF APPLICABLE

B. Generator's IL ID Number 0971900014

4. "24 HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS"

5. Transporter 1 Company Name Veolia Waste Services 6. US EPA ID Number 6645-20

C. Transporter's ID Number 0716

D. Transporter's Phone 847 623-3870

7. Transporter 2 Company Name 8. US EPA ID Number

E. Transporter's ID Number

F. Transporter's Phone ( )

9. Designated Facility Name and Site Address 10. US EPA ID Number

Veolia ES Zion Landfill
701 Green Bay Road
Zion, IL. 60099

G. Facility's IL ID Number 0197810200002

H. Facility's Phone 847 731-5110

GENERATOR

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Asbestos, 9, NA, 2212, III, RQ	1	CM	20	Y	EPA HW Number
b.					EPA HW Number
c.					EPA HW Number
d.					EPA HW Number

J. Additional Description for Materials Listed Above

Approval Code SZL 003164

K. Handling Codes for Wastes Listed Above In Item #14

15. Special Handling Instructions and Additional Information

Do Not Create Dust

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed /Typed Name	Signature	Date Month Day Year
Dan Hibbard	Dan Hibbard	08 20 08

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed /Typed Name	Signature	Date Month Day Year
Gilbert Cartwright	Gilbert Cartwright	08 20 08

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed /Typed Name	Signature	Date Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed /Typed Name	Signature	Date Month Day Year
C Lyman	C. Lyman	8 20 08

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COPY 2. TSD MAIL TO IEPA
(RCRA HAZARDOUS AND PCB WASTES ONLY)

In case of a spill call the Illinois Office of Emergency Response at 217 / 782-7860 and the National Response Center at 800 / 424-8802 or 202 / 426-2675.

STATE OF ILLINOIS

P.O. BOX 19276 SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761

State Form LPC 62 8/81 IL532-0610

FOR SHIPMENT OF HAZARDOUS AND SPECIAL WASTE

PLEASE TYPE (Form designed for use on elite (12-pitch) typewriter.) EPA Form 8700-22 (Rev. 6-89) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. ILD 005443544 Manifest Document No.
2. Page 1 of

Information in the shaded areas is not required by Federal law, but is required by Illinois law.

3. Generator's Name and Mailing Address Location If Different
Johns Manville
1871 N. Pershing Road
Waukegan, IL. 60087

4. "24 HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS"

5. Transporter 1 Company Name TSI 55 6. US EPA ID Number

7. Transporter 2 Company Name 8. US EPA ID Number

9. Designated Facility Name and Site Address 10 US EPA ID Number
Veolia ES Zion Landfill
701 Green Bay Road
Zion. Il 60099

A. Illinois Manifest Document Number IL11097301 FEE PAID IF APPLICABLE
B. Generator's IL ID Number 0971190014
C. Transporter's ID Number 4306
D. Transporter's Phone 800)788-4073
E. Transporter's ID Number
F. Transporter's Phone ( )
G. Facility's IL ID Number 0978020002
H. Facility's Phone 847) 731-5110

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Asbestos, 9, NA, 2212, III, RQ	1	CM	~~20~~ 20	Y	EPA HW Number
b.					EPA HW Number
c.					EPA HW Number
d.					EPA HW Number

J. Additional Description for Materials Listed Above

Approval Code SZL 003164

K. Handling Codes for Wastes Listed Above In Item #14

15. Special Handling Instructions and Additional Information

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Printed/Typed Name Dan Hibbard Signature Dan Hibbard Date Month Day Year 08 19 08

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name David [illegible] Signature [illegible] Date Month Day Year 08 19 08

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name Signature Date Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.
Printed/Typed Name C. Lugaza Signature C. Lugaza Date Month Day Year 8 19 08

GENERATOR / TRANSPORTER / FACILITY

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COPY 2. TSD MAIL TO IEPA (RCRA HAZARDOUS AND PCB WASTES ONLY)

STATE OF ILLINOIS

ENVIRONMENTAL PROTECTION AGENCY DIVISION OF LAND POLLUTION CONTROL

P.O. BOX 19276 SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761

State Form LPC 62 8/81 IL532-0610

FOR SHIPMENT OF HAZARDOUS AND SPECIAL WASTE

PLEASE TYPE (Form designed for use on elite (12-pitch) typewriter.) EPA Form 8700-22 (Rev. 6-89) Form Approved. OMB No. 2050-0039

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UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. ILD 005443544 Manifest Document No.
2. Page 1 of
Information in the shaded areas is not required by Federal law, but is required by Illinois law.

A. Illinois Manifest Document Number IL11097309 FEE PAID IF APPLICABLE

3. Generator's Name and Mailing Address — Location If Different
Johns Manville
1871 N. Pershing Road
Waukegan, IL. 60087

B. Generator's IL ID Number 0971900014

4. "24 HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS"

5. Transporter 1 Company Name: TSI 55
6. US EPA ID Number

C. Transporter's ID Number 4306
D. Transporter's Phone (800) 782-4023

7. Transporter 2 Company Name
8. US EPA ID Number

E. Transporter's ID Number
F. Transporter's Phone ( )

9. Designated Facility Name and Site Address
Veolia ES Zion Landfill
701 Green Bay Road
Zion, IL. 60099

10. US EPA ID Number

G. Facility's IL ID Number 0978020002
H. Facility's Phone 847 731-5110

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Asbestos, 9, NA, 2212, III, RQ	1	CM	30	Y	EPA HW Number
b.					EPA HW Number
c.					EPA HW Number
d.					EPA HW Number

GENERATOR

J. Additional Description for Materials Listed Above
Approval Code 003164
SZL 003164

K. Handling Codes for Wastes Listed Above In Item #14

15. Special Handling Instructions and Additional Information
Do Not Create Dust

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Printed /Typed Name	Signature	Date Month Day Year
Dan Hibbard	Dan Hibbard	08 19 08

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed /Typed Name	Signature	Date Month Day Year
David Pfeiffer		08 19 08

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed /Typed Name	Signature	Date Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.

Printed /Typed Name	Signature	Date Month Day Year
P Shelnsta	P Shelnsta	08 19 08

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COPY 2. TSD MAIL TO IEPA
(RCRA HAZARDOUS AND PCB WASTES ONLY)

STATE OF ILLINOIS

P.O. BOX 19276 SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761

State Form LPC 62 8/81 IL532-0610

FOR SHIPMENT OF HAZARDOUS AND SPECIAL WASTE

PLEASE TYPE (Form designed for use on elite (12-pitch) typewriter.) EPA Form 8700-22 (Rev. 6-89) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. ILD 005443544 | Manifest Document No. | 2. Page 1 of | Information in the shaded areas is not required by Federal law, but is required by Illinois law.

3. Generator's Name and Mailing Address
Johns Manville
1871 N. Pershing Road
Waukegan, IL. 60087

Location If Different

4. "24 HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS"

A. Illinois Manifest Document Number IL11097308 FEE PAID IF APPLICABLE

B. Generator's IL ID Number 0971900014

5. Transporter 1 Company Name TSI #55 | 6. US EPA ID Number

C. Transporter's ID Number 4306

D. Transporter's Phone 800)782-4073

7. Transporter 2 Company Name | 8. US EPA ID Number

E. Transporter's ID Number

F. Transporter's Phone ( )

9. Designated Facility Name and Site Address
Veolia ES Zion Landfill
701 Green Bay Road
Zion, IL. 60099

10. US EPA ID Number

G. Facility's IL ID Number 0978020002

H. Facility's Phone 847)-731-5110

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Asbestos, 9, NA, 2212, III, RQ	1	CM	30	Y	EPA HW Number
b.					EPA HW Number
c.					EPA HW Number
d.					EPA HW Number

J. Additional Description for Materials Listed Above

Approval Code 003164

K. Handling Codes for Wastes Listed Above In Item #14

15. Special Handling Instructions and Additional Information

Do Not Create Dust

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Printed /Typed Name Dan Hibbard | Signature Dan Hibbard 8-19-08 | Date Month Day Year 08 19 08

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed /Typed Name David Griffin | Signature | Date Month Day Year 08 19 08

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed /Typed Name | Signature | Date Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.

Printed /Typed Name P. Shebesta | Signature P. Shebesta | Date Month Day Year 081908

GENERATOR / TRANSPORTER / FACILITY

In case of a spill call the Illinois Office of Emergency Response at 217 / 782-7860 and the National Response Center at 800 / 424-8802 or 202 / 426-2675.

COPY 2. TSD MAIL TO IEPA
(RCRA HAZARDOUS AND PCB WASTES ONLY)

STATE OF ILLINOIS

P.O. BOX 19276 SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761

State Form LPC 62 8/81 IL532-0610

FOR SHIPMENT OF HAZARDOUS AND SPECIAL WASTE

PLEASE TYPE (Form designed for use on elite (12-pitch) typewriter.) EPA Form 8700-22 (Rev. 5-89) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. ILD 005443544 | Manifest Document No. | 2. Page 1 of | Information in the shaded areas is not required by Federal law, but is required by Illinois law.

3. Generator's Name and Mailing Address
Johns Manville
1871 N. Pershing Road
~~XXXXXXXXXXXXX~~ Waukegan, IL 60087
Location If Different

4. 24 HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS

5. Transporter 1 Company Name: TSI
6. US EPA ID Number:

7. Transporter 2 Company Name:
8. US EPA ID Number:

9. Designated Facility Name and Site Address
Veolia ES Zion Landfill
701 Green Bay Road
Zion, IL. 60099
10. US EPA ID Number:

A. Illinois Manifest Document Number IL11097306 FEE PAID IF APPLICABLE
B. Generator's IL ID Number 0971$900014
C. Transporter's ID Number 4306
D. Transporter's Phone (800) 782-4073
E. Transporter's ID Number
F. Transporter's Phone ( )
G. Facility's IL ID Number 0978020002
H. Facility's Phone 847) 731-5110

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Asbestos, 9, NA, 2212, III, RQ	1	CM	30	Y	EPA HW Number
b.					EPA HW Number
c.					EPA HW Number
d.					EPA HW Number

J. Additional Description for Materials Listed Above
Approval Code 003164

K. Handling Codes for Wastes Listed Above In Item #14

15. Special Handling Instructions and Additional Information
Do Not Create Dust

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Printed /Typed Name: Dan Hibbard | Signature: Dan Hibbard | Date Month Day Year: 08 19 08

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed /Typed Name: David [illegible] | Signature: [illegible] | Date Month Day Year: 08 19 08

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed /Typed Name: | Signature: | Date Month Day Year:

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.
Printed /Typed Name: K. Thuot | Signature: [illegible] | Date Month Day Year: 08 19 08

GENERATOR / TRANSPORTER / FACILITY

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COPY 2. TSD MAIL TO IEPA (RCRA HAZARDOUS AND PCB WASTES ONLY)

STATE OF ILLINOIS

ENVIRONMENTAL PROTECTION AGENCY DIVISION OF LAND POLLUTION CONTROL

P.O. BOX 19276 SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761

State Form LPC 62 8/81 IL532-0610

FOR SHIPMENT OF HAZARDOUS AND SPECIAL WASTE

PLEASE TYPE (Form designed for use on elite (12-pitch) typewriter.) EPA Form 8700-22 (Rev. 6-89) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. ILD 005443544 | Manifest Document No. | 2. Page 1 of 1 | Information in the shaded areas is not required by Federal law, but is required by Illinois law.

3. Generator's Name and Mailing Address / Location If Different
Johns Manville
1871 North Pershing Road, Waukegan, IL. 60087

4. *24 HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS* (847) 360-4400

A. Illinois Manifest Document Number IL 10030440 FEE PAID IF APPLICABLE

B. Generator's IL ID Number 0971190014

5. Transporter 1 Company Name: Veolia Waste Services 6013 | 6. US EPA ID Number: ~~XXXX~~ N/A

C. Transporter's ID Number 0716

D. Transporter's Phone 847) 623-3870

7. Transporter 2 Company Name | 8. US EPA ID Number

E. Transporter's ID Number

F. Transporter's Phone ( )

9. Designated Facility Name and Site Address
~~XXXXX Zion Landfill~~ Veolia ES Zion Lndfill
701 Greenbay Road
Zion, IL. 60099

10. US EPA ID Number N/A

G. Facility's IL ID Number 0970850002

H. Facility's Phone 847) 731-5110

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. ~~Non-Hazardous, Non DOT Regulated Petroleum Impacted Material, NOS~~ DH 8-15-08	1	DT	~~15~~	Y	EPA HW Number
b. Asbestos, 9, NA, 2212, III, RQ	1	CM	20	Y	EPA HW Number
c.					EPA HW Number
d.					EPA HW Number

J. Additional Description for Materials Listed Above
~~Approval Code: SZL 002179~~ DH 8-15-08
SQXK
Approval Code SZL 003164

K. Handling Codes for Wastes Listed Above In Item #14

15. Special Handling Instructions and Additional Information

Do Not Create Dust

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Printed/Typed Name: ~~XXXXX XXXXXX~~ Dan Hibbard | Signature: Dan Hibbard | Date Month Day Year 08 19 08

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Carlos Mendoza | Signature: Carlos Mendoza | Date Month Day Year 08/19/08

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name | Signature | Date Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: D. Shebesta | Signature: P. Shebesta | Date Month Day Year 08 19 08

GENERATOR / TRANSPORTER / FACILITY

In case of a spill call the Illinois Office of Emergency Response at 217/782-7860 and the National Response Center at 800/424-8802 or 202/426-2675.

COPY 2. TSD MAIL TO IEPA
(RCRA HAZARDOUS AND PCB WASTES ONLY)

STATE OF ILLINOIS

ENVIRONMENTAL PROTECTION AGENCY DIVISION OF LAND POLLUTION CONTROL

P.O. BOX 19276 SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761

FOR SHIPMENT OF HAZARDOUS AND SPECIAL WASTE

State Form LPC 62 8/81 IL532-0610

PLEASE TYPE (Form designed for use on elite (12-pitch) typewriter.) EPA Form 8700-22 (Rev. 6-89) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. ILD 005443544 | Manifest Document No. | 2. Page 1 of 1

Information in the shaded areas is not required by Federal law, but is required by Illinois law.

3. Generator's Name and Mailing Address / Location If Different
Johns Manville
1871 North Pershing Road, Waukegan, IL. 60087

4. *24 HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS* (847) 360- 4400

A. Illinois Manifest Document Number IL 10030432 FEE PAID IF APPLICABLE

B. Generator's IL ID Number 0971900014

5. Transporter 1 Company Name: Veolia Waste Services
6. US EPA ID Number: N/A

C. Transporter's ID Number 0716

D. Transporter's Phone 847 623-3870

7. Transporter 2 Company Name
8. US EPA ID Number

E. Transporter's ID Number

F. Transporter's Phone ( )

9. Designated Facility Name and Site Address
~~ONYX Zion Landfill~~ Veolia ES Zion Lndfill
701 Greenbay Road
Zion, IL 60099

10. US EPA ID Number N/A

G. Facility's IL ID Number 0978020002

H. Facility's Phone 847 731-5110

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. ~~Non-Hazardous, Non-DOT Regulated Petroleum Impacted Material, NOS~~ DH 8-15-08	1	DT	15	Y	EPA HW Number
b. Asbestos, 9, NA, 2212, III, RQ	1	CM	20	Y	EPA HW Number
c.					EPA HW Number
d.					EPA HW Number

J. Additional Description for Materials Listed Above
~~Approval Code: SZL 002179~~ DH 8-15-08
~~Soil~~
Approval Code SZL 003164

K. Handling Codes for Wastes Listed Above In Item #14

15. Special Handling Instructions and Additional Information
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Printed/Typed Name: ~~XXXXXXXXXXXXXXXX~~ Dan Hibbard | Signature: Dan Hibbard | Date Month Day Year 08 19 08

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Carlos M | Signature: Carlos M | Date Month Day Year 08 19 08

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name | Signature | Date Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.
Printed/Typed Name: K. Truot | Signature | Date Month Day Year 08 19 08

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In case of a spill call the Illinois Office of Emergency Response at 217/782-7860 and the National Response Center at 800/424-8802 or 202/426-2675.

COPY 2. TSD MAIL TO IEPA
(RCRA HAZARDOUS AND PCB WASTES ONLY)

STATE OF ILLINOIS ENVIRONMENTAL PROTECTION AGENCY DIVISION OF LAND POLLUTION CONTROL

P.O. BOX 19276 SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761

State Form LPC 62 8/81 IL532-0610

FOR SHIPMENT OF HAZARDOUS AND SPECIAL WASTE

PLEASE TYPE (Form designed for use on elite (12-pitch) typewriter.) EPA Form 8700-22 (Rev. 6-89) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: ILD 005443544
Manifest Document No.:
2. Page 1 of 1
Information in the shaded areas is not required by Federal law, but is required by Illinois law.

A. Illinois Manifest Document Number: IL10030441 FEE PAID IF APPLICABLE

3. Generator's Name and Mailing Address: Johns Manville, 1871 North Pershing Road, Waukegan, IL, 60087
Location If Different:

B. Generator's IL ID Number: 0971190001 4

4. "24 HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS" (847) 360-4400

5. Transporter 1 Company Name: Veolia Waste Services
6. US EPA ID Number: N/A

C. Transporter's ID Number: 0716
D. Transporter's Phone 847) 623-3870

7. Transporter 2 Company Name:
8. US EPA ID Number:

E. Transporter's ID Number:
F. Transporter's Phone ( )

9. Designated Facility Name and Site Address: ~~Onyx Zion Landfill~~ Veolia ES Zion Landfill, 701 Greenbay Road, Zion, IL. 60099
10. US EPA ID Number: N/A

G. Facility's IL ID Number: 0978020002
H. Facility's Phone 847) 731-5110

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. ~~Non Hazardous, Non DOT Regulated Petroleum Impacted Material, NOS~~ DH 8-15-08	1	DT	15	Y	EPA HW Number
b. Asbestos, 9, NA, 2212, III, RQ	1	CM	20	Y	EPA HW Number
c.					EPA HW Number
d.					EPA HW Number

J. Additional Description for Materials Listed Above
~~Approval Code: SZL 002179~~ DH 8-15-08
Approval Code SZL 003164 ~~XXXX~~

K. Handling Codes for Wastes Listed Above In Item #14

15. Special Handling Instructions and Additional Information
Do Not Create Dust

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: ~~XXXXXXPeterson~~ Dan Hibbard
Signature: Dan Hibbard
Date (Month Day Year): 08 19 08

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Carlos M
Signature: Carlos M.
Date (Month Day Year): 08 19 08

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name:
Signature:
Date (Month Day Year):

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.
Printed/Typed Name: A. Thiot
Signature: KT
Date (Month Day Year): 08 19 08

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COPY 2. TSD MAIL TO IEPA
(RCRA HAZARDOUS AND PCB WASTES ONLY)

STATE OF ILLINOIS

ENVIRONMENTAL PROTECTION AGENCY DIVISION OF LAND POLLUTION CONTROL
P.O. BOX 19276 SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761
State Form LPC 62 8/81 IL532-0610

FOR SHIPMENT OF HAZARDOUS AND SPECIAL WASTE

PLEASE TYPE (Form designed for use on elite (12-pitch) typewriter.) EPA Form 8700-22 (Rev. 6-89) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. ILD 005443544
Manifest Document No.
2. Page 1 of 1
Information in the shaded areas is not required by Federal law, but is required by Illinois law.

3. Generator's Name and Mailing Address — Location If Different
Johms Manville
1871 North Pershing Road, Waukegan, IL. 60087

4. "24 HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS" (847) 360-4400

5. Transporter 1 Company Name: Veolia Waste Services 10017
6. US EPA ID Number: N/A

7. Transporter 2 Company Name:
8. US EPA ID Number:

9. Designated Facility Name and Site Address
~~Onyx Zion Landfill~~ Veolia ES Zion Landfill
701 Greenbay Road
Zion, IL. 60099
10. US EPA ID Number: N/A

A. Illinois Manifest Document Number: IL 10030438 FEE PAID IF APPLICABLE
B. Generator's IL ID Number: 0971900011
C. Transporter's ID Number: 0716
D. Transporter's Phone 847 623-3870
E. Transporter's ID Number:
F. Transporter's Phone ( )
G. Facility's IL ID Number: 0978020002
H. Facility's Phone 847) 731-5110

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. ~~Non Hazardous, Non DOT Regulated Petroleum Impacted Material, NOS~~ DH 8-15-08	1	DT	~~15~~	Y	EPA HW Number
b. Asbestos, 9, NA, 2212, III, RQ	1	CM	20	Y	EPA HW Number
c.					EPA HW Number
d.					EPA HW Number

J. Additional Description for Materials Listed Above
~~Approval Code: SZL 002179~~ DH 8-15-08
Approval Code SZL 003164

K. Handling Codes for Wastes Listed Above In Item #14

15. Special Handling Instructions and Additional Information

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Printed/Typed Name: ~~David Peterson~~ Dan Hibbard — Signature: Dan Hibbard — Date (Month Day Year): 08 19 08

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Jason K Fick — Signature: [signature] — Date: 08 19 08

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name: — Signature: — Date (Month Day Year):

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.
Printed/Typed Name: P Shobosta — Signature: C Shubesta — Date: 08 19 08

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COPY 2. TSD MAIL TO IEPA
(RCRA HAZARDOUS AND PCB WASTES ONLY)

STATE OF ILLINOIS

P.O. BOX 19276 SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761

State Form LPC 62 8/81 IL532-0610

FOR SHIPMENT OF HAZARDOUS AND SPECIAL WASTE

PLEASE TYPE (Form designed for use on elite (12-pitch) typewriter.) EPA Form 8700-22 (Rev. 6-89) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. ILD 005443544 Manifest Document No.

2. Page 1 of 1

Information in the shaded areas is not required by Federal law, but is required by Illinois law.

3. Generator's Name and Mailing Address Location If Different
Johns Manville
1871 North Pershing Road, Waukegan, IL. 60087

4. *24 HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS* XXX (847) 360-4400

5. Transporter 1 Company Name: Veolia Waste Services
6. US EPA ID Number: N/A

7. Transporter 2 Company Name
8. US EPA ID Number

9. Designated Facility Name and Site Address
~~Onyx Zion Landfill~~ Veolia ES Zion Landfill
701 Greenbay Road
Zion, IL. 60099

10. US EPA ID Number: N/A

A. Illinois Manifest Document Number IL 10030433 FEE PAID IF APPLICABLE

B. Generator's IL ID Number 0971900014

C. Transporter's ID Number 0716

D. Transporter's Phone 847)623-3870

E. Transporter's ID Number

F. Transporter's Phone ( )

G. Facility's IL ID Number 0978020002

H. Facility's Phone (847) 731-5110

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. ~~Non Hazardous, Non DOT Regulated Petroleum Impacted Material, NOS~~ DH 8-15-08	1	DT	15	Y	EPA HW Number
b. Asbestos, 9, NA, 2212, III, RQ	1	CM	20	Y	EPA HW Number
c.					EPA HW Number
d.					EPA HW Number

J. Additional Description for Materials Listed Above
~~Approval Code: SZL 002179~~ DH 8-15-08
SOIL
Approval Code SZL 003164

K. Handling Codes for Wastes Listed Above In Item #14

15. Special Handling Instructions and Additional Information
Do Not Create XXXXX Dust

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Printed/Typed Name: ~~David Peterson~~ Dan Hibbard Signature: Dan Hibbard Date Month Day Year 08 18 08

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Joseph K Fick Signature: [signature] Date Month Day Year 08 18 08

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name Signature Date Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.
Printed/Typed Name: R Ihuot Signature: [signature] Date Month Day Year 08 19 08

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STATE OF ILLINOIS

P.O. BOX 19276 SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761

State Form LPC 62 8/81 IL532-0610

FOR SHIPMENT OF HAZARDOUS AND SPECIAL WASTE

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UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: ILD 005443544
Manifest Document No.:
2. Page 1 of 1
Information in the shaded areas is not required by Federal law, but is required by Illinois law.

3. Generator's Name and Mailing Address: Johns Manville, 1871 North Pershing Road, Waukegan, IL. 60087
Location If Different:

4. *24 HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS* (847) 360-4400

A. Illinois Manifest Document Number: IL10030435 FEE PAID IF APPLICABLE

B. Generator's IL ID Number: 0971190014

5. Transporter 1 Company Name: Veolia Waste Services
6. US EPA ID Number: N/A

C. Transporter's ID Number: 0716

D. Transporter's Phone: 847)623-3870

7. Transporter 2 Company Name:
8. US EPA ID Number:

E. Transporter's ID Number:

F. Transporter's Phone ( )

9. Designated Facility Name and Site Address: ~~Onyx~~ Zion Landfill, 701 Greenbay Road, Zion, IL. 60099 Veolia ES Zion Landfill
10. US EPA ID Number: N/A

G. Facility's IL ID Number: 0978020002

H. Facility's Phone: 847) 731-5110

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. ~~Non Hazardous, Non DOT XXXXXXXXX Regulated Petroleum Impacted Material, NOS~~ 8/14/08 [initials]	~~1~~	~~DT~~	~~15~~	~~Y~~	EPA HW Number
b. Asbestos, 9, NA, 2212, III, RQ	1	CM	20	Y	EPA HW Number
c.					EPA HW Number
d.					EPA HW Number

J. Additional Description for Materials Listed Above
Approval Code: ~~SZL 002179~~ 8/14/08 [initials]

Approval Code SZL 003164 ~~SOTL~~

K. Handling Codes for Wastes Listed Above In Item #14

15. Special Handling Instructions and Additional Information

Do Not Create Dust

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Printed/Typed Name: ~~David Peterson~~ Dan Hibbard | Signature: Dan Hibbard | Date Month Day Year: 08 18 08

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Joey Gnatt | Signature: [signature] | Date Month Day Year: 08 18 08

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name: | Signature: | Date Month Day Year:

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.
Printed/Typed Name: C. Turnacn | Signature: C. Turnacn | Date Month Day Year: 8 18 08

GENERATOR / TRANSPORTER / FACILITY

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STATE OF ILLINOIS

ENVIRONMENTAL PROTECTION AGENCY DIVISION OF LAND POLLUTION CONTROL

P.O. BOX 19276 SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761

State Form LPC 62 8/81 IL532-0610

FOR SHIPMENT OF HAZARDOUS AND SPECIAL WASTE

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UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: ILD 005443544
Manifest Document No.:
2. Page 1 of 1

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3. Generator's Name and Mailing Address — Location If Different
Johns Manville
1871 North Pershing Road, Waukegan, IL. 60087

4. "24 HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS" (847) 360-4400

5. Transporter 1 Company Name: Veolia Waste Services
6. US EPA ID Number: N/A

7. Transporter 2 Company Name:
8. US EPA ID Number:

9. Designated Facility Name and Site Address
~~Onyx Zion Landfill~~ Veolia ES Zion Lndfill
701 Greenbay Road
Zion, IL. 60099
10. US EPA ID Number: N/A

A. Illinois Manifest Document Number: IL 10030442 FEE PAID IF APPLICABLE
B. Generator's IL ID Number: 0971190004
C. Transporter's ID Number: 0716
D. Transporter's Phone 847) 623-3870
E. Transporter's ID Number:
F. Transporter's Phone ( )
G. Facility's IL ID Number: 0978080002
H. Facility's Phone 847) 731-5110

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. ~~Non-Hazardous, NON-DOT Regulated Petroleum Impacted Material, NOS~~ WH 8-15-08	1	DT	15	Y	EPA HW Number
b. XXXXXXXXXXXXX Asbestos, 9, NA, 2212, III, RQ	1	CM	20	Y	EPA HW Number
c.					EPA HW Number
d.					EPA HW Number

J. Additional Description for Materials Listed Above
~~Approval Code: SZL 00~~ WH 8-15-08
~~Approval Code: SZL 002179~~
Approval Code SZL 003164 XSOXX

K. Handling Codes for Wastes Listed Above in Item #14

15. Special Handling Instructions and Additional Information
Do Not Creaţ Dust

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Printed/Typed Name: ~~David Peterson~~ Dan Hibbard — Signature: Dan Hibbard — Date Month Day Year: 08 18 08

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: William Carter — Signature: [signature] — Date Month Day Year: 08 18 08

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name: — Signature: — Date Month Day Year:

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.
Printed/Typed Name: K Thurot — Signature: [signature] — Date Month Day Year: 08 18 08

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STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY DIVISION OF LAND POLLUTION CONTROL

P.O. BOX 19276 SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761

State Form LPC 62 8/81 IL532-0610

A 03

FOR SHIPMENT OF HAZARDOUS AND SPECIAL WASTE

PLEASE TYPE (Form designed for use on elite (12-pitch) typewriter.) EPA Form 8700-22 (Rev. 6-89) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. ILD 005443544 — Manifest Document No.
2. Page 1 of

Information in the shaded areas is not required by Federal law, but is required by Illinois law.

3. Generator's Name and Mailing Address — Location If Different
Johns Manville
1871 N. Pershing Road
Waukegan, Il. 60087

4. "24 HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS"

5. Transporter 1 Company Name: Veolia Waste Services
6. US EPA ID Number

7. Transporter 2 Company Name
8. US EPA ID Number

9. Designated Facility Name and Site Address
Veolia ES Zion Landfill
701 Green Bay Road
Zion, IL.. 60099

10. US EPA ID Number

A. Illinois Manifest Document Number: IL 10030496 FEE PAID IF APPLICABLE

B. Generator's IL ID Number: 0971900014

C. Transporter's ID Number: 0716

D. Transporter's Phone 847/623-3870

E. Transporter's ID Number

F. Transporter's Phone ( )

G. Facility's IL ID Number: 0978020002

H. Facility's Phone 847/731-5110

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Asbestos, 9, NA, 2212, III, RQ	1	CM	20	Y	EPA HW Number
b.					EPA HW Number
c.					EPA HW Number
d.					EPA HW Number

J. Additional Description for Materials Listed Above
Approval Code SZL 003164

K. Handling Codes for Wastes Listed Above In Item #14

15. Special Handling Instructions and Additional Information
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Printed/Typed Name: Dan Hibbard — Signature: Dan Hibbard — Date Month Day Year: 08 18 08

GENERATOR

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: William Lederle — Signature: [signature] — Date Month Day Year: 08 18 08

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name — Signature — Date Month Day Year

TRANSPORTER

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: C. Lunaan — Signature: C. Lunaan — Date Month Day Year: 8 18 08

FACILITY

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COPY 2. TSD MAIL TO IEPA
(RCRA HAZARDOUS AND PCB WASTES ONLY)

STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY DIVISION OF LAND POLLUTION CONTROL
P.O. BOX 19276 SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761

State Form LPC 62 8/81 IL532-0610

EPA Form 8700-22 (Rev. 6-89)

FOR SHIPMENT OF HAZARDOUS AND SPECIAL WASTE

Form Approved. OMB No. 2050-0039

551

PLEASE TYPE (Form designed for use on elite (12-pitch) typewriter.)

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. ILD 005443544
Manifest Document No.
2. Page 1 of
Information in the shaded areas is not required by Federal law, but is required by Illinois law.

3. Generator's Name and Mailing Address — Location If Different
Johns Manville
1871 N. Pershing Road
Waukegan, Il. 60087

4. *24 HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS*

5. Transporter 1 Company Name: Veolia Waste Services
6. US EPA ID Number

7. Transporter 2 Company Name
8. US EPA ID Number

9. Designated Facility Name and Site Address
Veolia ES Zion Landfill
701 Green Bay Road
Zion, IL. 60099
10. US EPA ID Number

A. Illinois Manifest Document Number IL 10030500 FEE PAID IF APPLICABLE
B. Generator's IL ID Number 0971900014
C. Transporter's ID Number 0716
D. Transporter's Phone 847) 623-3870
E. Transporter's ID Number
F. Transporter's Phone ( )
G. Facility's IL ID Number 0978020008
H. Facility's Phone ( )

GENERATOR

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Asbestos, 9, NA, 2212, III, RQ	1	CM	20	Y	EPA HW Number
b.					EPA HW Number
c.					EPA HW Number
d.					EPA HW Number

J. Additional Description for Materials Listed Above
Approval Code ~~003164~~ SZL 003164

K. Handling Codes for Wastes Listed Above In Item #14

15. Special Handling Instructions and Additional Information
Do Not Create Dust

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

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Printed/Typed Name: Dan Hibbard — Signature: Dan Hibbard — Date (Month Day Year): 08 18 08

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: William Ludewig — Signature: William [signature] — Date (Month Day Year): 08 18 08

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name — Signature — Date (Month Day Year)

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.
Printed/Typed Name: C. Lunaen — Signature: C. Lunaen — Date (Month Day Year): 8 18 08

This Agency is authorized to require, pursuant to Illinois Revised Statute, 1989, Chapter 111 1/2, Section 1004 and 1021, that this information be submitted to the Agency. Failure to provide this information may result in a civil penalty against the owner or operator not to exceed $25,000 per day of violation. Falsification of this information may result in a fine up to $50,000 per day of violation and imprisonment up to 5 years. This form has been approved by the Forms Management Center.

In case of a spill call the Illinois Office of Emergency Response at 217/782-7860 and the National Response Center at 800/424-8802 or 202/426-2675.

COPY 2. TSD MAIL TO IEPA (RCRA HAZARDOUS AND PCB WASTES ONLY)

STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY DIVISION OF LAND POLLUTION CONTROL
P.O. BOX 19276 SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761
530
FOR SHIPMENT OF HAZARDOUS AND SPECIAL WASTE
State Form LPC 62 8/81 IL532-0610

PLEASE TYPE (Form designed for use on elite (12-pitch) typewriter.) EPA Form 8700-22 (Rev. 6-89) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. ILD 005443544 Manifest Document No.
2. Page 1 of

Information in the shaded areas is not required by Federal law, but is required by Illinois law

3. Generator's Name and Mailing Address — Location If Different
Johns Manville
1871 N. Pershing Road
Waukegan, IL 60087

A. Illinois Manifest Document Number IL 10030498 FEE PAID IF APPLICABLE

B. Generator's IL ID Number 0971900014

4. *24 HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS*

5. Transporter 1 Company Name: Veolia Waste Services
6. US EPA ID Number

C. Transporter's ID Number 0716
D. Transporter's Phone (847) 623-3870

7. Transporter 2 Company Name
8. US EPA ID Number

E. Transporter's ID Number
F. Transporter's Phone ( )

9. Designated Facility Name and Site Address
Veolia ES Zion Landfill
701 Green Bay Road
Zion, IL. 60099
10. US EPA ID Number

G. Facility's IL ID Number 0978020002
H. Facility's Phone (847) 731-5110

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. ASbestos, 9, NA, 2212. III, RQ	1	CM	20	Y	EPA HW Number
b.					EPA HW Number
c.					EPA HW Number
d.					EPA HW Number

J. Additional Description for Materials Listed Above
Approval Code SZL 003164

K. Handling Codes for Wastes Listed Above In Item #14

15. Special Handling Instructions and Additional Information
Do Not Create Dust

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

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Printed/Typed Name: Dan Hibbard — Signature: Dan Hibbard — Date Month Day Year: 08 18 08

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: William Iadewa — Signature: William [illegible] — Date Month Day Year: 08 18 08

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name — Signature — Date Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: C. Lunan — Signature: C. Lunan — Date Month Day Year: 8 18 08

GENERATOR / TRANSPORTER / FACILITY

In case of a spill call the Illinois Office of Emergency Response at 217/782-7860 and the National Response Center at 800/424-8802 or 202/426-2675.

COPY 2. TSD MAIL TO IEPA
(RCRA HAZARDOUS AND PCB WASTES ONLY)

STATE OF ILLINOIS

ENVIRONMENTAL PROTECTION AGENCY DIVISION OF LAND POLLUTION CONTROL

P.O. BOX 19276 SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761

586

FOR SHIPMENT OF HAZARDOUS AND SPECIAL WASTE

State Form LPC 62 8/81 IL532-0610

PLEASE TYPE (Form designed for use on elite (12-pitch) typewriter.) EPA Form 8700-22 (Rev. 6-89) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. ILD 005443544 Manifest Document No.

2. Page 1 of

Information in the shaded areas is not required by Federal law, but is required by Illinois law.

3. Generator's Name and Mailing Address Location If Different
Johns Manville
~~XXX~~ 1871 N. Pershing Road
Waukegan, Il. 60087

4. *24 HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS*

A. Illinois Manifest Document Number IL10030499 FEE PAID IF APPLICABLE

B. Generator's IL ID Number 0971900014

C. Transporter's ID Number 0716

D. Transporter's Phone (847) 623-3870

5. Transporter 1 Company Name Veolia ~~Xxxxx~~ Waste ~~x~~ Services

6. US EPA ID Number

7. Transporter 2 Company Name

8. US EPA ID Number

E. Transporter's ID Number

F. Transporter's Phone ( )

9. Designated Facility Name and Site Address
Veolia ES Zion Landfill
701 Green Bay Road
Zion, Il. 60099

10. US EPA ID Number

G. Facility's IL ID Number 0978020002

H. Facility's Phone (847) 731-5110

GENERATOR

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Asbestos, 9, NA, 2212, III, RQ	1	CM	20	Y	EPA HW Number
b.					EPA HW Number
c.					EPA HW Number
d.					EPA HW Number

J. Additional Description for Materials Listed Above

Approval Code SZL 003164

K. Handling Codes for Wastes Listed Above In Item #14

15. Special Handling Instructions and Additional Information

Do Not Create Dust

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Printed/Typed Name: Dan Hibbard Signature: Dan Hibbard Date Month 08 Day 18 Year 08

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: William Ladewig Signature: William [illegible] Date Month Day Year

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name Signature Date Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.
Printed/Typed Name: C. Tunnan Signature: C. Tunnan Date Month 8 Day 18 Year 08

This Agency is authorized to require, pursuant to Illinois Revised Statute, 1989, Chapter 111 1/2, Section 1004 and 1021, that this information be submitted to the Agency. Failure to provide this information may result in a civil penalty against the owner or operator not to exceed $25,000 per day of violation. Falsification of this information may result in a fine up to $50,000 per day of violation and imprisonment up to 5 years. This form has been approved by the Forms Management Center.

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(RCRA HAZARDOUS AND PCB WASTES ONLY)

STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY DIVISION OF LAND POLLUTION CONTROL

P.O. BOX 19276 SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761

State Form LPC 62 8/81 IL532-0610

FOR SHIPMENT OF HAZARDOUS AND SPECIAL WASTE

PLEASE TYPE (Form designed for use on elite (12-pitch) typewriter.) EPA Form 8700-22 (Rev. 6-89) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. ILD 005443544 Manifest Document No.
2. Page 1 of

Information in the shaded areas is not required by Federal law, but is required by Illinois law.

3. Generator's Name and Mailing Address Location If Different
Johns Manville
1871 N. Pershing Road
Waukegan, Il. 60087

4. "24 HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS"

5. Transporter 1 Company Name: Veolia Waste Services
6. US EPA ID Number

7. Transporter 2 Company Name
8. US EPA ID Number

9. Designated Facility Name and Site Address
Veolia ES Zion Landfill
701 Green Bay Road
Zion, Il. 60099

10. US EPA ID Number

A. Illinois Manifest Document Number IL10030497 FEE PAID IF APPLICABLE
B. Generator's IL ID Number 0971900014
C. Transporter's ID Number 0716
D. Transporter's Phone 847) 623-3870
E. Transporter's ID Number
F. Transporter's Phone ( )
G. Facility's IL ID Number 0978020002
H. Facility's Phone 847 731-5110

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Asbestos, 9, NA, 2212, III, RQ	1	CM	20	Y	EPA HW Number
b.					EPA HW Number
c.					EPA HW Number
d.					EPA HW Number

J. Additional Description for Materials Listed Above
Approval Code SZL 003164

K. Handling Codes for Wastes Listed Above In Item #14

15. Special Handling Instructions and Additional Information
Do Not Create Dust

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Printed/Typed Name: Dan Hibbard Signature: Dan Hibbard Date Month Day Year: 08 18 08

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: William Ludewig Signature: William [illegible] Date Month Day Year: 08 18 08

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name Signature Date Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.
Printed/Typed Name: C. Kinnan Signature: C. Kinnan Date Month Day Year: 8 18 08

GENERATOR / TRANSPORTER / FACILITY

In case of a spill call the Illinois Office of Emergency Response at 217/782-7860 and the National Response Center at 800/424-8802 or 202/426-2675.

COPY 2. TSD MAIL TO IEPA
(RCRA HAZARDOUS AND PCB WASTES ONLY)

STATE OF ILLINOIS

P.O. BOX 19276 SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761

State Form LPC 62 8/81 IL532-0610

FOR SHIPMENT OF HAZARDOUS AND SPECIAL WASTE

PLEASE TYPE (Form designed for use on elite (12-pitch) typewriter.) EPA Form 8700-22 (Rev. 6-89) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: ILD 005443544 | Manifest Document No.: | 2. Page 1 of | Information in the shaded areas is not required by Federal law, but is required by Illinois law.

3. Generator's Name and Mailing Address: Johns Manville, 1871 N. Pershing Road, Waukegan, IL. 60087 | Location If Different:

4. *24 HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS*

5. Transporter 1 Company Name: Veolia Waste Services | 6. US EPA ID Number:

7. Transporter 2 Company Name: | 8. US EPA ID Number:

9. Designated Facility Name and Site Address: Veolea ES Zion Landfill, 701 Greebn Bay Road, Zion, Il. 60099 | 10. US EPA ID Number:

A. Illinois Manifest Document Number: IL10030485 FEE PAID IF APPLICABLE

B. Generator's IL ID Number: 0971900014

C. Transporter's ID Number: 0716

D. Transporter's Phone (847) 623-3870

E. Transporter's ID Number:

F. Transporter's Phone ( )

G. Facility's IL ID Number: 0978020002

H. Facility's Phone (847) 731-5110

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Asbestos, 9, NA, 2212, III; RQ	1	CM	20	Y	EPA HW Number
b.					EPA HW Number
c.					EPA HW Number
d.					EPA HW Number

J. Additional Description for Materials Listed Above: Approval Code SZL 003164

K. Handling Codes for Wastes Listed Above In Item #14

15. Special Handling Instructions and Additional Information: Do Not Create Dust

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

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Printed/Typed Name: Dan Hibbard | Signature: Dan Hibbard | Date Month Day Year: 08 15 08

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: Carlos Mendoza | Signature: Carlos Mendoza | Date Month Day Year: 08 15 08

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name: | Signature: | Date Month Day Year:

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name: C. Kunaan | Signature: C. Kunaan | Date Month Day Year: 8 15 08

GENERATOR / TRANSPORTER / FACILITY

In case of a spill call the Illinois Office of Emergency Response at 217/782-7860 and the National Response Center at 800/424-8802 or 202/426-2675.

COPY 2. TSD MAIL TO IEPA
(RCRA HAZARDOUS AND PCB WASTES ONLY)

STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY DIVISION OF LAND POLLUTION CONTROL

P.O. BOX 19276 SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761

State Form LPC 62 8/81 IL532-0610

FOR SHIPMENT OF HAZARDOUS AND SPECIAL WASTE

PLEASE TYPE (Form designed for use on elite (12-pitch) typewriter.) EPA Form 8700-22 (Rev. 6-89) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: ILD 005443544
Manifest Document No.:
2. Page 1 of
Information in the shaded areas is not required by Federal law, but is required by Illinois law.

3. Generator's Name and Mailing Address / Location If Different:
Johns Manville
1871 N. Pershing Road
Waukegan, IL. 60087

4. *24 HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS*

5. Transporter 1 Company Name: Veolia Waste Services
6. US EPA ID Number:

7. Transporter 2 Company Name:
8. US EPA ID Number:

9. Designated Facility Name and Site Address:
Veolia Es Zion Landfill
~~XXX~~ 701 Green Bay Road
Zion, IL. 60099
10. US EPA ID Number:

A. Illinois Manifest Document Number: IL10030489 FEE PAID IF APPLICABLE
B. Generator's IL ID Number: 0971900014
C. Transporter's ID Number: 0716
D. Transporter's Phone: 847 623-3870
E. Transporter's ID Number:
F. Transporter's Phone ( )
G. Facility's IL ID Number: 0978020002
H. Facility's Phone: 847 731-5110

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Asbestos, 9, NA, 2212, [redacted] III, RQ	1	CM	20	Y	EPA HW Number
b.					EPA HW Number
c.					EPA HW Number
d.					EPA HW Number

J. Additional Description for Materials Listed Above:
Approval Code SZL 003164

K. Handling Codes for Wastes Listed Above In Item #14

15. Special Handling Instructions and Additional Information:
Do Non Create Dust

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Printed/Typed Name	Signature	Date Month Day Year
Dan Hibbard	Dan Hibbard	08 15 08

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date Month Day Year
Carlos Mendoza	Carlos Mendoza	08 15 08

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.

Printed/Typed Name	Signature	Date Month Day Year
C. Lunaen	C. Lounaen	8 15 08

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COPY 2. TSD MAIL TO IEPA
(RCRA HAZARDOUS AND PCB WASTES ONLY)

STATE OF ILLINOIS

P.O. BOX 19276 SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761

State Form LPC 62 8/81 IL532-0610

FOR SHIPMENT OF HAZARDOUS AND SPECIAL WASTE

PLEASE TYPE (Form designed for use on elite (12-pitch) typewriter.) EPA Form 8700-22 (Rev. 6-89) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: ILD 005443544
Manifest Document No.:
2. Page 1 of
Information in the shaded areas is not required by Federal law, but is required by Illinois law.

3. Generator's Name and Mailing Address — Location If Different
Johns Manville
1871 N. Pershing Road
Waukegan, IL. 60087

A. Illinois Manifest Document Number: IL10030487 FEE PAID IF APPLICABLE

B. Generator's IL ID Number: 0971900014

4. *24 HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS*

5. Transporter 1 Company Name: Veolia Waste Services
6. US EPA ID Number:

C. Transporter's ID Number: 0716

D. Transporter's Phone: 847) 623-3870

7. Transporter 2 Company Name:
8. US EPA ID Number:

E. Transporter's ID Number:

F. Transporter's Phone ( )

9. Designated Facility Name and Site Address
Veolia ES Zion Landfill
701 Green Bay Road
Zion, IL. 60099
10. US EPA ID Number:

G. Facility's IL ID Number: 0978020002

H. Facility's Phone: 847) 731-5110

	11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a.	Asbestos, 9, NA, 2212, III, RQ	1	CM	20	Y	EPA HW Number
b.						EPA HW Number
c.						EPA HW Number
d.						EPA HW Number

GENERATOR

J. Additional Description for Materials Listed Above
Approval Code SZL 003164

K. Handling Codes for Wastes Listed Above In Item #14

15. Special Handling Instructions and Additional Information
Do Not Create Dust

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Printed/Typed Name: Dan Hibbard — Signature: Dan Hibbard — Date: Month 08 Day 15 Year 08

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Carlos Marchez — Signature: Carlos Mardz — Date: Month 08 Day 15 Year 08

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name: — Signature: — Date: Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: C. Timann — Signature: C. Timann — Date: Month 8 Day 15 Year 08

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STATE OF ILLINOIS

P.O. BOX 19276 SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761

State Form LPC 62 8/81 IL532-0610

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UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: ILD 005443544
Manifest Document No.:
2. Page 1 of
Information in the shaded areas is not required by Federal law, but is required by Illinois law.

3. Generator's Name and Mailing Address / Location If Different
Johns Manville
~~XXXXX~~ 1871 N. Pershing Road
Waukegan, IL. 60087

4. *24 HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS*

A. Illinois Manifest Document Number: IL 10030490 FEE PAID IF APPLICABLE
B. Generator's IL ID Number: 0971900014
C. Transporter's ID Number: 0716
D. Transporter's Phone: 847 623-3870

5. Transporter 1 Company Name: Veolia Waste Services
6. US EPA ID Number:

7. Transporter 2 Company Name:
8. US EPA ID Number:

E. Transporter's ID Number:
F. Transporter's Phone ( )

9. Designated Facility Name and Site Address
Veolia ES Zion Landfill
701 Green Bay Road
Zion, Il.. 60099

10. US EPA ID Number:

G. Facility's IL ID Number: 0978020002
H. Facility's Phone: 847) 731-5110

GENERATOR

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Asbestos, 9, NA, 2212, III, RQ	1	CM	20	Y	EPA HW Number
b.					EPA HW Number
c.					EPA HW Number
d.					EPA HW Number

J. Additional Description for Materials Listed Above
Approval Code SZL 003164

K. Handling Codes for Wastes Listed Above In Item #14

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Printed/Typed Name	Signature	Date Month Day Year
Dan Hibbard	Dan Hibbard	08 15 08

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date Month Day Year
John F Joyce		08 15 08

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.

Printed/Typed Name	Signature	Date Month Day Year
C. Lynacn	C. Lynacn	8 15 08

This Agency is authorized to require, pursuant to Illinois Revised Statute, 1989, Chapter 111 1/2, Section 1004 and 1021, that this information be submitted to the Agency. Failure to provide this information may result in a civil penalty against the owner or operator not to exceed $25,000 per day of violation. Falsification of this information may result in a fine up to $50,000 per day of violation and imprisonment up to 5 years. This form has been approved by the Forms Management Center.

In case of a spill call the Illinois Office of Emergency Response at 217/782-7860 and the National Response Center at 800/424-8802 or 202/426-2675.

COPY 2. TSD MAIL TO IEPA
(RCRA HAZARDOUS AND PCB WASTES ONLY)

STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY DIVISION OF LAND POLLUTION CONTROL
P.O. BOX 19276 SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761

FOR SHIPMENT OF HAZARDOUS AND SPECIAL WASTE

State Form LPC 62 8/81 IL532-0610

PLEASE TYPE (Form designed for use on elite (12-pitch) typewriter.) EPA Form 8700-22 (Rev. 6-89) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: ILD 005443544
Manifest Document No.:
2. Page 1 of
Information in the shaded areas is not required by Federal law, but is required by Illinois law.

3. Generator's Name and Mailing Address:
Johns Manville
1871 North ⊗ Pershing Road
Waukegan, IL, 60087
Location If Different

A. Illinois Manifest Document Number: IL10030493 FEE PAID IF APPLICABLE
B. Generator's IL ID Number: 0971900014

4. *24 HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS*

5. Transporter 1 Company Name: Veolia Waste Services
6. US EPA ID Number:
C. Transporter's ID Number: 0716
D. Transporter's Phone: 847 623-3870

7. Transporter 2 Company Name:
8. US EPA ID Number:
E. Transporter's ID Number:
F. Transporter's Phone ( )

9. Designated Facility Name and Site Address:
Veolia ES Zion Landfill
701 Green Bay Road
Zion, Il. 60099
10. US EPA ID Number:
G. Facility's IL ID Number: 0978020002
H. Facility's Phone: 847 731-5110

GENERATOR

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Asbestos, 9, NA, 2212, III, RQ	1	CM	20	Y	EPA HW Number
b.					EPA HW Number
c.					EPA HW Number
d.					EPA HW Number

J. Additional Description for Materials Listed Above
Approval Code SZL 003164

K. Handling Codes for Wastes Listed Above In Item #14

15. Special Handling Instructions and Additional Information
Do Not Create Dust

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: Dan Hibbard — Signature: Dan Hibbard — Date (Month Day Year): 08 15 08

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: Carlos Mendoza — Signature: Carlos Mendoza — Date (Month Day Year): 08 15 08

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name: — Signature: — Date (Month Day Year):

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.
Printed/Typed Name: C. Lineaen — Signature: C. Lineaen — Date (Month Day Year): 8 15 08

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UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. ILD 005443544 | Manifest Document No. | 2. Page 1 of | Information in the shaded areas is not required by Federal law, but is required by Illinois law.

3. Generator's Name and Mailing Address
Johns Manville
1871 N. Pershing Road
Waukegan, Il. 60087

Location If Different

A. Illinois Manifest Document Number IL 10030494 FEE PAID IF APPLICABLE

B. Generator's IL ID Number 0971900014

4. *24 HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS*

5. Transporter 1 Company Name Veolia Waste Services | 6. US EPA ID Number

C. Transporter's ID Number 0716

D. Transporter's Phone 847) 623-3870

7. Transporter 2 Company Name | 8. US EPA ID Number

E. Transporter's ID Number

F. Transporter's Phone ( )

9. Designated Facility Name and Site Address
Veolia ES Zion Landfill
701 Green Bay Road
Zion, IL. 60099

10. US EPA ID Number

G. Facility's IL ID Number 0978020002

H. Facility's Phone 847) 731-5110

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Asbestos, 9, NA, 2212, III, RQ	1	CM	20	Y	EPA HW Number
b.					EPA HW Number
c.					EPA HW Number
d.					EPA HW Number

J. Additional Description for Materials Listed Above

Approval Code SZL 003164

K. Handling Codes for Wastes Listed Above In Item #14

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Printed/Typed Name: ~~XXXX~~ Dan Hibbard | Signature: Dan Hibbard | Date Month Day Year: 08 15 08

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: Carlos Mendoza | Signature: Carlos Mendoza | Date Month Day Year: 08 15 08

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name | Signature | Date Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.

Printed/Typed Name: P. Shebesta | Signature: P. Shebesta | Date Month Day Year: 08 15 08

GENERATOR / TRANSPORTER / FACILITY

In case of a spill call the Illinois Office of Emergency Response at 217/782-7860 and the National Response Center at 800/424-8802 or 202/426-2675.

COPY 2. TSD MAIL TO IEPA
(RCRA HAZARDOUS AND PCB WASTES ONLY)

STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY DIVISION OF LAND POLLUTION CONTROL
P.O. BOX 19276 SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761
State Form LPC 62 8/81 IL532-0610
FOR SHIPMENT OF HAZARDOUS AND SPECIAL WASTE

PLEASE TYPE (Form designed for use on elite (12-pitch) typewriter.) EPA Form 8700-22 (Rev. 6-89) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. ILD 005443544
Manifest Document No.
2. Page 1 of
Information in the shaded areas is not required by Federal law, but is required by Illinois law.

3. Generator's Name and Mailing Address — Location If Different
Johns Manville
1871 North Pershing Road
Waukegan, IL. 60087

4. *24 HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS*

5. Transporter 1 Company Name: Veolia Waste Services
6. US EPA ID Number:

7. Transporter 2 Company Name:
8. US EPA ID Number:

9. Designated Facility Name and Site Address
Veolia ES Zion Landfill
701 Green Bay Road
Zion, IL. 60099
10. US EPA ID Number:

A. Illinois Manifest Document Number IL 10030484 FEE PAID IF APPLICABLE
B. Generator's IL ID Number 0971190014
C. Transporter's ID Number 0716
D. Transporter's Phone (847) 623-3870
E. Transporter's ID Number
F. Transporter's Phone ( )
G. Facility's IL ID Number 0978020002
H. Facility's Phone (847) 731-5110

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Asbestos, 9, NA, 2212, III, RQ	1	CM	20	Y	EPA HW Number
b.					EPA HW Number
c. ~~Approval Code SZL 003164~~					EPA HW Number
d.					EPA HW Number

J. Additional Description for Materials Listed Above
Approval Code SZL 003164

K. Handling Codes for Wastes Listed Above In Item #14

15. Special Handling Instructions and Additional Information
Do Not Create Dust

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Printed/Typed Name	Signature	Date Month Day Year
Dan Hibbard	Dan Hibbard	08 15 08

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date Month Day Year
John F Joyce	[signature]	08 15 08

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.

Printed/Typed Name	Signature	Date Month Day Year
P. Lyman	P. Lyman	8 15 08

GENERATOR / TRANSPORTER / FACILITY

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COPY 2. TSD MAIL TO IEPA
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STATE OF ILLINOIS

ENVIRONMENTAL PROTECTION AGENCY DIVISION OF LAND POLLUTION CONTROL

P.O. BOX 19276 SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761

FOR SHIPMENT OF HAZARDOUS AND SPECIAL WASTE

State Form LPC 62 8/81 IL532-0610

PLEASE TYPE (Form designed for use on elite (12-pitch) typewriter.) EPA Form 8700-22 (Rev. 6-89) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: ILD 005443544
Manifest Document No.:
2. Page 1 of
Information in the shaded areas is not required by Federal law, but is required by Illinois law.

3. Generator's Name and Mailing Address: Johns Manville, ~~XX~~ 1871 N. Pershing Road, Waukegan, IL. 60087
Location If Different:

4. *24 HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS*

A. Illinois Manifest Document Number: IL 10030488 FEE PAID IF APPLICABLE

B. Generator's IL ID Number: 0971900014

5. Transporter 1 Company Name: Veolia Waste Services
6. US EPA ID Number:

C. Transporter's ID Number: 0716

D. Transporter's Phone (847) 623-3870

7. Transporter 2 Company Name:
8. US EPA ID Number:

E. Transporter's ID Number:

F. Transporter's Phone ( )

9. Designated Facility Name and Site Address: Veolia ES Zion Landfill, 701 Green Bay Road, Zion, IL. 60099
10. US EPA ID Number:

G. Facility's IL ID Number: 0978020002

H. Facility's Phone (847) 731-5110

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Asbestos, 9, NA, 2212, III, RQ	1	CM	20	Y	EPA HW Number
b.					EPA HW Number
c.					EPA HW Number
d.					EPA HW Number

J. Additional Description for Materials Listed Above

Approval Code SZL 003164

K. Handling Codes for Wastes Listed Above In Item #14

15. Special Handling Instructions and Additional Information

Do Not Create Dust

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Printed/Typed Name	Signature	Date Month Day Year
Dan Hibbard	Dan Hibbard	08 15 08

GENERATOR

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date Month Day Year
John F Joyce		08 15 08

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date Month Day Year

TRANSPORTER

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.

Printed/Typed Name	Signature	Date Month Day Year
C. Luman	C. Luman	8 15 08

FACILITY

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STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY DIVISION OF LAND POLLUTION CONTROL
P.O. BOX 19276 SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761
State Form LPC 62 8/81 IL532-0610
EPA Form 8700-22 (Rev. 6-89)

FOR SHIPMENT OF HAZARDOUS AND SPECIAL WASTE

Form Approved. OMB No. 2050-0039

PLEASE TYPE (Form designed for use on elite (12-pitch) typewriter.)

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: ILD 005443544
Manifest Document No.:
2. Page 1 of

Information in the shaded areas is not required by Federal law, but is required by Illinois law.

3. Generator's Name and Mailing Address: Johns Manville, 1871 North Pershing Road, Waukegan, IL. 60087
Location If Different

A. Illinois Manifest Document Number: IL 10030483 FEE PAID IF APPLICABLE
B. Generator's IL ID Number: 0971A00014

4. *24 HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS*

5. Transporter 1 Company Name: Veolia Waste Services
6. US EPA ID Number

C. Transporter's ID Number: 0716
D. Transporter's Phone (847) 623-3870

7. Transporter 2 Company Name
8. US EPA ID Number

E. Transporter's ID Number
F. Transporter's Phone ( )

9. Designated Facility Name and Site Address: Veolia ES Zion Landfill, 701 Green Bay Road, Zion, IL. 60099
10. US EPA ID Number

G. Facility's IL ID Number: 0978020002
H. Facility's Phone (847) 731-5110

GENERATOR

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Asbestos, 9, NA, 2212, III, RQ	1	CM	20	Y	EPA HW Number
b.					EPA HW Number
c.					EPA HW Number
d.					EPA HW Number

J. Additional Description for Materials Listed Above: Approval Code SZL 003164

K. Handling Codes for Wastes Listed Above In Item #14

15. Special Handling Instructions and Additional Information: Do Not Create Dust

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Printed/Typed Name: Dan Hibbard | Signature: Dan Hibbard | Date Month Day Year: 08 15 08

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name | Signature | Date Month Day Year

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name: John F. Joyce | Signature: [signature] | Date Month Day Year: 08 15 08

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: C. Kunaen | Signature: C. Kunaen | Date Month Day Year: 8 15 08

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UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: ILD 005443544
Manifest Document No.:
2. Page 1 of
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3. Generator's Name and Mailing Address / Location If Different
Johns Manville
1871 N. Pershing Road
Waukegan, IL, 60087

4. *24 HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS*

5. Transporter 1 Company Name: Veolia Waste Services
6. US EPA ID Number:

7. Transporter 2 Company Name:
8. US EPA ID Number:

9. Designated Facility Name and Site Address
Veolia ES Zion Landfill
701 Green Bay Road
Zion, IL. 60099
10. US EPA ID Number:

A. Illinois Manifest Document Number: IL10030491 FEE PAID IF APPLICABLE
B. Generator's IL ID Number: 0971900014
C. Transporter's ID Number: 0716
D. Transporter's Phone: 847) 623-3870
E. Transporter's ID Number:
F. Transporter's Phone ( )
G. Facility's IL ID Number: 0978020002
H. Facility's Phone: 847) 731-5110

GENERATOR

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Asbestos, 9, NA, 2212, III, RQ	1	CM	20	Y	EPA HW Number
b.					EPA HW Number
c.					EPA HW Number
d.					EPA HW Number

J. Additional Description for Materials Listed Above
Approval Code SZL 003164

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Printed/Typed Name	Signature	Date Month Day Year
Dan Hibbard	Dan Hibbard	08 15 08

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date Month Day Year
John F Joyce	[illegible]	08 15 08

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Date Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.

Printed/Typed Name	Signature	Date Month Day Year
C. Kunaean	C. Kunaean	8 15 08

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UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. ILD 005443544 Manifest Document No.

2. Page 1 of

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3. Generator's Name and Mailing Address Location If Different
Johns Manville
1871 N. Pershing Road
Waukegan,, Il. 60087

4. *24 HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS*

5. Transporter 1 Company Name
Veolia waste Services
6. US EPA ID Number

7. Transporter 2 Company Name
8. US EPA ID Number

9. Designated Facility Name and Site Address
Veolia ES Zion Landfill
701 Green Bay Road
Zion, IL. 60099
10. US EPA ID Number

A. Illinois Manifest Document Number IL10030495 FEE PAID IF APPLICABLE

B. Generator's IL ID Number 0971900014

C. Transporter's ID Number 0716

D. Transporter's Phone 847) 623-3870

E. Transporter's ID Number

F. Transporter's Phone ( )

G. Facility's IL ID Number 0978020002

H. Facility's Phone 847) 731-5110

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
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b.					EPA HW Number
c.					EPA HW Number
d.					EPA HW Number

GENERATOR

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Printed/Typed Name: Dan Hibbard Signature: Dan Hibbard Date Month Day Year: 08 15 08

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: John F Joyce Signature: [illegible] Date Month Day Year: 08 15 08

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name Signature Date Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.
Printed/Typed Name: P Shebesta Signature: P. Shebesta Date Month Day Year: 08 15 08

This Agency is authorized to require, pursuant to Illinois Revised Statute, 1989, Chapter 111 1/2, Section 1004 and 1021, that this information be submitted to the Agency. Failure to provide this information may result in a civil penalty against the owner or operator not to exceed $25,000 per day of violation. Falsification of this information may result in a fine up to $50,000 per day of violation and imprisonment up to 5 years. This form has been approved by the Forms Management Center.

COPY 2. TSD MAIL TO IEPA
(RCRA HAZARDOUS AND PCB WASTES ONLY)

STATE OF ILLINOIS ENVIRONMENTAL PROTECTION AGENCY DIVISION OF LAND POLLUTION CONTROL

00-288123

P.O. BOX 19276 SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761

FOR SHIPMENT OF HAZARDOUS AND SPECIAL WASTE

State Form LPC 62 8/81 IL532-0610

PLEASE TYPE (Form designed for use on elite (12-pitch) typewriter.) EPA Form 8700-22 (Rev. 6-89) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: ILD 005443544 — Manifest Document No.: — 2. Page 1 of —

Information in the shaded areas is not required by Federal law, but is required by Illinois law.

3. Generator's Name and Mailing Address: Johns Manville, 1871 North Pershing Road, Waukegan, IL. 60087 — Location If Different:

A. Illinois Manifest Document Number: IL 10030486 FEE PAID IF APPLICABLE

B. Generator's IL ID Number: 0971190014

4. *24 HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS*

5. Transporter 1 Company Name: Veolia Waste Sservices — 6. US EPA ID Number:

C. Transporter's ID Number: 0716

D. Transporter's Phone: 847 623-3870

7. Transporter 2 Company Name: — 8. US EPA ID Number:

E. Transporter's ID Number:

F. Transporter's Phone ( )

9. Designated Facility Name and Site Address: Veolia ES Zion Landfill, 701 Green Bay Road, Zion, IL. 60099 — 10. US EPA ID Number:

G. Facility's IL ID Number: 0978020002

H. Facility's Phone: 847 731-5110

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Asbestos, 9, NA, 2212, III, RQ	1	CM	20	Y	EPA HW Number
b.					EPA HW Number
c.					EPA HW Number
d.					EPA HW Number

J. Additional Description for Materials Listed Above: Approval Code SZL 003164

K. Handling Codes for Wastes Listed Above In Item #14

15. Special Handling Instructions and Additional Information: Do Not Create Dust

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: Dan Hibbard — Signature: Dan Hibbard — Date: Month 08 Day 14 Year 08

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: Arnold S. Horn — Signature: [signature] — Date: Month 08 Day 14 Year 08

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name: — Signature: — Date: Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.

Printed/Typed Name: C. Lunnan — Signature: C. Lunnan — Date: Month 8 Day 14 Year 08

This Agency is authorized to require, pursuant to Illinois Revised Statute, 1989, Chapter 111 1/2, Section 1004 and 1021, that this information be submitted to the Agency. Failure to provide this information may result in a civil penalty against the owner or operator not to exceed $25,000 per day of violation. Falsification of this information may result in a fine up to $50,000 per day of violation and imprisonment up to 5 years. This form has been approved by the Forms Management Center.

In case of a spill call the Illinois Office of Emergency Response at 217/782-7860 and the National Response Center at 800/424-8802 or 202/426-2675.

COPY 2. TSD MAIL TO IEPA (RCRA HAZARDOUS AND PCB WASTES ONLY)

STATE OF ILLINOIS ENVIRONMENTAL PROTECTION AGENCY DIVISION OF LAND POLLUTION CONTROL

P.O. BOX 19276 SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761

FOR SHIPMENT OF HAZARDOUS AND SPECIAL WASTE

State Form LPC 62 8/81 IL532-0610

PLEASE TYPE (Form designed for use on elite (12-pitch) typewriter.) EPA Form 8700-22 (Rev. 6-89) Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. ILD 005443544 Manifest Document No.

2. Page 1 of

Information in the shaded areas is not required by Federal law, but is required by Illinois law.

3. Generator's Name and Mailing Address Location If Different
Johns Manville
1871 N. Pershing Road
Waukegan IL 60087

A. Illinois Manifest Document Number IL 10030478 FEE PAID IF APPLICABLE

B. Generator's IL ID Number 0971900014

4. *24 HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS*

5. Transporter 1 Company Name Veolia Waste Services
6. US EPA ID Number

C. Transporter's ID Number 0716

D. Transporter's Phone (847) 623-3870

7. Transporter 2 Company Name
8. US EPA ID Number

E. Transporter's ID Number

F. Transporter's Phone ( )

9. Designated Facility Name and Site Address
~~XXX~~ Veolia ES Zion Landfill
701 Green Bay Road
Zion Il. 60099
10. US EPA ID Number

G. Facility's IL ID Number 0978020002

H. Facility's Phone (847) 731-5110

GENERATOR

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. Asbestos, 9, NA,2212,III, RQ	1	CM	20	Y	EPA HW Number
b.					EPA HW Number
c.					EPA HW Number
d.					EPA HW Number

J. Additional Description for Materials Listed Above
Approval Code SZL 003164

K. Handling Codes for Wastes Listed Above in Item #14

15. Special Handling Instructions and Additional Information
Do Not Create Dust

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name Dan Hibbard — Signature Dan Hibbard — Date Month Day Year 08 14 08

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name Gilbert Cartwright — Signature Gilbert Cartwright — Date Month Day Year 08 14 08

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name — Signature — Date Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name C. Linnia — Signature C. Linnia — Date Month Day Year 8 14 08

This Agency is authorized to require, pursuant to Illinois Revised Statute, 1989, Chapter 111 1/2, Section 1004 and 1021, that this information be submitted to the Agency. Failure to provide this information may result in a civil penalty against the owner or operator not to exceed $25,000 per day of violation. Falsification of this information may result in a fine up to $50,000 per day of violation and imprisonment up to 5 years. This form has been approved by the Forms Management Center.

In case of a spill call the Illinois Office of Emergency Response at 217/782-7860 and the National Response Center at 800/424-8802 or 202/426-2675.

COPY 2. TSD MAIL TO IEPA
(RCRA HAZARDOUS AND PCB WASTES ONLY)

Appendix M

Troxler 3440 Density Meter SOP and Calibration Logs

CQM, INC.	QUALITY ASSURANCE
2679 Continental Drive	CQM Procedure Number: Con Mat 2-4
Green Bay, Wisconsin 54311	Page: 1 of 3
(920) 465-3911	Date: ______ Approval: ______
	Supersedes: ______

Subject: Density of Soil and Soil-Aggregate In-Place Nuclear Methods
ASTM: D2922-81

1.0 SCOPE

1.1 These test methods cover the determination of wet density, moisture content and dry density.

1.2 Method Used

A. Direct Transmission (Troxler nuclear gauge)

2.0 APPLICABLE REFERENCES

2.1 ASTM Standards

D1556 Test Method for Density of soil in Place by the Sand-Cone Method
D2167 Test Method for Density and Unit Weight of Soil in Place by the Rubber-Balloon Method
D2216 Method for Laboratory Determination of Water (Moisture) Content of Soil, Rock, and Soil-Aggregate Mixtures
D3017 Test Method for Moisture Content of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
D4718 Practice for Correction of Unit Weight and Water Content for Soils Containing Oversized Particles.

2.2 American Association of State Highway and Transportation Officials (AASHTO)
T238-86 Density of Soil and Soil Aggregate in Place by Nuclear Methods (Shallow Depth)

2.3 Troxler Nuclear Meter Manual

3.0 EQUIPMENT

3.1 Nuclear gauge

3.1.1 Troxler (direct transmission) gauge

3.2 Site preparation tools

3.2.1 Drive pin and drive pin extractor.

3.2.2 A plate or leveling tool for test site.

4.0 PERSONNEL REQUIREMENTS

4.1 CQM, Inc. will supply an engineering technician to perform the test. The technician will be in conformance with the regulations as written in the company license approved by the Nuclear Regulatory Commission.

4.2 Results of the tests will be reviewed by laboratory personnel with a minimum of five years experience or a staff professional engineer.

5.0 HAZARDS

5.1 This equipment utilizes radio active materials that must be handled with all familiar applicable safety procedures and government regulations.

5.2 The test equipment require periodic leak tests and operators to wear film badges to document radiation exposure when using the equipment.

6.0 PROCEDURE FOR FIELD USE

6.1 The nuclear gauge will be calibrated daily (standard counts), prior to implementing the test program scheduled for the day.

6.2 Select location to be tested and prepare the area so that test site is smooth or flat.

6.3 Make a hole perpendicular to the prepared surface using a drive pin and guide plate. The hole should extend to the depth of nuclear gauge probe. Remove drive pin and plate.

6.4 Set the gauge on the prepared soil surface.

6.5 Insert probe in the hole and rotate gauge and gently pull gauge so the probe rests on the side of the hole closest to the detector location in the gauge.

6.6 Record the wet density, moisture content and dry density readings as each test is completed.

6.7 The nuclear gauge results for compaction will be compared to the representative proctor test completed, prior to testing.

7.0 REPORT

7.1 Report shall include the following:

7.1.1 Standard counts of the meter when testing.

7.1.2 Make, model and serial number of the meter.

7.1.3 Name of the operator(s).

7.1.4 Location of tests.

7.1.5 Test results including wet density, moisture content and dry density.

CQM, INC.

2679 Continental Drive

Green Bay, WI 54311

(920) 465-3911

Client: ______________________

Project: ______________________

Prepared by: ______________ Date: __________

Checked by: ______________ Date: __________

Tested by: ______________ Date: __________

DENSITY TESTS OF COMPACTED FILL

PROJECT TEST NUMBER:
ELEVATION OF TEST:
DEPTH BELOW SURFACE GRADE:
DEPTH BELOW EXISTING GRADE:

LOCATION TESTED:

''NIFIED SOIL CLASSIFICATION:

__._ASTM D2487

___ASTM D2488 (Visual)

FIELD DENSITY RESULTS:

Density in place: __X__by Nuclear Method, ASTM D2922

_____by Sand Cone Method, ASTM D1556

Wet Density (pcf):

Moisture Content (%):

Dry Density (pcf):

MOISTURE-DENSITY RELATION OF SOIL:

_____= Average of tests on Native Undisturbed Soil

__X__= ASTM D 698 Method "A"

Maximum Dry Density (pcf):

Optimum Moisture (%):

COMPACTION TEST RESULTS:

Compaction (%):

Specified Compaction (%):

REMARKS:

Density test results are valid only at the locations and elevations tested. No information is available as to the adequacy of fill and compaction at locations other than those reported. Density tests were performed and locations selected by Robert R. Rouse of CQM, INC.

CQM, INC.

Construction Quality Management
2679 Continental Drive Green Bay, Wisconsin 54311
Phone: (920) 465-3911 Fax: (920) 465-3913

NUCLEAR DENSITY METER
TRANSPORT INFORMATION

OPERATOR & PROJECT INFORMATION:

Operator/Transporter: Chris Gofford Date Sent Out: 8/18/08

Destination: Waukegan IL. Date Returned: 11/20/08

Project Name: John Mansville

METER INFORMATION:

Type of Source: NUCLEAR DENSITY/MOISTURE METER

Model: 3440 Serial Number: 22746

Contents:	X	Americium 241:	Beryllium	1.48 GBq	(40 mCi:)	Activity
	X	Cesium 137		0.3 GBq	(8 mCi:)	Activity

SHIPPING DESCRIPTION: **RQ, Radioactive Material, Type A Package, Special Form** *non-fissile Or fissile excepted*, **7, UN3332**

Transitional Packaging Radioactive Yellow II Label Transport Index = 0.6

Shipping Container – Outside Dimensions: 13" x 17" x 30"
33 cm x 43 cm x 76 cm

REMARKS:

***** 24 Hour Emergency Contact : (919) 549-9539 *****
EMERGENCY RESPONSE INFORMATION – ON BACK OF SHEET

This is to certify that the above-named materials are properly classified, described, packaged and marked and are in proper condition for Transportation according to the applicable regulations of the Department of Transportation.

Signed: Robert R Rouse Date: 8/18/08
(Radiation Safety Officer)

CQM, INC.

2679 Continental Drive Green Bay, WI 54311
Phone: (920) 465-3911 Fax: (920) 465-3913

NUCLEAR METER UTILIZATION RECORD

MANUFACTURER: Troxler Electronics Labs.
MODEL: 3440
SERIAL NUMBER: 22746

RECORDING YEAR: 2008
PAGE 2 **OF** 3

DATE CALIBRATED: 5/8/06

COUNTS FACTORY STANDARD: 2800 | 670

DATE	OPERATOR	PROJECT	STANDARD COUNTS DENSITY	STANDARD COUNTS MOISTURE	NUMBER OF TESTS
8-7-08	RDW	Burnville WM	2676	651	
8-18-08	CRB	JOHNS MANVILLE / 2008 CAPPING ACTIVITIES	2619	646	5
8-19-08			2631	658	2
8-20-08			2652	656	9
8-22-08			2637	662	11
8-26-08			2632	662	3
8-27-08			2642	663	13
8-28-08		JoHns Manvill	2642	663	22
8-29-08			2642	663	19
9-2-08			2642	663	10
9-3-08			2642	663	25
9-8-08			2642	663	4
9/10/08			2642	633	36
9/11/08			2638	664	17
9/12/08			2673	652	32
9/17/08	CRB		2627	652	37
9/18/08	CRC		2663	655	19
9/19/08	CRB		2651	662	15
9/22/08	CRB		2631	662	8
9/23/08			2659	669	21

REMARKS/NOTES:

Battery charged on following dates: ______ ______ ______ ______

CQM, INC.
2679 Continental Drive Green Bay, WI 54311
Phone: (920) 465-3911 Fax: (920) 465-3913

NUCLEAR METER UTILIZATION RECORD

MANUFACTURER: Troxler Electronics Labs.
MODEL: 3440
SERIAL NUMBER: 22746

RECORDING YEAR: 2008
PAGE 3 **OF** 3

DATE CALIBRATED: 5/8/06

COUNTS FACTORY STANDARD: 2800 | 670

DATE	OPERATOR	PROJECT	STANDARD COUNTS DENSITY	STANDARD COUNTS MOISTURE	NUMBER OF TESTS
9/24/08	CRG	JOHNS MANVILLE 2008 CAPPING ACTIVITIES	2644	661	25
9/25/08	CRG / DLD	"	2642	668	61
10/1/08	CRG	2008 SETTLING BASIN	2621	665	7
10/6/08	" "	" "	2622	662	5
10/10/08	" "	" "	2650	656	6
10/13/08	" "	" "	2654	658	14
10/14/08	" "	" "	2665	667	5
10/15/08	" "	" "	2660	658	11
10/20/08	" "	" "	2650	659	4
10/22/08	" "	" "	2636	660	5
10/27/08	" "	" "	2646	663	3
10/28/08	" "	" "	2666	657	9
10/29/08	" "	" "	2660	663	11
10/30/08	" "	" "	2657	654	9
10/31/08	" "	" "	2643	660	6
11/4/08	" "	" "	2662	660	9
11/20/08	" "	" "	2626	663	49

REMARKS/NOTES:

Battery charged on following dates: 10/14/08 CRG

Appendix N

Barrier Layer Design Basis Information

LEGEND

— - —	LIMITS OF WASTE
—594—	EXISTING CONDITIONS CONTOURS

NOTES:

1. EXISTING CONDITIONS WERE SURVEYED BY CQM, INC. ON APRIL 1, 2008.

RELEASE	DATE:	BY:
Project Review		
5		
4		
3		
2		
1		
NO.	DATE:	BY:
DESCRIPTION		

REVISIONS

JM Johns Manville

CQM, INC.
Engineering–Surveying–Material Testing
2679 Continental Drive
Green Bay, WI 54311

Existing Conditions
April 1, 2008

Construction Documentation Drawings
Area 1 & 2 Final Cover
Johns Manville Waukegan Plant
Waukegan, IL

DRAWN BY: WBE

DATE: Sept. 2018

SCALE: 1"=60'

DRAWING NO.

1

Area 1 CQM Points								
Point No.	Coordinate North	Coordinate East	Point No.	Coordinate North	Coordinate East	Point No.	Coordinate North	Coordinate East
1001	2083601.39	1125531.87	1074	2083558.18	1125715.64	1147	2083644.90	1126604.19
1002	2083533.08	1125698.37	1075	2083560.02	1125610.78	1148	2083595.75	1126588.31
1003	2083560.80	1125843.53	1076	2083575.21	1125610.00	1149	2083572.99	1126580.93
1004	2083579.59	1126076.07	1077	2083567.94	1125508.72	1150	2083536.75	1126569.08
1005	2083564.95	1126088.45	1078	2083863.12	1126498.33	1151	2083502.89	1126531.21
1006	2083540.43	1126141.71	1079	2083836.21	1126396.69	1152	2083488.72	1126486.04
1007	2083604.91	1126052.48	1080	2083818.77	1126298.51	1153	2083475.81	1126441.88
1008	2083624.47	1126065.40	1081	2083776.19	1126398.10	1154	2083467.80	1126411.32
1009	2083599.05	1126090.72	1082	2083786.76	1126501.38	1155	2083465.25	1126366.39
1010	2083609.53	1126130.18	1083	2083808.09	1126196.58	1156	2083464.28	1126316.87
1011	2083642.70	1126163.22	1084	2083802.01	1126095.89	1157	2083465.74	1126273.50
1012	2083582.86	1126221.64	1085	2083786.88	1125999.07	1158	2083467.13	1126236.51
1013	2083542.79	1126232.77	1086	2083601.37	1125428.14	1159	2083467.69	1126221.24
1014	2083501.65	1126287.37	1087	2083650.00	1125550.00	1160	2083473.85	1126194.06
1015	2083511.17	1126313.73	1088	2083550.00	1125650.00	1161	2083481.62	1126160.75
1016	2083540.89	1126356.84	1089	2083600.00	1125650.00	1162	2083490.97	1126117.53
1017	2083567.23	1126449.45	1090	2083650.00	1125650.00	1163	2083491.64	1126058.91
1018	2083512.29	1126403.94	1091	2083700.00	1125650.00	1164	2083498.29	1126034.09
1019	2083554.56	1126499.06	1092	2083600.00	1125700.00	1165	2083491.04	1125991.12
1020	2083600.45	1126505.89	1093	2083650.00	1125700.00	1166	2083492.47	1125988.07
1021	2083654.86	1126537.02	1094	2083700.00	1125700.00	1167	2083492.79	1125964.64
1022	2083718.54	1126530.96	1095	2083600.00	1125750.00	1168	2083493.32	1125918.73
1023	2083723.20	1126442.00	1096	2083650.00	1125750.00	1169	2083493.97	1125863.00
1024	2083708.44	1126372.04	1097	2083700.00	1125750.00	1170	2083494.68	1125804.05
1025	2083638.68	1126348.35	1098	2083600.00	1125800.00	1171	2083495.19	1125761.20
1026	2083647.94	1126279.35	1099	2083700.00	1125800.00	1172	2083495.70	1125714.18
1027	2083710.45	1126250.93	1100	2083600.00	1125850.00	1173	2083496.36	1125666.67
1028	2083712.42	1126195.19	1101	2083650.00	1125850.00	1174	2083496.79	1125630.07
1029	2083730.55	1126139.31	1102	2083700.00	1125850.00	1175	2083497.33	1125586.80
1030	2083745.81	1126259.75	1103	2083750.00	1125850.00	1176	2083510.84	1125554.51
1031	2083820.50	1126306.73	1104	2083600.00	1125900.00	1177	2083524.89	1125526.12
1032	2083844.61	1126340.26	1105	2083650.00	1125900.00	1178	2083545.26	1125484.64
1033	2083769.60	1126567.10	1106	2083700.00	1125900.00	1179	2083563.87	1125447.08
1034	2083860.69	1126261.48	1107	2083800.00	1125900.00	1180	2083583.16	1125407.99
1035	2083850.41	1126179.65	1108	2083550.00	1125950.00	1181	2083593.87	1125382.95
1036	2083815.16	1126130.35	1109	2083700.00	1125950.00	1182	2083620.87	1125371.52
1037	2083804.16	1126066.18	1110	2083850.00	1125950.00	1183	2083662.64	1125373.04
1038	2083809.12	1126031.54	1111	2083800.00	1126000.00	1184	2083687.07	1125375.95
1039	2083781.32	1125980.01	1112	2083850.00	1126000.00	1185	2083749.14	1125400.42
1040	2083710.71	1125996.50	1113	2083650.00	1126050.00	1186	2083767.76	1125422.09
1041	2083762.53	1125939.80	1114	2083700.00	1126050.00	1187	2083780.81	1125461.03
1042	2083801.44	1125968.99	1115	2083750.00	1126050.00	1188	2083785.01	1125484.04
1043	2083732.90	1125878.87	1116	2083850.00	1126050.00	1189	2083798.05	1125507.11
1044	2083750.79	1125797.02	1117	2083650.00	1126100.00	1190	2083798.22	1125527.76
1045	2083771.44	1125780.31	1118	2083700.00	1126100.00	1191	2083787.80	1125585.03
1046	2083753.38	1125661.76	1119	2083750.00	1126100.00	1192	2083790.48	1125635.30
1047	2083688.67	1125528.19	1120	2083550.00	1126200.00	1193	2083781.33	1125686.60
1048	2083684.10	1125438.30	1121	2083650.00	1126200.00	1194	2083777.37	1125733.67
1049	2083745.57	1125491.87	1122	2083750.00	1126200.00	1195	2083790.51	1125759.32
1050	2083701.92	1126557.69	1123	2083800.00	1126250.00	1196	2083798.46	1125784.70
1051	2083595.35	1126530.97	1124	2083550.00	1126300.00	1197	2083803.10	1125811.58
1052	2083605.37	1126433.09	1125	2083600.00	1126300.00	1198	2083818.15	1125838.74
1053	2083606.66	1126224.93	1126	2083700.00	1126300.00	1199	2083835.81	1125900.49
1054	2083619.02	1125979.37	1127	2083600.00	1126350.00	1200	2083893.30	1125932.09
1055	2083640.37	1125782.79	1128	2083750.00	1126350.00	1201	2083895.43	1125971.39
1056	2083655.10	1125584.45	1129	2083800.00	1126350.00	1202	2083895.62	1125997.12
1057	2083652.15	1125484.40	1130	2083550.00	1126400.00	1203	2083894.04	1126039.98
1058	2083656.91	1125392.34	1131	2083600.00	1126400.00	1204	2083878.72	1126098.41
1059	2083709.12	1126363.27	1132	2083650.00	1126400.00	1205	2083868.73	1126169.02
1060	2083699.37	1126162.62	1133	2083550.00	1126450.00	1206	2083875.42	1126202.71
1061	2083712.84	1125855.63	1134	2083600.00	1126450.00	1207	2083878.55	1126243.18
1062	2083722.42	1125761.78	1135	2083650.00	1126450.00	1208	2083873.61	1126289.71
1063	2083731.61	1125663.99	1136	2083700.00	1126450.00	1209	2083868.30	1126340.53
1064	2083739.63	1125568.74	1137	2083800.00	1126450.00	1210	2083864.01	1126377.96
1065	2083747.75	1125463.90	1138	2083850.00	1126450.00	1211	2083867.55	1126414.25
1066	2083516.76	1126483.80	1139	2083650.00	1126500.00	1212	2083872.29	1126434.07
1067	2083482.19	1126402.55	1140	2083700.00	1126500.00	1213	2083875.68	1126472.67
1068	2083499.70	1126309.72	1141	2083800.00	1126550.00	1214	2083873.34	1126505.25
1069	2083515.21	1126211.66	1142	2083850.00	1126550.00	1215	2083878.61	1126544.88
1070	2083526.12	1126107.41	1143	2083811.99	1126618.09	1216	2083877.02	1126586.17
1071	2083550.51	1126022.04	1144	2083802.34	1126608.35	1217	2083879.77	1126615.12
1072	2083563.00	1125914.16	1145	2083756.31	1126595.58	1218	2083857.80	1126617.40
1073	2083551.29	1125813.32	1146	2083699.78	1126599.97			

Area 1 LFR Points		
Point No.	Coordinate North	Coordinate East
C-01	2083456.00	1126114.00
C-02	2083702.00	1126558.00
C-03	2083708.00	1126455.00
C-04	2083595.00	1126531.00
C-05	2083605.00	1126433.00
C-06	2083609.00	1126339.00
C-07	2083607.00	1126225.00
C-08	2083619.00	1126127.00
C-09	2083620.00	1126080.00
C-10	2083619.00	1125979.00
C-11	2083639.00	1125883.00
C-12	2083640.00	1125783.00
C-13	2083649.00	1125684.00
C-14	2083655.00	1125584.00
C-15	2083652.00	1125484.00
C-16	2083657.00	1125392.00
C-17	2083709.00	1126363.00
C-18	2083706.00	1126262.00
C-19	2083699.00	1126163.00
C-20	2083698.00	1126060.00
C-21	2083703.00	1125952.00
C-22	2083713.00	1125856.00
C-23	2083722.00	1125762.00
C-24	2083732.00	1125664.00
C-25	2083740.00	1125569.00
C-26	2083748.00	1125464.00
C-27	2083517.00	1126484.00
C-28	2083482.00	1126403.00
C-29	2083500.00	1126310.00
C-30	2083515.00	1126212.00
C-31	2083526.00	1126107.00
C-32	2083551.00	1126022.00
C-33	2083563.00	1125914.00
C-34	2083551.00	1125813.00
C-35	2083558.00	1125716.00
C-36	2083560.00	1125611.00
C-37	2083575.00	1125610.00
C-38	2083568.00	1125509.00
C-39	2083860.00	1126607.00
C-40	2083875.00	1126598.00
C-41	2083863.00	1126498.00
C-42	2083875.00	1126395.00
C-43	2083836.00	1126397.00
C-44	2083819.00	1126299.00
C-45	2083776.00	1126398.00
C-46	2083787.00	1126501.00
C-47	2083778.00	1126606.00
C-48	2083775.00	1126639.00
C-49	2083808.00	1126197.00
C-50	2083802.00	1126096.00
C-51	2083787.00	1125999.00
C-52	2083844.00	1125893.00
C-53	2083805.00	1125798.00
C-54	2083781.00	1125700.00
C-55	2083788.00	1125598.00
C-56	2083816.00	1125498.00
C-57	2083788.00	1125377.00
C-58	2083601.00	1125428.00
C-86	2083679.00	1125856.00
LF-SB01	2083664.00	1126347.00
LF-SB02	2083610.00	1126170.00
LF-SB03	2083669.00	1125946.00
LF-SB04	2083654.00	1125644.00
LGW-01	2083661.00	1126370.00

Area 2 CQM Points					
Point No.	North	East	Point No.	North	East
1	2084098.87	1126211.56	79	2084038.13	1126626.53
2	2084095.52	1126259.36	80	2084037.88	1126632.53
3	2084095.52	1126309.36	81	2084095.89	1126628.87
4	2084095.52	1126359.36	82	2084095.30	1126634.85
5	2084095.52	1126409.36	83	2084145.93	1126630.89
6	2084095.52	1126459.36	84	2084145.45	1126636.88
7	2084095.52	1126509.36	85	2084195.62	1126632.91
8	2084095.52	1126559.36	86	2084195.18	1126638.89
9	2084095.52	1126609.36	87	2084244.80	1126634.90
10	2084145.52	1126209.36	88	2084296.34	1126636.98
11	2084145.52	1126259.36	89	2084296.03	1126642.97
12	2084145.52	1126309.36	90	2084345.03	1126638.95
13	2084145.52	1126359.36	91	2084345.16	1126644.96
14	2084145.52	1126409.36	92	2084396.59	1126641.04
15	2084145.52	1126459.36	93	2084395.48	1126647.00
16	2084145.52	1126509.36	94	2084445.85	1126643.03
17	2084145.52	1126559.36	95	2084445.34	1126649.02
18	2084145.52	1126609.36	96	2084479.46	1126644.39
19	2084195.52	1126209.36	97	2084484.18	1126650.59
20	2084195.52	1126259.36	98	2084487.97	1126606.70
21	2084195.52	1126309.36	99	2084494.23	1126608.12
22	2084195.52	1126359.36	100	2084491.45	1126560.06
23	2084195.52	1126409.36	101	2084498.99	1126425.55
24	2084195.52	1126459.36	102	2084504.66	1126428.89
25	2084195.52	1126509.36	103	2084522.22	1126409.06
26	2084195.52	1126559.36	104	2084525.02	1126414.43
27	2084195.52	1126609.36	105	2084777.41	1126349.61
28	2084245.52	1126209.36	106	2084777.89	1126355.59
29	2084245.52	1126259.36	107	2084585.29	1126303.97
30	2084245.52	1126309.36	108	2084463.76	1126356.77
31	2084245.52	1126359.36	109	2084121.22	1126187.77
32	2084245.52	1126409.36	110	2084170.18	1126197.87
33	2084245.52	1126459.36	111	2084219.15	1126207.98
34	2084245.52	1126509.36	112	2084268.12	1126218.09
35	2084245.52	1126559.36	113	2084317.14	1126227.94
36	2084245.52	1126609.36	114	2084366.32	1126236.94
37	2084295.52	1126259.36	115	2084415.50	1126245.94
38	2084295.52	1126309.36	116	2084464.68	1126254.94
39	2084295.52	1126359.36	117	2084493.71	1126260.26
40	2084295.52	1126409.36	118	2084560.50	1126282.80
41	2084295.52	1126459.36	119	2084607.87	1126298.79
42	2084295.52	1126509.36	120	2084676.45	1126301.10
43	2084295.52	1126559.36	121	2084583.67	1126338.40
44	2084295.52	1126609.36	122	2084497.12	1126376.03
45	2084345.52	1126259.36	123	2084435.65	1126441.23
46	2084345.52	1126309.36	124	2084446.87	1126562.60
47	2084345.52	1126359.36	125	2084422.31	1126591.96
48	2084345.52	1126409.36	126	2084320.78	1126589.44
49	2084345.52	1126459.36	127	2084221.44	1126580.78
50	2084345.52	1126509.36	128	2084131.81	1126573.62
51	2084345.52	1126559.36	129	2084060.25	1126529.25
52	2084345.52	1126609.36	130	2084073.11	1126432.36
53	2084395.52	1126259.36	131	2084084.04	1126233.61
54	2084395.52	1126309.36	132	2084140.60	1126203.47
55	2084395.52	1126359.36	133	2084222.83	1126204.54
56	2084395.52	1126409.36	134	2084319.94	1126221.84
57	2084395.52	1126459.36	135	2084414.85	1126249.22
58	2084395.52	1126509.36	136	2084514.01	1126253.21
59	2084395.52	1126559.36	137	2084627.77	1126268.43
60	2084445.52	1126259.36	138	2084438.84	1126401.89
61	2084445.52	1126309.36	139	2084461.98	1126383.25
62	2084445.52	1126359.36	140	2084453.64	1126597.81
63	2084495.52	1126309.36	141	2084358.43	1126589.71
64	2084495.52	1126359.36	142	2084274.39	1126587.72
65	2084492.67	1126482.23	143	2084074.16	1126560.33
66	2084497.46	1126559.54	144	2084058.96	1126468.51
67	2084545.52	1126309.36	145	2084070.81	1126404.74
68	2084595.52	1126309.36	146	2084074.05	1126330.72
69	2084645.52	1126309.36	147	2084098.00	1126196.74
70	2084109.22	1126409.16	148	2084119.54	1126183.62
71	2084158.74	1126416.11	149	2084198.25	1126193.55
72	2084208.25	1126423.05	150	2084278.26	1126208.58
73	2084257.76	1126430.00	151	2084375.78	1126245.15
74	2084307.27	1126436.98	152	2084459.33	1126247.26
75	2084356.78	1126443.98	153	2084582.05	1126276.27
76	2084406.29	1126450.97	154	2084082.46	1126278.68
77	2084117.90	1126191.69	155	2084437.98	1126516.41
78	2084557.99	1126347.72			

Area 2 LFG Points		
Point No.	North	East
C-59	2084415.00	1126596.00
C-60	2084414.00	1126498.00
C-61	2084413.00	1126400.00
C-62	2084410.00	1126298.00
C-63	2084510.00	1126318.00
C-64	2084580.00	1126326.00
C-65	2084322.00	1126273.00
C-66	2084294.00	1126377.00
C-67	2084289.00	1126487.00
C-68	2084288.00	1126592.00
C-69	2084184.00	1126563.00
C-72	2084173.00	1126473.00
C-73	2084173.00	1126356.00
C-74	2084195.00	1126286.00
C-75	2084046.00	1126559.00
C-76	2084067.00	1126480.00
C-77	2084068.00	1126360.00
C-78	2084080.00	1126262.00
C-79	2084136.00	1126191.00
C-80	2084264.00	1126220.00
C-81	2084347.00	1126225.00
C-82	2084434.00	1126244.00
C-83	2084529.00	1126267.00
C-84	2084626.00	1126292.00
C-85	2084588.00	1126276.00
F-SB0	2084146.00	1126479.00
F-SB0	2084376.00	1126431.00

LEGEND

- LIMITS OF WASTE
- 594 EXISTING CONDITIONS CONTOURS
- C_44 LFR POINT NUMBER AND LOCATION
- 1140 CQM POINT NUMBER AND LOCATION

NOTES:

1. EXISTING CONDITIONS WERE SURVEYED BY CQM, INC. ON APRIL 1, 2008.

RELEASE	DATE:	BY:
Project Review		
5		
4		
3		
2		
1		
NO.	DATE:	BY:
DESCRIPTION		

REVISIONS

JM Johns Manville

LFR Borings and CQM Points

CQM, INC.
Engineering-Surveying-Material Testing
2679 Continental Drive
Green Bay, WI 54311

Area 1 & 2 Final Cover
Johns Manville Waukegan Plant
Waukegan, IL

DRAWN BY: WBE

DATE: Oct. 2018

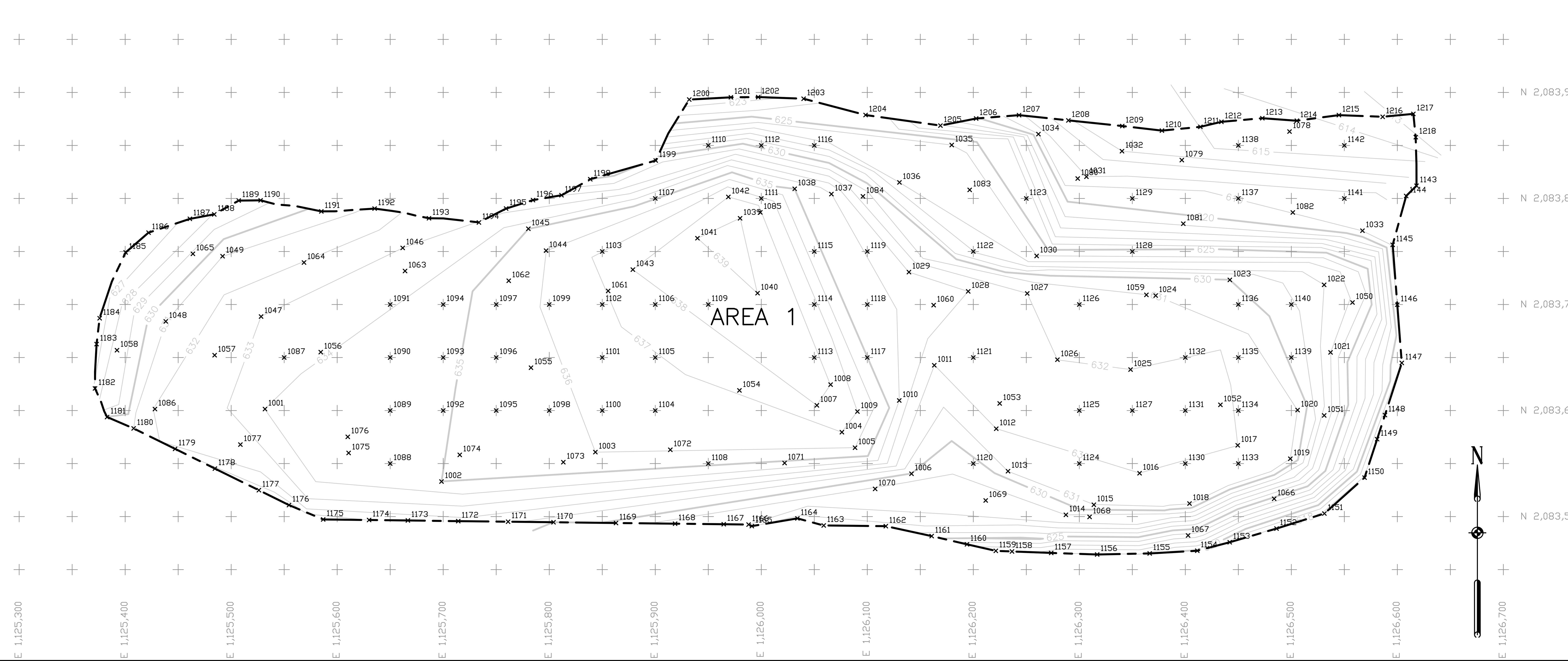
SCALE: 1"=60'

DRAWING NO.

1

Area 1 Barrier Layer

Point No.	Coordinate North	Coordinate East	Design Barrier Elevation	Description	Point No.	Coordinate North	Coordinate East	Design Barrier Elevation	Description	Point No.	Coordinate North	Coordinate East	Design Barrier Elevation	Description
1001	2083601.39	1125531.87	634.00		1074	2083558.2	1125715.6	635.10		1147	2083644.90	1126604.19	619.47	Limits of Waste
1002	2083533.08	1125698.37	635.00		1075	2083560.0	1125610.8	634.24		1148	2083595.75	1126588.31	618.65	Limits of Waste
1003	2083560.80	1125843.53	636.00		1076	2083575.2	1125610.0	634.25		1149	2083572.99	1126580.93	618.27	Limits of Waste
1004	2083579.59	1126076.07	637.00		1077	2083567.9	1125508.7	632.39		1150	2083536.75	1126569.08	617.93	Limits of Waste
1005	2083564.95	1126088.45	636.00		1078	2083863.1	1126498.3	614.64		1151	2083502.89	1126531.21	617.59	Limits of Waste
1006	2083540.43	1126141.71	630.00		1079	2083836.2	1126396.7	616.70		1152	2083488.72	1126486.04	617.95	Limits of Waste
1007	2083604.91	1126052.48	638.00		1080	2083818.8	1126298.5	618.36		1153	2083475.81	1126441.88	619.25	Limits of Waste
1008	2083624.47	1126065.40	638.00		1081	2083776.2	1126398.1	620.91		1154	2083467.80	1126411.32	620.93	Limits of Waste
1009	2083599.05	1126090.72	637.00		1082	2083786.8	1126501.4	618.98		1155	2083465.25	1126366.39	623.31	Limits of Waste
1010	2083609.53	1126130.18	634.00		1083	2083808.1	1126196.6	626.50		1156	2083464.28	1126316.87	621.69	Limits of Waste
1011	2083642.70	1126163.22	632.00		1084	2083802.0	1126095.9	631.59		1157	2083465.74	1126273.50	621.79	Limits of Waste
1012	2083582.86	1126221.64	632.00		1085	2083786.9	1125999.1	638.03		1158	2083467.13	1126236.51	622.00	Limits of Waste
1013	2083542.79	1126232.77	631.00		1086	2083601.4	1125428.1	632.02		1159	2083467.69	1126221.24	622.32	Limits of Waste
1014	2083501.65	1126287.37	629.00		1087	2083650.00	1125550.00	NA		1160	2083473.85	1126194.06	623.54	Limits of Waste
1015	2083511.17	1126313.73	631.00		1088	2083550.00	1125650.00	NA		1161	2083481.62	1126160.75	625.48	Limits of Waste
1016	2083540.89	1126356.84	632.00		1089	2083600.00	1125650.00	NA		1162	2083490.97	1126117.53	627.00	Limits of Waste
1017	2083567.23	1126449.45	632.00		1090	2083650.00	1125650.00	NA		1163	2083491.64	1126058.91	627.81	Limits of Waste
1018	2083512.29	1126403.94	631.00		1091	2083700.00	1125650.00	NA		1164	2083498.29	1126034.09	627.70	Limits of Waste
1019	2083554.56	1126499.06	631.00		1092	2083600.00	1125700.00	NA		1165	2083491.04	1125991.12	627.56	Limits of Waste
1020	2083600.45	1126505.89	631.00		1093	2083650.00	1125700.00	NA		1166	2083492.47	1125988.07	628.00	Limits of Waste
1021	2083654.86	1126537.02	627.00		1094	2083700.00	1125700.00	NA		1167	2083492.79	1125964.64	628.25	Limits of Waste
1022	2083718.54	1126530.96	628.00		1095	2083600.00	1125750.00	NA		1168	2083493.32	1125918.73	628.74	Limits of Waste
1023	2083723.20	1126442.00	630.00		1096	2083650.00	1125750.00	NA		1169	2083493.97	1125863.00	629.70	Limits of Waste
1024	2083708.44	1126372.04	631.00		1097	2083700.00	1125750.00	NA		1170	2083494.68	1125804.05	630.00	Limits of Waste
1025	2083638.68	1126348.35	632.00		1098	2083600.00	1125800.00	NA		1171	2083495.19	1125761.20	631.18	Limits of Waste
1026	2083647.94	1126279.35	632.00		1099	2083700.00	1125800.00	NA		1172	2083495.70	1125714.18	631.67	Limits of Waste
1027	2083710.45	1126250.93	632.00		1100	2083600.00	1125850.00	NA		1173	2083496.36	1125666.67	631.30	Limits of Waste
1028	2083712.42	1126195.19	633.00		1101	2083650.00	1125850.00	NA		1174	2083496.79	1125630.07	631.02	Limits of Waste
1029	2083730.55	1126139.31	633.00		1102	2083700.00	1125850.00	NA		1175	2083497.33	1125586.80	630.47	Limits of Waste
1030	2083745.81	1126259.75	626.00		1103	2083750.00	1125850.00	NA		1176	2083510.84	1125554.51	631.15	Limits of Waste
1031	2083820.50	1126306.73	618.00		1104	2083600.00	1125900.00	NA		1177	2083524.89	1125526.12	631.40	Limits of Waste
1032	2083844.61	1126340.26	616.50		1105	2083650.00	1125900.00	NA		1178	2083545.26	1125484.64	631.14	Limits of Waste
1033	2083769.60	1126567.10	619.00		1106	2083700.00	1125900.00	NA		1179	2083563.87	1125447.08	631.53	Limits of Waste
1034	2083860.69	1126261.48	619.00		1107	2083800.00	1125900.00	NA		1180	2083583.16	1125407.99	631.20	Limits of Waste
1035	2083850.41	1126179.65	626.00		1108	2083550.00	1125950.00	NA		1181	2083593.87	1125382.95	631.00	Limits of Waste
1036	2083815.16	1126130.35	627.00		1109	2083700.00	1125950.00	NA		1182	2083620.87	1125371.52	628.30	Limits of Waste
1037	2083804.16	1126066.18	634.00		1110	2083850.00	1125950.00	NA		1183	2083662.64	1125373.04	625.90	Limits of Waste
1038	2083809.12	1126031.54	635.00		1111	2083800.00	1126000.00	NA		1184	2083687.07	1125375.95	625.70	Limits of Waste
1039	2083781.32	1125980.01	639.00		1112	2083850.00	1126000.00	NA		1185	2083749.14	1125400.42	627.40	Limits of Waste
1040	2083710.71	1125996.50	639.00		1113	2083650.00	1126050.00	NA		1186	2083767.76	1125422.09	627.10	Limits of Waste
1041	2083762.53	1125939.80	639.00		1114	2083700.00	1126050.00	NA		1187	2083780.81	1125461.03	628.00	Limits of Waste
1042	2083801.44	1125968.99	638.00		1115	2083750.00	1126050.00	NA		1188	2083785.01	1125484.04	628.85	Limits of Waste
1043	2083732.90	1125878.87	638.00		1116	2083850.00	1126050.00	NA		1189	2083798.05	1125507.11	629.90	Limits of Waste
1044	2083750.79	1125797.02	636.00		1117	2083650.00	1126100.00	NA		1190	2083798.22	1125527.76	630.00	Limits of Waste
1045	2083771.44	1125780.31	635.00		1118	2083700.00	1126100.00	NA		1191	2083787.80	1125585.03	630.40	Limits of Waste
1046	2083753.38	1125661.76	633.00		1119	2083750.00	1126100.00	NA		1192	2083790.48	1125635.30	631.40	Limits of Waste
1047	2083688.67	1125528.19	633.00		1120	2083550.00	1126200.00	NA		1193	2083781.33	1125686.60	632.40	Limits of Waste
1048	2083684.10	1125438.30	631.00		1121	2083650.00	1126200.00	NA		1194	2083777.37	1125733.67	633.10	Limits of Waste
1049	2083745.57	1125491.87	631.00		1122	2083750.00	1126200.00	NA		1195	2083790.51	1125759.32	632.60	Limits of Waste
1050	2083701.9	1126557.7	626.71		1123	2083800.00	1126250.00	NA		1196	2083798.46	1125784.70	632.10	Limits of Waste
1051	2083595.4	1126531.0	627.74		1124	2083550.00	1126300.00	NA		1197	2083803.10	1125811.58	631.97	Limits of Waste
1052	2083605.4	1126433.1	632.00		1125	2083600.00	1126300.00	NA		1198	2083818.15	1125838.74	630.20	Limits of Waste
1053	2083606.7	1126224.9	632.00		1126	2083700.00	1126300.00	NA		1199	2083835.81	1125900.49	630.38	Limits of Waste
1054	2083619.0	1125979.4	637.23		1127	2083600.00	1126350.00	NA		1200	2083893.30	1125932.09	623.40	Limits of Waste
1055	2083640.4	1125782.8	635.72		1128	2083750.00	1126350.00	NA		1201	2083895.43	1125971.39	623.30	Limits of Waste
1056	2083655.1	1125584.5	633.86		1129	2083800.00	1126350.00	NA		1202	2083895.62	1125997.12	623.60	Limits of Waste
1057	2083652.2	1125484.4	632.38		1130	2083550.00	1126400.00	NA		1203	2083894.04	1126039.98	624.60	Limits of Waste
1058	2083656.9	1125392.3	628.88		1131	2083600.00	1126400.00	NA		1204	2083878.72	1126098.41	625.80	Limits of Waste
1059	2083709.1	1126363.3	631.00		1132	2083650.00	1126400.00	NA		1205	2083868.73	1126169.02	623.57	Limits of Waste
1060	2083699.4	1126162.6	633.40		1133	2083550.00	1126450.00	NA		1206	2083875.42	1126202.71	621.30	Limits of Waste
1061	2083712.8	1125855.6	637.06		1134	2083600.00	1126450.00	NA		1207	2083878.55	1126243.18	618.40	Limits of Waste
1062	2083722.4	1125761.8	635.51		1135	2083650.00	1126450.00	NA		1208	2083873.61	1126289.71	616.40	Limits of Waste
1063	2083731.6	1125664.0	633.47		1136	2083700.00	1126450.00	NA		1209	2083868.30	1126340.53	616.50	Limits of Waste
1064	2083739.6	1125568.7	632.03		1137	2083800.00	1126450.00	NA		1210	2083864.01	1126377.96	615.60	Limits of Waste
1065	2083747.8	1125463.9	629.13		1138	2083850.00	1126450.00	NA		1211	2083867.55	1126414.25	614.98	Limits of Waste
1066	2083516.8	1126483.8	624.64		1139	2083650.00	1126500.00	NA		1212	2083872.29	1126434.07	614.55	Limits of Waste
1067	2083482.2	1126402.6	624.49		1140	2083700.00	1126500.00	NA		1213	2083875.68	1126472.67	614.45	Limits of Waste
1068	2083499.7	1126309.7	628.87		1141	2083800.00	1126550.00	NA		1214	2083873.34	1126505.25	614.46	Limits of Waste
1069	2083515.2	1126211.7	628.41		1142	2083850.00	1126550.00	NA		1215	2083878.61	1126544.88	613.75	Limits of Waste
1070	2083526.1	1126107.4	628.83		1143	2083811.99	1126618.09	617.48	Limits of Waste	1216	2083877.02	1126586.17	613.45	Limits of Waste
1071	2083550.5	1126022.0	634.86		1144	2083802.34	1126608.35	617.40	Limits of Waste	1217	2083879.77	1126615.12	612.71	Limits of Waste
1072	2083563.0	1125914.2	636.07		1145	2083756.31	1126595.58	618.84	Limits of Waste	1218	2083857.80	1126617.40	613.57	Limits of Waste
1073	2083551.3	1125813.3	635.60		1146	2083699.78	1126599.97	619.00	Limits of Waste					



Area 2 Barrier Layer

Point No.	Coordinate North	Coordinate East	Design Barrier Elevation	Description
1	2084098.87	1126211.56	597.00	
2	2084095.52	1126259.36	596.44	
3	2084095.52	1126309.36	597.32	
4	2084095.52	1126359.36	598.22	
5	2084095.52	1126409.36	599.00	
6	2084095.52	1126459.36	598.06	
7	2084095.52	1126509.36	597.07	
8	2084095.52	1126559.36	596.08	
9	2084095.52	1126609.36	595.10	Outside Limits of Waste
10	2084145.52	1126209.36	595.08	
11	2084145.52	1126259.36	595.98	
12	2084145.52	1126309.36	596.89	
13	2084145.52	1126359.36	597.79	
14	2084145.52	1126409.36	598.69	
15	2084145.52	1126459.36	597.89	
16	2084145.52	1126509.36	596.90	
17	2084145.52	1126559.36	595.92	
18	2084145.52	1126609.36	594.93	Outside Limits of Waste
19	2084195.52	1126209.36	594.65	
20	2084195.52	1126259.36	595.55	
21	2084195.52	1126309.36	596.46	
22	2084195.52	1126359.36	597.36	
23	2084195.52	1126409.36	598.26	
24	2084195.52	1126459.36	597.72	
25	2084195.52	1126509.36	596.74	
26	2084195.52	1126559.36	595.75	
27	2084195.52	1126609.36	594.75	Outside Limits of Waste
28	2084245.52	1126209.36	594.61	
29	2084245.52	1126259.36	595.12	
30	2084245.52	1126309.36	596.02	
31	2084245.52	1126359.36	596.93	
32	2084245.52	1126409.36	597.83	
33	2084245.52	1126459.36	597.56	
34	2084245.52	1126509.36	596.57	
35	2084245.52	1126559.36	595.59	
36	2084245.52	1126609.36	594.58	Outside Limits of Waste
37	2084295.52	1126259.36	594.69	
38	2084295.52	1126309.36	595.59	
39	2084295.52	1126359.36	596.50	
40	2084295.52	1126409.36	597.40	
41	2084295.52	1126459.36	597.39	
42	2084295.52	1126509.36	596.41	
43	2084295.52	1126559.36	595.42	
44	2084295.52	1126609.36	594.41	Outside Limits of Waste
45	2084345.52	1126259.36	594.26	
46	2084345.52	1126309.36	595.16	
47	2084345.52	1126359.36	596.07	
48	2084345.52	1126409.36	596.97	
49	2084345.52	1126459.36	597.22	
50	2084345.52	1126509.36	596.24	
51	2084345.52	1126559.36	595.25	
52	2084345.52	1126609.36	594.25	Outside Limits of Waste
53	2084395.52	1126259.36	593.83	
54	2084395.52	1126309.36	594.73	
55	2084395.52	1126359.36	595.62	
56	2084395.52	1126409.36	596.54	
57	2084395.52	1126459.36	597.05	
58	2084395.52	1126509.36	596.07	
59	2084395.52	1126559.36	595.09	
60	2084445.52	1126259.36	593.40	
61	2084445.52	1126309.36	594.30	
62	2084445.52	1126359.36	595.00	
63	2084445.52	1126409.36	593.87	
64	2084495.52	1126359.36	594.36	
65	2084492.67	1126482.23	590.85	Outside Limits of Waste
66	2084497.46	1126559.54	591.50	Outside Limits of Waste
67	2084545.52	1126309.36	593.44	
68	2084595.52	1126309.36	592.83	
69	2084645.52	1126309.36	591.13	
70	2084109.22	1126409.16	599.00	
71	2084158.74	1126416.11	598.70	
72	2084208.25	1126423.05	598.40	
73	2084257.76	1126430.00	598.10	
74	2084307.27	1126436.98	597.79	
75	2084356.78	1126443.98	597.49	
76	2084406.29	1126450.97	597.18	
77	2084117.90	1126191.69	595.00	
78	2084557.99	1126347.72	594.00	
79	2084038.13	1126626.53	594.00	Outside Limits of Waste
80	2084037.88	1126632.53	594.00	Outside Limits of Waste
81	2084095.89	1126628.87	593.76	Outside Limits of Waste
82	2084095.30	1126634.85	593.70	Outside Limits of Waste
83	2084145.93	1126630.89	593.54	Outside Limits of Waste
84	2084145.45	1126636.88	593.44	Outside Limits of Waste
85	2084195.62	1126632.91	593.33	Outside Limits of Waste
86	2084195.18	1126638.89	593.24	Outside Limits of Waste
87	2084244.80	1126634.90	593.13	Outside Limits of Waste
88	2084296.38	1126636.98	593.02	Outside Limits of Waste
89	2084296.03	1126642.97	592.92	Outside Limits of Waste
90	2084345.03	1126638.95	592.80	Outside Limits of Waste
91	2084345.16	1126644.94	592.70	Outside Limits of Waste
92	2084396.59	1126641.04	592.48	Outside Limits of Waste
93	2084396.48	1126647.00	592.48	Outside Limits of Waste
94	2084445.85	1126643.03	592.38	Outside Limits of Waste
95	2084445.34	1126649.02	592.26	Outside Limits of Waste
96	2084479.46	1126644.39	592.13	Outside Limits of Waste
97	2084484.18	1126650.59	592.13	Outside Limits of Waste
98	2084487.97	1126606.70	592.00	Outside Limits of Waste
99	2084494.23	1126608.12	592.00	Outside Limits of Waste
100	2084491.45	1126560.06	591.50	Outside Limits of Waste
101	2084498.99	1126425.55	589.20	Outside Limits of Waste
102	2084504.66	1126428.89	589.20	Outside Limits of Waste
103	2084522.22	1126409.06	589.09	Outside Limits of Waste
104	2084525.02	1126414.43	589.09	Outside Limits of Waste
105	2084777.41	1126349.61	588.01	Outside Limits of Waste
106	2084777.89	1126355.59	588.01	Outside Limits of Waste
107	2084585.29	1126303.97	593.00	
108	2084633.76	1126356.77	595.00	
109	2084121.22	1126187.77	594.90	
110	2084170.18	1126197.87	594.66	
111	2084219.15	1126207.98	594.42	
112	2084268.12	1126218.09	594.18	
113	2084317.14	1126227.94	593.94	
114	2084366.32	1126236.04	593.68	
115	2084415.50	1126245.94	593.42	
116	2084464.68	1126254.94	593.15	
117	2084493.71	1126260.26	593.00	
118	2084560.50	1126282.80	592.50	
119	2084607.87	1126298.79	592.14	
120	2084676.45	1126301.10	591.50	Limit of Waste
121	2084583.67	1126338.40	593.42	Limit of Waste
122	2084497.12	1126376.03	594.50	Limit of Waste
123	2084435.85	1126441.23	596.77	Limit of Waste
124	2084446.87	1126562.60	594.85	Limit of Waste
125	2084422.31	1126591.96	594.36	Limit of Waste
126	2084320.78	1126589.44	594.74	Limit of Waste
127	2084221.44	1126580.78	595.24	Limit of Waste
128	2084131.81	1126573.62	595.68	Limit of Waste
129	2084060.25	1126529.25	596.79	Limit of Waste
130	2084073.11	1126432.56	598.66	Limit of Waste
131	2084084.04	1126233.61	597.75	Limit of Waste
132	2084140.60	1126203.47	595.02	Limit of Waste
133	2084222.83	1126204.54	594.73	Limit of Waste
134	2084319.94	1126221.84	594.52	Limit of Waste
135	2084414.85	1126249.22	593.48	Limit of Waste
136	2084514.01	1126253.21	594.23	Limit of Waste
137	2084627.77	1126288.43	594.89	Limit of Waste
138	2084438.84	1126401.89	596.04	Limit of Waste
139	2084461.98	1126383.25	594.90	Limit of Waste
140	2084453.64	1126597.61	594.14	Limit of Waste
141	2084358.43	1126589.71	594.20	Limit of Waste
142	2084274.39	1126587.72	594.93	Limit of Waste
143	2084098.16	1126560.33	596.13	Limit of Waste
144	2084056.96	1126468.51	598.20	Limit of Waste
145	2084070.81	1126404.74	599.00	Limit of Waste
146	2084074.05	1126330.72	598.00	Limit of Waste
147	2084098.00	1126196.74	597.37	Limit of Waste
148	2084119.54	1126183.62	595.53	Limit of Waste
149	2084198.25	1126193.55	595.69	Limit of Waste
150	2084278.26	1126208.58	595.15	Limit of Waste
151	2084375.78	1126245.15	593.74	Limit of Waste
152	2084459.33	1126247.26	594.01	Limit of Waste
153	2084582.05	1126276.27	592.84	Limit of Waste
154	2084082.46	1126278.68	597.55	Limit of Waste
155	2084437.98	1126516.41	595.79	Limit of Waste

LEGEND

- LIMITS OF WASTE
- 594 DESIGN BARRIER LAYER CONTOURS
- 100 SURVEY POINT NUMBER AND LOCATION

RELEASE	DATE:	BY:
Project Review		
5		
4		
3		
2		
1		
NO.	DATE:	BY:
DESCRIPTION		

REVISIONS

JM Johns Manville

CQM, INC.
Engineering-Surveying-Material Testing
2879 Continental Drive
Green Bay, WI 54311

Design Barrier Layer

Construction Documentation Drawings
Area 1 & 2 Final Cover
Johns Manville Waukegan Plant
Waukegan, IL

DRAWN BY: WBE

DATE: Sept. 2018

SCALE: 1"=60'

DRAWING NO.

2

Johns Manville - Waukegan Plant
On-Site Landfill Closure - Fill Area 1 (Miscellaneous Disposal Pit)
Barrier Layer Design and Record Elevations

LFR RWP Dwg 10 C-Boring ID	LFR RWP Dwg 10 Point ID	CQM Dwg A-4 Point ID	Northing	Easting	2003 LFR RWP Table B-2 Design Barrier Elevation	2008 CQM Dwg A-4 Design Barrier Elevation	2008 CQM Dwg A-4 Record Barrier Elevation	Calculated Barrier Elevation Delta	Notes
NLP	NLP	1001	2083601	1125532	NLP	634.00	634.03	0.03	
NLP	NLP	1002	2083533	1125698	NLP	635.00	635.10	0.10	
NLP	NLP	1003	2083561	1125844	NLP	636.00	636.02	0.02	
NLP	NLP	1004	2083580	1126076	NLP	637.00	637.01	0.01	
NLP	NLP	1005	2083565	1126088	NLP	636.00	636.06	0.06	Boring Confirmed ≥ 1 ft thick
NLP	NLP	1006	2083540	1126142	NLP	630.00	630.15	0.15	
NLP	NLP	1007	2083605	1126052	NLP	638.00	638.02	0.02	Boring Confirmed ≥ 1 ft thick
NLP	NLP	1008	2083624	1126065	NLP	638.00	638.00	0.00	
NLP	NLP	1009	2083599	1126091	NLP	637.00	637.01	0.01	
NLP	NLP	1010	2083610	1126130	NLP	634.00	634.00	0.00	Boring Confirmed ≥ 1 ft thick
NLP	NLP	1011	2083643	1126163	NLP	632.00	632.22	0.22	Boring Confirmed ≥ 1 ft thick
NLP	NLP	1012	2083583	1126222	NLP	632.00	632.07	0.07	
NLP	NLP	1013	2083543	1126233	NLP	631.00	631.11	0.11	
NLP	NLP	1014	2083502	1126287	NLP	629.00	629.10	0.10	
NLP	NLP	1015	2083511	1126314	NLP	631.00	631.12	0.12	
NLP	NLP	1016	2083541	1126357	NLP	632.00	632.00	0.00	
NLP	NLP	1017	2083567	1126449	NLP	632.00	632.01	0.01	
NLP	NLP	1018	2083512	1126404	NLP	631.00	631.08	0.08	
NLP	NLP	1019	2083555	1126499	NLP	631.00	631.03	0.03	
NLP	NLP	1020	2083600	1126506	NLP	631.00	631.01	0.01	
NLP	NLP	1021	2083655	1126537	NLP	627.00	627.16	0.16	
NLP	NLP	1022	2083719	1126531	NLP	628.00	628.00	0.00	
NLP	NLP	1023	2083723	1126442	NLP	630.00	630.02	0.02	
NLP	NLP	1024	2083708	1126372	NLP	631.00	631.02	0.02	
NLP	NLP	1025	2083639	1126348	NLP	632.00	632.01	0.01	
NLP	NLP	1026	2083648	1126279	NLP	632.00	632.01	0.01	
NLP	NLP	1027	2083710	1126251	NLP	632.00	632.03	0.03	
NLP	NLP	1028	2083712	1126195	NLP	633.00	633.03	0.03	
NLP	NLP	1029	2083731	1126139	NLP	633.00	633.07	0.07	Boring Confirmed ≥ 1 ft thick
NLP	NLP	1030	2083746	1126260	NLP	626.00	626.27	0.27	
NLP	NLP	1031	2083821	1126307	NLP	618.00	618.22	0.22	Boring Confirmed ≥ 1 ft thick
NLP	NLP	1032	2083845	1126340	NLP	616.50	616.74	0.24	Boring Confirmed ≥ 1 ft thick
NLP	NLP	1033	2083770	1126567	NLP	619.00	619.02	0.02	Boring Confirmed ≥ 1 ft thick
NLP	NLP	1034	2083861	1126261	NLP	619.00	619.16	0.16	Boring Confirmed ≥ 1 ft thick
NLP	NLP	1035	2083850	1126180	NLP	626.00	626.16	0.16	Boring Confirmed ≥ 1 ft thick
NLP	NLP	1036	2083815	1126130	NLP	627.00	627.16	0.16	Boring Confirmed ≥ 1 ft thick
NLP	NLP	1037	2083804	1126066	NLP	634.00	634.10	0.10	Boring Confirmed ≥ 1 ft thick
NLP	NLP	1038	2083809	1126032	NLP	635.00	635.01	0.01	
NLP	NLP	1039	2083781	1125980	NLP	639.00	639.31	0.31	
NLP	NLP	1040	2083711	1125997	NLP	639.00	639.01	0.01	Boring Confirmed ≥ 1 ft thick
NLP	NLP	1041	2083763	1125940	NLP	639.00	639.05	0.05	
NLP	NLP	1042	2083801	1125969	NLP	638.00	638.02	0.02	
NLP	NLP	1043	2083733	1125879	NLP	638.00	638.01	0.01	
NLP	NLP	1044	2083751	1125797	NLP	636.00	636.04	0.04	
NLP	NLP	1045	2083771	1125780	NLP	635.00	635.02	0.02	
NLP	NLP	1046	2083753	1125662	NLP	633.00	633.02	0.02	
NLP	NLP	1047	2083689	1125528	NLP	633.00	633.01	0.01	
NLP	NLP	1048	2083684	1125438	NLP	631.00	631.01	0.01	
NLP	NLP	1049	2083746	1125492	NLP	631.00	631.03	0.03	
C-01	1101	Beyond LOW	2083456	1126114	626.00	NA	NA	Beyond LOW	
C-02	1102	1050	2083702	1126558	626.71	626.71	626.85	0.14	
C-03	1103	Near 1136	2083708	1126455	630.10	NDE	630.30	0.20	Estimated Delta
C-04	1104	1051	2083595	1126531	627.74	627.74	627.75	0.01	
C-05	1105	1052	2083605	1126433	632.00	632.00	632.04	0.04	
C-06	1106	Near 1127	2083609	1126339	632.00	NDE	631.93	-0.07	Estimated Delta
C-07	1107	1053	2083607	1126225	632.00	632.00	632.08	0.08	
C-08	1108	Near 1010	2083619	1126127	634.30	NDE	634.00	-0.30	Estimated Delta, Boring Confirmed ≥ 1 ft thick
C-09	1109	Near 1009	2083620	1126080	637.21	NDE	637.01	-0.20	Estimated Delta
C-10	1110	1054	2083619	1125979	637.23	637.23	637.25	0.02	
C-11	1111	Near 1105	2083639	1125883	636.79	NDE	636.81	0.02	Estimated Delta
C-12	1112	1055	2083640	1125783	635.72	635.72	635.73	0.01	
C-13	1113	Near 1093	2083649	1125684	634.78	NDE	634.61	-0.17	Estimated Delta
C-14	1114	1056	2083655	1125584	633.86	633.86	633.86	0.00	
C-15	1115	1057	2083652	1125484	632.38	632.38	632.39	0.01	
C-16	1116	1058	2083657	1125392	628.88	628.88	628.92	0.04	Table B-1 value of 628.40 ft ASL had changed
C-17	1117	1059	2083709	1126363	631.00	631.00	631.08	0.08	
C-18	1118	Near 1027	2083706	1126262	631.20	NDE	632.03	0.83	Estimated Delta
C-19	1119	1060	2083699	1126163	633.40	633.40	633.43	0.03	Boring Confirmed ≥ 1 ft thick
C-20	1120	Near 1114	2083698	1126060	636.51	NDE	633.86	-2.65	Estimated Delta, Boring Confirmed ≥ 1 ft thick
C-21	1121	1109	2083703	1125952	638.37	638.37	638.30	-0.07	Table B-1: Waste at 634.9 ft ASL. Barrier >635.9 ft ASL so exceeds the 1 ft thickness requirement.
C-22	1122	1061	2083713	1125856	637.06	637.06	637.09	0.03	
C-23	1123	1062	2083722	1125762	635.51	635.51	635.51	0.00	

Johns Manville - Waukegan Plant
On-Site Landfill Closure - Fill Area 1 (Miscellaneous Disposal Pit)
Barrier Layer Design and Record Elevations

LFR RWP Dwg 10 C-Boring ID	LFR RWP Dwg 10 Point ID	CQM Dwg A-4 Point ID	Northing	Easting	2003 LFR RWP Table B-2 Design Barrier Elevation	2008 CQM Dwg A-4 Design Barrier Elevation	2008 CQM Dwg A-4 Record Barrier Elevation	Calculated Barrier Elevation Delta	Notes
C-24	1124	1063	2083732	1125664	633.47	633.47	633.60	0.13	
C-25	1125	1064	2083740	1125569	632.03	632.03	632.04	0.01	
C-26	1126	1065	2083748	1125464	629.13	629.13	629.19	0.06	
C-27	1127	1066	2083517	1126484	624.64	624.64	624.74	0.10	
C-28	1128	1067	2083482	1126403	624.49	624.49	624.52	0.03	Table B-1 value of 623.60 ft ASL had changed. Hand auger boring confirmed ≥ 1 ft thick (15 inches thick).
C-29	1129	1068	2083500	1126310	628.87	628.87	629.03	0.16	
C-30	1130	1069	2083515	1126212	628.41	628.41	628.55	0.14	
C-31	1131	1070	2083526	1126107	628.83	628.83	629.19	0.36	Table B-1 value of 628.90 ft ASL had changed
C-32	1132	1071	2083551	1126022	634.86	634.86	634.87	0.01	
C-33	1133	1072	2083563	1125914	636.07	636.07	636.20	0.13	
C-34	1134	1073	2083551	1125813	635.60	635.60	635.61	0.01	
C-35	1135	1074	2083558	1125716	635.10	635.10	635.10	0.00	
C-36	1136	1075	2083560	1125611	634.24	634.24	634.27	0.03	
C-37	1137	1076	2083575	1125610	634.25	634.25	634.25	0.00	
C-38	1138	1077	2083568	1125509	632.39	632.39	632.73	0.34	
C-39	1139	Near 1142	2083860	1126607	613.72	NDE	614.68	0.96	Estimated Delta, Boring Confirmed ≥ 1 ft thick
C-40	1140	Near 1142	2083875	1126598	613.41	NDE	614.68	1.27	Estimated Delta, Boring Confirmed ≥ 1 ft thick
C-41	1141	1078	2083863	1126498	614.64	614.64	614.69	0.05	
C-42	1142	Beyond LOW	2083875	1126395	615.21	NA	NA	Beyond LOW	
C-43	1143	1079	2083836	1126397	616.70	616.70	616.74	0.04	Table B-1 value of 616.40 ft ASL had changed. Boring Confirmed 1 ft min.
C-44	1144	1080	2083819	1126299	618.36	618.36	618.55	0.19	
C-45	1145	1081	2083776	1126398	620.91	620.91	621.09	0.18	Boring Confirmed ≥ 1 ft thick
C-46	1146	1082	2083787	1126501	618.98	618.98	619.09	0.11	Boring Confirmed ≥ 1 ft thick
C-47	1147	Near 1033	2083778	1126606	617.59	NDE	619.02	1.43	Table B-1 value of 617.50 ft ASL had changed. Boring Confirmed 1 ft min.
C-48	1148	Beyond LOW	2083775	1126639	617.80	NA	NA	Beyond LOW	
C-49	1149	1083	2083808	1126197	626.50	626.50	626.54	0.04	Boring Confirmed ≥ 1 ft thick
C-50	1150	1084	2083802	1126096	631.59	631.59	631.59	0.00	
C-51	1151	1085	2083787	1125999	638.03	638.03	638.08	0.05	
C-52	1152	Beyond LOW	2083844	1125893	628.44	NA	NA	Beyond LOW	Table B-1 value of 628.80 ft ASL had changed.
C-53	1153	Beyond LOW	2083805	1125798	631.50	NA	NA	Beyond LOW	
C-54	1154	At LOW	2083781	1125700	632.60	NA	NA	At LOW	
C-55	1155	At LOW	2083788	1125598	630.60	NA	NA	At LOW	
C-56	1156	Beyond LOW	2083816	1125498	627.20	NA	NA	Beyond LOW	
C-57	1157	Beyond LOW	2083788	1125377	625.30	NA	NA	Beyond LOW	
C-58	1158	1086	2083601	1125428	632.02	632.02	632.06	0.04	
C-86	1186	Near 1102	2083679	1125856	636.83	NDE	636.86	0.03	Estimated Delta
LF-SB01	1187	Near 1025	2083664	1126347	631.66	NDE	632.01	0.35	Estimated Delta
LF-SB02	1188	Near 1011	2083610	1126170	631.18	NDE	632.22	1.04	Estimated Delta
LF-SB03	1189	Near 1109	2083669	1125946	637.78	NDE	638.30	0.52	Estimated Delta
LF-SB04	1190	Near 1090	2083654	1125644	634.51	NDE	634.24	-0.27	Estimated Delta
LGW-01	1193	Near 1025	2083661	1126370	631.73	NDE	632.01	0.28	Estimated Delta
LMW-01	1194	Near 1025	2083666	1126363	631.63	NDE	632.01	0.38	Estimated Delta
LMW-02	1195	Near 1025	2083662	1126360	631.68	NDE	632.01	0.33	Estimated Delta
LMW-03	1196	Near 1125	2083622	1126315	632.00	NDE	631.86	-0.14	Estimated Delta
LMW-04	1197	Near 1043	2083733	1125934	638.60	NDE	638.01	-0.59	Estimated Delta
LMW-05	1198	Near 1093	2083655	1125687	634.79	NDE	634.61	-0.18	Estimated Delta
LWM-06	NLP	Beyond LOW	2083711	1125286	618.10	NA	NA	Beyond LOW	
LMW-07	1199	Beyond LOW	2083928	1125590	620.20	NA	NA	Beyond LOW	
NLP	NLP	1087	2083650	1125550	NDE-Basis	NDE-Basis	633.64	Basis Survey	
NLP	NLP	1088	2083550	1125650	NDE-Basis	NDE-Basis	634.13	Basis Survey	
NLP	NLP	1089	2083600	1125650	NDE-Basis	NDE-Basis	634.39	Basis Survey	
NLP	NLP	1090	2083650	1125650	NDE-Basis	NDE-Basis	634.24	Basis Survey	
NLP	NLP	1091	2083700	1125650	NDE-Basis	NDE-Basis	633.85	Basis Survey	
NLP	NLP	1092	2083600	1125700	NDE-Basis	NDE-Basis	634.80	Basis Survey	
NLP	NLP	1093	2083650	1125700	NDE-Basis	NDE-Basis	634.61	Basis Survey	
NLP	NLP	1094	2083700	1125700	NDE-Basis	NDE-Basis	634.54	Basis Survey	
NLP	NLP	1095	2083600	1125750	NDE-Basis	NDE-Basis	635.16	Basis Survey	
NLP	NLP	1096	2083650	1125750	NDE-Basis	NDE-Basis	635.18	Basis Survey	
NLP	NLP	1097	2083700	1125750	NDE-Basis	NDE-Basis	635.29	Basis Survey	
NLP	NLP	1098	2083600	1125800	NDE-Basis	NDE-Basis	635.71	Basis Survey	
NLP	NLP	1099	2083700	1125800	NDE-Basis	NDE-Basis	636.06	Basis Survey	
NLP	NLP	1100	2083600	1125850	NDE-Basis	NDE-Basis	636.03	Basis Survey	
NLP	NLP	1101	2083650	1125850	NDE-Basis	NDE-Basis	636.40	Basis Survey	
NLP	NLP	1102	2083700	1125850	NDE-Basis	NDE-Basis	636.86	Basis Survey	
NLP	NLP	1103	2083750	1125850	NDE-Basis	NDE-Basis	636.93	Basis Survey	
NLP	NLP	1104	2083600	1125900	NDE-Basis	NDE-Basis	636.41	Basis Survey	
NLP	NLP	1105	2083650	1125900	NDE-Basis	NDE-Basis	636.81	Basis Survey	
NLP	NLP	1106	2083700	1125900	NDE-Basis	NDE-Basis	637.78	Basis Survey	
NLP	NLP	1107	2083800	1125900	NDE-Basis	NDE-Basis	634.94	Basis Survey	
NLP	NLP	1108	2083550	1125950	NDE-Basis	NDE-Basis	634.90	Basis Survey	

Johns Manville - Waukegan Plant
On-Site Landfill Closure - Fill Area 1 (Miscellaneous Disposal Pit)
Barrier Layer Design and Record Elevations

LFR RWP Dwg 10 C-Boring ID	LFR RWP Dwg 10 Point ID	CQM Dwg A-4 Point ID	Northing	Easting	2003 LFR RWP Table B-2 Design Barrier Elevation	2008 CQM Dwg A-4 Design Barrier Elevation	2008 CQM Dwg A-4 Record Barrier Elevation	Calculated Barrier Elevation Delta	Notes
NLP	NLP	1110	2083850	1125950	NDE-Basis	NDE-Basis	629.16	Basis Survey	
NLP	NLP	1111	2083800	1126000	NDE-Basis	NDE-Basis	637.10	Basis Survey	
NLP	NLP	1112	2083850	1126000	NDE-Basis	NDE-Basis	629.34	Basis Survey	
NLP	NLP	1113	2083650	1126050	NDE-Basis	NDE-Basis	637.78	Basis Survey	Boring Confirmed ≥ 1 ft thick
NLP	NLP	1114	2083700	1126050	NDE-Basis	NDE-Basis	637.11	Basis Survey	Boring Confirmed ≥ 1 ft thick
NLP	NLP	1115	2083750	1126050	NDE-Basis	NDE-Basis	635.27	Basis Survey	Boring Confirmed ≥ 1 ft thick
NLP	NLP	1116	2083850	1126050	NDE-Basis	NDE-Basis	627.67	Basis Survey	
NLP	NLP	1117	2083650	1126100	NDE-Basis	NDE-Basis	635.10	Basis Survey	
NLP	NLP	1118	2083700	1126100	NDE-Basis	NDE-Basis	634.46	Basis Survey	Boring Confirmed ≥ 1 ft thick
NLP	NLP	1119	2083750	1126100	NDE-Basis	NDE-Basis	633.92	Basis Survey	
NLP	NLP	1120	2083550	1126200	NDE-Basis	NDE-Basis	629.85	Basis Survey	
NLP	NLP	1121	2083650	1126200	NDE-Basis	NDE-Basis	632.21	Basis Survey	
NLP	NLP	1122	2083750	1126200	NDE-Basis	NDE-Basis	628.28	Basis Survey	Boring Confirmed ≥ 1 ft thick
NLP	NLP	1123	2083800	1126250	NDE-Basis	NDE-Basis	624.69	Basis Survey	Boring Confirmed ≥ 1 ft thick
NLP	NLP	1124	2083550	1126300	NDE-Basis	NDE-Basis	631.69	Basis Survey	
NLP	NLP	1125	2083600	1126300	NDE-Basis	NDE-Basis	631.86	Basis Survey	
NLP	NLP	1126	2083700	1126300	NDE-Basis	NDE-Basis	631.40	Basis Survey	
NLP	NLP	1127	2083600	1126350	NDE-Basis	NDE-Basis	631.93	Basis Survey	
NLP	NLP	1128	2083750	1126350	NDE-Basis	NDE-Basis	625.20	Basis Survey	Boring Confirmed ≥ 1 ft thick
NLP	NLP	1129	2083800	1126350	NDE-Basis	NDE-Basis	619.40	Basis Survey	Boring Confirmed ≥ 1 ft thick
NLP	NLP	1130	2083550	1126400	NDE-Basis	NDE-Basis	631.90	Basis Survey	
NLP	NLP	1131	2083600	1126400	NDE-Basis	NDE-Basis	631.97	Basis Survey	
NLP	NLP	1132	2083650	1126400	NDE-Basis	NDE-Basis	631.94	Basis Survey	
NLP	NLP	1133	2083550	1126450	NDE-Basis	NDE-Basis	631.61	Basis Survey	
NLP	NLP	1134	2083600	1126450	NDE-Basis	NDE-Basis	631.74	Basis Survey	
NLP	NLP	1135	2083650	1126450	NDE-Basis	NDE-Basis	631.47	Basis Survey	
NLP	NLP	1136	2083700	1126450	NDE-Basis	NDE-Basis	630.30	Basis Survey	
NLP	NLP	1137	2083800	1126450	NDE-Basis	NDE-Basis	619.01	Basis Survey	Boring Confirmed ≥ 1 ft thick
NLP	NLP	1138	2083850	1126450	NDE-Basis	NDE-Basis	615.14	Basis Survey	Boring Confirmed ≥ 1 ft thick
NLP	NLP	1139	2083650	1126500	NDE-Basis	NDE-Basis	629.66	Basis Survey	
NLP	NLP	1140	2083700	1126500	NDE-Basis	NDE-Basis	629.29	Basis Survey	
NLP	NLP	1141	2083800	1126550	NDE-Basis	NDE-Basis	618.40	Basis Survey	Boring Confirmed ≥ 1 ft thick
NLP	NLP	1142	2083850	1126550	NDE-Basis	NDE-Basis	614.68	Basis Survey	Boring Confirmed ≥ 1 ft thick

Notes:

1. NA = Not Applicable, either beyond limit of waste (Beyond LOW) or at limit of waste (At LOW).
2. NDE = No Design Elevation since not surveyed at exact location.
3. Delta = Record Barrier Elevation - Design Barrier Elevation
4. Estimated Delta results from NDE, the nearest (not exact) Record Barrier Elevation is compared to the LFR design elevation. Data presented as estimate only, not actual result.
5. NDE-Basis = No Design Elevation since these points were surveyed only to serve as a basis for the sand drainage layer and protective clay cap thickness measurements.
6. NLP = No LFR point for this location.
7. Boring Confirmed ≥ 1 ft thick are those locations where a Geoprobe was used to measure the barrier thickness ≥ 1 ft thick in August 2018.
8. Database survey elevations differed from Table B-1 PDF elevations.
9. Installation of the C-Borings occurred from April 8 to 18, 2003. During the completion of the borings, the locations were flagged. Following the completion of the borings, a topographical survey was completed by Harrington Land Surveyors on April 23, 2003. The 2003 surveying was the basis for tables B-1 and B-2 in the June 2008 Remedial Work Plan. Surveying performed by CQM in 2008 at the C-Boring locations prior to commencing work indicated that some of these elevations had changed, as noted.
10. CQM survey locations at or beyond limits of waste not shown on table since there is no barrier thickness at the limits of waste.

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On-Site Landfill Closure - Fill Area 2 (Collection Basin)
Barrier Layer Design and Record Elevations

LFR RWP Dwg 10 C-Boring ID	LFR RWP Dwg 10 Point ID	CQM Dwg A-4 Point ID	Northing	Easting	2003 LFR RWP Table B-2 Design Barrier Elevation	2008 CQM Dwg A-4 Design Barrier Elevation	2008 CQM Dwg A-4 Record Barrier Elevation	Calculated Barrier Elevation Delta	Notes
NLP	NLP	1	2084099	1126212	NLP	597.00	597.10	0.10	
NLP	NLP	2	2084096	1126259	NLP	596.44	596.60	0.16	
NLP	NLP	3	2084096	1126309	NLP	597.32	597.51	0.19	Boring Confirmed ≥ 1 ft thick
NLP	NLP	4	2084096	1126359	NLP	598.22	598.40	0.18	
NLP	NLP	5	2084096	1126409	NLP	599.00	599.08	0.08	Boring Confirmed ≥ 1 ft thick
NLP	NLP	6	2084096	1126459	NLP	598.06	598.07	0.01	
NLP	NLP	7	2084096	1126509	NLP	597.07	597.19	0.12	Boring Confirmed ≥ 1 ft thick
NLP	NLP	8	2084096	1126559	NLP	596.08	596.10	0.02	
NLP	NLP	10	2084146	1126209	NLP	595.08	595.09	0.01	
NLP	NLP	11	2084146	1126259	NLP	595.98	596.00	0.02	Boring Confirmed ≥ 1 ft thick
NLP	NLP	12	2084146	1126309	NLP	596.89	597.01	0.12	
NLP	NLP	13	2084146	1126359	NLP	597.79	597.94	0.15	Boring Confirmed ≥ 1 ft thick
NLP	NLP	14	2084146	1126409	NLP	598.69	598.73	0.04	
NLP	NLP	15	2084146	1126459	NLP	597.89	597.90	0.01	Boring Confirmed ≥ 1 ft thick
NLP	NLP	16	2084146	1126509	NLP	596.90	596.97	0.07	
NLP	NLP	17	2084146	1126559	NLP	595.92	595.93	0.01	Boring Confirmed ≥ 1 ft thick
NLP	NLP	19	2084196	1126209	NLP	594.65	594.73	0.08	
NLP	NLP	20	2084196	1126259	NLP	595.55	595.61	0.06	
NLP	NLP	21	2084196	1126309	NLP	596.46	596.47	0.01	Boring Confirmed ≥ 1 ft thick
NLP	NLP	22	2084196	1126359	NLP	597.36	597.39	0.03	
NLP	NLP	23	2084196	1126409	NLP	598.26	598.27	0.01	Boring Confirmed ≥ 1 ft thick
NLP	NLP	24	2084196	1126459	NLP	597.72	597.78	0.06	
NLP	NLP	25	2084196	1126509	NLP	596.74	596.74	0.00	Boring Confirmed ≥ 1 ft thick
NLP	NLP	26	2084196	1126559	NLP	595.75	595.85	0.10	
NLP	NLP	28	2084246	1126209	NLP	594.61	594.63	0.02	
NLP	NLP	29	2084246	1126259	NLP	595.12	595.31	0.19	
NLP	NLP	30	2084246	1126309	NLP	596.02	596.18	0.16	
NLP	NLP	31	2084246	1126359	NLP	596.93	597.03	0.10	
NLP	NLP	32	2084246	1126409	NLP	597.83	597.96	0.13	
NLP	NLP	33	2084246	1126459	NLP	597.56	597.58	0.02	
NLP	NLP	34	2084246	1126509	NLP	596.57	596.69	0.12	
NLP	NLP	35	2084246	1126559	NLP	595.59	595.63	0.04	
NLP	NLP	37	2084296	1126259	NLP	594.69	594.76	0.07	
NLP	NLP	38	2084296	1126309	NLP	595.59	595.63	0.04	
NLP	NLP	39	2084296	1126359	NLP	596.50	596.59	0.09	
NLP	NLP	40	2084296	1126409	NLP	597.40	597.48	0.08	
NLP	NLP	41	2084296	1126459	NLP	597.39	597.39	0.00	
NLP	NLP	42	2084296	1126509	NLP	596.41	596.41	0.00	
NLP	NLP	43	2084296	1126559	NLP	595.42	595.43	0.01	
NLP	NLP	45	2084346	1126259	NLP	594.26	594.32	0.06	
NLP	NLP	46	2084346	1126309	NLP	595.16	595.16	0.00	
NLP	NLP	47	2084346	1126359	NLP	596.07	596.19	0.12	
NLP	NLP	48	2084346	1126409	NLP	596.97	596.99	0.02	
NLP	NLP	49	2084346	1126459	NLP	597.22	597.22	0.00	
NLP	NLP	50	2084346	1126509	NLP	596.24	596.24	0.00	
NLP	NLP	51	2084346	1126559	NLP	595.25	595.34	0.09	
NLP	NLP	53	2084396	1126259	NLP	593.83	593.99	0.16	
NLP	NLP	54	2084396	1126309	NLP	594.73	594.81	0.08	
NLP	NLP	55	2084396	1126359	NLP	595.62	595.62	0.00	
NLP	NLP	56	2084396	1126409	NLP	596.54	596.59	0.05	
NLP	NLP	57	2084396	1126459	NLP	597.05	597.06	0.01	
NLP	NLP	58	2084396	1126509	NLP	596.07	596.09	0.02	
NLP	NLP	59	2084396	1126559	NLP	595.09	595.10	0.01	
NLP	NLP	60	2084446	1126259	NLP	593.40	593.49	0.09	
NLP	NLP	61	2084446	1126309	NLP	594.30	594.39	0.09	
NLP	NLP	62	2084446	1126359	NLP	595.00	595.18	0.18	
NLP	NLP	63	2084496	1126309	NLP	593.87	594.03	0.16	
NLP	NLP	64	2084496	1126359	NLP	594.36	594.56	0.20	
NLP	NLP	67	2084546	1126309	NLP	593.44	593.56	0.12	
NLP	NLP	68	2084596	1126309	NLP	592.83	592.91	0.08	
NLP	NLP	69	2084646	1126309	NLP	591.13	591.29	0.16	
NLP	NLP	70	2084109	1126409	NLP	599.00	599.00	0.00	
NLP	NLP	71	2084159	1126416	NLP	598.70	598.71	0.01	
NLP	NLP	72	2084208	1126423	NLP	598.40	598.45	0.05	
NLP	NLP	73	2084258	1126430	NLP	598.10	598.19	0.09	
NLP	NLP	74	2084307	1126437	NLP	597.79	597.89	0.10	
NLP	NLP	75	2084257	1126444	NLP	597.49	597.50	0.01	
NLP	NLP	76	2084406	1126451	NLP	597.18	597.21	0.03	
NLP	NLP	77	2084118	1126192	NLP	595.00	595.29	0.29	
NLP	NLP	78	2084558	1126348	NLP	594.00	594.05	0.05	
NLP	NLP	107	2084585	1126304	NLP	593.00	593.02	0.02	
NLP	NLP	108	2084464	1126357	NLP	595.00	595.01	0.01	
NLP	NLP	109	2084121	1126188	NLP	594.90	595.13	0.23	

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Barrier Layer Design and Record Elevations

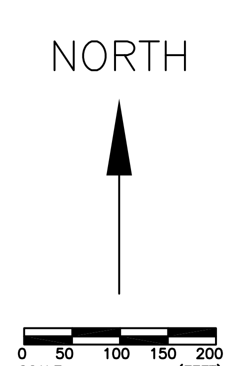
LFR RWP Dwg 10 C-Boring ID	LFR RWP Dwg 10 Point ID	CQM Dwg A-4 Point ID	Northing	Easting	2003 LFR RWP Table B-2 Design Barrier Elevation	2008 CQM Dwg A-4 Design Barrier Elevation	2008 CQM Dwg A-4 Record Barrier Elevation	Calculated Barrier Elevation Delta	Notes
NLP	NLP	110	2084170	1126198	NLP	594.66	594.74	0.08	
NLP	NLP	111	2084219	1126208	NLP	594.42	594.66	0.24	
NLP	NLP	112	2084268	1126218	NLP	594.18	594.22	0.04	
NLP	NLP	113	2084317	1126228	NLP	593.94	594.14	0.20	
NLP	NLP	114	2084366	1126237	NLP	593.68	593.71	0.03	
NLP	NLP	115	2084416	1126246	NLP	593.42	593.59	0.17	
NLP	NLP	116	2084465	1126260	NLP	593.15	593.29	0.14	
NLP	NLP	117	2084494	1126283	NLP	593.00	593.16	0.16	
NLP	NLP	118	2084561	1126299	NLP	592.50	592.62	0.12	
NLP	NLP	119	2084608	1126301	NLP	592.14	592.20	0.06	
C-59	1159	Beyond LOW	2084415	1126596	592.30	NA	NA	Beyond LOW	
C-60	1160	Near 58	2084414	1126498	594.24	NDE	596.09	1.85	Estimated Delta
C-61	1161	Near 56	2084413	1126400	594.21	NDE	596.59	2.38	Estimated Delta
C-62	1162	Near 54	2084410	1126298	592.40	NDE	594.81	2.41	Estimated Delta
C-63	1163	Near 63	2084510	1126323	591.99	NDE	594.03	2.04	Estimated Delta
C-64	1164	Near 107	2084580	1126326	591.39	NDE	593.02	1.63	Estimated Delta
C-65	1165	Near 37	2084322	1126273	592.71	NDE	594.76	2.05	Estimated Delta
C-66	1166	Near 39	2084294	1126377	594.83	NDE	596.59	1.76	Estimated Delta
C-67	1167	Near 41	2084289	1126487	594.86	NDE	597.39	2.53	Estimated Delta
C-68	1168	Beyond LOW	2084288	1126592	592.80	NA	NA	Beyond LOW	
C-69	1169	Beyond LOW	2084184	1126563	593.71	NA	NA	Beyond LOW	
C-72	1172	Near 15	2084173	1126473	595.53	NDE	597.90	2.37	Estimated Delta
C-73	1173	Near 13	2084173	1126356	595.49	NDE	597.94	2.45	Estimated Delta
C-74	1174	Near 21	2084195	1126286	594.05	NDE	596.47	2.42	Estimated Delta
C-75	1175	Beyond LOW	2084046	1126559	593.67	NA	NA	Beyond LOW	
C-76	1176	At LOW	2084067	1126460	596.20	NA	NA	At LOW	
C-77	1177	Beyond LOW	2084068	1126360	596.60	NA	NA	Beyond LOW	
C-78	1178	Beyond LOW	2084080	1126262	594.60	NA	NA	Beyond LOW	
C-79	1179	Beyond LOW	2084136	1126191	592.84	NA	NA	Beyond LOW	
C-80	1180	Near 112	2084264	1126220	592.26	NDE	594.22	1.96	Estimated Delta
C-81	1181	Beyond LOW	2084347	1126225	593.70	NA	NA	Beyond LOW	
C-82	1182	Beyond LOW	2084434	1126244	592.45	NA	NA	Beyond LOW	
C-83	1183	Near 117	2084529	1126267	590.84	NDE	593.16	2.32	Estimated Delta
C-84	1184	Near 119	2084626	1126292	592.60	NDE	592.20	-0.40	Estimated Delta
C-85	1185	Near 118	2084588	1126276	593.09	NDE	592.62	-0.47	Estimated Delta
LF-SB05	1191	Near 6	2084146	1126479	595.50	NDE	598.07	2.57	Estimated Delta
LF-SB06	1192	Near 48	2084376	1126431	595.10	NDE	596.99	1.89	Estimated Delta
LMW-08	1200	Beyond LOW	2084273	1126628	592.11	NA	NA	Beyond LOW	
LMW-09	NLP	Beyond LOW	Near LMW-08	Near LMW-08	592.20	NA	NA	Beyond LOW	
LMW-10	1201	Near 34	2084277	1126530	594.06	NDE	596.69	2.63	Estimated Delta

Notes:

1. NA = Not Applicable, either beyond limit of waste (Beyond LOW) or at limit of waste (At LOW).
2. NDE = No Design Elevation since not surveyed at exact location.
3. Delta = Record Barrier Elevation - Design Barrier Elevation
4. Estimated Delta results from NDE, the nearest (not exact) Record Barrier Elevation is compared to the LFR design elevation. Data presented as estimate only, not actual result.
5. NLP = No LFR point for this location.
6. Boring Confirmed ≥ 1 ft thick are those locations where a Geoprobe was used to measure the barrier thickness ≥ 1 ft thick in August 2018.
7. CQM survey locations at or beyond limits of waste not shown on table since there is no barrier thickness at the limits of waste.

Appendix O

Stormwater Drainage Map



DAVID M. PETERSON, PE, PC

PROJECT: WWT PONDS & SETTLING BASIN CLOSURE

TOPOGRAPHIC MAP

CLIENT: JOHNS MANVILLE	PM: DMP
LOCATION: 1871 NORTH PERSHING ROAD, WAUKEGAN, IL 60087	DRAWING: 1
DRAWN BY: DMP · REVIEWED BY: DMP · DATE: MAR. 2018	

Appendix P

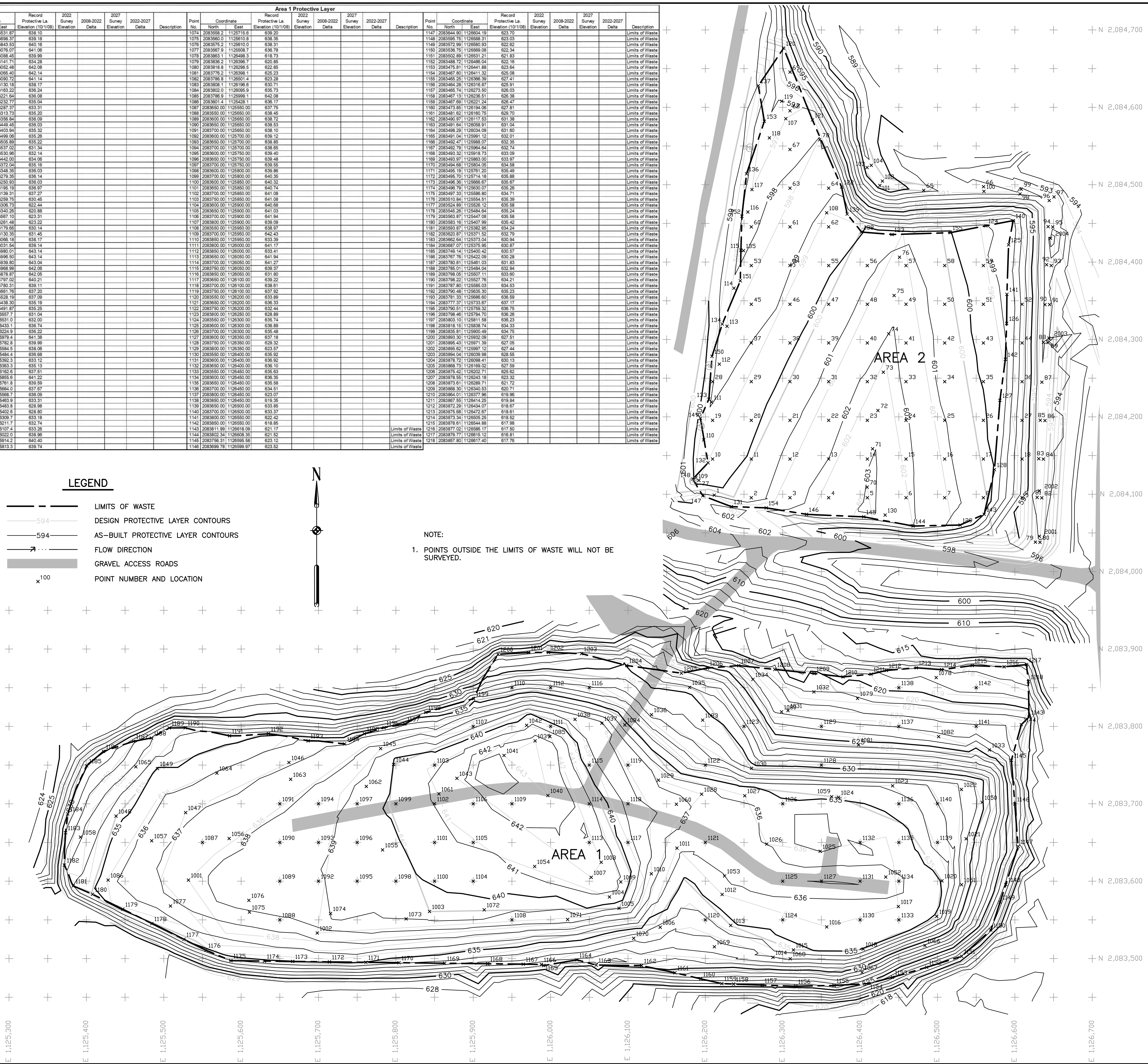
Protective Cover Survey Map

Area 1 Protective Layer

Point No.	Coordinate North	Coordinate East	Record Protective La. Elevation (10/1/08)	2022 Survey Elevation	2008-2022 Delta	2027 Survey Elevation	2022-2027 Delta	Description
1001	2083601.39	1125531.87	638.10					
1002	2083533.08	1125698.37	639.18					
1003	2083560.80	1125843.53	640.16					
1004	2083579.59	1126076.07	641.06					
1005	2083564.95	1126088.45	639.99					
1006	2083540.43	1126141.71	634.28					
1007	2083604.91	1126052.48	642.08					
1008	2083624.47	1126065.40	642.14					
1009	2083599.05	1126090.72	641.14					
1010	2083609.53	1126130.18	638.17					
1011	2083642.70	1126163.22	636.24					
1012	2083582.86	1126221.64	636.08					
1013	2083542.79	1126232.77	635.04					
1014	2083501.65	1126287.37	633.31					
1015	2083511.17	1126313.73	635.20					
1016	2083540.89	1126356.84	636.09					
1017	2083567.23	1126449.45	636.03					
1018	2083512.29	1126403.94	635.32					
1019	2083554.56	1126499.06	635.26					
1020	2083600.45	1126505.89	635.22					
1021	2083654.86	1126537.02	631.34					
1022	2083718.54	1126530.96	632.14					
1023	2083723.20	1126442.00	634.06					
1024	2083708.44	1126372.04	635.16					
1025	2083638.68	1126348.35	636.03					
1026	2083647.94	1126279.35	636.14					
1027	2083710.45	1126250.93	636.03					
1028	2083712.42	1126195.19	636.97					
1029	2083730.55	1126139.31	637.27					
1030	2083745.81	1126259.75	630.45					
1031	2083820.50	1126306.73	622.44					
1032	2083844.61	1126340.26	620.88					
1033	2083769.60	1126567.10	623.31					
1034	2083860.69	1126261.48	623.22					
1035	2083850.41	1126179.65	630.14					
1036	2083815.16	1126130.35	631.45					
1037	2083804.16	1126066.18	638.17					
1038	2083809.12	1126031.54	639.14					
1039	2083781.32	1125980.01	643.14					
1040	2083710.71	1125996.50	643.14					
1041	2083762.53	1125939.80	643.04					
1042	2083801.44	1125968.99	642.06					
1043	2083732.90	1125878.87	642.05					
1044	2083750.79	1125797.02	640.21					
1045	2083771.44	1125780.31	639.11					
1046	2083753.38	1125661.76	637.20					
1047	2083688.67	1125528.19	637.09					
1048	2083684.10	1125438.30	635.19					
1049	2083745.57	1125491.87	635.25					
1050	2083701.9	1126557.7	631.04					
1051	2083595.4	1126531.0	632.00					
1052	2083605.4	1126433.1	636.74					
1053	2083606.7	1126224.9	636.22					
1054	2083619.0	1125979.4	641.38					
1055	2083640.4	1125782.8	639.99					
1056	2083655.1	1125584.5	638.06					
1057	2083652.2	1125484.4	636.68					
1058	2083656.9	1125392.3	633.12					
1059	2083709.1	1126363.3	635.13					
1060	2083699.4	1126162.6	637.51					
1061	2083712.8	1125855.6	641.22					
1062	2083722.4	1125761.8	639.59					
1063	2083731.6	1125664.0	637.67					
1064	2083739.6	1125568.7	636.09					
1065	2083747.8	1125463.9	633.31					
1066	2083516.8	1126483.8	628.98					
1067	2083482.2	1126402.6	628.80					
1068	2083499.7	1126309.7	633.18					
1069	2083515.2	1126211.7	632.74					
1070	2083526.1	1126107.4	633.26					
1071	2083550.5	1126022.0	638.96					
1072	2083563.0	1125914.2	640.40					
1073	2083551.3	1125813.3	639.74					

Point No.	Coordinate North	Coordinate East	Record Protective La. Elevation (10/1/08)	2022 Survey Elevation	2008-2022 Delta	2027 Survey Elevation	2022-2027 Delta	Description
1074	2083558.2	1125715.6	639.20					
1075	2083560.0	1125610.8	638.35					
1076	2083575.2	1125610.0	638.31					
1077	2083567.9	1125508.7	636.78					
1078	2083863.1	1126498.3	618.73					
1079	2083836.2	1126396.7	620.85					
1080	2083818.8	1126298.5	622.85					
1081	2083776.2	1126398.1	625.23					
1082	2083786.8	1126501.4	623.28					
1083	2083808.1	1126196.6	630.71					
1084	2083802.0	1126095.9	635.73					
1085	2083786.9	1125999.1	642.08					
1086	2083601.4	1125428.1	636.17					
1087	2083650.00	1125550.00	637.75					
1088	2083550.00	1125650.00	638.45					
1089	2083600.00	1125650.00	638.72					
1090	2083650.00	1125650.00	638.53					
1091	2083700.00	1125650.00	638.10					
1092	2083600.00	1125700.00	639.12					
1093	2083650.00	1125700.00	638.85					
1094	2083700.00	1125700.00	638.65					
1095	2083600.00	1125750.00	639.40					
1096	2083650.00	1125750.00	639.48					
1097	2083700.00	1125750.00	639.55					
1098	2083600.00	1125800.00	639.86					
1099	2083700.00	1125800.00	640.35					
1100	2083600.00	1125850.00	640.32					
1101	2083650.00	1125850.00	640.74					
1102	2083700.00	1125850.00	641.08					
1103	2083750.00	1125850.00	641.08					
1104	2083600.00	1125900.00	640.68					
1105	2083650.00	1125900.00	641.03					
1106	2083700.00	1125900.00	641.94					
1107	2083800.00	1125900.00	639.09					
1108	2083550.00	1125950.00	638.97					
1109	2083700.00	1125950.00	642.43					
1110	2083850.00	1125950.00	633.39					
1111	2083800.00	1126000.00	641.17					
1112	2083850.00	1126000.00	633.41					
1113	2083650.00	1126050.00	641.94					
1114	2083700.00	1126050.00	641.27					
1115	2083750.00	1126050.00	639.37					
1116	2083850.00	1126050.00	631.80					
1117	2083650.00	1126100.00	639.22					
1118	2083700.00	1126100.00	638.61					
1119	2083750.00	1126100.00	637.92					
1120	2083550.00	1126200.00	633.89					
1121	2083650.00	1126200.00	636.33					
1122	2083750.00	1126200.00	632.44					
1123	2083800.00	1126250.00	628.89					
1124	2083550.00	1126300.00	635.74					
1125	2083600.00	1126300.00	636.89					
1126	2083700.00	1126300.00	635.48					
1127	2083600.00	1126350.00	637.18					
1128	2083750.00	1126350.00	629.32					
1129	2083800.00	1126350.00	623.57					
1130	2083550.00	1126400.00	635.92					
1131	2083600.00	1126400.00	636.92					
1132	2083650.00	1126400.00	636.10					
1133	2083550.00	1126450.00	635.63					
1134	2083600.00	1126450.00	636.35					
1135	2083650.00	1126450.00	635.58					
1136	2083700.00	1126450.00	634.51					
1137	2083800.00	1126450.00	623.07					
1138	2083850.00	1126450.00	619.35					
1139	2083650.00	1126500.00	633.85					
1140	2083700.00	1126500.00	633.37					
1141	2083800.00	1126550.00	622.42					
1142	2083850.00	1126550.00	618.85					
1143	2083811.99	1126618.09	621.17					Limits of Waste
1144	2083802.34	1126608.35	621.52					Limits of Waste
1145	2083756.31	1126595.58	623.12					Limits of Waste
1146	2083699.78	1126599.97	623.52					Limits of Waste

Point No.	Coordinate North	Coordinate East	Record Protective La. Elevation (10/1/08)	2022 Survey Elevation	2008-2022 Delta	2027 Survey Elevation	2022-2027 Delta	Description
1147	2083644.90	1126604.19	623.70					Limits of Waste
1148	2083595.75	1126588.31	623.03					Limits of Waste
1149	2083572.99	1126580.93	622.62					Limits of Waste
1150	2083536.75	1126569.08	622.34					Limits of Waste
1151	2083502.89	1126531.21	621.83					Limits of Waste
1152	2083488.72	1126486.04	622.16					Limits of Waste
1153	2083475.81	1126441.88	623.64					Limits of Waste
1154	2083467.80	1126411.32	625.08					Limits of Waste
1155	2083465.25	1126366.39	627.41					Limits of Waste
1156	2083464.28	1126316.87	625.91					Limits of Waste
1157	2083465.74	1126273.50	626.03					Limits of Waste
1158	2083467.13	1126236.51	626.38					Limits of Waste
1159	2083467.69	1126221.24	626.47					Limits of Waste
1160	2083473.85	1126194.06	627.81					Limits of Waste
1161	2083481.62	1126160.75	629.70					Limits of Waste
1162	2083490.97	1126117.53	631.38					Limits of Waste
1163	2083491.64	1126058.91	631.04					Limits of Waste
1164	2083498.29	1126034.09	631.60					Limits of Waste
1165	2083491.04	1125991.12	632.01					Limits of Waste
1166	2083492.47	1125988.07	632.35					Limits of Waste
1167	2083492.79	1125964.64	632.74					Limits of Waste
1168	2083493.32	1125918.73	633.09					Limits of Waste
1169	2083493.97	1125863.00	633.97					Limits of Waste
1170	2083494.68	1125804.05	634.58					Limits of Waste
1171	2083495.19	1125761.20	635.49					Limits of Waste
1172	2083495.70	1125714.18	635.88					Limits of Waste
1173	2083496.36	1125666.67	635.67					Limits of Waste
1174	2083496.79	1125630.07	635.26					Limits of Waste
1175	2083497.33	1125586.80	634.71					Limits of Waste
1176	2083510.84	1125554.51	635.39					Limits of Waste
1177	2083524.89	1125526.12	635.58					Limits of Waste
1178	2083545.26	1125484.64	635.24					Limits of Waste
1179	2083563.87	1125447.08	635.58					Limits of Waste
1180	2083583.16	1125407.99	635.42					Limits of Waste
1181	2083593.87	1125382.95	634.24					Limits of Waste
1182	2083620.87	1125371.52	632.79					Limits of Waste
1183	2083662.64	1125373.04	630.94					Limits of Waste
1184	2083687.07	1125375.95	630.87					Limits of Waste
1185	2083749.14	1125400.42	630.57					Limits of Waste
1186	2083767.76	1125422.09	630.28					Limits of Waste
1187	2083780.81	1125461.03	631.83					Limits of Waste
1188	2083785.01	1125484.04	632.94					Limits of Waste
1189	2083798.05	1125507.11	633.60					Limits of Waste
1190	2083798.22	1125527.76	634.21					Limits of Waste
1191	2083787.80	1125585.03	634.53					Limits of Waste
1192	2083790.48	1125635.30	635.23					Limits of Waste
1193	2083781.33	1125686.60	636.59					Limits of Waste
1194	2083777.37	1125733.67	637.17					Limits of Waste
1195	2083790.51	1125759.32	636.75					Limits of Waste
1196	2083798.46	1125784.70	636.26					Limits of Waste
1197	2083803.10	1125811.58	636.23					Limits of Waste
1198	2083818.15	1125838.74	634.33					Limits of Waste
1199	2083835.81	1125900.49	634.75					Limits of Waste
1200	2083893.30	1125932.09	627.51					Limits of Waste
1201	2083895.43	1125971.39	627.05					Limits of Waste
1202	2083895.62	1125997.12	627.44					Limits of Waste
1203	2083894.04	1126039.98	628.55					Limits of Waste
1204	2083878.72	1126098.41	630.13					Limits of Waste
1205	2083868.73	1126169.02	627.59					Limits of Waste
1206	2083875.42	1126202.71	625.62					Limits of Waste
1207	2083878.55	1126243.18	623.32					Limits of Waste
1208	2083873.61	1126289.71	621.72					Limits of Waste
1209	2083868.30	1126340.53	620.71					Limits of Waste
1210	2083864.01	1126377.96	619.96					Limits of Waste
1211	2083867.55	1126414.25	619.84					Limits of Waste
1212	2083872.29	1126434.07	618.67					Limits of Waste
1213	2083875.68	1126472.67	618.61					Limits of Waste
1214	2083873.34	1126505.25	618.52					Limits of Waste
1215	2083878.61	1126544.88	617.98					Limits of Waste
1216	2083877.02	1126586.17	617.50					Limits of Waste
1217	2083879.77	1126615.12	616.81					Limits of Waste
1218	2083857.80	1126617.40	617.76					Limits of Waste



LEGEND

- LIMITS OF WASTE
- 594 DESIGN PROTECTIVE LAYER CONTOURS
- 594 AS-BUILT PROTECTIVE LAYER CONTOURS
- FLOW DIRECTION
- GRAVEL ACCESS ROADS
- ×100 POINT NUMBER AND LOCATION

NOTE:

1. POINTS OUTSIDE THE LIMITS OF WASTE WILL NOT BE SURVEYED.

Area 2 Protective Layer

Point No.	North	East	Record Protect. Layer Elevation	2022 Survey Elevation	2008-2022 Delta	2027 Survey Elevation	2022-2027 Delta	Description
1	2084098.87	1126211.56	601.21					
2	2084095.52	1126259.36	600.63					
3	2084095.52	1126309.36	601.60					
4	2084095.52	1126359.36	602.41					
5	2084095.52	1126409.36	603.21					
6	2084095.52	1126459.36	602.28					
7	2084095.52	1126509.36	601.27					
8	2084095.52	1126559.36	600.34					
9	2084095.52	1126609.36	-					Outside Limits of Waste
10	2084145.52	1126209.36	599.32					
11	2084145.52	1126259.36	600.16					
12	2084145.52	1126309.36	601.03					
13	2084145.52	1126359.36	601.99					
14	2084145.52	1126409.36	603.06					
15	2084145.52	1126459.36	602.11					
16	2084145.52	1126509.36	601.15					
17	2084145.52	1126559.36	600.22					
18	2084145.52	1126609.36	-					Outside Limits of Waste
19	2084195.52	1126209.36	599.08					
20	2084195.52	1126259.36	599.79					
21	2084195.52	1126309.36	600.84					
22	2084195.52	1126359.36	601.72					
23	2084195.52	1126409.36	602.67					
24	2084195.52	1126459.36	601.86					
25	2084195.52	1126509.36	601.02					
26	2084195.52	1126559.36	600.11					
27	2084195.52	1126609.36	-					Outside Limits of Waste
28	2084245.52	1126209.36	598.98					
29	2084245.52	1126259.36	599.38					
30	2084245.52	1126309.36	600.33					
31	2084245.52	1126359.36	601.08					
32	2084245.52	1126409.36	602.28					
33	2084245.52	1126459.36	601.68					
34	2084245.52	1126509.36	600.77					
35	2084245.52	1126559.36	599.81					
36	2084245.52	1126609.36	-					Outside Limits of Waste
37	2084295.52	1126259.36	598.89					
38	2084295.52	1126309.36	599.79					
39	2084295.52	1126359.36	600.72					
40	2084295.52	1126409.36	601.76					
41	2084295.52	1126459.36	601.60					
42	2084295.52	1126509.36	600.75					
43	2084295.52	1126559.36	599.77					
44	2084295.52	1126609.36	-					Outside Limits of Waste
45	2084345.52	1126259.36	598.50					
46	2084345.52	1126309.36	599.28					
47	2084345.52	1126359.36	600.37					
48	2084345.52	1126409.36	601.16					
49	2084345.52	1126459.36	601.34					
50	2084345.52	1126509.36	600.62					
51	2084345.52	1126559.36	599.47					
52	2084345.52	1126609.36	-					Outside Limits of Waste
53	2084395.52	1126259.36	598.20					
54	2084395.52	1126309.36	598.86					
55	2084395.52	1126359.36	599.72					
56	2084395.52	1126409.36	600.84					
57	2084395.52	1126459.36	601.41					
58	2084395.52	1126509.36	600.22					
59	2084395.52	1126559.36	599.38					
60	2084445.52	1126259.36	597.79					
61	2084445.52	1126309.36	598.57					
62	2084445.52	1126359.36	599.30					
63	2084495.52	1126309.36	598.04					
64	2084495.52	1126359.36	598.82					
65	2084492.67	1126482.23	-					Outside Limits of Waste
66	2084497.46	1126559.54	-					Outside Limits of Waste
67	2084545.52	1126309.36	597.72					
68	2084595.52	1126309.36	597.18					
69	2084645.52	1126309.36	595.67					
70	2084109.22	1126409.16	603.19					
71	2084158.74	1126416.11	603.00					
72	2084208.25	1126423.05	602.75					
73	2084257.76	1126430.00	602.43					
74	2084307.27	1126436.98	602.11					
75	2084356.78	1126443.98	601.78					
76	2084406.29	1126450.97	601.58					
77	2084117.90	1126191.69	599.64					
78	2084557.99	1126347.72	598.08					
79	2084038.13	1126626.53	-					Outside Limits of Waste
80	2084037.88	1126632.53	-					Outside Limits of Waste
81	2084095.89	1126628.87	-					Outside Limits of Waste
82	2084095.30	1126634.85	-					Outside Limits of Waste
83	2084145.93	1126630.89	-					Outside Limits of Waste
84	2084145.45	1126636.88	-					Outside Limits of Waste
85	2084195.62	1126632.91	-					Outside Limits of Waste
86	2084195.18	1126638.89	-					Outside Limits of Waste
87	2084244.80	1126634.90	-					Outside Limits of Waste
88	2084296.34	1126636.98	-					Outside Limits of Waste
89	2084296.03	1126642.97	-					Outside Limits of Waste
90	2084345.03	1126638.95	-					Outside Limits of Waste
91	2084345.16	1126644.96	-					Outside Limits of Waste
92	2084396.59	1126641.04	-					Outside Limits of Waste
93	2084395.48	1126647.00	-					Outside Limits of Waste
94	2084445.85	1126643.03	-					Outside Limits of Waste
95	2084445.34	1126649.02	-					Outside Limits of Waste
96	2084479.46	1126644.39	-					Outside Limits of Waste
97	2084484.18	1126650.59	-					Outside Limits of Waste
98	2084487.97	1126606.70	-					Outside Limits of Waste
99	2084494.23	1126608.12	-					Outside Limits of Waste
100	2084491.45	1126560.06	-					Outside Limits of Waste
101	2084498.99	1126425.55	-					Outside Limits of Waste
102	2084504.66	1126428.89	-					Outside Limits of Waste
103	2084522.22	1126409.06	-					Outside Limits of Waste
104	2084525.02	1126414.43	-					Outside Limits of Waste
105	2084777.41	1126349.61	-					Outside Limits of Waste
106	2084777.89	1126355.59	-					Outside Limits of Waste
107	2084585.29	1126303.97	597.24					
108	2084463.76	1126356.77	599.07					
109	2084121.22	1126187.77	599.65					
110	2084170.18	1126197.87	599.11					
111	2084219.15	1126207.98	599.02					
112	2084268.12	1126218.09	598.61					
113	2084317.14	1126227.94	598.34					
114	2084366.32	1126236.94	598.10					
115	2084415.50	1126245.94	597.75					
116	2084464.68	1126254.94	597.63					
117	2084493.71	1126260.26	597.50					
118	2084560.50	1126282.80	596.97					
119	2084607.87	1126298.79	596.56					
120	2084676.45	1126301.10	595.77					Limit of Waste
121	2084583.67	1126338.40	597.44					Limit of Waste
122	2084497.12	1126376.03	598.88					Limit of Waste
123	2084435.65	1126441.23	601.02					Limit of Waste
124	2084446.87	1126562.60	599.13					Limit of Waste
125	2084422.31	1126591.96	598.53					Limit of Waste
126	2084320.78	1126589.44	598.91					Limit of Waste
127	2084221.44	1126580.78	599.49					Limit of Waste
128	2084131.81	1126573.62	599.76					Limit of Waste
129	2084060.25	1126529.25	600.89					Limit of Waste
130	2084073.11	1126432.36	602.76					Limit of Waste
131	2084084.04	1126233.61	602.00					Limit of Waste
132	2084140.60	1126203.47	599.34					Limit of Waste
133	2084222.83	1126204.54	599.20					Limit of Waste
134	2084319.94	1126221.84	598.76					Limit of Waste
135	2084414.85	1126249.22	597.69					Limit of Waste
136	2084514.01	1126253.21	598.32					Limit of Waste
137	2084627.77	1126268.43	599.22					Limit of Waste
138	2084438.84	1126401.89	600.19					Limit of Waste
139	2084461.98	1126383.25	599.42					Limit of Waste
140	2084453.64	1126597.81	598.43					Limit of Waste
141	2084358.43	1126589.71	598.72					Limit of Waste
142	2084274.39	1126587.72	599.18					Limit of Waste
143	2084074.16	1126560.33	600.19					Limit of Waste
144	2084058.96	1126468.51	602.06					Limit of Waste
145	2084070.81	1126404.74	602.99					Limit of Waste
146	2084074.05	1126330.72	602.33					Limit of Waste
147	2084098.00	1126196.74	601.44					Limit of Waste
148	2084119.54	1126183.62	600.09					Limit of Waste
149	2084198.25	1126193.55	599.89					Limit of Waste
150	2084278.26	1126208.58	599.39					Limit of Waste
151	2084375.78	1126245.15	598.13					Limit of Waste
152	2084459.33	1126247.26	598.20					Limit of Waste
153	2084582.05	1126276.27	597.21					Limit of Waste
154	2084082.46	1126278.68	601.83					Limit of Waste
155	2084437.98	1126516.41	600.11					Limit of Waste

RELEASE	DATE:	BY:
Project Review		
5		
4		
3		
2		
1		
NO.	DATE:	BY:
DESCRIPTION		
REVISIONS		

Johns Manville

CQM, INC.
Engineering-Surveying-Material Testing
2679 Continental Drive
Green Bay, WI 54311

Protective Layer

Area 1 & 2 Final Cover
Johns Manville Waukegan Plant
Waukegan, IL

DRAWN BY: WBE

DATE: Oct. 2018

SCALE: 1"=60'

DRAWING NO.

1

Appendix F

On-Site Landfill Response to December 5, 2017 Comments (RTC #1)

AECOM Imagine it. Delivered.

AECOM
4320 Winfield Road, Suite 300
Warrenville, IL 60555
aecom.com

April 25, 2018

Mr. Matthew J. Ohl
Remedial Project Manager
United States Environmental Protection Agency Region 5
77 West Jackson Blvd., SR-6J
Chicago, Illinois 60555

**Subject: Response to December 5, 2017 U.S. EPA Comments
Final Closure Report, Non-Asbestos Containing On-Site
Landfill Permit Exempt "815" Facility #0971900014
Johns Manville, Waukegan, Lake County, Illinois**

Dear Mr. Ohl:

AECOM Technical Services, Inc. (AECOM) is providing this document on behalf of Johns Manville (JM0 to respond to comments provided by the U.S. Environmental Protection Agency (USEPA) on December 5, 2017 to the Final Closure Report for the Non-Asbestos Containing On-Site Landfill ("On-Site Landfill"), a permit exempt "815" facility at the former Johns Manville manufacturing facility located in Waukegan, Illinois (#0971900014) dated March 31, 2017. Remediation work was completed in accordance with the Final Phase II Remedial Work Plan (Revision 1) dated June 20, 2008 (RWP), and satisfactorily meets the full requirements of the First Amended Consent Decree, the Adjusted Standard Order dated December 6, 2007, and regulations for existing landfills set forth in 35 IAC Part 814, Subparts A and C.

To facilitate review of the Final Closure Report and responses to USEPA comments, past reports and applicable documents, have been identified in **Table 1** and are provided in electronic format attached to this response. The Final Closure Report and this response to comments address work that was completed subsequent to approval of the RWP by the EPA.

Comment 01: *Table 1 lists a site investigation report that was submitted to the USEPA and Illinois EPA on 6 Sep. 2005, but, incidentally, correspondence in Appendix A (see Draft Summary of IEPA Comments and Responses On-Site Landfill) indicates this site investigation report was actually dated 26 Sep. 2005. The next activity listed in Table 1 is the submission of the Final Phase II RWP to the USEPA and Illinois EPA on 8 Feb. 2008, and, according to this Table 1, the OSL was capped later that year, between 4 Aug. and 7 Nov. 2008, around eight (8) years after the USEPA initially determined the OSL should be closed. The last activity listed in Table 1 is the growth and development of the vegetative soil cover, which occurred between 8 Nov. 2008 and 30 Nov. 2016. However, one of the aerial photographs, Photo 4, on the last page of Appendix I of Appendix E, shows that a vegetative cover was fairly well established in Nov. 2008. Title 35 of the Illinois Administrative Code (IAC), Section 811.322 (35 IAC 811.322) requires the vegetation to consist of a diverse mix of native and introduced species consistent with post-closure land use, but eight (8) years seems to be a long time to achieve growth and development of the vegetative soil cover.*

Recommendation: *Revise the report to provide more information about the gap in time between the USEPA's determination that the OSL be closed in the second ESD and the commencement of the closure activities. Evidently, it took a considerable amount of time for the adjusted standards to be granted to Johns Manville by the IPCB. It is also recommended that the closure report describe the reason(s) for submitting the capping activities CCR and closure report for the OSL so long after completion of the OSL construction work.*

Response 01: Between 2005 and 2008 data was collected related to landfill gas monitoring, leachate collection, and groundwater monitoring. Data was submitted to the IPCB in support of the adjusted standards, comments were received, and responses to comments were made. Upon resolution of comments, then it took time for the IPCB to grant the adjusted standards.

Additional work completed between 2005 and 2008 was related to developing a design basis for the OSL cap. This included deriving an appropriate HELP Model that was acceptable to the USEPA.

The gap between the conclusion of substantial work in November 2008 and 2016 was, in-part, due to ongoing O&M of the vegetative cover. Other project delays resulted from changes to the Industrial Canal and Pumping Lagoon closure methods. Submittal of the OSL Closure Plan was tabled until all work described in the First Amended Consent Decree (FACD) was complete.

Comment 02: *The closure report commonly references other documents, particularly the seven (7) reference documents in listed in Section 6. Only one of these documents is included with the closure report, and this was the IPCB petition, Order AS 04-4 (Adjusted Standard – Land), as well as correspondence regarding the adjusted standards. The other references were not provided and do not appear to be readily available to the public. Although it's not necessary to include publically available test methods, standards, or regulations, such as the regulations in 35 IAC 814, most of the reports and information referenced by the closure report, as well as the references in the Final Phase II RWP, are pertinent to the closure of the OSL and compliance with the regulatory requirements. However, these references can be difficult to access, such as the above-mentioned "compliance plan" or the Sep 2005 site investigation report.*

Recommendation: *Since there is such a large amount of information and correspondence regarding the Johns Manville site, include the pertinent details in the report. Other documents should only be referenced to provide supplemental background information, such as to determine where the requirements originated or became established. Also, please include bookmarks in large files to facilitate access to figures and appendices.*

Response 02: (Table 1) The seven referenced documents are identified as Report #11, Report #1, Report #2, Report #23, Report #27, Report #31, and Report #30, respectively, in **Table 1** and are attached in electronic format.

Comment 03: *It was not mentioned in the closure report, but the Executive Summary of the Final Phase II RWP explains the following:*

"The proposed final cover is an alternative specification to the low permeability layer specified in 35 Illinois Administrative Code (IAC) Section 811.314(b)(3)(C). Evaluation of the performance of an alternative specification to the low permeability layer described in 35 IAC Section 811.314(b)(3)(C) was previously presented in the report entitled "Proposed Final Cover Soil and Thickness" (LFR, September 17, 2004) and subsequent LFR correspondence with the [Illinois] IEPA dated April 25, 2006 (Response to IEPA Comments on [Hydrologic Evaluation of Landfill Performance] HELP Model regarding Johns Manville Facility Petition for Adjusted Standards)."

It is evident from the language in the FACD that the Phase II RWP was to provide many of the specific details regarding the OSL remedial design, closure, and documentation requirements, and Paragraph 15(b) of the FACD lists several elements that were to be included, at a minimum, in the work plan. Section 4.2 of the closure report says that the USEPA approved the Final Phase II RWP with modifications on 14 Apr. 2008. Although the closure report includes correspondence concerning the work plan in Appendix D, it does not include the requirements that were specified in the Final Phase II RWP. The details in the Final Phase II RWP are valuable for understanding the closure activities as well as the documentation and regulatory requirements for OSL closure. Nevertheless, the work plan is also voluminous and contains roughly 1100 pages.

Recommendation: *The approved, complete Final Phase II RWP should be included in the report for reference as a separate addendum or supplemental document, and the applicable regulatory requirements should be explained, identified, and referenced within the closure report.*

Response 03: (Table 1 and Table 2) The complete Final Phase II RWP approved by USEPA is identified as Report #31 in **Table 1** and attached in electronic format. **Table 2** cross references the FACD requirements with the RWP.

Comment 04: *In Section 3.1.1, Site Preparation and Barrier Layer, of the Final Phase II RWP, it provides specifications for the barrier layer. The final 12-inch barrier soil layer in the fill areas (#1 and #2) was to be compacted to 90% of modified Proctor density (ASTM D1557) at 0 to 6 % above the optimum moisture content, or 95 % of standard Proctor density (ASTM D698) at 0 to 4 % above the optimum moisture content, and alternative compaction specifications, based on laboratory testing, were allowed in order to meet the HELP model criteria of 7 x 10E-6 cm/s. As noted in Section 3.0 of the CCR in Appendix E of the closure report, the fill material for Fill Area #1 consisted of relocated non-[Asbestos-Containing Material] (ACM) waste from the southern and eastern boundary of this area, stripped materials from cutting and regrading operations within the fill areas (#1 and #2), and on-site stockpiled clayey soils (Clay Stockpile 12).*

Recommendation: *Revise the closure report to provide more details regarding the relocation of non-ACM waste and if it was used within the barrier layer.*

Response 04: No waste material was used within the Barrier Layer. Relocated non-ACM waste material was placed within the former Miscellaneous Disposal Pit (MDP) access road on the east side of Fill Area 1 and covered with compacted Barrier Layer clay. Compaction testing was performed where Barrier Layer clay was relocated to confirm it met the minimum requirements.

Comment 05: *In the CCR, Appendix F of Appendix E, the closure report provides density and moisture content results from the in-place testing of the barrier layer material. These tests were performed using a Troxler 3440 nuclear density meter, and the locations for the nuclear density meter tests on the barrier layer are shown in Drawing A-3 in Appendix A of Appendix E. Drawing A-3 shows that the eleven (11) barrier layer tests in Area #1 were generally performed near the northeastern corner or toward the middle of the area. This same drawing shows sixteen (16) barrier layer tests in Area #2, but Appendix F of Appendix E has a discrepancy because it indicates there were eighteen (18) barrier layer tests in this Area #2. Drawing A-3 also shows that the barrier layer tests in Area #2 were performed in a grid pattern, but only for the southern portion of the area.*

Recommendation: *Revise the closure report to provide the reason for the testing discrepancy in Area #2. In addition, it is recommended that the closure report provide the requirements and rationale for the nuclear density meter test locations for the barrier layer (which were quite different from the protective layer test locations). Furthermore, it is recommended that the closure report confirm that all the nuclear density meter testing was performed in accordance with the gauge manufacturer's instructions and standardized test methods and procedures, including calibration and standardization (e.g., ASTM D6938, which replaced ASTM D2922). In addition, the report should include all the geotechnical laboratory certifications and test results for the barrier and protective layer materials (such as results from the Shelby tube samples, i.e., hydraulic conductivity, Atterberg limits, particle size, and determination of the maximum proctor density (e.g., 130.1 PCF @ 8.4% moisture)).*

Response 05:
(Table 1)
(Attachment A)

Within Fill Area 1 there were 11 locations that were tested as shown on drawing A-3. Testing was performed where Barrier Layer clay was relocated to cover waste material (i.e. around the MDP access road).

Within Fill Area 2 there were 16 locations that were tested as shown on drawing A-3. Testing was performed where Barrier Layer material was extended to cap the area that did not contain barrier material. Two additional locations were tested (Tests 17 and 18) beyond the boundary of Fill Area 2 (to the east) and consequently were not shown on drawing A-3. Tests 17 and 18 were completed in the drainage swale area east of Fill Area 2.

Nuclear density meter testing was performed in accordance with all calibration and standardization requirements. The Standard Operating Procedure (SOP) and calibration logs for the Troxler 3440 density meter are included in **Attachment A**.

Appendix E of Appendix E of the Final Closure Report contains the geotechnical testing results for the clay used to construct the Barrier Layer (where necessary) and protective cover. Report #27 identified in **Table 1** and attached in electronic format includes geotechnical testing results (permeability) for the Barrier Layer and is attached in electronic format.

Comment 06: *In Section 2.2 of the CCR in Appendix E of the closure report, it explains that for the protective layer, approximately 73,600 cubic yards (CY) of clayey soils were placed in-situ. This section further notes that these Lake County clayey soils were obtained from Clay Stockpile #12, and this material was originally imported to the site in 2007 from an overburden stockpile / borrow area at the Veolia Landfill located in Zion, Illinois. Section 2.2 of the CCR also mentions that this clayey soil was sampled to demonstrate compliance with the analytical requirements for fill material that are in the Phase II RWP (Revision 1A) Wastewater Treatment Pond Closure, submitted to the USEPA on 13 Jan. 2005. Analytical test results for the Onyx Zion Landfill Clay were included in the closure report in Appendix D of Appendix E, and the geotechnical test results were included in Appendix E of Appendix E. Appendix E of Appendix E lists the geotechnical tests as Test Pit Numbers 1 through 8. According to Section 2.2 of the CCR, six (6) of the geotechnical samples were reportedly collected from Clay Stockpile #12, and the other two (2) geotechnical samples were collected from clay stockpiled in Fill Area #2.*

Recommendation: *Revise the text to provide the details and procedures that were followed regarding the collection and analysis of samples to determine the analytical chemistry and geotechnical properties of the materials (sand as well as clay) and whether the samples are representative of the volume of material that was utilized. In addition, it is recommended that the closure report summarize the results of the laboratory and field testing of the materials, provide information regarding data validation, and highlight any tests that did not meet the closure requirements. The closure report should also explain the procedure used to determine the volumes of the different materials placed within the OSL.*

Response 06: (Attachment B, Attachment C, Attachment D,)

Appendix B of Appendix E of the Final Closure Report contains the full laboratory analytical reports for the Borrow Pit sand. Representative sand samples were collected from undisturbed Borrow Pit sand at various depth intervals. Shallow samples were collected using a shovel while deeper samples were collected using a Geoprobe equipped with disposable liners. Once collected, sand samples were transferred to sample containers using disposable gloves, the sample containers were put on loose ice in a cooler, and the samples were transported under chain of custody protocol to the laboratory for analysis. Sample identifications were BP-NW-1, BP-2, BP-3, BP-4, BP-5, BP-6, BP-7, BP-3 (0.5’), BP-6 (0.5’), BP-8 (16”), BP-8 (3’), BP-9 (15”), BP-9 (3’), BP-10 (14”), BP-10 (3’), BP-11 (16”), BP-11 (3’), BP-12 (13”), BP-12 (3’), BP-13 (12”), BP-13 (3’), BP-14 (15”), BP-14 (3’), and DUP-1.

The 23 sand samples plus one duplicate sample (DUP-1) were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), Resource Conservation and Recovery Act (RCRA) metals, antimony, pH, pesticides, polychlorinated biphenyls (PCBs), and asbestos. At the required sampling frequency of one sample per 10,000 cubic yards (CY), this sampling event prequalified 230,000 CY of sand which exceeded the volume used to construct the one foot thick drainage layer.

The volume of sand used to construct the drainage layer was calculated by multiplying a thickness of 1 foot by the area of FA1 (9.6 acres) and area of FA2 (4.1 acres). These areas exceeded the limits of waste.

- 1 ft x (9.6 + 4.1 acres) x 43,560 sq.ft./acre x CY/27cu.ft. = 22,100 CY

All sand laboratory analyses for VOCs, SVOCs, RCRA Metals, antimony, pH, pesticides, PCBs, and asbestos were below criteria. Therefore, no summary tables were prepared. Sand data validation summaries are included in **Attachment B**.

Appendix C of Appendix E of the Final Closure Report contains the Borrow Pit sand geotechnical results including boring logs and sieve analysis. A site map is also included identifying the soil boring locations. A drill rig utilizing hollow stem augers was used to collect sand samples at four separate locations around the Borrow Pit down to the underlying clay up to approximately 27 feet below grade. The sand was evaluated by a geologist using the Unified Soil Classification System (USCS) and was determined to be generally fine to medium grained and moderately dense. The sieve analyses were consistent with these observations.

Appendix D of Appendix E of the Final Closure Report contains both clay analytical summary tables as well as the full laboratory reports. Representative clay samples were collected from virgin Onyx Zion Landfill clay that needed to be removed to construct an additional landfill cell. An excavator was used to dig six test holes that were spaced apart. Clay samples were collected at 6 foot and 12 foot depths from each hole using disposable gloves to fill sample containers which were then put on loose ice in a cooler and transported under chain of custody protocol to the laboratory for analysis. Sample identifications were OZL-14 (6'), OZL-14 (12'), OZL-14 (12') DUP, OZL-15 (6'), OZL-15 (12'), OZL-16 (6'), OZL-16 (12'), OZL-17 (6'), OZL-17 (6') DUP, OZL-17 (12'), OZL-18 (6'), OZL-18 (12'), OZL-19 (6'), OZL-19 (12').

The 12 clay samples plus two duplicate samples (suffix DUP) were analyzed for VOCs, SVOCs, RCRA Metals, antimony, pH, pesticides, PCBs, and asbestos. At the required sampling frequency of one sample per 10,000 CY, this sampling event prequalified 120,000 CY of clay which exceeded the volume used to construct the three foot thick protective cover. Clay that was used to construct the protective cover came from clay stockpile #12 and **Attachment C** contains a survey of that pile.

The volume of clay used to construct the protective cover was calculated by multiplying a thickness of 3 feet of compacted clay by the area of FA1 (10.7 acres) and area of FA2 (4.5 acres). Clay extended beyond the sand so the areas of clay cover are larger than those of sand.

- 3 ft x (10.7 + 4.5 acres) x 43,560 sq.ft./acre x CY/27cu.ft. = 73,600 CY

All clay laboratory analyses for VOCs, SVOCs, RCRA Metals, antimony, pH, pesticides, PCBs, and asbestos were below criteria with the exception of one arsenic result. The arsenic result was 13.6 mg/kg which was above the metropolitan background level of 13 mg/kg. Consequently, a 95% upper confidence limit (UCL) calculation was performed including all other arsenic results. The mean and standard deviation for the 12 samples were 8.57 mg/kg and 2.10 mg/kg, respectively. For this calculation duplicate samples were averaged with the original samples to calculate the data point that was used. The 95% UCL calculation was 9.76 mg/kg which was less than 13 mg/kg; therefore, the clay was accepted for use. Clay data validation summaries are presented in **Attachment D**.

Appendix E of Appendix E of the Final Closure Report contains the clay geotechnical results including grain size analysis, Atterberg limits, moisture content, Modified Proctor density, coefficient of permeability, permeability compaction, and USCS. Geotechnical samples were collected by excavating at each location sampled to expose fresh clay, using a shovel to fill a 5-gallon bucket at each location, and transporting the 5-gallon bucket to the geotechnical testing laboratory.

Comment 07: *The sampling requirement provided in Section 3.0 of the Sampling and Analysis Plan in Appendix F of the Final Phase II RWP for the OSL, says off-property sources of clay are to be sampled and tested at the rate of one sample per 10,000 CY, but it appears that this only pertains to the analytical testing for contaminants; not the geotechnical tests. Appendix E of the Phase II RWP (Revision 1A) Wastewater Treatment Pond Closure document has a Sampling and Analysis Plan that includes fill materials, and it seems that these requirements were also applicable for the OSL fill material. Section 6.3 of Appendix E of the Phase II RWP (Revision 1A) Wastewater Treatment Pond Closure document explains that, similar to the analytical requirements in the Final Phase II RWP for the OSL, off-property sources of clay were to be sampled and tested at the rate of one sample per 10,000 CY. In addition, this section notes that "No sampling or testing of any pre-qualified materials will be conducted following their placement as cover." The specifications for construction of the OSL cap in Section 9 of Appendix C of the Final Phase II RWP for the OSL indicate that the stockpiled clayey soils and sand were chemically pre-qualified and no additional chemical testing was required, but it is not clear if these materials received chemical and/or geotechnical approval by the regulatory agencies prior to construction of the cap. Apparently this "pre-qualification" only refers to the chemical analysis of the materials, but it is recommended that the closure report explain both the analytical chemistry testing and geotechnical material testing requirements as well as the reasons these requirements were not included with the Final Phase II RWP for the OSL.*

Recommendation: *Revise the closure report to provide details regarding the precautions taken to prevent stockpiled materials from becoming intermixed with the contaminated soils on the site or becoming contaminated by remedial activities. In addition, include the specifications for material placement and testing, such as maximum lift thickness for the different materials and density test frequency required per unit area of barrier material placed, as well as the procedures that were used to monitor the placement activities and verify these requirements were met.*

Response 07: Approval of the RWP, including the Construction Compliance Plan (Revision 1) provided at Appendix D, served as the basis for determining approval criteria for materials used in construction of the cap. Since the materials used in construction of the cap met the RWP, it was assumed no subsequent regulatory approval was required. Response 06 provides further information regarding the sampling, analysis, and volume of approved sand and clay.

Stockpiled materials were not mixed with contaminated soils. Stockpiles were created on surfaces that were already capped such as the CERCLA landfill cap east of the Settling Basin (clay stockpile 12) and West Parking Area asphalt cap west of the CERCLA landfill (sand stockpile 1). Clay stockpile 12 was created on top of orange snow fence that served to mark the bottom of the pile so there was no over-excavation into the CERCLA cover.

Procedures for constructing the OSL cap included the following:

- Sand and clay was loaded from sand stockpile 1 and clay stockpile 12, respectively, into transport vehicles which were either off-road trucks or pan scrapers.
- Sand and clay were transported to the OSL and dumped where needed.
- Machines and transport vehicles only drove on clean clay to construct the barrier layer, clean sand to construct the drainage layer, and clean clay to construct the protective cover. This prevented contamination of each layer from waste materials as well as cap materials (i.e. sand from the drainage layer did not get mixed with clay in the protective cover).
- Bulldozers were used to spread the sand and clay in lifts. Bulldozers only drove on the material that was being placed so sand and clay did not get mixed.
- Sand was placed in one lift so that the minimum thickness of 12 inches was achieved.
- Clay was placed in maximum 8 inch lifts and compacted to achieve 90% Modified Proctor density (ASTM D1557). Compaction was achieved by a combination of tracking over clay as it was placed, compacting the clay with a vibratory sheepsfoot compactor, and driving off-road trucks and scrapers over placed clay. The top 3 inches of the protective clay cover were tracked-in to allow for seeding and establishment of the vegetative cover.
- The contractor installed wooden stakes that were marked with tape to indicate the appropriate lift thickness. These stakes were installed approximately 50 to 70 feet apart. In addition, the contractor utilized bulldozers equipped with GPS units to spread sand and clay. The placements of lifts were also observed visually during each day of work and measured randomly during construction.
- Surveying and compaction testing was performed by an independent third party and the results of such documentation were included in Appendix A of Appendix E of the Final Closure Report. Surveying measurements were taken at a minimum spacing of 70 feet plus features, breaks, crests, and toes of slopes. Compaction testing was performed approximately every 10,000 square feet of each lift.

Comment 08: *In regards to the testing of the placed material, the closure report primarily includes the testing conducted by the nuclear density meter (Troxler 3440) on the barrier and protective layers, which are provided in Appendices F and G of Appendix E. However, confirmation testing of the placed material is generally performed using laboratory testing or a test liner. In general, the closure report should follow the construction quality assurance program guidance in 35 IAC 811, Subpart E.*

Recommendation: *Provide the requirements and details for the in-place testing, such as the sampling requirements, documentation, standard operating procedures (SOPs), and test methods that were used (e.g. ASTM D6938).*

Response 08: (Attachment A and Table 1)

Laboratory testing was not performed because geotechnical testing was completed prior to commencing work. Appendix E of Appendix E of the Final Closure Report contains the geotechnical testing results for the clay used to construct the Barrier Layer (where necessary) and protective cover. Report #27 identified in **Table 1** includes geotechnical testing results (permeability) for the barrier layer and is attached in electronic format.

Response 07 contains a description of the means and methods used to place the sand and clay. It also contains the compaction testing requirements for the clay. Clay was compacted to 90% Modified Proctor (ASTM D1557). **Attachment A** includes the SOP and calibration logs for the Troxler 3440 density meter.

Comment 09:

Section 2.1 of the CCR (Appendix E) explains that the sand material for the drainage layer was obtained from the Johns Manville Borrow Pit. This material was reportedly sampled and analyzed to demonstrate compliance with the analytical requirements for fill material with the approved Phase II RWP (Revision 1A) Wastewater Treatment Pond Closure submitted to the USEPA on 13 Jan. 2005, which was several years prior to the submission of the Final Phase II RWP for the OSL on 8 Feb. 2008. However, it is not clear if the material was previously approved for use in the OSL.

Recommendation: *Revise the closure report to explain whether there were any additional revisions, changes, or modifications to the work plan after it received approval, and if any problems or pertinent issues were identified during the closure activities, such as the potential problems identified in the work plan and other correspondence. It is also recommended that the closure report explain if there were any indications of the emergency conditions considered in Appendix E, Emergency and Contingency Plan, of the Final Phase II RWP.*

Response 09:

Approval of the RWP served as the basis for approving sand for the drainage layer. Sand testing results indicated that standards were achieved and the sand was suitable for use.

There were no problems encountered during the completion of the OSL capping activities and hence no emergency conditions were encountered.

Comment 10:

It appears that some of the applicable regulatory requirements provided in 35 IAC 814, Subparts A and C were not adequately discussed in the closure report. As a consequence, it is not clear whether the design, operation, and closure of the OSL was compliant with such requirements. For example, an applicable regulation that was not discussed in the report is 35 IAC 814.302, Applicable Standards, Paragraph (b), where it explains that units regulated under this Subpart shall be subject to the following standards: (1) The unit must be equipped with a system which will effectively drain and collect leachate and transport it to a leachate management system, and (2) The owner or operator shall provide a long-term static safety factor of at least 1.5 to protect a completed unit against slope failure. Other regulatory requirements are only briefly mentioned, such as 35 IAC 811.322 in Section 4.3 of the closure report. Conversely, Appendix A of the closure report contains the petitions and correspondence for obtaining Adjusted Standards for the OSL, and Section 4.0 provides specific details concerning closure of the OSL in accordance with these Adjusted Standards.

Recommendation: *Include similar details regarding compliance with the requirements of 35 IAC 814, Subparts A and C, as well as all other applicable regulatory requirements for the OSL in the report.*

Response 10: (Table 1) The approved RWP granted JM exemptions from certain requirements of *35 IAC 814, Subparts A and C*. This included the requirement for a leachate collection or management system. Periodic removal of leachate from wells was completed until such time as the OSL cap was constructed. Following the cap construction, leachate no longer accumulated, as expected. Leachate recovery documentation is included in Reports #8 to #16 identified in **Table 1** and attached in electronic format.

Comment 11: Adjusted Standards were granted to Johns Manville for the closure of the OSL by the IPCB. In regards to the requirements for the landfill gas monitoring and landfill gas management system, Sections 4.1.1 and 4.1.2 of the closure report explain that the monitoring results were previously submitted to the Illinois EPA and USEPA in the 2012 annual report, dated 14 Feb. 2014, and provided in Appendix C.

Recommendation: *Revise the report to provide verification that the Illinois EPA and USEPA previously determined that Johns Manville did not meet the requirements for implementing a Landfill Gas Collection System, and there are no requirements for further monitoring of landfill gas emissions.*

Response 11: Report #23 and Report #11 document that there is no need for a landfill gas collection system nor any requirement for further monitoring of landfill gas emissions.

Comment 12: Table 3 of Appendix C contains the results of the ambient monitoring locations. A note in this table explains that the ambient air measurements were collected one (1) inch above the ground surface. Section 4.1.2 of the report says the OSL gas sampling monitoring points located outside the landfill boundary were the following: LMW-12, LMW-19, LMW-21, LMW-23, LMW-25, SMW-07A, SMW-08AR, SMW-10A, and SMW-12R. This same section notes that the methane concentrations for the time period were measured to be less than 50% of the LEL, so the results showed that the requirements for the implementation a landfill gas collection system were not met, no landfill gas management system was needed, and no further landfill gas monitoring was necessary.

Recommendation: *Clarify the monitoring procedures and which wells were used to monitor the landfill gas, groundwater quality, and leachate in the report*

Response 12: (Table 1) Landfill gas, groundwater, and leachate monitoring procedures and data are presented in Reports #8 to #16 in **Table 1** and attached in electronic format.

Comment 13: Appendix I of the Final Phase II RWP includes the "Monitoring Well Logs" for the following nineteen (19) wells installed between 1988 and 2003: SMW-07A (Nov-1989), -08A (Nov-1989), -09 (Oct-1988), -10A (Nov-1989), -11A (Nov-1989), -12 (Oct-1988), -13 (Oct-1988); UMW-14 (Oct-1991) and -28 (Apr-2003); LGW-01 (Apr-2003); LMW-02 (Apr-2003), -03 (Apr-2003), -05 (Apr-2003), -06 (Apr-2003), -07 (Apr-2003), -09 (Apr-2003), -10 (Apr-2003), -11 (May-2003), and -12(May-2003)). These older logs were included in Appendix B of the closure report, along with ten (10) additional wells installed in August 2008 (i.e., LMW-19, -20, -21, -22, -23, -24, -25, -26; SMW-08AR and -12R). Evidently, the well logs for LMW-04 and the eleven (11) wells at the *bottom of Appendix C, Tables 2 and 3 are missing, and the results from LMW-20, -22, -24 and -26 were not reported in Appendix C, Tables 2 and 3.*

Recommendation: *Provide the details on these wells and the other wells shown in Appendix C, Tables 2 and 3, such as the reason(s) they were installed, well development procedures and results, historical monitoring results (including gas, leachate, and/or groundwater), reasons they are no longer measured, etc. in the report.*

Response 13: (Table 1)

Eight wells referenced as P-87 through P-94 were 1-inch diameter PVC temporary piezometers. The purpose of these temporary piezometers was to assist with assessing the groundwater elevations, flow direction, and gradients within the shallow sand aquifer. These were also used to assess the soil gas quality before and after the adjusted standard was approved. Well logs for the temporary piezometers and LMW-04 are provided in Report #27 in **Table 1** and attached in electronic format.

Three wells referenced as 04-92, 04-89, and 04-91 were 1-inch diameter PVC temporary piezometers that were installed east of Fill Area 2 with a Geoprobe to a depth of approximately 5 feet below ground surface with 2.5 feet of 0.010 inch slotted screen on the bottom; the PVC riser extended above grade. These temporary piezometers were located 2, 50, and 90 feet east of LMW-09, respectively. The purpose of these temporary piezometers was to monitor soil gas quality.

Monitoring ceased at these locations when data indicated it was not required by the December 2007 Adjusted Standard Order to install a landfill gas collection system nor perform further landfill gas monitoring as described in Report #11 and Report #23.

Soil gas monitoring data was not collected from LMW-20, LMW-22, LMW-24, and LMW-26 because these are deeper wells with submerged well screens.

Comment 14:

The following landfill gas monitoring wells were reportedly not available for the first semi-annual monitoring event in May 2008; LMW-19, LMW-21, LMW-23, LMW-25, SMW-07A, SMW-08AR, and SMW-12R. In addition, Table 3 of Appendix C shows that the methane concentrations ranged from 0 to 84.4% at monitoring location LGW-01, and the average methane concentration at this location was around 51%. The location of the LGW-01 well was not shown in Figure 2 of the report, but it is shown on a "Site Plan" in Exhibit 1, which was attached to an amended petition that was filed by Johns Manville for an adjusted standard with the IPCB, dated 30 Sep. 2004. This well apparently was drilled into the deepest portion of the non-asbestos waste material in Fill Area #1.

Recommendation: *Although adjusted standards were granted, the closure report should be revised to describe the methods that will be used to ensure gas buildup is minimized in areas of concern and explain if there will be adequate monitoring during post-closure to protect human health and the environment.*

Response 14: (Table 1)
As described in Report #11 and Report #23 in **Table 1** and attached in electronic format, landfill gas monitoring is no longer required. Landfill gas monitoring described in Report #11 indicated that no substantial pressures were measured. The OSL cap prevents the introduction of water which further mitigates the generation of landfill gas. Therefore, there will be no buildup of pressures beneath the OSL cap. The OSL vegetation is thriving and there has never been any visual indication of vegetative stress due to landfill gas (i.e. "vegetation burnout"), even prior to OSL capping activities.

Comment 15:
Section 4.1.3 of the closure report indicates that the monitoring wells for groundwater were installed during 20 through 26 Aug. 2008, and these wells were installed as described in Figure 8 of the 7 Dec. 2007 Adjusted Standard Order. The final locations for the groundwater monitoring wells are shown in the closure report in Figure 2 and Appendix B contains the well construction logs.

Recommendation: *Revise the closure report to provide greater details as well as a summary of past and current groundwater and leachate monitoring plans, historical and current analysis of the results and trends, and regulatory requirements, including a discussion of the applicable Groundwater Quality Standards in 35 IAC 811.320 and 35 IAC 814.402(b)(3).*

Response 15: (Table 1)
Reports #8 to #16 in **Table 1** and attached in electronic format provide groundwater and leachate monitoring results, a comparison to standards, and trends.

Comment 16:
As explained in the last paragraph of Section 3.1.3, Final Protective Layer, of the Final Phase II RWP, "Final cover grades are sloped to drain surface runoff to perimeter areas of Fill Area #1 and Fill Area #2." This same paragraph indicates the surface runoff was designed for "sheet flow" to perimeter areas of the CERCLA cover. Drawing A-6 of the Construction Documentation Drawings in Appendix A of Appendix E shows an "internal swale," twelve (12)-inch polyvinyl chloride (PVC) pipes, and the flow moving north around Fill Area #2, but the discharge for the runoff is not shown or described in the closure report.

Recommendation: *Revise the closure report to provide further information and a discussion of the final slopes and contours, as well as the drainage pathways, swales, and discharge for stormwater runoff.*

Response 16: (Attachment E)
Storm water runoff design was dictated by the RWP. Construction of the OSL cap was consistent with the RWP. Runoff from the northern portion of Fill Area #2 infiltrates into the ground within the Collection Basin. Infiltration was further facilitated by the construction of the Collection Basin infiltration gallery in 2014. Surface pipes serve to route storm water beneath access roads to facilitate drainage. **Attachment E** provides an overall survey of the area and shows storm water drainage flow paths.

Comment 17:
In Appendix E of the closure report, the Executive Summary of the CCR says that there has been no leachate collected since 2011, and periodic inspections (currently monthly) are completed, as required by the 30-year OSL Operation and Maintenance (O&M) Plan.

Recommendation: *Revise the closure report to include the inspection reports and information regarding the 30-year O&M Plan, such as the procedures used to measure and collect the leachate, and the results of the monitoring, as well as the schedule and plans for operations, maintenance, and inspections of the final cover, including post-closure care, monitoring, and documentation requirements.*

Response 17: (Table 1) Monitoring of the landfill cap will be performed consistent with the surrounding CERCLA landfill as documented in the O&M Manual included as Report #35 in **Table 1** and attached in electronic format. All other monitoring will continue to be completed and documented in annual reports such as Reports #8 to #16 in **Table 1** and attached in electronic format. Total leachate generation since installation of the final cover has been 7.63 gallons as reported in the annual reports. No recoverable leachate has been generated since 2012.

Comment 18: *Appendix D of the Final Phase II RWP for the OSL contains the Construction Compliance Plan (CCP), and Section 5.0 of the CCP includes documentation requirements. As explained in the first sentence of this section, "Inspection observations, measurements, and testing results collected in the field for purposes of [construction quality assurance] CQA will be recorded daily in bound field books or on other field forms, as developed. The last paragraph of this section mentions that all the information required to be maintained by the CQA officer on site will be available for viewing by the USEPA, [Illinois] IEPA, and their designated representatives upon request and during normal construction operating hours.*

Recommendation: *Include this documentation in the closure report.*

Response 18: Field notes during construction were included in Appendix H of Appendix E of the Final Closure Report.

Comment 19: *Section 3.1.1, Site Preparation and Barrier Layer Construction, of the Final Phase II RWP for the OSL initially indicates that there was no planned excavation into the existing CERCLA cover, but it notes that the potential exists for the existing CERCLA cover to be penetrated along the eastern side of Fill Area #2, where a drainage swale will be constructed. In the discussion of the excavation and regrading activities for portions of Fill Area #1, Section 3.0, Site Preparation Activities, of the CCR in Appendix E of the closure report says "It should be noted that there was no excavation of the existing CERCLA cover." However, it was not clear if this note extends to all the work performed for both fill areas or only to the portions of Fill Area #1 that were discussed. In Section 5.0, Final Protective Layer Construction, of the CCR in Appendix E of the closure report, it says "No waste materials were encountered during construction of the east swale," but it is not clear whether the excavation impacted the existing CERCLA cover.*

Recommendation: *Revise the closure report to explain if there was any excavation or impacts to the existing CERCLA cover.*

Response 19: There was no excavation of, or impacts to, the existing CERCLA cover within the perimeter of Fill Area 1 and Fill Area 2 during OSL capping activities. The CERCLA cover remained intact.

Construction of the drainage swale to the east of Fill Area 2 required penetration of the CERCLA cover to achieve the necessary design elevations and allow for proper drainage. During construction of the drainage swale the following means and methods were used:

- Survey stakes were established identifying where excavation was required to construct the drainage swale.
- Overburden soil consisting of sand and clay (not underlying waste material) was removed and transported to the MDP east access road for filling (prior to being capped with compacted barrier clay).
- A water truck equipped with a pump, hose, and nozzle was used to wet the excavation. An asbestos trained laborer and supervisor were equipped in Level C personal protective equipment including using half-face respirators equipped with HEPA cartridges.
- Roll-off boxes were imported, strategically staged, and lined with plastic sheeting.
- An excavator removed waste materials to achieve the target elevations. Excavated waste materials were loaded directly into roll-off boxes and the excavator tracks did not contact the waste material. The excavator operator was equipped in Level C personal protective equipment including using half-face respirator equipped with HEPA cartridges.
- When roll-off boxes were filled, the excess plastic sheeting was wrapped over the roll-off box contents and secured with adhesive and/or duct tape effectively “burrito wrapping” the box contents. Roll-off boxes were then placarded (asbestos) for transportation.
- Trucks picking up the roll-off boxes covered them with a tarp and the drivers were issued manifests. Truck drivers transported the roll-off boxes to Veolia Environmental Services, Zion Landfill (now called Advanced Disposal Zion Landfill) for disposal.
- Excavation, transportation, and disposal activities lasted five days from August 14 to August 20, 2008 (no work occurred on August 16 and 17). A total of 42 roll-off boxes were transported to the Veolia Zion Landfill and resulted in the disposal of 546.47 tons.
- Clay from stockpile 12 was imported and used to fill the excavation. Clay was placed in maximum 8-inch lifts and compacted to a minimum of 90% modified proctor density until a thickness of 26 inches of clay was achieved. Machines only drove over clay, no machines drove over waste material. The clay was compacted in the drainage swale using the same means and methods used to compact clay within Fill Area 1 and Fill Area 2. The final clay surface served as the bottom of the drainage swale.
- The drainage swale clay was seeded and erosion control matting was installed over the seed to establish a stabilized vegetative cover.

Comment 20: *The Background section of the closure report includes two (2) sections; Section 2.1, Property Location and Description, and Section 2.2, Property History. These sections are very similar to the sections with the same name in the Final Phase II RWP but there are a few subtle differences. For example, the last sentence of Section 2.1 of the work plan states "The Settling Basin occupies the central portion of the former Disposal Area, with the Mixing Basin and Catch Basin to the immediate west." This same sentence was revised in the closure report to say "The former Settling Basin occupies the central portion of the former JM Disposal area, with the former Collection Basin (Mixing Basin and Catch Basin) to the immediate west." However, the statement in the closure report is evidently incorrect because Exhibit 6 of the FACD shows the former Catch Basin and former Mixing Basin were on the western side of the former Settling Basin, and the former Collection Basin was on the eastern side of the former Settling Basin.*

Recommendation: *The error should be corrected.*

Response 20: (Attachment F) A replacement page for the Final Closure Report is included in **Attachment F**.

Comment 21: *Appendix C of Appendix E includes the Borrow Pit Sand Geotechnical Results, and it can be observed from the Log of Borehole BP-3 that there was nearly five (5) feet of roofing material near the ground surface at this location. Plan views of this location are shown at the beginning of Appendix B of Appendix E and at the end of Appendix C of Appendix E. According to Section 2.0 of the CCR in Appendix E, the sand drainage layer was constructed using stockpiled sand obtained from the on-site Johns Manville Borrow Pit, near the location of BP-3, but there is no discussion of the extent of the roofing materials or excavation of these materials prior to the excavation or testing of the sand. The Borrow Pit Sand Analytical Results indicate that the sand in the samples was uniform and the chemical analysis showed that the analytes were either not detected or were present at low concentrations.*

Recommendation: *Revise the closure report to provide information regarding the presence of the roofing materials that were located near or within on-site Johns Manville Borrow Pit used to excavate the material for the sand drainage layer.*

Response 21: B-3 was completed in an area that contained non-asbestos containing shingle tabs and other roofing debris. This material was removed prior to initiating sand sampling and subsequent excavation activities in this area. Appendix C of Appendix E of the Final Closure Report contains a figure identifying the locations of the geotechnical borings in the Borrow Pit.

Comment 22: *Appendix D of Appendix E shows that one of the twelve (12) clay samples (OZL-15 (6')) had an elevated Arsenic concentration of 13.6 mg/kg, which slightly exceeded the laboratory detection limit and the most stringent Tier I Site Remediation Objective (SRO) of 13 mg/kg. However, this one sample was evidently the exception because the average Arsenic concentration of the twelve (12) clay samples was 8.73 mg/kg, which is well below the most stringent Tier I SRO. It should be noted that the closure report shows that nearly all the chemical analyses as well as the geotechnical testing results met the regulatory criteria. Furthermore, as explained within the Executive Summary of the CCR in Appendix E, the results from the surveys and testing show that the thicknesses were achieved for each of the cover layers and compaction* *difficult to achieve the required compaction, typical nuclear density test data occasionally identify areas that fail. The daily field testing reports were not provided, so it is possible that areas were retested until they passed, and the closure report only included passing tests.*

Recommendation: *Include the actual field testing data to help clarify dates and times of testing and possible retesting.*

Response 22: If there were any non-conforming test results then the data was not recorded as it did not represent a final condition and there was no requirement to document it. Only conforming test results were recorded.

Comment 23: *In Section 5.0 of the CCR in Appendix E of the closure report, it says "The final protective layer was hauled from Clay Stockpile #12 using scrapers, placed using track machines, and compacted using a sheepsfoot compactor to 90% standard proctor (ASTM D698)." However, the nuclear density meter results in Appendix G of Appendix E indicate that the compaction requirements were 90% of modified proctor density at 2-6% above optimum. Also, the specifications in the Final Phase II RWP for the final protective layer are in Section 3.1.3, and this section indicates that this layer will be placed using track machines and compacted to 90% of modified Proctor density (ASTM D1557) at 0 to 6% above the optimum moisture content, or 92% of standard Proctor density (ASTM D698) at 0 to 4% above the optimum moisture content.*

Recommendation: *Revise the closure report to correct the discrepancy between the modified and standard proctor compaction requirements in the CCR and test results.*

Response 23: (Attachment G) Section 5.0 of the CCR contained in Appendix E of the Final Closure Report should have referenced 90% modified proctor (ASTM D1557). **Attachment G** contains the replacement page to this report.

If you have any questions, please contact me at (847) 902-1519.

Yours sincerely,

Tat Ebihara

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Attachments:

Table 1 – On-Site Landfill Reporting Summary
Table 2 – Comparison of First Amended Consent Decree Requirements and the Remedial Work Plan
Attachment A – Response 05: SOP and Calibration Logs for Troxler 3440 Density Meter
Attachment B – Response 06: Sand Data Validation Summaries
Attachment C – Response 06: Stockpile Survey Map
Attachment D – Response 06: Clay Data Validation Summaries
Attachment E – Response 16: Storm Water Drainage Map

Attachment E – Response 16: Storm Water Drainage Map
Attachment F – Response 20: Final Closure Report Replacement Page
Attachment G – Response 23: CCR Section 5.0 Replacement Page

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Tables

Table 1 - On-Site Landfill Reporting Summary
On-Site Landfill - Johns Manville
Waukegan, Illinois

Reporting Programs	Report #	Title of Report	Date of Report
Consent Decrees	**1**	Consent Decree (1988)	3/18/1988
	2	First Amended Consent Decree	2/4/2004
815 Reports	**3**	2004 Annual Report for On-Site Permit Exempt "815" Facility	2/14/2005
	4	2005 Annual Report for On-Site Permit Exempt "815" Facility	2/14/2006
	5	2006 Annual Report for On-Site Permit Exempt "815" Facility	2/14/2007
	6	2007 Annual Report for On-Site Permit Exempt "815" Facility	2/14/2008
	7	2008 Annual Report for On-Site Permit Exempt "815" Facility	2/12/2009
	8	2009 Annual Report for On-Site Permit Exempt "815" Facility	2/12/2010
	9	2010 Annual Report for On-Site Permit Exempt "815" Facility	2/15/2011
	10	2011 Annual Report for On-Site Permit Exempt "815" Facility	2/14/2012
	11	2012 Annual Report for On-Site Permit Exempt "815" Facility	2/14/2013
	12	2013 Annual Report for On-Site Permit Exempt "815" Facility	2/14/2014
	13	2014 Annual Report for On-Site Permit Exempt "815" Facility	2/13/2015
	14	2015 Annual Report for On-Site Permit Exempt "815" Facility	2/3/2016
	15	2016 Annual Report for On-Site Permit Exempt "815" Facility	2/14/2017
	16	2017 Annual Report for On-Site Permit Exempt "815" Facility	2/13/2018
5-Year Post-Remedial Construction Reports	**17**	First 5-Year Post-Remedial Construction Ambient Air, Groundwater, and Surface Water Monitoring Event Report	4/1/1997
	18	Second 5-Year Post-Remedial Construction Ambient Air, Groundwater, and Surface Water Monitoring Event Report	6/7/2002
	19	Third 5-Year Post-Remedial Construction Ambient Air, Groundwater, and Surface Water Monitoring Event Report	3/21/2008
	20	Fourth 5-Year Post-Remedial Construction Ambient Air, Groundwater, and Surface Water Monitoring Event Report	11/22/2013
	21	Fifth 5-Year Post-Remedial Construction Ambient Air, Groundwater, and Surface Water Monitoring Event Report	2/16/2018
Adjusted Standard Petition and Order	**22**	Petition of Johns Manville for an Adjusted Standard from 35 Ill. Adm. Code 814, 811.310, 811.311, 811.318, 811.320	9/30/2004
	23	Petition of Johns Manville for an Adjusted Standard from: 35 Ill. Adm. Code 811.310, 811.311, 811.318, 811.320, and 814	12/6/2007
Miscellaneous Reports	**24**	Operation and Maintenance Manual, Revision 1	10/11/2002
	25	On-Site Landfill Supporing Documents to Describe Historical Activities at Johns Manville Site	2/24/2003
	26	Proposed Final Cover Soil and Thickness On-Site Landfill	9/17/2004
	27	Site Investigation Report On-Site Landfill	9/26/2005
	28	Response to IEPA Comments on HELP Model (August 30, 2005) and Petition for Adjusted Standards	4/25/2006
	29	Request for U.S. EPA Opinion on Proposed Groundwater Monitoring Well Locations; On-Site Landfill	11/14/2006
	30	Final Phase II Remedial Work Plan Non-Asbestos Containing On-Site Landfill Closure	2/8/2008
	31	Final Phase II Remedial Work Plan Non-Asbestos Containing On-Site Landfill Closure, Revision 1	6/20/2008
	32	Operation and Maintenance Manual, Revision 2	5/18/2010
	33	Revised Quality Assurance Project Plan (Revision 1)	1/24/2013
	34	Non-Asbestos Containing ON-Site Landfill Construction Final Closure Report - State Facility ID# 0971900014	3/31/2017
	35	CERCLA Operations and Maintenance Manual, Revision 3	3/24/2018

Table 2 - Comparison of First Amended Consent Decree Requirements and the Remedial Work Plan
On-Site Landfill - Johns Manville
Waukegan, Illinois

Final Phase II Remedial Work Plan On-Site Landfill, Revision 1 (RWP) dated June 20, 2008		First Amended Consent Decree (FACD) or Regulatory Reference	Document Indicating Scope Change
Section 3.1 Final Cover	Barrier Soil Layer: minimum 12-inch vertical thickness of previously placed clay (as interim cover), or equivalent.	FACD Section III(4)(x) and V(14)(a).	Described in "Proposed Final Cover Soil and Thickness" (LFR, September 17, 2004) and equivalent cover per 35 IAC Part 811.314(b)(3)(A)(iii).
	Lateral Drainage Layer: 12-inch vertical thickness of sand overlying the Barrier Soil Layer.		
	Final Protective Layer: 36-inch vertical thickness of clay overlying the lateral drainage layer capable of supporting vegetation.		
Section 3.2 Landfill Gas Monitoring	Landfill gas monitoring plan and schedule and ambient air monitoring	35 IAC Part 811.310 and Adjusted Standard Order.	Adjusted Standard Order dated 12/6/2007 describes the reduction in landfill gas monitoring in multiple sections. Landfill gas management changes described in the 2012 Annual Report dated 2/14/2013.
Section 3.3 Leachate Monitoring and Management System	Includes design of leachate collection and monitoring system, leachate sampling and recovery.	35 IAC Part 811.309; Monitoring Results provided in On-Site Permit Exempt "815" Facility Reports to Illinios EPA.	Adjusted Standard Order dated 12/6/2007 describes changes to the "zone of attenuation" [Section 811.320(c)(1)] for leachate monitoring in multiple sections.
Section 3.4 Groundwater Monitoring System	Includes design of well construction, location, sampling plans and schedules, and contingency plan.	35 IAC Part 811.318 and 811.319, and the Adjusted Standard Order.	Adjusted Standard Order dated 12/6/2007 describes changes in well locations and groundwater quality monitoring in multiple sections.
Section 4.0 Operation and Maintenance Activities	Site Security - 6 ft high perimeter fence and swinging gates with key entry pads and signage.	35 IAC Part 811.11; Operations and Maintenance Manual, Revision 1; FACD.	CERCLA Operations and Maintenance Manual, Revision 3 dated 3/24/2018.
	Access Roads - Class I ro Class II access roads located along south and east boundaries of Site and between Fill Area #1 and Fill Area #2.		
	Inspection Frequency - A minimum frequency of quarterly inspections of the final cover and all vegetated areas for a period of five years.		
	Final Cover Maintenance - The final cover will consist of 36 inches of clay over a 12 inch sand drainage layer over a 12 inch minimum compacted clay barrier layer. The top surface of the final cover will be vegetated. The primary function of the final cover is to reduce water percolation and infiltration through the waste material and to route water drainage from the sand drainage layer to surface drainage. Normal O&M consists of regular inspections, tree/shrub removal, and erosion repair. Non-routine O&M includes differential settlement and slope repair. The required O&M period in accordance with the FACD is 30 years after completion of construction. After 30 years, U.S. EPA and the State of Illinois shall evaluate the need for further operation and maintenance as specified in the FACD.		
	Cover Inspections - On-Site Landfill cover inspections will consist of weekly inspections until vegetative cover is thriving, monthly inspections conducted thereafter, and inspections within 72 hours of heavy rainfall events. Inspections will be conducted concurrently with inspection requirements for the CERCLA vegetative cover in the approved O&M Manual for the JM Disposal Area.		
	Maintenance - The detailed construction of the vegetated soil cover for the site is described in Section 3.0. Replacement materials should meet the specifications established in Section 3.0.		
Section 5.0 Other Submittals	Construction Compliance Plan	FACD Section V(15)(b)	No update.
	Emergency and Contingency Plan		No update.
	Sampling and Analysis Plan		Revised Quality Assurance Project Plan (Revision 1) dated 1/24/2013 Section 3.3.
	Quality Assurance Project Plan Addendum		Revised Quality Assurance Project Plan (Revision 1) dated 1/24/2013.
	Site Health and Safety Plan		CERCLA Operations and Maintenance Manual, Revision 3 dated 3/24/2018.

Attachment A

Response 05: SOP and Calibration Logs for Troxler 3440 Density Meter

CQM, INC.

2679 Continental Drive

Green Bay, Wisconsin 54311

(920) 465-3911

Subject: Density of Soil and Soil-Aggregate In-Place Nuclear Methods
ASTM: D2922-81

1.0 SCOPE

1.1 These test methods cover the determination of wet density, moisture content and dry density.

1.2 Method Used

A. Direct Transmission (Troxler nuclear gauge)

2.0 APPLICABLE REFERENCES

2.1 ASTM Standards

D1556 Test Method for Density of soil in Place by the Sand-Cone Method
D2167 Test Method for Density and Unit Weight of Soil in Place by the Rubber-Balloon Method
D2216 Method for Laboratory Determination of Water (Moisture) Content of Soil, Rock, and Soil-Aggregate Mixtures
D3017 Test Method for Moisture Content of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
D4718 Practice for Correction of Unit Weight and Water Content for Soils Containing Oversized Particles.

2.2 American Association of State Highway and Transportation Officials (AASHTO)
T238-86 Density of Soil and Soil Aggregate in Place by Nuclear Methods (Shallow Depth)

2.3 Troxler Nuclear Meter Manual

3.0 EQUIPMENT

3.1 Nuclear gauge

3.1.1 Troxler (direct transmission) gauge

3.2 Site preparation tools

3.2.1 Drive pin and drive pin extractor.

3.2.2 A plate or leveling tool for test site.

4.0 PERSONNEL REQUIREMENTS

4.1 CQM, Inc. will supply an engineering technician to perform the test. The technician will be in conformance with the regulations as written in the company license approved by the Nuclear Regulatory Commission.

4.2 Results of the tests will be reviewed by laboratory personnel with a minimum of five years experience or a staff professional engineer.

5.0 HAZARDS

5.1 This equipment utilizes radio active materials that must be handled with all familiar applicable safety procedures and government regulations.

5.2 The test equipment require periodic leak tests and operators to wear film badges to document radiation exposure when using the equipment.

6.0 PROCEDURE FOR FIELD USE

6.1 The nuclear gauge will be calibrated daily (standard counts), prior to implementing the test program scheduled for the day.

6.2 Select location to be tested and prepare the area so that test site is smooth or flat.

6.3 Make a hole perpendicular to the prepared surface using a drive pin and guide plate. The hole should extend to the depth of nuclear gauge probe. Remove drive pin and plate.

6.4 Set the gauge on the prepared soil surface.

6.5 Insert probe in the hole and rotate gauge and gently pull gauge so the probe rests on the side of the hole closest to the detector location in the gauge.

6.6 Record the wet density, moisture content and dry density readings as each test is completed.

6.7 The nuclear gauge results for compaction will be compared to the representative proctor test completed, prior to testing.

7.0 REPORT

7.1 Report shall include the following:

7.1.1 Standard counts of the meter when testing.

7.1.2 Make, model and serial number of the meter.

7.1.3 Name of the operator(s).

7.1.4 Location of tests.

7.1.5 Test results including wet density, moisture content and dry density.

CQM, INC.

2679 Continental Drive

Green Bay, WI 54311

(920) 465-3911

Client: ______________________

Project: ______________________

Prepared by: ______________ Date: __________

Checked by: ______________ Date: __________

Tested by: ______________ Date: __________

DENSITY TESTS OF COMPACTED FILL

PROJECT TEST NUMBER:
ELEVATION OF TEST:
DEPTH BELOW SURFACE GRADE:
DEPTH BELOW EXISTING GRADE:

LOCATION TESTED:

UNIFIED SOIL CLASSIFICATION:

___ ASTM D2487

___ ASTM D2488 (Visual)

FIELD DENSITY RESULTS:

Density in place: _X_ by Nuclear Method, ASTM D2922
____ by Sand Cone Method, ASTM D1556

Wet Density (pcf):
Moisture Content (%):
Dry Density (pcf):

MOISTURE-DENSITY RELATION OF SOIL:

____ = Average of tests on Native Undisturbed Soil
_X_ = ASTM D 698 Method "A"

Maximum Dry Density (pcf):
Optimum Moisture (%):

COMPACTION TEST RESULTS:

Compaction (%):
Specified Compaction (%):

REMARKS:

Density test results are valid only at the locations and elevations tested. No information is available as to the adequacy of fill and compaction at locations other than those reported. Density tests were performed and locations selected by Robert R. Rouse of CQM, INC.

CQM, INC.

Construction Quality Management
2679 Continental Drive Green Bay, Wisconsin 54311
Phone: (920) 465-3911 Fax: (920) 465-3913

NUCLEAR DENSITY METER
TRANSPORT INFORMATION

OPERATOR & PROJECT INFORMATION:

Operator/Transporter: Chris Gofford Date Sent Out: 8/18/08

Destination: Waukegan IL. Date Returned: 11/20/08

Project Name: John Mansville

METER INFORMATION:

Type of Source: NUCLEAR DENSITY/MOISTURE METER

Model: 3440 Serial Number: 22746

Contents:	X	Americium 241:	Beryllium	1.48 GBq	(40 mCi:)	Activity
	X	Cesium 137		0.3 GBq	(8 mCi:)	Activity

SHIPPING DESCRIPTION: **RQ, Radioactive Material, Type A Package, Special Form** *non-fissile Or fissile excepted*, **7, UN3332**

Transitional Packaging Radioactive Yellow II Label Transport Index = 0.6

Shipping Container – Outside Dimensions: 13" x 17" x 30"
33 cm x 43 cm x 76 cm

REMARKS:

***** 24 Hour Emergency Contact : (919) 549-9539 *****

EMERGENCY RESPONSE INFORMATION – ON BACK OF SHEET

This is to certify that the above-named materials are properly classified, described, packaged and marked and are in proper condition for Transportation according to the applicable regulations of the Department of Transportation.

Signed: Robert R Rouse Date: 8/18/08
(Radiation Safety Officer)

CQM, INC.
2679 Continental Drive Green Bay, WI 54311
Phone: (920) 465-3911 Fax: (920) 465-3913

NUCLEAR METER UTILIZATION RECORD

MANUFACTURER: Troxler Electronics Labs.
MODEL: 3440
SERIAL NUMBER: 22746

RECORDING YEAR: 2008
PAGE 2 **OF** 3

DATE CALIBRATED: 5/8/06

COUNTS FACTORY STANDARD: 2800 | 670

DATE	OPERATOR	PROJECT	STANDARD COUNTS DENSITY	STANDARD COUNTS MOISTURE	NUMBER OF TESTS
8-7-08	RDW	Burnville WM	2676	651	
8-18-08	CRG	JOHNS MANVILLE / 2008 CAPPING ACTIVITIES	2619	646	5
8-19-08			2631	658	2
8-20-08			2652	656	9
8-22-08			2637	662	11
8-26-08			2632	662	3
8-27-08			2642	663	13
8-28-08		Johns Manvill	2642	663	22
8-29-08			2642	663	19
9-2-08			2642	663	10
9-3-08			2642	663	25
9-8-08			2642	663	4
9/10/08			2642	633	36
9/11/08			2638	664	17
9/12/08			2673	652	32
9/17/08	CRG		2627	652	37
9/18/08	CRG		2663	655	19
9/19/08	CRG		2651	662	15
9/22/08	CRG		2631	662	8
9/23/08			2659	665	21

REMARKS/NOTES:

Battery charged on following dates: ________ ________ ________ ________

CQM, INC.

2679 Continental Drive Green Bay, WI 54311
Phone: (920) 465-3911 Fax: (920) 465-3913

NUCLEAR METER UTILIZATION RECORD

MANUFACTURER: Troxler Electronics Labs.
MODEL: 3440
SERIAL NUMBER: 22746

RECORDING YEAR: 2008
PAGE 3 OF 3

DATE CALIBRATED: 5/8/06

COUNTS FACTORY STANDARD: 2800 | 670

DATE	OPERATOR	PROJECT	STANDARD COUNTS DENSITY	STANDARD COUNTS MOISTURE	NUMBER OF TESTS
9/24/08	CRG	JOHNS MANVILLE 2008 CAPPING ACTIVITIES	2644	661	25
9/25/08	CRG/DLD	"	2642	668	61
10/1/08	CRG	2008 SETTLING BASIN	2621	665	7
10/6/08	" "	" "	2622	662	5
10/10/08	" "	" "	2650	656	6
10/13/08	" "	" "	2654	658	14
10/14/08	" "	" "	2665	667	5
10/15/08	" "	" "	2660	658	11
10/20/08	" "	" "	2650	659	4
10/22/08	" "	" "	26366	660	5
10/27/08	" "	" "	2646	663	3
10/28/08	" "	" "	2666	657	9
10/29/08	" "	" "	2660	663	11
10/30/08	" "	" "	2657	654	9
10/31/08	" "	" "	2643	660	6
11/4/08	" "	" "	2662	660	9
11/20/08	" "	" "	2626	663	49

REMARKS/NOTES:

Battery charged on following dates: CRG 10/14/08 ______ ______ ______

Attachment B

Response 06: Sand Data Validation Summaries

Laboratory Report Data Review - QC Review Checklist

	Laboratory Report ID:	**040515950**			
Laboratory Name:	EMSL Analytical, Inc.	Report Package Date:	8/22/2005		
Project Name:	Johns Manville	Review Date:	1/29/2018		
Project Number:	009-07992-00-001				
Reviewer Name:	Eric Thomas/Matt Kyrias				
Parameters:	Asbestos				
Method IDs:	EPA 600/R-93/116				
Matrix:	Solids				

***Attach copy of lab report showing sample IDs and corresponding lab IDs (Att 1)**	**Yes**	**No**	**N/A**	**Comment**
Report Completeness & Sample Log-In Condition				
1 Was a signature page with appropriate authority signature provided?	X			
2 Was there a case narrative noting all known problems or anomolies?			X	
3 Were all samples received under chain-of-custody (seals used) and within appropriate temperature?	X			
4 Were all departures from standard conditions narrated (i.e., preservation acceptable, no headspace)?	X			
5 Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X			
6 Are all laboratory ID numbers cross-referenced to the corresponding QC data (batch IDs provided)?			X	
7 Were reference methods provided and cited appropriately?	X			
8 Were samples prepared and analyzed within holding times?	X			
Date Collected: 8/17/2005 Date Received: 8/18/2005				
9 Were all soil results reported on a dry-weight basis?			X	
10 Was a percent moisture result reported for all soil and sediment samples?			X	
11 Is there a QAPP or SAP available as a reference for the project performed?	X			
12 Are non-detects identified as ND at RL with a "U", or other?	X			
13 Are laboratory flags defined?			X	
Laboratory Method Blanks and Trip Blanks				
1 Were appropriate types of laboratory method blanks analyzed?	X			
2 Was the method blank free of contamination (i.e., less than the MDL or RL)?	X			
3 Did the method blank contamination affect the final results? If so, note on page 2.			X	
4 Was a trip blank required and submitted with the samples?			X	
5 Was the trip blank free of contamination (i.e., less than the MDL or RL)?			X	
6 Did the trip blank contamination affect the final results? If so, note on page 2.			X	
Surrogates				
1 Were surrogates added prior to extraction for all appropriate methods?			X	
2 Were surrogate percent recoveries within laboratory control limits?			X	
3 Did the surrogate percent recoveries affect the final results? If so, note on page 2.			X	
Laboratory Control Samples				
1 Were LCS performed for all appropriate methods?			X	
2 Were LCS percent recoveries within laboratory control limits?			X	
3 Did the LCS percent recoveries affect the final results? If so, note on page 2.			X	
4 Were the LCS/LCSD RPD values within laboratory control limits?			X	
Matrix Spikes				
1 Were MS/MSDs performed on a project sample selected by the laboratory?			X	
Sample used/methods:				
2 Were MS/MSD percent recoveries within laboratory control limits?			X	
3 Did the MS/MSD percent recoveries affect the final results? If yes, note in Comment seciton.			X	
4 Were the MS/MSD RPD values within laboratory control limits?			X	
Field and Laboratory Duplicates				
1 Was a field duplicate submitted with this SDG?		X		
Field Duplicate ID:				
2 Was the RPD values less than review criteria?			X	
3 Did the field duplicate RPD results affect the final results? If so, note in Comments section.			X	

Comments

Comment No.	***Description (data usability; note any estimated and/or rejected data):***
1	**Field duplicates were submitted for this field sampling program per the required QAPP frequency.**
2	
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Signature of Validator:	
Signature of Senior Review:	

Attachment 1: Cross-reference of field IDs with Laboratory IDs.

****Attachment 2: Final results from the database***

Laboratory Report Data Review - QC Review Checklist

	Laboratory Report ID:	**5-2529**	
Laboratory Name:	First Environmental Laboratories, Inc.	Report Package Date:	8/24/2005
Project Name:	Johns Manville	Review Date:	1/29/2018
Project Number:	009-07992-00-001		
Reviewer Name:	Eric Thomas/Matt Kyrias		
Parameters:	VOC's, SVOC's, RCRA Metals, pH, Pesticides, PCBs		
Method IDs:	160.3, 7470A, 5035A/8260B, 6010B-3050B, 8270C-3540C, 8081A/8082-		
Matrix:	Solids		

***Attach copy of lab report showing sample IDs and corresponding lab IDs (Att 1)**	**Yes**	**No**	**N/A**	**Comment**
Report Completeness & Sample Log-In Condition				
1 Was a signature page with appropriate authority signature provided?	X			
2 Was there a case narrative noting all known problems or anomolies?	X			
3 Were all samples received under chain-of-custody (seals used) and within appropriate temperature?	X			
4 Were all departures from standard conditions narrated (i.e., preservation acceptable, no headspace)?	X			
5 Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X			
6 Are all laboratory ID numbers cross-referenced to the corresponding QC data (batch IDs provided)?			X	
7 Were reference methods provided and cited appropriately?	X			
8 Were samples prepared and analyzed within holding times?	X			
Date Collected: 8/17/2005 Date Received: 8/17/2005				
9 Were all soil results reported on a dry-weight basis?	X			
10 Was a percent moisture result reported for all soil and sediment samples?	X			
11 Is there a QAPP or SAP available as a reference for the project performed?	X			
12 Are non-detects identified as ND at RL with a "U", or other?	X			
13 Are laboratory flags defined?			X	
Laboratory Method Blanks and Trip Blanks				
1 Were appropriate types of laboratory method blanks analyzed?	X			
2 Was the method blank free of contamination (i.e., less than the MDL or RL)?	X			
3 Did the method blank contamination affect the final results? If so, note on page 2.			X	
4 Was a trip blank required and submitted with the samples?			X	
5 Was the trip blank free of contamination (i.e., less than the MDL or RL)?			X	
6 Did the trip blank contamination affect the final results? If so, note on page 2.			X	
Surrogates				
1 Were surrogates added prior to extraction for all appropriate methods?			X	
2 Were surrogate percent recoveries within laboratory control limits?			X	
3 Did the surrogate percent recoveries affect the final results? If so, note on page 2.			X	
Laboratory Control Samples				
1 Were LCS performed for all appropriate methods?			X	
2 Were LCS percent recoveries within laboratory control limits?			X	
3 Did the LCS percent recoveries affect the final results? If so, note on page 2.			X	
4 Were the LCS/LCSD RPD values within laboratory control limits?			X	
Matrix Spikes				
1 Were MS/MSDs performed on a project sample selected by the laboratory?			X	
Sample used/methods:				
2 Were MS/MSD percent recoveries within laboratory control limits?			X	
3 Did the MS/MSD percent recoveries affect the final results? If yes, note in Comment seciton.			X	
4 Were the MS/MSD RPD values within laboratory control limits?			X	
Field and Laboratory Duplicates				
1 Was a field duplicate submitted with this SDG?		X		
Field Duplicate ID:				
2 Was the RPD values less than review criteria?			X	
3 Did the field duplicate RPD results affect the final results? If so, note in Comments section.			X	

Comments	
Comment No.	***Description (data usability; note any estimated and/or rejected data):***
1	**Field duplicates were submitted for this field sampling program per the required QAPP frequency.**
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Signature of Validator:	Eric Thomas
Signature of Senior Review:	

Attachment 1: Cross-reference of field IDs with Laboratory IDs.

****Attachment 2: Final results from the database***

Laboratory Report Data Review - QC Review Checklist

Laboratory Report ID:		**040516267**	
Laboratory Name:	EMSL Analytical, Inc.	Report Package Date:	8/24/2005
Project Name:	Johns Manville	Review Date:	1/29/2018
Project Number:	009-07992-00-001		
Reviewer Name:	Eric Thomas/Matt Kyrias		
Parameters:	Asbestos		
Method IDs:	EPA 600/R-93/116		
Matrix:	Solids		

***Attach copy of lab report showing sample IDs and corresponding lab IDs (Att 1)**	**Yes**	**No**	**N/A**	**Comment**
Report Completeness & Sample Log-In Condition				
1 Was a signature page with appropriate authority signature provided?	X			
2 Was there a case narrative noting all known problems or anomolies?	X			
3 Were all samples received under chain-of-custody (seals used) and within appropriate temperature?	X			
4 Were all departures from standard conditions narrated (i.e., preservation acceptable, no headspace)?	X			
5 Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X			
6 Are all laboratory ID numbers cross-referenced to the corresponding QC data (batch IDs provided)?			X	
7 Were reference methods provided and cited appropriately?	X			
8 Were samples prepared and analyzed within holding times?	X			
Date Collected: 8/22/2005 Date Received: 8/23/2005				
9 Were all soil results reported on a dry-weight basis?			X	
10 Was a percent moisture result reported for all soil and sediment samples?			X	
11 Is there a QAPP or SAP available as a reference for the project performed?	X			
12 Are non-detects identified as ND at RL with a "U", or other?	X			
13 Are laboratory flags defined?			X	
Laboratory Method Blanks and Trip Blanks				
1 Were appropriate types of laboratory method blanks analyzed?	X			
2 Was the method blank free of contamination (i.e., less than the MDL or RL)?	X			
3 Did the method blank contamination affect the final results? If so, note on page 2.			X	
4 Was a trip blank required and submitted with the samples?			X	
5 Was the trip blank free of contamination (i.e., less than the MDL or RL)?			X	
6 Did the trip blank contamination affect the final results? If so, note on page 2.			X	
Surrogates				
1 Were surrogates added prior to extraction for all appropriate methods?			X	
2 Were surrogate percent recoveries within laboratory control limits?			X	
3 Did the surrogate percent recoveries affect the final results? If so, note on page 2.			X	
Laboratory Control Samples				
1 Were LCS performed for all appropriate methods?			X	
2 Were LCS percent recoveries within laboratory control limits?			X	
3 Did the LCS percent recoveries affect the final results? If so, note on page 2.			X	
4 Were the LCS/LCSD RPD values within laboratory control limits?			X	
Matrix Spikes				
1 Were MS/MSDs performed on a project sample selected by the laboratory?			X	
Sample used/methods:				
2 Were MS/MSD percent recoveries within laboratory control limits?			X	
3 Did the MS/MSD percent recoveries affect the final results? If yes, note in Comment seciton.			X	
4 Were the MS/MSD RPD values within laboratory control limits?			X	
Field and Laboratory Duplicates				
1 Was a field duplicate submitted with this SDG?		X		
Field Duplicate ID:				
2 Was the RPD values less than review criteria?			X	
3 Did the field duplicate RPD results affect the final results? If so, note in Comments section.			X	

Comments

Comment No.	***Description (data usability; note any estimated and/or rejected data):***
1	**Field duplicates were submitted for this field sampling program per the required QAPP frequency.**
2	
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Signature of Validator:	
Signature of Senior Review:	

***Attachment 1: Cross-reference of field IDs with Laboratory IDs.**

****Attachment 2: Final results from the database**

Laboratory Report Data Review - QC Review Checklist

	Laboratory Report ID:	**5-2613**			
Laboratory Name:	First Environmental Laboratories, Inc.	Report Package Date:			8/25/2005
Project Name:	Johns Manville	Review Date:			1/29/2018
Project Number:	009-07992-00-001				
Reviewer Name:	Eric Thomas/Matt Kyrias				
Parameters:	VOC's, SVOC's, RCRA Metals, Antimony, pH, Pesticides, PCBs				
Method IDs:	160.3, 5035A/8260B, 8270C-3540C, 8081A/8082-3540C, 7470A, 6010B-				
Matrix:	Solids				

***Attach copy of lab report showing sample IDs and corresponding lab IDs (Att 1)**	**Yes**	**No**	**N/A**	**Comment**
Report Completeness & Sample Log-In Condition				
1 Was a signature page with appropriate authority signature provided?	X			
2 Was there a case narrative noting all known problems or anomolies?	X			
3 Were all samples received under chain-of-custody (seals used) and within appropriate temperature?	X			
4 Were all departures from standard conditions narrated (i.e., preservation acceptable, no headspace)?	X			
5 Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X			
6 Are all laboratory ID numbers cross-referenced to the corresponding QC data (batch IDs provided)?			X	
7 Were reference methods provided and cited appropriately?	X			
8 Were samples prepared and analyzed within holding times?	X			
Date Collected: 8/22/2005 Date Received: 8/22/2005				
9 Were all soil results reported on a dry-weight basis?	X			
10 Was a percent moisture result reported for all soil and sediment samples?	X			
11 Is there a QAPP or SAP available as a reference for the project performed?	X			
12 Are non-detects identified as ND at RL with a "U", or other?	X			
13 Are laboratory flags defined?		X		
Laboratory Method Blanks and Trip Blanks				
1 Were appropriate types of laboratory method blanks analyzed?	X			
2 Was the method blank free of contamination (i.e., less than the MDL or RL)?	X			
3 Did the method blank contamination affect the final results? If so, note on page 2.			X	
4 Was a trip blank required and submitted with the samples?			X	
5 Was the trip blank free of contamination (i.e., less than the MDL or RL)?			X	
6 Did the trip blank contamination affect the final results? If so, note on page 2.			X	
Surrogates				
1 Were surrogates added prior to extraction for all appropriate methods?	X			
2 Were surrogate percent recoveries within laboratory control limits?	X			
3 Did the surrogate percent recoveries affect the final results? If so, note on page 2.			X	
Laboratory Control Samples				
1 Were LCS performed for all appropriate methods?			X	
2 Were LCS percent recoveries within laboratory control limits?			X	
3 Did the LCS percent recoveries affect the final results? If so, note on page 2.			X	
4 Were the LCS/LCSD RPD values within laboratory control limits?			X	
Matrix Spikes				
1 Were MS/MSDs performed on a project sample selected by the laboratory?			X	
Sample used/methods:				
2 Were MS/MSD percent recoveries within laboratory control limits?			X	
3 Did the MS/MSD percent recoveries affect the final results? If yes, note in Comment seciton.			X	
4 Were the MS/MSD RPD values within laboratory control limits?			X	
Field and Laboratory Duplicates				
1 Was a field duplicate submitted with this SDG?		X		
Field Duplicate ID:				
2 Was the RPD values less than review criteria?			X	
3 Did the field duplicate RPD results affect the final results? If so, note in Comments section.			X	

Comments

Comment No.	***Description (data usability; note any estimated and/or rejected data):***
1	**Field duplicates were submitted for this field sampling program per the required QAPP frequency.**
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Signature of Validator:	Eric Thomas
Signature of Senior Review:	Jot Elihara

Attachment 1: Cross-reference of field IDs with Laboratory IDs.

****Attachment 2: Final results from the database***

Laboratory Report Data Review - QC Review Checklist

	Laboratory Report ID:	**040608086**	
Laboratory Name:	EMSL Analytical, Inc.	Report Package Date:	5/5/06
Project Name:	Johns Manville	Review Date:	1/29/2018
Project Number:	009-07992-00-001		
Reviewer Name:	Eric Thomas/Matt Kyrias		
Parameters:	Asbestos		
Method IDs:	EPA 600/R-93/116		
Matrix:	Solids		

***Attach copy of lab report showing sample IDs and corresponding lab IDs (Att 1)**	**Yes**	**No**	**N/A**	**Comment**
Report Completeness & Sample Log-In Condition				
1 Was a signature page with appropriate authority signature provided?	X			
2 Was there a case narrative noting all known problems or anomolies?			X	
3 Were all samples received under chain-of-custody (seals used) and within appropriate temperature?	X			
4 Were all departures from standard conditions narrated (i.e., preservation acceptable, no headspace)?	X			
5 Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X			
6 Are all laboratory ID numbers cross-referenced to the corresponding QC data (batch IDs provided)?			X	
7 Were reference methods provided and cited appropriately?	X			
8 Were samples prepared and analyzed within holding times?	X			
Date Collected: 4/27/2006 Date Received: 4/28/2006				
9 Were all soil results reported on a dry-weight basis?			X	
10 Was a percent moisture result reported for all soil and sediment samples?			X	
11 Is there a QAPP or SAP available as a reference for the project performed?	X			
12 Are non-detects identified as ND at RL with a "U", or other?	X			
13 Are laboratory flags defined?			X	
Laboratory Method Blanks and Trip Blanks				
1 Were appropriate types of laboratory method blanks analyzed?	X			
2 Was the method blank free of contamination (i.e., less than the MDL or RL)?	X			
3 Did the method blank contamination affect the final results? If so, note on page 2.			X	
4 Was a trip blank required and submitted with the samples?			X	
5 Was the trip blank free of contamination (i.e., less than the MDL or RL)?			X	
6 Did the trip blank contamination affect the final results? If so, note on page 2.			X	
Surrogates				
1 Were surrogates added prior to extraction for all appropriate methods?			X	
2 Were surrogate percent recoveries within laboratory control limits?			X	
3 Did the surrogate percent recoveries affect the final results? If so, note on page 2.			X	
Laboratory Control Samples				
1 Were LCS performed for all appropriate methods?			X	
2 Were LCS percent recoveries within laboratory control limits?			X	
3 Did the LCS percent recoveries affect the final results? If so, note on page 2.			X	
4 Were the LCS/LCSD RPD values within laboratory control limits?			X	
Matrix Spikes				
1 Were MS/MSDs performed on a project sample selected by the laboratory?			X	
Sample used/methods:				
2 Were MS/MSD percent recoveries within laboratory control limits?			X	
3 Did the MS/MSD percent recoveries affect the final results? If yes, note in Comment seciton.			X	
4 Were the MS/MSD RPD values within laboratory control limits?			X	
Field and Laboratory Duplicates				
1 Was a field duplicate submitted with this SDG?		X		
Field Duplicate ID:				
2 Was the RPD values less than review criteria?			X	
3 Did the field duplicate RPD results affect the final results? If so, note in Comments section.			X	

Comments

Comment No.	***Description (data usability; note any estimated and/or rejected data):***
1	**Field duplicates were submitted for this field sampling program per the required QAPP frequency.**
2	
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Signature of Validator:	
Signature of Senior Review:	

***Attachment 1: Cross-reference of field IDs with Laboratory IDs.**

****Attachment 2: Final results from the database**

Laboratory Report Data Review - QC Review Checklist

	Laboratory Report ID:	**6-1778**			
Laboratory Name:	First Environmental Laboratories, Inc.	Report Package Date:			5/8/06
Project Name:	Johns Manville	Review Date:			1/29/2018
Project Number:	009-07992-00-001				
Reviewer Name:	Eric Thomas/Matt Kyrias				
Parameters:	VOC's, SVOC's, RCRA Metals, Antimony, pH, Pesticides, PCBs				
Method IDs:	160.3, 5035A/8260B, 8270C, 8081A/8082, 7470A, 6010B, 4500H+B				
Matrix:	Solids				

***Attach copy of lab report showing sample IDs and corresponding lab IDs (Att 1)**	**Yes**	**No**	**N/A**	**Comment**
Report Completeness & Sample Log-In Condition				
1 Was a signature page with appropriate authority signature provided?	X			
2 Was there a case narrative noting all known problems or anomolies?	X			
3 Were all samples received under chain-of-custody (seals used) and within appropriate temperature?	X			
4 Were all departures from standard conditions narrated (i.e., preservation acceptable, no headspace)?	X			
5 Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X			
6 Are all laboratory ID numbers cross-referenced to the corresponding QC data (batch IDs provided)?			X	
7 Were reference methods provided and cited appropriately?	X			
8 Were samples prepared and analyzed within holding times?	X			
Date Collected: 4/26/2006 Date Received: 4/27/2006				
9 Were all soil results reported on a dry-weight basis?	X			
10 Was a percent moisture result reported for all soil and sediment samples?	X			
11 Is there a QAPP or SAP available as a reference for the project performed?	X			
12 Are non-detects identified as ND at RL with a "U", or other?	X			
13 Are laboratory flags defined?		X		
Laboratory Method Blanks and Trip Blanks				
1 Were appropriate types of laboratory method blanks analyzed?	X			
2 Was the method blank free of contamination (i.e., less than the MDL or RL)?	X			
3 Did the method blank contamination affect the final results? If so, note on page 2.			X	
4 Was a trip blank required and submitted with the samples?			X	
5 Was the trip blank free of contamination (i.e., less than the MDL or RL)?			X	
6 Did the trip blank contamination affect the final results? If so, note on page 2.			X	
Surrogates				
1 Were surrogates added prior to extraction for all appropriate methods?	X			
2 Were surrogate percent recoveries within laboratory control limits?	X			
3 Did the surrogate percent recoveries affect the final results? If so, note on page 2.		X		
Laboratory Control Samples				
1 Were LCS performed for all appropriate methods?			X	
2 Were LCS percent recoveries within laboratory control limits?			X	
3 Did the LCS percent recoveries affect the final results? If so, note on page 2.			X	
4 Were the LCS/LCSD RPD values within laboratory control limits?			X	
Matrix Spikes				
1 Were MS/MSDs performed on a project sample selected by the laboratory?			X	
Sample used/methods:				
2 Were MS/MSD percent recoveries within laboratory control limits?			X	
3 Did the MS/MSD percent recoveries affect the final results? If yes, note in Comment seciton.			X	
4 Were the MS/MSD RPD values within laboratory control limits?			X	
Field and Laboratory Duplicates				
1 Was a field duplicate submitted with this SDG?	X			
Field Duplicate ID: DUP-1				
2 Was the RPD values less than review criteria?	X			
3 Did the field duplicate RPD results affect the final results? If so, note in Comments section.		X		

Comments

Comment No.	***Description (data usability; note any estimated and/or rejected data):***
1	
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Signature of Validator:	Eric Thomas
Signature of Senior Review:	Tat Ebihara

***Attachment 1: Cross-reference of field IDs with Laboratory IDs.**

****Attachment 2: Final results from the database**

Laboratory Report Data Review - QC Review Checklist					
	Laboratory Report ID:	**040511079**			
Laboratory Name:	EMSL Analytical, Inc.	Report Package Date:	6/30/05		
Project Name:	Johns Manville	Review Date:	1/29/2018		
Project Number:	009-07992-00-001				
Reviewer Name:	Eric Thomas/Matt Kyrias				
Parameters:	Asbestos				
Method IDs:	EPA 600/R-93/116				
Matrix:	Solids				

***Attach copy of lab report showing sample IDs and corresponding lab IDs (Att 1)**	**Yes**	**No**	**N/A**	**Comment**
Report Completeness & Sample Log-In Condition				
1 Was a signature page with appropriate authority signature provided?		X		**Fax copy**
2 Was there a case narrative noting all known problems or anomolies?			X	
3 Were all samples received under chain-of-custody (seals used) and within appropriate temperature?	X			
4 Were all departures from standard conditions narrated (i.e., preservation acceptable, no headspace)?	X			
5 Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X			
6 Are all laboratory ID numbers cross-referenced to the corresponding QC data (batch IDs provided)?			X	
7 Were reference methods provided and cited appropriately?	X			
8 Were samples prepared and analyzed within holding times?	X			
Date Collected: 6/22/2005 Date Received: 6/30/2005				
9 Were all soil results reported on a dry-weight basis?			X	
10 Was a percent moisture result reported for all soil and sediment samples?			X	
11 Is there a QAPP or SAP available as a reference for the project performed?	X			
12 Are non-detects identified as ND at RL with a "U", or other?	X			
13 Are laboratory flags defined?			X	
Laboratory Method Blanks and Trip Blanks				
1 Were appropriate types of laboratory method blanks analyzed?	X			
2 Was the method blank free of contamination (i.e., less than the MDL or RL)?	X			
3 Did the method blank contamination affect the final results? If so, note on page 2.			X	
4 Was a trip blank required and submitted with the samples?			X	
5 Was the trip blank free of contamination (i.e., less than the MDL or RL)?			X	
6 Did the trip blank contamination affect the final results? If so, note on page 2.			X	
Surrogates				
1 Were surrogates added prior to extraction for all appropriate methods?			X	
2 Were surrogate percent recoveries within laboratory control limits?			X	
3 Did the surrogate percent recoveries affect the final results? If so, note on page 2.			X	
Laboratory Control Samples				
1 Were LCS performed for all appropriate methods?			X	
2 Were LCS percent recoveries within laboratory control limits?			X	
3 Did the LCS percent recoveries affect the final results? If so, note on page 2.			X	
4 Were the LCS/LCSD RPD values within laboratory control limits?			X	
Matrix Spikes				
1 Were MS/MSDs performed on a project sample selected by the laboratory?			X	
Sample used/methods:				
2 Were MS/MSD percent recoveries within laboratory control limits?			X	
3 Did the MS/MSD percent recoveries affect the final results? If yes, note in Comment seciton.			X	
4 Were the MS/MSD RPD values within laboratory control limits?			X	
Field and Laboratory Duplicates				
1 Was a field duplicate submitted with this SDG?		X		
Field Duplicate ID:				
2 Was the RPD values less than review criteria?			X	
3 Did the field duplicate RPD results affect the final results? If so, note in Comments section.			X	

Comments

Comment No.	***Description (data usability; note any estimated and/or rejected data):***
1	**Field duplicates were submitted for this field sampling program per the required QAPP frequency.**
2	
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Signature of Validator:	Eric Thomas
Signature of Senior Review:	Tat Ebihara

Attachment 1: Cross-reference of field IDs with Laboratory IDs.

****Attachment 2: Final results from the database***

Laboratory Report Data Review - QC Review Checklist

Laboratory Report ID:	**5-1589**		
Laboratory Name:	First Environmental Laboratories, Inc.	Report Package Date:	6/30/05
Project Name:	Johns Manville	Review Date:	1/29/2018
Project Number:	009-07992-00-001		
Reviewer Name:	Eric Thomas/Matt Kyrias		
Parameters:	VOC's, SVOC's, RCRA Metals, Antimony, pH, Pesticides, PCBs		
Method IDs:	160.3, 5035A/8260B, 8270C-3540C, 8081A/8082-3540C, 7470A, 6010B-		
Matrix:	Solids		

	****Attach copy of lab report showing sample IDs and corresponding lab IDs (Att 1)***	**Yes**	**No**	**N/A**	**Comment**
	Report Completeness & Sample Log-In Condition				
1	Was a signature page with appropriate authority signature provided?	X			
2	Was there a case narrative noting all known problems or anomolies?	X			
3	Were all samples received under chain-of-custody (seals used) and within appropriate temperature?	X			
4	Were all departures from standard conditions narrated (i.e., preservation acceptable, no headspace)?	X			
5	Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X			
6	Are all laboratory ID numbers cross-referenced to the corresponding QC data (batch IDs provided)?			X	
7	Were reference methods provided and cited appropriately?	X			
8	Were samples prepared and analyzed within holding times?	X			
	Date Collected: 6/22/2005 Date Received: 6/23/2005				
9	Were all soil results reported on a dry-weight basis?	X			
10	Was a percent moisture result reported for all soil and sediment samples?	X			
11	Is there a QAPP or SAP available as a reference for the project performed?	X			
12	Are non-detects identified as ND at RL with a "U", or other?	X			
13	Are laboratory flags defined?			X	
	Laboratory Method Blanks and Trip Blanks				
1	Were appropriate types of laboratory method blanks analyzed?	X			
2	Was the method blank free of contamination (i.e., less than the MDL or RL)?	X			
3	Did the method blank contamination affect the final results? If so, note on page 2.			X	
4	Was a trip blank required and submitted with the samples?			X	
5	Was the trip blank free of contamination (i.e., less than the MDL or RL)?			X	
6	Did the trip blank contamination affect the final results? If so, note on page 2.			X	
	Surrogates				
1	Were surrogates added prior to extraction for all appropriate methods?	X			
2	Were surrogate percent recoveries within laboratory control limits?	X			
3	Did the surrogate percent recoveries affect the final results? If so, note on page 2.		X		
	Laboratory Control Samples				
1	Were LCS performed for all appropriate methods?			X	
2	Were LCS percent recoveries within laboratory control limits?			X	
3	Did the LCS percent recoveries affect the final results? If so, note on page 2.			X	
4	Were the LCS/LCSD RPD values within laboratory control limits?			X	
	Matrix Spikes				
1	Were MS/MSDs performed on a project sample selected by the laboratory?			X	
	Sample used/methods:				
2	Were MS/MSD percent recoveries within laboratory control limits?			X	
3	Did the MS/MSD percent recoveries affect the final results? If yes, note in Comment seciton.			X	
4	Were the MS/MSD RPD values within laboratory control limits?			X	
	Field and Laboratory Duplicates				
1	Was a field duplicate submitted with this SDG?		X		
	Field Duplicate ID:				
2	Was the RPD values less than review criteria?			X	
3	Did the field duplicate RPD results affect the final results? If so, note in Comments section.			X	

Comments

Comment No.	***Description (data usability; note any estimated and/or rejected data):***
1	**Field duplicates were submitted for this field sampling program per the required QAPP frequency.**
2	
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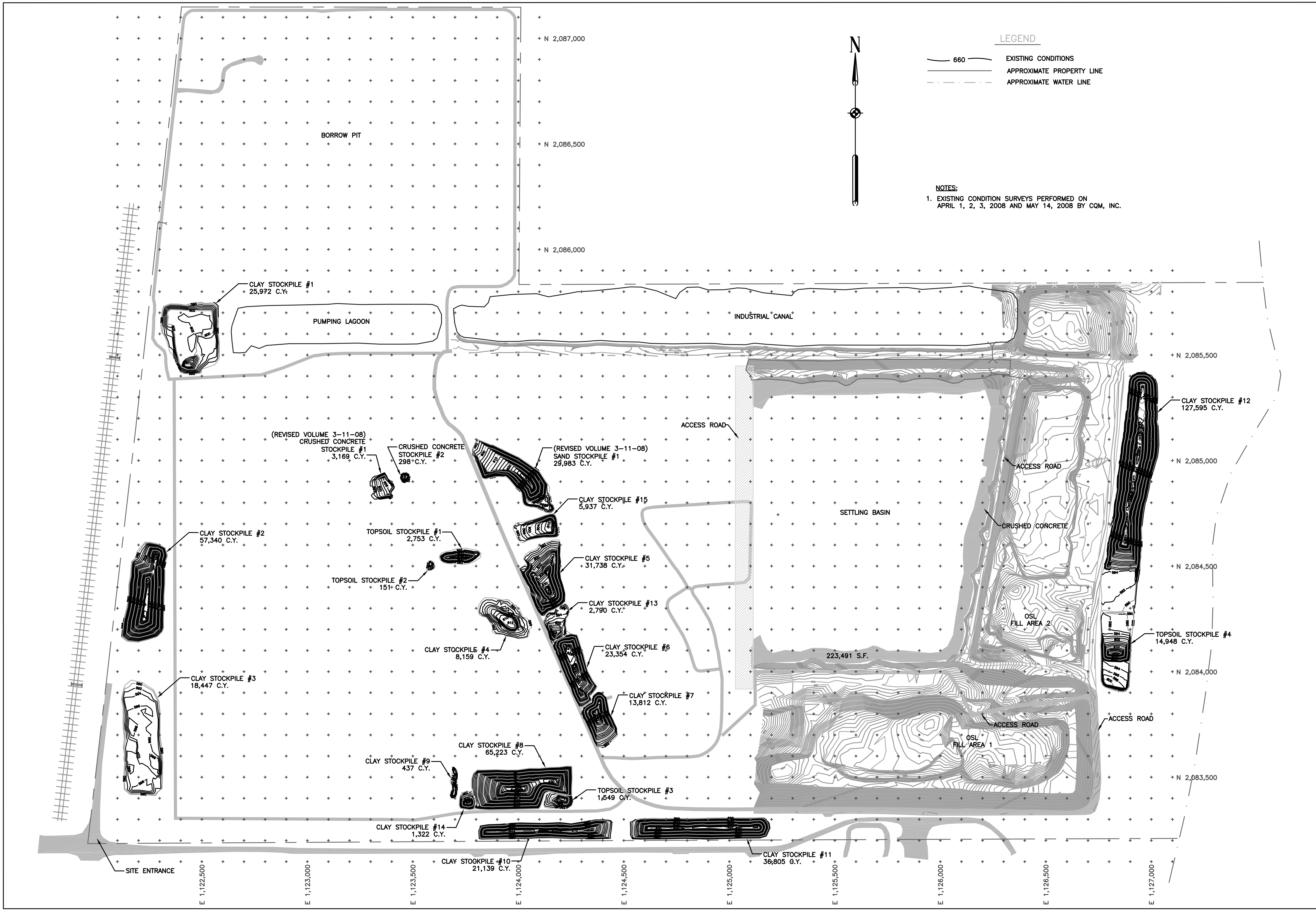
Signature of Validator:	
Signature of Senior Review:	

****Attachment 1: Cross-reference of field IDs with Laboratory IDs.***

*****Attachment 2: Final results from the database***

Attachment C

Response 06: Stockpile Survey Map



RELEASE	DATE:	BY:
Project Review		
5		
4		
3		
2	5/19/2008	WBE
ADDED APS SURVEY		
1	4/30/2008	WBE
ADDED CRG SURVEY		
NO.	DATE:	BY:
DESCRIPTION		
REVISIONS		

CQM, INC.
Construction Quality Management
2679 Continental Drive
Green Bay, WI 54311

Stockpile Survey Map

Johns Mansville Waukegan Plant
Waukegan, IL

DRAWN BY: WBE

DATE: May 2008

SCALE: 1"=400'

DRAWING NO.

1

Attachment D

Response 06: Clay Data Validation Summaries

Laboratory Report Data Review - QC Review Checklist

Laboratory Report ID: 7-0800

Laboratory Name:	First Environmental Laboratories, Inc.	Report Package Date:	3/5/2007
Project Name:	Johns Manville	Review Date:	4/13/2018
Project Number:			
Reviewer Name:	Matt Kyrias		
Parameters:	VOC's, SVOC's, RCRA Metals, Antimony, pH, Pesticides, PCB's		
Method IDs:	2540B, 5035A/8260B, 8270C-3540C, 8081A/8082-3540C, 6010C-3050B,		
Matrix:	Solids		

***Attach copy of lab report showing sample IDs and corresponding lab IDs (Att 1)**	**Yes**	**No**	**N/A**	**Comment**
Report Completeness & Sample Log-In Condition				
1 Was a signature page with appropriate authority signature provided?	X			
2 Was there a case narrative noting all known problems or anomolies?	X			
3 Were all samples received under chain-of-custody (seals used) and within appropriate temperature?	X			
4 Were all departures from standard conditions narrated (i.e., preservation acceptable, no headspace)?	X			
5 Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X			
6 Are all laboratory ID numbers cross-referenced to the corresponding QC data (batch IDs provided)?	X			
7 Were reference methods provided and cited appropriately?	X			
8 Were samples prepared and analyzed within holding times?	X			
Date Collected: 2/27/2007 Date Received: 2/28/2007				
9 Were all soil results reported on a dry-weight basis?	X			
10 Was a percent moisture result reported for all soil and sediment samples?	X			
11 Is there a QAPP or SAP available as a reference for the project performed?	X			
12 Are non-detects identified as ND at RL with a "U", or other?	X			
13 Are laboratory flags defined?	X			
Laboratory Method Blanks and Trip Blanks				
1 Were appropriate types of laboratory method blanks analyzed?	X			
2 Was the method blank free of contamination (i.e., less than the MDL or RL)?	X			
3 Did the method blank contamination affect the final results? If so, note on page 2.			X	
4 Was a trip blank required and submitted with the samples?			X	
5 Was the trip blank free of contamination (i.e., less than the MDL or RL)?			X	
6 Did the trip blank contamination affect the final results? If so, note on page 2.			X	
Surrogates				
1 Were surrogates added prior to extraction for all appropriate methods?	X			
2 Were surrogate percent recoveries within laboratory control limits?	X			
3 Did the surrogate percent recoveries affect the final results? If so, note on page 2.			X	
Laboratory Control Samples				
1 Were LCS performed for all appropriate methods?			X	
2 Were LCS percent recoveries within laboratory control limits?			X	
3 Did the LCS percent recoveries affect the final results? If so, note on page 2.			X	
4 Were the LCS/LCSD RPD values within laboratory control limits?			X	
Matrix Spikes				
1 Were MS/MSDs performed on a project sample selected by the laboratory?			X	
Sample used/methods:				
2 Were MS/MSD percent recoveries within laboratory control limits?			X	
3 Did the MS/MSD percent recoveries affect the final results? If yes, note in Comment seciton.			X	
4 Were the MS/MSD RPD values within laboratory control limits?			X	
Field and Laboratory Duplicates				
1 Was a field duplicate submitted with this SDG?	X			
Field Duplicate ID: OZL-14 (12') DUP and OZL-17 (6') DUP				
2 Was the RPD values less than review criteria?			X	
3 Did the field duplicate RPD results affect the final results? If so, note in Comments section.			X	

Comments

Comment No.	***Description (data usability; note any estimated and/or rejected data):***
1	**Field duplicates were collected for this field sampling program per the required QAPP frequency.**
2	**Lab Number 7-0800-003 Sample ID OZL-12 (12') DUP *Semi-Volatile Compounds* Surrogate recovery outside control limits; low bias**
3	
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Signature of Validator:	MK
Signature of Senior Review:	Tat Elihara

Attachment 1: Cross-reference of field IDs with Laboratory IDs.

****Attachment 2: Final results from the database***

Laboratory Report Data Review - QC Review Checklist

	Laboratory Report ID:	**040704003**	
Laboratory Name:	EMSL Analytical, Inc.	Report Package Date:	3/2/2007
Project Name:	Johns Manville	Review Date:	4/13/2018
Project Number:			
Reviewer Name:	Matt Kyrias		
Parameters:	Asbestos		
Method IDs:	PLM EPA 600/R-93/116 and TEM CARB 435C		
Matrix:	Solids		

***Attach copy of lab report showing sample IDs and corresponding lab IDs (Att 1)**	**Yes**	**No**	**N/A**	**Comment**
Report Completeness & Sample Log-In Condition				
1 Was a signature page with appropriate authority signature provided?	X			
2 Was there a case narrative noting all known problems or anomolies?	X			
3 Were all samples received under chain-of-custody (seals used) and within appropriate temperature?	X			
4 Were all departures from standard conditions narrated (i.e., preservation acceptable, no headspace)?	X			
5 Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X			
6 Are all laboratory ID numbers cross-referenced to the corresponding QC data (batch IDs provided)?	X			
7 Were reference methods provided and cited appropriately?	X			
8 Were samples prepared and analyzed within holding times?	X			
Date Collected: 2/27/2007 Date Received: 2/28/2007				
9 Were all soil results reported on a dry-weight basis?	X			
10 Was a percent moisture result reported for all soil and sediment samples?	X			
11 Is there a QAPP or SAP available as a reference for the project performed?	X			
12 Are non-detects identified as ND at RL with a "U", or other?	X			
13 Are laboratory flags defined?	X			
Laboratory Method Blanks and Trip Blanks				
1 Were appropriate types of laboratory method blanks analyzed?	X			
2 Was the method blank free of contamination (i.e., less than the MDL or RL)?	X			
3 Did the method blank contamination affect the final results? If so, note on page 2.			X	
4 Was a trip blank required and submitted with the samples?			X	
5 Was the trip blank free of contamination (i.e., less than the MDL or RL)?			X	
6 Did the trip blank contamination affect the final results? If so, note on page 2.			X	
Surrogates				
1 Were surrogates added prior to extraction for all appropriate methods?	X			
2 Were surrogate percent recoveries within laboratory control limits?	X			
3 Did the surrogate percent recoveries affect the final results? If so, note on page 2.			X	
Laboratory Control Samples				
1 Were LCS performed for all appropriate methods?			X	
2 Were LCS percent recoveries within laboratory control limits?			X	
3 Did the LCS percent recoveries affect the final results? If so, note on page 2.			X	
4 Were the LCS/LCSD RPD values within laboratory control limits?			X	
Matrix Spikes				
1 Were MS/MSDs performed on a project sample selected by the laboratory?			X	
Sample used/methods:				
2 Were MS/MSD percent recoveries within laboratory control limits?			X	
3 Did the MS/MSD percent recoveries affect the final results? If yes, note in Comment seciton.			X	
4 Were the MS/MSD RPD values within laboratory control limits?			X	
Field and Laboratory Duplicates				
1 Was a field duplicate submitted with this SDG?	X			
Field Duplicate ID: OZL-14 (12') DUP and OZL-17 (6') DUP				
2 Was the RPD values less than review criteria?			X	
3 Did the field duplicate RPD results affect the final results? If so, note in Comments section.			X	

Comments

Comment No.	***Description (data usability; note any estimated and/or rejected data):***
1	**Field duplicates were collected for this field sampling program per the required QAPP frequency.**
2	
3	
4	
5	
6	

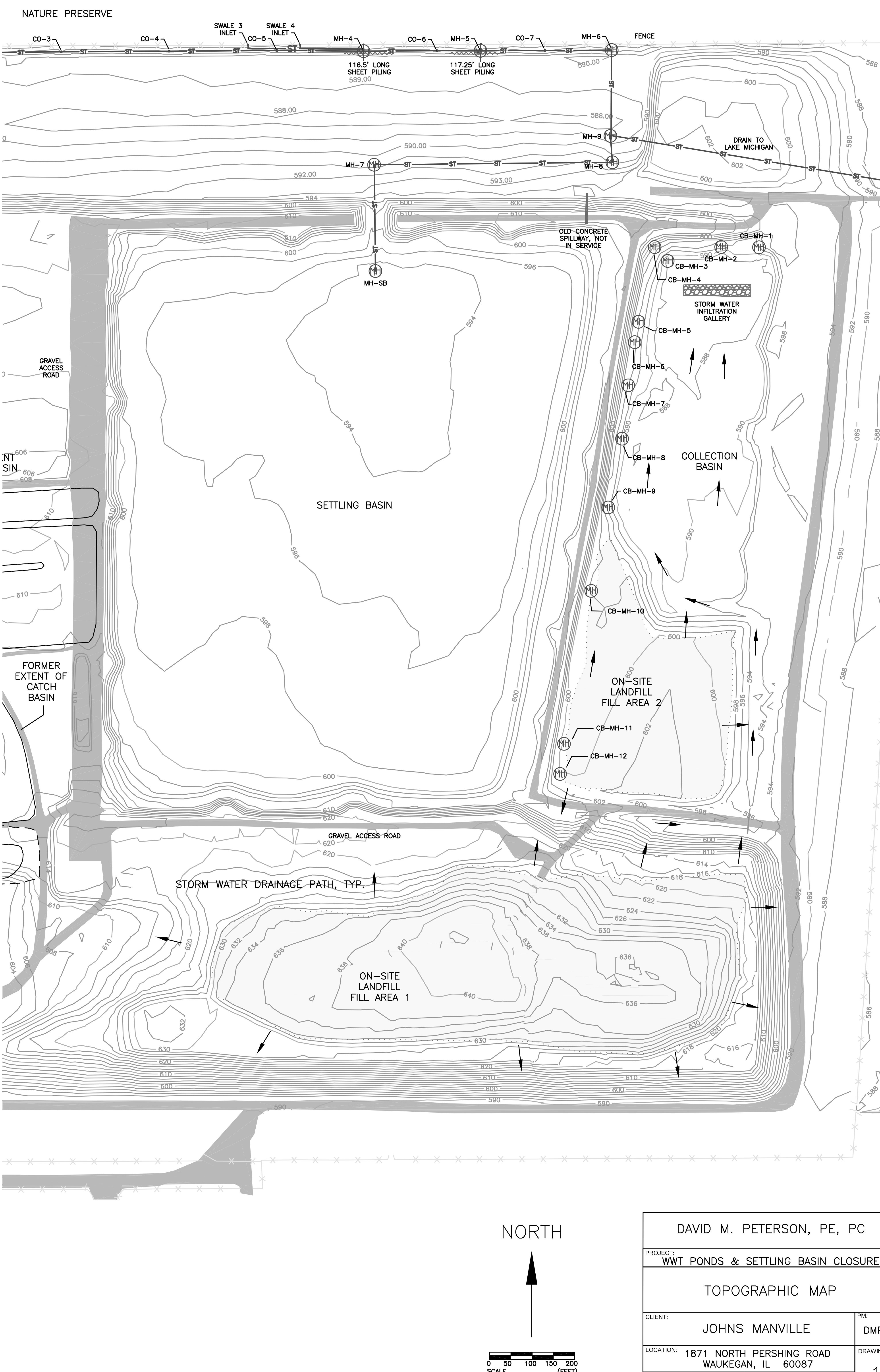
Signature of Validator:	MK
Signature of Senior Review:	Tat Ebihara

****Attachment 1: Cross-reference of field IDs with Laboratory IDs.***

*****Attachment 2: Final results from the database***

Attachment E

Response 16: Storm Water Drainage Map



DAVID M. PETERSON, PE, PC

PROJECT: WWT PONDS & SETTLING BASIN CLOSURE

TOPOGRAPHIC MAP

CLIENT: JOHNS MANVILLE	PM: DMP
LOCATION: 1871 NORTH PERSHING ROAD WAUKEGAN, IL 60087	DRAWING: 1
DRAWN BY: DMP / REVIEWED BY: DMP / DATE: MAR. 2018	

Attachment F

Response 20: Final Closure Report Replacement Page

2.0 Background

2.1 Property Location and Description

JM's approximately 353-acre Property is located along the shoreline of Lake Michigan primarily in the City of Waukegan, Lake County, Illinois (**Figure 1**). It is bounded on the west by the Union Pacific Railroad, on the south by Greenwood Avenue, NRG Energy Inc. Waukegan Generating Station, Commonwealth Edison, and City of Waukegan property, on the east by the shoreline of Lake Michigan, and on the north by the Illinois Beach State Park Nature Preserve.

For discussion purposes, the Property may be divided into five general areas (**Figure 1**): former Manufacturing Area (roughly 109 acres), former Disposal Area (142 acres), Borrow Pit (roughly 50 acres), Beach (roughly 23 acres) and former Industrial Canal and former Pumping Lagoon (roughly 29 acres). The On-Site Landfill (approximately 15.5 acres) is located within the south east corner of the former JM Disposal Area. The former Settling Basin occupies the central portion of the former JM Disposal area, with the former Collection Basin to the east and the Mixing Basin and Catch Basin to the immediate west.

2.2 Property History

JM has occupied the Property since approximately 1920. Prior to that time, the area was largely undeveloped. Manufacturing facilities were constructed within the former Manufacturing Area (**Figure 1**) beginning in the early 1920s with various changes and additions made until the late 1970s. At its peak, the manufacturing plant employed up to several thousand workers and produced a wide range of asbestos-containing products. The manufacture of asbestos-containing materials (ACMs) was discontinued at the Site circa December 1985. Manufacturing of other building materials continued until September 1998.

By October 2001, the manufacturing buildings in the southwestern portion of the JM Property were demolished. The only permanent structure that currently remains on the Property is a building to house property maintenance staff and equipment, adjacent to the Pumping Lagoon.

Historically, waste manufacturing debris and other ACMs were placed in the former JM Disposal Area. In September 1983, pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), the U.S. Environmental Protection Agency (U.S. EPA) placed the Disposal Area on the National Priorities List. In July 1985, JM submitted a Remedial Investigation Report for the JM Disposal Area. In accordance with the original federal Consent Decree (OCD) between JM, U.S. EPA, and the State of Illinois dated March 18, 1988, the former JM Disposal Area was closed and capped with an engineered cover. These closure and capping activities began in 1989 and were completed in 1992.

As stated above, JM has previously conducted substantial closure activities within the former Disposal Area pursuant to the OCD between the United States of America, the State of Illinois, and JM. That work was substantially completed prior to 1992. Other areas of the Site, including the On-Site Landfill were, by agreement, left open for continued use as part of the manufacturing operations until they were no longer needed for that purpose.

Attachment G

Response 23: CCR Section 5.0 Replacement Page

4.0 Sand Drainage Layer Construction

A minimum 1-foot thick sand drainage layer was constructed over the Barrier Layer. The drainage layer extends over all of FA1 and FA2. An excavator and off-road trucks were used to load and haul sand over designated roads from a stockpile west of the CERCLA landfill to the OSL. Once sand was placed it was graded using bulldozers equipped with GPS units. The thickness of the sand drainage layer was surveyed on a maximum 70-foot grid pattern with a GPS unit to confirm that the sand drainage layer met the targeted one foot nominal thickness. An identical grid pattern was used to document the barrier layer. **Drawing A-5** depicts both the design of the sand layer and the drainage layer elevations.

A perimeter drain was constructed to provide an outlet for water collecting within the sand drainage layer. A perforated lateral drain pipe wrapped with geotextile was embedded in the perimeter of the sand drainage layer parallel to the lateral limits of the final cover in FA1 and FA2 using the specified solid drain pipe outlet locations. Outlets for the drain pipe in FA1 discharge to the perimeter of the final cover in FA1. Outlets for the drain pipe in FA2 discharge to the drainage swales along the east and west boundaries of the final cover in FA2.

5.0 Final Protective Layer Construction

The final protective layer consists of Lake County clayey soils compacted to a minimum thickness of three feet in areas overlying the sand drainage layer. The final protective layer was hauled from Clay Stockpile 12 using scrapers, placed using track machines, and compacted using a sheepsfoot compactor to 90% modified proctor (ASTM D1557). The soils were placed in a maximum of 8 inch lifts to achieve the target elevations. The surface of the final protective layer (approximately six inches) was not compacted with a sheepsfoot compactor. This layer was compacted via track machines, in a manner that facilitated addition of soil amendments and establishment of vegetation. Final cover grades were made using bulldozers equipped with GPS units. The cover was sloped so as to drain surface water runoff to perimeter areas of FA1 and FA2. Surface water runoff from FA1 “sheet flows” to perimeter areas of the CERCLA cap. Surface water runoff from FA2 “sheet flows” to perimeter drainage swales, located along the south, west, and east boundaries of FA2. The eastern swale was excavated, backfilled and compacted with clayey soils in areas where less than 26 inches of clay was present.

Appendix G contains results of final protective layer and east swale moisture and density testing and **Drawing A-7** illustrates the locations of the barrier density tests. Final protective layer surfaces were surveyed on a maximum 70-foot grid pattern, by using a GPS unit to confirm that the final protective layer was a minimum of three feet thick. This was the identical grid pattern used to document the sand drainage layer. **Drawing A-6** depicts both the design of the cap and the final protective layer elevations.

Appendix G

On-Site Landfill Response to July 26, 2018 Comments (RTC #2)

AECOM
303 East Wacker Drive
Chicago, IL 60601
aecom.com

August 22, 2018

Mr. Matthew J. Ohl
Remedial Project Manager
United States Environmental Protection Agency Region 5
77 West Jackson Boulevard, SR-6J
Chicago, Illinois 60604-3590

Subject: **Response to U.S. EPA Comments Received July 26, 2018**
Final Closure Report, Non-Asbestos Containing On-Site Landfill, Permit Exempt "815" Facility #0971900014
Johns Manville, Waukegan, Lake County, Illinois

Dear Mr. Ohl:

AECOM Technical Services, Inc. (AECOM) is providing this document on behalf of Johns Manville (JM) to respond to comments provided by the U.S. Environmental Protection Agency (USEPA) on July 26, 2018 to the Response to Comments dated April 25, 2018 for the Final Closure Report for the Non-Asbestos Containing On-Site Landfill ("On-Site Landfill"), a permit exempt "815" facility at the former Johns Manville manufacturing facility located in Waukegan, Illinois (#0971900014) dated March 31, 2017. Remediation work was completed in accordance with the Final Phase II Remedial Work Plan (Revision 1) dated June 20, 2008 (RWP), and satisfactorily meets the full requirements of the First Amended Consent Decree, the Adjusted Standard Order dated December 6, 2007, and the general requirements for existing landfills set forth in 35 IAC Part 814, Subparts A and C.

To facilitate review of the Final Closure Report and responses to USEPA comments, past reports and applicable documents have been identified in Table 1 (revision is provided in **Attachment B**) and previously provided in electronic format attached to this response. The Final Closure Report and this response to comments address work that was completed subsequent to approval of the RWP by the EPA.

Comment 01: *Table 1 – On-Site Landfill Reporting Summary: This table was included with AECOM's responses and contains a list of 35 past reports and documents that are important for understanding the history of the Johns Manville (JM) site and OSL as well as the closure requirements. The response letter explains that the reports and documents are attached in electronic format, but, initially, they were not included. The reports and documents were then requested from AECOM and provided at a later date.*

<u>Comment 01</u>: Confirm that the files containing past reports and documents in Table 1 can be opened, are not damaged, and are attached in electronic format along with the Final Closure Report.

Response 01: Two new compact discs with the documents listed in Table 1 will be accompanied with the Final Closure Report.

Comment 02: *Response 01: As discussed in Paragraph 6 of reference 1.a., Table 1 of the Final Closure Report lists the construction activity for the period from November 8, 2008 to November 30, 2016 as "Growth and development of fully-established vegetative soil cover." Response 01 provides some additional information by noting "The gap between the conclusion of substantial work in November 2008 and 2016 was, in part, due to ongoing O&M of the vegetative cover." Aerial Photo four (4) in the Construction Completion Report (CCR), which was taken in November 2008, says "OSL capping work completed, vegetative cover established." While further growth, development, and establishment of the vegetative soil cover likely occurred from November 8, 2008 to November 30, 2016, the chronological table should primarily be reserved for major events and construction activities.*

<u>*Comment 02*</u>*: It is recommended that the chronological table (Table 1 of the Final Closure Report) be revised to include "Operations and Maintenance (O&M) for the final cover" for the above-mentioned time period, and reference the O&M activities described in Section 4 of the Final Phase II Remedial Work Plan (RWP) and/or Section 8 of the CCR. Additionally, as explained in Response 01, it is further recommended that the report include the information that closure of the OSL was delayed because of changes to the Industrial Canal and Pumping Lagoon closure methods, and closure of the OSL was tabled until all the work described in the First Amended Consent Decree (FACD) was completed. Since the date when the construction activities described in the FACD were completed was an important milestone, this event and date be should also be added to the chronological table.*

Response 02: (Attachment A) Table 1 of the Final Closure Report has been revised to include O&M for the final cover which commenced in November 2008 and continues today. Final cover O&M activities include maintaining site security (locks, signage, fencing, gates, and installation of new fencing and gates), maintaining access roads (addition of gravel and grading), and final cover maintenance (routine inspections, additional seeding in 2009, mowing events, and tree/shrub removal; no erosion repair has been required). Revised Table 1 is located in **Attachment A**.

Table 1 of the Closure Report will be revised to include the information that closure of the OSL was delayed because of changes to the Industrial Canal and Pumping Lagoon closure methods, and closure of the OSL was tabled until all the work described in the First Amended Consent Decree (FACD) was completed. On-site remediation work described in the FACD was completed in November 2016 and is also included in Table 1.

Comment 03: *Response 02: Previously, Paragraph 5 of reference 1.a. mentioned that the chronological table (Table 1) of the Final Closure Report includes a "compliance plan" that was submitted to the USEPA and Illinois EPA on July 10, 2003.*

<u>*Comment 03*</u>*: It is recommended that the report provide the information that the July 10, 2003 Compliance Plan was superseded by Appendix D (Construction Compliance Plan) of the Final Phase II RWP (Revision I). In addition, since the chronological table (Table 1) references an Initial Facility Report (IFR) that Johns Manville (JM) submitted to the Illinois EPA, it is recommended that this report be added to the OSL reporting summary (Table 1) provided with AECOM's responses. It is further recommended that the reporting summary include the Quality Assurance Project Plans (QAPPs) and Sampling Analysis Plans (SAPs) for the clay and sand material sampling events.*

Response 03: (Attachment A and Attachment B)

Table 1 of the Closure Report (Chronology of Events and Construction Activities) has been updated to note that Appendix D (Construction Compliance Plan) of the Final Phase II RWP (Revision 1) superseded the July 10, 2003 Compliance Plan. This table is included in **Attachment A**.

Table 1 of the Response to Comments dated April 25, 2018 (On-Site Landfill Reporting Summary) has been updated to include the Initial Facility Report (IFR) submitted to the Illinois EPA in September 1992. Updated Table 1 is included in **Attachment B**. The OSL Final Phase II RWP SAPP (Appendix F of RWP) and QAPP (Appendix G of RWP) applied to the clay and sand material sampling events.

Comment 04:

Response 03: Table 2 of AECOM's response references the FACD Section V (14) (a) for the final cover, but this paragraph describes the interim cover.

Comment 04: Revise to reference FACD Section V (15) (c) in Table 2.

Response 04: (Attachment B)

Table 2 from the Response to Comments dated April 25, 2018 has been revised to reference FACD Section V (15) (c). Revised Table 2 is located in **Attachment B**.

Comment 05:

Responses 04 and 05: For Fill Area #1, the AECOM response says "Testing was performed where Barrier Layer clay was relocated to cover waste material (i.e. around the MDP access road)." For Fill Area #2, the response says "Testing was performed where Barrier Layer material was extended to cap the area that did not contain barrier material." Section 3.1.1 (Site Preparation and Barrier Layer Construction) of the RWP indicates that the final 12-inch barrier soil layer for Fill Areas #1 and #2 was to be compacted to the specified density. This same section notes that filling was proposed to cover the MDP Access Road in the northeast corner of Fill Area #1, and excavation and regrading of portions of the south and east slopes of Fill Area #1 were proposed to decrease the existing interim soil cover slopes. Significant cutting and regrading of the existing interim soil cover in Fill Area #2 was proposed to achieve Barrier Layer grades. Apparently, as indicated by the AECOM response, the Barrier Layer material was only constructed, compacted, and tested in limited areas (where necessary). A comparison of Appendices F and G of Appendix E suggests there was substantially more compaction tests per lift for the protective layer than for the barrier layer. Section 3 of the CCR, says the "soil fill" in Fill Areas #1 and #2 was compacted, but it is not clear if this "soil fill" is in reference to the 12-inch barrier layer and/or the protective layer. This same section of the CCR says the fill material for the MDP Access Road consisted of relocated non-ACM waste from the southern and eastern boundary of Fill Area #1, stripped materials from cutting and regrading operations within Fill Areas #1 and #2, and on-site stockpiled clayey soils (Clay Stockpile 12). Section 3.1.1 of the RWP says "The fill will consist of stripped materials from cutting and regrading operations within Fill Area #1 and Fill Area #2 and on-site stockpile fill material meeting Site requirements."

Comment 05: As mentioned in the previous memorandum, it is recommended that the Final Closure Report provide more details concerning the relocation of non-ACM waste materials. The RWP does not discuss the excavation or transfer of non-ACM waste materials to the MDP Access Road, so the report should explain the reason these operations were necessary. The report should also indicate the approximate volume (cubic yards) of non-ACM waste materials that were placed within the former MDP Access Road, and whether the relocation of non-ACM waste materials anticipated and approved as part of the RWP? It is recommended that the Final

Closure Report show areas where the non-ACM waste materials were excavated and explain if the 12-inch barrier layer was constructed over these areas and tested for compaction after placement.

Response 05: (Attachment C, Attachment D, Attachment E))

The RWP discussed cutting and filling activities to achieve the design elevations. In doing such work it was necessary to relocate non-ACM waste materials. It was understood that this would occur as non-ACM waste materials were encountered in soil borings prior to commencing work described in the RWP. Relocated non-ACM waste materials were not part of the final barrier layer. Non-ACM waste materials were capped with a barrier comprised of either compacted existing relocated barrier clay or compacted stockpiled clay. **Attachment C** is a figure illustrating where the barrier layer was constructed. The 12-inch barrier layer was tested for compaction after placement as shown in Appendix A and Appendix F of Appendix E of the Closure Report. Appendix A is repeated in **Attachment D** and Appendix F is repeated in **Attachment E**.

The volume of material placed to fill the Miscellaneous Disposal Pit former access road below the barrier layer surface is estimated to be 5,000 cubic yards. The volume of non-ACM waste materials represented a fraction of this amount; estimated to be 10%, or 500 cubic yards.

Comment 06:

Responses 04 and 05: Appendix B (Final Cover Design Calculations) of the RWP includes Tables B-1 and B-2, which show the ground surface elevation (Feet, MSL) in 2003 at a number of boring locations. These tables include columns for the depth of the boring, depth to top of waste, depth to top of CERCLA cover, elevation of top of waste or top of CERCLA cover, planned top of barrier layer elevation, depth of cut/fill, and calculated barrier layer thickness. The information in these tables suggests that for most of the OSL Fill Areas #1 and #2, a layer of interim clay cover and/or barrier layer material would be present after the grading operations. In Appendix C (Remedial Design Construction Specifications) of the RWP, Figure 10 shows the locations of the borings and this figure suggests that the boring locations correspond to different location or point numbers. However, by comparing this figure to the construction drawings, i.e., Drawings A-4, A-5, and A-6 in Appendix A of the CCR, it can be observed that the location numbers in Figure 10 in Appendix C of the RWP do not correspond with the point numbers in Appendix A of the CCR. The Drawing A-4 in Appendix A of the CCR compares the "Record Barrier Elevation" to the "Design Barrier Elevation," but the report does not explain the procedure used to survey and determine the "Design Barrier Elevation" and the relationship between these elevations and the elevations calculated in Appendix B of the RWP.

<u>Comment 06</u>: It is recommended that the CCR explain or provide the reference that describes the origin as well as the environmental and geotechnical quality of the Lake County clay used for the interim material layer that comprises the existing clay for the construction of large portions of the barrier layer. In addition, the report needs to provide the procedure used for surveying and determining the approved "Design Barrier Elevations" in Construction Drawing A-4 in the CCR for the different points and coordinates. Ultimately, the closure report should provide confirmation that the thickness of the barrier layer was a minimum of one foot and corresponded with the procedure and geotechnical information described in the approved RWP. The report also needs to verity that the site preparation and barrier layer construction procedures were in accordance with the RWP, and show the details regarding the areas where the Barrier Layer material for Fill Areas #1 and #2 was constructed, compacted,

and/or tested, etc. prior to placement of the one (1)-foot thick sand drainage layer, which was subsequently overlain by the three (3)-foot thick final protective layer. It is further recommended that the report the explain the difference between placement of the existing clay and the stockpiled clay in the field reports, such as Reports #10, #11, and #12, and why several field reports, i.e., Reports #23, #24, and #25, mention the placement of a six (6)-inch un-compacted lift for the protective layer.

Response 06: (Attachment C, Attachment D, Attachment F, Attachment G, Attachment H, Attachment I, Attachment J, Attachment K, Attachment L, Attachment M)

The existing Lake County clay that comprised the barrier material was placed in the 1990s while the Johns Manville Waukegan Plant was operational. This existing clay was approved for use as barrier material by USEPA approval of the Phase II Remedial Work Plan and approval is included in **Attachment F**. There is no record of the clay source(s). Geotechnical testing of the existing barrier clay was presented in the Site Investigation Report dated September 26, 2005 (Report #27 of Table 1). This is repeated in **Attachment G**. Environmental testing was performed of existing barrier clay and this data is included in **Attachment H**.

The borings on Tables B-1 and B-2 are consistently labeled and located properly on Figure 10 (see cross reference table below). For example, Boring C-44 in Table B-1 is located in Fill Area 1 and properly identified on Figure 10 as point 1144, 2.5, C-44 which indicate the CAD point (1144), depth of lean clay (2.5 feet), and soil boring location (C-44). Drawing 10 was created by LFR on 02/06/08 and was a pre-construction drawing.

The barrier design elevations determined from Figure 10 were used by CQM to create a topographic surface over the OSL. CQM then increased the number of surveying points to achieve a minimum of one point every 5,000 square feet and to include features such as breaks, crests, and toes of slopes. More points were surveyed than identified in the pre-construction drawings to improve accuracy. CQM applied a different survey point numbering system due to the increased number of survey locations. These same points were consistently measured during the construction of the OSL cap for the barrier elevation, sand elevation, and clay surface elevation of the protective cover.

Post construction drawings A-4, A-5, and A-6 were generated by CQM in January 2009 and are included in **Attachment D**. CQM compared the LFR design barrier elevation to the actual recorded barrier elevation constructed in the field on drawing A-4. The actual barrier elevation was either equal to, or higher than, the design barrier elevation, indicating that the minimum barrier elevation was achieved.

After the barrier layer was constructed, then the design sand elevation was calculated to be one foot above the recorded barrier elevation and is on drawing A-5. The sand layer was constructed, surveyed, and the recorded sand elevation is on drawing A-5. After the sand layer was constructed, then the design protective cover elevation was calculated to be three feet above the recorded sand elevation and is on drawing A-6. The protective layer was constructed, surveyed, and the recorded protective cover clay surface elevation is on drawing A-6. This process ensured that sand and protective clay thicknesses were achieved based upon as-built measurements.

Some LFR points from Figure 10 did coincide with CQM points on drawings A-4, A-5, and A-6. The following table provides a cross reference of those points.

LFR Point (C-Boring)	CQM Point	LFR Point (C-Boring)	CQM Point	LFR Point (C-Boring)	CQM Point
1102 (C-02)	1050	1122 (C-22)	1061	1135 (C-35)	1074
1104 (C-04)	1051	1123 (C-23)	1062	1136 (C-36)	1075
1105 (C-05)	1052	1124 (C-24)	1063	1137 (C-37)	1076
1107 (C-07)	1053	1125 (C-25)	1064	1138 (C-38)	1077
1110 (C-10)	1054	1126 (C-26)	1065	1141 (C-41)	1078
1112 (C-12)	1055	1128 (C-28)	1067	1144 (C-44)	1080
1114 (C-14)	1056	1129 (C-29)	1068	1145 (C-45)	1081
1115 (C-15)	1057	1130 (C-30)	1069	1146 (C-46)	1082
1116 (C-16)	1058	1131 (C-31)	1070	1149 (C-49)	1083
1117 (C-17)	1059	1132 (C-32)	1071	1150 (C-50)	1084
1119 (C-19)	1060	1133 (C-33)	1072	1151 (C-51)	1085
1121 (C-21)	1109	1134 (C-34)	1073	1158 (C-58)	1086

Drawing A-3 from the CCR has been annotated to show approximate areas in Fill Area #1 and Fill Area #2 where barrier clay was relocated (see **Attachment C**). Drawing A-3 also identifies areas of relocated existing barrier clay or stockpiled barrier clay that were tested for compaction. Both existing barrier clay and stockpiled clay were used to construct the compacted clay barrier. As can be seen from Figure 10, much of the existing barrier clay came from Fill Area #2. Both relocated existing barrier clay and stockpiled clay were successfully compacted to meet the same specifications.

In an effort to demonstrate that the constructed barrier clay is a minimum of one foot thick, additional field notes were procured from CQM (see **Attachment I**). Upon review of the field notes, such data is absent. Consequently, a Geoprobe was utilized to confirm that the barrier clay was at least 12 inches thick. **Attachment J** contains a figure of the soil thickness measurements (which coincide with the same locations in **Attachment D**) and a table of the results. All locations were measured to contain at least 12 inches of barrier clay.

With respect to reports 10, 11, and 12 (provided in **Attachment K**): Field reports identifying "existing clay placement" identify areas where clay has been previously placed (i.e. not today). Field reports identifying "clay placed today" identify areas where clay was placed today. The nomenclature was used in an effort to distinguish today's work from previous work during remedial construction.

With respect to reports 23, 24, and 25 (provided in **Attachment L**): Clay was initially placed in maximum 8-inch thick uncompacted lifts that were subsequently compacted, tested for compaction, and passed the compaction requirements. **Attachment D** identifies the locations of compaction testing and **Attachment M** provides compaction testing results for the protective clay cover which are repeated from Appendix G of Appendix E of the Closure Report. The upper layer of clay was compacted by track machines and scrapers. The upper layer of clay was not compacted with the vibratory sheepsfoot compactor since this clay was to be seeded. The upper 6-inch layer of clay (thinner than lower maximum 8-inch lifts) achieved the compaction requirements in the absence of the sheepsfoot compactor as shown in **Attachment D** and **Attachment L**.

Comment 07: *Response 08*

<u>Comment 07</u>: Confirm that the only in-place geotechnical testing of the barrier, sand drainage, and final protective layers was testing of the barrier and final protective layer materials by using the Troxler 3440 density meter (i.e., measurement of in-place moisture content and density).

Response 07: This is confirmed to be the only in-place geotechnical testing of the barrier, sand drainage, and final protective layers.

Comment 08: *Response 10: This response explains that the approved RWP granted JM exemptions from "certain" requirements of 35 IAC 814, Subparts A and C, which included the requirement for a leachate collection or management system. The executive summary of the Closure Report says it will provide documentation to confirm that closure of the OSL satisfactorily meets the full requirements of the regulations for existing landfills set forth in 35 IAC 814, Subparts A and C. Based on information in the closure report and previous responses, the OSL is a permit exempt "815" facility, there are no requirements for a leachate collection or management system or for further monitoring of landfill gas emissions, and an alternative final cover for the OSL was approved. Section 1.3 of the RWP indicates the OSL is regulated as an existing landfill under 35 IAC 814 (Subpart C) and applicable sections of Part 811. According to Section 2.2 of the RWP, the predominant waste placed in the OSL was calcium silicate, but JM also disposed of roofing materials, wood, paper, and cardboard materials that the Illinois EPA subsequently considered to be putrescible wastes.*

<u>Comment 08:</u> As indicated above, the OSL was granted exemptions and adjusted standards, but it is recommended that the report provide a clear and thorough description of the closure requirements in 35 IAC 814, Subparts A and C that are still applicable. Applicable standards are described in 35 IAC 814, Subpart C, Section 814.302 (Applicable Standards), paragraphs (a) through (g). For example, does the approved RWP exempt the OSL from Section 814.302 (b)(2), which requires the owner or operator to provide a long-term static safety factor of at least 1.5 (and 1.3 under seismic conditions) to protect the completed units against slope failure or 814.302 (d), or is the Closure Report meant to satisfy the requirements for the written

closure plan described Section 811.110?

Response 08: The following paragraphs provide a description of the closure requirements from 35 IAC 811, 814, and 815 that are applicable to the OSL. A section will be added to the Closure Report identifying ongoing regulatory requirements and present the information contained within this response.

<u>35 IAC 811</u>: The On-Site Landfill meets the definition of "existing facility or existing unit" contained in 35 IAC Section 810.103. The only requirements in 35 IAC 811 that are applicable to the OSL are the general requirements in 35 IAC Section 811.110 (Closure and Written Closure Plan) and 35 IAC Section 811.111 (Post-Closure Maintenance). The Closure Report and Final Phase II RWP dated June 20, 2008 satisfy the requirements of the Closure and Written Closure Plan in 35 IAC 811.110. Post-closure maintenance has been performed since January 2009 and will continue to be performed in accordance with 35 IAC Section 811.111 per the O&M Manual (see Response 10 for further information on the O&M Manual).

<u>35 IAC 814:</u> The requirements in 35 IAC 814 Subparts A and C are no longer applicable as they are addressed in the RWP and the Petition for Adjusted Standards with one exception. Section 814.302 (b)(2), which requires the owner or operator to provide a long-term static safety factor of at least 1.5 (and 1.3 under seismic conditions) to protect the completed units against slope failure, is applicable. However, a soil cover with a grade averaging 10 horizontal to 1 vertical (10 percent grade), and flatter, are common covers at Fill Area #s 1 and 2. Fill Area #1 was constructed by filling a depression that was surrounded by the CERCLA landfill. The CERCLA landfill cap was completed in the early 1990s and approved by the USEPA in the First Amended Consent Decree (FACD) and Explanation of Significant Differences (ESDs). Fill Area #2 was constructed by filling a depression called the Collection Basin, and that too was approved by the USEPA in the FACD and ESDs.

<u>35 IAC 815:</u> The OSL is considered a permit exempt "815" Facility. As such, an annual report is required pursuant to 35 IAC 815 Subpart C. Data gathered and submitted with the annual report includes that identified in Part 815.303 (see Reports #3 through #16 of Table 1 in **Attachment B**).

Comment 09: *Response 16: Attachment E of the AECOM response letter provides an overall survey of the area and shows storm water drainage flow paths. Drawing A-8 in Appendix A of the CCR contains construction details and shows that a four (4)-inch diameter drain tile with sock was placed along the entire toe of the drainage layer in Fill Area #1 and on the east toe of Fill Area #2. This same drawing shows four (4)-inch diameter solid outlet pipes, and Drawing A-5 shows the locations where the outlet pipes discharge to the existing bench on the CERCLA Cap on the east toe of Fill Area #2. Drawings A-8 and A-5 details show an interior swale with a GCL and four (4)-inch diameter drain tile was constructed to drain the western side of Fill Area #2. Figure 13 in the RWP shows that outlet pipes were to be placed approximately 150' – 200' on center. Appendix H (Field Reports) includes reports that show construction of the drain tile and GCL placement (see Report #6, Report #7, and Report #10) and Appendix I contains photographs (see Photographs 7, 9, 11, and 12).*

Comment 09: It is recommended that Attachment E in AECOM's response should reference Drawings A-5, A-6, and A-8 in Appendix A of the CCR, because these drawings show details, piping, and drainage path information. In particular, Drawing A-6 indicates where swales, interior and exterior, are located, and where twelve (12)-inch PVC pipes were placed, presumably beneath the access roads. It is recommended that the report include a discussion of the drainage swales, locations where outlet pipes from the sand layer discharge, and where erosion has occurred and erosion control measures needed to be implemented. For instance, describe whether the flow through the outlet pipes is consistent with design expectations, explain the reason an infiltration gallery was subsequently constructed at the north end of the collection basin and the reason there are manholes along the western side of the collection basin and OSL Fill Area #2. In addition, the report should discuss storm water runoff to the north and south of Fill Area #1 and the infiltration gallery located near the south-east access road entrance.

Response 09: (Attachment D, Attachment N)

The drawing provided in the Response to Comments, Attachment E, dated April 25, 2018, provides an overview of storm water drainage from the OSL (repeated in **Attachment N**). Drawings A-5, A-6, and A-8 in **Attachment D** show details, piping, and more detailed drainage path information including swales and drainage piping beneath access roads nearer the OSL. These drawings are consistent with one another.

The drainage system was constructed, and functions, as designed. Following construction of the drainage system, no further erosion control measures were necessary. This is largely due to the gradual slopes of the landfill cap and the established vegetation of the surrounding stable CERCLA cap completed in the early 1990s.

The infiltration gallery was constructed at the north end of the Collection Basin so that storm water runoff would drain into the subsurface to eliminate ponding water and maintain the integrity of the clay cap.

Manholes and conveyance piping along the western side of the Collection Basin and OSL Fill Area #2 formerly routed surface water from the Settling Basin to the Industrial Canal. These manholes and conveyance piping are no longer functional now that the Settling Basin, Collection Basin, and Industrial Canal have been filled.

Storm water runoff to the north of Fill Area #1 largely flows to the Collection Basin infiltration gallery. A small amount drains towards the Settling Basin. Storm water runoff to the south of Fill Area #1 flows as it did prior to construction of the OSL cap. No erosion control measures have been necessary for storm water drainage following construction of the OSL cap.

The infiltration gallery near the south-east access road entrance was constructed in an effort to contain storm water runoff from construction activities in 2016. The infiltration gallery was not constructed as part of OSL capping activities. The design and operation of the infiltration gallery is being addressed as a Punch List item identified from the April 4, 2018 Pre-final Inspection.

Comment 10: *Response 17: The long-term monitoring schedule in the O&M Manual (Report #35 in Table 1 of AECOM's response letter) includes a table (Table 3) that contains a long-term monitoring schedule. This schedule lists the minimum number of events for monitoring different environmental media, i.e., soil, water, and air. According to this schedule, air monitoring was completed in 2006, but groundwater monitoring and soil visual inspections will not be completed until 2021. This same long-term monitoring schedule further shows that monitoring of soil by performing soil borings began in 1991, were performed again in 1996, and will continue every ten (10) years until 2026. The Overview of the RWP indicates that under the terms of the FACD, JM is required to implement measures and perform activities required for closure of the OSL and provide for O&M of the closed area for a minimum period of 30 years after completion of construction.*

<u>Comment 10</u>: It is recommended that the OSL Closure Report provide more explicit information regarding the visual inspections that will be conducted and the schedule for post-closure monitoring of the OSL, particularly for the identification of potential O&M problems, such as those listed in Table 1 of the O&M Manual. Similar to the RWP, the Introduction of the Closure Report says "Following closure, JM is required to implement measures and perform activities required for operation and maintenance (O&M) of the closed areas for a minimum period of 30 years after completion of construction." It further notes in this section that the OSL stopped accepting waste in 1998, the final cover was constructed in 2008, and it is considered to have a fully established final cover as documented in the Final Closure Report. The Final Closure Report was submitted in March of 2017, nearly ten (10) years after construction of the final cover, so the timeline for post-closure monitoring is unclear and the report needs to be more explicit, i.e., provide details on the monitoring, inspections, and documentation requirements that are specifically for post-closure of the OSL. It is further recommended that Section V (Performance of the Work), Paragraphs (14)(j)(3), (14)(j)(7), and (15)(f) of the FACD be reviewed, and then monitoring and O&M schedules should be coordinated with the USEPA for approval.

Response 10: An O&M Manual was submitted to the USEPA, the USEPA provided comments, and a Response to Comments was submitted to the USEPA on June 13, 2018. Long term care of the OSL will be performed in accordance with the O&M Manual and consistent with the requirements of the FACD. A revised O&M Manual encompassing all CERCLA obligations (not just those associated with the OSL) will be provided following approval of the Southwest Sites Closure Report to allow for any further modifications. The revised O&M Manual will include a detailed monitoring schedule for the OSL as well as other CERCLA units. Whenever possible, monitoring events will be completed for the CERCLA units at the same time for on-site efficiency.

The O&M Manual will include the following elements, at a minimum:

- Semi-annual visual inspections (April-May and September-October) of gravel access roads, perimeter security fence and gates, vegetative soil cover, and monitoring wells.
- Completion of semi-annual inspection logs.
- Maintenance, as required, of gravel access roads (due to erosion), perimeter security fence and gates (due to trespassers), vegetative soil cover (due to deep rooted vegetation (i.e. tree saplings) and burrowing animals), and monitoring wells (due to flaking paint).
- Groundwater monitoring
- Mowing

Comment 11: *Response 18: Section 5.0 (Documentation Requirements) of Appendix D of the Construction Compliance Plan (CCP) for the approved RWP contains a list of documentation requirements. For instance, the documentation was to include inspection observations, measurements, and testing results collected in the field for purposes of CQA, and the documentation was to be recorded daily in bound field books or on other field forms, as developed. At a minimum, the daily field report was to include the following information:*

- *Project name and date*
- *Weather conditions*
- *Personnel on site (oversight, contractor, subcontractor, other)*
- *Phase of construction in progress*
- *Status of health and safety issues*
- *Material and equipment on-site*
- *Inspections completed, noting deficiencies*
- *Tests performed with results including previous testing results, if appropriate*
- *Instructions regarding any required retesting*
- *Construction deficiencies*
- *Changed conditions and/or conflicts encountered*
- *Signature and title of inspector*

<u>Comment 11</u>: While Appendix H of Appendix E includes Field Reports, and these reports are beneficial and include most of the above-mentioned information, they do not include the field measurements as described in the CCP. In addition, there is limited to no information on deficiencies, retesting, or challenges, such as the construction of the drainage swale to the east of Fill Area #2, as described in Response 19. In regards to the lack of field measurements, one example can be observed from Report #3, which notes that from 7:10 am to 5:30 pm on 20 Aug. 2008 the inspector was on the site to continue barrier layer documentation and density test placed fill material to achieve design elevation. The field report indicates the inspector performed density tests from 9:00 am to 5:30 pm, but it does not say how many tests were performed. According to the data in Appendix F of Appendix E, only two (2) compaction tests were recorded for this date, but the nuclear meter utilization record included with AECOM's responses indicates nine (9) tests were performed on 20 Aug. 2008. Moreover, Field Report #1 says Area #1 barrier layer was documented with GPS, but the compaction results are provided using State Plane coordinates and there is no documentation of the Area #1 barrier layer with GPS coordinates. It is recommended that the Closure Report include all the field documentation and information required in accordance with the approved RWP, and any project modifications to the RWP were to be highlighted on the final construction drawings in the CCR (Appendix A of Appendix E).

Response 11: Documentation that construction of the OSL cap achieved the designed layer thickness and compaction requirements was dependent upon final surveying and density testing data. Intermediate measurements are not necessarily representative of final conditions. Compacting and testing continued until the compaction requirement was achieved, then the final result was recorded. There were no final deficiencies, retesting, or challenges that occurred during the construction of the OSL cap.

Construction of the drainage swale east of Fill Area #2 was performed as planned, in accordance with applicable regulations, and as described in Response 19 within the Response to Comments dated April 25, 2018. This detailed information regarding the construction of the east swale will be included in the revised Closure Report in Appendix E (Construction Completion Report) once all USEPA comments have been resolved.

August 20, 2008 represented the third day of compaction testing, according to the Nuclear Meter Utilization Record that has been cited. During this time, intermediate tests were taken to provide verbal compaction feedback to the contractor so that means and methods could be adjusted to achieve the necessary requirements. This likely occurred at other times during the project. This data was not recorded on a permanent record and does not represent a compaction deficiency, retesting, or challenge.

The GPS used for surveying was also used to identify the locations of acceptable compaction tests. Surveying data was downloaded from the GPS equipment when the equipment was returned to the office. This surveying data was saved in Illinois State Plane coordinates and used to complete the construction drawings provided in **Attachment D**. Electronic files downloaded from the GPS unit were combined to complete the final construction drawings.

The existing barrier layer limits were documented in design drawings and those drawings were used as a basis for developing the barrier layer elevations for field measurements. Only those areas where the barrier layer was disturbed were tested for compaction. Compaction testing was performed at a minimum frequency of one test per 20,000 square feet.

Comment 12: *Response 21*

<u>*Comment 12*</u>*: Is there any documentation of the removal of the non-asbestos containing shingle tabs and other roofing debris near or within the Johns Manville borrow pit?*

Response 12: (Attachment O) No non-asbestos containing shingle tabs and other roofing debris near or within the JM Borrow Pit were moved during OSL capping activities. The dredging limits were not expanded any nearer to boring B-3 than shown in Figure 09-02 of Appendix C of Appendix E of the Closure Report. Dredging was expanded to the south as shown in Figure 1 of Appendix B of Appendix E of the Closure Report to generate supplemental sand used for capping the OSL. This sand also met all project testing requirements. Note that soil sample B-3 on Figure 1 (from 2005) was not at the same location as soil sample B-3 on Figure 09-02 (from 2003); these were two different sampling locations. These figures are also included in **Attachment O**.

Comment 13: *Response 22*

See Comment 11.

Response 13: There were no final deficiencies, retesting, or challenges that occurred during the construction of the OSL cap. Any non-conforming test results were communicated verbally to the contractor so that they could improve means and methods. Only conforming test results were recorded.

If you have any questions, please contact me at (312) 861-4030.

Sincerely,

Tim Dull, P.E.
Senior Project Manager
timothy.dull@aecom.com

Attachments

Attachment A -	Responses 02 and 03: Revised Table 1 of the Closure Report
Attachment B -	Responses 03 and 04: Revised Table 1 and Table 2 from the Response to Comments dated April 25, 2018
Attachment C -	Responses 05 and 06: Relocated Barrier Material Drawing
Attachment D -	Response 05: Appendix A of Appendix E of Closure Report (Construction Documentation Drawings)
Attachment E -	Response 05: Appendix F of Appendix E of Closure Report (Barrier Layer Compaction Testing Results)
Attachment F -	Response 06: USEPA Approval of Phase II Remedial Work Plan dated April 14, 2008
Attachment G -	Response 06: Geotechnical Testing of Barrier Clay
Attachment H -	Response 06: Environmental Testing of Barrier Clay
Attachment I -	Response 06: Additional CQM Field Notes
Attachment J -	Response 06: Barrier Thickness Measurements
Attachment K -	Response 06: Inspection Reports 10, 11, and 12
Attachment L -	Response 06: Inspection Reports 23, 24, and 25
Attachment M -	Response 06: Appendix G of Appendix E of Closure Report (Protective Layer Compaction Testing Results)
Attachment N -	Response 09: Attachment E of Response to Comments dated April 25, 2018 (Storm Water Drawing)
Attachment O -	Response 12: Borrow Pit Figures

cc: Scott Myers, Johns Manville, Scott.Myers@jm.com (electronic copy only)
Brent Tracy, Johns Manville, brent.tracy@jm.com (electronic copy only)
Dave Peterson, DMP, dmpete@dmpete.cnc.net (electronic copy only)
Kirston Buczak, USACE, Kirston.A.Buczak@usace.army.mil (electronic copy only)
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Richard Saichek, USACE, Richard.E.Saichek@usace.army.mil (electronic copy only)

ATTACHMENT A

Responses 02 and 03: Revised Table 1 of the Closure Report

Table 1. Chronology of Events and Construction Activities

Date	Milestone
July 13, 1989 to August 7, 1989	As part of CERCLA Disposal Area closure activities, JM completed installation of a 6-inch sand layer over the sideslopes and base of the Miscellaneous Disposal Pit (MDP). After the sand layer installation, JM continued to place non-asbestos containing manufacturing wastes in the MDP.
December 20, 1989 to January 1990	A 15-inch clay cover was placed on the sideslopes of the MDP as part of closure activities for the CERCLA Disposal Area.
May 8, 1990	JM completed installation of an additional six-inch sand layer over regraded wastes of the MDP. Placement of the sand layer concluded USEPA requirements for closure of the MDP prior to the closure of the CERCLA Disposal Area.
September 1992	JM prepared and submitted an Initial Facility Report (IFR) to the Illinois Environmental Protection Agency (IEPA) describing the disposal activities that had taken place and the plans for future disposal in the On-Site Landfill. The IFR filed in 1992 indicated JM's intention to operate the On-Site Landfill as an inert waste landfill, based on leachate data for the wastes that were intended to be placed in the unit.
1992 to 1998	Non-asbestos-containing waste placement activities into the On-Site Landfill. Daily and interim cover was periodically placed over waste material in Fill Area #1 and Fill Area #2.
September 22, 2000	The U.S. EPA issued a Second ESD to the OCD. In the ESD, U.S. EPA determined that the On-Site Landfill should be closed.
April 2003	Thickness of interim clay barrier was placed over Fill Area #1 and Fill Area #2 was confirmed with 86 soil borings.
July 10, 2003	A Compliance Plan for closure of the On-site Landfill was submitted to the U.S. EPA and the Illinois Environmental Protection Agency (IEPA) regarding activities that are planned to meet the regulatory requirements for closure and to identify those requirements that cannot be met; and for which JM intends to seek adjusted standards from the IPCB. Appendix D (Construction Compliance Plan) of the Final Phase II Remedial Work Plan (RWP) (Revision 1) superseded the July 10, 2003 Compliance Plan.
September 6, 2005	Site Investigation Report submitted to U.S. EPA and IEPA.
February 8, 2008	Final Phase II Remedial Work Plan (Revision 0) submitted to U.S. EPA and IEPA.
April 14, 2008	U.S. EPA approval of Phase II Remedial Work Plan with modifications.
June 20, 2008	Final Phase II Remedial Work Plan (Revision 1) submitted to U.S. EPA and IEPA.
August 4, 2008 to November 7, 2008	Completed final capping of On-site Landfill. Achievement of design barrier layer sub-base grades, a 1-foot thick sand drainage layer and a 3-foot thick compacted clay final protective layer was completed as described in the Construction Completion Report (**Appendix E**).
November 8, 2008 to November 30, 2016	Operations and Maintenance for the final cover per the activities described in Section 4 of the Final Phase II RWP (Revision 1). Closure of the On-site Landfill was delayed due to changes to the Industrial Canal and Pumping Lagoon closure methods, and closure of the On-site Landfill was tabled until all the work described in the First Amended Consent Decree (FACD) was completed in November 2016.

ATTACHMENT B

Responses 03 and 04: Revised Table 1 and Table 2 of the Response to Comments dated April 25, 2018

Table 1 - On-Site Landfill Reporting Summary
On-Site Landfill - Johns Manville
Waukegan, Illinois

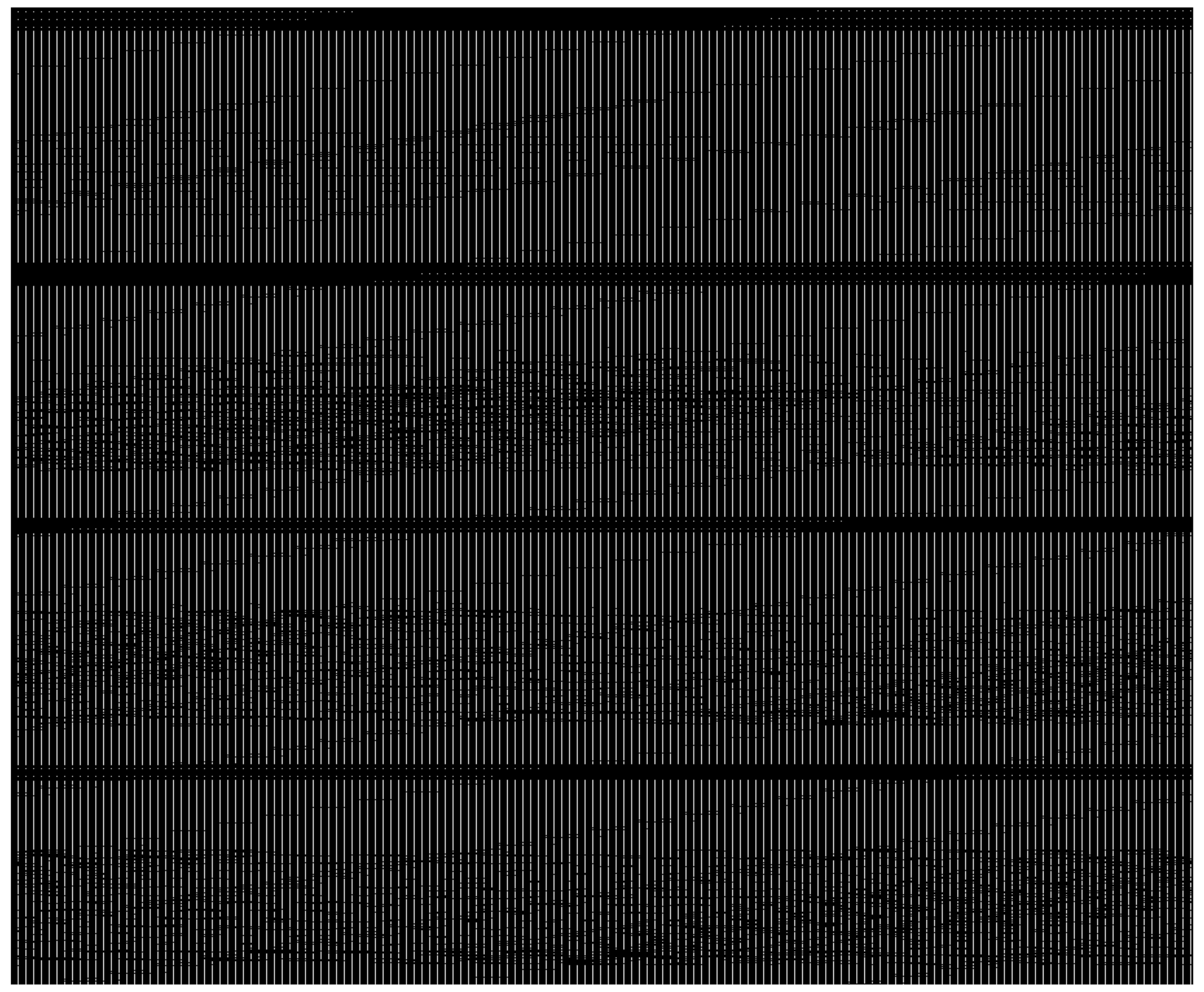
Reporting Programs	Report #	Title of Report	Date of Report
Consent Decrees	1	Consent Decree (1988)	3/18/1988
	2	First Amended Consent Decree	2/4/2004
815 Reports	3	2004 Annual Report for On-Site Permit Exempt "815" Facility	2/14/2005
	4	2005 Annual Report for On-Site Permit Exempt "815" Facility	2/14/2006
	5	2006 Annual Report for On-Site Permit Exempt "815" Facility	2/14/2007
	6	2007 Annual Report for On-Site Permit Exempt "815" Facility	2/14/2008
	7	2008 Annual Report for On-Site Permit Exempt "815" Facility	2/12/2009
	8	2009 Annual Report for On-Site Permit Exempt "815" Facility	2/12/2010
	9	2010 Annual Report for On-Site Permit Exempt "815" Facility	2/15/2011
	10	2011 Annual Report for On-Site Permit Exempt "815" Facility	2/14/2012
	11	2012 Annual Report for On-Site Permit Exempt "815" Facility	2/14/2013
	12	2013 Annual Report for On-Site Permit Exempt "815" Facility	2/14/2014
	13	2014 Annual Report for On-Site Permit Exempt "815" Facility	2/13/2015
	14	2015 Annual Report for On-Site Permit Exempt "815" Facility	2/3/2016
	15	2016 Annual Report for On-Site Permit Exempt "815" Facility	2/14/2017
	16	2017 Annual Report for On-Site Permit Exempt "815" Facility	2/13/2018
5-Year Post-Remedial Construction Reports	17	First 5-Year Post-Remedial Construction Ambient Air, Groundwater, and Surface Water Monitoring Event Report	4/1/1997
	18	Second 5-Year Post-Remedial Construction Ambient Air, Groundwater, and Surface Water Monitoring Event Report	6/7/2002
	19	Third 5-Year Post-Remedial Construction Ambient Air, Groundwater, and Surface Water Monitoring Event Report	3/21/2008
	20	Fourth 5-Year Post-Remedial Construction Ambient Air, Groundwater, and Surface Water Monitoring Event Report	11/22/2013
	21	Fifth 5-Year Post-Remedial Construction Ambient Air, Groundwater, and Surface Water Monitoring Event Report	2/16/2018
Adjusted Standard Petition and Order	22	Petition of Johns Manville for an Adjusted Standard from 35 Ill. Adm. Code 814, 811.310, 811.311, 811.318, 811.320	9/30/2004
	23	Petition of Johns Manville for an Adjusted Standard from: 35 Ill. Adm. Code 811.310, 811.311, 811.318, 811.320, and 814	12/6/2007
Miscellaneous Reports	24	Initial Facility Report	9/1/1992
	25	Operation and Maintenance Manual, Revision 1	10/11/2002
	26	On-Site Landfill Supporing Documents to Describe Historical Activities at Johns Manville Site	2/24/2003
	27	Proposed Final Cover Soil and Thickness On-Site Landfill	9/17/2004
	28	Site Investigation Report On-Site Landfill	9/26/2005
	29	Response to IEPA Comments on HELP Model (August 30, 2005) and Petition for Adjusted Standards	4/25/2006
	30	Request for U.S. EPA Opinion on Proposed Groundwater Monitoring Well Locations; On-Site Landfill	11/14/2006
	31	Final Phase II Remedial Work Plan Non-Asbestos Containing On-Site Landfill Closure	2/8/2008
	32	Final Phase II Remedial Work Plan Non-Asbestos Containing On-Site Landfill Closure, Revision 1	6/20/2008
	33	Operation and Maintenance Manual, Revision 2	5/18/2010
	34	Revised Quality Assurance Project Plan (Revision 1)	1/24/2013
	35	Non-Asbestos Containing ON-Site Landfill Construction Final Closure Report - State Facility ID# 0971900014	3/31/2017
	36	CERCLA Operations and Maintenance Manual, Revision 3	3/24/2018

Table 2 - Comparison of First Amended Consent Decree Requirements and the Remedial Work Plan
On-Site Landfill - Johns Manville
Waukegan, Illinois

Final Phase II Remedial Work Plan On-Site Landfill, Revision 1 (RWP) dated June 20, 2008		First Amended Consent Decree (FACD) or Regulatory Reference	Document Indicating Scope Change
Section 3.1 Final Cover	Barrier Soil Layer: minimum 12-inch vertical thickness of previously placed clay (as interim cover), or equivalent.	FACD Section III(4)(x) and V(15)(c).	Described in "Proposed Final Cover Soil and Thickness" (LFR, September 17, 2004) and equivalent cover per 35 IAC Part 811.314(b)(3)(A)(iii).
	Lateral Drainage Layer: 12-inch vertical thickness of sand overlying the Barrier Soil Layer.		
	Final Protective Layer: 36-inch vertical thickness of clay overlying the lateral drainage layer capable of supporting vegetation.		
Section 3.2 Landfill Gas Monitoring	Landfill gas monitoring plan and schedule and ambient air monitoring	35 IAC Part 811.310 and Adjusted Standard Order.	Adjusted Standard Order dated 12/6/2007 describes the reduction in landfill gas monitoring in multiple sections. Landfill gas management changes described in the 2012 Annual Report dated 2/14/2013.
Section 3.3 Leachate Monitoring and Management System	Includes design of leachate collection and monitoring system, leachate sampling and recovery.	35 IAC Part 811.309; Monitoring Results provided in On-Site Permit Exempt "815" Facility Reports to Illinios EPA.	Adjusted Standard Order dated 12/6/2007 describes changes to the "zone of attenuation" [Section 811.320(c)(1)] for leachate monitoring in multiple sections.
Section 3.4 Groundwater Monitoring System	Includes design of well construction, location, sampling plans and schedules, and contingency plan.	35 IAC Part 811.318 and 811.319, and the Adjusted Standard Order.	Adjusted Standard Order dated 12/6/2007 describes changes in well locations and groundwater quality monitoring in multiple sections.
Section 4.0 Operation and Maintenance Activities	Site Security - 6 ft high perimeter fence and swinging gates with key entry pads and signage.	35 IAC Part 811.11; Operations and Maintenance Manual, Revision 1; FACD.	CERCLA Operations and Maintenance Manual, Revision 3 dated 3/24/2018.
	Access Roads - Class I ro Class II access roads located along south and east boundaries of Site and between Fill Area #1 and Fill Area #2.		
	Inspection Frequency - A minimum frequency of quarterly inspections of the final cover and all vegetated areas for a period of five years.		
	Final Cover Maintenance - The final cover will consist of 36 inches of clay over a 12 inch sand drainage layer over a 12 inch minimum compacted clay barrier layer. The top surface of the final cover will be vegetated. The primary function of the final cover is to reduce water percolation and infiltration through the waste material and to route water drainage from the sand drainage layer to surface drainage. Normal O&M consists of regular inspections, tree/shrub removal, and erosion repair. Non-routine O&M includes differential settlement and slope repair. The required O&M period in accordance with the FACD is 30 years after completion of construction. After 30 years, U.S. EPA and the State of Illinois shall evaluate the need for further operation and maintenance as specified in the FACD.		
	Cover Inspections - On-Site Landfill cover inspections will consist of weekly inspections until vegetative cover is thriving, monthly inspections conducted thereafter, and inspections within 72 hours of heavy rainfall events. Inspections will be conducted concurrently with inspection requirements for the CERCLA vegetative cover in the approved O&M Manual for the JM Disposal Area.		
	Maintenance - The detailed construction of the vegetated soil cover for the site is described in Section 3.0. Replacement materials should meet the specifications established in Section 3.0.		
Section 5.0 Other Submittals	Construction Compliance Plan	FACD Section V(15)(b)	No update.
	Emergency and Contingency Plan		No update.
	Sampling and Analysis Plan		Revised Quality Assurance Project Plan (Revision 1) dated 1/24/2013 Section 3.3.
	Quality Assurance Project Plan Addendum		Revised Quality Assurance Project Plan (Revision 1) dated 1/24/2013.
	Site Health and Safety Plan		CERCLA Operations and Maintenance Manual, Revision 3 dated 3/24/2018.

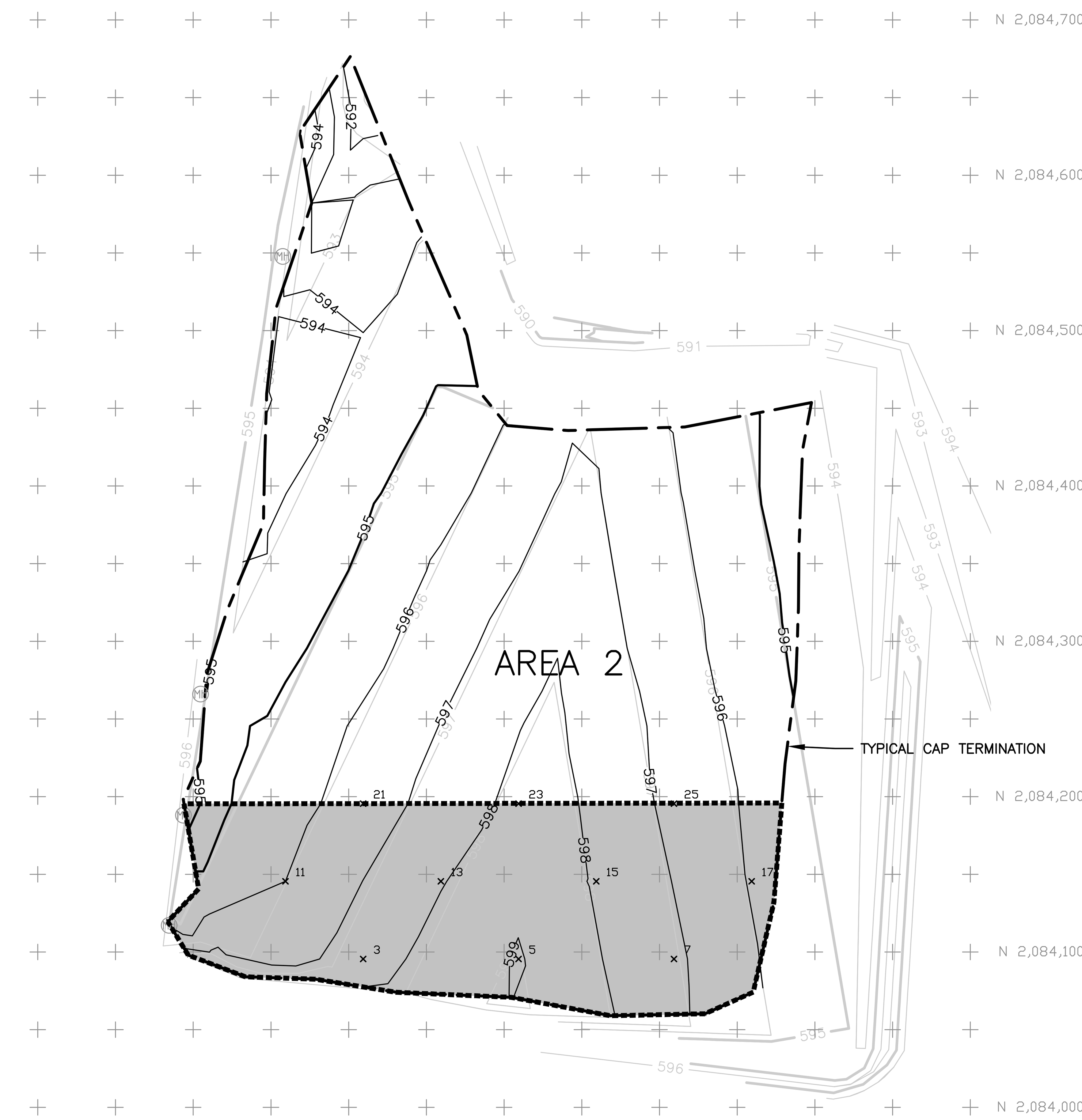
ATTACHMENT C

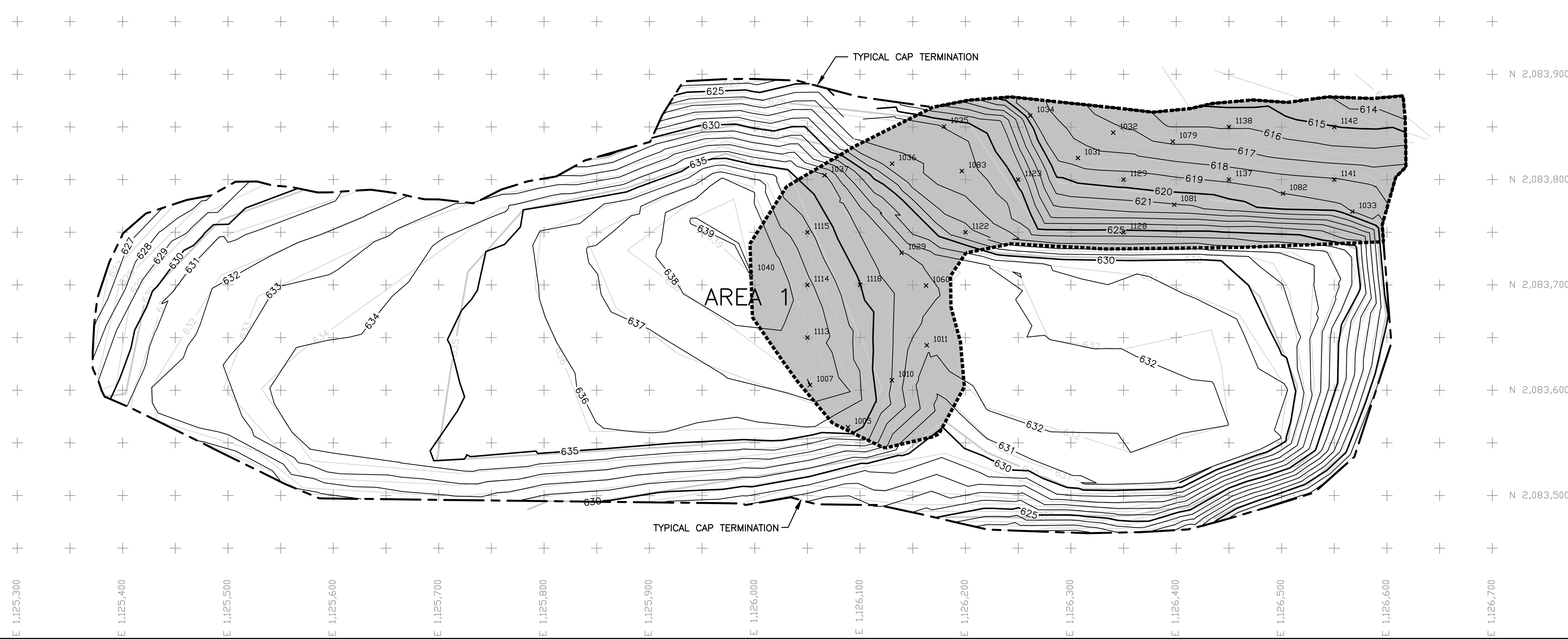
Response 06: Relocated Barrier Material Drawing



NOTES:

1. FILL AREA 1 CLAY RELOCATION AREA = 105,114 SQUARE FEET.
2. FILL AREA 2 CLAY RELOCATION AREA = 46,230 SQUARE FEET.
3. BARRIER THICKNESS TESTING FREQUENCY >1 SAMPLE/5,000 SQUARE FEET.
4. BARRIER THICKNESS TESTING COMPLETED BY AECOM ON AUGUST 15 AND 16, 2018 USING A GEOPROBE.





N

LEGEND

	LIMITS OF WASTE
594	DESIGN BARRIER LAYER CONTOURS
594	AS-BUILT BARRIER LAYER CONTOURS
×100	SURVEY POINT NUMBER AND LOCATION
	APPROXIMATE AREA OF CLAY RELOCATION

RELEASE	DATE:	BY:
Project Review		
5		
4		
3		
2		
1		
NO.	DATE:	BY:
DESCRIPTION		

REVISIONS

Johns Manville

CQM, INC.
Engineering–Surveying–Material Testing
2679 Continental Drive
Green Bay, WI 54311

Clay Barrier Layer Thickness

Area 1 & 2 Final Cover
Johns Manville Waukegan Plant
Waukegan, IL

DRAWN BY: WBE

DATE: Aug. 2018

SCALE: 1"=60'

DRAWING NO.

A–9

ATTACHMENT D

Response 05: Appendix A of Appendix E of Closure Report (Construction Documentation Drawings)

Johns Manville

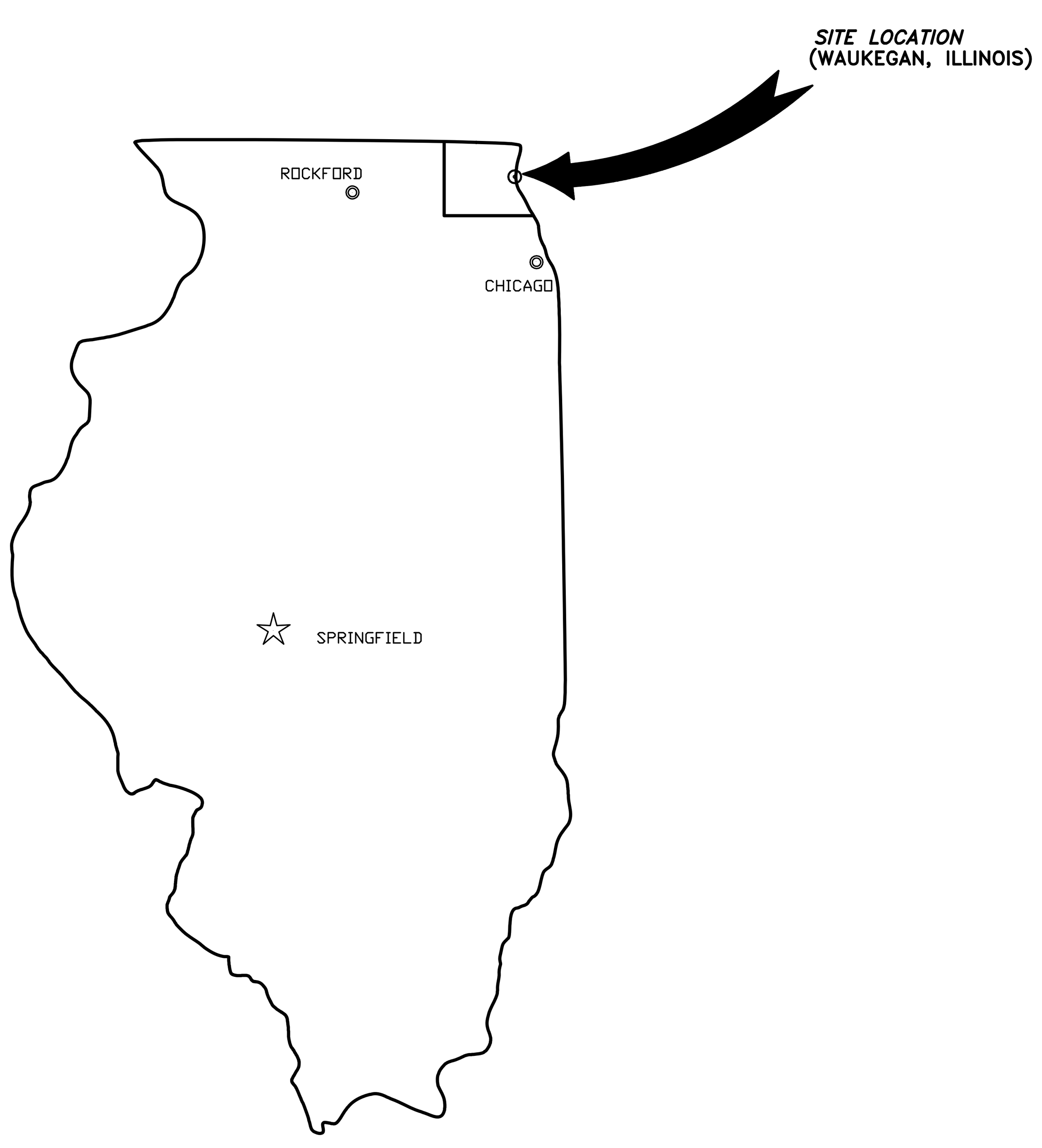
CONSTRUCTION DOCUMENTATION DRAWINGS

AREA 1 & 2 FINAL COVER

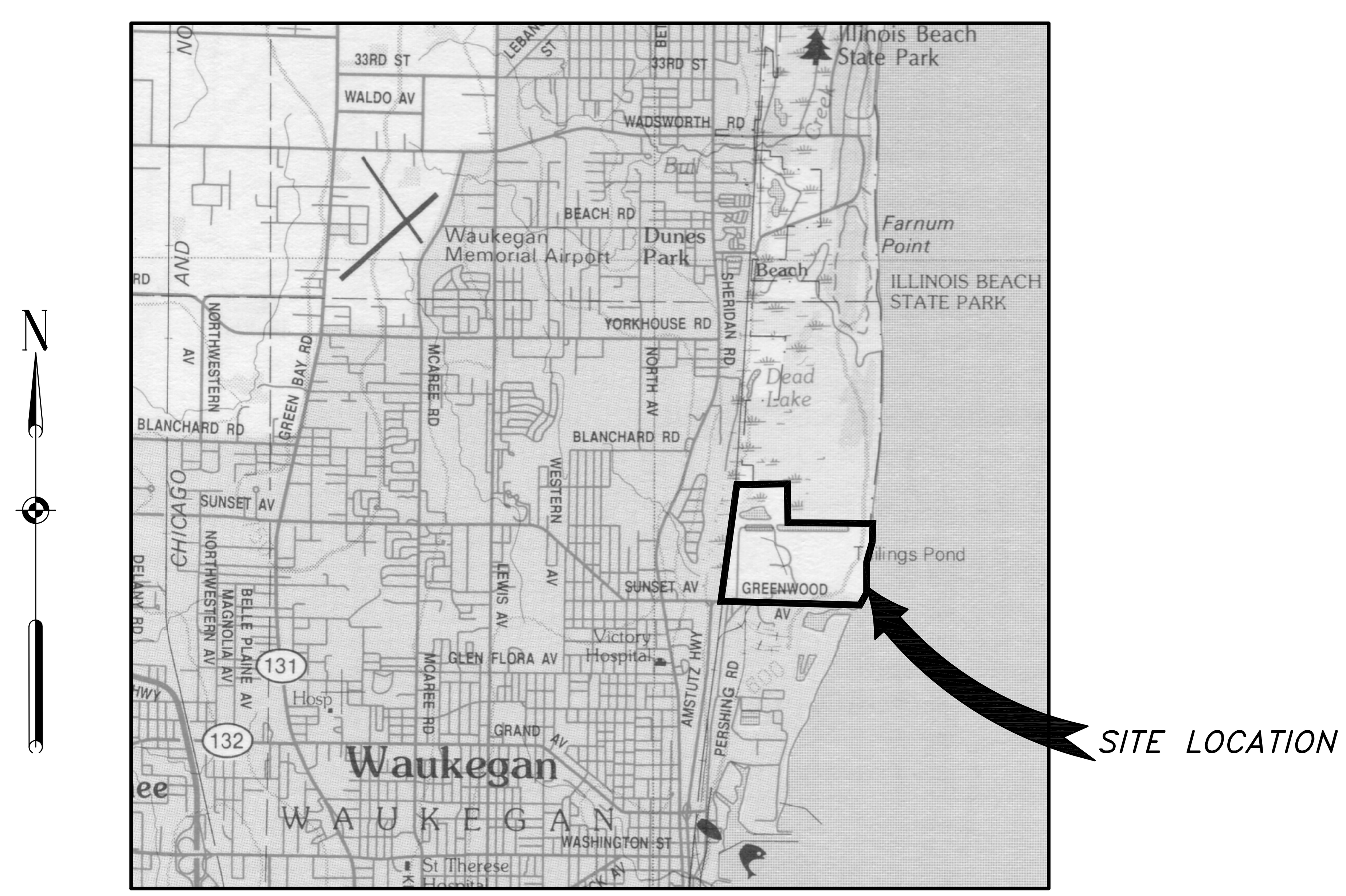
JOHNS MANVILLE WAUKEGAN PLANT

WAUKEGAN, ILLINOIS

JANUARY 2009



STATE LOCATION MAP



SITE LOCATION MAP – WAUKEGAN, ILLINOIS
NOT TO SCALE

INDEX	
DRAWING NO	DESCRIPTION
A–1	TITLE SHEET
A–2	EXISTING CONDITIONS
A–3	BARRIER LAYER FILL/DENSITY TEST LOCATIONS
A–4	BARRIER LAYER
A–5	SAND DRAINAGE LAYER AND PIPING
A–6	PROTECTIVE LAYER
A–7	PROTECTIVE LAYER DENSITY TEST LOCATIONS
A–8	DETAILS

FRANK R. STURZL
062-051026
LICENSED PROFESSIONAL ENGINEER
3-23-17

Drawings Prepared By:

CQM, INC.

Engineering–Surveying–Material Testing

CLAY STOCKPILE	
STOCKPILE NO.	APPROXIMATE YARDAGE
1	25,972 C.Y.
2	57,340 C.Y.
3	18,447 C.Y.
4	8,159 C.Y.
5	31,738 C.Y.
6	23,354 C.Y.
7	13,812 C.Y.
8	38,715 C.Y.
9	437 C.Y.
10	21,139 C.Y.
11	36,805 C.Y.
12	EXCAVATED
13	2,790 C.Y.
14	1,322 C.Y.
15	5,937 C.Y.
16	18,037 C.Y.
17	588 C.Y.
TOTAL:	304,592 C.Y.

TOPSOIL STOCKPILE	
STOCKPILE NO.	APPROXIMATE YARDAGE
1	2,753 C.Y.
2	151 C.Y.
3	1,549 C.Y.
4	13,748 C.Y.
TOTAL:	18,201 C.Y.

CRUSHED CONCRETE	
STOCKPILE NO.	APPROXIMATE YARDAGE
1	3,169 C.Y.
2	298 C.Y.
TOTAL:	3,467 C.Y.

SAND STOCKPILE	
STOCKPILE NO.	APPROXIMATE YARDAGE
1	5,020 C.Y.
2	14,273 C.Y.
TOTAL:	19,293 C.Y.

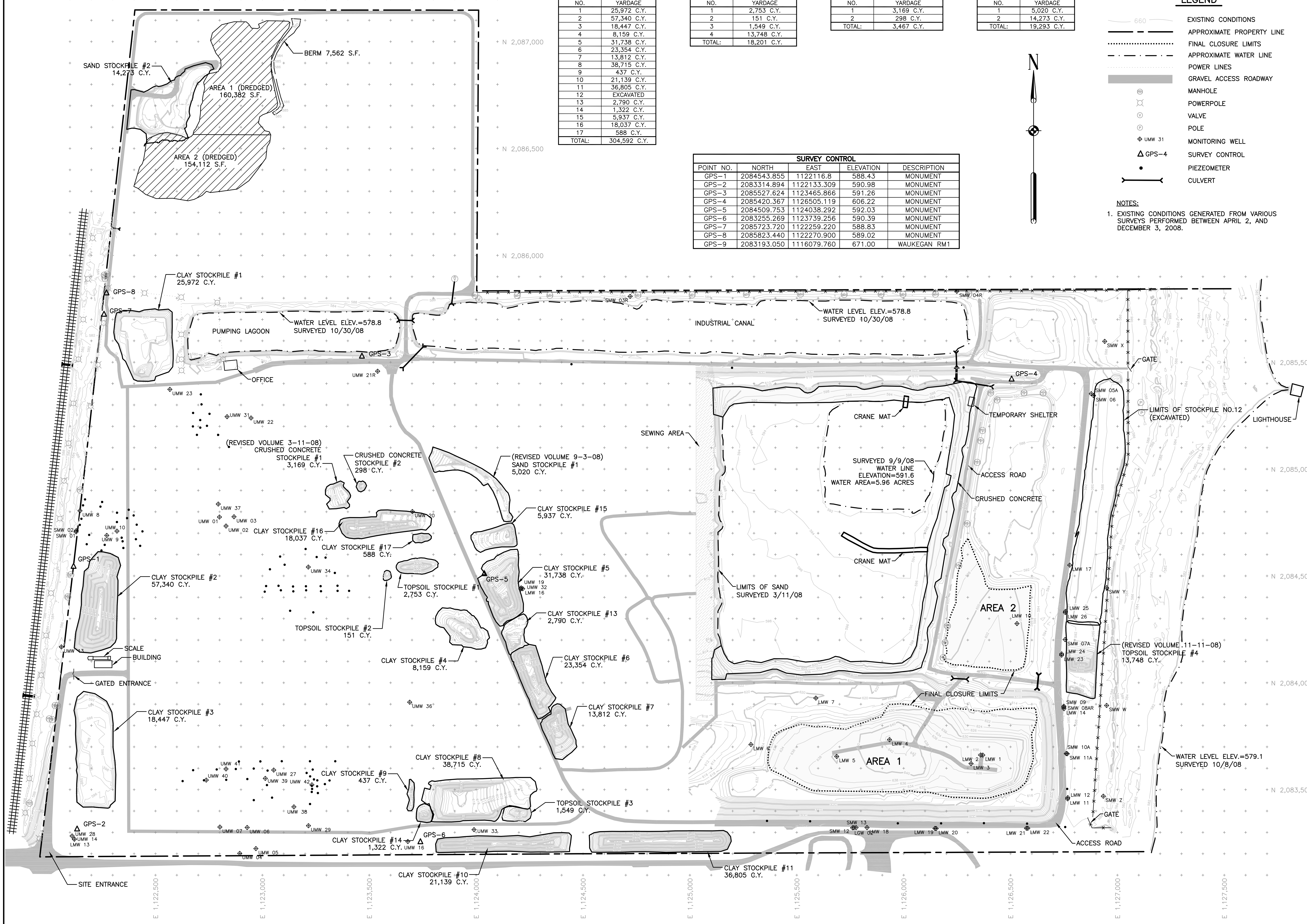
SURVEY CONTROL				
POINT NO.	NORTH	EAST	ELEVATION	DESCRIPTION
GPS-1	2084543.855	1122116.8	588.43	MONUMENT
GPS-2	2083314.894	1122133.309	590.98	MONUMENT
GPS-3	2085527.624	1123465.866	591.26	MONUMENT
GPS-4	2085420.367	1126505.119	606.22	MONUMENT
GPS-5	2084509.753	1124038.292	592.03	MONUMENT
GPS-6	2083255.269	1123739.256	590.39	MONUMENT
GPS-7	2085723.720	1122259.220	588.83	MONUMENT
GPS-8	2085823.440	1122270.900	589.02	MONUMENT
GPS-9	2083193.050	1116079.760	671.00	WAUKEGAN RM1

LEGEND

- EXISTING CONDITIONS
- APPROXIMATE PROPERTY LINE
- FINAL CLOSURE LIMITS
- APPROXIMATE WATER LINE
- POWER LINES
- GRAVEL ACCESS ROADWAY
- MANHOLE
- POWERPOLE
- VALVE
- POLE
- UMW 31 MONITORING WELL
- GPS-4 SURVEY CONTROL
- PIEZOMETER
- CULVERT

NOTES:

1. EXISTING CONDITIONS GENERATED FROM VARIOUS SURVEYS PERFORMED BETWEEN APRIL 2, AND DECEMBER 3, 2008.



RELEASE	DATE:	BY:
Project Review		
5		
4		
3		
2		
1		
NO.	DATE:	BY:
DESCRIPTION		

REVISIONS

JM Johns Manville

CQM, INC.
Engineering–Surveying–Material Testing
2679 Continental Drive
Green Bay, WI 54311

Existing Conditions

Construction Documentation Drawings
Area 1 & 2 Final Cover
Johns Manville Waukegan Plant
Waukegan, IL

DRAWN BY: WBE

DATE: Jan. 2009

SCALE: 1"=200'

DRAWING NO.

A-2

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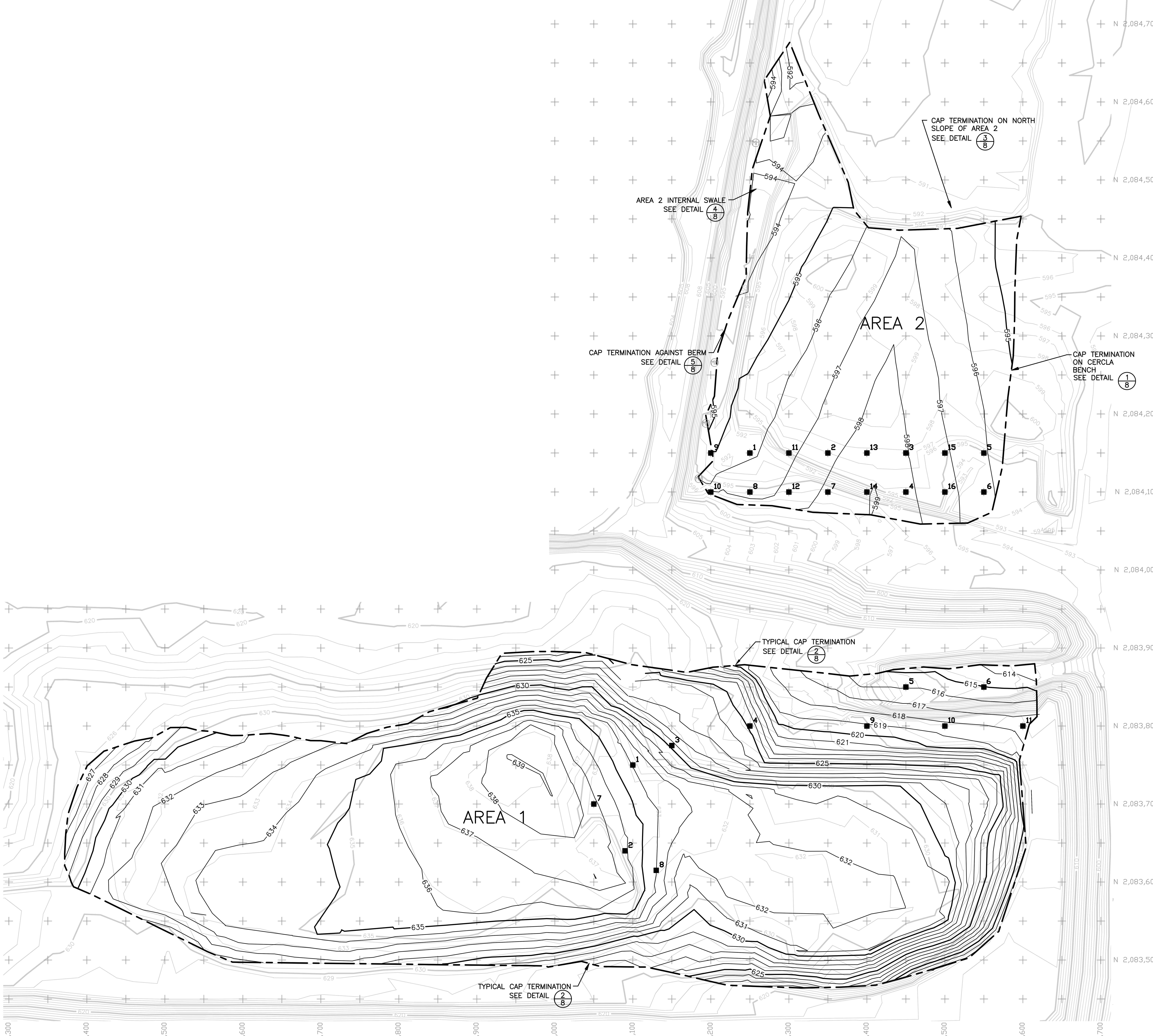


N

LEGEND

LIMITS OF WASTE

594 EXISTING CONDITIONS CONTOURS

632 AS-BUILT BARRIER LAYER CONTOURS

10 DENSITY TEST LOCATION AND NUMBER

NOTES:

1. APPENDIX D OF THE DOCUMENTATION REPORT SUMMARIZES THE FIELD MOISTURE/DENSITY TESTING PERFORMED ON THE BARRIER LAYER MATERIAL.

RELEASE	DATE:	BY:
Project Review		
5		
4		
3		
2		
1		
NO.	DATE:	BY:
DESCRIPTION		

REVISIONS

JM Johns Manville

CQM, INC.
Engineering-Surveying-Material Testing
2679 Continental Drive
Green Bay, WI 54311

Barrier Layer Fill Density Test Locations

Construction Documentation Drawings
Area 1 & 2 Final Cover
Johns Manville Waukegan Plant
Waukegan, IL

DRAWN BY: WBE

DATE: Jan. 2009

SCALE: 1"=60'

DRAWING NO.

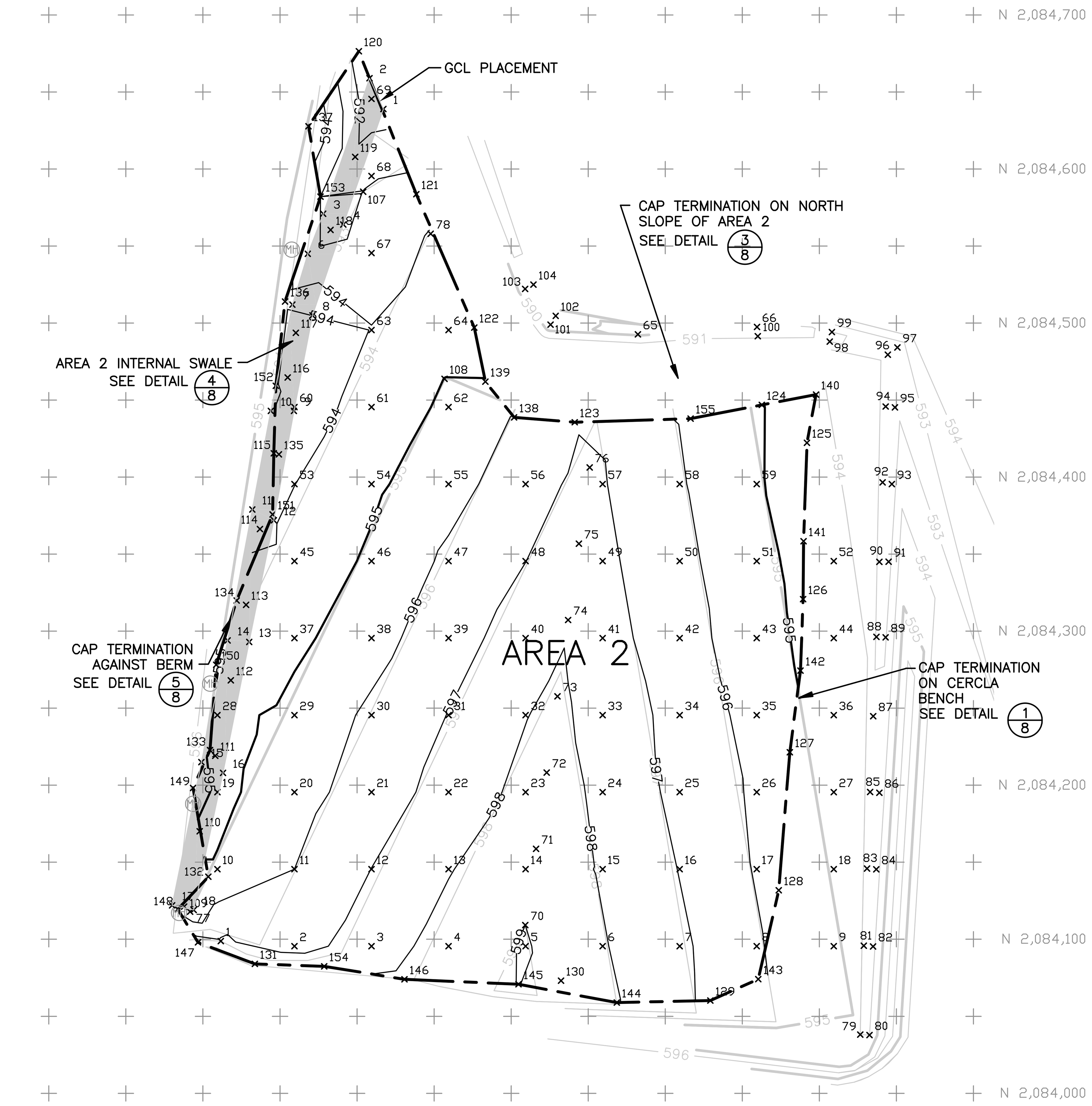
A-3

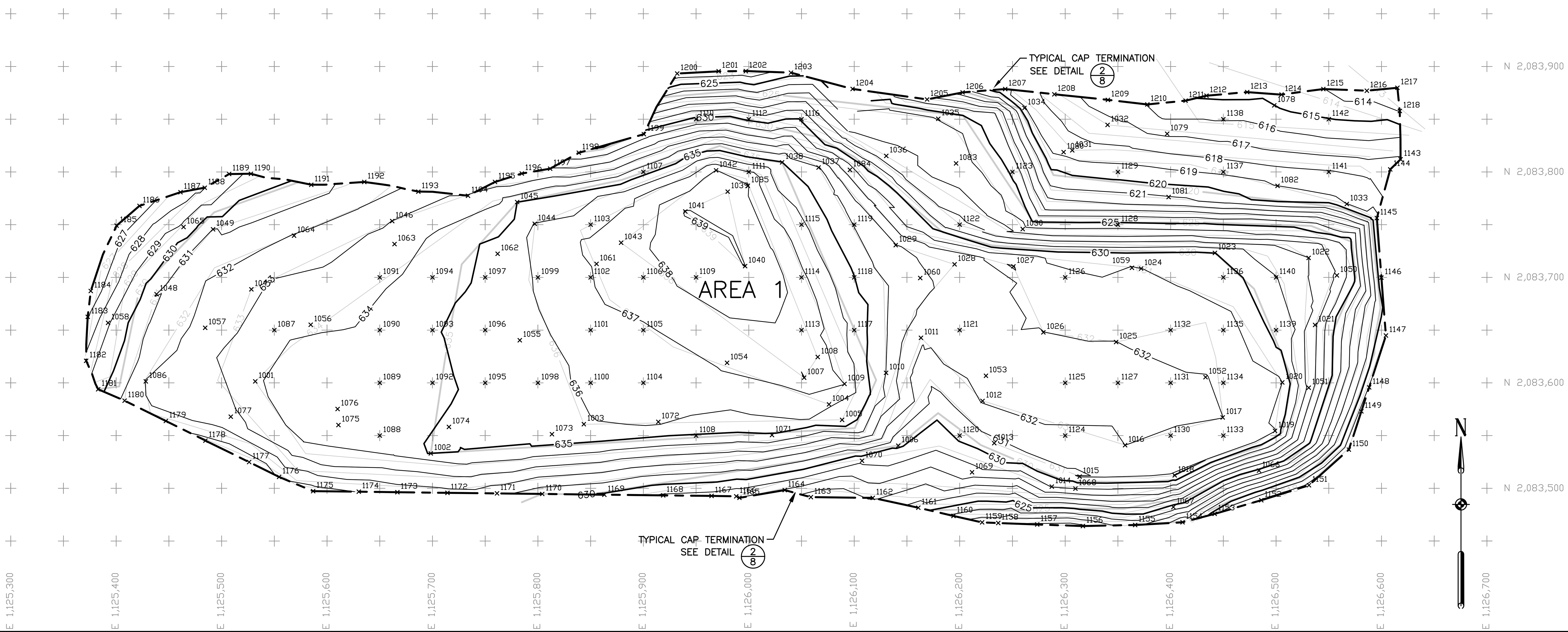
Area 1 Barrier Layer

Point No.	Coordinate North	Coordinate East	Design Barrier Elevation	Record Barrier Elevation	Delta	Description
GROUP1PLACEHOLDER
1074	2083558.2	1125715.6	635.10	635.10	0.00	
1075	2083560.0	1125610.8	634.24	634.27	0.03	
1076	2083575.2	1125610.0	634.25	634.25	0.00	
1077	2083567.9	1125508.7	632.39	632.73	0.34	
1078	2083863.1	1126498.3	614.64	614.69	0.05	
1079	2083836.2	1126396.7	616.70	616.74	0.04	
1080	2083818.8	1126298.5	618.36	618.55	0.19	
1081	2083776.2	1126398.1	620.91	621.09	0.18	
1082	2083786.8	1126501.4	618.98	619.09	0.11	
1083	2083808.1	1126196.6	626.50	626.54	0.04	
1084	2083802.0	1126095.9	631.59	631.59	0.00	
1085	2083786.9	1125999.1	638.03	638.08	0.05	
1086	2083601.4	1125428.1	632.02	632.06	0.04	
1087	2083650.00	1125550.00	NA	633.64	NA	
1088	2083550.00	1125650.00	NA	634.13	NA	
1089	2083600.00	1125650.00	NA	634.39	NA	
1090	2083650.00	1125650.00	NA	634.24	NA	
1091	2083700.00	1125650.00	NA	633.85	NA	
1092	2083600.00	1125700.00	NA	634.80	NA	
1093	2083650.00	1125700.00	NA	634.61	NA	
1094	2083700.00	1125700.00	NA	634.54	NA	
1095	2083600.00	1125750.00	NA	635.16	NA	
1096	2083650.00	1125750.00	NA	635.18	NA	
1097	2083700.00	1125750.00	NA	635.29	NA	
1098	2083600.00	1125800.00	NA	635.71	NA	
1099	2083700.00	1125800.00	NA	636.06	NA	
1100	2083600.00	1125850.00	NA	636.03	NA	
1101	2083650.00	1125850.00	NA	636.40	NA	
1102	2083700.00	1125850.00	NA	636.86	NA	
1103	2083750.00	1125850.00	NA	636.93	NA	
1104	2083600.00	1125900.00	NA	636.41	NA	
1105	2083650.00	1125900.00	NA	636.81	NA	
1106	2083700.00	1125900.00	NA	637.78	NA	
1107	2083800.00	1125900.00	NA	634.94	NA	
1108	2083550.00	1125950.00	NA	634.90	NA	
1109	2083700.00	1125950.00	NA	638.30	NA	
1110	2083850.00	1125950.00	NA	629.16	NA	
1111	2083800.00	1126000.00	NA	637.10	NA	
1112	2083850.00	1126000.00	NA	629.34	NA	
1113	2083650.00	1126050.00	NA	637.78	NA	
1114	2083700.00	1126050.00	NA	637.11	NA	
1115	2083750.00	1126050.00	NA	635.27	NA	
1116	2083850.00	1126050.00	NA	627.67	NA	
1117	2083650.00	1126100.00	NA	635.10	NA	
1118	2083700.00	1126100.00	NA	634.46	NA	
1119	2083750.00	1126100.00	NA	633.92	NA	
1120	2083550.00	1126200.00	NA	629.85	NA	
1121	2083650.00	1126200.00	NA	632.21	NA	
1122	2083750.00	1126200.00	NA	628.28	NA	
1123	2083800.00	1126250.00	NA	624.69	NA	
1124	2083550.00	1126300.00	NA	631.69	NA	
1125	2083600.00	1126300.00	NA	631.86	NA	
1126	2083700.00	1126300.00	NA	631.40	NA	
1127	2083600.00	1126350.00	NA	631.93	NA	
1128	2083750.00	1126350.00	NA	625.20	NA	
1129	2083800.00	1126350.00	NA	619.40	NA	
1130	2083550.00	1126400.00	NA	631.90	NA	
1131	2083600.00	1126400.00	NA	631.97	NA	
1132	2083650.00	1126400.00	NA	631.94	NA	
1133	2083550.00	1126450.00	NA	631.61	NA	
1134	2083600.00	1126450.00	NA	631.74	NA	
1135	2083650.00	1126450.00	NA	631.47	NA	
1136	2083700.00	1126450.00	NA	630.30	NA	
1137	2083800.00	1126450.00	NA	619.01	NA	
1138	2083850.00	1126450.00	NA	615.14	NA	
1139	2083650.00	1126500.00	NA	629.66	NA	
1140	2083700.00	1126500.00	NA	629.29	NA	
1141	2083800.00	1126550.00	NA	618.40	NA	
1142	2083850.00	1126550.00	NA	614.68	NA	
1143	2083811.99	1126618.09	See Note 2	617.12	NA	Limits of Waste
1144	2083802.34	1126608.35	617.40	617.40	0.00	Limits of Waste
1145	2083756.31	1126595.58	618.84	619.11	0.27	Limits of Waste
1146	2083699.78	1126599.97	619.00	619.42	0.42	Limits of Waste
1147	2083644.90	1126604.19	619.47	619.56	0.09	Limits of Waste
1148	2083595.75	1126588.31	618.65	618.88	0.23	Limits of Waste
1149	2083572.99	1126580.93	618.27	618.53	0.26	Limits of Waste
1150	2083536.75	1126569.08	617.93	618.10	0.17	Limits of Waste
1151	2083502.89	1126531.21	617.59	617.66	0.07	Limits of Waste
1152	2083488.72	1126486.04	617.95	618.04	0.09	Limits of Waste
1153	2083475.81	1126441.88	619.25	619.44	0.19	Limits of Waste
1154	2083467.80	1126411.32	620.93	621.04	0.11	Limits of Waste
1155	2083465.25	1126366.39	623.31	623.34	0.03	Limits of Waste
1156	2083464.28	1126316.87	621.69	621.80	0.11	Limits of Waste
1157	2083465.74	1126273.50	621.79	621.81	0.02	Limits of Waste
1158	2083467.13	1126236.51	622.00	622.28	0.28	Limits of Waste
1159	2083467.69	1126221.24	622.32	622.38	0.06	Limits of Waste
1160	2083473.85	1126194.06	623.54	623.72	0.18	Limits of Waste
1161	2083481.62	1126160.75	625.48	625.58	0.10	Limits of Waste
1162	2083490.97	1126117.53	627.00	627.20	0.20	Limits of Waste
1163	2083491.64	1126058.91	627.81	626.91 *	0.90	Limits of Waste
1164	2083498.29	1126034.09	See Note 2	627.33	NA	Limits of Waste
1165	2083491.04	1125991.12	627.56	627.98	0.42	Limits of Waste
1166	2083492.47	1125988.07	628.00	628.15	0.15	Limits of Waste
1167	2083492.79	1125964.64	628.25	628.62	0.37	Limits of Waste
1168	2083493.32	1125918.73	628.74	628.88	0.14	Limits of Waste
1169	2083493.97	1125863.00	629.70	629.85	0.15	Limits of Waste
1170	2083494.68	1125804.05	630.00	630.34	0.34	Limits of Waste
1171	2083495.19	1125761.20	631.18	631.31	0.13	Limits of Waste
1172	2083495.70	1125714.18	631.67	631.70	0.03	Limits of Waste
1173	2083496.36	1125666.67	631.30	631.46	0.16	Limits of Waste
1174	2083496.79	1125630.07	631.02	631.04	0.02	Limits of Waste
1175	2083497.33	1125586.80	630.47	630.59	0.12	Limits of Waste
1176	2083510.84	1125554.51	631.15	631.15	0.00	Limits of Waste
1177	2083524.89	1125526.12	631.40	631.47	0.07	Limits of Waste
1178	2083545.26	1125484.64	See Note 2	630.88	NA	Limits of Waste
1179	2083563.87	1125447.08	631.53	631.54	0.01	Limits of Waste
1180	2083583.16	1125407.99	631.20	631.23	0.03	Limits of Waste
1181	2083593.87	1125382.95	See Note 2	630.05	NA	Limits of Waste
1182	2083620.87	1125371.52	See Note 2	628.52	NA	Limits of Waste
1183	2083662.64	1125373.04	See Note 2	626.62	NA	Limits of Waste
1184	2083687.07	1125375.95	625.70	626.69	0.99	Limits of Waste
1185	2083749.14	1125400.42	See Note 2	626.35	NA	Limits of Waste
1186	2083767.76	1125422.09	See Note 2	626.06	NA	Limits of Waste
1187	2083780.81	1125461.03	See Note 2	627.76	NA	Limits of Waste
1188	2083785.01	1125484.04	628.85	628.87	0.02	Limits of Waste
1189	2083798.05	1125507.11	See Note 2	629.35	NA	Limits of Waste
1190	2083798.22	1125527.76	630.00	630.04	0.04	Limits of Waste
1191	2083787.80	1125585.03	630.40	630.41	0.01	Limits of Waste
1192	2083790.48	1125635.30	See Note 2	631.02	NA	Limits of Waste
1193	2083781.33	1125686.60	632.40	632.41	0.01	Limits of Waste
1194	2083777.37	1125733.67	633.10	633.11	0.01	Limits of Waste
1195	2083790.51	1125759.32	632.60	632.63	0.03	Limits of Waste
1196	2083798.46	1125784.70	632.10	632.10	0.00	Limits of Waste
1197	2083803.10	1125811.58	631.97	632.10	0.13	Limits of Waste
1198	2083818.15	1125838.74	See Note 2	630.14	NA	Limits of Waste
1199	2083835.81	1125900.49	630.38	630.49	0.11	Limits of Waste
1200	2083893.30	1125932.09	623.40	623.44	0.04	Limits of Waste
1201	2083895.43	1125971.39	See Note 2	622.76	NA	Limits of Waste
1202	2083895.62	1125997.12	See Note 2	623.26	NA	Limits of Waste
1203	2083894.04	1126039.98	See Note 2	624.41	NA	Limits of Waste
1204	2083878.72	1126098.41	625.80	625.96	0.16	Limits of Waste
1205	2083868.73	1126169.02	623.57	623.58	0.01	Limits of Waste
1206	2083875.42	1126202.71	See Note 2	621.44	NA	Limits of Waste
1207	2083878.55	1126243.18	See Note 2	619.24	NA	Limits of Waste
1208	2083873.61	1126289.71	See Note 2	617.71	NA	Limits of Waste
1209	2083868.30	1126340.53	616.50	616.53	0.03	Limits of Waste
1210	2083864.01	1126377.96	615.60	615.85	0.25	Limits of Waste
1211	2083867.55	1126414.25	614.98	615.91	0.93	Limits of Waste
1212	2083872.29	1126434.07	614.55	614.57	0.02	Limits of Waste
1213	2083875.68	1126472.67	614.45	614.49	0.04	Limits of Waste
1214	2083873.34	1126505.25	614.46	614.47	0.01	Limits of Waste
1215	2083878.61	1126544.88	613.75	613.78	0.03	Limits of Waste
1216	2083877.02	1126586.17	613.45	613.47	0.02	Limits of Waste
1217	2083879.77	1126615.12	612.71	612.73	0.02	Limits of Waste
1218	2083857.80	1126617.40	613.57	613.61	0.04	Limits of Waste

NOTES:

1. * REPRESENTS RECORD BARRIER LAYER ELEVATION APPROVED BY LEVINE FRICKE (LFR), ELGIN, ILLINOIS.
2. POINTS 1143, 1164, 1178, 1181, 1182, 1183, 1185, 1186, 1187, 1189, 1192, 1198, 1201, 1202, 1203, 1206, 1207 AND, 1208 RECORD BARRIER LAYER ELEVATIONS APPROVED BY LFR.
3. TOP OF SAND ELEVATION MODIFIED 8/21/08 TO DEPICT 1.0 ABOVE RECORD BARRIER LAYER ELEVATION.





Area 2 Barrier Layer

AREA2PLACEHOLDER

LEGEND

- LIMITS OF WASTE
- DESIGN BARRIER LAYER CONTOURS (594)
- AS-BUILT BARRIER LAYER CONTOURS (594)
- SURVEY POINT NUMBER AND LOCATION (×100)

RELEASE	DATE:	BY:
Project Review		
5		
4		
3		
2		
1		
NO.	DATE:	BY:
DESCRIPTION		

REVISIONS

JM Johns Manville

CQM, INC.
Engineering–Surveying–Material Testing
2679 Continental Drive
Green Bay, WI 54311

Barrier Layer

Construction Documentation Drawings
Area 1 & 2 Final Cover
Johns Manville Waukegan Plant
Waukegan, IL

DRAWN BY: WBE

DATE: Jan. 2009

SCALE: 1"=60'

DRAWING NO. A–4

Area 1 Sand Drainage Layer

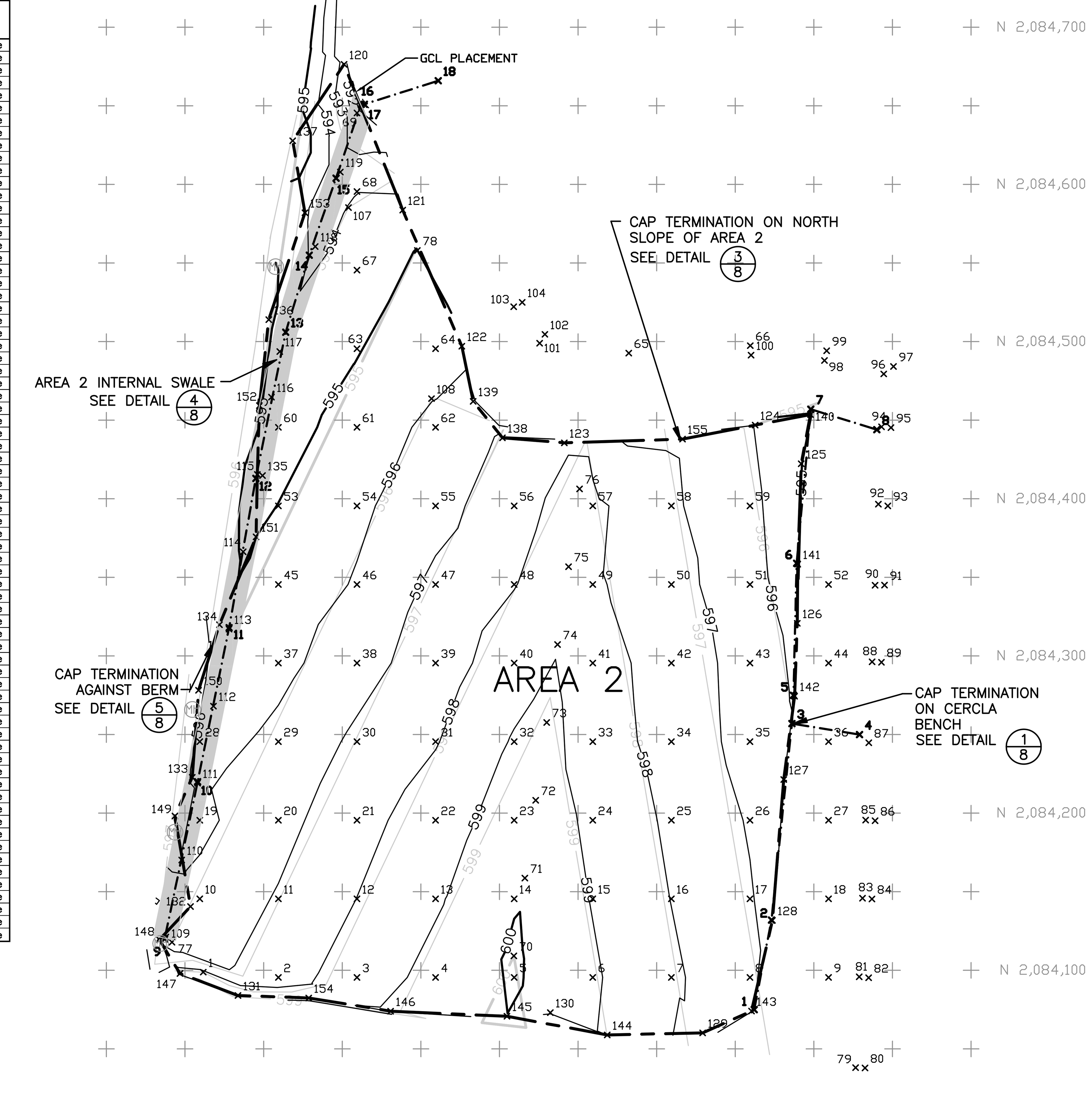
Point No.	Coordinate North	Coordinate East	Design Sand Elevation	Record Sand Elevation	Delta	Sand Thickness	Description
1001	2083601.39	1125531.87	635.03	635.10	0.07	1.07	
1002	2083533.08	1125698.37	636.10	636.15	0.05	1.05	
1003	2083560.80	1125843.53	637.02	637.06	0.04	1.04	
1004	2083579.59	1126076.07	638.01	638.02	0.01	1.01	
1005	2083564.95	1126088.45	637.06	636.97	−0.09	0.91	
1006	2083540.43	1126141.71	631.15	631.21	0.06	1.06	
1007	2083604.91	1126052.48	639.02	639.06	0.04	1.04	
1008	2083624.47	1126065.40	639.00	639.01	0.01	1.01	
1009	2083599.05	1126090.72	638.01	638.02	0.01	1.01	
1010	2083609.53	1126130.18	635.00	635.00	0.00	1.00	
1011	2083642.70	1126163.22	633.22	633.13	−0.09	0.91	
1012	2083582.86	1126221.64	633.07	633.00	−0.07	0.93	
1013	2083542.79	1126232.77	632.11	632.03	−0.08	0.92	
1014	2083501.65	1126287.37	630.10	630.20	0.10	1.10	
1015	2083511.17	1126313.73	632.12	632.18	0.06	1.06	
1016	2083540.89	1126356.84	633.00	633.01	0.01	1.01	
1017	2083567.23	1126449.45	633.01	633.02	0.01	1.01	
1018	2083512.29	1126403.94	632.08	632.24	0.16	1.16	
1019	2083554.56	1126499.06	632.03	632.20	0.17	1.17	
1020	2083600.45	1126505.89	632.01	632.20	0.19	1.19	
1021	2083654.86	1126537.02	628.16	628.26	0.10	1.10	
1022	2083718.54	1126530.96	629.00	629.03	0.03	1.03	
1023	2083723.20	1126442.00	631.02	631.02	0.00	1.00	
1024	2083708.44	1126372.04	632.02	632.13	0.11	1.11	
1025	2083638.68	1126348.35	633.01	632.93	−0.08	0.92	
1026	2083647.94	1126279.35	633.01	633.02	0.01	1.01	
1027	2083710.45	1126250.93	633.03	632.96	−0.07	0.93	
1028	2083712.42	1126195.19	634.03	633.93	−0.10	0.90	
1029	2083730.55	1126139.31	634.07	634.15	0.08	1.08	
1030	2083745.81	1126259.75	627.27	627.29	0.02	1.02	
1031	2083820.50	1126306.73	619.22	619.32	0.10	1.10	
1032	2083844.61	1126340.26	617.74	617.76	0.02	1.02	
1033	2083769.60	1126567.10	620.02	620.22	0.20	1.20	
1034	2083860.69	1126261.48	620.16	620.18	0.02	1.02	
1035	2083850.41	1126179.65	627.16	627.06	−0.10	0.90	
1036	2083815.16	1126130.35	628.16	628.32	0.16	1.16	
1037	2083804.16	1126066.18	635.10	635.11	0.01	1.01	
1038	2083809.12	1126031.54	636.01	636.09	0.08	1.08	
1039	2083781.32	1125980.01	640.13	640.05	−0.08	0.92	
1040	2083710.71	1125996.50	640.01	640.07	0.06	1.06	
1041	2083762.53	1125939.80	640.05	640.00	−0.05	0.95	
1042	2083801.44	1125968.99	639.02	639.02	0.00	1.00	
1043	2083732.90	1125878.87	639.01	639.01	0.00	1.00	
1044	2083750.79	1125797.02	637.04	637.11	0.07	1.07	
1045	2083771.44	1125780.31	636.02	636.02	0.00	1.00	
1046	2083753.38	1125661.76	634.02	634.07	0.05	1.05	
1047	2083688.67	1125528.19	634.01	634.07	0.06	1.06	
1048	2083684.10	1125438.30	632.01	632.18	0.17	1.17	
1049	2083745.57	1125491.87	632.03	632.20	0.17	1.17	
1050	2083701.9	1126557.7	627.85	628.02	0.17	1.17	
1051	2083595.4	1126531.0	628.75	628.92	0.17	1.17	
1052	2083605.4	1126433.1	633.04	633.08	0.04	1.04	
1053	2083606.7	1126224.9	633.08	633.10	0.02	1.02	
1054	2083619.0	1125979.4	638.25	638.27	0.02	1.02	
1055	2083640.4	1125782.8	636.73	636.83	0.10	1.10	
1056	2083655.1	1125584.5	634.86	635.02	0.16	1.16	
1057	2083652.2	1125484.4	633.39	633.56	0.17	1.17	
1058	2083656.9	1125392.3	629.92	630.11	0.19	1.19	
1059	2083709.1	1126363.3	632.08	632.00	−0.08	0.92	
1060	2083699.4	1126162.6	634.43	634.45	0.02	1.02	
1061	2083712.8	1125855.6	638.09	638.16	0.07	1.07	
1062	2083722.4	1125761.8	636.51	636.56	0.05	1.05	
1063	2083731.6	1125664.0	634.60	634.62	0.02	1.02	
1064	2083739.6	1125568.7	633.04	633.05	0.01	1.01	
1065	2083747.8	1125463.9	630.19	630.25	0.06	1.06	
1066	2083516.8	1126483.8	625.74	625.90	0.16	1.16	
1067	2083482.2	1126402.6	625.52	625.71	0.19	1.19	
1068	2083499.7	1126309.7	630.03	630.11	0.08	1.08	
1069	2083515.2	1126211.7	629.55	629.70	0.15	1.15	
1070	2083526.1	1126107.4	630.19	630.19	0.00	1.00	
1071	2083550.5	1126022.0	635.87	635.91	0.04	1.04	
1072	2083563.0	1125914.2	637.20	637.34	0.14	1.14	
1073	2083551.3	1125813.3	636.61	636.70	0.09	1.09	
1074	2083558.2	1125715.6	636.10	636.20	0.10	1.10	
1075	2083560.0	1125610.8	635.27	635.27	0.00	1.00	
1076	2083575.2	1125610.0	635.25	635.26	0.01	1.01	
1077	2083567.9	1125508.7	633.73	633.74	0.01	1.01	
1078	2083863.1	1126498.3	615.69	615.69	0.00	1.00	
1079	2083836.2	1126396.7	617.74	617.75	0.01	1.01	
1080	2083818.8	1126298.5	619.55	619.75	0.20	1.20	
1081	2083776.2	1126398.1	622.09	622.09	0.00	1.00	
1082	2083786.8	1126501.4	620.09	620.21	0.12	1.12	
1083	2083808.1	1126196.6	627.54	627.60	0.06	1.06	
1084	2083802.0	1126095.9	632.59	632.62	0.03	1.03	
1085	2083786.9	1125999.1	639.08	639.00	−0.08	0.92	
1086	2083601.4	1125428.1	633.06	633.13	0.07	1.07	
1087	2083650.00	1125550.00	634.64	634.74	0.10	1.10	
1088	2083550.00	1125650.00	635.13	635.33	0.20	1.20	
1089	2083600.00	1125650.00	635.39	635.59	0.20	1.20	
1090	2083650.00	1125650.00	635.24	635.44	0.20	1.20	
1091	2083700.00	1125650.00	634.85	635.05	0.20	1.20	
1092	2083600.00	1125700.00	635.80	636.10	0.30	1.30	
1093	2083650.00	1125700.00	635.61	635.81	0.20	1.20	
1094	2083700.00	1125700.00	635.54	635.64	0.10	1.10	
1095	2083600.00	1125750.00	636.16	636.36	0.20	1.20	
1096	2083650.00	1125750.00	636.18	636.38	0.20	1.20	
1097	2083700.00	1125750.00	636.29	636.49	0.20	1.20	
1098	2083600.00	1125800.00	636.71	636.81	0.10	1.10	
1099	2083700.00	1125800.00	637.06	637.26	0.20	1.20	
1100	2083600.00	1125850.00	637.03	637.23	0.20	1.20	
1101	2083650.00	1125850.00	637.40	637.60	0.20	1.20	
1102	2083700.00	1125850.00	637.86	637.96	0.10	1.10	
1103	2083750.00	1125850.00	637.93	638.03	0.10	1.10	
1104	2083600.00	1125900.00	637.41	637.61	0.20	1.20	
1105	2083650.00	1125900.00	637.81	638.01	0.20	1.20	
1106	2083700.00	1125900.00	638.78	638.88	0.10	1.10	
1107	2083800.00	1125900.00	635.94	636.04	0.10	1.10	
1108	2083550.00	1125950.00	635.90	635.90	0.00	1.00	
1109	2083700.00	1125950.00	639.30	639.40	0.10	1.10	
1110	2083850.00	1125950.00	630.16	630.26	0.10	1.10	
1111	2083800.00	1126000.00	638.10	638.10	0.00	1.00	
1112	2083850.00	1126000.00	630.34	630.34	0.00	1.00	
1113	2083650.00	1126050.00	638.78	638.88	0.10	1.10	
1114	2083700.00	1126050.00	638.11	638.11	0.00	1.00	
1115	2083750.00	1126050.00	636.27	636.27	0.00	1.00	
1116	2083850.00	1126050.00	628.67	628.67	0.00	1.00	
1117	2083650.00	1126100.00	636.10	636.10	0.00	1.00	
1118	2083700.00	1126100.00	635.46	635.46	0.00	1.00	
1119	2083750.00	1126100.00	634.92	634.92	0.00	1.00	
1120	2083550.00	1126200.00	630.85	630.85	0.00	1.00	
1121	2083650.00	1126200.00	633.21	633.21	0.00	1.00	
1122	2083750.00	1126200.00	629.28	629.28	0.00	1.00	
1123	2083800.00	1126250.00	625.69	625.79	0.10	1.10	
1124	2083550.00	1126300.00	632.69	632.69	0.00	1.00	
1125	2083600.00	1126300.00	632.86	632.96	0.10	1.10	
1126	2083700.00	1126300.00	632.40	632.40	0.00	1.00	
1127	2083600.00	1126350.00	632.93	632.93	0.00	1.00	
1128	2083750.00	1126350.00	626.20	626.20	0.00	1.00	
1129	2083800.00	1126350.00	620.40	620.50	0.10	1.10	
1130	2083550.00	1126400.00	632.90	632.90	0.00	1.00	
1131	2083600.00	1126400.00	632.97	632.97	0.00	1.00	
1132	2083650.00	1126400.00	632.94	633.04	0.10	1.10	
1133	2083550.00	1126450.00	632.61	632.61	0.00	1.00	
1134	2083600.00	1126450.00	632.74	632.84	0.10	1.10	
1135	2083650.00	1126450.00	632.47	632.57	0.10	1.10	
1136	2083700.00	1126450.00	631.30	631.40	0.10	1.10	
1137	2083800.00	1126450.00	620.01	620.01	0.00	1.00	
1138	2083850.00	1126450.00	616.14	616.24	0.10	1.10	
1139	2083650.00	1126500.00	630.66	630.76	0.10	1.10	
1140	2083700.00	1126500.00	630.29	630.29	0.00	1.00	
1141	2083800.00	1126550.00	619.40	619.40	0.00	1.00	
1142	2083850.00	1126550.00	615.68	615.78	0.10	1.10	
1143	2083811.99	1126618.09	618.12	618.11	−0.01	0.99	Limits of Waste
1144	2083802.34	1126608.35	618.40	618.41	0.01	1.01	Limits of Waste
1145	2083756.31	1126595.58	620.11	620.12	0.01	1.01	Limits of Waste
1146	2083699.78	1126599.97	620.42	620.44	0.02	1.02	Limits of Waste
1147	2083644.90	1126604.19	620.56	620.63	0.07	1.07	Limits of Waste
1148	2083595.75	1126588.31	619.88	620.03	0.15	1.15	Limits of Waste
1149	2083572.99	1126580.93	619.53	619.55	0.02	1.02	Limits of Waste
1150	2083536.75	1126569.08	619.10	619.29	0.19	1.19	Limits of Waste
1151	2083502.89	1126531.21	618.66	618.77	0.11	1.11	Limits of Waste
1152	2083488.72	1126486.04	619.04	619.16	0.12	1.12	Limits of Waste
1153	2083475.81	1126441.88	620.44	620.44	0.00	1.00	Limits of Waste
1154	2083467.80	1126411.32	622.04	622.07	0.03	1.03	Limits of Waste
1155	2083465.25	1126366.39	624.34	624.35	0.01	1.01	Limits of Waste
1156	2083464.28	1126316.87	622.80	622.80	0.00	1.00	Limits of Waste
1157	2083465.74	1126273.50	622.81	622.95	0.14	1.14	Limits of Waste
1158	2083467.13	1126236.51	623.28	623.29	0.01	1.01	Limits of Waste
1159	2083467.69	1126221.24	623.38	623.44	0.06	1.06	Limits of Waste
1160	2083473.85	1126194.06	624.72	624.75	0.03	1.03	Limits of Waste
1161	2083481.62	1126160.75	626.58	626.67	0.09	1.09	Limits of Waste
1162	2083490.97	1126117.53	628.20	628.31	0.11	1.11	Limits of Waste
1163	2083491.64	1126058.91	627.91	627.92	0.01	1.01	Limits of Waste
1164	2083498.29	1126034.09	628.33	628.53	0.20	1.20	Limits of Waste
1165	2083491.04	1125991.12	628.98	629.00	0.02	1.02	Limits of Waste
1166	2083492.47	1125988.07	629.15	629.31	0.16	1.16	Limits of Waste
1167	2083492.79	1125964.64	629.62	629.69	0.07	1.07	Limits of Waste
1168	2083493.32	1125918.73	629.88	629.96	0.08	1.08	Limits of Waste
1169	2083493.97	1125863.00	630.85	630.92	0.07	1.07	Limits of Waste
1170	2083494.68	1125804.05	631.34	631.53	0.19	1.19	Limits of Waste
1171	2083495.19	1125761.20	632.31	632.37	0.06	1.06	Limits of Waste
1172	2083495.70	1125714.18	632.70	632.85	0.15	1.15	Limits of Waste
1173	2083496.36	1125666.67	632.46	632.50	0.04	1.04	Limits of Waste
1174	2083496.79	1125630.07	632.04	632.05	0.01	1.01	Limits of Waste
1175	2083497.33	1125586.80	631.59	631.62	0.03	1.03	Limits of Waste
1176	2083510.84	1125554.51	632.15	632.33	0.18	1.18	Limits of Waste
1177	2083524.89	1125526.12	632.47	632.52	0.05	1.05	Limits of Waste
1178	2083545.26	1125484.64	631.88	632.02	0.14	1.14	Limits of Waste
1179	2083563.87	1125447.08	632.54	632.55	0.01	1.01	Limits of Waste
1180	2083583.16	1125407.99	632.23	632.33	0.10	1.10	Limits of Waste
1181	2083593.87	1125382.95	631.05	631.22	0.17	1.17	Limits of Waste
1182	2083620.87	1125371.52	629.52	629.73	0.21	1.21	Limits of Waste
1183	2083662.64	1125373.04	627.62	627.81	0.19	1.19	Limits of Waste
1184	2083687.07	1125375.95	627.69	627.82	0.13	1.13	Limits of Waste
1185	2083749.14	1125400.42	627.35	627.53	0.18	1.18	Limits of Waste
1186	2083767.76	1125422.09	627.06	627.23	0.17	1.17	Limits of Waste
1187	2083780.81	1125461.03	628.76	628.82	0.06	1.06	Limits of Waste
1188	2083785.01	1125484.04	629.87	629.90	0.03	1.03	Limits of Waste
1189	2083798.05	1125507.11	630.35	630.54	0.19	1.19	Limits of Waste
1190	2083798.22	1125527.76	631.04	631.21	0.17	1.17	Limits of Waste
1191	2083787.80	1125585.03	631.41	631.51	0.10	1.10	Limits of Waste
1192	2083790.48	1125635.30	632.02	632.18	0.16	1.16	Limits of Waste
1193	2083781.33	1125686.60	633.41	633.58	0.17	1.17	Limits of Waste
1194	2083777.37	1125733.67	634.11	634.12	0.01	1.01	Limits of Waste
1195	2083790.51	1125759.32	633.63	633.67	0.04	1.04	Limits of Waste
1196	2083798.46	1125784.70	633.10	633.13	0.03	1.03	Limits of Waste
1197	2083803.10	1125811.58	633.10	633.11	0.01	1.01	Limits of Waste
1198	2083818.15	1125838.74	631.14	631.19	0.05	1.05	Limits of Waste
1199	2083835.81	1125900.49	631.49	631.65	0.16	1.16	Limits of Waste
1200	2083893.30	1125932.09	624.44	624.47	0.03	1.03	Limits of Waste
1201	2083895.43	1125971.39	623.76	623.93	0.17	1.17	Limits of Waste
1202	2083895.62	1125997.12	624.26	624.36	0.10	1.10	Limits of Waste
1203	2083894.04	1126039.98	625.41	625.43	0.02	1.02	Limits of Waste
1204	2083878.72	1126098.41	626.96	627.04	0.08	1.08	Limits of Waste
1205	2083868.73	1126169.02	624.58	624.51	−0.07	0.93	Limits of Waste
1206	2083875.42	1126202.71	622.44	622.51	0.07	1.07	Limits of Waste
1207	2083878.55	1126243.18	620.24	620.25	0.01	1.01	Limits of Waste
1208	2083873.61	1126289.71	618.71	618.71	0.00	1.00	Limits of Waste
1209	2083868.30	1126340.53	617.53	617.58	0.05	1.05	Limits of Waste
1210	2083864.01	1126377.96	616.85	616.86	0.01	1.01	Limits of Waste
1211	2083867.55	1126414.25	616.91	616.81	−0.10	0.90	Limits of Waste
1212	2083872.29	1126434.07	615.57	615.61	0.04	1.04	Limits of Waste
1213	2083875.68	1126472.67	615.49	615.59	0.10	1.10	Limits of Waste
1214	2083873.34	1126505.25	615.47	615.48	0.01	1.01	Limits of Waste
1215	2083878.61	1126544.88	614.78	614.87	0.09	1.09	Limits of Waste
1216	2083877.02	1126586.17	614.47	614.47	0.00	1.00	Limits of Waste
1217	2083879.77	1126615.12	613.73	613.76	0.03	1.03	Limits of Waste
1218	2083857.80	1126617.40	614.61	614.74	0.13	1.13	Limits of Waste

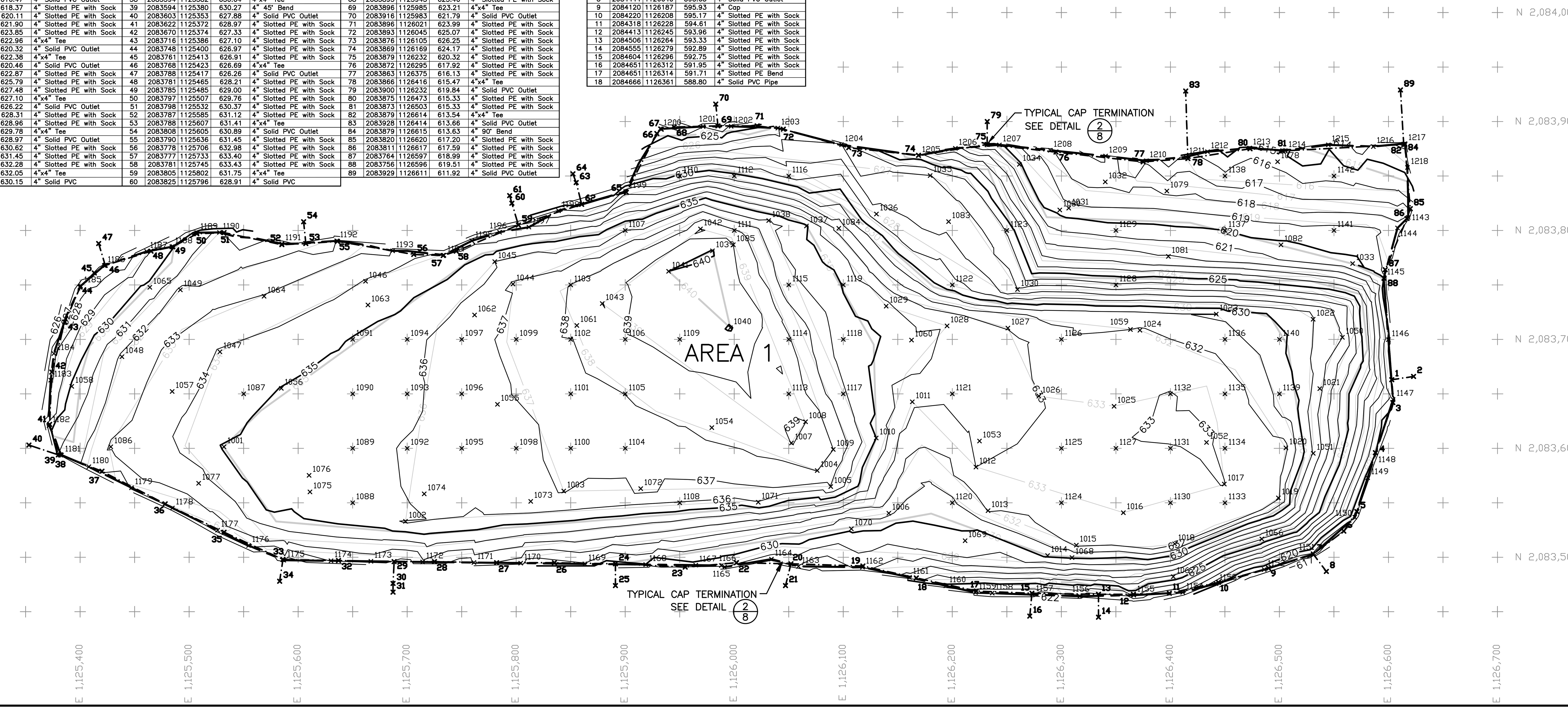
Area 1 Drain Collection Pipe

Point No.	Coordinate North	Coordinate East	Top of Pipe Elevation	Description
1	2083663	1126603	620.17	4"x4" Tee
2	2083666	1126623	619.01	4" Solid PVC Outlet
3	2083642	1126604	619.91	4" Slotted PE with Sock
4	2083596	1126588	619.31	4" Slotted PE with Sock
5	2083542	1126571	618.63	4" Slotted PE with Sock
6	2083524	1126559	618.13	4" Slotted PE with Sock
7	2083503	1126531	617.97	4"x4" Tee
8	2083487	1126543	616.47	4" Solid PVC Outlet
9	2083490	1126490	618.37	4" Slotted PE with Sock
10	2083477	1126444	620.11	4" Slotted PE with Sock
11	2083467	1126399	621.90	4" Slotted PE with Sock
12	2083466	1126366	623.85	4" Slotted PE with Sock
13	2083466	1126334	622.96	4"x4" Tee
14	2083445	1126334	620.32	4" Solid PVC Outlet
15	2083467	1126273	622.38	4"x4" Tee
16	2083446	1126271	620.46	4" Solid PVC Outlet
17	2083469	1126222	622.87	4" Slotted PE with Sock
18	2083481	1126167	625.79	4" Slotted PE with Sock
19	2083492	1126118	627.48	4" Slotted PE with Sock
20	2083494	1126052	627.10	4"x4" Tee
21	2083474	1126047	626.22	4" Solid PVC Outlet
22	2083495	1126002	628.31	4" Slotted PE with Sock
23	2083491	1125955	628.96	4" Slotted PE with Sock
24	2083494	1125891	629.78	4"x4" Tee
25	2083474	1125891	628.97	4" Solid PVC Outlet
26	2083495	1125835	630.62	4" Slotted PE with Sock
27	2083495	1125782	631.45	4" Slotted PE with Sock
28	2083496	1125725	632.28	4" Slotted PE with Sock
29	2083496	1125688	632.05	4"x4" Tee
30	2083476	1125687	630.15	4" Solid PVC
31	2083468	1125687	629.07	4" Solid PVC Outlet
32	2083497	1125637	631.70	4" Slotted PE with Sock
33	2083498	1125586	631.08	4"x4" Tee
34	2083478	1125583	629.12	4" Solid PVC Outlet
35	2083523	1125532	632.01	4" Slotted PE with Sock
36	2083549	1125478	631.42	4" Slotted PE with Sock
37	2083579	1125420	632.00	4" Slotted PE with Sock
38	2083594	1125382	630.64	4"x4" Tee
39	2083594	1125380	630.27	4" 45° Bend
40	2083603	1125353	627.88	4" Solid PVC Outlet
41	2083622	1125372	628.97	4" Slotted PE with Sock
42	2083670	1125374	627.33	4" Slotted PE with Sock
43	2083716	1125386	627.10	4" Slotted PE with Sock
44	2083748	1125400	626.97	4" Slotted PE with Sock
45	2083761	1125413	626.91	4" Slotted PE with Sock
46	2083768	1125423	626.69	4"x4" Tee
47	2083788	1125417	626.26	4" Solid PVC Outlet
48	2083781	1125465	628.21	4" Slotted PE with Sock
49	2083785	1125485	629.00	4" Slotted PE with Sock
50	2083797	1125507	629.76	4" Slotted PE with Sock
51	2083798	1125532	630.37	4" Slotted PE with Sock
52	2083787	1125585	631.12	4" Slotted PE with Sock
53	2083788	1125607	631.41	4"x4" Tee
54	2083808	1125605	630.89	4" Solid PVC Outlet
55	2083790	1125636	631.45	4" Slotted PE with Sock
56	2083778	1125706	632.98	4" Slotted PE with Sock
57	2083777	1125733	633.40	4" Slotted PE with Sock
58	2083781	1125745	633.43	4" Slotted PE with Sock
59	2083805	1125802	631.75	4"x4" Tee
60	2083825	1125796	628.91	4" Solid PVC
61	2083832	1125794	627.22	4" Solid PVC Outlet
62	2083824	1125860	630.14	4"x4" Tee
63	2083844	1125855	627.44	4" Solid PVC
64	2083852	1125852	626.06	4" Solid PVC Outlet
65	2083835	1125901	631.13	4" 45° Bend
66	2083889	1125929	624.05	4" Slotted PE with Sock
67	2083893	1125933	623.62	4" Slotted PE with Sock
68	2083895	1125945	623.46	4" Slotted PE with Sock
69	2083896	1125985	623.21	4"x4" Tee
70	2083916	1125983	621.79	4" Solid PVC Outlet
71	2083896	1126021	623.99	4" Slotted PE with Sock
72	2083893	1126045	625.07	4" Slotted PE with Sock
73	2083876	1126105	626.25	4" Slotted PE with Sock
74	2083869	1126169	624.17	4" Slotted PE with Sock
75	2083879	1126232	620.32	4" Slotted PE with Sock
76	2083872	1126295	617.92	4" Slotted PE with Sock
77	2083863	1126375	616.13	4" Slotted PE with Sock
78	2083866	1126416	615.47	4"x4" Tee
79	2083900	1126232	619.84	4" Solid PVC Outlet
80	2083875	1126473	615.33	4" Slotted PE with Sock
81	2083873	1126503	615.33	4" Slotted PE with Sock
82	2083879	1126614	613.54	4"x4" Tee
83	2083928	1126414	613.66	4" Solid PVC Outlet
84	2083879	1126615	613.63	4" 90° Bend
85	2083820	1126620	617.20	4" Slotted PE with Sock
86	2083811	1126617	617.59	4" Slotted PE with Sock
87	2083764	1126597	618.99	4" Slotted PE with Sock
88	2083756	1126596	619.51	4" Slotted PE with Sock
89	2083929	1126611	611.92	4" Solid PVC Outlet

Area 2 Drain Collection Pipe

Point No.	Coordinate North	Coordinate East	Top of Pipe Elevation	Description
1	2084075	1126562	596.50	4" Cap
2	2084132	1126573	596.09	4" Slotted PE with Sock
3	2084257	1126586	595.56	4"x4" Tee
4	2084250	1126629	594.39	4" Solid PVC Outlet
5	2084275	1126587	595.22	4" Solid PVC Outlet
6	2084359	1126589	594.90	4" Solid PVC Outlet
7	2084457	1126598	594.55	4"x4" Tee
8	2084444	1126640	593.63	4" Solid PVC Outlet
9	2084120	1126187	595.93	4" Cap
10	2084220	1126208	595.17	4" Slotted PE with Sock
11	2084318	1126228	594.61	4" Slotted PE with Sock
12	2084413	1126245	593.96	4" Slotted PE with Sock
13	2084506	1126264	593.33	4" Slotted PE with Sock
14	2084555	1126279	592.89	4" Slotted PE with Sock
15	2084604	1126296	592.75	4" Slotted PE with Sock
16	2084651	1126312	591.95	4" Slotted PE with Sock
17	2084651	1126314	591.71	4" Slotted PE Bend
18	2084666	1126361	588.80	4" Solid PVC Pipe





Area 2 Sand Drainage Layer

Point No.	Coordinate North	Coordinate East	Design Sand Elevation	Record Sand Elevation	Delta	Sand Thickness	Description
1	2084098.87	1126211.56	598.10	598.15	0.05	1.05	
2	2084095.52	1126259.36	597.60	597.61	0.01	1.01	
3	2084095.52	1126309.36	598.51	598.43	−0.08	0.92	
4	2084095.52	1126359.36	599.40	599.32	−0.08	0.92	
5	2084095.52	1126409.36	600.08	600.12	0.04	1.04	
6	2084095.52	1126459.36	599.07	599.12	0.05	1.05	
7	2084095.52	1126509.36	598.19	598.16	−0.03	0.97	
8	2084095.52	1126559.36	597.10	597.27	0.17	1.17	
9	2084095.52	1126609.36	–	–	–	–	Outside Limits of Waste
10	2084145.52	1126209.36	596.09	596.28	0.19	1.19	
11	2084145.52	1126259.36	597.00	597.08	0.08	1.08	
12	2084145.52	1126309.36	598.01	598.01	0.00	1.00	
13	2084145.52	1126359.36	598.94	598.87	−0.07	0.93	
14	2084145.52	1126409.36	599.73	599.93	0.20	1.20	
15	2084145.52	1126459.36	598.90	598.95	0.05	1.05	
16	2084145.52	1126509.36	597.97	597.98	0.01	1.01	
17	2084145.52	1126559.36	596.93	597.08	0.15	1.15	
18	2084145.52	1126609.36	–	–	–	–	Outside Limits of Waste
19	2084195.52	1126209.36	595.73	595.78	0.05	1.05	
20	2084195.52	1126259.36	596.61	596.67	0.06	1.06	
21	2084195.52	1126309.36	597.47	597.66	0.19	1.19	
22	2084195.52	1126359.36	598.39	598.52	0.13	1.13	
23	2084195.52	1126409.36	599.27	599.46	0.19	1.19	
24	2084195.52	1126459.36	598.78	598.77	−0.01	0.99	
25	2084195.52	1126509.36	597.74	597.83	0.09	1.09	
26	2084195.52	1126559.36	596.85	596.92	0.07	1.07	
27	2084195.52	1126609.36	–	–	–	–	Outside Limits of Waste
28	2084245.52	1126209.36	595.63	595.83	0.20	1.20	
29	2084245.52	1126259.36	596.31	596.25	−0.06	0.94	
30	2084245.52	1126309.36	597.18	597.19	0.01	1.01	
31	2084245.52	1126359.36	598.03	597.94	−0.09	0.91	
32	2084245.52	1126409.36	598.96	599.09	0.13	1.13	
33	2084245.52	1126459.36	598.58	598.49	−0.09	0.91	
34	2084245.52	1126509.36	597.69	597.63	−0.06	0.94	
35	2084245.52	1126559.36	596.63	596.64	0.01	1.01	
36	2084245.52	1126609.36	–	–	–	–	Outside Limits of Waste
37	2084295.52	1126259.36	595.76	595.71	−0.05	0.95	
38	2084295.52	1126309.36	596.63	596.60	−0.03	0.97	
39	2084295.52	1126359.36	597.59	597.52	−0.07	0.93	
40	2084295.52	1126409.36	598.48	598.54	0.06	1.06	
41	2084295.52	1126459.36	598.39	598.41	0.02	1.02	
42	2084295.52	1126509.36	597.41	597.57	0.16	1.16	
43	2084295.52	1126559.36	596.43	596.60	0.17	1.17	
44	2084295.52	1126609.36	–	–	–	–	Outside Limits of Waste
45	2084345.52	1126259.36	595.32	595.38	0.06	1.06	
46	2084345.52	1126309.36	596.16	596.08	−0.08	0.92	
47	2084345.52	1126359.36	597.19	597.22	0.03	1.03	
48	2084345.52	1126409.36	597.99	597.96	−0.03	0.97	
49	2084345.52	1126459.36	598.22	598.13	−0.09	0.91	
50	2084345.52	1126509.36	597.24	597.41	0.17	1.17	
51	2084345.52	1126559.36	596.34	596.27	−0.07	0.93	
52	2084345.52	1126609.36	–	–	–	–	Outside Limits of Waste
53	2084395.52	1126259.36	594.99	595.02	0.03	1.03	
54	2084395.52	1126309.36	595.81	595.81	0.00	1.00	
55	2084395.52	1126359.36	596.62	596.62	0.00	1.00	
56	2084395.52	1126409.36	597.59	597.63	0.04	1.04	
57	2084395.52	1126459.36	598.06	598.22	0.16	1.16	
58	2084395.52	1126509.36	597.09	597.15	0.06	1.06	
59	2084395.52	1126559.36	596.10	596.19	0.09	1.09	
60	2084445.52	1126259.36	594.49	594.61	0.12	1.12	
61	2084445.52	1126309.36	595.39	595.40	0.01	1.01	
62	2084445.52	1126359.36	596.18	596.26	0.08	1.08	
63	2084495.52	1126309.36	595.03	594.94	−0.09	0.91	
64	2084495.52	1126359.36	595.56	595.68	0.12	1.12	
65	2084492.67	1126482.23	–	–	–	–	Outside Limits of Waste
66	2084497.46	1126559.54	–	–	–	–	Outside Limits of Waste
67	2084545.52	1126309.36	594.56	594.54	−0.02	0.98	
68	2084595.52	1126309.36	593.91	593.98	0.07	1.07	
69	2084645.52	1126309.36	592.29	592.46	0.17	1.17	
70	2084109.22	1126409.16	600.00	600.13	0.13	1.13	
71	2084158.74	1126416.11	599.71	599.90	0.19	1.19	
72	2084208.25	1126423.05	599.45	599.57	0.12	1.12	
73	2084257.76	1126430.00	599.19	599.30	0.11	1.11	
74	2084307.27	1126436.98	598.89	598.93	0.04	1.04	
75	2084356.78	1126443.98	598.50	598.55	0.05	1.05	
76	2084406.29	1126450.97	598.21	598.41	0.20	1.20	
77	2084117.90	1126191.69	596.29	596.41	0.12	1.12	
78	2084557.99	1126347.72	595.05	595.03	−0.02	0.98	
79	2084038.13	1126626.53	–	–	–	–	Outside Limits of Waste
80	2084037.88	1126632.53	–	–	–	–	Outside Limits of Waste
81	2084095.89	1126628.87	–	–	–	–	Outside Limits of Waste
82	2084095.30	1126634.85	–	–	–	–	Outside Limits of Waste
83	2084145.93	1126630.89	–	–	–	–	Outside Limits of Waste
84	2084145.45	1126636.88	–	–	–	–	Outside Limits of Waste
85	2084195.62	1126632.91	–	–	–	–	Outside Limits of Waste
86	2084195.18	1126638.89	–	–	–	–	Outside Limits of Waste
87	2084244.80	1126634.90	–	–	–	–	Outside Limits of Waste
88	2084296.34	1126636.98	–	–	–	–	Outside Limits of Waste
89	2084296.03	1126642.97	–	–	–	–	Outside Limits of Waste
90	2084345.03	1126638.95	–	–	–	–	Outside Limits of Waste
91	2084345.16	1126644.96	–	–	–	–	Outside Limits of Waste
92	2084396.59	1126641.04	–	–	–	–	Outside Limits of Waste
93	2084395.48	1126647.00	–	–	–	–	Outside Limits of Waste
94	2084445.85	1126643.03	–	–	–	–	Outside Limits of Waste
95	2084445.34	1126649.02	–	–	–	–	Outside Limits of Waste
96	2084479.46	1126644.39	–	–	–	–	Outside Limits of Waste
97	2084484.18	1126650.59	–	–	–	–	Outside Limits of Waste
98	2084487.97	1126606.70	–	–	–	–	Outside Limits of Waste
99	2084494.23	1126608.12	–	–	–	–	Outside Limits of Waste
100	2084491.45	1126560.06	–	–	–	–	Outside Limits of Waste
101	2084498.99	1126425.55	–	–	–	–	Outside Limits of Waste
102	2084504.66	1126428.89	–	–	–	–	Outside Limits of Waste
103	2084522.22	1126409.06	–	–	–	–	Outside Limits of Waste
104	2084525.02	1126414.43	–	–	–	–	Outside Limits of Waste
105	2084777.41	1126349.61	–	–	–	–	Outside Limits of Waste
106	2084777.89	1126355.59	–	–	–	–	Outside Limits of Waste
107	2084585.29	1126303.97	594.02	594.04	0.02	1.02	
108	2084463.76	1126356.77	596.01	595.97	−0.04	0.96	
109	2084121.22	1126187.77	596.13	596.30	0.17	1.17	
110	2084170.18	1126197.87	595.74	595.90	0.16	1.16	
111	2084219.15	1126207.98	595.66	595.86	0.20	1.20	
112	2084268.12	1126218.09	595.22	595.42	0.20	1.20	
113	2084317.14	1126227.94	595.14	595.18	0.04	1.04	
114	2084366.32	1126236.94	594.71	594.91	0.20	1.20	
115	2084415.50	1126245.94	594.59	594.61	0.02	1.02	
116	2084464.68	1126254.94	594.29	594.43	0.14	1.14	
117	2084493.71	1126260.26	594.16	594.30	0.14	1.14	
118	2084560.50	1126282.80	593.62	593.78	0.16	1.16	
119	2084607.87	1126298.79	593.20	593.38	0.18	1.18	
120	2084676.45	1126301.10	592.52	592.72	0.20	1.20	Limit of Waste
121	2084583.67	1126338.40	594.49	594.39	−0.10	0.90	Limit of Waste
122	2084497.12	1126376.03	595.72	595.85	0.13	1.13	Limit of Waste
123	2084435.65	1126441.23	597.92	597.85	−0.07	0.93	Limit of Waste
124	2084446.87	1126562.60	596.04	595.98	−0.06	0.94	Limit of Waste
125	2084422.31	1126591.96	595.45	595.40	−0.05	0.95	Limit of Waste
126	2084320.78	1126589.44	595.77	595.74	−0.03	0.97	Limit of Waste
127	2084221.44	1126580.78	596.31	596.33	0.02	1.02	Limit of Waste
128	2084131.81	1126573.62	596.72	596.70	−0.02	0.98	Limit of Waste
129	2084060.25	1126529.25	597.80	597.78	−0.02	0.98	Limit of Waste
130	2084073.11	1126432.36	599.67	599.62	−0.05	0.95	Limit of Waste
131	2084084.04	1126233.61	598.76	598.89	0.13	1.13	Limit of Waste
132	2084140.60	1126203.47	596.16	596.23	0.07	1.07	Limit of Waste
133	2084222.83	1126204.54	595.84	595.87	0.03	1.03	Limit of Waste
134	2084319.94	1126221.84	595.59	595.67	0.08	1.08	Limit of Waste
135	2084414.85	1126249.22	594.63	594.64	0.01	1.01	Limit of Waste
136	2084514.01	1126253.21	595.28	595.28	0.00	1.00	Limit of Waste
137	2084627.77	1126268.43	596.07	595.99	−0.08	0.92	Limit of Waste
138	2084438.84	1126401.89	597.05	597.10	0.05	1.05	Limit of Waste
139	2084461.98	1126383.25	596.02	596.21	0.19	1.19	Limit of Waste
140	2084453.64	1126597.81	595.18	595.26	0.08	1.08	Limit of Waste
141	2084358.43	1126589.71	595.61	595.55	−0.06	0.94	Limit of Waste
142	2084274.39	1126587.72	595.93	595.92	−0.01	0.99	Limit of Waste
143	2084074.16	1126560.33	597.13	597.09	−0.04	0.96	Limit of Waste
144	2084058.96	1126468.51	599.05	598.95	−0.18	0.90	Limit of Waste
145	2084070.81	1126404.74	600.02	599.99	−0.03	0.97	Limit of Waste
146	2084074.05	1126330.72	599.17	599.16	−0.01	0.99	Limit of Waste
147	2084098.00	1126196.74	598.44	598.38	−0.06	0.94	Limit of Waste
148	2084119.54	1126183.62	596.72	596.76	0.04	1.04	Limit of Waste
149	2084198.25	1126193.55	596.70	596.84	0.14	1.14	Limit of Waste
150	2084278.26	1126208.58	596.17	596.25	0.08	1.08	Limit of Waste
151	2084375.78	1126245.15	594.92	595.00	0.08	1.08	Limit of Waste
152	2084459.33	1126247.26	595.19	595.19	0.00	1.00	Limit of Waste
153	2084582.05	1126276.27	594.00	594.08	0.08	1.08	Limit of Waste
154	2084082.46	1126278.68	598.75	598.79	0.04	1.04	Limit of Waste
155	2084437.98	1126516.41	596.84	596.94	0.10	1.10	Limit of Waste

LEGEND

- LIMITS OF WASTE
- DRAIN PIPE
- 594 DESIGN SAND LAYER CONTOURS
- 594 AS-BUILT SAND LAYER CONTOURS
- ×100 SURVEY POINT NUMBER AND LOCATION
- ×100 DRAIN PIPE POINT NUMBER AND LOCATION

RELEASE	DATE:	BY:
Project Review		
5		
4		
3		
2		
1		
NO.	DATE:	BY:
DESCRIPTION		

REVISIONS

JM Johns Manville

CQM, INC.
Engineering–Surveying–Material Testing
2679 Continental Drive
Green Bay, WI 54311

Sand Drainage Layer and Piping

Construction Documentation Drawings
Area 1 & 2 Final Cover
Johns Manville Waukegan Plant
Waukegan, IL

DRAWN BY: WBE

DATE: Jan. 2009

SCALE: 1"=60'

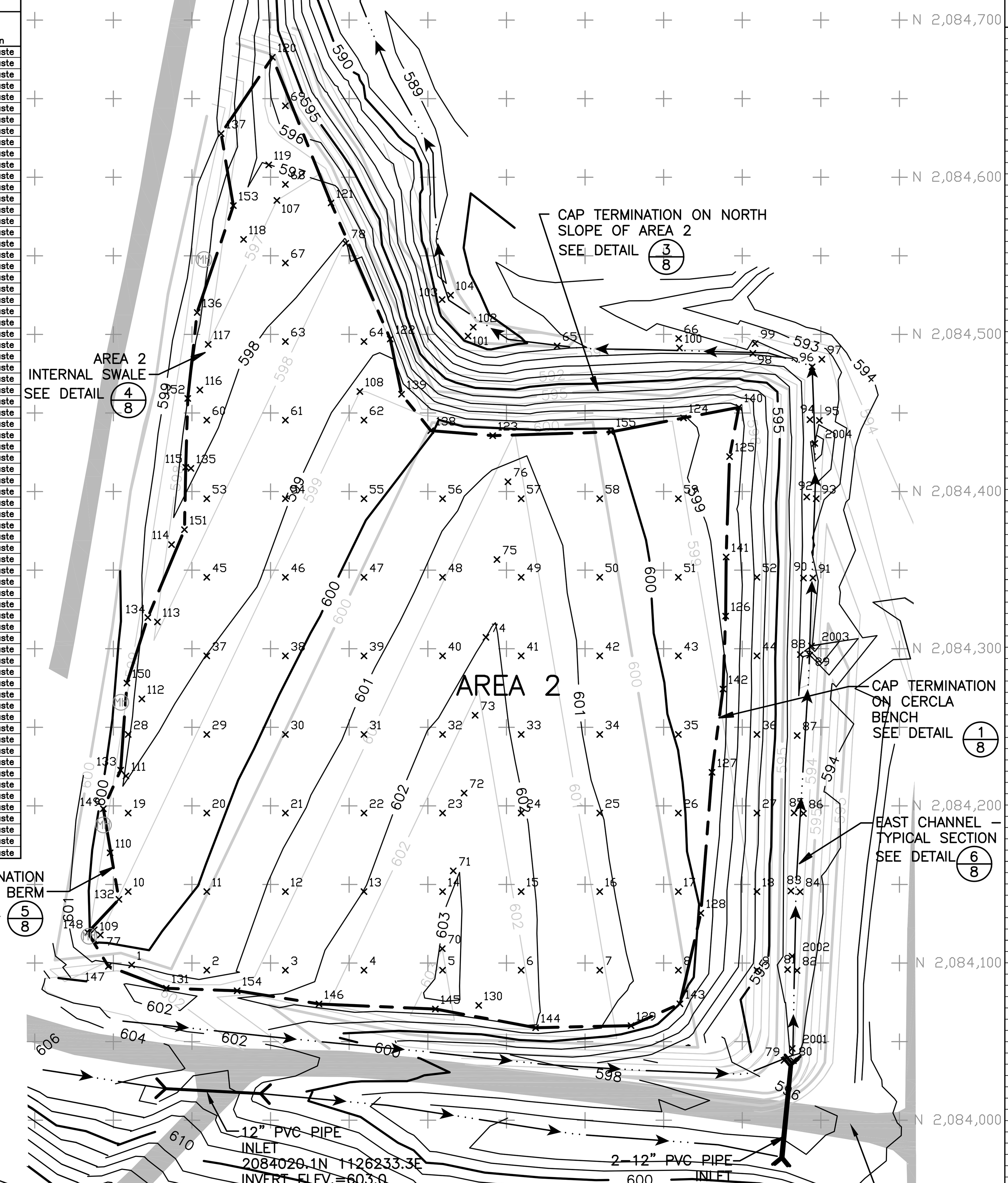
DRAWING NO. A–5

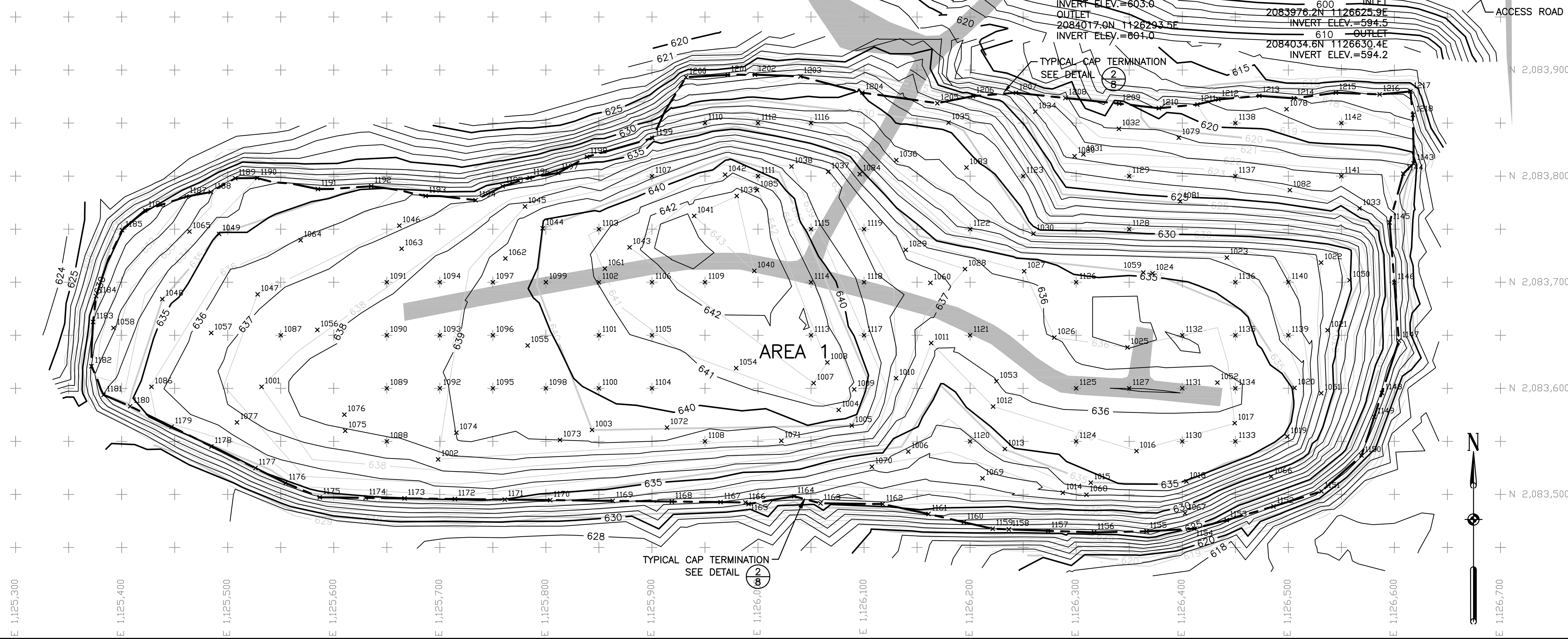
Area 1 Protective Layer

Point No.	Coordinate North	East	Design Protective La. Elevation	Record Protective La. Elevation	Delta	Protective La. Thickness	Description
1001	2083601.39	1125531.87	638.10	638.10	0.00	3.00	
1002	2083533.08	1125698.37	639.15	639.18	0.03	3.03	
1003	2083560.80	1125843.53	640.06	640.16	0.10	3.10	
1004	2083579.59	1126076.07	641.02	641.06	0.04	3.04	
1005	2083564.95	1126088.45	639.97	639.99	0.02	3.02	
1006	2083540.43	1126141.71	634.21	634.28	0.07	3.07	
1007	2083604.91	1126052.48	642.06	642.08	0.02	3.02	
1008	2083624.47	1126065.40	642.01	642.14	0.13	3.13	
1009	2083599.05	1126090.72	641.02	641.14	0.12	3.12	
1010	2083609.53	1126130.18	638.00	638.17	0.17	3.17	
1011	2083642.70	1126163.22	636.13	636.24	0.11	3.11	
1012	2083582.86	1126221.64	636.00	636.08	0.08	3.08	
1013	2083542.79	1126232.77	635.03	635.04	0.01	3.01	
1014	2083501.65	1126287.37	633.20	633.31	0.11	3.11	
1015	2083511.17	1126313.73	635.18	635.20	0.02	3.02	
1016	2083540.89	1126356.84	636.01	636.09	0.08	3.08	
1017	2083567.23	1126449.45	636.02	636.03	0.01	3.01	
1018	2083512.29	1126403.94	635.24	635.32	0.08	3.08	
1019	2083554.56	1126499.06	635.20	635.26	0.06	3.06	
1020	2083600.45	1126505.89	635.20	635.22	0.02	3.02	
1021	2083654.86	1126537.02	631.26	631.34	0.08	3.08	
1022	2083718.54	1126530.96	632.03	632.14	0.11	3.11	
1023	2083723.20	1126442.00	634.02	634.06	0.04	3.04	
1024	2083708.44	1126372.04	635.13	635.16	0.03	3.03	
1025	2083638.68	1126348.35	635.93	636.03	0.10	3.10	
1026	2083647.94	1126279.35	636.02	636.14	0.12	3.12	
1027	2083710.45	1126250.93	635.96	636.03	0.07	3.07	
1028	2083712.42	1126195.19	636.93	636.97	0.04	3.04	
1029	2083730.55	1126139.31	637.15	637.27	0.12	3.12	
1030	2083745.81	1126259.75	630.29	630.45	0.16	3.16	
1031	2083820.50	1126306.73	622.32	622.44	0.12	3.12	
1032	2083844.61	1126340.26	620.76	620.88	0.12	3.12	
1033	2083769.60	1126567.10	623.22	623.31	0.09	3.09	
1034	2083860.69	1126261.48	623.18	623.24	0.06	3.06	
1035	2083850.41	1126179.65	630.06	630.14	0.08	3.08	
1036	2083815.16	1126130.35	631.32	631.45	0.13	3.13	
1037	2083804.16	1126066.18	638.11	638.17	0.06	3.06	
1038	2083809.12	1126031.54	639.09	639.14	0.05	3.05	
1039	2083781.32	1125980.01	643.05	643.14	0.09	3.09	
1040	2083710.71	1125996.50	643.07	643.14	0.07	3.07	
1041	2083762.53	1125939.80	643.00	643.04	0.04	3.04	
1042	2083801.44	1125968.99	642.02	642.06	0.04	3.04	
1043	2083732.90	1125876.87	642.01	642.05	0.04	3.04	
1044	2083750.79	1125797.02	640.11	640.21	0.10	3.10	
1045	2083771.44	1125780.31	639.02	639.11	0.09	3.09	
1046	2083753.35	1125661.76	637.07	637.20	0.13	3.13	
1047	2083668.67	1125528.19	637.07	637.09	0.02	3.02	
1048	2083684.10	1125438.30	635.18	635.19	0.01	3.01	
1049	2083745.57	1125491.87	635.20	635.25	0.05	3.05	
1050	2083701.9	1126557.7	631.02	631.04	0.02	3.02	
1051	2083595.4	1126531.0	631.92	632.00	0.08	3.08	
1052	2083605.4	1126433.1	636.50	636.74	0.24	3.66	
1053	2083606.7	1126224.9	636.10	636.22	0.12	3.12	
1054	2083619.0	1125979.4	641.27	641.38	0.11	3.11	
1055	2083640.4	1125782.8	639.83	639.99	0.16	3.16	
1056	2083655.1	1125584.5	638.02	638.06	0.04	3.04	
1057	2083652.2	1125484.4	636.56	636.68	0.12	3.12	
1058	2083656.9	1125392.3	633.11	633.12	0.01	3.01	
1059	2083709.1	1126363.3	635.00	635.13	0.13	3.13	
1060	2083699.4	1126162.6	637.45	637.51	0.06	3.06	
1061	2083717.8	1125855.6	641.16	641.22	0.06	3.06	
1062	2083722.4	1125761.8	639.56	639.59	0.03	3.03	
1063	2083731.6	1125664.0	637.62	637.67	0.05	3.05	
1064	2083739.6	1125568.7	636.05	636.09	0.04	3.04	
1065	2083747.8	1125463.9	633.25	633.31	0.06	3.06	
1066	2083516.8	1125483.8	628.90	628.98	0.08	3.08	
1067	2083482.2	1126402.6	628.71	628.80	0.09	3.09	
1068	2083499.7	1126309.7	633.11	633.18	0.07	3.07	
1069	2083515.2	1126211.7	632.70	632.74	0.04	3.04	
1070	2083526.1	1126107.4	633.19	633.26	0.07	3.07	
1071	2083550.5	1126022.0	638.91	638.96	0.05	3.05	
1072	2083563.0	1125914.2	640.34	640.40	0.06	3.06	
1073	2083551.3	1125813.3	639.70	639.74	0.04	3.04	
1074	2083558.2	1125715.6	639.20	639.20	0.00	3.00	
1075	2083560.0	1125610.8	638.27	638.35	0.08	3.08	
1076	2083575.2	1125610.0	638.26	638.31	0.05	3.05	
1077	2083567.9	1125508.7	636.74	636.78	0.04	3.04	
1078	2083863.1	1126498.3	618.69	618.73	0.04	3.04	
1079	2083836.2	1126396.7	620.75	620.85	0.10	3.10	
1080	2083818.8	1126298.5	622.75	622.85	0.10	3.10	
1081	2083776.2	1126398.1	625.09	625.23	0.14	3.14	
1082	2083786.8	1126501.4	623.21	623.28	0.07	3.07	
1083	2083808.1	1126196.6	630.60	630.71	0.11	3.11	
1084	2083802.0	1126095.9	635.62	635.73	0.11	3.11	
1085	2083786.9	1125999.1	642.00	642.08	0.08	3.08	
1086	2083601.4	1125428.1	636.13	636.17	0.04	3.04	
1087	2083650.00	1125550.00	637.74	637.75	0.01	3.01	
1088	2083550.00	1125650.00	638.33	638.45	0.12	3.12	
1089	2083600.00	1125650.00	638.59	638.72	0.13	3.13	
1090	2083650.00	1125650.00	638.44	638.53	0.09	3.09	
1091	2083700.00	1125650.00	638.05	638.10	0.05	3.05	
1092	2083600.00	1125700.00	639.10	639.12	0.02	3.02	
1093	2083650.00	1125700.00	638.81	638.85	0.04	3.04	
1094	2083700.00	1125700.00	638.64	638.65	0.01	3.01	
1095	2083600.00	1125750.00	639.36	639.40	0.04	3.04	
1096	2083650.00	1125750.00	639.38	639.48	0.10	3.10	
1097	2083700.00	1125750.00	639.49	639.55	0.06	3.06	
1098	2083600.00	1125800.00	639.81	639.86	0.05	3.05	
1099	2083700.00	1125800.00	640.26	640.35	0.09	3.09	
1100	2083600.00	1125850.00	640.23	640.32	0.09	3.09	
1101	2083650.00	1125850.00	640.60	640.74	0.14	3.14	
1102	2083700.00	1125850.00	640.96	641.08	0.12	3.12	
1103	2083750.00	1125850.00	641.03	641.08	0.05	3.05	
1104	2083600.00	1125900.00	640.61	640.68	0.07	3.07	
1105	2083650.00	1125900.00	641.01	641.03	0.02	3.02	
1106	2083700.00	1125900.00	641.88	641.94	0.06	3.06	
1107	2083800.00	1125900.00	639.04	639.09	0.05	3.05	
1108	2083550.00	1125950.00	638.90	638.97	0.07	3.07	
1109	2083700.00	1125950.00	642.40	642.43	0.03	3.03	
1110	2083850.00	1125950.00	633.26	633.39	0.13	3.13	
1111	2083800.00	1126000.00	641.10	641.17	0.07	3.07	
1112	2083850.00	1126000.00	633.34	633.41	0.07	3.07	
1113	2083650.00	1126050.00	641.88	641.94	0.06	3.06	
1114	2083700.00	1126050.00	641.11	641.27	0.16	3.16	
1115	2083750.00	1126050.00	639.27	639.37	0.10	3.10	
1116	2083850.00	1126050.00	631.67	631.80	0.13	3.13	
1117	2083650.00	1126100.00	639.10	639.22	0.12	3.12	
1118	2083700.00	1126100.00	638.46	638.61	0.15	3.15	
1119	2083750.00	1126100.00	637.92	637.92	0.00	3.00	
1120	2083550.00	1126200.00	633.85	633.89	0.04	3.04	
1121	2083650.00	1126200.00	636.21	636.33	0.12	3.12	
1122	2083750.00	1126200.00	632.28	632.44	0.16	3.16	
1123	2083800.00	1126250.00	628.79	628.89	0.10	3.10	
1124	2083550.00	1126300.00	635.69	635.74	0.05	3.05	
1125	2083600.00	1126300.00	636.50	636.89	0.39	3.93	
1126	2083650.00	1126300.00	635.40	635.48	0.08	3.08	
1127	2083600.00	1126350.00	636.50	637.18	0.68	4.25	
1128	2083750.00	1126350.00	629.20	629.32	0.12	3.12	
1129	2083800.00	1126350.00	623.50	623.57	0.07	3.07	
1130	2083550.00	1126400.00	635.90	635.92	0.02	3.02	
1131	2083600.00	1126400.00	635.97	636.92	0.95	3.95	
1132	2083650.00	1126400.00	636.04	636.10	0.06	3.06	
1133	2083550.00	1126450.00	635.61	635.63	0.02	3.02	
1134	2083600.00	1126450.00	635.84	636.35	0.51	3.51	
1135	2083650.00	1126450.00	635.57	635.58	0.01	3.01	
1136	2083700.00	1126450.00	634.40	634.51	0.11	3.11	
1137	2083800.00	1126450.00	623.01	623.07	0.06	3.06	
1138	2083850.00	1126450.00	619.24	619.35	0.11	3.11	
1139	2083600.00	1126500.00	633.76	633.85	0.09	3.09	
1140	2083700.00	1126500.00	633.29	633.37	0.08	3.08	
1141	2083800.00	1126550.00	622.40	622.42	0.02	3.02	
1142	2083850.00	1126550.00	618.78	618.85	0.07	3.07	
1143	2083811.99	1126618.09	621.11	621.17	0.06	3.06	Limits of Waste
1144	2083802.34	1126608.35	621.41	621.52	0.11	3.11	Limits of Waste
1145	2083756.31	1126595.58	623.12	623.12	0.00	3.00	Limits of Waste
1146	2083699.78	1126599.97	623.44	623.52	0.08	3.08	Limits of Waste
1147	2083644.90	1126604.19	623.63	623.70	0.07	3.07	Limits of Waste
1148	2083595.75	1126588.31	623.03	623.03	0.00	3.00	Limits of Waste
1149	2083572.99	1126580.93	622.55	622.62	0.07	3.07	Limits of Waste
1150	2083556.31	1126569.08	622.29	622.34	0.05	3.05	Limits of Waste
1151	2083502.89	1126523.01	621.77	621.83	0.06	3.06	Limits of Waste
1152	2083488.72	1126486.04	622.16	622.16	0.00	3.00	Limits of Waste
1153	2083475.81	1126441.88	623.44	623.64	0.20	3.20	Limits of Waste
1154	2083467.80	1126411.32	625.07	625.08	0.01	3.01	Limits of Waste
1155	2083465.25	1126366.39	627.35	627.41	0.06	3.06	Limits of Waste
1156	2083464.28	1126316.87	625.80	625.91	0.11	3.11	Limits of Waste
1157	2083465.74	1126273.50	625.95	626.03	0.08	3.08	Limits of Waste
1158	2083467.13	1126236.51	626.29	626.38	0.09	3.09	Limits of Waste
1159	2083467.69	1126221.24	626.44	626.47	0.03	3.03	Limits of Waste
1160	2083473.85	1126194.06	627.81	627.86	0.05	3.05	Limits of Waste
1161	2083481.62	1126160.75	629.67	629.70	0.03	3.03	Limits of Waste
1162	2083490.97	1126117.53	631.31	631.38	0.07	3.07	Limits of Waste
1163	2083491.64	1126058.91	630.92	631.04	0.12	3.12	Limits of Waste
1164	2083498.29	1126034.09	631.53	631.60	0.07	3.07	Limits of Waste
1165	2083498.74	1126009.12	632.00	632.01	0.01	3.01	Limits of Waste
1166	2083492.47	1125988.07	632.31	632.35	0.04	3.04	Limits of Waste
1167	2083492.79	1125964.64	632.69	632.74	0.05	3.05	Limits of Waste
1168	2083493.32	1125918.73	632.96	633.09	0.13	3.13	Limits of Waste
1169	2083493.97	1125863.00	633.92	633.97	0.05	3.05	Limits of Waste
1170	2083494.68	1125804.05	634.53	634.58	0.05	3.05	Limits of Waste
1171	2083495.19	1125761.20	635.37	635.49	0.12	3.12	Limits of Waste
1172	2083495.70	1125714.18	635.85	635.88	0.03	3.03	Limits of Waste
1173	2083496.36	1125666.67	635.50	635.67	0.17	3.17	Limits of Waste
1174	2083496.79	1125630.07	635.05	635.26	0.21	3.21	Limits of Waste
1175	2083497.33	1125586.80	634.62	634.71	0.09	3.09	Limits of Waste
1176	2083510.84	1125554.51	635.33	635.39	0.06	3.06	Limits of Waste
1177	2083524.89	1125526.12	635.52	635.58	0.06	3.06	Limits of Waste
1178	2083545.26	1125484.64	635.02	635.24	0.22	3.22	Limits of Waste
1179	2083563.87	1125447.08	635.55	635.58	0.03	3.03	Limits of Waste
1180	2083583.16	1125407.99	635.33	635.42	0.09	3.09	Limits of Waste
1181	2083593.87	1125382.95	634.22	634.24	0.02	3.02	Limits of Waste
1182	2083620.87	1125371.52	632.73	632.79	0.06	3.06	Limits of Waste
1183	2083662.64	1125373.04	630.81	630.94	0.13	3.13	Limits of Waste
1184	2083687.07	1125375.95	630.82	630.87	0.05	3.05	Limits of Waste
1185	2083749.14	1125400.42	630.53	630.57	0.04	3.04	Limits of Waste
1186	2083767.76	1125422.09	630.23	630.28	0.05	3.05	Limits of Waste
1187	2083780.81	1125461.03	631.82	631.83	0.01	3.01	Limits of Waste
1188	2083785.01	1125484.04	632.90	632.94	0.04	3.04	Limits of Waste
1189	2083798.05	1125507.11	633.54	633.60	0.06	3.06	Limits of Waste
1190	2083798.22	1125527.76	634.21	634.21	0.00	3.00	Limits of Waste
1191	2083787.80	1125585.03	634.51	634.53	0.02	3.02	Limits of Waste
1192	2083790.48	1125635.30	635.18	635.23	0.05	3.05	Limits of Waste
1193	2083781.33	1125686.60	636.58	636.59	0.01	3.01	Limits of Waste
1194	2083777.37	1125733.67	637.12	637.17	0.05	3.05	Limits of Waste
1195	2083790.51	1125759.32	636.67	636.75	0.08	3.08	Limits of Waste
1196	2083798.46	1125784.70	636.13	636.26	0.13	3.13	Limits of Waste
1197	2083803.10	1125811.58	636.11	636.23	0.12	3.12	Limits of Waste
1198	2083818.15	1125838.74	634.19	634.33	0.14	3.14	Limits of Waste
1199	2083835.81	1125900.49	634.65	634.75	0.10	3.10	Limits of Waste
1200	2083893.30	1125932.09	627.47	627.51	0.04	3.04	Limits of Waste
1201	2083895.43	1125971.39	626.93	627.05	0.12	3.12	Limits of Waste
1202	2083895.62	1125997.12	627.36	627.44	0.08	3.08	Limits of Waste
1203	2083894.04	1126039.98	628.43	628.55	0.12	3.12	Limits of Waste
1204	2083878.72	1126098.41	630.04	630.13	0.09	3.09	Limits of Waste
1205	2083868.73	1126169.02	627.51	627.59	0.08	3.08	Limits of Waste
1206	2083875.42	1126202.71	625.51	625.62	0.11	3.11	Limits of Waste
1207	2083878.55	1126243.18	623.25	623.32	0.07	3.07	Limits of Waste
1208	2083873.61	1126289.71	621.71	621.72	0.01	3.01	Limits of Waste
1209	2083868.30	1126340.53	620.58	620.71	0.13	3.13	Limits of Waste
1210	2083864.01	1126377.96	619.86	619.96	0.10	3.10	Limits of Waste
1211	2083867.55	1126414.25	619.81	619.84	0.03	3.03	Limits of Waste
1212	2083872.29	1126434.07	618.61	618.67	0.06	3.06	Limits of Waste
1213	2083875.68	1126472.67	618.59	618.61	0.02	3.02	Limits of Waste
1214	2083873.34	1126505.25	618.48	618.52	0.04	3.04	Limits of Waste
1215	2083878.61	1126544.88	617.87	617.98	0.11	3.11	Limits of Waste
1216	2083877.02	1126586.17	617.47	617.50	0.03	3.03	Limits of Waste
1217	2083879.77	1126615.12	616.76	616.81	0.05	3.05	Limits of Waste
1218	2083857.80	1126617.40	617.74	617.76	0.02	3.02	Limits of Waste

Area 2 East Channel Clay Thickness

Point No.	Coordinate North	East	Bottom of Clay Elevation	Top of Clay Elevation	Clay Thickness
2001	2084045.7	1126631.7	591.76	593.97	2.21
2002	2084104.4	1126631.7	591.28	593.66	2.38
2003	2084301.8	1126644.0	590.53	592.96	2.43
2004	2084430.7	1126646.1	590.25	592.52	2.27





Area 2 Protective Layer

Point No.	North	East	Design Protect. Layer Elevation	Record Protect. Layer Elevation	Delta	Protect. Layer Thickness	Description
1	2084098.87	1126211.56	601.15	601.21	0.06	3.06	
2	2084095.52	1126259.36	600.61	600.63	0.02	3.02	
3	2084095.52	1126309.36	601.43	601.60	0.17	3.17	
4	2084095.52	1126359.36	602.32	602.41	0.09	3.09	
5	2084095.52	1126409.36	603.12	603.21	0.09	3.09	
6	2084095.52	1126459.36	602.12	602.28	0.16	3.16	
7	2084095.52	1126509.36	601.16	601.27	0.11	3.11	
8	2084095.52	1126559.36	600.27	600.34	0.07	3.07	
9	2084095.52	1126609.36	–	–	–	–	Outside Limits of Waste
10	2084145.52	1126209.36	599.28	599.32	0.04	3.04	
11	2084145.52	1126259.36	600.08	600.16	0.08	3.08	
12	2084145.52	1126309.36	601.01	601.03	0.02	3.02	
13	2084145.52	1126359.36	601.87	601.99	0.12	3.12	
14	2084145.52	1126409.36	602.93	603.06	0.13	3.13	
15	2084145.52	1126459.36	601.95	602.11	0.16	3.16	
16	2084145.52	1126509.36	600.98	601.15	0.17	3.17	
17	2084145.52	1126559.36	600.08	600.22	0.14	3.14	
18	2084145.52	1126609.36	–	–	–	–	Outside Limits of Waste
19	2084195.52	1126209.36	598.78	599.08	0.30	3.30	
20	2084195.52	1126259.36	599.67	599.79	0.12	3.12	
21	2084195.52	1126309.36	600.66	600.84	0.18	3.18	
22	2084195.52	1126359.36	601.52	601.72	0.20	3.20	
23	2084195.52	1126409.36	602.46	602.67	0.21	3.21	
24	2084195.52	1126459.36	601.77	601.86	0.09	3.09	
25	2084195.52	1126509.36	600.83	601.02	0.19	3.19	
26	2084195.52	1126559.36	599.92	600.11	0.19	3.19	
27	2084195.52	1126609.36	–	–	–	–	Outside Limits of Waste
28	2084245.52	1126209.36	598.83	598.98	0.15	3.15	
29	2084245.52	1126259.36	599.25	599.38	0.13	3.13	
30	2084245.52	1126309.36	600.19	600.33	0.14	3.14	
31	2084245.52	1126359.36	600.94	601.08	0.14	3.14	
32	2084245.52	1126409.36	602.09	602.28	0.19	3.19	
33	2084245.52	1126459.36	601.49	601.68	0.19	3.19	
34	2084245.52	1126509.36	600.63	600.77	0.14	3.14	
35	2084245.52	1126559.36	599.64	599.81	0.17	3.17	
36	2084245.52	1126609.36	–	–	–	–	Outside Limits of Waste
37	2084295.52	1126259.36	598.71	598.89	0.18	3.18	
38	2084295.52	1126309.36	599.60	599.79	0.19	3.19	
39	2084295.52	1126359.36	600.52	600.72	0.20	3.20	
40	2084295.52	1126409.36	601.54	601.76	0.22	3.22	
41	2084295.52	1126459.36	601.41	601.60	0.19	3.19	
42	2084295.52	1126509.36	600.57	600.75	0.18	3.18	
43	2084295.52	1126559.36	599.60	599.77	0.17	3.17	
44	2084295.52	1126609.36	–	–	–	–	Outside Limits of Waste
45	2084345.52	1126259.36	598.38	598.50	0.12	3.12	
46	2084345.52	1126309.36	599.08	599.28	0.20	3.20	
47	2084345.52	1126359.36	600.22	600.37	0.15	3.15	
48	2084345.52	1126409.36	600.96	601.16	0.20	3.20	
49	2084345.52	1126459.36	601.13	601.34	0.21	3.21	
50	2084345.52	1126509.36	600.41	600.62	0.21	3.21	
51	2084345.52	1126559.36	599.27	599.47	0.20	3.20	
52	2084345.52	1126609.36	–	–	–	–	Outside Limits of Waste
53	2084395.52	1126259.36	598.02	598.20	0.18	3.18	
54	2084395.52	1126309.36	598.81	598.86	0.05	3.05	
55	2084395.52	1126359.36	599.62	599.72	0.10	3.10	
56	2084395.52	1126409.36	600.63	600.84	0.21	3.21	
57	2084395.52	1126459.36	601.22	601.41	0.19	3.19	
58	2084395.52	1126509.36	600.15	600.22	0.07	3.07	
59	2084395.52	1126559.36	599.19	599.38	0.19	3.19	
60	2084445.52	1126259.36	597.61	597.79	0.18	3.18	
61	2084445.52	1126309.36	598.40	598.57	0.17	3.17	
62	2084445.52	1126359.36	599.26	599.30	0.04	3.04	
63	2084495.52	1126309.36	597.94	598.04	0.10	3.10	
64	2084495.52	1126359.36	598.68	598.82	0.14	3.14	
65	2084492.67	1126482.23	–	–	–	–	Outside Limits of Waste
66	2084497.46	1126559.54	–	–	–	–	Outside Limits of Waste
67	2084545.52	1126309.36	597.54	597.72	0.18	3.18	
68	2084595.52	1126309.36	596.98	597.18	0.20	3.20	
69	2084645.52	1126309.36	595.46	595.67	0.21	3.21	
70	2084109.22	1126409.16	603.13	603.19	0.06	3.06	
71	2084158.74	1126416.11	602.90	603.00	0.10	3.10	
72	2084208.25	1126423.05	602.57	602.75	0.18	3.18	
73	2084257.76	1126430.00	602.30	602.43	0.13	3.13	
74	2084307.27	1126436.98	601.93	602.11	0.18	3.18	
75	2084356.78	1126443.98	601.55	601.78	0.23	3.23	
76	2084406.29	1126450.97	601.41	601.58	0.17	3.17	
77	2084117.90	1126191.69	599.41	599.64	0.23	3.23	
78	2084557.99	1126347.72	598.03	598.08	0.05	3.05	
79	2084038.13	1126626.53	–	–	–	–	Outside Limits of Waste
80	2084037.88	1126632.53	–	–	–	–	Outside Limits of Waste
81	2084095.89	1126628.87	–	–	–	–	Outside Limits of Waste
82	2084095.30	1126634.85	–	–	–	–	Outside Limits of Waste
83	2084145.93	1126630.89	–	–	–	–	Outside Limits of Waste
84	2084145.45	1126636.88	–	–	–	–	Outside Limits of Waste
85	2084195.62	1126632.91	–	–	–	–	Outside Limits of Waste
86	2084195.18	1126638.89	–	–	–	–	Outside Limits of Waste
87	2084244.80	1126634.90	–	–	–	–	Outside Limits of Waste
88	2084296.34	1126636.98	–	–	–	–	Outside Limits of Waste
89	2084296.03	1126642.97	–	–	–	–	Outside Limits of Waste
90	2084345.03	1126638.95	–	–	–	–	Outside Limits of Waste
91	2084345.16	1126644.96	–	–	–	–	Outside Limits of Waste
92	2084396.59	1126641.04	–	–	–	–	Outside Limits of Waste
93	2084395.48	1126647.00	–	–	–	–	Outside Limits of Waste
94	2084445.85	1126643.03	–	–	–	–	Outside Limits of Waste
95	2084445.34	1126649.02	–	–	–	–	Outside Limits of Waste
96	2084479.46	1126644.39	–	–	–	–	Outside Limits of Waste
97	2084484.18	1126650.59	–	–	–	–	Outside Limits of Waste
98	2084487.97	1126606.70	–	–	–	–	Outside Limits of Waste
99	2084494.23	1126608.12	–	–	–	–	Outside Limits of Waste
100	2084491.45	1126560.06	–	–	–	–	Outside Limits of Waste
101	2084498.99	1126425.55	–	–	–	–	Outside Limits of Waste
102	2084504.66	1126428.89	–	–	–	–	Outside Limits of Waste
103	2084522.22	1126409.06	–	–	–	–	Outside Limits of Waste
104	2084525.02	1126414.43	–	–	–	–	Outside Limits of Waste
105	2084777.41	1126349.61	–	–	–	–	Outside Limits of Waste
106	2084777.89	1126355.59	–	–	–	–	Outside Limits of Waste
107	2084585.29	1126303.97	597.04	597.24	0.20	3.20	
108	2084463.76	1126356.77	598.97	599.07	0.10	3.10	
109	2084121.22	1126187.77	599.30	599.65	0.35	3.35	
110	2084170.18	1126197.87	598.90	599.11	0.21	3.21	
111	2084219.15	1126207.98	598.86	599.02	0.16	3.16	
112	2084268.12	1126218.09	598.42	598.61	0.19	3.19	
113	2084317.14	1126227.94	598.18	598.34	0.16	3.16	
114	2084366.32	1126236.94	597.91	598.10	0.19	3.19	
115	2084415.50	1126245.94	597.61	597.75	0.14	3.14	
116	2084464.68	1126254.94	597.43	597.63	0.20	3.20	
117	2084493.71	1126260.26	597.30	597.50	0.20	3.20	
118	2084560.50	1126282.80	596.78	596.97	0.19	3.19	
119	2084607.87	1126298.79	596.38	596.56	0.18	3.18	
120	2084676.45	1126301.10	595.72	595.77	0.05	3.05	Limit of Waste
121	2084583.67	1126338.40	597.39	597.44	0.05	3.05	Limit of Waste
122	2084497.12	1126376.03	598.85	598.88	0.03	3.03	Limit of Waste
123	2084435.65	1126441.23	600.85	601.02	0.17	3.17	Limit of Waste
124	2084446.87	1126562.60	598.98	599.13	0.15	3.15	Limit of Waste
125	2084422.31	1126591.96	598.40	598.53	0.13	3.13	Limit of Waste
126	2084320.78	1126589.44	598.74	598.91	0.17	3.17	Limit of Waste
127	2084221.44	1126580.78	599.33	599.49	0.16	3.16	Limit of Waste
128	2084131.81	1126573.62	599.70	599.76	0.06	3.06	Limit of Waste
129	2084060.25	1126529.25	600.78	600.89	0.11	3.11	Limit of Waste
130	2084073.11	1126432.36	602.62	602.76	0.14	3.14	Limit of Waste
131	2084084.04	1126233.61	601.89	602.00	0.11	3.11	Limit of Waste
132	2084140.60	1126203.47	599.23	599.34	0.11	3.11	Limit of Waste
133	2084222.83	1126204.54	598.87	599.20	0.33	3.33	Limit of Waste
134	2084319.94	1126221.84	598.67	598.76	0.09	3.09	Limit of Waste
135	2084414.85	1126249.22	597.64	597.69	0.05	3.05	Limit of Waste
136	2084514.01	1126253.21	598.28	598.32	0.04	3.04	Limit of Waste
137	2084627.77	1126268.43	598.99	599.22	0.23	3.23	Limit of Waste
138	2084438.84	1126401.89	600.10	600.19	0.09	3.09	Limit of Waste
139	2084461.98	1126383.25	599.21	599.42	0.21	3.21	Limit of Waste
140	2084453.64	1126597.81	598.26	598.43	0.17	3.17	Limit of Waste
141	2084358.43	1126589.71	598.55	598.72	0.17	3.17	Limit of Waste
142	2084274.39	1126587.72	598.92	599.18	0.26	3.26	Limit of Waste
143	2084074.16	1126560.33	600.09	600.19	0.10	3.10	Limit of Waste
144	2084058.96	1126468.51	601.87	602.06	0.19	3.11	Limit of Waste
145	2084070.81	1126404.74	602.99	602.99	0.00	3.00	Limit of Waste
146	2084074.05	1126330.72	602.16	602.33	0.17	3.17	Limit of Waste
147	2084098.00	1126196.74	601.38	601.44	0.06	3.06	Limit of Waste
148	2084119.54	1126183.62	599.76	600.09	0.33	3.33	Limit of Waste
149	2084198.25	1126193.55	599.84	599.89	0.05	3.05	Limit of Waste
150	2084278.26	1126208.58	599.25	599.39	0.14	3.14	Limit of Waste
151	2084375.78	1126245.15	598.00	598.13	0.13	3.13	Limit of Waste
152	2084459.33	1126247.26	598.19	598.20	0.01	3.01	Limit of Waste
153	2084582.05	1126276.27	597.08	597.21	0.13	3.13	Limit of Waste
154	2084082.46	1126278.68	601.79	601.83	0.04	3.04	Limit of Waste
155	2084437.98	1126516.41	599.94	600.11	0.17	3.17	Limit of Waste

LEGEND

- LIMITS OF WASTE
- 594 DESIGN PROTECTIVE LAYER CONTOURS
- 594 AS-BUILT PROTECTIVE LAYER CONTOURS
- FLOW DIRECTION
- GRAVEL ACCESS ROADS
- ×100 POINT NUMBER AND LOCATION

RELEASE	DATE:	BY:
Project Review		
5		
4		
3		
2		
1		
NO.	DATE:	BY:

DESCRIPTION

REVISIONS

Johns Manville

CQM, INC.
Engineering–Surveying–Material Testing
2679 Continental Drive
Green Bay, WI 54311

Protective Layer

Construction Documentation Drawings
Area 1 & 2 Final Cover
Johns Manville Waukegan Plant
Waukegan, IL

DRAWN BY: WBE

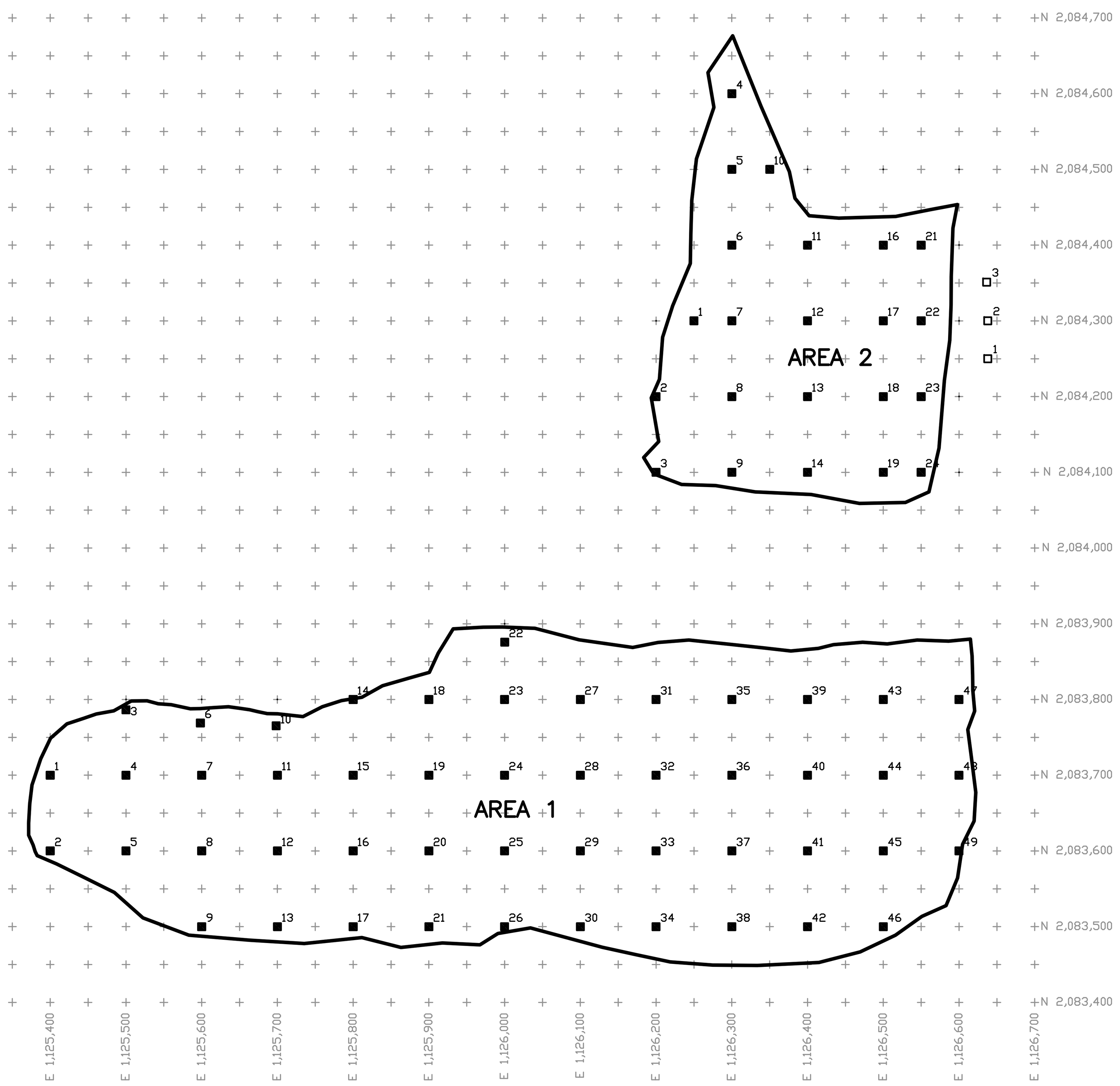
DATE: Jan. 2009

SCALE: 1"=60'

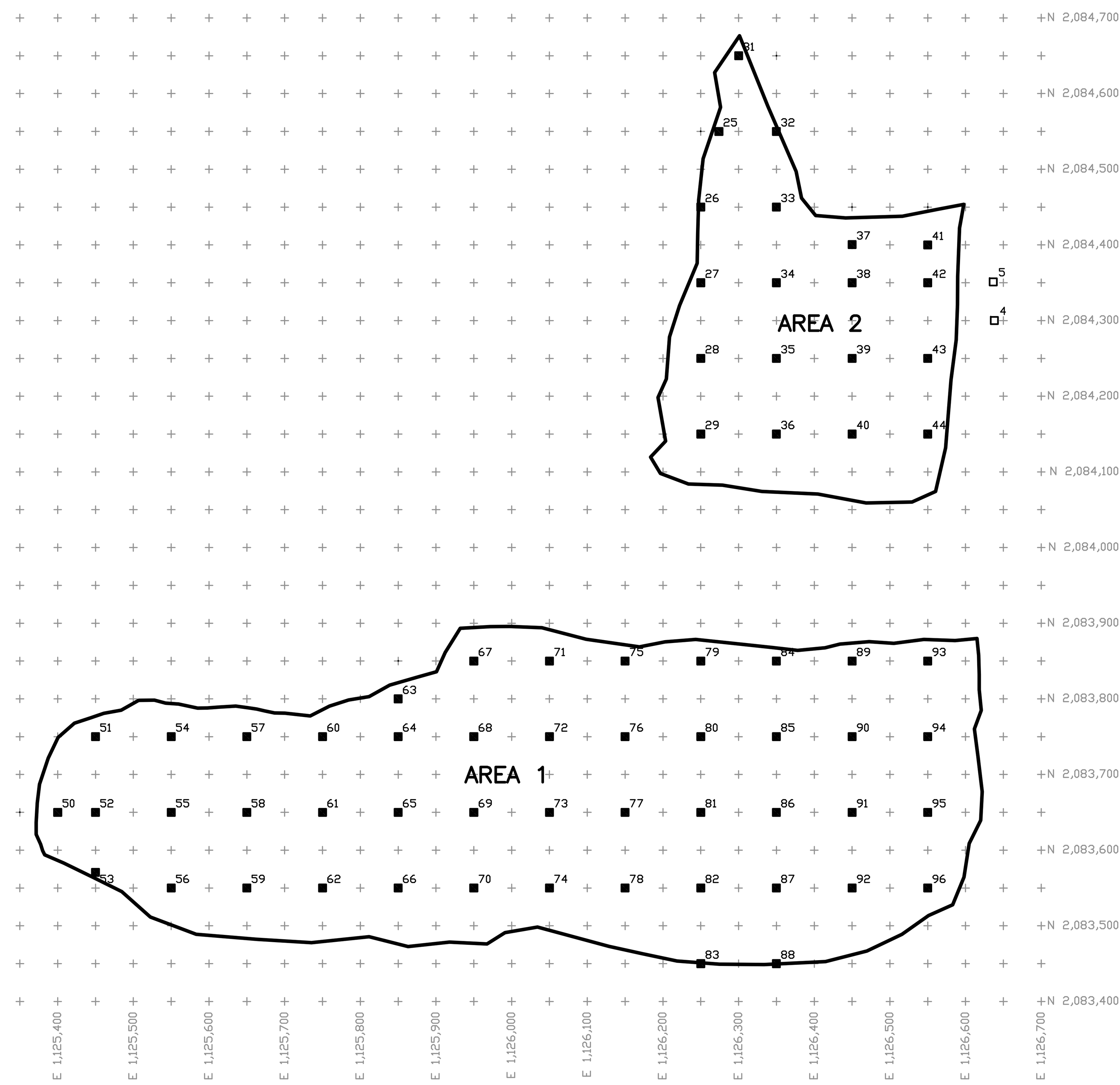
DRAWING NO.

A–6

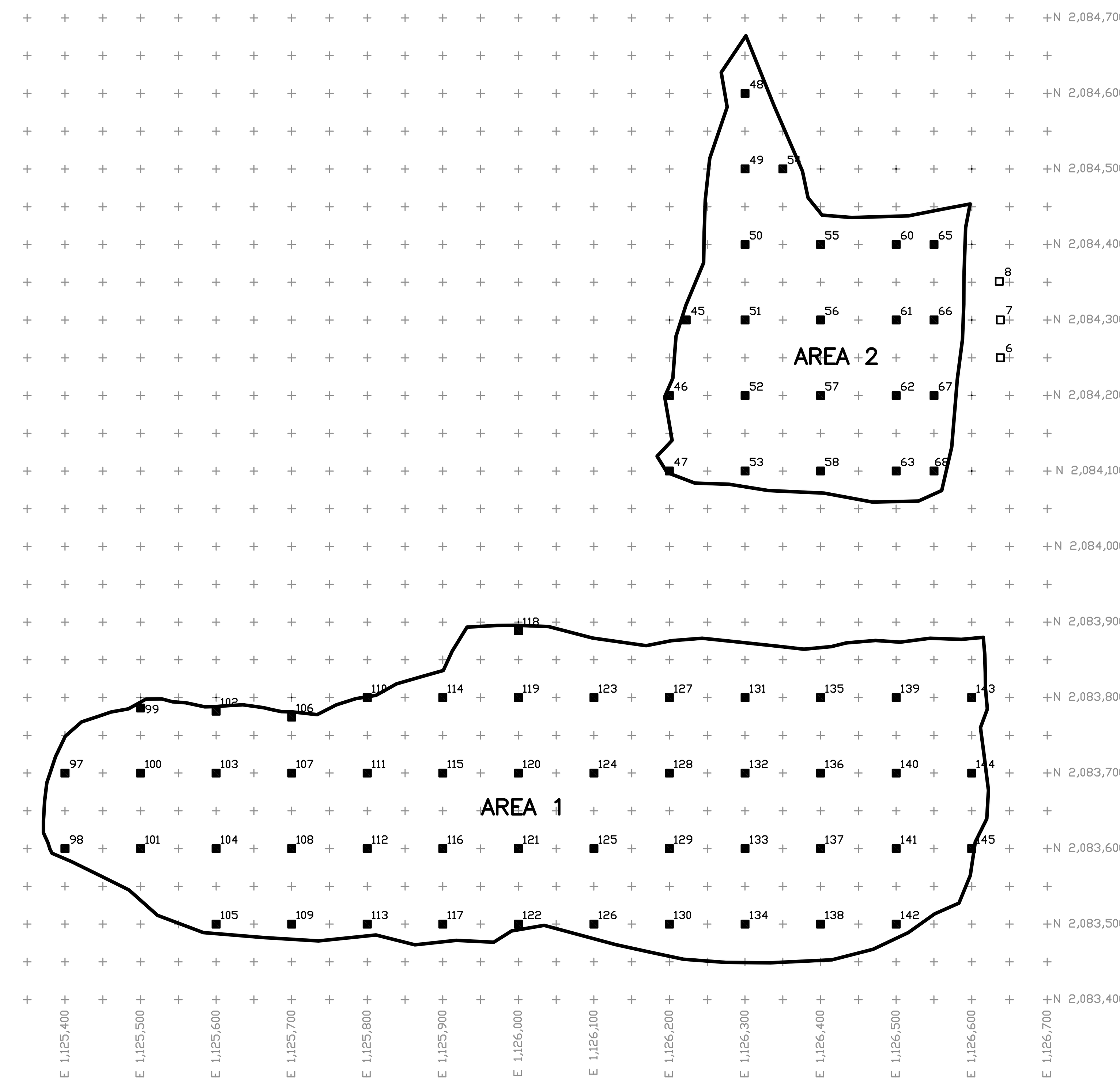
G:\Project Data\MIS-SITE\Johns Manville\Site Cap\Documentation\A-6.dwg, 2/10/2009 2:04:10 PM



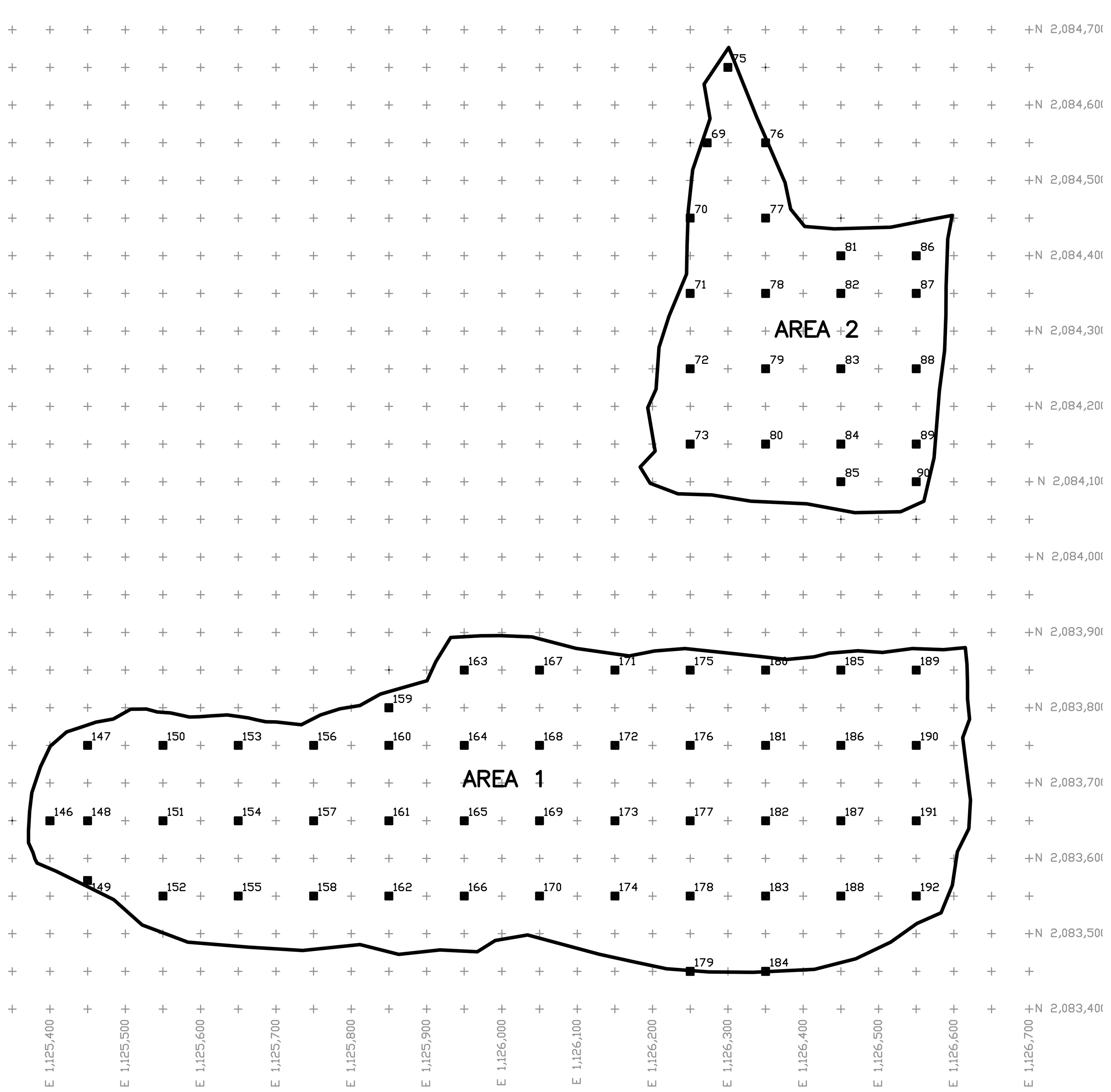
PROTECTIVE LAYER (LIFT NO.1)



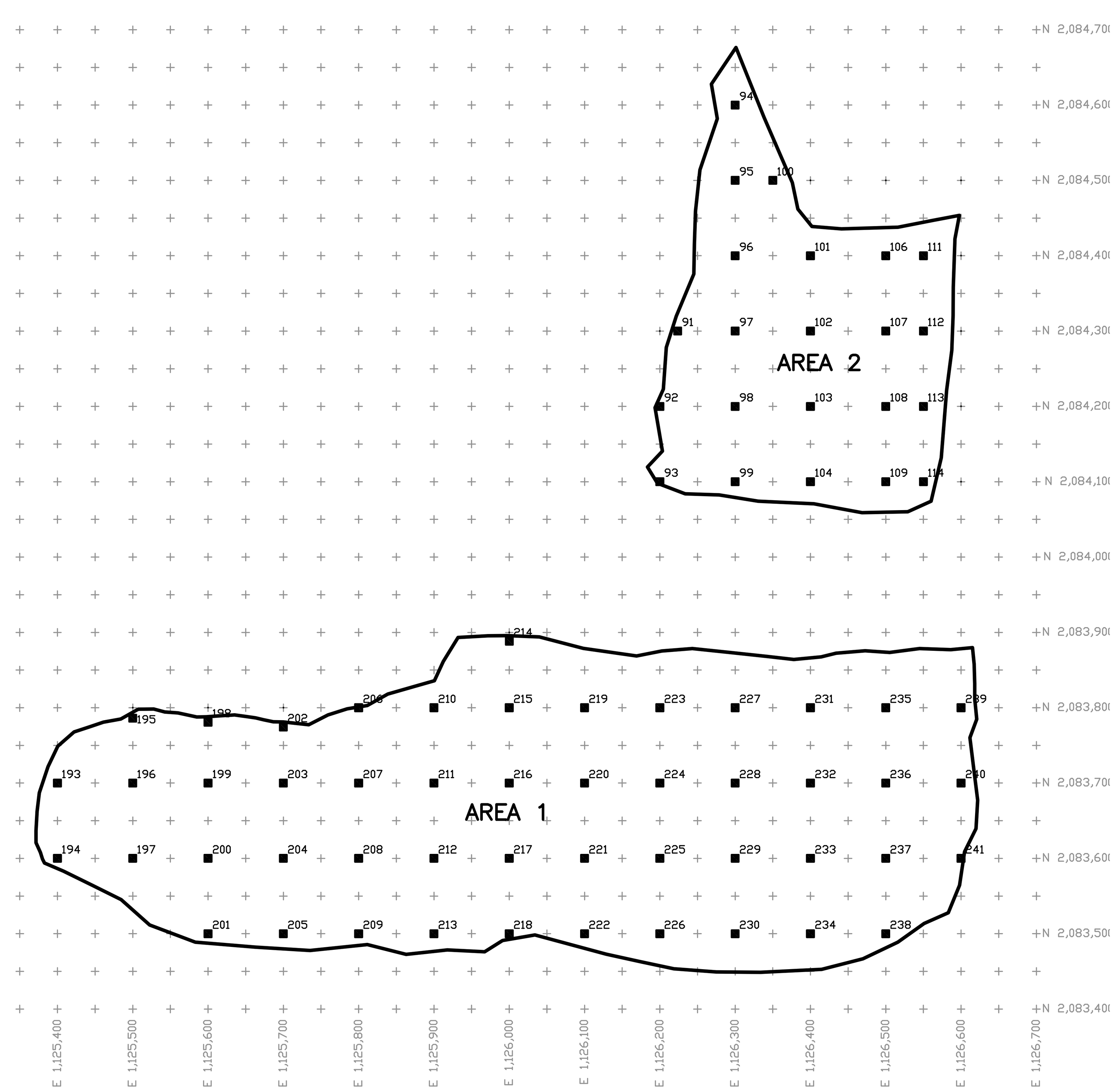
PROTECTIVE LAYER (LIFT NO.2)



PROTECTIVE LAYER (LIFT NO.3)



PROTECTIVE LAYER (LIFT NO.4)



PROTECTIVE LAYER (LIFT NO.5)

N

LEGEND

LIMITS OF WASTE

DENSITY TEST LOCATION AND NUMBER FOR EAST CHANNEL

DENSITY TEST LOCATION AND NUMBER

NOTES:

1. THE PROTECTIVE LAYER FOR AREA 1 AND 2 WAS PLACED IN APPROXIMATE 8-INCH LIFTS AND COMPACTED TO 6-INCHES. THE TOP 6-INCH LIFT OF THE 3-FOOT PROTECTIVE LAYER MATERIAL WAS TRACKED IN BY A DOZER TO PROMOTE VEGETATION GROWTH.
2. APPENDIX E OF THE DOCUMENTATION REPORT SUMMARIZES THE FIELD MOISTURE/DENSITY TESTING PERFORMED ON THE PROTECTIVE LAYER MATERIAL.
3. APPENDIX F OF THE DOCUMENTATION REPORT SUMMARIZES THE FIELD MOISTURE/DENSITY TESTING PERFORMED ON THE CERCLA CAP EAST CHANNEL MATERIAL.

RELEASE	DATE:	BY:
Project Review		
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2		
1		
NO.	DATE:	BY:

DESCRIPTION

REVISIONS

JM Johns Manville

CQM, INC.
Engineering-Surveying-Material Testing
2679 Continental Drive
Green Bay, WI 54311

Protective Layer
Density Test Locations

Construction Documentation Drawings
Area 1 & 2 Final Cover
Johns Manville Waukegan Plant
Waukegan, IL

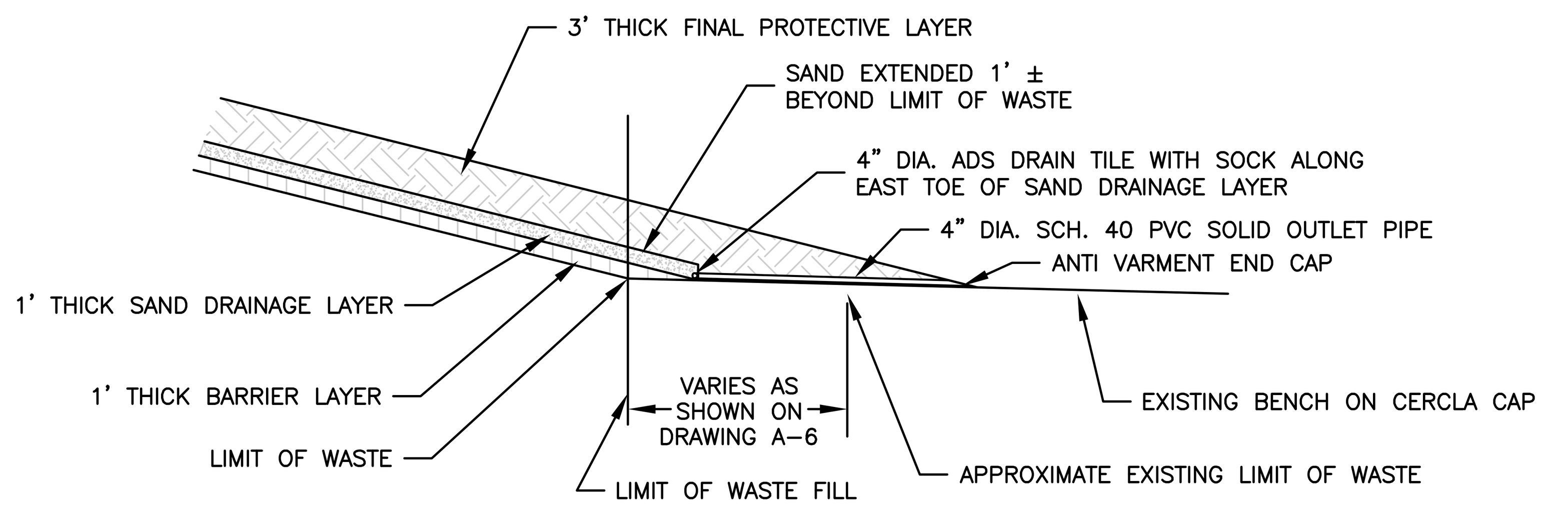
DRAWN BY: WBE

DATE: Jan. 2009

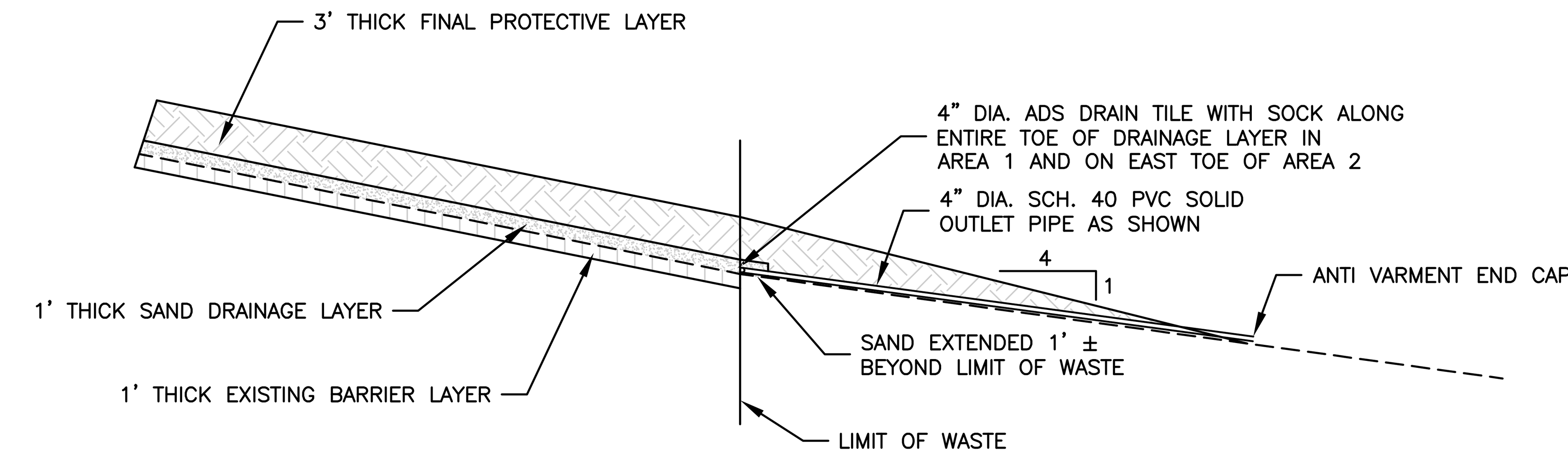
SCALE: NTS

DRAWING NO.

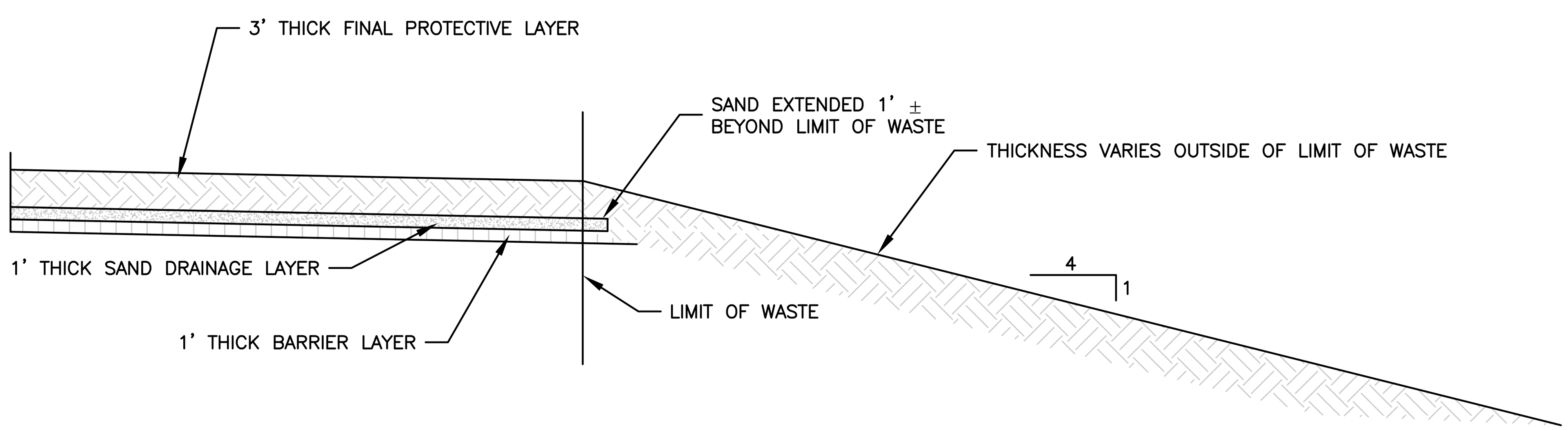
A-7



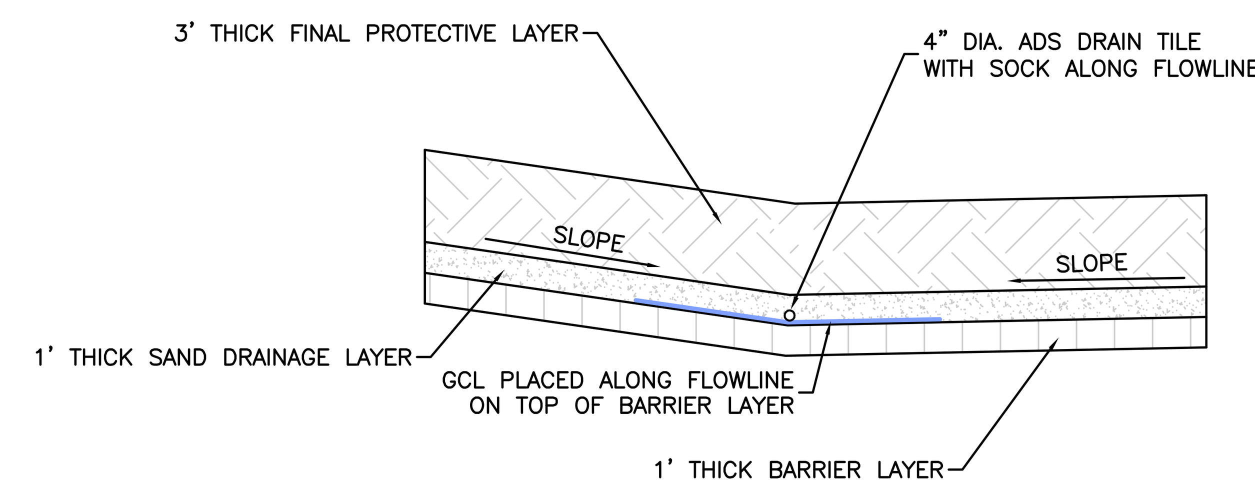
1/8 CAP TERMINATION ON CERCLA BENCH
NOT TO SCALE



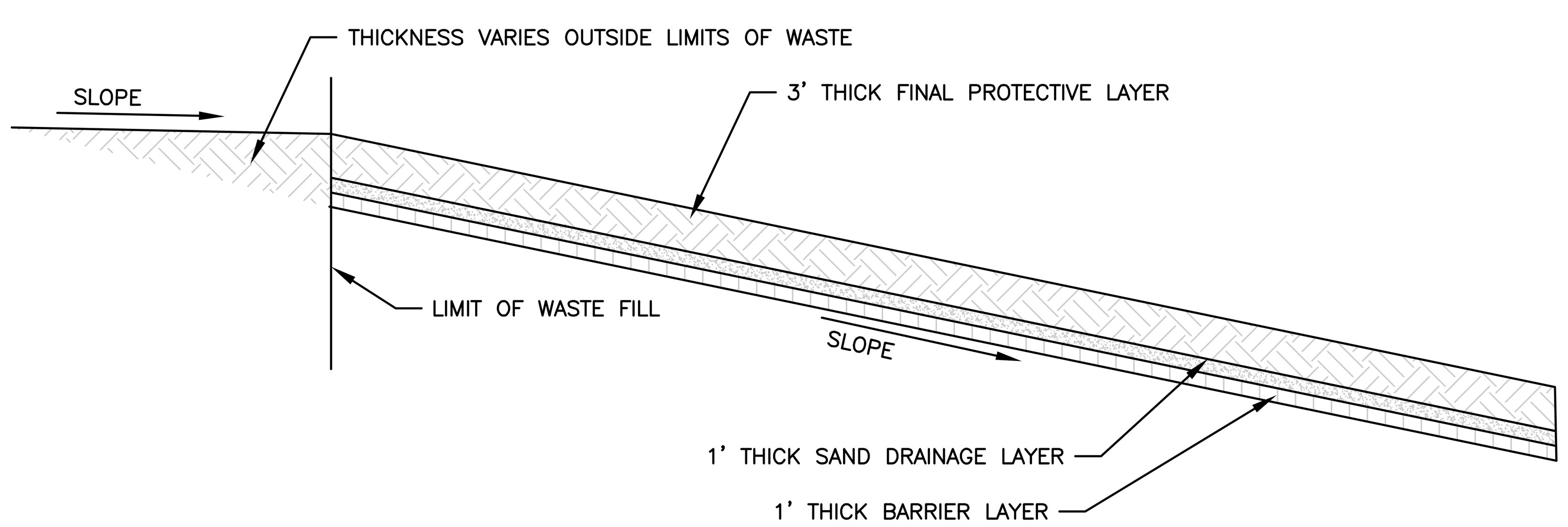
2/8 TYPICAL CAP TERMINATION
NOT TO SCALE



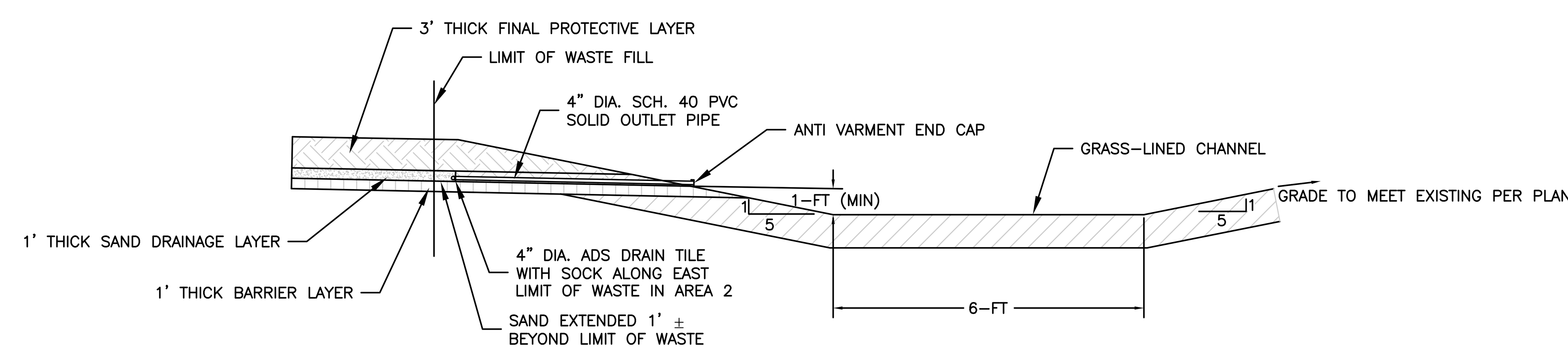
3/8 CAP TERMINATION AT NORTH SLOPE OF AREA 2
NOT TO SCALE



4/8 AREA 2 INTERIOR SWALE DETAIL
NOT TO SCALE



5/8 CAP TERMINATION AGAINST BERM ON WEST SIDE OF AREA 2
NOT TO SCALE



6/8 EAST CHANNEL – TYPICAL SECTION AND CAP TERMINATION
NOT TO SCALE

RELEASE	DATE:	BY:
Project Review		
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1		
NO.	DATE:	BY:
DESCRIPTION		

REVISIONS

Johns Manville

CQM, INC.
Engineering–Surveying–Material Testing
2679 Continental Drive
Green Bay, WI 54311

Details

Construction Documentation Drawings
Area 1 & 2 Final Cover
Johns Manville Waukegan Plant
Waukegan, IL

DRAWN BY: WBE

DATE: Jan. 2009

SCALE: NTS

DRAWING NO. A–8

ATTACHMENT E

Response 05: Appendix F of Appendix E of Closure Report (Barrier Layer Compaction Testing Results)

CLIENT: JOHNS MANVILLE - AREA 1 AND 2
PROJECT NAME: FINAL COVER CONSTRUCTION
LOCATION AND SOIL TYPE: AREA 1 BARRIER LAYER
IN-PLACE MOISTURE DENSITY TESTING
DENSITY METER: TROXLER 3440
PROBE DEPTH: 6 INCHES
MAXIMUM PROCTOR DENSITY: 130.1 PCF @ 8.4% MOISTURE
COMPACTION REQUIREMENTS: 90% OF MODIFIED PROCTOR DENSITY
@ 2-6% ABOVE OPTIMUM

Test No.	Date Tested	Coordinates North	East	Lift No.	Moisture (%)	Dry Density (PCF)	Compaction (%)
1	8/18/08	2083750	1126100	1	10.6	128.7	98.9
2	8/18/08	2083640	1126090	1	11.8	121.4	93.3
3	8/20/08	2083775	1126150	1	10.8	123.2	94.7
4	8/20/08	2083750	1126250	1	10.5	122.2	93.9
5	8/21/08	2083800	1126450	1	10.4	123.1	94.6
6	8/21/08	2083800	1126500	1	11.0	122.1	93.9
7	8/18/08	2083700	1126050	2	11.8	125.4	96.4
8	8/18/08	2083615	1126130	2	11.5	126.5	97.2
9	8/26/08	2083800	1126400	2	11.0	117.3	90.2
10	8/26/08	2083800	1126500	2	11.1	123.2	94.7
11	8/26/08	2083800	1126600	2	11.0	125.6	96.5

CLIENT: JOHNS MANVILLE - AREA 1 AND 2
PROJECT NAME: FINAL COVER CONSTRUCTION
LOCATION AND SOIL TYPE: AREA 2 BARRIER LAYER
IN-PLACE MOISTURE DENSITY TESTING
DENSITY METER: TROXLER 3440
PROBE DEPTH: 6 INCHES
MAXIMUM PROCTOR DENSITY: 130.1 PCF @ 8.4% MOISTURE
COMPACTION REQUIREMENTS: 90% OF MODIFIED PROCTOR DENSITY
@ 2-6% ABOVE OPTIMUM

Test No.	Date Tested	Coordinates North	Coordinates East	Lift No.	Moisture (%)	Dry Density (PCF)	Compaction (%)
1	8/22/08	2084150	1126250	1	11.5	119.1	91.5
2	8/22/08	2084150	1126350	1	11.1	117.8	90.5
3	8/22/08	2084150	1126450	1	11.5	119.0	91.5
4	8/22/08	2084050	1126450	1	10.6	117.7	90.5
5	8/22/08	2084150	1126550	1	12.0	119.7	92.0
6	8/22/08	2084050	1126550	1	12.8	121.6	93.5
7	8/22/08	2084150	1126650	1	10.8	125.5	96.5
8	8/22/08	2084050	1126650	1	12.4	119.4	91.8
9	8/27/08	2084150	1126200	2	10.5	125.8	96.7
10	8/27/08	2084100	1126200	2	12.5	124.3	95.5
11	8/27/08	2084150	1126300	2	11.5	126.2	97.0
12	8/27/08	2084100	1126300	2	11.1	122.5	94.2
13	8/27/08	2084150	1126400	2	10.4	123.7	95.1
14	8/27/08	2084100	1126400	2	12.0	123.2	94.7
15	8/27/08	2084150	1126500	2	11.1	122.5	94.2
16	8/27/08	2084100	1126500	2	11.6	126.2	97.0
17	8/27/08	2084150	1126600	2	11.3	125.0	96.1
18	8/27/08	2084100	1126600	2	11.3	126.7	97.4

ATTACHMENT F

Response 06: USEPA Approval of Phase II Remedial Work Plan dated April 14, 2008

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF:

VIA TELEFAX AND
CERTIFIED MAIL

April 14, 2008

Bill Bow, Principal
Levin-Fricke
630 Tollgate Road, Suite D
Elgin, IL 60123-9364

Dear Mr. Bow:

The U.S. Environmental Protection Agency (EPA), in consultation with the State of Illinois, has reviewed the February 8, 2008 "Final Phase II Remedial Work Plan- On-Site Landfill Closure" (the Work Plan) for the Johns-Manville Site in Waukegan, Illinois (the Site). EPA hereby approves the Work Plan with the following modifications:

1. The title of the document should be changed to avoid confusion with the 150-acre CERCLA landfill area. Possible alternate titles for the document are "Final Phase II Remedial Work Plan- Former Miscellaneous Disposal Pit Closure" and "Final Phase II Remedial Work Plan- Non-Asbestos-Containing Landfill Area Closure".

2. The potential exists for the CERCLA cap to be penetrated during the work, especially near the east side of Fill Area #2. The Work Plan must describe how this will be verified during construction and, if it is penetrated, how the cap will be repaired.

3. The Barrier Layer must be verified to have 12 inch thickness after the cut and fill activities. How this will be accomplished must be stated in the Work Plan.

4. The Sand Drainage Layer, Final Protective Layer, and Vegetative Cover must meet the criteria (soil type, compaction) used for input to the HELP modeling; how this will be demonstrated must be stated in the Work Plan.

5. Page 28: Schedule: remove "anticipated" and add definite completion date for construction activities. Either "November 15, 2008" or "4 months after contractor mobilization" would be acceptable.

Please submit amended pages for insertion into the Work Plan at your earliest convenience. If you have any questions concerning this letter, please contact me at (312) 886-4742.

Sincerely,

Brad Bradley

Brad Bradley
Remedial Project Manager

cc: Sandy Bron, Illinois EPA
Beth Wallace, Illinois Attorney General's Office

United States Environmental Protection Agency
Region V
77 West Jackson Boulevard
Chicago, Illinois 60604

EPA

Superfund Division

Facsimile Cover Sheet
Telephone Number
312-~~886-4071~~
353-5541

To: Bill Bow

Office phone: (847) 695-8855 **Machine No:** (847) 695-7799

From: Brad Bradley

Office phone: (312) 886-4742 **Mail code:**

Date: 4/14/08 **Number of pages, including cover:** 3

Message:

Signature:

ATTACHMENT G

Response 06: Geotechnical Testing of Barrier Clay

Appendix F

Permeability Analytical Data Report – Interim Landfill Cover

May 6, 2003

TSC
TESTING SERVICE CORPORATION
Corporate Office:
360 S. Main Place, Carol Stream, IL 60188-2404
630.462.2600 • Fax 630.653.2988
Local Office:
457 E. Gundersen Drive, Carol Stream, IL 60188-2492
630.653.3920 • Fax 630.653.2726

Ms. Wendy Teskey
LFR Levine Fricke
630 Tollgate Road, Suite D
Elgin, Illinois 60123

Re: Laboratory Analysis
TSC Job L-57,606

Dear Ms. Teskey:

Included in this report is the result of the analysis you requested for six (6) Shelby Tube samples delivered to our office.

Sample ID	% Moisture	P.C.F. Dry	K_T (cm/sec)	Description
LMW-03 ST-01	20.4	107.2	3.9×10^{-8}	Brown & gray silty CLAY, little sand, trace gravel (CL)
C-22 * ST-02	11.3	117.3	1.4×10^{-5}	Brown & gray clayey SAND, little gravel (SC)
C-14 ST-03	18.0	105.5	6.1×10^{-8}	Brown & gray silty CLAY, little sand and gravel (CL)
C-9-10 ST-04	13.1	119.8	3.4×10^{-7}	Brown & gray silty CLAY, some sand, little gravel (CL)
C-67-68 ST-05	9.6	120.9	1.8×10^{-7}	Brown, black & gray sandy CLAY, little gravel (CL)
C-65-66 ST-06	17.6	105.7	3.2×10^{-5}	Brown silty CLAY, some sand, trace gravel (CL)

*NOTE: The bottom ten inches of Sample C-22 was of a gray sand (SP) not suitable for an ASTM D5084 permeability analysis.

The analysis was performed following current ASTM D5084 methodology.

It is a pleasure to assist you on this project. Please call if you have any questions or require additional information.

Respectfully submitted,

TESTING SERVICE CORPORATION

Larry Lockwald
Laboratory Manager

LL:cn

A comparison of the average water elevations within the shallow, unconfined aquifer located above the Wadsworth Till with the average water elevations found within the deep sand and gravel/Silurian Dolomite (see Table 3) shows that there is a downward gradient from the shallow sand to these underlying units. As Table 3 shows, the downward gradient in the vicinity of the On-Site Landfill ranges from 0.03 foot per foot (LMW-14) to 0.06 foot per foot (LMW-18).

4.2.5 Vertical Flow Velocity

Table 4 shows the calculated vertical flow velocity from the shallow, unconfined aquifer to the underlying sand and gravel/Silurian Dolomite, through the lower permeability Wadsworth Till. Velocities range from 0.02 to 0.04 feet per year. Taking into account the thickness of the Wadsworth Till in the vicinity of the On-Site Landfill, groundwater travel times through the till range from approximately 2,300 to 4,100 years. This calculation is strictly for groundwater itself; migration through the till for any potential contaminants would be further reduced by adsorption and attenuation.

4.2.6 Definition of Uppermost Aquifer

Based upon the geology and hydrogeology in the vicinity of the On-Site Landfill, the uppermost aquifer is defined from the surface to the upper section of the underlying Silurian Dolomite bedrock. This includes two significant water bearing zones, the shallow, unconfined aquifer located within the beach sand complex above the Wadsworth Till and the aquifer that includes the sand and gravel outwash and underlying Silurian Dolomite. These aquifers are separated by the Wadsworth Till that is an average thickness of 79 feet in the vicinity of the On-Site Landfill. The till exhibits an average hydraulic conductivity of 6.52E-08 cm/s, thus travel times for groundwater passing through the till are on the order of 2,300 to 4,100 years.

4.3 On-Site Landfill Characterization

4.3.1 On-site Landfill Interim Cover

The results of the soil borings that were advanced in April 2003 across the two fill areas show that interim cover thickness varies widely across both Fill Area 1 and Fill Area 2. The clay cover ranged from 1 foot to 10.5 feet in thickness in Fill Area 1. The approximate average thickness was 3 to 4 feet. The clay fill in Fill Area 2 ranged from 2 feet to 15 feet in thickness. Figure 6 shows the locations of the soil borings. Figures 15, 16 and 17 present three cross sections of the fill areas to graphically depict the clay cover thickness, the waste layer and the interface between the on-site landfill and the closed CERCLA landfill. Figure 18 presents the variation in thickness of clay cover across the landfill graphically by plotting the clay thickness contours.

Permeability of the clay cover was tested in Fill Area 1 at four locations (ST-1 through ST-4) and in Fill Area 2 at two locations (ST-4 and ST-5), which are shown in Figure

7. The permeability of the interim cover overlying Fill Area 1 ranged from 3.9×10^{-8} centimeter/second (cm/s) to 3.4×10^{-7} cm/s. The bottom 10" of one of the four samples from Fill Area 1 (ST-2) contained gray sand material unsuitable for conducting the permeability test. Disregarding the results from the ST-2 sample, the average permeability of the cover in Fill Area 1 was estimated to be 1.47×10^{-7} cm/s. Of the two samples from Fill Area 2, the sample from location ST-6 consisted of silty clay with some (30-55%) sand and trace gravel, and was not considered representative of the clay fill across Fill Area 2 and was not used in the analysis. From the results of the analysis of the sample from ST-5, the permeability of the cover in Fill Area 2 was determined to be 1.8×10^{-7} cm/sec. The analysis was performed following ASTM Method D-5084. The laboratory report showing the results of the permeability testing is presented in Appendix E.

4.3.2 On-Site Landfill Subsurface Characterization

Fill Area 1:

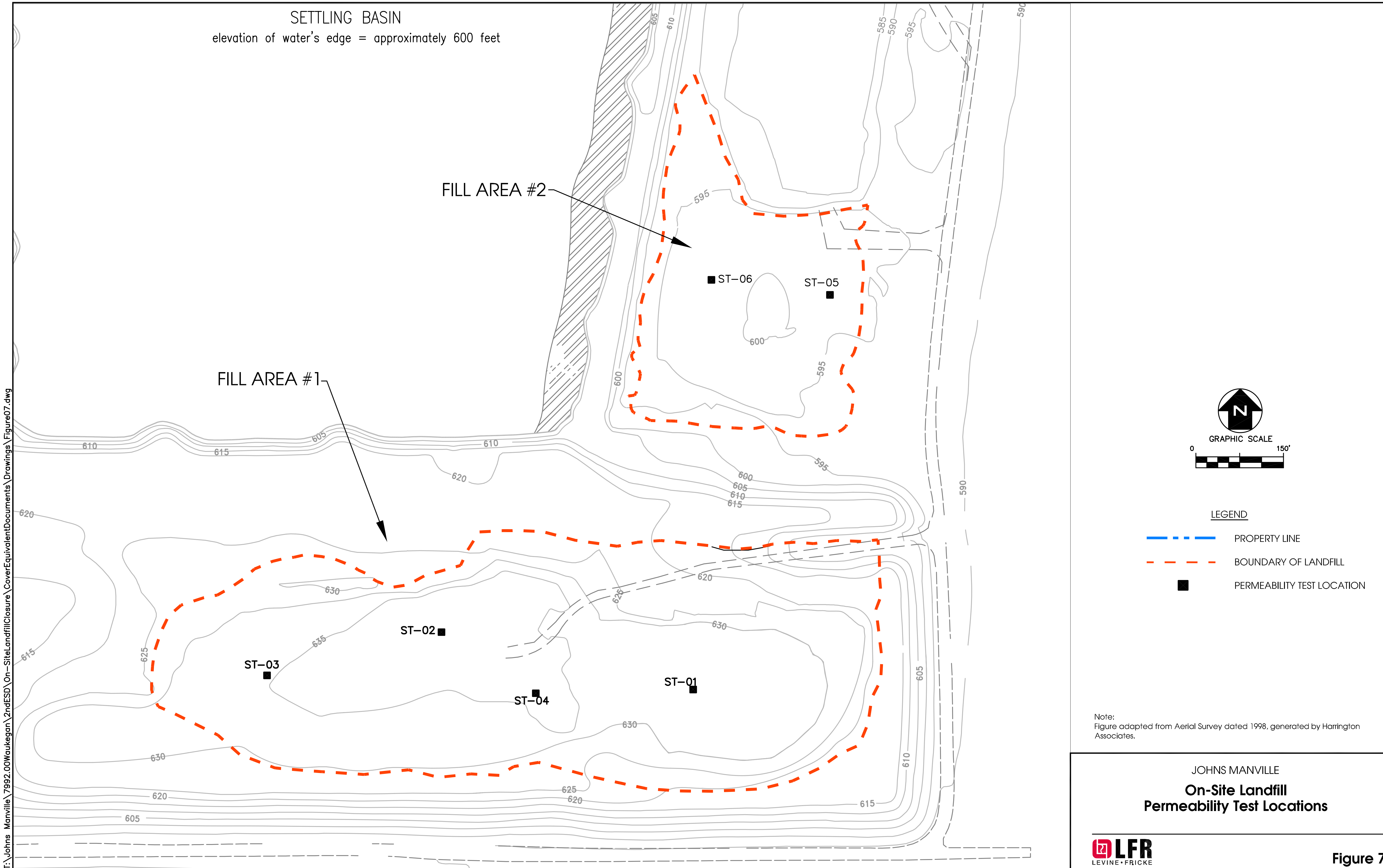
The 1992 historical topographic survey of the on-site landfill was compared with the survey completed in late 1998. No waste or interim cover has been placed since that time. It was estimated that between 30 feet and 40 feet of waste material and soil cover had been placed in the southeast portion of Fill Area 1 (vicinity of SB-01 and SB-02). Lesser amounts of material were placed towards the western limits of Fill Area 1 (vicinity of LF-SB03 and LF-SB04).

The boring log for LF-SB02 showed the presence of calcium silicate from 18 feet to 36 feet bgs. Calcium silicate is the inert material that makes up the T-12 insulation that was manufactured at the Waukegan plant through 1998. Consistent with the composition of T-12 insulation, synthetic fibers were also found in the boring. These fibers were tested at an independent laboratory, Scilab Boston, Inc. (Scilab), which confirmed that the material did not contain asbestos. The Scilab results are included in Appendix G. Multiple attempts to reach similar depths in the area of LF-SB01 were met with subsurface refusal at depths between 10 feet and 13 feet bgs (see boring log). The boring at LF-SB02 was terminated in T-12 waste material at 36 feet bgs (approximately 596 feet AMSL).

Greater than 95% clay was encountered from the surface down to 13 feet bgs in LF-SB01 (maximum depth of boring) and down to 18 feet bgs in LF-SB02 (depth at which T-12 was encountered). This was consistent with the Waukegan plant's operations during the 1992 to 1998 time period, when JM was placing sufficient cover material to prevent surficial exposure of the waste T-12 material.

In the vicinity of LF-SB03 and LF-SB04, very little waste material was encountered. At LF-SB03, the cover for the former CERCLA landfill underlying the Site was encountered at 11.5 feet bgs. Except for an isolated shingle "wafer" that was encountered at 8 feet bgs, only clay was found above the former CERCLA landfill. At LF-SB04, the cover of the former CERCLA landfill was encountered at approximately

T:\Johns Manville\7992.00Waukegan\2ndESD\On-SiteLandfillClosure\CoverEquivalentDocuments\Drawings\Figure07.dwg



Note:
Figure adapted from Aerial Survey dated 1998, generated by Harrington Associates.

JOHNS MANVILLE

On-Site Landfill
Permeability Test Locations

LFR
LEVINE•FRICKE

Figure 7

ATTACHMENT H

Response 06: Environmental Testing of Barrier Clay

DK PILE

Dirt Supplier: DK Contractors

Dirt Pile Location: East Side of Landfill, South of Collection Basin

Number of Loads Supplied: 1295

Number of loads on-site: 1295

Activity Period: 1999 through 2000

Pile Status: Inactive

Does All Soil meet Illinois Title 35 Subtitle G Chapter 1 Subchapter f Part 742 TACO Standard: Yes

Number of Samples: 5 (including re-tests)

Analytical Method: 8260 VOC, 8310 PNA, RCRA Metals = As, Bd, Cd, Cr, Pb, Hg, Se, Ag, SPLP Lead, pH, PCBs

Comments: Some soil was rejected due to the presence of construction debris.

The samples collected on November 18 and 19, 1999 were not analyzed for PCBs or metals by STL (laboratory).

Contractor **DK Contractors**
Sample Identification **E1W041399**
Sample Date **4/13/99**
Report Date **4/26/99**

Compound	Units	Lab Detection Limit	Back Ground Level	Sample Results	Standard Tier 1 Levels (mg/kg) Residential Soil Ingestion	Inhalation	Class I Groundwater
SPLP Lead	mg/L	0.005	NA	ND	NL	NL	0.0075
pH	SU	0.1	NA	9.1	6 - 9	6 - 9	6 - 9
RCRA Metals							
Arsenic	mg/kg	2	13	**8**	0.4	750	31
Barium	mg/kg	0.95	110	45.5	5500	690000	2100
Cadmium	mg/kg	2	0.6	ND	78	1800	430
Chromium	mg/kg	0.95	16.2	13	390	270	28
Lead	mg/kg	4.7	36	15.8	400	NL	NL
Mercury	mg/kg	0.0404	0.06	ND	23	10	8
Selenium	mg/kg	2	0.48	ND	390	NL	2.4
Silver	mg/kg	4.7	0.55	ND	390	NL	110
PCBs (EPA Method 8080)							
PCB 1016	mg/kg	0.02	NA	ND	1	NL	0.5
PCB 1221	mg/kg	0.02	NA	ND	1	NL	0.5
PCB 1232	mg/kg	0.02	NA	ND	1	NL	0.5
PCB 1242	mg/kg	0.02	NA	ND	1	NL	0.5
PCB 1248	mg/kg	0.02	NA	ND	1	NL	0.5
PCB 1254	mg/kg	0.02	NA	ND	1	NL	0.5
PCB 1260	mg/kg	0.02	NA	ND	1	NL	0.5
PNAs (EPA Method 8310)							
Acenaphthene	mg/kg	0.2	NA	ND	4700	NL	570
Acenaphthylene	mg/kg	0.2	NA	ND	NL	NL	NL
Anthracene	mg/kg	0.04	NA	ND	23000	NL	12000
Benzo a anthracene	mg/kg	0.004	NA	ND	0.9	NL	2
Benzo a pyrene	mg/kg	0.004	NA	ND	0.09	NL	8
Benzo b fluoanthene	mg/kg	0.004	NA	ND	0.9	NL	5
Benzo ghi perylene	mg/kg	0.004	NA	ND	NL	NL	NL
Benzo k fluoranthene	mg/kg	0.004	NA	ND	9	NL	49
Chrysene	mg/kg	0.04	NA	ND	88	NL	160
Dibenzo a,h anthracene	mg/kg	0.004	NA	ND	0.09	NL	2
Fluoranthene	mg/kg	0.04	NA	ND	3100	NL	4300
Fluorene	mg/kg	0.04	NA	ND	3100	NL	560
Indeno 1,2,3-cd pyrene	mg/kg	0.004	NA	ND	0.9	NL	14
Naphthalene	mg/kg	0.2	NA	ND	3100	NL	84
Phenanthrene	mg/kg	0.04	NA	ND	NL	NL	NL
Pyrene	mg/kg	0.04	NA	ND	2300	NL	4200
VOCs (EPA Method 8260)							
Acetone	mg/kg	0.01	NA	ND	7800	100000	16
Benzene	mg/kg	0.005	NA	ND	22	0.8	0.03
Bromodichloromethane	mg/kg	0.005	NA	ND	10	3000	0.6
Bromoform	mg/kg	0.005	NA	NT	81	53	0.8
Bromomethane	mg/kg	0.01	NA	ND	110	10	0.2
2-Buthanone	mg/kg	0.01	NA	NT	NL	NL	NL
Carbon disulfide	mg/kg	0.005	NA	NT	7800	720	32
Carbon tetrachloride	mg/kg	0.005	NA	ND	5	0.3	0.07
Chlorobenzene	mg/kg	0.005	NA	ND	1600	130	1
Chlorodibromomethane	mg/kg	0.005	NA	ND	1600	1300	0.4
Chloroethane	mg/kg	1	NA	ND	NL	NL	NL
2- Chloroethyl vinyl ether	mg/kg	NT	NA	NT	NL	NL	NL
Chloroform	mg/kg	0.005	NA	ND	100	0.3	0.6
Chloromethane	mg/kg	0.005	NA	NT	NL	NL	NL
1,1- Dichloroethane	mg/kg	0.005	NA	ND	7800	1300	23
1,2- Dichloroethane	mg/kg	0.005	NA	ND	7	0.4	0.02
1,1- Dichloroethene	mg/kg	0.005	NA	ND	700	1500	0.06
cis- 1,2- Dichloroethene	mg/kg	0.005	NA	ND	780	1200	0.4
trans-1,2-Dichloroethene	mg/kg	0.005	NA	ND	1600	3100	0.7
1,2 Dichloropropane	mg/kg	0.005	NA	ND	9	15	0.03
cis - 1,3 Dichloropropene	mg/kg	0.005	NA	ND	4	0.1	0.004
trans - 1,3 Dichloropropene	mg/kg	0.005	NA	ND	4	0.1	0.004
Ethylbenzene	mg/kg	0.005	NA	ND	7800	400	13
2 - Hexanone	mg/kg	0.02	NA	NT	NL	NL	NL
Methylene chloride	mg/kg	0.005	NA	ND	85	13	0.02
4-Methyl-2-pentanone	mg/kg	0.01	NA	NT	NL	NL	NL
Styrene	mg/kg	0.005	NA	ND	16000	1500	4
1,1,2,2-Tetrachloroethane	mg/kg	0.005	NA	NT	NL	NL	NL
Tetrachloroethene	mg/kg	0.005	NA	ND	12	11	0.06
Toluene	mg/kg	0.005	NA	ND	16000	650	12
1,1,1- Trichloroethane	mg/kg	0.005	NA	ND	NL	1200	2
1,1,2-Trichloroethane	mg/kg	0.005	NA	ND	310	1800	0.02
Tricloroethene	mg/kg	0.005	NA	ND	58	5	0.06
Trichlorofluoromethane	mg/kg	NT	NA	NT	NL	NL	NL
Vinyl Acetate	mg/kg	NT	NA	NT	NL	NL	NL
Vinyl Chloride	mg/kg	0.01	NA	ND	0.3	0.03	0.01
Total Xylenes	mg/kg	0.01	NA	ND	160000	410	150

Notes:
1. NL = Not Listed
2. NA = Not Applicable
3. ND = Not Detected
4. NT = Not Tested
5. Illinois Title 35, Subtitle G, Chapter I, Subchapter f, Part 742 titled Tiered Approach to Corrective Action Objectives supercedes this summary table.

Contractor **DK Contractors**
Sample Identification **E2W111599**
Sample Date **11/18/99**
Report Date **12/1/99**

Compound	Units	Lab Detection Limit	Back Ground Level	Sample Results	Standard Tier 1 Levels (mg/kg) Residential Soil Ingestion	Inhalation	Class I Groundwater
SPLP Lead	mg/L	0.005	NA	ND	NL	NL	0.0075
pH	SU	0.1	NA	8.5	6 - 9	6 - 9	6 - 9
RCRA Metals							
Arsenic	mg/kg	NT	13	NT	0.4	750	31
Barium	mg/kg	NT	110	NT	5500	690000	2100
Cadmium	mg/kg	NT	0.6	NT	78	1800	430
Chromium	mg/kg	NT	16.2	NT	390	270	28
Lead	mg/kg	NT	36	NT	400	NL	NL
Mercury	mg/kg	NT	0.06	NT	23	10	8
Selenium	mg/kg	NT	0.48	NT	390	NL	2.4
Silver	mg/kg	NT	0.55	NT	390	NL	110
PCBs (EPA Method 8080)							
PCB 1016	mg/kg	NT	NA	NT	1	NL	0.5
PCB 1221	mg/kg	NT	NA	NT	1	NL	0.5
PCB 1232	mg/kg	NT	NA	NT	1	NL	0.5
PCB 1242	mg/kg	NT	NA	NT	1	NL	0.5
PCB 1248	mg/kg	NT	NA	NT	1	NL	0.5
PCB 1254	mg/kg	NT	NA	NT	1	NL	0.5
PCB 1260	mg/kg	NT	NA	NT	1	NL	0.5
PNAs (EPA Method 8310)							
Acenaphthene	mg/kg	0.2	NA	ND	4700	NL	570
Acenaphthylene	mg/kg	0.2	NA	ND	NL	NL	NL
Anthracene	mg/kg	0.04	NA	ND	23000	NL	12000
Benzo a anthracene	mg/kg	0.004	NA	ND	0.9	NL	2
Benzo a pyrene	mg/kg	0.004	NA	ND	0.09	NL	8
Benzo b fluoanthene	mg/kg	0.004	NA	ND	0.9	NL	5
Benzo ghi perylene	mg/kg	0.004	NA	ND	NL	NL	NL
Benzo k fluoranthene	mg/kg	0.004	NA	ND	9	NL	49
Chrysene	mg/kg	0.04	NA	ND	88	NL	160
Dibenzo a,h anthracene	mg/kg	0.004	NA	ND	0.09	NL	2
Fluoranthene	mg/kg	0.04	NA	ND	3100	NL	4300
Fluorene	mg/kg	0.04	NA	ND	3100	NL	560
Indeno 1,2,3-cd pyrene	mg/kg	0.004	NA	ND	0.9	NL	14
Naphthalene	mg/kg	0.2	NA	ND	3100	NL	84
Phenanthrene	mg/kg	0.04	NA	ND	NL	NL	NL
Pyrene	mg/kg	0.04	NA	ND	2300	NL	4200
VOCs (EPA Method 8260)							
Acetone	mg/kg	0.01	NA	ND	7800	100000	16
Benzene	mg/kg	0.005	NA	ND	22	0.8	0.03
Bromodichloromethane	mg/kg	0.005	NA	ND	10	3000	0.6
Bromoform	mg/kg	NT	NA	NT	81	53	0.8
Bromomethane	mg/kg	0.01	NA	ND	110	10	0.2
2-Buthanone	mg/kg	NT	NA	NT	NL	NL	NL
Carbon disulfide	mg/kg	NT	NA	NT	7800	720	32
Carbon tetrachloride	mg/kg	0.005	NA	ND	5	0.3	0.07
Chlorobenzene	mg/kg	0.005	NA	ND	1600	130	1
Chlorodibromomethane	mg/kg	0.005	NA	ND	1600	1300	0.4
Chloroethane	mg/kg	0.005	NA	ND	NL	NL	NL
2- Chloroethyl vinyl ether	mg/kg	NT	NA	NT	NL	NL	NL
Chloroform	mg/kg	0.005	NA	ND	100	0.3	0.6
Chloromethane	mg/kg	NT	NA	NT	NL	NL	NL
1,1- Dichloroethane	mg/kg	0.005	NA	ND	7800	1300	23
1,2- Dichloroethane	mg/kg	0.005	NA	ND	7	0.4	0.02
1,1- Dichloroethene	mg/kg	0.005	NA	ND	700	1500	0.06
cis- 1,2- Dichloroethene	mg/kg	0.005	NA	ND	780	1200	0.4
trans-1,2-Dichloroethene	mg/kg	0.005	NA	ND	1600	3100	0.7
1,2 Dichloropropane	mg/kg	0.005	NA	ND	9	15	0.03
cis - 1,3 Dichloropropene	mg/kg	0.005	NA	ND	4	0.1	0.004
trans - 1,3 Dichloropropene	mg/kg	0.005	NA	ND	4	0.1	0.004
Ethylbenzene	mg/kg	0.005	NA	ND	7800	400	13
2 - Hexanone	mg/kg	NT	NA	NT	NL	NL	NL
Methylene chloride	mg/kg	0.005	NA	ND	85	13	0.02
4-Methyl-2-pentanone	mg/kg	NT	NA	NT	NL	NL	NL
Styrene	mg/kg	0.005	NA	ND	16000	1500	4
1,1,2,2-Tetrachloroethane	mg/kg	NT	NA	NT	NL	NL	NL
Tetrachloroethene	mg/kg	0.005	NA	ND	12	11	0.06
Toluene	mg/kg	0.005	NA	0.009	16000	650	12
1,1,1- Trichloroethane	mg/kg	0.005	NA	ND	NL	1200	2
1,1,2-Trichloroethane	mg/kg	0.005	NA	ND	310	1800	0.02
Tricloroethene	mg/kg	0.005	NA	ND	58	5	0.06
Trichlorofluoromethane	mg/kg	NT	NA	NT	NL	NL	NL
Vinyl Acetate	mg/kg	NT	NA	NT	NL	NL	NL
Vinyl Chloride	mg/kg	0.01	NA	ND	0.3	0.03	0.01
Total Xylenes	mg/kg	0.01	NA	ND	160000	410	150

Notes:
1. NL = Not Listed
2. NA = Not Applicable
3. ND = Not Detected
4. NT = Not Tested
5. Illinois Title 35, Subtitle G, Chapter I, Subchapter f, Part 742 titled Tiered Approach to Corrective Action Objectives supercedes this summary table.

Contractor **DK Contractors**
Sample Identification **E1E092499**
Sample Date **11/19/99**
Report Date **12/1/99**

Compound	Units	Lab Detection Limit	Back Ground Level	Sample Results	Standard Tier 1 Levels (mg/kg) Residential Soil Ingestion	Inhalation	Class I Groundwater
SPLP Lead	mg/L	0.005	NA	ND	NL	NL	0.0075
pH	SU	0.1	NA	8.2	6 - 9	6 - 9	6 - 9
RCRA Metals							
Arsenic	mg/kg	NT	13	NT	0.4	750	31
Barium	mg/kg	NT	110	NT	5500	690000	2100
Cadmium	mg/kg	NT	0.6	NT	78	1800	430
Chromium	mg/kg	NT	16.2	NT	390	270	28
Lead	mg/kg	NT	36	NT	400	NL	NL
Mercury	mg/kg	NT	0.06	NT	23	10	8
Selenium	mg/kg	NT	0.48	NT	390	NL	2.4
Silver	mg/kg	NT	0.55	NT	390	NL	110
PCBs (EPA Method 8080)							
PCB 1016	mg/kg	NT	NA	NT	1	NL	0.5
PCB 1221	mg/kg	NT	NA	NT	1	NL	0.5
PCB 1232	mg/kg	NT	NA	NT	1	NL	0.5
PCB 1242	mg/kg	NT	NA	NT	1	NL	0.5
PCB 1248	mg/kg	NT	NA	NT	1	NL	0.5
PCB 1254	mg/kg	NT	NA	NT	1	NL	0.5
PCB 1260	mg/kg	NT	NA	NT	1	NL	0.5
PNAs (EPA Method 8310)							
Acenaphthene	mg/kg	0.2	NA	ND	4700	NL	570
Acenaphthylene	mg/kg	0.2	NA	ND	NL	NL	NL
Anthracene	mg/kg	0.04	NA	ND	23000	NL	12000
Benzo a anthracene	mg/kg	0.004	NA	ND	0.9	NL	2
Benzo a pyrene	mg/kg	0.004	NA	ND	0.09	NL	8
Benzo b fluoanthene	mg/kg	0.004	NA	ND	0.9	NL	5
Benzo ghi perylene	mg/kg	0.004	NA	ND	NL	NL	NL
Benzo k fluoranthene	mg/kg	0.004	NA	ND	9	NL	49
Chrysene	mg/kg	0.04	NA	ND	88	NL	160
Dibenzo a,h anthracene	mg/kg	0.004	NA	ND	0.09	NL	2
Fluoranthene	mg/kg	0.04	NA	ND	3100	NL	4300
Fluorene	mg/kg	0.04	NA	ND	3100	NL	560
Indeno 1,2,3-cd pyrene	mg/kg	0.004	NA	ND	0.9	NL	14
Naphthalene	mg/kg	0.2	NA	ND	3100	NL	84
Phenanthrene	mg/kg	0.04	NA	ND	NL	NL	NL
Pyrene	mg/kg	0.04	NA	ND	2300	NL	4200
VOCs (EPA Method 8260)							
Acetone	mg/kg	0.01	NA	ND	7800	100000	16
Benzene	mg/kg	0.005	NA	0.012	22	0.8	0.03
Bromodichloromethane	mg/kg	0.005	NA	ND	10	3000	0.6
Bromoform	mg/kg	NT	NA	NT	81	53	0.8
Bromomethane	mg/kg	0.01	NA	ND	110	10	0.2
2-Buthanone	mg/kg	NT	NA	NT	NL	NL	NL
Carbon disulfide	mg/kg	NT	NA	NT	7800	720	32
Carbon tetrachloride	mg/kg	0.005	NA	ND	5	0.3	0.07
Chlorobenzene	mg/kg	0.005	NA	ND	1600	130	1
Chlorodibromomethane	mg/kg	0.005	NA	ND	1600	1300	0.4
Chloroethane	mg/kg	0.005	NA	ND	NL	NL	NL
2- Chloroethyl vinyl ether	mg/kg	NT	NA	NT	NL	NL	NL
Chloroform	mg/kg	0.005	NA	ND	100	0.3	0.6
Chloromethane	mg/kg	NT	NA	NT	NL	NL	NL
1,1- Dichloroethane	mg/kg	0.005	NA	ND	7800	1300	23
1,2- Dichloroethane	mg/kg	0.005	NA	ND	7	0.4	0.02
1,1- Dichloroethene	mg/kg	0.005	NA	ND	700	1500	0.06
cis- 1,2- Dichloroethene	mg/kg	0.005	NA	ND	780	1200	0.4
trans-1,2-Dichloroethene	mg/kg	0.005	NA	ND	1600	3100	0.7
1,2 Dichloropropane	mg/kg	0.005	NA	ND	9	15	0.03
cis - 1,3 Dichloropropene	mg/kg	0.005	NA	ND	4	0.1	0.004
trans - 1,3 Dichloropropene	mg/kg	0.005	NA	ND	4	0.1	0.004
Ethylbenzene	mg/kg	0.005	NA	0.012	7800	400	13
2 - Hexanone	mg/kg	NT	NA	NT	NL	NL	NL
Methylene chloride	mg/kg	0.005	NA	ND	85	13	0.02
4-Methyl-2-pentanone	mg/kg	NT	NA	NT	NL	NL	NL
Styrene	mg/kg	0.005	NA	ND	16000	1500	4
1,1,2,2-Tetrachloroethane	mg/kg	NT	NA	NT	NL	NL	NL
Tetrachloroethene	mg/kg	0.005	NA	ND	12	11	0.06
Toluene	mg/kg	0.005	NA	0.04	16000	650	12
1,1,1- Trichloroethane	mg/kg	0.005	NA	ND	NL	1200	2
1,1,2-Trichloroethane	mg/kg	0.005	NA	ND	310	1800	0.02
Tricloroethene	mg/kg	0.005	NA	ND	58	5	0.06
Trichlorofluoromethane	mg/kg	NT	NA	NT	NL	NL	NL
Vinyl Acetate	mg/kg	NT	NA	NT	NL	NL	NL
Vinyl Chloride	mg/kg	0.01	NA	ND	0.3	0.03	0.01
Total Xylenes	mg/kg	0.01	NA	0.04	160000	410	150

Notes:
1. NL = Not Listed
2. NA = Not Applicable
3. ND = Not Detected
4. NT = Not Tested
5. Illinois Title 35, Subtitle G, Chapter I, Subchapter f, Part 742 titled Tiered Approach to Corrective Action Objectives supercedes this summary table.

Contractor **DK Contractors**
Sample Identification **E1E092499**
Sample Date **12/14/99**
Report Date **12/21/99**

Compound	Units	Lab Detection Limit	Back Ground Level	Sample Results	Standard Tier 1 Levels (mg/kg) Residential Soil Ingestion	Inhalation	Class I Groundwater
SPLP Lead	mg/L	0.005	NA	NT	NL	NL	0.0075
pH	SU	0.1	NA	NT	6 - 9	6 - 9	6 - 9
RCRA Metals							
Arsenic	mg/kg	NT	13	NT	0.4	750	31
Barium	mg/kg	NT	110	NT	5500	690000	2100
Cadmium	mg/kg	NT	0.6	NT	78	1800	430
Chromium	mg/kg	NT	16.2	NT	390	270	28
Lead	mg/kg	NT	36	NT	400	NL	NL
Mercury	mg/kg	NT	0.06	NT	23	10	8
Selenium	mg/kg	NT	0.48	NT	390	NL	2.4
Silver	mg/kg	NT	0.55	NT	390	NL	110
PCBs (EPA Method 8080)							
PCB 1016	mg/kg	NT	NA	NT	1	NL	0.5
PCB 1221	mg/kg	NT	NA	NT	1	NL	0.5
PCB 1232	mg/kg	NT	NA	NT	1	NL	0.5
PCB 1242	mg/kg	NT	NA	NT	1	NL	0.5
PCB 1248	mg/kg	NT	NA	NT	1	NL	0.5
PCB 1254	mg/kg	NT	NA	NT	1	NL	0.5
PCB 1260	mg/kg	NT	NA	NT	1	NL	0.5
PNAs (EPA Method 8310)							
Acenaphthene	mg/kg	NT	NA	NT	4700	NL	570
Acenaphthylene	mg/kg	NT	NA	NT	NL	NL	NL
Anthracene	mg/kg	NT	NA	NT	23000	NL	12000
Benzo a anthracene	mg/kg	NT	NA	NT	0.9	NL	2
Benzo a pyrene	mg/kg	NT	NA	NT	0.09	NL	8
Benzo b fluoanthene	mg/kg	NT	NA	NT	0.9	NL	5
Benzo ghi perylene	mg/kg	NT	NA	NT	NL	NL	NL
Benzo k fluoranthene	mg/kg	NT	NA	NT	9	NL	49
Chrysene	mg/kg	NT	NA	NT	88	NL	160
Dibenzo a,h anthracene	mg/kg	NT	NA	NT	0.09	NL	2
Fluoranthene	mg/kg	NT	NA	NT	3100	NL	4300
Fluorene	mg/kg	NT	NA	NT	3100	NL	560
Indeno 1,2,3-cd pyrene	mg/kg	NT	NA	NT	0.9	NL	14
Naphthalene	mg/kg	NT	NA	NT	3100	NL	84
Phenanthrene	mg/kg	NT	NA	NT	NL	NL	NL
Pyrene	mg/kg	NT	NA	NT	2300	NL	4200
VOCs (EPA Method 8260)							
Acetone	mg/kg	0.01	NA	ND	7800	100000	16
Benzene	mg/kg	0.005	NA	ND	22	0.8	0.03
Bromodichloromethane	mg/kg	0.005	NA	ND	10	3000	0.6
Bromoform	mg/kg	NT	NA	NT	81	53	0.8
Bromomethane	mg/kg	0.01	NA	ND	110	10	0.2
2-Buthanone	mg/kg	NT	NA	NT	NL	NL	NL
Carbon disulfide	mg/kg	NT	NA	NT	7800	720	32
Carbon tetrachloride	mg/kg	0.005	NA	ND	5	0.3	0.07
Chlorobenzene	mg/kg	0.005	NA	ND	1600	130	1
Chlorodibromomethane	mg/kg	0.005	NA	ND	1600	1300	0.4
Chloroethane	mg/kg	0.005	NA	ND	NL	NL	NL
2- Chloroethyl vinyl ether	mg/kg	NT	NA	NT	NL	NL	NL
Chloroform	mg/kg	0.005	NA	ND	100	0.3	0.6
Chloromethane	mg/kg	NT	NA	NT	NL	NL	NL
1,1- Dichloroethane	mg/kg	0.005	NA	ND	7800	1300	23
1,2- Dichloroethane	mg/kg	0.005	NA	ND	7	0.4	0.02
1,1- Dichloroethene	mg/kg	0.005	NA	ND	700	1500	0.06
cis- 1,2- Dichloroethene	mg/kg	0.005	NA	ND	780	1200	0.4
trans-1,2-Dichloroethene	mg/kg	0.005	NA	ND	1600	3100	0.7
1,2 Dichloropropane	mg/kg	0.005	NA	ND	9	15	0.03
cis - 1,3 Dichloropropene	mg/kg	0.005	NA	ND	4	0.1	0.004
trans - 1,3 Dichloropropene	mg/kg	0.005	NA	ND	4	0.1	0.004
Ethylbenzene	mg/kg	0.005	NA	ND	7800	400	13
2 - Hexanone	mg/kg	NT	NA	NT	NL	NL	NL
Methylene chloride	mg/kg	0.005	NA	ND	85	13	0.02
4-Methyl-2-pentanone	mg/kg	NT	NA	NT	NL	NL	NL
Styrene	mg/kg	0.005	NA	ND	16000	1500	4
1,1,2,2-Tetrachloroethane	mg/kg	NT	NA	NT	NL	NL	NL
Tetrachloroethene	mg/kg	0.005	NA	ND	12	11	0.06
Toluene	mg/kg	0.005	NA	ND	16000	650	12
1,1,1- Trichloroethane	mg/kg	0.005	NA	ND	NL	1200	2
1,1,2-Trichloroethane	mg/kg	0.005	NA	ND	310	1800	0.02
Tricloroethene	mg/kg	0.005	NA	ND	58	5	0.06
Trichlorofluoromethane	mg/kg	NT	NA	NT	NL	NL	NL
Vinyl Acetate	mg/kg	NT	NA	NT	NL	NL	NL
Vinyl Chloride	mg/kg	0.01	NA	ND	0.3	0.03	0.01
Total Xylenes	mg/kg	0.01	NA	ND	160000	410	150

Notes:
1. NL = Not Listed
2. NA = Not Applicable
3. ND = Not Detected
4. NT = Not Tested
5. Illinois Title 35, Subtitle G, Chapter I, Subchapter f, Part 742 titled Tiered Approach to Corrective Action Objectives supercedes this summary table.

Contractor **DK Contractors**
Sample Identification **E3060700**
Sample Date **6/7/00**
Report Date **6/19/00**

Compound	Units	Lab Detection Limit	Back Ground Level	Sample Results	Standard Tier 1 Levels (mg/kg) Residential Soil Ingestion	Inhalation	Class I Groundwater
SPLP Lead	mg/L	0.005	NA	ND	NL	NL	0.0075
pH	SU	0.1	NA	NT	6 - 9	6 - 9	6 - 9
RCRA Metals							
Arsenic	mg/kg	2.5	13	ND	0.4	750	31
Barium	mg/kg	25	110	29.7	5500	690000	2100
Cadmium	mg/kg	0.5	0.6	ND	78	1800	430
Chromium	mg/kg	5	16.2	8.59	390	270	28
Lead	mg/kg	1	36	21.6	400	NL	NL
Mercury	mg/kg	2.04	0.06	ND	23	10	8
Selenium	mg/kg	2.5	0.48	ND	390	NL	2.4
Silver	mg/kg	2.5	0.55	ND	390	NL	110
PCBs (EPA Method 8080)							
PCB 1016	mg/kg	0.025	NA	ND	1	NL	0.5
PCB 1221	mg/kg	0.025	NA	ND	1	NL	0.5
PCB 1232	mg/kg	0.025	NA	ND	1	NL	0.5
PCB 1242	mg/kg	0.025	NA	ND	1	NL	0.5
PCB 1248	mg/kg	0.025	NA	ND	1	NL	0.5
PCB 1254	mg/kg	0.025	NA	ND	1	NL	0.5
PCB 1260	mg/kg	0.025	NA	ND	1	NL	0.5
PNAs (EPA Method 8310)							
Acenaphthene	mg/kg	0.06	NA	0.0653	4700	NL	570
Acenaphthylene	mg/kg	0.4	NA	ND	NL	NL	NL
Anthracene	mg/kg	0.06	NA	ND	23000	NL	12000
Benzo a anthracene	mg/kg	0.06	NA	ND	0.9	NL	2
Benzo a pyrene	mg/kg	0.06	NA	ND	0.09	NL	8
Benzo b fluoanthene	mg/kg	0.06	NA	ND	0.9	NL	5
Benzo ghi perylene	mg/kg	0.06	NA	ND	NL	NL	NL
Benzo k fluoranthene	mg/kg	0.06	NA	ND	9	NL	49
Chrysene	mg/kg	0.06	NA	ND	88	NL	160
Dibenzo a,h anthracene	mg/kg	0.06	NA	ND	0.09	NL	2
Fluoranthene	mg/kg	0.06	NA	0.084	3100	NL	4300
Fluorene	mg/kg	0.06	NA	ND	3100	NL	560
Indeno 1,2,3-cd pyrene	mg/kg	0.06	NA	ND	0.9	NL	14
Naphthalene	mg/kg	0.06	NA	ND	3100	NL	84
Phenanthrene	mg/kg	0.06	NA	0.0605	NL	NL	NL
Pyrene	mg/kg	0.06	NA	0.0647	2300	NL	4200
VOCs (EPA Method 8260)							
Acetone	mg/kg	0.025	NA	ND	7800	100000	16
Benzene	mg/kg	0.005	NA	ND	22	0.8	0.03
Bromodichloromethane	mg/kg	0.005	NA	ND	10	3000	0.6
Bromoform	mg/kg	0.005	NA	ND	81	53	0.8
Bromomethane	mg/kg	0.005	NA	ND	110	10	0.2
2-Buthanone	mg/kg	0.01	NA	ND	NL	NL	NL
Carbon disulfide	mg/kg	0.005	NA	ND	7800	720	32
Carbon tetrachloride	mg/kg	0.005	NA	ND	5	0.3	0.07
Chlorobenzene	mg/kg	0.005	NA	ND	1600	130	1
Chlorodibromomethane	mg/kg	0.005	NA	ND	1600	1300	0.4
Chloroethane	mg/kg	0.005	NA	ND	NL	NL	NL
2- Chloroethyl vinyl ether	mg/kg	0.005	NA	ND	NL	NL	NL
Chloroform	mg/kg	0.005	NA	ND	100	0.3	0.6
Chloromethane	mg/kg	0.005	NA	ND	NL	NL	NL
1,1- Dichloroethane	mg/kg	0.005	NA	ND	7800	1300	23
1,2- Dichloroethane	mg/kg	0.005	NA	ND	7	0.4	0.02
1,1- Dichloroethene	mg/kg	0.005	NA	ND	700	1500	0.06
cis- 1,2- Dichloroethene	mg/kg	0.005	NA	ND	780	1200	0.4
trans-1,2-Dichloroethene	mg/kg	0.005	NA	ND	1600	3100	0.7
1,2 Dichloropropane	mg/kg	0.005	NA	ND	9	15	0.03
cis - 1,3 Dichloropropene	mg/kg	0.005	NA	ND	4	0.1	0.004
trans - 1,3 Dichloropropene	mg/kg	0.005	NA	ND	4	0.1	0.004
Ethylbenzene	mg/kg	0.005	NA	ND	7800	400	13
2 - Hexanone	mg/kg	0.01	NA	ND	NL	NL	NL
Methylene chloride (6)	mg/kg	0.005	NA	0.0782	85	13	0.02
4-Methyl-2-pentanone	mg/kg	0.01	NA	ND	NL	NL	NL
Styrene	mg/kg	0.005	NA	ND	16000	1500	4
1,1,2,2-Tetrachloroethane	mg/kg	0.005	NA	ND	NL	NL	NL
Tetrachloroethene	mg/kg	0.005	NA	ND	12	11	0.06
Toluene	mg/kg	0.005	NA	0.00813	16000	650	12
1,1,1- Trichloroethane	mg/kg	0.005	NA	ND	NL	1200	2
1,1,2-Trichloroethane	mg/kg	0.005	NA	ND	310	1800	0.02
Tricloroethene	mg/kg	0.005	NA	ND	58	5	0.06
Trichlorofluoromethane	mg/kg	0.005	NA	ND	NL	NL	NL
Vinyl Acetate	mg/kg	0.01	NA	ND	NL	NL	NL
Vinyl Chloride	mg/kg	0.005	NA	ND	0.3	0.03	0.01
Total Xylenes	mg/kg	0.005	NA	ND	160000	410	150

Notes:
1. NL = Not Listed
2. NA = Not Applicable
3. ND = Not Detected
4. NT = Not Tested
5. Illinois Title 35, Subtitle G, Chapter I, Subchapter f, Part 742 titled Tiered Approach to Corrective Action Objectives supercedes this summary table.

6. The concentration of the analyte detected in the sample is characteristic of a laboratory artifact. Also, the method blank contained 0.01417 mg/kg.

ATTACHMENT I

Response 06: Additional CQM Field Notes

MON 8/18/08 75° - 84° 90° SUNNY

9:45 CRG ARRIVED ON SITE TO OBSERVE TEST BARRIER LAYER & SCALES

- WATER CART GRADING MATERIAL AND ROADS TO KEEP DUST DOWN

- WORKING ON AREA 1 BARRIER LAYER GRADING

- AREA 2 ~~AREA~~ CHANNEL EXCAVATION

TROXLER 3440
S/N 22746

STANDARD COUNT
MS: 646
DS: 2619

MODIFIED PROCTOR = 130.1 PCF @ 8.4 OPT. *
125.9 PCF @ 10.0 OPT.

SPEC. = 90% @ 2% - 6% ABOVE OPT.

STANDARD PROCTOR 121.0 PCF @ 12.1 OPT.

SPEC. = 92% @ OPTIMUM - 4% ABOVE

LOCATION	LIFT	DD	WD	%M	%C
71	SURFACE	125.4	140.2	11.8	96.4
20	1' DOWN	118.8	134.7	13.4	91.3
76	SURFACE	126.5	141.0	11.5	97.2
25	1' DOWN	121.4	135.7	11.8	93.3
23	SURFACE	128.7	142.3	10.6	98.9

PLACED: 8" (1 TEST)

7:15 OFF SITE

TUES. 8/19/08 CLOUDY 62-84°

3:00 ON SITE TO CONTINUE SCREEN BARRIER LOCATION AREA !

- STAKED AREA & LIMITS OF GRADE & SOME REMAINING BARRIER LAYER POINTS

~~8:30 CALLED JOHN HUME BACK & GAVE HIM GROUND ELEVATIONS @ LIMITS OF GRADE POINTS IN TABLE W/OUT DESIGN ELEVATIONS - HE WILL CHECK & CALL BACK~~

6:45 OFF SITE

WED 8/20/08 CLEAR 76-84°

7:10 - ON SITE TO SURVEY BARRIER LAYER POINTS & DENSITY TEST

7:30 - DENNY CLINTON (JCAHN [illegible] ENGINEER ON SITE) SPOKE W/ DENNY & UPDATED HIM W/ LIMITS OF WASTE POINTS
- CALL JOHN HOME FOR DESIGN ELEVATIONS

7:45 CALLED JOHN HOME @ LFR TO ASK FOR LOW DESIGN ELEVATIONS

8:30 CALLED JOHN HOME BACK & GAVE HIM GRND ELEVATION @ LIMITS OF WASTE POINTS ON TABLE WITHOUT DESIGN ELEVATIONS - HE WILL CHECK & CALL BACK

8:43 JOHN CALLED BACK - THE GROUND ELEVATION SURVEYED 8/19/08 ARE OK - NOT LOW
- STACK 1' SAND & 3' PROTECTIVE SOIL

10:30 CALLED JOHN @ LFR TO ASK ABOUT 2 POINTS

9:00 REVIEWED BARRIER LAYER AS-BUILT SURFACE W/ DENNY - HE IS OK WITH IT / ADJUST A COUPLE CONTOURS ON COMPUTER

- AREA 1 CLEAR

EQUIPMENT

1- JOHN DEERE 850C DOZER W/ GPS
1- OFF ROAD TRUCK

LAKE COUNTY GRADING ON SITE PLACING SAND @ SOUTH TOE OF AREA 1 WITH OFF ROAD TRUCK AND PUSHING UP-SLOPE / GRADING TO 1-FOOT USING A JOHN DEERE 850C DOZER W/ GPS

11:35 CALLED JOHN HOME BACK @ LFR (HE LEFT MESSAGE TO CALL)
- HE SAID 1521 @ 626.91 GROUND IS OK AND 1522 @ 627.33 IS OK
- NOTE 1522 DID NOT HAVE A DESIGN ELEVATION
- I TOLD JOHN I DID NOT FEEL COMFORTABLE DECIDING IF GRADES ARE ACCEPTABLE OUT OF DESIGN TOLERANCE - HE APPRECIATED THE CALL

12:15 THERMAL DENSITY RESULTS of POINTS 1521 + 1522

12:20 CHECKED GPS WITH LAKE COUNTY SCRIBER (RAY) + ELEVATION WERE WITHIN 0.01 (RIGHT ON) //
00

- LAKE COUNTY GRADING WATERING HAUL ROADS

2083800N 1126450E
" " 1126500E
550

TROXLER 3440
S/N 22746

STANDARD COUNT
MS: 658
DS: 2621

MODIFIED PROCTOR: 130.1 PCF @ 8.4 OPT.
SPEC. = 90% C, 2% - 6% ABOVE OPT

AREA 1 BARRIER

LOCATION	UFT	DD	WD	%M	%C
2084370N 1126240E	27 6" Nuc	123.2	136.5	10.8	94.7
2084270N 1126194E	31 6" Nuc	122.2	135.6	10.5	94.3

5:30 OFF SITE

5 CQA
5 SCRAPER

THUR 8/21/CC CLEAR 71° - 82°

6:30 CAB ARRIVED ON SITE TO MONITOR TEST AREA 2 DITCH GRAVEL LAYER AND BACKFILL SAND GRADES

AREA 1

LAKE COUNTY GRADING ON SITE PLACING SAND ON THE ENTIRE SLOPE WITH A JOHN DEERE 850C DOZER AND OFF ROAD TRUCK

AREA 2

LAKE COUNTY GRADING REMOVING CLAY MATERIAL ABOVE DESIGN GRADE & PLACING THE MATERIAL IN NORTH EAST CORNER OF AREA 1

LAKE COUNTY GRADING ALSO PLACING CLAY IN THE EAST CHANNEL AREA AND COMPACTING IN 6" LIFTS

7:05 DENNY CLINTON ON SITE

TROXLER 3440
S/N 22746

STANDARD COUNT
MT = 656
DT = 2652

MAXIMUM PROCTOR = 130.1 PCF @ 8.4 OPT
SPEC = 90% @ 2% - 6% ABOVE OPT. (10.4 MIN)

AREA 1 BARRIER

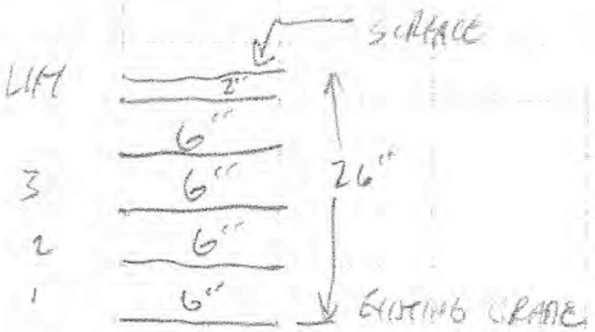
LOCATION	LIFT	DD	WD	% M	% C
2088800N 1126450E	40 6" FROM SURFACE	123.1	135.9	10.4	94.6
1126500E	44.6" FROM SURFACE	122.1	135.6	11.0	93.9

7:30 DENNY TESTED 6" BELOW SURFACE SO LAKE COUNTY GRADING COULD PLACE FINAL 6" LIFT

10:00 USEPA ON SITE

- DURING THE COURSE OF THE MORNING LAKE COUNTY GRADING WORKED ON PLACING/ GRADING SAND ON AREA 1 TOP

- ONE DOZER WAS UTILIZED TO GRADE AREA 2



AREA 2 CHANNEL

LOCATION	LIFT	DD	WD	%M	%C
	3	121.7	137.6	13.0	93.6
	2	119.9	136.1	13.5	92.2
	1	123.9	138.6	11.9	95.2
	1	125.4	140.4	12.0	96.4
	3	126.3	139.7	10.6	97.1
	2	120.7	137.7	14.1	92.7
	1	121.3	137.8	13.6	93.2

1:00 PROJECT MEETING CANCELLED PER DENNIS BECAUSE HE IS STILL MEETING W/ USEPA

1:00 MIKE - LAKE COUNTY GRADING PM ON SITE FOR MEETING

3:15 STARTED TO RAIN

3:30 STOPPED

4:00 LOOKED C PL BACK

4:15 LAKE COUNTY GRADING ROLLING
WELL CASING ON AREA 1

SCALLOPS 3
CGA 16

5:30 CRITTER
2 HEAD ON GRADE TABLO

[illegible] STOCKPILE 400 CY

FR - 8/22/08 74°-80°

6:40 CRB ARRIVED ON SITE TO RESURVEY TEST AREA 2 PLACED FILL WITHIN 6" OF SURFACE AND START SAND DOC. FOR AREA 1

7:00 SPOKE W/DENNY - HE IS CONCERNED WITH SAND VOLUMES - MAY RUN OUT

7:20 CALLED BJ @ COMM... FOR AREA 1
AREA 1 AREA INSIDE LIMITS OF WASTE
419,236 SURFACE AREA (SAND)
419,236 ÷ 27 = 15,527 CY SAND @ 1.0

18,633 CY SAND @ 1.2

3,106 CY EXTRA

DRAWINGS SHOW 51,400 CY SAND

7:30 DENNY ASKED TO HAVE SOME SURVEY SHOTS S-E OF AREA 2 ON THE ROAD / DITCH AREA

7:30 JEFF OMALLEY STATE LAKE COUNTY GRADING PLANS ON PLACING FILL ON AREA 1 NE CORNER AND AFTER AREA 2 IS DENSITY TESTED, PLACE FILL ON AREA 2

LAKE COUNTY GRADING ON SITE EXCAVATING CLAY FROM THE EAST CLAY STOCKPILE WITH A JOHN DEERE 350D BACKHOE AND PLACING IN THE NORTH EAST CORNER OF AREA 1 AS FILL

TROXLER 3440
S/N 22746
MS = 662
DS = 2637

M. PROCTOR: 130.1 PCF @ 8.4 OPT.
SPEC: 90% @ 2-6% OVER OPT. (10.4 MIN)

AREA 2 BARRIER

LOCATION	LIFT	DD	WD	% M	% C
5		119.1	132.8	11.5	91.6
12	6" FROM SUBGRADE	117.8	130.9	11.1	90.5
14		119.0	132.6	11.5	91.4
21		119.7	134.1	12.0	92.0
26		125.5	139.1	10.8	96.5
27		119.4	134.2	12.4	91.8
22		121.6	137.2	12.8	93.5
17		117.7	130.2	10.6	90.5

AREA 1 NE CORNER FILL

LOCATION	LIFT	DD	WD	% M	% C
44	6" FROM SUBGRADE	118.3	133.2	12.6	90.9
40		123.1	139.0	12.9	~~94.6~~ 94.6
35		120.5	137.5	14.2	92.6
		120.8	137.6	13.9	92.9

1:15 STARTED TO RAIN

1:__ CONTRACTOR SHUT DOWN

1:25 CALLED NEUMAN
- AREA 1 TESTS PASSED
- CAN BE BACK NEXT WEEK

1:30 OFF SITE

MCM 8/25/08 65-80° CLEAR

7:45 CRL ARRIVED ON SITE TO DENNY TEST AREA 1 NE CORNER & SCREEN/ DOCUMENT BARRIER LAYER (AREA 1 NE CORNER) & AREA 2

EQUIPMENT ON SITE
- SAME

LAKE COUNTY GRADING ON SITE PLACING SAND ON AREA 1 W/ OFF ROAD TRUCK & GRADING W/ A DOZER ... W/ GPS

Site: LABOR PLACING ... LAYER ON AREA 1 FOR SAND THICKNESS CONTROL

8:00 DENNY ON SITE
- PIPE CREW ON SITE TO INSTALL AREA 1 PERIMETER DRAIN PIPE

8:30 MET JUNIOR - PIPE INSTALLER FOREMAN
- PROJECT PARAMETERS
  - NEED A TEE @ MAX 200' INCREMENTS
  - PIPE NEEDS TO DRAIN - NO FLAT SPOTS / LOCATIONS
- PIPE NEEDS TO BE SCREENED PRIOR TO BACKFILLING
- DENNY APPROVED PLACING DRAIN PIPE ON INSIDE LIMIT OF GRADE STAKES - THE STAKES WILL HOLD THE PIPE IN PLACE

11:30 WALKED AREA 2 NORTH DRAINAGE CHANNEL WITH DENNY, DALE, JEFF + RAY - DENNY SAID TO FILL AT NORTH [illegible] AREA TO MAKE DRAIN - DO NOT CHANGE EAST SIDE DUE TO TEST PIT DATA

3:00 WALKED AREA 2 DITCH W/ DALE - HE WANTS TO CONSTRUCT DITCH AS DESIGNED AND GRADE AN ADDITIONAL ± 200' FOR ADEQUATE DRAINAGE

3:47 LCG UTILIZED A SMOOTH DRUM ROLLER TO ROLL NE CORNER WHERE FILL WAS PLACED

- DURING THE COURSE OF THE DAY LCG UTILIZED A WATER TRUCK TO WATER THE HAUL ROADS / MINIMIZE THE DUST

IN THE AFTERNOON LCG UTILIZED SCRAPER TO PLACE BARRIER LAYER MATERIAL ON AREA 2

5:00 - 6:[illegible] DEP. BARRIER PANS

6:20 CF [illegible]

5 [illegible] SCRAPERS
5 CCA

TU 8/26/08 SUNNY 64°-80°

6:20 CRG ON SITE TO DOCUMENT BARRIER LAYER GRADES & DENSITY TEST

LCG ON SITE PLACING SAND ON AREA 1 W/ OFF ROAD TRUCKS & GRADING TO C.O W/ 6R DOZER
- ON AREA 2 LCG ARE UTILIZING SCRAPER TO PLACE BARRIER LAYER MATERIAL / COMPACTING W/ SHEEPSFOOT COMPACTOR

7:15 JEFF STARTED CLAY PLACEMENT LEVEL STAKES TOMORROW ON AREA 1

8:00 TESTED AREA 1 RE GRADE FILL AREA

LCG PIPING CREW ON SITE PLACING PERIMETER DRAIN PIPE

CREW 1 OPERATOR
1 FOREMAN
2 LABOR
1-CAT 312B BACKHOE

1141
1143
1147
1502
✓1567
1571
1572
1576

2:30 START OF CLAY PLACEMENT ON AREA 1 / NORTH SIDE. THE CLAY WAS PLACED @ THE TOE OF SLOPE (OUTSIDE THE LIMITS OF LINER) AND DOZED UP ONTO THE CAP AREA

TROXLER 3440
S/N 22746
STANDARD COUNT
MS = 662
DS = 2632

10.4 MC

AREA 1 NE CORNER FILL

LOCATION	LIFT	DD	WD	% M	% C
86	SURFACE	117.3	130.2	11.0	90.2
90	SURFACE	123.2	136.9	11.1	94.7
94	SURFACE	125.6	139.4	11.0	96.5

(13)

5:10 OFF SITE

WED. 8/27/08 64° - 80°

6:20 CRG ARRIVED ON SITE TO TOPO AREA 1 TOP OF SAND (AS-BUILT) & POSSIBLY DOCUMENT AREA 2 BARRIER LAYER AREA 2

LCG ON SITE PLACING SAND ON AREA 2 WITH OFF ROAD TRUCK & GRADING TO 1.0

- LCG ALSO PLACING CLAY ON THE SOUTH SIDE OF AREA 2 WITH SCRAPERS AND DOZING INTO PLACE / COMPACTING W/ A CAT SHEEPSFOOT 825C COMPACTOR

(14)

AREA 1 SAND TOPO TO PICK UP BREAK POINTS (AS-BUILT) / PRIOR TO CLAY PLACEMENT

JOB: JM1 SAND TOPO 8-27-08. CRD

12:30 DENSITY TESTED AREA 2 SOUTH BARRIER LAYER FILL AREA (SURFACE) - TEST PASSED

1:30 DENSITY TESTED AREA 1 PROTECTIVE MATERIAL PLACEMENT ON SOUTH SIDE - TEST PASSED

TROXLER	3440
S/N	22746
MS	663
DS	2642

PROCTOR = 130.1 PCF @ 8.4 OM
SPEC = 90% C 2%-6% ABOVE OM.

LOCATION	LIFT	DD	WD	% M	% C
29	SURFACE	125.8	139.0	10.5	96.7
35		126.2	140.7	11.5	97.0
40		123.7	136.6	10.4	95.0
45		122.5	136.1	11.1	94.1
50		125.0	139.1	11.3	96.1
30		124.3	139.9	12.5	95.6
36		122.5	136.1	11.1	94.1
41		123.2	138.0	12.0	94.7
46		126.2	140.5	11.6	97.0
51	SURFACE	126.7	141.0	11.3	97.4

AREA 1

15

LOCATION	LIFT	DD	WD	% M	% C
118	1	123.9	138.8	12.1	95.2
214	3	122.5	137.4	12.2	94.1
310	5	125.3	139.3	11.2	96.3

6:30 OFF SITE

TUES 8/28/07 CLOUDY 66°-80°
6:15 CPG ARRIVED ON SITE AREA 2
BARRIER LAYER & COMPLETE
AREA 1 SAND DOC & SAND TOPS

6:30 LAKE COUNTY PLACING SAND ON AREA 1
8:00 AUSTIN ON SITE TO ASSIST W/ DENSITY TESTS
9:30 AREA 1 SAND PLACEMENT COMPLETE/

7:00 DOCUMENTED AREA 2 BARRIER LAYER

9:30 STARTED SAND PLACEMENT ON AREA 2

6:30 LCG PLACING CLAY ON AREA 1
W/ SCRAPER AND COMPACTING W/A 825C
SHEEPSFOOT COMPACTOR

1:00 PROJECT MEETING

2:30 MEETING W/ DENNY DALE, & TIM TO
DISCUSS MH IN BAIN AREA

10:00 - 11:30 LIGHT RAIN

5:30 OFF SITE

3/29/13

FRI. 68 - 82° SCAT

6:20 CRG ARRIVED ON SITE TO DOCUMENT MORE BARRIER LAYER ON AREA 2

LCG ON SITE PLACING CLAY ON AREA 1 WITH SCRAPERS -

LCG ON SITE PLACING SAND ON AREA 2 WITH ON ROAD TRUCK

PIPE CREW ON SITE TO INSTALL AREA 2 PIPING / GCL MATERIAL. DALE NOT CONCERNED WITH TEE DRAIN PIPING 'L SLOPE AS LONG AS IT DRAINS

(17)

1543 - 1576

1541

1542

1543

2:30 LCG SHUT DOWN

2:30 CRG / NESTHC OFF SITE

3:00

TUES. 9/2/08 72° - 90° CLOUDY

7:00 DRB ARRIVED ON SITE TO DOCUMENT MORE OF AREA 2 BC

- DUSTIN ON SITE TO CONTINUE NDGM TESTING AREA 1 PROTECTIVE LAYER CLAY MATERIAL

LCG ON SITE PLACING PROTECTIVE MATERIAL ON AREA 1 WITH 4 SCRAPERS & COMPACTING THE MATERIAL

ON AREA 2 LCG PLACING SAND WITH 3 OFF ROAD TRUCKS & GRADING TO 1.0

- 8:00 SCREENED 3 SAND POINTS ON AREA 1

8:30 SPOKE W/ DEMPT ABOUT TOE DRAIN PIPES DRAINING

10:00 ANGIE PETERSON ON SITE

3750 N
6100E
} TOE

3800 N	6250E	CRAT
3850 N	6200E	CRAT

11:00 SCREENED AREA 1 SANDS TOE OF SLOPE IN NE CORNER

12:30 EMAILED FILE TO BET

12:30 LCG PLACED ADDITIONAL SAND @ AREA 1 NE TOE AREA (CLAY) WITH OFF ROAD TRUCK

SAND V. 15,624 CY BY AREA
SAND V. BY AREA
SA = 431,446 S.F. ×1.0
15,979 CY

AREA 2
EAST DITCH TEST PITS w/ DACE (?)
8/28/08

②	247	2084104.4 N	1126631.7 E	591.28 (BOTTOM)	
①	248	2084045.7 N	1126631.7 E	591.76 (BOTTOM)	

4:50 DUG 2 TEST PITS IN EAST DITCH
w/ BACKHOE FOR BOTTOM OF CLAY ELEVATION

						THICKNESS
④	211	2084430.7	1126646.1 E	590.25	592.52	2.27
③	212	2084301.8 N	1126644.0 E	590.53	592.96	2.43

4 POINTS FOR CLAY THICKNESS IN EAST DRAINAGE CHANNEL

4:00 AREA 2 SAND PLACEMENT COMPLETE

DACES TO POINTS FOR CLAY THICKNESS

TOP OF TOPSOIL ELEVATION

			10/6/08	
2084104.6 N	1126631.8 E	591.28	593.66	2.38
2084045.7 N	1126632.0 E	591.76	~~593.89~~ 593.97	2.21
			10/23/08	

5:40 OFF SITE

593.66
591.28
2.38

593.89
591.76
2.13

WED 9/3/08 CLEAR 68° - 76°

6:30 ~~CBS~~ ARRIVED ON SITE TO DOCUMENT AREA 2 SAND THICKNESS (3rd SURVEY)

7:00 DUSTIN ON SITE TO DELIVER TEST

LCG ON SITE PLACING CLAY ON AREA 1 WITH 7 SCRAPERS, 1 DOZER, & 1 SHEEPSFOOT COMPACTION

8:30 - 11:30 DOCUMENTING AREA 1 SAND

12:00 DISCUSSED w/ DALE & JEFF EXCESS SAND OVER GCL AREA - DALE WANTS IT BACK DRAGGED TO THE EAST

- WATER TRUCK WATERING HAUL ROAD

11:30 DALE GAVE JEFF APPROVAL TO PLACE THE CLAY IN 12" LIFTS

12:30 - 3:15 TOPPED SAND STOCKPILE
175 · 181

SCRAPER ROUND TIME
15 TRIPS · 7 SCRAPERS = 105 CY
8:07
7875 CY / DAY

2:00 NOTICED AREA 2 WEST AREA SAND over GCL IS TO THICK - LCG STATED DENNY SAID THEY COULD GO FROM EDGE OF GCL STRAIGHT ACROSS - DALE WILL CHECK w/ DENNY JEFF WANTS CHANGE ORDER TO REMOVE SAND - DALE WILL TALK TO DENNY

4:30 SCRAPERS PANNED THE AREA IN PREP. FOR RAIN
5:10 OFF SITE

THUR. 9/4/08 64°-68° RAIN

6:30 CRG ARRIVED ON SITE TO COMPLETE AREA 2 SAND DCL

- SITE IS WET & MUDDY FROM OVERNIGHT RAIN

6:40 SPOKE W/ JEFF - CRG NOT WORKING TODAY DUE TO RAIN

9:00 5020 CY REMAINING FOR SAND STOCKPILE PER BJ

AREA 1 AS-BUILT SAND 15,684 CY
STOCKPILE AS-BUILT SAND 5,020

20,704 CY
- 29,983 CY DESIGN STOCKPILE

9,279 CY FOR AREA 2
- 6675

2604 CY ?

- 6CC WEST LIMITS

4121.8N	6179.5E
4214.9	6199.2E
4294.4	6215.8E
4378.5	6232.0E
4443.3	6243.7E
4511.7	6257.9E
4545.1	6261.9E
4570.9	6278.0E
4659.2	6308.2E

22

AREA 1 429.78C (BARRIER LAYER)

DELETE JM 2 SAND DC 8-29-09 - CRD

FRI. 9/5/08 CLOUDY 60-70°

6:30 CRG ARRIVED ON SITE TO DOCUMENT AREA 2 WEST SIDE SAND THICKNESS WITH GPS AFTER LCG REMOVES EXCESS SAND

- SITE IS WET & MUDDY FROM 9/4/08 HEAVY RAIN

7:00 - LCG ON SITE TO REMOVE SAND ON AREA 2 WEST DITCH AREA

12:00 SAND REMOVED & STOCKPILED IN SW CORNER OF AREA 2
- POINTS DOCUMENTED FOR SAND THICKNESS COMPLETE FOR AREA 2

1 FOREMAN
1 SKILLED LABOR
1 OPERATOR

J.D. 850C DOZER

12:00 OFF SITE

MON. 9/8/08 CLOUDY 68-72°

7:30 OBS ARRIVED ON SITE TO SURVEY TOE DRAIN OUTLETS & OTHER ITEMS

7:45 DUSTIN ON SITE TO DENSITY TEST PLACED PROTECTIVE MATERIAL (CLAY) ON AREA 1+2

~~CLAY PLACEMENT STARTED ON AREA 4 SW AREA W/ 1 TRACK & SCRAPER~~

11:30 START OF LIGHT RAIN
12:00 STEADY RAIN / SCRAPER START TO GRADE AREA IN PREP. OF RAIN

(24)

		(RANGE FINDER)	
5320N	5860E	68 YARDS	SOUTH
5117N	5628E	78 YARDS	EAST

BOUY LOCATION
2085116N 1125862

1245 OFF SITE

TUE. 9/9/08 52°-65° CLEAR

6:30 CRG ARRIVED ON SITE FOR AREA 1 DENSITY TESTING

6:30 DUSTIN ON SITE TO ASSIST W/DENSITY TESTING

SITE IS WET & MUDDY FROM LAST NIGHTS RAIN (± 1")

- LCG ON SITE WITH ~~ONE~~ OPERATOR & 1 ARRIVING TO BACKDRAG AREA 2
- LCG ANTICIPATES CLEARING [illegible]

6136 CY ABOVE AREA 2 SAND volume

RAINED OUT!

- CRG/DUSTIN STARTED TO SURVEY WITNESSES & CROSS-SECTION ON SOUTH BERM
- BOAT LOCATION 2085116N 1125860E

JOB: JIM WITNESSES 9-9-08

- SCREENED BERM X-SECTION WHERE PIPE WILL CROSS
- SCREENED WITNESSES
- SCREENED WATER PARAMETER

4:45 OFF SITE

- SCREENED WITNESSES TODAY

WED 9/10/08 52° - 68°

6:30 CRG ARRIVED ON SITE TO DENSITY TEST AREA 1 CLAY PLACEMENT W/AUSTIN & SURVEY NEW WELLS BY E. HAUL ROAD

6:30 AUSTIN ON SITE TO DENSITY TEST AREA 1 PROTECTIVE MATERIAL

- LAKE COUNTY GRADING ON SITE TO PLACE CLAY ON AREA 1 WITH 7 SCRAPERS

6:50 JEFF STATED LAKE COUNTY GRADING WILL PLACE CLAY, COMPACT THE MATERIAL, AND PLACE THE REMAINING CLAY MATERIAL AND COMPACT

(26)

- WATER TRUCK ON SITE WATERING HAUL ROADS

2:10 DISCUSSED W/DALE & DENNIS AREA 1 NE CORNER. DENNIS WANTS THE SURFACE WATER TO RUN OFF THE NORTH SLOPE - NOT EAST

- FILL WILL BE REQUIRED TO MAKE THE WATER DRAIN NORTH - WILL DISCUSS @ NEXT MEETING ALONG W/ EXTENDING 2 DRAIN PIPE EXTENSION TO THE NORTH

- DENNIS ASKED ABOUT COMPACTION
- CRG STATED LCG IS PLACING / COMPACTING THEN PLACING AGAIN UNTIL 3' IS PLACED. THEN LCG WILL DIG DOWN TO NECESSARY ELEVATION FOR DENSITY TEST. THIS METHOD IS UTILIZED TO PREVENT AUSTIN IN THE MIDDLE OF HEAVY EQUIPMENT (SAFETY)
- ALL TESTS TODAY HAVE PASSED

(WELL SURVEY 6 HOURS)
(AREA 1 SURVEY 1 HOUR)

5:30 OFF SITE
CRG / AUSTIN

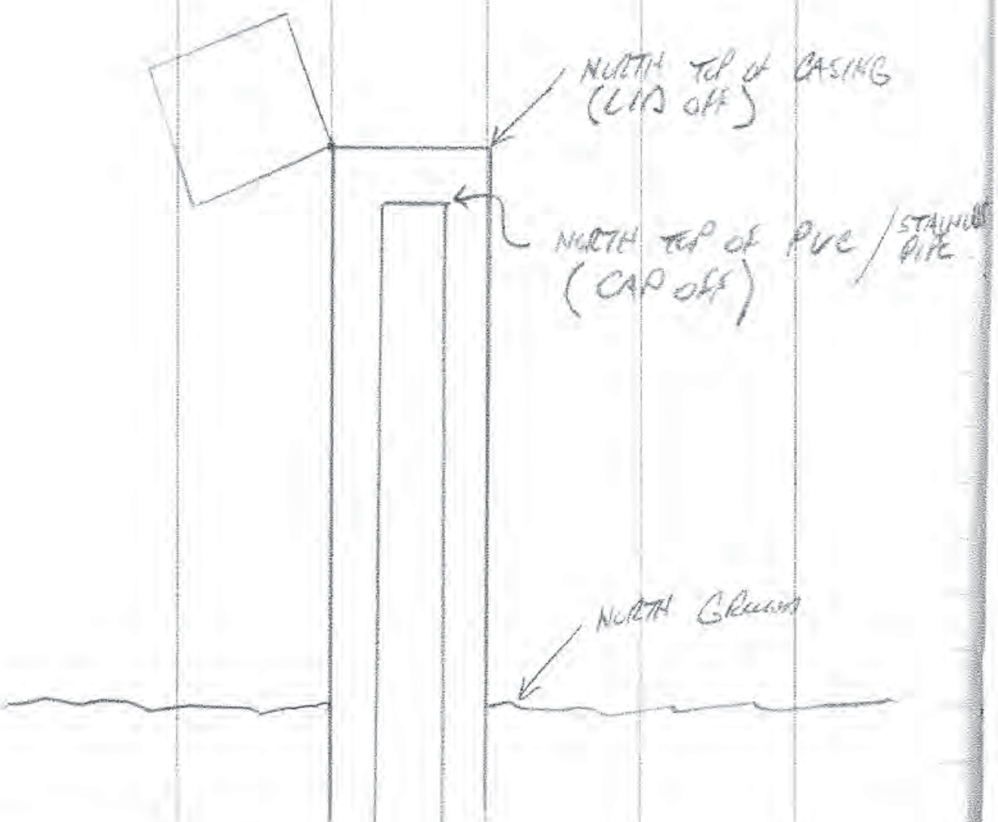
9/10/08

- AS-BUILT SURVEY OF MONITORING WELL

JOB: JM MW AS-BUILT 9-10-08.CRD

SBIBS OK

- WELL SURVEY
  - NORTH GROUND
  - NORTH TOP OF CASING (LID OFF)
  - NORTH TOP OF PVC (CAP OFF)



LMW 17 X

2	NORTH GROUND			593.89
3	NORTH CASING	2084550.7N	1126777.1E	597.08
4	NORTH PVC			596.97

LMW-25

5	NORTH GROUND			592.65
6	NORTH CASING	2084334.3N	1126757.2	595.28
8	NORTH PVC			595.02

LMW-26

9	NORTH GROUND			592.50
10	NORTH CASING	2084328.4N	1126756.4	595.15
11	NORTH PVC			594.92

SMW-07A

~~MW-7A~~ (MARKED ON WELL AS MW 7A)

12	NORTH GROUND			591.58
13	NORTH CASING	2084202.2N	1126755.3E	593.66
14	NORTH STAINLESS PIPE			593.98

LMW-24

15	NORTH GROUND			591.67
16	NORTH CASING	2084135.1N	1126739.3E	593.94
17	NORTH PVC			593.75

LMW 23				
18	NORTH GROUND			591.80
19	NORTH CASING	2084129.2N	1126739.2E	594.05
20	NORTH PVC			593.82
SMW 08AR				
21	NORTH GROUND			592.11
22	NORTH CASING	2083885.6N	1126749.1E	594.44
23	NORTH STAINLESS PIPE			594.47
SMW 09				
24	NORTH GROUND			591.67
25	NORTH CASING	2083890.4N	1126749.6E	592.34
26	NORTH STAINLESS PIPE			592.76
LMW 14				
27	NORTH GROUND			592.06
28	NORTH CASING	2083878.7N	1126749.9E	594.59
29	NORTH PVC			594.50
SMW 10A				
30	NORTH GROUND			590.69
31	NORTH CASING	2083668.8N	1126760.7E	592.17
32	NORTH STAINLESS PIPE			592.63

(28)

SMW 11A				
33	NORTH GROUND			590.48
34	NORTH CASING	2083668.1N	1126765.3E	591.89
35	NORTH STAINLESS PIPE			592.36
LMW 11				
36	NORTH GROUND			588.81
37	NORTH CASING	2083456.9N	1126767.1E	591.29
38	NORTH STAINLESS PIPE			591.09
LMW 12				
39	NORTH GROUND			588.65
40	NORTH CASING	2083462.9N	1126767.8E	591.67
41	NORTH STAINLESS PIPE			591.58
LMW-22 X				
42	NORTH GROUND			589.31
43	NORTH CASING	2083319.5N	1126580.6E	591.96
44	NORTH PVC			591.72
LMW 21 X				
45	NORTH GROUND			589.33
46	NORTH CASING	2083319.3N	1126574.4E	591.91
47	NORTH PVC			591.65

LMW 20 X

48 NORTH GROUND 589.86
49 NORTH CASING 2083318.2N 1126152.1E 592.31
50 NORTH PVC 592.10

LMW 19

51 NORTH GROUND 589.92
52 NORTH CASING 2083318.7N 1126146.5E 592.42
53 NORTH PVC 592.19

LMW 18 X

54 NORTH GROUND 589.70
55 NORTH CASING 2083322.5N 1125828.6E 591.86
56 NORTH PVC 591.86

LGW 02

57 NORTH GROUND 590.30
58 NORTH CASING 2083322.4N 1125777.3E 592.78
59 NORTH STAINLESS PIPE 592.54

SMW 13

60 NORTH GROUND 589.16
61 NORTH CASING 2083322.1N 1125767.6E 590.51
62 NORTH STAINLESS PIPE 590.95

SMW 12

63 NORTH GROUND 589.48
64 NORTH CASING 2083321.7N 1125761.1E 591.21
65 NORTH STAINLESS STEEL 591.65

UMW 32

NORTH GROUND 591.45
NORTH CASING 2084439.1N 1124209.4E 593.86
NORTH PVC 593.74

LMW 16

NORTH GROUND 591.16
NORTH CASING 2084440.3N 1124217.8E 593.75
NORTH PVC 593.61

UMW 19

NORTH GROUND 591.45
NORTH CASING 2084444.0N 1124210.5E 594.05
NORTH STAINLESS PIPE 593.91

LMW 13

NORTH GROUND 590.60
NORTH CASING 2083268.5N 1122120.7E 593.16
NORTH PVC 593.06

UMW 28

NORTH GROUND			590.28
NORTH CASING	2083283.4N	1122110.0E	593.31
NORTH STAINLESS PIPE			593.10

5:30 off site

CRG/[illegible]

THUR. 9/11/08 ~~[illegible]~~ SUNNY 60°-78°

6:30 CRG / DUSTIN ARRIVED ON SITE TO CONTINUE AREA 1 DENSITY TESTING PROTECTIVE LAYER MATERIAL

6:30 LCG ON SITE PLACING PROTECTIVE LAYER (CLAY) ON AREA 1 WITH 7 SCRAPERS, 2 DOZERS, AND 1 SHEEPSFOOT COMPACTOR

9:30 CALLED PAT & CAM TO GIVE PROJECT UPDATE

8:00 LCG STARTED AREA 2 CLAY PLACEMENT IN SE CORNER w/ 2 SCRAPERS

11:30 DALE STATED THE STOCKPILE NEXT TO THE SITE ENTRANCE CONSISTS MAINLY OF CLAY WITH SOME GRAVEL MIXED IN TO CLASSIFY AS CLAY MATERIAL FOR THE TOP UNCOMPACTED 6" OF AREA 1 & 2

(34)

1- DO NOT NEED DUSTIN NEXT WEEK
2- ~~POSSIBLE~~ NEED SURVEY (2 DAYS)
3- [illegible] [illegible] TRUCK REVIEW
- HAVE MEAD & [illegible] REVIEW?

CALLED TIM FOR SURVEY OR NOT USED
1- WAIT UNTIL GPS ARRIVAL
2- SURVEY w/ CONTRACTOR GPS
3- TOTAL STATION w/ DUSTIN

2:30 NEXT THURSDAY SET MATS ON GEOTEXTILE FOR POTENTIAL BRIDGE

2:40 CHECKED BAR 3 w/ LCB
- ok .06

3:00 LEAVE [illegible] SITE

WED. 9/17/08 SUNNY 60°-76°

6:50 CPG ARRIVED ON SITE TO DE-LINEY TEST AREA 1

- LCG ON SITE UTILIZING 7 SCRAPERS, 2 ROLLER, AND 1 825C SHEEPSFOOT COMPACTOR TO PLACE CLAY ON AREA 1

- LCG ALSO UTILIZING A WATER TRUCK TO WATER HAUL ROADS

7:15 DAVE RETURN ON SITE TO OBSERVE CLAY PLACEMENT

1:00 INFORMED JEFF HE COULD NOT PLACE CLAY ON WET AREAS LOCATED ON EAST TOP - HE WILL BACKDRAG WET MATERIAL

1:30 DAVE ON SITE TO OBSERVE CONSTRUCTION ACTIVITIES

1522

(32)

TROXLER 3440
S/N 22746
STANDARD C →
MC 652
DS 2627

PROCTOR = 130.1 @ 8.4
SPEC = 2% - 6%
ABOVE OPT.
MOISTURE = 10.4 - 14.4

LOCATION	LIFT	DD	WD	% MC	% C
259	4	123.2	138.5	12.4	94.7
260		120.7	136.8	13.3	92.8
261	C	120.9	136.2	12.7	92.9
262	4	121.9	136.9	12.3	93.7
311	5	123.7	136.7	10.5	95.1
312		124.3	137.8	10.8	95.6
313		121.9	136.4	11.9	93.7
314	5	121.1	135.6	12.0	93.1
222	3	120.1	134.3	11.8	92.3
218	3	118.0	132.0	11.9	90.7
272	3	118.1	131.1	11.0	90.8
224		118.4	132.0	11.5	91.0
225		120.5	134.5	11.6	92.6
226	3	118.2	133.8	13.2	90.9

Location	Lift	DD	WD	% M	% C
227	3				
228		120.0	135.1	12.6	92.3
229		122.9	136.2	10.8	94.5
230	3	124.6	139.4	11.9	95.8
231	3	118.8	132.1	11.2	91.3
✓ 232					
233		126.3	139.8	10.6	97.1
234	3	123.9	137.0	10.6	95.2
263	4				
264					
265					
266	4	120.4	135.2	12.2	92.6
267	4				
268					
269					
270	4				
274		119.4	135.8	13.8	91.8
279		121.3	138.1	13.8	93.7
284		119.0	134.6	13.1	91.5
288	4				

Location	Lift	DD	WD	% M	% C
235	3	122.7	136.0	11.4	94.3
236		124.4	138.2	11.1	95.6
✓ 237					
238	3				
239	3	120.3	134.9	12.1	92.5
240	3	118.2	134.0	13.3	90.9
241	3				
	S. Slope	Density	Test		
275	4	118.6	135.5	14.2	91.1
280	4	119.2	132.3	11.1	91.6
318	5	118.0	132.0	11.9	90.7
330		118.3	133.9	13.2	90.9
326		117.8	133.7	13.5	90.6
322					
334	5	117.1	132.4	13.1	90.0

LOCAT	LIFT	DD	WD	%M	%C
265	4	123.2	137.2	11.4	94.7
269		119.3	135.2	13.3	91.1
273		122.9	136.3	10.9	94.4
277		120.4	136.3	13.3	92.5
281					
28[illegible]	4				

4:00 WATER TRUCK SHUT DOWN

4:10 INFORMED JEFF THE TOP OF PROTECTIVE LAYER FOR AREA 1 NEEDS TO BE COMPLETE PRIOR TO COMM ACCORDINGLY - I WILL NOT PIECE MEAL IT! - WILL DO IN 1 SURVEY FOR AREA 1

DENSITY TESTED AREA EAST 1/2 DURING THE COURSE OF THE MORNING / AFTERNOON

- PERFORMED 37 DENSITY TESTS
  - TESTS PASSED

5:00 SCRAPERS / DOZERS SHUT DOWN

6:00 SHEEPSFOOT COMPACTOR SHUT DOWN

5:00 CRG OFF SITE

THUR 9/18/08 62° - 76°

6:30 CRG ARRIVED ON SITE TO COMPLETE AREA 1 DENSITY TESTS

- LCG ON SITE PLACING CLAY ON THE EAST 1/2 WITH 3 SCRAPERS, 1 DOZER, & 1 SHEEPSFOOT COMPACTOR
- LCG UTILIZING 4 SCRAPERS AND 2 DOZER TO START PLACEMENT OF TOP 6" UNCOMPACTED CLAY MATERIAL, PLACEMENT WILL START ON THE WEST END OF AREA 1 AND WORK EAST

- LCG UTILIZING WATER TRUCK TO WATER HAUL ROADS

9:30 INFORMED JEFF THE AREA 1 WEST END WAS TO ROUGH TO DOCUMENT / COULD DOCUMENT AFTER IT IS SEEDED AS OPTION

10:00 7 SCRAPERS WERE UTILIZED TO PLACE 6" LIFT ON WEST 1/2 OF AREA 1

8:00 - LCG ON SITE W/ BACKHOE TO PLACE MATS ON BASIN GEOTEXTILE (TEST AREA)

1:00 PROJECT MEETING

2:30 CALLED AMY + DUSTIN TO CANCEL FRIDAYS SAMPLES

2:30 COMPACTOR PARKED
3:00 2 SCRAPERS STARTED TO PLACE CLAY ON EAST 1/2 OF AREA 1 TO ACHIEVE COMPACTED PROTECTIVE COVER THICKNESS

TROXLER 3440
S/N 22746
STANDARD COUNT
MS 655
DS 2663

PROCTOR = 130.1 @ 8.4 OPT.
SPEC = 90% @ 2% - 6% ABOVE OPT.

LOCATION	LIFT	WD	DD	% M	% C	
145	1	134.3	119.1	12.8	91.6	9/19
142	1	133.6	117.1	14.1	90.0	9/19
237	3	136.4	120.2	13.4	92.4	
238		136.6	120.2	13.1	92.4	
241		134.2	119.2	12.6	91.6	9/19
232		134.2	118.7	13.1	91.2	
227	3	139.2	125.8	10.6	96.7	
270	4	120.2	134.8	12.1	92.4	
322	5	119.2	135.2	13.5	91.6	
✓ 288	4	117.9	134.7	14.2	90.7	9/19

LOCATION	LIFT	WD	DD	% M	% C
283	4	137.9	123.0	12.1	94.5
287	4	134.3	119.9	12.8	92.1 9/19/08
264	4	121.7	135.6	13.9	93.5
268		122.3	138.2	13.0	94.0
272		123.1	138.9	12.8	94.6
277		122.1	137.7	12.8	93.9
282		122.3	138.0	12.8	94.0
286	4	124.4	137.8	10.8	95.6
263	4	120.9	134.2	11.1	92.9
267		121.1	136.3	12.6	93.1
271		120.4	137.1	13.9	92.5
276		120.4	134.5	11.7	92.5
281		120.5	134.2	11.3	92.6
285	4	121.1	135.3	11.7	93.0

LOCATION	LIFT	UA	DA	% M	% C	
315	5	138.6	124.4	11.4	95.6	9/22 9/19/08
316	↓	135.8	119.5	13.6	91.9	
317	5	133.5	118.6	12.5	91.2	
319	5	134.5	118.1	13.9	90.8	9/22
320	↓	134.8	118.1	14.1	90.8	
321	5	137.2	122.1	12.3	93.9	
		DA	UA			
323	5	117.5	132.5	12.7	90.3	9/22
324	↓	118.0	133.9	13.5	90.7	
325	5	121.2	135.7	11.9	93.2	
327	5	121.2	134.7	11.1	93.2	9/22
328	↓	117.6	134.0	14.0	90.4	
329	5	121.7	133.3	12.1	92.8	
331	5	120.1	134.1	11.7	92.3	9/22
332	↓	119.1	133.4	12.0	91.5	
333	5	122.0	137.2	12.4	93.8	
335	5	120.3	134.9	12.1	92.5	~~9/19/08~~ 9/22/08
336	↓	119.2	135.4	13.5	91.6	
337	5	121.5	135.7	11.7	93.4	

~~9/19/08~~ 9/22/08

FRI. 9/19/08 62°-78° SUNNY

6:30 CRB ARRIVED ON SITE TO COMPLETE AREA 1 DENSITY TESTING IN NE CORNER

- LCG ON SITE PLACING PROTECTIVE LAYER (CLAY) IN NE CORNER TO ACHIEVE COMPACTED LAYER THICKNESS (2.5') WITH 5 SCRAPERS
- LCG ALSO ON SITE PLACING THE TOP LOOSE 6" LIFT WITH SCRAPER AND DOZER

- LCG WATERING HAUL ROAD

- LCG SURVEYOR ON SITE CHECKING TOP OF PROTECTIVE LAYER GRADES ON WEST 1/2 OF AREA 1

12:00 SPOKE WITH DAVE ABOUT CQM INVOICE ITEMIZED - HE IS OK W/IT

- DAVE ASKED CQM TO DENSITY TEST THE SETTLING BASIN THE WEEK OF SEPT. 29
- REQUIREMENTS: - 18"
  - 90% OF STANDARD
  - NO MOISTURE REQUIREMENTS
- CALLED TIM / HE SAID TO DO IT

TROXLER 3440
S/N 22746
STANDARD COUNTS
MS = 662
DS = 2651

2:15 WALKED EAST TOE OF SLOPE W/ JEFF
- DISCUSSED ADDING MORE CLAY MATERIAL / COMPACTION

2:20 SPOKE W/ DAVE ABOUT EROSION UPDATE

2:30 OFF SITE

MON. 9/22/08 67°-74°
7:00 CRG ARRIVED ON SITE TO COMPLETE AREA 1 DENSITY TESTING IN NE CORNER & START AREA 2 DENSITY TESTING

- LCG ON SITE PLACING CLAY W/ 4 SCRAPERS ON AREA 1 IN NE CORNER TO ACHIEVE 2.5' COMPACTED THICKNESS/ GRADING / COMPACTING

- LCG ON SITE PLACING CLAY W/ 2 SCRAPERS ON AREA 2 EAST SIDE

7:30 A SEMI LOAD OF EROSION CONTROL MATTING WAS DELIVERED & UNLOADED IN SE CORNER OF SETTLING BASIN (ON CRUSHED CONCRETE)

16' X 108'
NORTH AMERICAN GREEN
EROSION CONTROL MATTING

262-806-6039 DON SMITH CELL
697-3475 OFFICE

39

TROXLER 3440
S/N 22746
STANDARD CT
M 1662
DJ 2631

9:00 AREA 1 DENSITY TESTS COMPLETE

9:15 SPOKE W/ DALE PETERSON ABOUT TOP OF PROTECTIVE LAYER SURFACE PRIOR TO DOCUMENTATION SURVEY. HE SAID AS LONG AS IT DRAINS TO SURVEY IT.

12:00 LCG WORKING ON PLACING LOOSE 6" TOP LIFT OF PROTECTIVE MATERIAL ON AREA 1 EAST END

- LCG WATERING HAUL ROADS / MINIMIZE DUST

- LCG & DALE P. RAN BACKHOE ON CLAMP WATER IN SETTLING BASIN TO DRIEVE SEDIMENT.

2:15 SPOKE W/ DAVE ABOUT RAISING POINTS ON AREA 1 E. END FOR BETTER DRAINAGE - HE WAS OK W/ THIS - FIGURE VOLUME

62 CUBIC YARDS

2:30 INFORMED JEFF TO RAISE POINTS: 1197
1199
1203
1105
} 0.5

3:00 STAKED 4 POINTS W/ LCG SURVEYOR

3:15 - 4:45 DOCUMENTED PROTECTIVE LAYER WITH LCG QA CERT ON WEST END OF AREA 1

4:50 OFF SITE

TUES. 9/23/KE 60° - 78° SUNNY

6:30 CRG ARRIVED ON SITE TO CONTINUE AREA 1 TOP OF PROTECTIVE LAYER DOCUMENTATION WITH LCG GPS UNIT AND ASSIST DUSTIN WITH AREA 2 DENSITY TESTING

DUSTIN ON SITE (FROM GREEN BAY) TO HELP W/ AREA 2 DENSITY TESTING

- LCG ON SITE GRADING THE TOP LOOSE 6" LIFT ON THE WEST 1/2 OF AREA 1 W/ 2 DOZERS

7:00 LCG ON SITE TO START AREA 2 CLAY PLACEMENT W/ 5 SCRAPERS, 1 D8 DOZER 1 SHEEPSFOOT COMPACTOR

- LCG ON SITE WATERING HAUL ROADS W/ WATER TRUCK ON A FULL TIME BASIS

(41)

EQUIPMENT ON SITE

6 - CATERPILLAR 627 SCRAPER
2 - JOHN DEERE 850 DOZER
1 - CATERPILLAR 850C SHEEPSFOOT COMPACTOR
1 - CATERPILLAR D8 DOZER
1 - WATER TRUCK

7:20 FIRST LOAD OF SAND WAS PLACED IN SETTLING BASIN TO FILL IN LOW AREA (T&M) 2 CAT D400 OFF ROAD TRUCK

8:00 SPOKE WITH DAVE ABOUT AREA 1 PROTECTIVE LAYER DOCUMENTATION. I TOLD DAVE THE SURFACE IS ROUGH & THE ELEVATION COULD CHANGE AFTER SEEDING PREPARATION ACTIVITIES. HE SAID JOHN MANNING IS OK WITH THIS. I ALSO TOLD HIM WE COULD ALSO SURVEY THE CREST OF SLOPE & TOE OF SLOPE FOR AS-BUILT BESIDE THE DOCUMENTATION POINTS - HE SAID GOOD IDEA

8:00 - 10:00 DOCUMENTED GRADE OF AREA 1

10:45 TOLD DAVE AREA WEST OF LOW GRADE ARE OK / READY TO BE SEEDED - HE DID NOT HAVE ANY ISSUES

11:00 INFORMED JEFF GRADING THE [illegible] READY TO BE SCRAPED / AREA 1 WEST END

1:10 DENNY ON SITE TO OBSERVE CONSTRUCTION ACTIVITIES - PLEASED WITH PROCEDURE - PLACE CLAY IN 3 LIFTS ACROSS AREA 2 OK AS LONG AS WE GET COMPACTION

10:00 LCG SCRAPER CHECKED AREA 1 EAST 1/2 TOP OF PROTECTIVE LAYER GRADE

1:45 INFORMED JEFF I WILL WALK AREA 1 WITH HIM WED. AFTERNOON TO REVIEW SURFACE PRIOR TO DOCUMENTATION SURVEY ~~SCHEDULED~~ THURSDAY MORNING

3:00 DAVE ON SITE - PLEASED WITH CONSTRUCTION ACTIVITIES

4:30 SCRAPERS SHUT DOWN

5:00 REMAINING EQUIPMENT SHUT DOWN

5:00 [illegible] Off Site

6:30 - 7:30 ICED KNEE - IT WAS SORE & SWOLLEN [illegible] DURING THE DAY
- TOOK IBUPROFEN

WED. 9/24/08 SUNNY 60-80°

6:30 CRE ARRIVED ON SITE TO CONTINUE AREA 2 DENSITY TESTING

- AUSTIN NOT ON SITE

- LCG ON SITE PLACING CLAY ON AREA 2 WITH 5 SCRAPERS, 1 D8 DOZER, AND 1 CATERPILLAR 825C SHEEPSFOOT COMPACTOR

- LCG ON SITE UTILIZING 2 850 DOZER TO CONTINUE GRADING AREA 1 EAST 1/2

- LCG ON SITE UTILIZING 1 WATER TRUCK TO WATER THE HAUL ROADS ON A FULL TIME BASIS

- LCG SURVEYOR ON SITE CHECKING AREA 1 EAST 1/2 BARRIER LAYER GRADE WITH GPS UNIT

8:15 CALLED TJA - GAVE HIM PROJECT UPDATE
- ALSO INFORMED HIM I TWISTED MY KNEE LAST WEEK SOMETIME - SORE OVER THE WEEKEND & ICED IT LAST NIGHT - DID NOT INFORM JM - TJA SAID TO WATCH IT & GO IN IF NEED BE

TROXLER 3440
S/N 22746
MS= 661
DS= 2644

LOCATION	LIFT	DD	WD	% M	% C
54	1	125.7	138.7	10.4	96.6
60		124.1	138.8	11.9	95.4
65		122.8	138.6	12.9	94.4
70		121.3	135.9	12.1	93.2
75		121.5	135.7	11.6	93.4
55		118.0	133.9	13.5	90.7
61		127.1	140.4	10.5	97.7
66		126.5	140.0	10.6	97.3
71		123.8	137.4	10.9	95.2
76		123.5	138.4	12.1	95.0
56		121.1	135.6	12.0	93.1
62		120.8	135.0	11.8	92.8
67		124.4	138.4	11.2	95.7
72		119.4	133.2	11.5	91.8
77	1	123.8	137.0	10.7	95.2

LOCATION	UNIT	DA	WA	% M	% C
83	2	118.5	132.0	11.4	91.0
90		126.4	141.3	11.8	97.2
94		126.0	140.3	11.4	96.8
99		122.2	136.2	11.4	93.9
~~104~~					
84		119.5	134.1	12.1	91.9
91		121.2	136.8	12.8	93.2
95		124.0	139.2	12.3	95.3
100		126.4	141.6	12.1	97.1
~~105~~					
96		121.5	135.5	11.5	93.4
101		120.6	135.5	12.3	92.7
~~106~~	2				

LOCATION	UNIT	DA	WA	% M	% C
110	3				
111					
116					
121					
126					
112					
117					
122					
127					
107					
113					
118					
123					
128					
108					
114					
119					
124					
129	3				

LOCATION	LIFT	DD	W/C	[illegible]	% C
109					
115					
120					
125					
130					

8:00 LANDSCAPING CONTRACTOR ON SITE TO START SEEDING AREA 1 WEST CERTIFIED AREA

9:30 DENNY AREA TO HAVE ADDITIONAL AREA SEEDED

10:30 CALLED TIM -

① HE WILL REVIEW LAKE MICHIGAN HISTORIC HIGH WATER LEVEL

② IF WE DID ANY COMAO WORK WE WOULD WORK UNDER [illegible] ARCHITECTURAL FIRM

③ WE COULD DO SURFACE WATER PLAN / MAKE SURE AREAS DRAIN

DON FROM ADVANCED [illegible]

11:05 [illegible] CLAY [illegible]

- COMPACTION FACTOR

362-0818

MEETING TOMORROW [illegible] [illegible] [illegible]

12:30 AREA 2 COVERED WITH CLAY

3:45 WALKED AREA 1 EAST 1/2 WITH JEFF - IT LOOKS GOOD TO DO [illegible] ON THURS

3:50 [illegible] ON SITE / SAID THE AREA 1 SURFACE LOOKS GOOD

THUR. 9/25/08 64° - 79° SUNNY

6:40 CRB ARRIVED ON SITE TO DOCUMENT AREA 1 EAST 1/2 TOP of PROTECTIVE LAYER ELEVATIONS WITH LCG GPS UNIT

7:30 - DUSTIN ON SITE TO CONTINUE AREA 2 DENSITY TESTING

LCG ON SITE TO CONTINUE PROTECTIVE LAYER (CCAM) PLACEMENT ON AREA 2 WITH SCRAPERS, 2 DOZERS, AND 1 SHEEPSFOOT COMPACTOR

ROCK LANDSCAPING ON SITE TO CONTINUE PULVERIZING THE SURFACE / SEEDING / PLACING EROSION CONTROL MATTING ON AREA 1

8:00 - 12:00 DOCUMENTING AREA 1 W/ LCG GPS

12:00 - 1:00 REVIEWED AREA 1 SURVEY DATA

1:00 - 2:15 PROJECT MEETING

(46)

TROXLER 3440
S/N 22746
STANDARD COUNT
MD 668
DS 2642

LOCATION	LIFT	WD	DD	%M	%C
107	3	136.7	122.4	11.7	94.1
108		133.6	117.7	13.5	90.5
109		133.7	117.9	13.6	90.6
110		136.0	119.9	13.4	92.2
111		135.2	119.1	13.6	91.5
112		138.1	124.6	10.9	95.7
113					
110	3				

3:20 CALLED DAVE - GAGE NM PROBLEM CHARGE

5:00 OFF SITE

FRI - 9/26/08 SUNNY 60° - 70°

6:35 CRG ARRIVED ON SITE TO DOCUMENT CONSTRUCTION ACTIVITIES

- LAKE COUNTY GRADING ON SITE PLACING THE TOP LOOSE 6" LIFT OF PROTECTIVE LAYER MATERIAL ON AREA 2 WITH 3 SCRAPERS AND 2 DOZERS

- ROCK ENTERPRISES ON SITE TO CONTINUE SEEDING AREA 1

7:45 JEFF POINTED OUT WASTE MATERIAL PUMPING OUT NEW DITCH AREA NORTH OF AREA 2

8:30 INFORMED DENNIS

8:45 GAVE JEFF AREA 2 GRADE TABLE HARD COPY - ALSO WAS EMAILED TO ROBERT PRECIOUS

9:00 LOOKED & WENT AREA NORTH OF AREA 2 WITH DENNIS & JEFF

- DENNIS STATED TO CAP IT WITH 2' OF CLAY & MOVE DITCH TO THE NORTH TO GO AROUND IT - KEEP TRACK OF TIME & CLAY FOR THEM

WET SPOT THAT PUMPED THROUGH (SLUDGE)
2084607.2N 1126390.9E 589.33

12:30 OFF SITE

MON 9/29/08 CLEAR 60-65°

7:10 CRG ARRIVED ON SITE TO START DENSITY TESTING THE SETTLING BASIN CLAY PLACEMENT AND TOPO NUMEROUS PROJECT ITEMS

- LCG ON SITE GRADING AREA 2 WITH 1 JOHN DEERE 650 DOZER

9:XX LCG STARTED SETTLING BASIN CLAY PLACEMENT WITH 2 627 SCRAPERS AND 1 - DOZER

10:30 STARTED TO RAIN
10:45 - ROCK CONSTRUCTORS SHUT DOWN
11:00 LCG SHUT DOWN

SURVEY JOBS:

- JM SETTLING BASIN 9-29-08
  - TOPO OF SOUTH HAUL ROAD AREA, FROM SAND BY SETTLEMENT PLATES TO TOE OF SOUTH BERM

- JM STOCKPILE TOPO 9-29-08
  - TOPO OF CLAY STOCKPILE EAST OF EAST ACCESS ROAD AFTER AREA 1, 2, AND THAT AREA NORTH OF AREA 2 WAS COMPLETED / PRIOR TO SETTLING BASIN CLAY PLACEMENT

- JM AREA 1 TOPO 9-29-08
  - TOPO OF TOP AREA AND BREAKLINE SO PAT CAN LAYOUT PROPOSED ACCESS ROAD - THIS JOB IS NOT DONE - STARTED TO RAIN!

TUE. 9/30/08 50-65° CLEAR

6:30 CRG ARRIVED ON SITE TO DOCUMENT/ TEST SETTLING BASIN CLAY PLACEMENT

- SITE IS WET & MUDDY FROM LAST NIGHT RAINS
- JEFF STATED LCG NOT WORKING TODAY DUE TO WET SITE CONDITIONS
- CRG WILL DO VARIOUS SURVEYING TODAY

9:00 MET W/ GREG FROM RYAN CENTRAL TO DISCUSS MH IN SETTLING BASIN

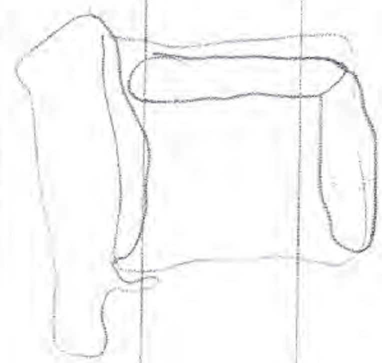
- LANDSCAPERS ON SITE WORKING ON AREA & SEEDING

WAUKEGAN PLANT SURVEY

SURVEY JOBS:

IN SETTLING BASIN 9-30-08

- TOPO FOR SOUTH CRUSHED CONCRETE, EAST CRUSHED CONCRETE, NORTH CRUSHED CONCRETE AREA - WEST SCALE AREA, WEST SEEDING AREA



2:45 OFF SITE

TO DO PAPER WORK

WED. 10/1/08 44° - 58° CLOUDY

6:40 CRG ARRIVED ON SITE TO DOCUMENT / DENSITY TEST, IF ENOUGH MATERIAL IS PLACED, FOR THE SETTLING BASIN

7:00 LCB ON SITE GRADING AREA 2 WITH A JOHN DEERE 850 DOZER

LCB ALSO ON SITE PLACING CLAY ON THE SETTLING BASIN WITH 4 - 627 SCRAPERS AND 1 - JOHN DEERE 750 DOZER STARTING IN THE SW CORNER

- CRG ALSO ON SITE TO SURVEY NUMEROUS ITEMS: 1. STAKE AREA 1 PROFILES & ACCESS ROAD
2. FINISH AREA 1 TOPO
3. START AREA 2 DOC. SURVEY

1 - CAT 815 SHEEPSFOOT COMPACTOR
4 - CAT 627 SCRAPERS
1 - JOHN DEERE 750 DOZER

SURVEY JOBS: JM AREA 1 TOPO 10-1-08

EAST STOCKPILE ORIGINAL VOLUME
127,595 CY
102,479 CY CUT (AREA 1 & 2)

25,116 CY REMAINING

AREA 1 DESIGN PROTECTIVE LAYER
51,700 CY

AREA 2
21,925 CY

73,625 CY

9:30: SPOKE W/ DALE ABOUT SETTLING BASIN PROCTOR
- USE 90% STANDARD PROCTOR

11:00 PROJECT MEETING
12:00 CALLED TJA FOR PROJECT UPDATE

SETTLING BASIN

TROXLER 3440
S/N 22746
STANDARD COUNT
M - 665
DS: 2621

PROCTOR = 121.0 CMI CAT.

1245 HAVE GAGE AND SPEC.

SPEC. = 90% STANDARD PROCTOR / NO MOISTURE SPEC.
8" COMPACTED LIFT
7" COMPACTED LIFT
= 15" COMPACTED CLAY THICKNESS

LOCATION	LIFT	WD	DD	% M	% C
1	1 (8")	137.9	126.3	9.2	100
2	2 (15")	134.0	117.2	14.3	96.8
127	1	139.8	125.4	11.5	100.0
3	2	134.8	118.8	13.4	98.2
128	1	138.3	125.6	10.2	100
	2				
4		123.9	108.9	13.7	90.0
5		138.9	124.5	11.6	100.0

2:20 CALLED PAT / TOM
- RAN SCRAPER ON FIRST 100' THEN RAN COMPACTOR

2:30 4 SCRAPERS SHUT DOWN

- SCREENED 5 MIL MIL SOIL AREA 1 & SCREENED 1 MIL ON AREA 2

3:40 OFF SITE

6 - AREA 1 TOPO
1 - AREA 1 & 2 MIL AS-BUILT SCREEN
3 4 - DENSITY TEST SETTLING BASIN
- AREA 1 ROAD LAYOUT

THUR | OCTOBER 2, 2008 CLOUDY 45° - 65°

6:45 CRB ARRIVED ON SITE TO ACCURACY / AREA 2 PROTECTIVE LAYER w/ GPS UNIT

7:00 - 11:00 ACCURACY GRADE TAKE POINTS ON AREA 2

LCG ON SITE GRADING WESTERN AREA 2 LIMITS OF WASTE WITH A JOHN DEERE 750 DOZER

- PERIMETER DRAINAGE CHANNEL TO WEST TO COMPLETE GRADING

- CRB WILL DOCUMENT BREAK LINES / WESTERN LIMITS OF WASTE MONDAY WHEN EVERYTHING IS COMPLETE

11:20 STAKED GCL LIMITS TO VERIFY & DITCH IS OVER GCL — OK

11:30 SURVEYED AREA 1 ACCESS RAMP ON N. SIDE

SURVEY JOBS: JM AREA 2 DOC 10-2-08
JM AREA 1 RAMP TOPO 10-2-08

CARMONY

MONDAY PM CALL

12:30 OFF SITE

MON 10/6/08 55°-60° CLOUDY

7:40 CEB ARRIVED ON SITE TO SCREEN AREA 2 AS-BUILT AND DOCUMENT TEST SETTLING BASIN CLAY PLACEMENT

- LCG ON SITE PLACING CLAY ON THE SETTLING BASIN SOUTH END WITH 4 - CATERPILLAR 627 SCRAPERS AND 1 JOHN DEERE 750 DOZER.

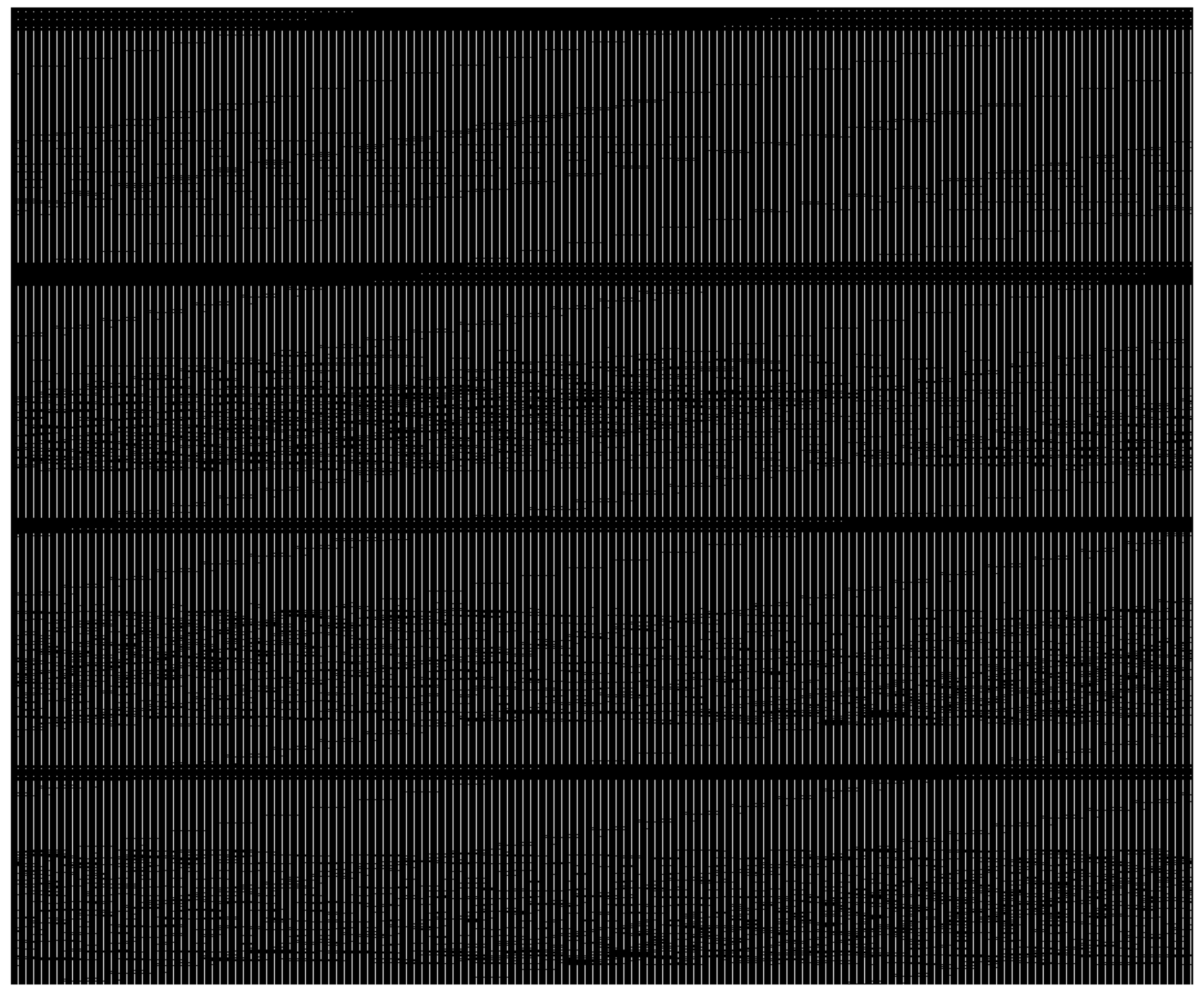
ROCK ENTERPRIZE LANDSCAPING CONTRACTOR ON SITE COMPLETING AREA 2 SEEDING, FERTILIZING, AND PLACEMENT OF EROSION CONTROL MATTING

10:45 SPOKE W/ DAVE ABOUT EXISTING DITCH WEST OF EAST HALL ROAD BY AREA 2 - HE WILL LOOK @ IT

SCREEN JOB: JM AREA 2 TOPO 10-6-08
AREA 2 TOPO AND EAST CHANNEL AS-BUILT SCREEN

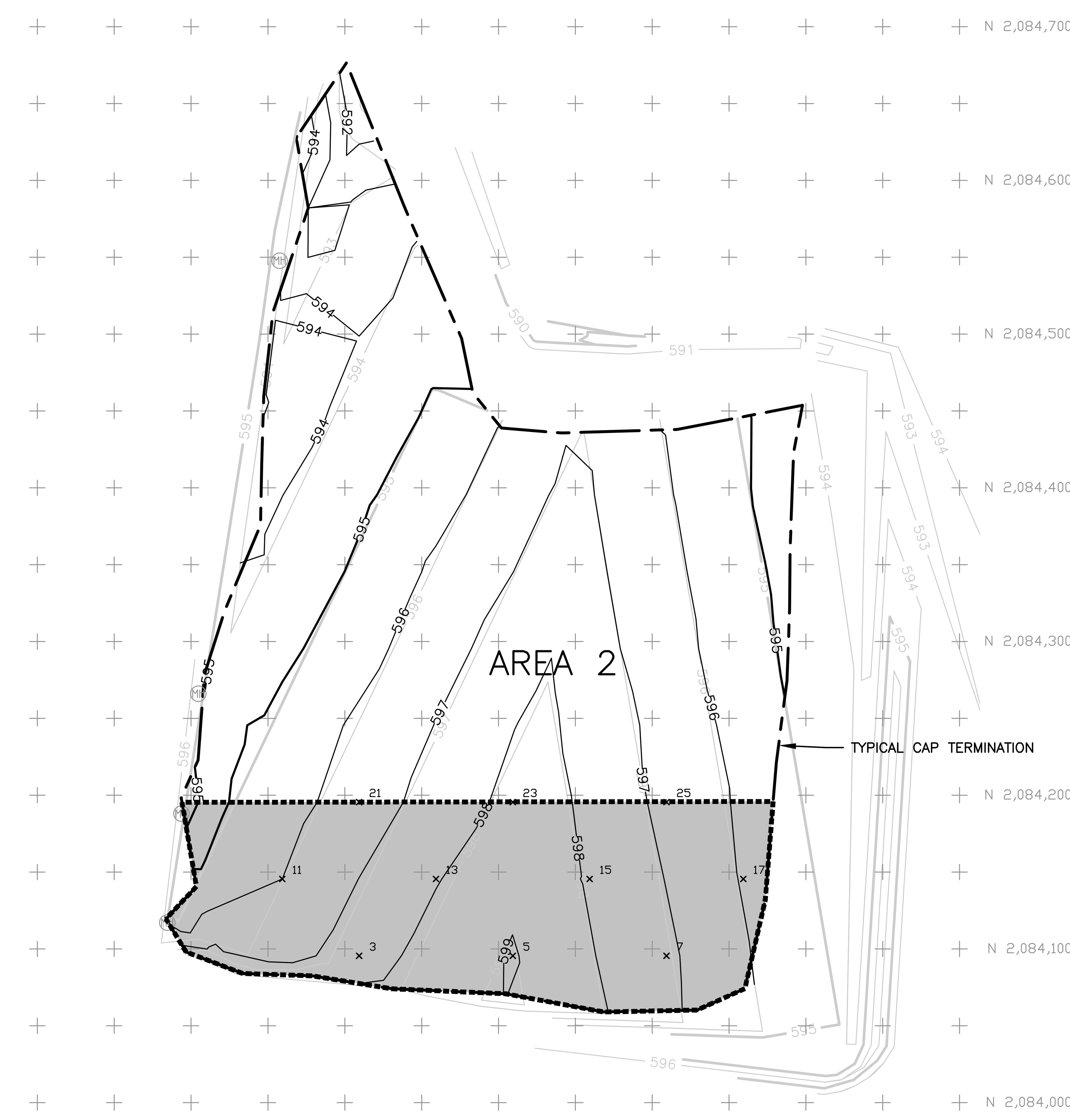
ATTACHMENT J

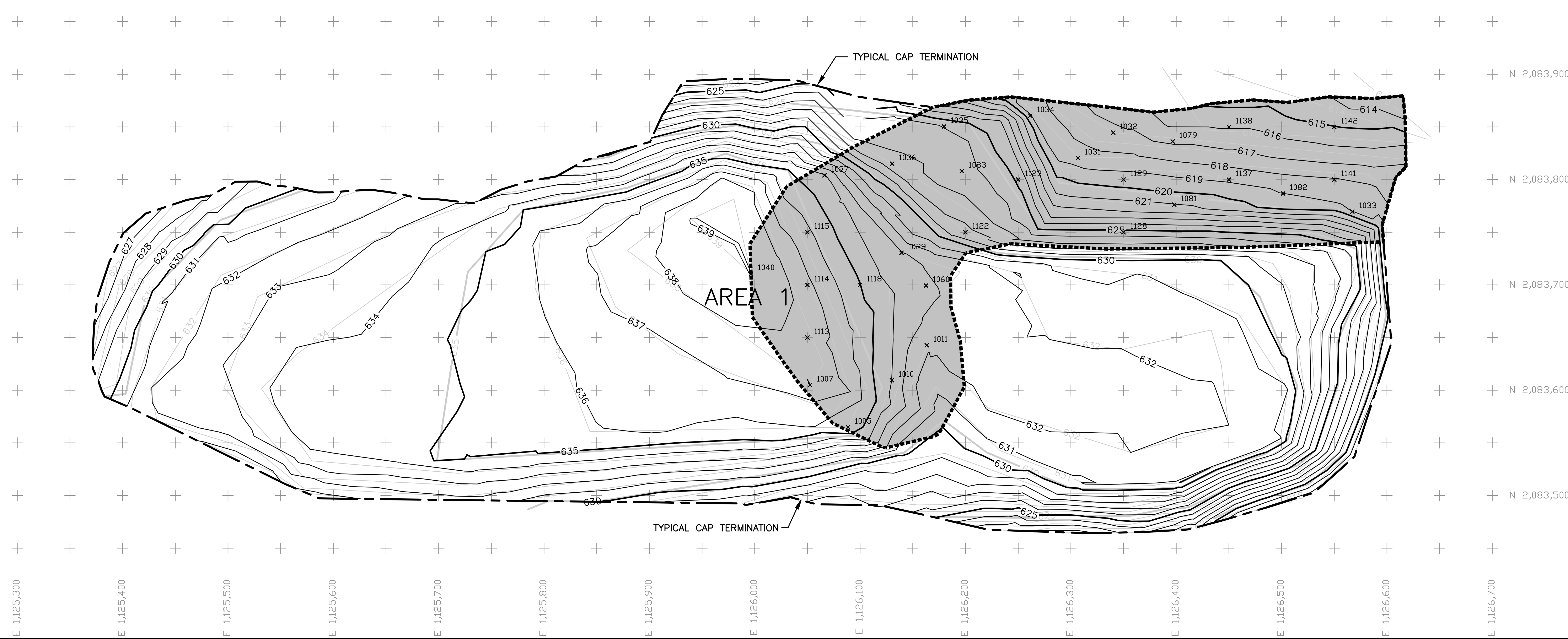
Response 06: Barrier Thickness Measurements



NOTES:

1. FILL AREA 1 CLAY RELOCATION AREA = 105,114 SQUARE FEET.
2. FILL AREA 2 CLAY RELOCATION AREA = 46,230 SQUARE FEET.
3. BARRIER THICKNESS TESTING FREQUENCY >1 SAMPLE/5,000 SQUARE FEET.
4. BARRIER THICKNESS TESTING COMPLETED BY AECOM ON AUGUST 15 AND 16, 2018 USING A GEOPROBE.





N

LEGEND

	LIMITS OF WASTE
594	DESIGN BARRIER LAYER CONTOURS
594	AS-BUILT BARRIER LAYER CONTOURS
×100	SURVEY POINT NUMBER AND LOCATION
	APPROXIMATE AREA OF CLAY RELOCATION

RELEASE	DATE:	BY:
Project Review		
5		
4		
3		
2		
1		
NO.	DATE:	BY:
DESCRIPTION		

REVISIONS

JM Johns Manville

CQM, INC.
Engineering-Surveying-Material Testing
2679 Continental Drive
Green Bay, WI 54311

Clay Barrier Layer Thickness

Area 1 & 2 Final Cover
Johns Manville Waukegan Plant
Waukegan, IL

DRAWN BY: WBE

DATE: Aug. 2018

SCALE: 1"=60'

DRAWING NO.

A-9

AECOM		
	Client: Johns Manville	Boring ID:
	Project Number: 60556851.130	Typical Log[1]
	Boring Location: 1871 North Pershing Ave, Waukegan, IL	
	Drilling Method: 6620DT Geoprobe Rig with Macro-Core (MC) Sampler	Sheet 1 of 1
	Weather: Sunny, ~70 to 85° F	Date Started: 8/15/2018
Logger By: Matt Kyrias and Erica Foley		
Drilled By: CS Drilling - Augustin Mendez		Date Finished: 8/16/2018

Depth (ft)	Layer Type and Minimum Barrier Thickness[2]	Sample Number	Sample Type	Recovery (in)	U.S.C.S.	**Lithologic Description**	Well Construction Details
1 2 3	Protective Cover	1	MC	52-60	CH	CLAY, trace SILT, trace FG SAND, high plasticity, moist, stiff, light brown.	Borehole backfilled with bentonite chips to grade.
4	Drainage Layer				SP	FINE-GRAINED SAND, poorly graded, moist, loose, light brown.	
5	Barrier Layer				CH	CLAY, trace GRAVEL, high plasticity, moist, stiff, light to dark brown.	

End of Boring: 5.5 to 7 feet below ground surface (bgs)

Fill Area #1 Boring Locations		**Fill Area #2 Boring Locations**
1005	1081	3
1007	1082	5
1010	1083	7
1011	1113	11
1029	1114	13
1031	1115	25
1032	1118	17
1033	1122	21
1034	1123	23
1035	1128	15
1036	1129	
1037	1137	
1040	1138	
1060	1141	
1079	1142	

Notes:

[1] Typical soil boring log from borings advanced on August 15 and 16, 2018.

[2] Layer Type and Minimum Barrier Thickness from Final Phase II Remedial Work Plan dated June 20, 2008.

--- Minimum thickness of 36 inches for protective cover, 12 inches for drainage layer, and 12 inches for barrier layer met or exceeded in each soil boring.

ATTACHMENT K

Response 06: Inspection Reports 10, 11, and 12

CQM, INC. 2679 Continental Drive Green Bay, WI 54311-6627 (920) 465-3911 Fax (920) 465-3913	Client: Johns Manville Waukegan Plant	Date: 8/29/08
	Project: Fill Area 1 & 2 Capping Activities	Day: FRIDAY
	Engineer's Rep: Chris R. Goffard	Page: 1 of 2
	Contractor's Rep: Jeff O'Malley	Rprt No.: 10
	Signed: [signature]	

RESIDENT INSPECTION REPORT

Weather Conditions	Temperature Low	Temperature High	Sky	Rain	Snow	Project Site Conditions
	68°	82°	SUNNY			Dry Muddy

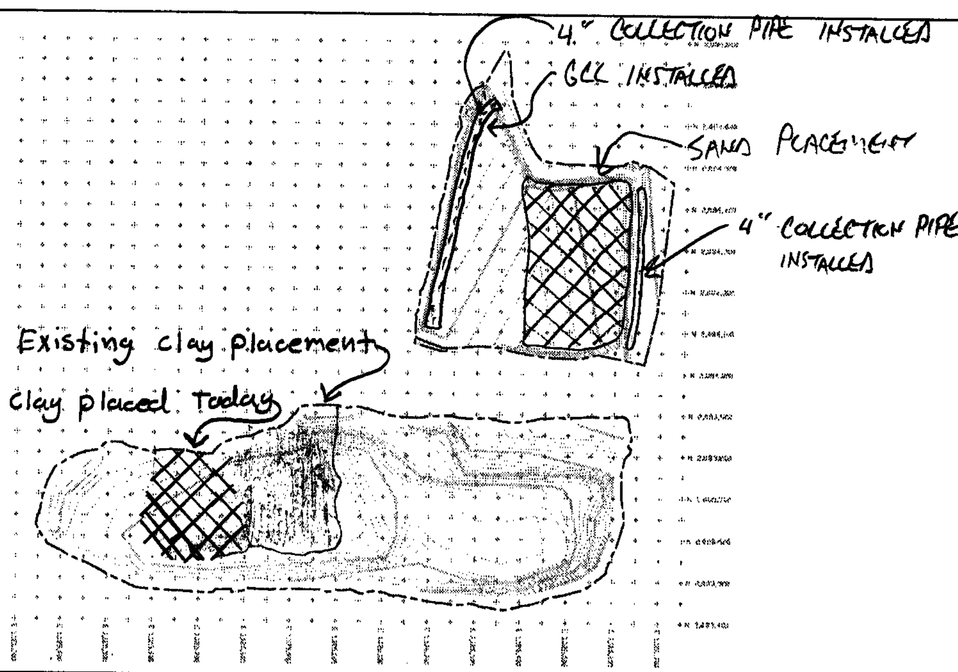
Field Book No.: 1 Page #s 17

Contractor(s) on Site:

Report of Observation of Work and Comments:

6:20 CRG ARRIVED ON SITE TO CONTINUE AREA 2 BARRIER LAYER DOCUMENTATION
6:30 DUSTIN ARRIVED ON SITE TO CONTINUE AREA 1 PROTECTIVE LAYER DENSITY TESTING
LAKE COUNTY GRADING ON SITE TO CONTINUE CLAY PLACEMENT (PROTECTIVE LAYER) ON AREA 1 WITH SCRAPERS, DOZERS, AND 1 SHEEPSFOOT COMPACTOR
ON AREA 2 LAKE COUNTY GRADING CONTINUE TO PLACE SAND WITH OFF ROAD TRUCKS AND GRADE TO 1.0' ON AREAS OF DOCUMENTED BARRIER LAYER
LAKE COUNTY PIPE CREW ON SITE TO INSTALL AREA 2 4" COLLECTION PIPE AND GCL MATERIAL
1:30 SURVEYED LIMITS OF GCL PLACEMENT (AS-BUILT)

Sketch:



1/27/05 KML F-112-1.xls

Front

CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client:	Johns Manville Waukegan Plant	**Date:**	8/29/09
Project:	Fill Area 1 & 2 Capping Activities	**Day:**	FRIDAY
Engineer's Rep:	Chris R. Goffard	**Page:**	2 of 2
Contractor's Rep:	Jeff O'Malley	**Rprt No.:**	10

RESIDENT INSPECTION REPORT

APE CREW

Report of Observation of Work and Comments:

PERFORMED 19 DENSITY TESTS ON AREA 1 PROTECTIVE LAYER MATERIAL — TESTS PASSED
2:30 LAKE COUNTY GRADING SHUT DOWN
3:00 CRG/DUSTIN OFF SITE

Number of Men:

Foreman /	1
Operators 9	1
Laborers 1	2

Equipment:

7- cat 627 scrapers
2- John Deere Dozers with GPS
1- Cat D8R Dozer
4- off Road Trucks
1- Disk
1- smooth Drum roller
1- water Truck
1- John Deere 325 Back Hoe
1- John Deere 350 Back Hoe
1- cat 825c sheepsfoot compactor

CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client:	Johns Manville Waukegan Plant	**Date:**	9/2/08
Project:	Fill Area 1 & 2 Capping Activities	**Day:**	TUESDAY
Engineer's Rep:	Chris R. Goffard	**Page:**	1 of 2
Contractor's Rep:	Jeff O'Malley	**Rprt No.:**	11
Signed:	Chris Goffard		

RESIDENT INSPECTION REPORT

Weather Conditions	Temperature Low	Temperature High	Sky	Rain	Snow	Project Site Conditions
	72°	90°	CLEAR			Dry / Muddy

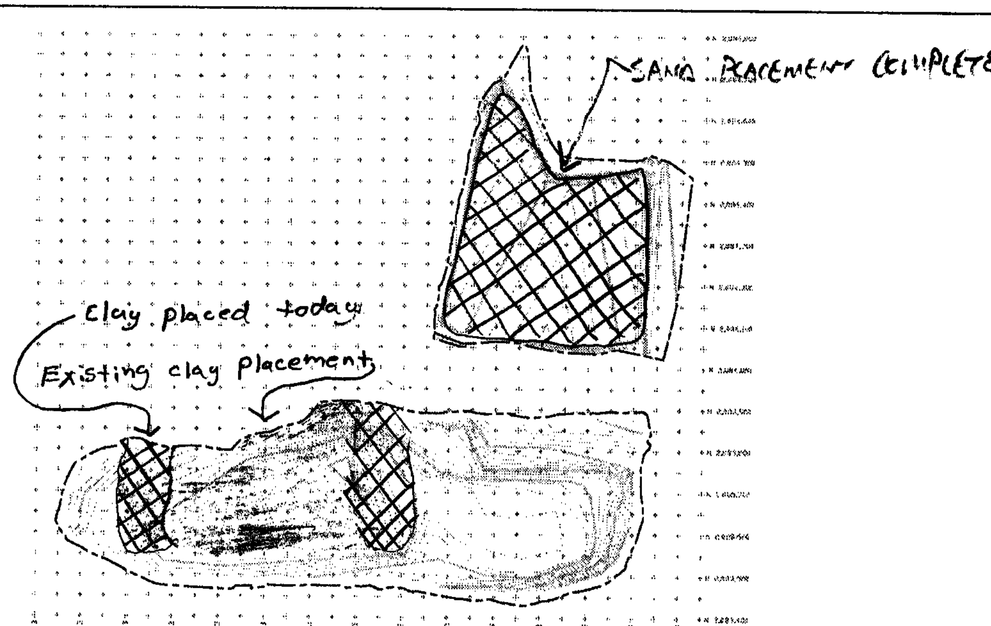
Field Book No.: 1 Page #s 18-19

Contractor(s) on Site:

Report of Observation of Work and Comments:

7:00 CRG ARRIVED ON SITE TO COMPLETE AREA 2 BARRIER LAYER DOCUMENTATION
7:00 DUSTIN ON SITE TO CONTINUE DENSITY TESTING AREA 1 PROTECTIVE LAYER MATERIAL (CLAY)
LAKE COUNTY GRADING ON SITE PLACING PROTECTIVE MATERIAL ON AREA 1 WITH 4 SCRAPERS, 2 DOZERS, AND 1 825C SHEEPSFOOT COMPACTOR
ON AREA 2 LAKE COUNTY GRADING PLACING SAND WITH 3 OFF ROAD TRUCKS AND GRADING TO 1.0 WITH A GPS EQUIPPED DOZER
8:30 DENNY ON SITE OBSERVING CONSTRUCTION ACTIVITIES
10:00 DAVE P. ON SITE TO OVERSEE PROJECT / ANSWER CONSTRUCTION RELATED QUESTIONS
12:30 LAKE COUNTY GRADING PLACING ADDITIONAL SAND AT LOW AREAS IN NORTH EAST CORNER OF AREA 1

Sketch:



CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client: Johns Manville Waukegan Plant
Project: Fill Area 1 & 2 Capping Activities
Engineer's Rep: Chris R. Goffard
Contractor's Rep: Jeff O'Malley

Date: 9/2/08
Day: TUESDAY
Page: 2 of 2
Rprt No.: 11

RESIDENT INSPECTION REPORT

Report of Observation of Work and Comments:

4:00 AREA 2 SAND PLACEMENT COMPLETE
DURING THE COURSE OF THE DAY LAKE COUNTY GRADING UTILIZED A WATER TRUCK TO WATER THE HAUL ROADS / MINIMIZE DUST
5:00 SCRAPERS / COMPACTOR SHUT DOWN
5:00 LAKE COUNTY GRADING UTILIZED OFF ROAD TRUCKS TO HAUL TOPSOIL FROM A STOCKPILE EAST OF THE EAST HAUL ROAD AND STAGE EAST OF AREA 2 EAST CHANNEL
5:30 OFF ROAD TRUCKS SHUT DOWN
5:40 CRG / AUSTIN OFF SITE

Number of Men:
Foreman 1
Operators 12
Laborers 1

Equipment:
7- cat 627 Scrapers
2- John Deere Dozers with GPS
1- cat D8R Dozer
4- off Road Trucks
1- Disk
1- smooth Drum roller
1- water Truck
1- John Deere 325 Back hoe
1- John Deere 350 Back Hoe
1- cat 825c sheepsfoot compactor

CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client:	Johns Manville Waukegan Plant	**Date:**	9/3/08
Project:	Fill Area 1 & 2 Capping Activities	**Day:**	WEDNESDAY
Engineer's Rep:	Chris R. Goffard	**Page:**	1 of 2
Contractor's Rep:	Jeff O'Malley	**Rprt No.:**	12
Signed:	Chris Goffard		

RESIDENT INSPECTION REPORT

Weather Conditions	Temperature		Sky	Rain	Snow	Project Site Conditions
	Low	High				
	68°	76°	CLEAR			Dry / Muddy

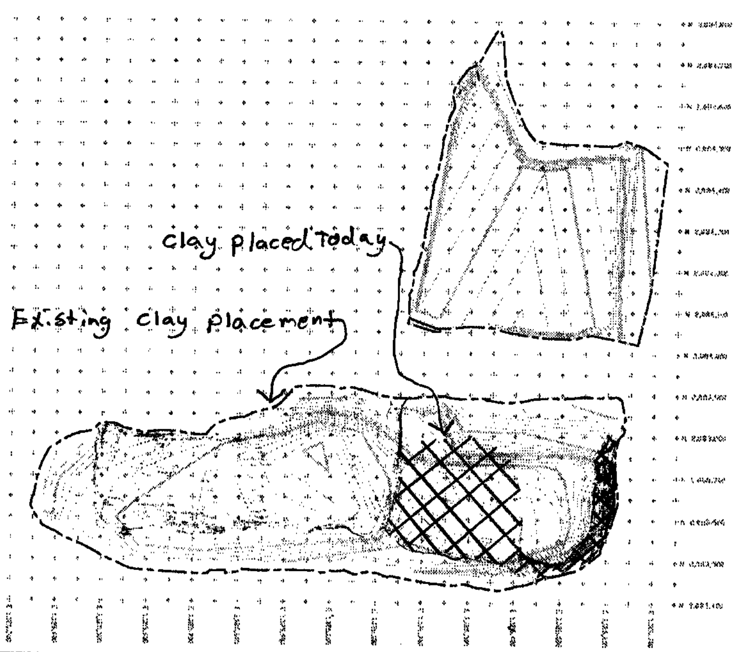
Field Book No.: 1 Page #s 20

Contractor(s) on Site:

Report of Observation of Work and Comments:

6:30 CRG ARRIVED ON SITE TO DOCUMENT AREA 2 SAND THICKNESS
6:30 AUSTIN ARRIVED ON SITE TO CONTINUE DENSITY TESTING AREA 1 PROTECTIVE LAYER MATERIAL (CLAY)
LAKE COUNTY GRADING ON SITE PLACING PROTECTIVE LAYER MATERIAL (CLAY) ON AREA 1 WITH SCRAPERS, DOZERS, AND 1 SHEEPSFOOT COMPACTOR
8:30 - 11:30 DOCUMENTED AREA 2 SAND THICKNESS
12:30 - 3:15 SURVEYED REMAINING SAND STOCKPILE WHICH WAS UTILIZED FOR AREA 1 AND 2 SAND SOURCE
PERFORMED 24 DENSITY TESTS ON AREA 1 PROTECTIVE LAYER
- TESTS PASSED

Sketch:



CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client:	Johns Manville Waukegan Plant	**Date:**	9/3/08
Project:	Fill Area 1 & 2 Capping Activities	**Day:**	WEDNESDAY
Engineer's Rep:	Chris R. Goffard	**Page:**	2 of 2
Contractor's Rep:	Jeff O'Malley	**Rprt No.:**	12

RESIDENT INSPECTION REPORT

Report of Observation of Work and Comments:

4:30 SCRAPERS GRADED THE HAUL ROADS FOR DRAINAGE
5:00 LAKE COUNTY GRADING SHUT DOWN
5:10 CRG/AUSTIN OFF SITE

Number of Men:
Foreman 1
Operators 10
Laborers 1

Equipment:
7- cat 627 scrapes.
2- Jhon Deere 850 Dozers with GPS
1- cat D8R Dozer
4- off Road Trucks
1- Disk
1- smooth Drum roller
1- water truck
1- John Deere 325 Back Hoe
1- John Deere 350 Back Hoe
1- cat 825c sheepsfoot compactor

ATTACHMENT L

Response 06: Inspection Reports 23, 24, and 25

CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client: Johns Manville Waukegan Plant
Project: Fill Area 1 & 2 Capping Activities
Engineer's Rep: Chris R. Goffard
Contractor's Rep: Jeff O'Malley
Signed: Chris [signature]

Date: 9/16/06
Day: THURSDAY
Page: 1 of 2
Rprt No.: 23

RESIDENT INSPECTION REPORT

Weather Conditions	Temperature Low	Temperature High	Sky	Rain	Snow	Project Site Conditions
	62°	76°	SUNNY			Dry / Muddy

Field Book No.: 1 Page #s 35 - 37

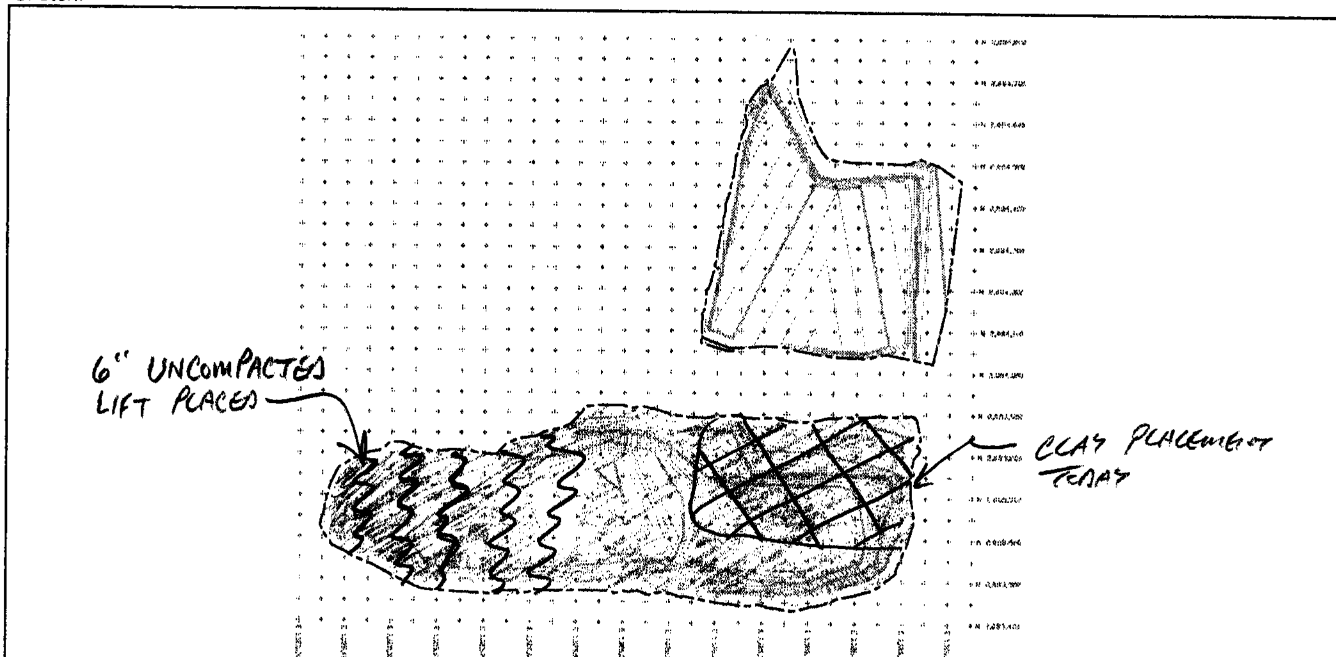
Contractor(s) on Site:

Report of Observation of Work and Comments:

6:30 CRG ARRIVED ON SITE TO COMPLETE AREA 1 PROTECTIVE LAYER DENSITY TESTING
- LAKE COUNTY GRADING ON SITE PLACING PROTECTIVE LAYER MATERIAL ON THE EAST 1/2 OF AREA 1 WITH 3 SCRAPERS AND A CATERPILLAR 825C SHEEPSFOOT COMPACTOR
- LAKE COUNTY GRADING ALSO ON SITE UTILIZING 4 SCRAPERS AND 2 DOZERS TO START PLACEMENT OF THE TOP 6" LOOSE LIFT OF PROTECTIVE LAYER MATERIAL
- LAKE COUNTY GRADING UTILIZING A WATER TRUCK TO WATER THE HAUL ROADS / KEEP DUST TO A MINIMUM

10:00 7 SCRAPERS WERE UTILIZED TO PLACE 6" UNCOMPACTED LIFT

Sketch:



1/27/05 KML F-112-1.xls

Front

CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client:	Johns Manville Waukegan Plant	**Date:**	9/18/08
Project:	Fill Area 1 & 2 Capping Activities	**Day:**	Thursday
Engineer's Rep:	Chris R. Goffard	**Page:**	2 of 2
Contractor's Rep:	Jeff O'Malley	**Rprt No.:**	23

RESIDENT INSPECTION REPORT

Report of Observation of Work and Comments:

10:30 DENSITY TESTED AREA 1 EAST END
- PERFORMED 19 DENSITY TEST / ALL PASSED

1:00 PROJECT MEETING
3:00 2 SCRAPERS STARTED TO PLACE CLAY ON EAST 1/2 OF AREA 1 TO ACHIEVE COMPACTED PROTECTIVE LAYER GRADE
5:00 LAKE COUNTY GRADING SHUT DOWN
5:00 CRG OFF SITE

Number of Men:
Foreman 1
Operators 10
Laborers
SCREENER 1

Equipment:
2 - CATERPILLAR 627 SCRAPERS
1 - CATERPILLAR 825 C SHEEPSFOOT COMPACTOR
2 - JOHN DEERE 850 DOZERS
1 - CATERPILLAR D8 DOZER

CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client: Johns Manville Waukegan Plant
Project: Fill Area 1 & 2 Capping Activities
Engineer's Rep: Chris R. Goffard
Contractor's Rep: Jeff O'Malley
Signed: Chris Goffard

Date: 9/19/08
Day: FRIDAY
Page: 1 of 2
Rprt No.: 24

RESIDENT INSPECTION REPORT

Weather Conditions	Temperature Low	Temperature High	Sky	Rain	Snow	Project Site Conditions
	62°	78°	SUNNY			Dry / Muddy

Field Book No.: 1 **Page #s** 38

Contractor(s) on Site:

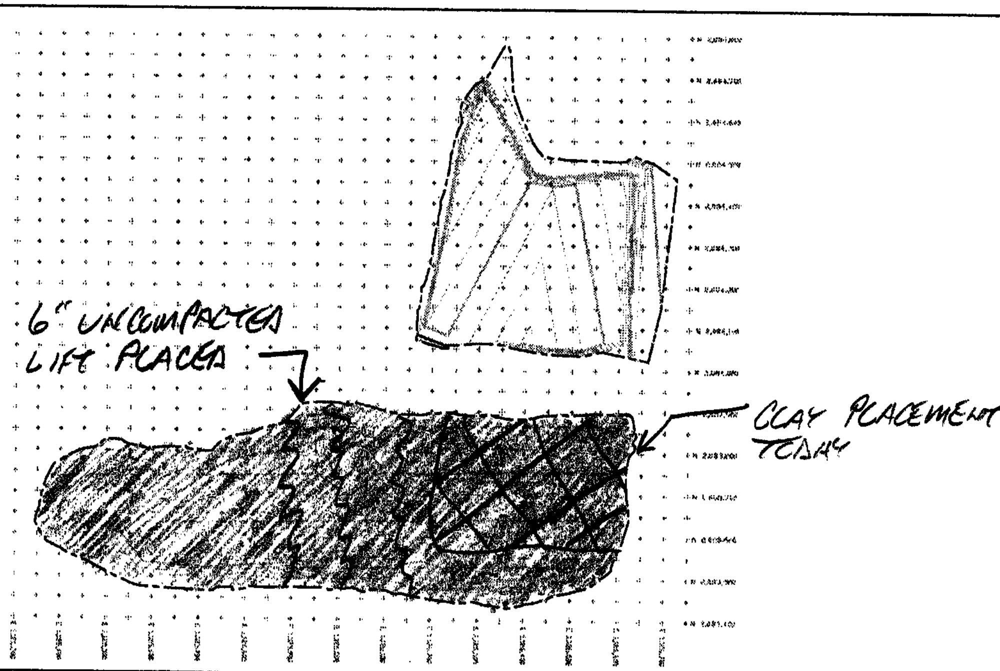
Report of Observation of Work and Comments:

6:30 CRG ARRIVED ON SITE TO CONTINUE AREA 1 DENSITY TESTING IN NORTHEAST CORNER

- LAKE COUNTY GRADING ON SITE PLACING PROTECTIVE LAYER MATERIAL ON AREA 1 IN NORTHEAST CORNER TO MEET REQUIRED COMPACTION THICKNESS
- LAKE COUNTY GRADING ALSO ON SITE PLACING LOOSE 6" TOP LIFT OF PROTECTIVE LAYER ON AREA 1. AFTER THE TOP 6" LIFT WAS PLACED AND GRADED THE LAKE COUNTY GRADING SURVEYOR CHECKED THE DOCUMENTATION POINTS WITH A GPS
- DURING THE COURSE OF THE DAY ALL HAUL ROADS WERE WATERED TO MINIMIZE DUST BY LAKE COUNTY GRADING

- PERFORMED 15 DENSITY TESTS ON AREA 1 PROTECTIVE LAYER
  - ALL TESTS PASSED COMPACTION / MOISTURE REQUIREMENTS

Sketch:



CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
(920) 465-3911
Fax (920) 465-3913

Client:	Johns Manville Waukegan Plant	**Date:**	9/19/08
Project:	Fill Area 1 & 2 Capping Activities	**Day:**	FRIDAY
Engineer's Rep:	Chris R. Goffard	**Page:**	2 of 2
Contractor's Rep:	Jeff O'Malley	**Rprt No.:**	25

RESIDENT INSPECTION REPORT

Report of Observation of Work and Comments:

2:20 GAVE DAVE P. A PROJECT UPDATE AND
DISCUSSED WORK SCHEDULE FOR NEXT WEEK
2:30 CRG OFF SITE
5:00 LAKE COUNTY GRADING SHUT DOWN

Number of Men:
Foreman 1
Operators 9
Laborers
SCREENER 1

Equipment:
6 - CATERPILLAR 627 SCRAPERS
1 - CATERPILLAR 825C SHEEPSFOOT COMPACTER
2 - JOHN DEERE 850 DOZERS
1 - CATERPILLAR D8 DOZER
1 - WATER TRUCK

CQM, INC.
2679 Continental Drive
Green Bay, WI 54311-6627
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Fax (920) 465-3913

Client:	Johns Manville Waukegan Plant	Date:	9/22/08
Project:	Fill Area 1 & 2 Capping Activities	Day:	MONDAY
Engineer's Rep:	Chris R. Goffard	Page:	1 of 2
Contractor's Rep:	Jeff O'Malley	Rprt No.:	25
Signed:	[signature]		

RESIDENT INSPECTION REPORT

Weather Conditions	Temperature		Sky	Rain	Snow	Project Site Conditions
	Low	High				
	62°	74°	CLEAR			Dry / Muddy

Field Book No.: 1 Page #s 39-40

Contractor(s) on Site:

Report of Observation of Work and Comments:

7:10 CRG ARRIVED ON SITE TO CONTINUE AREA 1 DENSITY TESTING IN NORTHEAST CORNER

- LAKE COUNTY GRADING ON SITE PLACING PROTECTIVE LAYER FILL MATERIAL ON AREA 1 IN THE NORTHEAST CORNER TO ACHIEVE COMPACTION THICKNESS

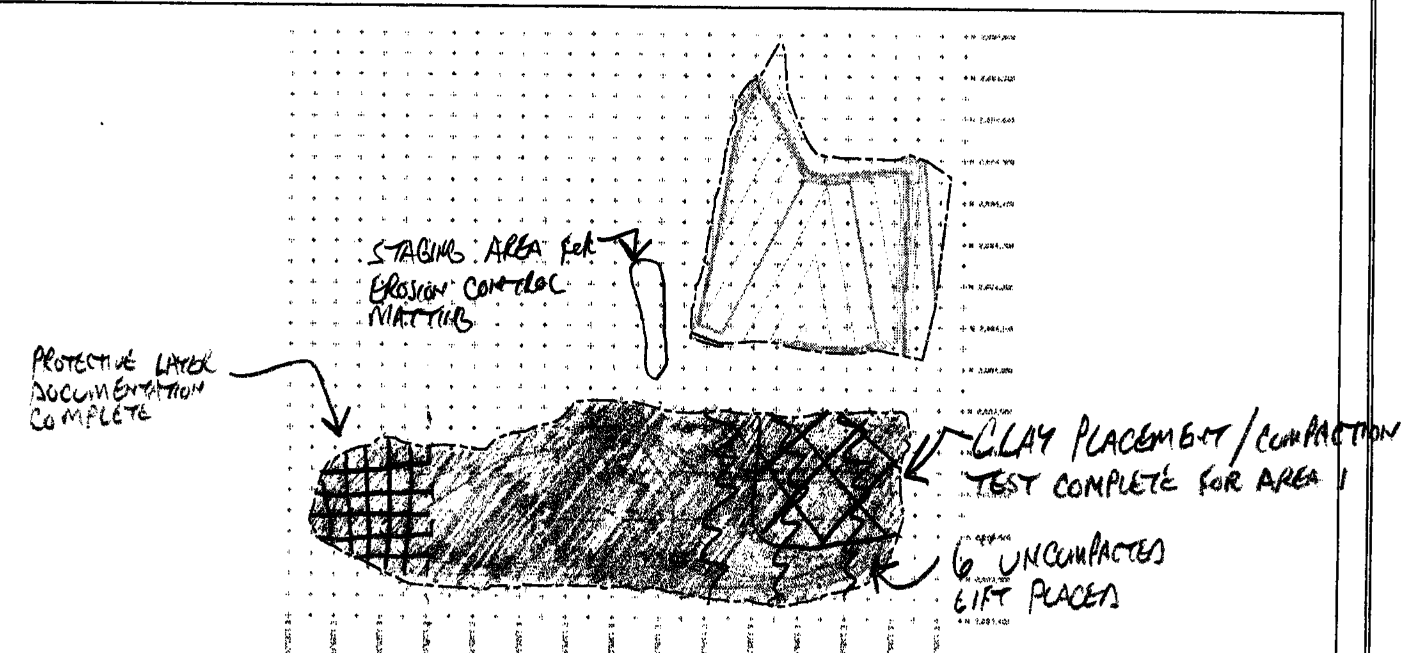
7:30 A SEMI LOAD OF EROSION CONTROL MATTING WAS DELIVERED AND UNLOADED ON THE CRUSHED CONCRETE LOCATED NORTH OF AREA 1

- LAKE COUNTY GRADING ALSO ON SITE UTILIZING A JOHN DEERE 850 DOZER TO GRADE THE WEST 1/2 OF AREA 1 FOR TUESDAY DOCUMENTATION

9:00 AREA 1 DENSITY TESTS COMPLETE

- DENSITY TESTS PASSED COMPACTION AND MOISTURE REQUIREMENTS

Sketch:



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Client: Johns Manville Waukegan Plant
Project: Fill Area 1 & 2 Capping Activities
Engineer's Rep: Chris R. Goffard
Contractor's Rep: Jeff O'Malley

Date: 9/22/08
Day: MONDAY

Rprt No.: 25

RESIDENT INSPECTION REPORT

Report of Observation of Work and Comments:

12:00 LAKE COUNTY GRADING PLACING LOOSE 6" TOP LIFT OF PROTECTIVE MATERIAL ON AREA 1 EAST END
3:15 - 4:45 DOCUMENT AREA 1 WEST END TOP OF PROTECTIVE LAYER
5:00 LAKE COUNTY GRADING SHUT DOWN
5:00 CRG OFF SITE

Number of Men:
Foreman 1
Operators 10
Laborers
SURVEYOR 1

Equipment:
6 - CATERPILLAR 627 SCRAPERS
1 - CATERPILLAR 825C SHEEPFOOT COMPACTOR
2 - JOHN DEERE 850 DOZERS
1 - CATERPILLAR D8 DOZER
1 - WATER TRUCK

ATTACHMENT M

Response 06: Appendix G of Appendix E of Closure Report (Protective Layer Compaction Testing Results)

CLIENT:	**JOHNS MANVILLE - AREA 1 AND 2**
PROJECT NAME:	**FINAL COVER CONSTRUCTION**
LOCATION AND SOIL TYPE:	**AREA 1 PROTECTIVE COVER**
	IN-PLACE MOISTURE DENSITY TESTING
DENSITY METER:	**TROXLER 3440**
PROBE DEPTH:	**6 INCHES**
MAXIMUM PROCTOR DENSITY:	**130.1 PCF @ 8.4% MOISTURE**
COMPACTION REQUIREMENTS:	**90% OF MODIFIED PROCTOR DENSITY**
	@ 2-6% ABOVE OPTIMUM

Test No.	Date Tested	Coordinates North	Coordinates East	Lift No.	Moisture (%)	Dry Density (PCF)	Compaction (%)
1	9/10/08	2083700	1125400	1	12.2	121.3	93.2
2	9/10/08	2083600	1125400	1	14.2	118.4	91.0
3	9/10/08	2083800	1125500	1	14.0	117.2	90.1
4	9/10/08	2083700	1125500	1	13.9	117.3	90.2
5	9/10/08	2083600	1125500	1	13.0	122.3	94.0
6	8/29/08	2083800	1125600	1	14.2	118.4	91.0
7	8/29/08	2083700	1125600	1	13.5	120.5	92.6
8	9/2/08	2083600	1125600	1	10.5	119.9	92.2
9	9/10/08	2083500	1125600	1	12.8	120.2	92.4
10	8/29/08	2083800	1125700	1	13.3	120.8	92.9
11	8/29/08	2083700	1125700	1	11.3	122.5	94.2
12	8/29/08	2083600	1125700	1	12.9	121.1	93.1
13	9/10/08	2083500	1125700	1	12.8	120.4	92.5
14	8/28/08	2083800	1125800	1	13.0	117.4	90.2
15	8/28/08	2083700	1125800	1	11.9	119.2	91.6
16	9/2/08	2083600	1125800	1	10.8	128.3	98.6
17	9/10/08	2083500	1125800	1	13.2	120.7	92.8
18	8/28/08	2083800	1125900	1	10.8	120.2	92.4
19	8/28/08	2083700	1125900	1	12.1	120.4	92.5
20	8/28/08	2083600	1125900	1	13.0	121.4	93.3
21	9/10/08	2083500	1125900	1	13.2	120.7	92.8

CLIENT: JOHNS MANVILLE - AREA 1 AND 2
PROJECT NAME: FINAL COVER CONSTRUCTION
LOCATION AND SOIL TYPE: AREA 1 PROTECTIVE COVER
IN-PLACE MOISTURE DENSITY TESTING
DENSITY METER: TROXLER 3440
PROBE DEPTH: 6 INCHES
MAXIMUM PROCTOR DENSITY: 130.1 PCF @ 8.4% MOISTURE
COMPACTION REQUIREMENTS: 90% OF MODIFIED PROCTOR DENSITY
@ 2-6% ABOVE OPTIMUM

Test No.	Date Tested	Coordinates North	Coordinates East	Lift No.	Moisture (%)	Dry Density (PCF)	Compaction (%)
22	8/27/08	2083900	1126000	1	12.1	123.9	95.2
23	8/28/08	2083800	1126000	1	11.7	123.0	94.5
24	8/28/08	2083700	1126000	1	13.2	118.2	90.9
25	8/28/08	2083600	1126000	1	13.5	120.5	92.6
26	9/10/08	2083500	1126000	1	13.7	118.9	91.4
27	9/3/08	2083800	1126100	1	13.4	120.6	92.7
28	9/3/08	2083700	1126100	1	13.9	118.5	91.1
29	9/3/08	2083600	1126100	1	12.9	118.4	91.0
30	9/10/08	2083500	1126100	1	11.8	123.1	94.6
31	9/3/08	2083800	1126200	1	13.9	118.8	91.3
32	9/3/08	2083700	1126200	1	13.6	118.7	91.2
33	9/3/08	2083600	1126200	1	13.9	118.5	91.1
34	9/10/08	2083500	1126200	1	13.0	121.1	93.1
35	9/3/08	2083800	1126300	1	14.0	118.7	91.2
36	9/3/08	2083700	1126300	1	13.5	118.4	91.0
37	9/3/08	2083600	1126300	1	13.8	120.3	92.5
38	9/10/08	2083500	1126300	1	12.7	123.7	95.1
39	9/8/08	2083800	1126400	1	14.1	119.0	91.5
40	9/8/08	2083700	1126400	1	13.6	120.2	92.4
41	9/10/08	2083600	1126400	1	14.3	118.1	90.8
42	9/10/08	2083500	1126400	1	13.3	118.9	91.4

CLIENT: JOHNS MANVILLE - AREA 1 AND 2
PROJECT NAME: FINAL COVER CONSTRUCTION
LOCATION AND SOIL TYPE: AREA 1 PROTECTIVE COVER
IN-PLACE MOISTURE DENSITY TESTING
DENSITY METER: TROXLER 3440
PROBE DEPTH: 6 INCHES
MAXIMUM PROCTOR DENSITY: 130.1 PCF @ 8.4% MOISTURE
COMPACTION REQUIREMENTS: 90% OF MODIFIED PROCTOR DENSITY
@ 2-6% ABOVE OPTIMUM

Test No.	Date Tested	Coordinates North	Coordinates East	Lift No.	Moisture (%)	Dry Density (PCF)	Compaction (%)
43	9/10/08	2083800	1126500	1	12.0	117.6	90.4
44	9/10/08	2083700	1126500	1	13.2	120.7	92.8
45	9/10/08	2083600	1126500	1	14.4	118.2	90.9
46	9/19/08	2083500	1126500	1	14.1	117.1	90.0
47	9/10/08	2083800	1126600	1	14.3	118.5	91.1
48	9/10/08	2083700	1126600	1	13.0	121.1	93.1
49	9/19/08	2083600	1126600	1	12.8	119.1	91.5
50	9/10/08	2083650	1125350	2	13.2	120.7	92.8
51	9/10/08	2083750	1125450	2	13.3	121.0	93.0
52	9/10/08	2083650	1125450	2	13.5	120.5	92.6
53	9/10/08	2083550	1125450	2	12.7	121.6	93.5
54	9/2/08	2083750	1125550	2	13.2	117.5	90.3
55	9/2/08	2083650	1125550	2	13.7	120.0	92.2
56	9/2/08	2083550	1125550	2	12.5	122.6	94.2
57	8/29/08	2083750	1125650	2	13.0	122.3	94.0
58	8/29/08	2083650	1125650	2	12.2	121.3	93.2
59	9/2/08	2083550	1125650	2	11.8	124.0	95.3
60	8/29/08	2083750	1125750	2	12.3	120.3	92.5
61	8/29/08	2083650	1125750	2	12.7	118.4	91.0
62	9/2/08	2083550	1125750	2	11.4	125.0	96.1
63	8/28/08	2083850	1125850	2	12.9	123.1	94.6

CLIENT: JOHNS MANVILLE - AREA 1 AND 2
PROJECT NAME: FINAL COVER CONSTRUCTION
LOCATION AND SOIL TYPE: AREA 1 PROTECTIVE COVER
IN-PLACE MOISTURE DENSITY TESTING
DENSITY METER: TROXLER 3440
PROBE DEPTH: 6 INCHES
MAXIMUM PROCTOR DENSITY: 130.1 PCF @ 8.4% MOISTURE
COMPACTION REQUIREMENTS: 90% OF MODIFIED PROCTOR DENSITY
@ 2-6% ABOVE OPTIMUM

Test No.	Date Tested	Coordinates North	East	Lift No.	Moisture (%)	Dry Density (PCF)	Compaction (%)
64	8/28/08	2083750	1125850	2	12.2	123.1	94.6
65	8/28/08	2083650	1125850	2	13.1	121.6	93.5
66	8/28/08	2083550	1125850	2	12.1	125.4	96.4
67	8/28/08	2083850	1125950	2	11.9	117.7	90.5
68	8/28/08	2083750	1125950	2	12.3	119.6	91.9
69	8/28/08	2083650	1125950	2	12.8	121.4	93.3
70	9/2/08	2083550	1125950	2	10.6	126.2	97.0
71	8/28/08	2083850	1126050	2	12.8	119.1	91.5
72	8/28/08	2083750	1126050	2	11.3	122.5	94.2
73	8/28/08	2083650	1126050	2	12.7	121.6	93.5
74	9/10/08	2083550	1126050	2	10.8	124.3	95.5
75	9/3/08	2083850	1126150	2	12.1	120.4	92.5
76	9/3/08	2083750	1126150	2	13.4	121.5	93.4
77	9/3/08	2083650	1126150	2	13.3	121.0	93.0
78	9/10/08	2083550	1126150	2	12.0	120.6	92.7
79	9/3/08	2083850	1126250	2	13.6	118.3	90.9
80	9/3/08	2083750	1126250	2	13.7	118.8	91.3
81	9/3/08	2083650	1126250	2	14.4	118.6	91.2
82	9/10/08	2083550	1126250	2	10.4	127.1	97.7
83	9/12/08	2083450	1126250	2	10.4	118.3	90.9
84	9/8/08	2083850	1126350	2	12.8	120.6	92.7

CLIENT: JOHNS MANVILLE - AREA 1 AND 2
PROJECT NAME: FINAL COVER CONSTRUCTION
LOCATION AND SOIL TYPE: AREA 1 PROTECTIVE COVER
IN-PLACE MOISTURE DENSITY TESTING
DENSITY METER: TROXLER 3440
PROBE DEPTH: 6 INCHES
MAXIMUM PROCTOR DENSITY: 130.1 PCF @ 8.4% MOISTURE
COMPACTION REQUIREMENTS: 90% OF MODIFIED PROCTOR DENSITY
@ 2-6% ABOVE OPTIMUM

Test No.	Date Tested	Coordinates North	Coordinates East	Lift No.	Moisture (%)	Dry Density (PCF)	Compaction (%)
85	9/3/08	2083750	1126350	2	13.9	117.1	90.0
86	9/3/08	2083650	1126350	2	12.9	120.2	92.4
87	9/10/08	2083550	1126350	2	13.2	120.7	92.8
88	9/12/08	2083450	1126350	2	12.1	118.3	90.9
89	9/10/08	2083850	1126450	2	13.3	117.4	90.2
90	9/10/08	2083750	1126450	2	14.4	118.1	90.8
91	9/10/08	2083650	1126450	2	12.9	120.4	92.5
92	9/10/08	2083550	1126450	2	13.3	120.8	92.9
93	9/10/08	2083850	1126550	2	14.2	118.6	91.2
94	9/10/08	2083750	1126550	2	12.6	117.4	90.2
95	9/10/08	2083650	1126550	2	13.7	117.3	90.2
96	9/10/08	2083550	1126550	2	13.2	120.7	92.8
97	9/11/08	2083700	1125400	3	12.4	122.2	93.9
98	9/11/08	2083600	1125400	3	14.1	117.9	90.6
99	9/11/08	2083800	1125500	3	13.4	117.9	90.6
100	9/11/08	2083700	1125500	3	12.0	120.9	92.9
101	9/11/08	2083600	1125500	3	13.0	119.5	91.9
102	8/29/08	2083800	1125600	3	13.3	121.0	93.0
103	8/29/08	2083700	1125600	3	12.7	121.6	93.5
104	9/2/08	2083600	1125600	3	11.1	119.1	91.5
105	9/12/08	2083500	1125600	3	13.6	120.9	92.9

CLIENT: JOHNS MANVILLE - AREA 1 AND 2
PROJECT NAME: FINAL COVER CONSTRUCTION
LOCATION AND SOIL TYPE: AREA 1 PROTECTIVE COVER
IN-PLACE MOISTURE DENSITY TESTING
DENSITY METER: TROXLER 3440
PROBE DEPTH: 6 INCHES
MAXIMUM PROCTOR DENSITY: 130.1 PCF @ 8.4% MOISTURE
COMPACTION REQUIREMENTS: 90% OF MODIFIED PROCTOR DENSITY
@ 2-6% ABOVE OPTIMUM

Test No.	Date Tested	Coordinates North	Coordinates East	Lift No.	Moisture (%)	Dry Density (PCF)	Compaction (%)
106	8/29/08	2083800	1125700	3	12.5	120.9	92.9
107	8/29/08	2083700	1125700	3	13.0	122.3	94.0
108	8/29/08	2083600	1125700	3	12.2	123.6	95.0
109	9/12/08	2083500	1125700	3	13.8	120.9	92.9
110	8/29/08	2083800	1125800	3	13.3	120.4	92.5
111	8/29/08	2083700	1125800	3	12.1	120.8	92.9
112	8/29/08	2083600	1125800	3	12.9	121.7	93.5
113	9/12/08	2083500	1125800	3	14.4	118.3	90.9
114	8/28/08	2083800	1125900	3	12.9	122.7	94.3
115	8/28/08	2083700	1125900	3	12.8	121.1	93.1
116	8/29/08	2083600	1125900	3	13.3	121.0	93.0
117	9/12/08	2083500	1125900	3	13.1	121.9	93.7
118	8/27/08	2083900	1126000	3	12.2	122.5	94.2
119	8/28/08	2083800	1126000	3	11.5	125.4	96.4
120	8/28/08	2083700	1126000	3	11.9	120.4	92.5
121	8/29/08	2083600	1126000	3	13.5	119.9	92.2
122	9/17/08	2083500	1126000	3	11.9	118.0	90.7
123	9/3/08	2083800	1126100	3	12.6	119.6	91.9
124	9/3/08	2083700	1126100	3	13.4	120.6	92.7
125	9/3/08	2083600	1126100	3	12.7	120.8	92.9
126	9/17/08	2083500	1126100	3	11.8	120.1	92.3

CLIENT: JOHNS MANVILLE - AREA 1 AND 2
PROJECT NAME: FINAL COVER CONSTRUCTION
LOCATION AND SOIL TYPE: AREA 1 PROTECTIVE COVER
IN-PLACE MOISTURE DENSITY TESTING
DENSITY METER: TROXLER 3440
PROBE DEPTH: 6 INCHES
MAXIMUM PROCTOR DENSITY: 130.1 PCF @ 8.4% MOISTURE
COMPACTION REQUIREMENTS: 90% OF MODIFIED PROCTOR DENSITY
@ 2-6% ABOVE OPTIMUM

Test No.	Date Tested	Coordinates North	Coordinates East	Lift No.	Moisture (%)	Dry Density (PCF)	Compaction (%)
127	9/17/08	2083800	1126200	3	11.0	118.1	90.8
128	9/17/08	2083700	1126200	3	11.5	118.4	91.0
129	9/17/08	2083600	1126200	3	11.6	120.5	92.6
130	9/17/08	2083500	1126200	3	13.2	118.2	90.9
131	9/18/08	2083800	1126300	3	10.6	125.8	96.7
132	9/17/08	2083700	1126300	3	12.6	120.0	92.2
133	9/17/08	2083600	1126300	3	10.8	122.9	94.5
134	9/17/08	2083500	1126300	3	11.9	124.6	95.8
135	9/17/08	2083800	1126400	3	11.2	118.8	91.3
136	9/18/08	2083700	1126400	3	13.1	118.7	91.2
137	9/17/08	2083600	1126400	3	10.6	126.3	97.1
138	9/17/08	2083500	1126400	3	10.6	123.9	95.2
139	9/17/08	2083800	1126500	3	11.4	122.7	94.3
140	9/17/08	2083700	1126500	3	11.1	124.4	95.6
141	9/18/08	2083600	1126500	3	13.4	120.2	92.4
142	9/18/08	2083500	1126500	3	13.1	120.2	92.4
143	9/17/08	2083800	1126600	3	13.3	118.2	90.9
144	9/17/08	2083700	1126600	3	12.1	120.3	92.5
145	9/19/08	2083600	1126600	3	12.6	119.2	91.6
146	9/11/08	2083650	1125350	4	13.6	118.6	91.2
147	9/11/08	2083750	1125450	4	12.1	119.6	91.9

CLIENT: JOHNS MANVILLE - AREA 1 AND 2
PROJECT NAME: FINAL COVER CONSTRUCTION
LOCATION AND SOIL TYPE: AREA 1 PROTECTIVE COVER
IN-PLACE MOISTURE DENSITY TESTING
DENSITY METER: TROXLER 3440
PROBE DEPTH: 6 INCHES
MAXIMUM PROCTOR DENSITY: 130.1 PCF @ 8.4% MOISTURE
COMPACTION REQUIREMENTS: 90% OF MODIFIED PROCTOR DENSITY
@ 2-6% ABOVE OPTIMUM

Test No.	Date Tested	Coordinates North	Coordinates East	Lift No.	Moisture (%)	Dry Density (PCF)	Compaction (%)
148	9/11/08	2083650	1125450	4	14.3	119.0	91.5
149	9/11/08	2083550	1125450	4	12.5	117.5	90.3
150	9/11/08	2083750	1125550	4	12.8	119.6	91.9
151	9/11/08	2083650	1125550	4	12.5	121.3	93.2
152	9/11/08	2083550	1125550	4	12.5	117.5	90.3
153	9/12/08	2083750	1125650	4	13.4	117.8	90.5
154	9/12/08	2083650	1125650	4	13.3	117.8	90.5
155	9/12/08	2083550	1125650	4	13.8	120.9	92.9
156	9/12/08	2083750	1125750	4	13.3	117.5	90.3
157	9/12/08	2083650	1125750	4	12.7	122.1	93.9
158	9/12/08	2083550	1125750	4	12.4	121.9	93.7
159	9/12/08	2083850	1125850	4	12.7	124.1	95.4
160	9/12/08	2083750	1125850	4	10.7	128.4	98.7
161	9/12/08	2083650	1125850	4	11.6	126.9	97.5
162	9/12/08	2083550	1125850	4	12.7	124.1	95.4
163	9/17/08	2083850	1125950	4	12.4	123.2	94.7
164	9/17/08	2083750	1125950	4	13.3	120.7	92.8
165	9/17/08	2083650	1125950	4	12.7	120.9	92.9
166	9/17/08	2083550	1125950	4	12.3	121.9	93.7
167	9/18/08	2083850	1126050	4	11.1	120.9	92.9
168	9/18/08	2083750	1126050	4	13.9	121.7	93.5

CLIENT: JOHNS MANVILLE - AREA 1 AND 2
PROJECT NAME: FINAL COVER CONSTRUCTION
LOCATION AND SOIL TYPE: AREA 1 PROTECTIVE COVER
IN-PLACE MOISTURE DENSITY TESTING
DENSITY METER: TROXLER 3440
PROBE DEPTH: 6 INCHES
MAXIMUM PROCTOR DENSITY: 130.1 PCF @ 8.4% MOISTURE
COMPACTION REQUIREMENTS: 90% OF MODIFIED PROCTOR DENSITY
@ 2-6% ABOVE OPTIMUM

Test No.	Date Tested	Coordinates North	Coordinates East	Lift No.	Moisture (%)	Dry Density (PCF)	Compaction (%)
169	9/17/08	2083650	1126050	4	11.4	123.2	94.7
170	9/17/08	2083550	1126050	4	12.2	120.4	92.5
171	9/18/08	2083850	1126150	4	12.6	121.1	93.1
172	9/18/08	2083750	1126150	4	13.0	122.3	94.0
173	9/17/08	2083650	1126150	4	13.3	119.3	91.7
174	9/18/08	2083550	1126150	4	12.1	120.2	92.4
175	9/18/08	2083850	1126250	4	13.9	120.4	92.5
176	9/18/08	2083750	1126250	4	10.9	122.9	94.5
177	9/17/08	2083650	1126250	4	12.8	123.1	94.6
178	9/17/08	2083550	1126250	4	13.8	119.4	91.8
179	9/17/08	2083450	1126250	4	14.2	118.6	91.2
180	9/18/08	2083850	1126350	4	11.7	120.4	92.5
181	9/18/08	2083750	1126350	4	12.8	122.1	93.9
182	9/17/08	2083650	1126350	4	13.3	120.4	92.5
183	9/17/08	2083550	1126350	4	13.8	121.3	93.2
184	9/17/08	2083450	1126350	4	11.1	119.2	91.6
185	9/18/08	2083850	1126450	4	11.3	120.5	92.6
186	9/18/08	2083750	1126450	4	12.8	122.3	94.0
187	9/18/08	2083650	1126450	4	12.1	123.0	94.5
188	9/17/08	2083550	1126450	4	13.1	119.0	91.5
189	9/18/08	2083850	1126550	4	11.7	121.1	93.1

CLIENT: JOHNS MANVILLE - AREA 1 AND 2
PROJECT NAME: FINAL COVER CONSTRUCTION
LOCATION AND SOIL TYPE: AREA 1 PROTECTIVE COVER
IN-PLACE MOISTURE DENSITY TESTING
DENSITY METER: TROXLER 3440
PROBE DEPTH: 6 INCHES
MAXIMUM PROCTOR DENSITY: 130.1 PCF @ 8.4% MOISTURE
COMPACTION REQUIREMENTS: 90% OF MODIFIED PROCTOR DENSITY
@ 2-6% ABOVE OPTIMUM

Test No.	Date Tested	Coordinates North	Coordinates East	Lift No.	Moisture (%)	Dry Density (PCF)	Compaction (%)
190	9/18/08	2083750	1126550	4	10.8	124.4	95.6
191	9/19/08	2083650	1126550	4	12.8	119.9	92.2
192	9/19/08	2083550	1126550	4	14.2	117.9	90.6
193	9/11/08	2083700	1125400	5	13.3	118.8	91.3
194	9/11/08	2083600	1125400	5	14.4	118.8	91.3
195	9/11/08	2083800	1125500	5	13.0	121.2	93.2
196	9/11/08	2083700	1125500	5	12.7	120.0	92.2
197	9/11/08	2083600	1125500	5	12.9	120.4	92.5
198	9/12/08	2083800	1125600	5	12.5	117.9	90.6
199	9/12/08	2083700	1125600	5	13.1	121.9	93.7
200	9/12/08	2083600	1125600	5	12.5	122.4	94.1
201	9/12/08	2083500	1125600	5	14.4	118.3	90.9
202	9/12/08	2083800	1125700	5	10.4	127.2	97.8
203	9/12/08	2083700	1125700	5	13.3	121.0	93.0
204	9/12/08	2083600	1125700	5	12.5	122.4	94.1
205	9/12/08	2083500	1125700	5	13.3	120.6	92.7
206	9/12/08	2083800	1125800	5	12.5	123.8	95.2
207	9/12/08	2083700	1125800	5	12.8	120.8	92.9
208	9/12/08	2083600	1125800	5	13.0	122.1	93.9
209	9/12/08	2083500	1125800	5	11.7	121.1	93.1
210	9/12/08	2083800	1125900	5	14.4	117.5	90.3

CLIENT: JOHNS MANVILLE - AREA 1 AND 2
PROJECT NAME: FINAL COVER CONSTRUCTION
LOCATION AND SOIL TYPE: AREA 1 PROTECTIVE COVER
IN-PLACE MOISTURE DENSITY TESTING
DENSITY METER: TROXLER 3440
PROBE DEPTH: 6 INCHES
MAXIMUM PROCTOR DENSITY: 130.1 PCF @ 8.4% MOISTURE
COMPACTION REQUIREMENTS: 90% OF MODIFIED PROCTOR DENSITY
@ 2-6% ABOVE OPTIMUM

Test No.	Date Tested	Coordinates North	Coordinates East	Lift No.	Moisture (%)	Dry Density (PCF)	Compaction (%)
211	9/12/08	2083700	1125900	5	10.9	124.4	95.6
212	9/12/08	2083600	1125900	5	10.4	124.8	95.9
213	9/12/08	2083500	1125900	5	12.7	122.3	94.0
214	8/27/08	2083900	1126000	5	11.2	125.3	96.3
215	9/17/08	2083800	1126000	5	10.5	123.7	95.1
216	9/17/08	2083700	1126000	5	10.8	124.3	95.5
217	9/17/08	2083600	1126000	5	11.9	121.9	93.7
218	9/17/08	2083500	1126000	5	12.0	121.1	93.1
219	9/22/08	2083800	1126100	5	11.4	124.4	95.6
220	9/19/08	2083700	1126100	5	13.6	119.5	91.9
221	9/19/08	2083600	1126100	5	12.5	118.6	91.2
222	9/17/08	2083500	1126100	5	11.9	118.0	90.7
223	9/22/08	2083800	1126200	5	13.9	118.1	90.8
224	9/19/08	2083700	1126200	5	14.1	118.1	90.8
225	9/19/08	2083600	1126200	5	12.3	122.1	93.9
226	9/18/08	2083500	1126200	5	13.5	119.2	91.6
227	9/22/08	2083800	1126300	5	12.7	117.5	90.3
228	9/19/08	2083700	1126300	5	13.5	118.0	90.7
229	9/19/08	2083600	1126300	5	11.9	121.2	93.2
230	9/17/08	2083500	1126300	5	13.5	117.8	90.5
231	9/22/08	2083800	1126400	5	11.1	121.2	93.2

CLIENT: JOHNS MANVILLE - AREA 1 AND 2
PROJECT NAME: FINAL COVER CONSTRUCTION
LOCATION AND SOIL TYPE: AREA 1 PROTECTIVE COVER
IN-PLACE MOISTURE DENSITY TESTING
DENSITY METER: TROXLER 3440
PROBE DEPTH: 6 INCHES
MAXIMUM PROCTOR DENSITY: 130.1 PCF @ 8.4% MOISTURE
COMPACTION REQUIREMENTS: 90% OF MODIFIED PROCTOR DENSITY
@ 2-6% ABOVE OPTIMUM

Test No.	Date Tested	Coordinates North	Coordinates East	Lift No.	Moisture (%)	Dry Density (PCF)	Compaction (%)
232	9/19/08	2083700	1126400	5	14.0	117.6	90.4
233	9/19/08	2083600	1126400	5	12.1	120.7	92.8
234	9/17/08	2083500	1126400	5	13.2	118.3	90.9
235	9/22/08	2083800	1126500	5	11.7	120.1	92.3
236	9/19/08	2083700	1126500	5	12.0	119.1	91.5
237	9/19/08	2083600	1126500	5	12.4	122.0	93.8
238	9/17/08	2083500	1126500	5	13.1	117.1	90.0
239	9/22/08	2083800	1126600	5	12.1	120.3	92.5
240	9/22/08	2083700	1126600	5	13.5	119.2	91.6
241	9/22/08	2083600	1126600	5	11.7	121.5	93.4

CLIENT:	**JOHNS MANVILLE - AREA 1 AND 2**
PROJECT NAME:	**FINAL COVER CONSTRUCTION**
LOCATION AND SOIL TYPE:	**AREA 2 PROTECTIVE COVER**
	IN-PLACE MOISTURE DENSITY TESTING
DENSITY METER:	**TROXLER 3440**
PROBE DEPTH:	**6 INCHES**
MAXIMUM PROCTOR DENSITY:	**130.1 PCF @ 8.4% MOISTURE**
COMPACTION REQUIREMENTS:	**90% OF MODIFIED PROCTOR DENSITY**
	@ 2-6% ABOVE OPTIMUM

Test No.	Date Tested	Coordinates North	Coordinates East	Lift No.	Moisture (%)	Dry Density (PCF)	Compaction (%)
1	9/24/08	2084300	1126200	1	10.4	125.7	96.6
2	9/24/08	2084200	1126200	1	13.5	118.0	90.7
3	9/24/08	2084100	1126200	1	12.0	121.1	93.1
4	9/23/08	2084600	1126300	1	11.9	119.5	91.9
5	9/23/08	2084500	1126300	1	11.0	122.9	94.5
6	9/23/08	2084400	1126300	1	11.7	125.9	96.8
7	9/24/08	2084300	1126300	1	11.9	124.1	95.4
8	9/24/08	2084200	1126300	1	10.5	127.1	97.7
9	9/24/08	2084100	1126300	1	11.8	120.8	92.9
10	9/23/08	2084500	1126400	1	12.2	117.5	90.3
11	9/23/08	2084400	1126400	1	11.9	124.6	95.8
12	9/24/08	2084300	1126400	1	12.9	122.8	94.4
13	9/24/08	2084200	1126400	1	10.6	126.5	97.2
14	9/24/08	2084100	1126400	1	11.2	124.4	95.6
15	9/23/08	2084500	1126500	1	14.3	118.0	90.7
16	9/23/08	2084400	1126500	1	12.0	119.6	91.9
17	9/24/08	2084300	1126500	1	12.1	121.3	93.2
18	9/24/08	2084200	1126500	1	10.9	123.8	95.2
19	9/24/08	2084100	1126500	1	11.5	119.4	91.8
20	9/23/08	2084500	1126600	1	12.1	121.3	93.2
21	9/23/08	2084400	1126600	1	12.3	120.9	92.9

CLIENT: JOHNS MANVILLE - AREA 1 AND 2
PROJECT NAME: FINAL COVER CONSTRUCTION
LOCATION AND SOIL TYPE: AREA 2 PROTECTIVE COVER
IN-PLACE MOISTURE DENSITY TESTING
DENSITY METER: TROXLER 3440
PROBE DEPTH: 6 INCHES
MAXIMUM PROCTOR DENSITY: 130.1 PCF @ 8.4% MOISTURE
COMPACTION REQUIREMENTS: 90% OF MODIFIED PROCTOR DENSITY
@ 2-6% ABOVE OPTIMUM

Test No.	Date Tested	Coordinates North	Coordinates East	Lift No.	Moisture (%)	Dry Density (PCF)	Compaction (%)
22	9/24/08	2084300	1126600	1	11.6	121.5	93.4
23	9/24/08	2084200	1126600	1	12.1	123.5	94.9
24	9/24/08	2084100	1126600	1	10.7	123.8	95.2
25	9/23/08	2084550	1126250	2	11.0	123.1	94.6
26	9/23/08	2084450	1126250	2	10.8	125.8	96.7
27	9/23/08	2084350	1126250	2	10.4	124.7	95.8
28	9/24/08	2084250	1126250	2	11.4	118.5	91.1
29	9/24/08	2084150	1126250	2	12.1	119.5	91.9
30	9/23/08	2084750	1126350	2	13.1	118.8	91.3
31	9/23/08	2084650	1126350	2	11.5	121.8	93.6
32	9/23/08	2084550	1126350	2	11.3	126.1	96.9
33	9/23/08	2084450	1126350	2	10.5	123.6	95.0
34	9/23/08	2084350	1126350	2	11.3	126.1	96.9
35	9/24/08	2084250	1126350	2	11.8	126.4	97.2
36	9/24/08	2084150	1126350	2	12.8	121.2	93.2
37	9/23/08	2084450	1126450	2	12.0	124.9	96.0
38	9/23/08	2084350	1126450	2	12.8	121.2	93.2
39	9/24/08	2084250	1126450	2	11.4	126.0	96.8
40	9/24/08	2084150	1126450	2	12.3	124.0	95.3
41	9/23/08	2084450	1126550	2	10.7	128.4	98.7
42	9/23/08	2084350	1126550	2	10.5	123.6	95.0

CLIENT: JOHNS MANVILLE - AREA 1 AND 2
PROJECT NAME: FINAL COVER CONSTRUCTION
LOCATION AND SOIL TYPE: AREA 2 PROTECTIVE COVER
IN-PLACE MOISTURE DENSITY TESTING
DENSITY METER: TROXLER 3440
PROBE DEPTH: 6 INCHES
MAXIMUM PROCTOR DENSITY: 130.1 PCF @ 8.4% MOISTURE
COMPACTION REQUIREMENTS: 90% OF MODIFIED PROCTOR DENSITY
@ 2-6% ABOVE OPTIMUM

Test No.	Date Tested	Coordinates North	Coordinates East	Lift No.	Moisture (%)	Dry Density (PCF)	Compaction (%)
43	9/24/08	2084250	1126550	2	11.4	122.2	93.9
44	9/24/08	2084150	1126550	2	12.1	126.4	97.2
45	9/25/08	2084300	1126200	3	11.7	122.4	94.1
46	9/25/08	2084200	1126200	3	13.5	117.7	90.5
47	9/25/08	2084100	1126200	3	13.6	117.9	90.6
48	9/25/08	2084600	1126300	3	12.3	123.0	94.5
49	9/25/08	2084500	1126300	3	14.1	117.6	90.4
50	9/25/08	2084400	1126300	3	12.6	119.1	91.5
51	9/25/08	2084300	1126300	3	10.9	124.6	95.8
52	9/25/08	2084200	1126300	3	13.6	119.1	91.5
53	9/25/08	2084100	1126300	3	13.4	119.9	92.2
54	9/25/08	2084500	1126400	3	11.4	123.9	95.2
55	9/25/08	2084400	1126400	3	13.5	119.5	91.9
56	9/25/08	2084300	1126400	3	12.7	120.0	92.2
57	9/25/08	2084200	1126400	3	11.7	117.3	90.2
58	9/25/08	2084100	1126400	3	12.0	123.9	95.2
59	9/25/08	2084500	1126500	3	13.0	120.3	92.5
60	9/25/08	2084400	1126500	3	12.2	121.7	93.5
61	9/25/08	2084300	1126500	3	12.2	121.9	93.7
62	9/25/08	2084200	1126500	3	10.5	122.4	94.1
63	9/25/08	2084100	1126500	3	11.7	122.4	94.1

CLIENT: JOHNS MANVILLE - AREA 1 AND 2
PROJECT NAME: FINAL COVER CONSTRUCTION
LOCATION AND SOIL TYPE: AREA 2 PROTECTIVE COVER
IN-PLACE MOISTURE DENSITY TESTING
DENSITY METER: TROXLER 3440
PROBE DEPTH: 6 INCHES
MAXIMUM PROCTOR DENSITY: 130.1 PCF @ 8.4% MOISTURE
COMPACTION REQUIREMENTS: 90% OF MODIFIED PROCTOR DENSITY
@ 2-6% ABOVE OPTIMUM

Test No.	Date Tested	Coordinates North	Coordinates East	Lift No.	Moisture (%)	Dry Density (PCF)	Compaction (%)
64	9/25/08	2084500	1126600	3	12.1	125.0	96.1
65	9/25/08	2084400	1126600	3	11.3	123.5	94.9
66	9/25/08	2084300	1126600	3	13.3	117.6	90.4
67	9/25/08	2084200	1126600	3	12.6	119.5	91.9
68	9/25/08	2084100	1126600	3	11.5	122.8	94.4
69	9/25/08	2084550	1126250	4	12.1	120.4	92.5
70	9/25/08	2084450	1126250	4	13.2	118.0	90.7
71	9/25/08	2084350	1126250	4	12.9	117.1	90.0
72	9/25/08	2084250	1126250	4	13.1	121.8	93.6
73	9/25/08	2084150	1126250	4	13.0	118.3	90.9
74	9/25/08	2084750	1126350	4	12.0	123.6	95.0
75	9/25/08	2084650	1126350	4	11.8	121.7	93.5
76	9/25/08	2084550	1126350	4	12.3	123.0	94.5
77	9/25/08	2084450	1126350	4	12.6	121.4	93.3
78	9/25/08	2084350	1126350	4	10.6	122.5	94.2
79	9/25/08	2084250	1126350	4	12.3	118.5	91.1
80	9/25/08	2084150	1126350	4	12.6	122.9	94.5
81	9/25/08	2084450	1126450	4	12.8	119.7	92.0
82	9/25/08	2084350	1126450	4	13.5	119.5	91.9
83	9/25/08	2084250	1126450	4	10.6	124.2	95.5
84	9/25/08	2084150	1126450	4	10.6	129.6	99.6

CLIENT: JOHNS MANVILLE - AREA 1 AND 2
PROJECT NAME: FINAL COVER CONSTRUCTION
LOCATION AND SOIL TYPE: AREA 2 PROTECTIVE COVER
IN-PLACE MOISTURE DENSITY TESTING
DENSITY METER: TROXLER 3440
PROBE DEPTH: 6 INCHES
MAXIMUM PROCTOR DENSITY: 130.1 PCF @ 8.4% MOISTURE
COMPACTION REQUIREMENTS: 90% OF MODIFIED PROCTOR DENSITY
@ 2-6% ABOVE OPTIMUM

Test No.	Date Tested	Coordinates North	Coordinates East	Lift No.	Moisture (%)	Dry Density (PCF)	Compaction (%)
85	9/25/08	2084050	1126450	4	11.9	125.0	96.1
86	9/25/08	2084450	1126550	4	12.3	118.0	90.7
87	9/25/08	2084350	1126550	4	12.6	122.2	93.9
88	9/25/08	2084250	1126550	4	11.2	117.9	90.6
89	9/25/08	2084150	1126550	4	12.3	124.2	95.5
90	9/25/08	2084050	1126550	4	12.1	125.0	96.1
91	9/25/08	2084300	1126200	5	12.6	123.0	94.5
92	9/25/08	2084200	1126200	5	12.2	124.0	95.3
93	9/25/08	2084100	1126200	5	10.6	120.9	92.9
94	9/25/08	2084600	1126300	5	10.6	129.6	99.6
95	9/25/08	2084500	1126300	5	11.6	125.1	96.2
96	9/25/08	2084400	1126300	5	11.9	121.2	93.2
97	9/25/08	2084300	1126300	5	12.1	125.0	96.1
98	9/25/08	2084200	1126300	5	12.3	118.0	90.7
99	9/25/08	2084100	1126300	5	11.5	122.7	94.3
100	9/25/08	2084500	1126400	5	12.9	120.8	92.9
101	9/25/08	2084400	1126400	5	12.5	120.4	92.5
102	9/25/08	2084300	1126400	5	12.4	121.4	93.3
103	9/25/08	2084200	1126400	5	11.8	119.6	91.9
104	9/25/08	2084100	1126400	5	11.6	124.1	95.4
105	9/25/08	2084500	1126500	5	13.9	118.5	91.1

CLIENT: JOHNS MANVILLE - AREA 1 AND 2
PROJECT NAME: FINAL COVER CONSTRUCTION
LOCATION AND SOIL TYPE: AREA 2 PROTECTIVE COVER
IN-PLACE MOISTURE DENSITY TESTING
DENSITY METER: TROXLER 3440
PROBE DEPTH: 6 INCHES
MAXIMUM PROCTOR DENSITY: 130.1 PCF @ 8.4% MOISTURE
COMPACTION REQUIREMENTS: 90% OF MODIFIED PROCTOR DENSITY
@ 2-6% ABOVE OPTIMUM

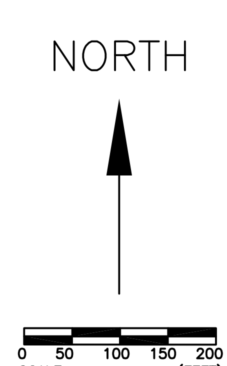
Test No.	Date Tested	Coordinates North	Coordinates East	Lift No.	Moisture (%)	Dry Density (PCF)	Compaction (%)
106	9/25/08	2084400	1126500	5	13.1	121.0	93.0
107	9/25/08	2084300	1126500	5	11.6	126.4	97.2
108	9/25/08	2084200	1126500	5	12.7	121.6	93.5
109	9/25/08	2084100	1126500	5	14.3	117.8	90.5
110	9/25/08	2084500	1126600	5	11.8	120.1	92.3
111	9/25/08	2084400	1126600	5	11.1	123.9	95.2
112	9/25/08	2084300	1126600	5	12.1	125.0	96.1
113	9/25/08	2084200	1126600	5	13.4	120.0	92.2
114	9/25/08	2084100	1126600	5	10.5	122.4	94.1

CLIENT: JOHNS MANVILLE - AREA 1 AND 2
PROJECT NAME: FINAL COVER CONSTRUCTION
LOCATION AND SOIL TYPE: AREA 2 EAST CHANNEL
IN-PLACE MOISTURE DENSITY TESTING
DENSITY METER: TROXLER 3440
PROBE DEPTH: 6 INCHES
MAXIMUM PROCTOR DENSITY: 130.1 PCF @ 8.4% MOISTURE
COMPACTION REQUIREMENTS: 90% OF MODIFIED PROCTOR DENSITY
@ 2-6% ABOVE OPTIMUM

Test No.	Date Tested	Coordinates North	Coordinates East	Lift No.	Moisture (%)	Dry Density (PCF)	Compaction (%)
1	8/21/08	2084250	1126636	1	11.9	123.9	95.2
2	8/21/08	2084300	1126640	1	12.0	125.4	96.4
3	8/21/08	2084350	1126642	1	13.6	121.3	93.2
4	8/21/08	2084325	1126638	2	13.5	119.9	92.2
5	8/21/08	2084375	1126643	2	14.1	120.7	92.8
6	8/21/08	2084260	1126636	3	13.0	121.7	93.5
7	8/21/08	2084300	1126640	3	10.6	126.3	97.1
8	9/3/08	2084350	1126642	3	13.4	120.6	92.7

ATTACHMENT N

Response 09: Attachment E of Response to Comments dated April 25, 2018 (Storm Water Drawing)



DAVID M. PETERSON, PE, PC

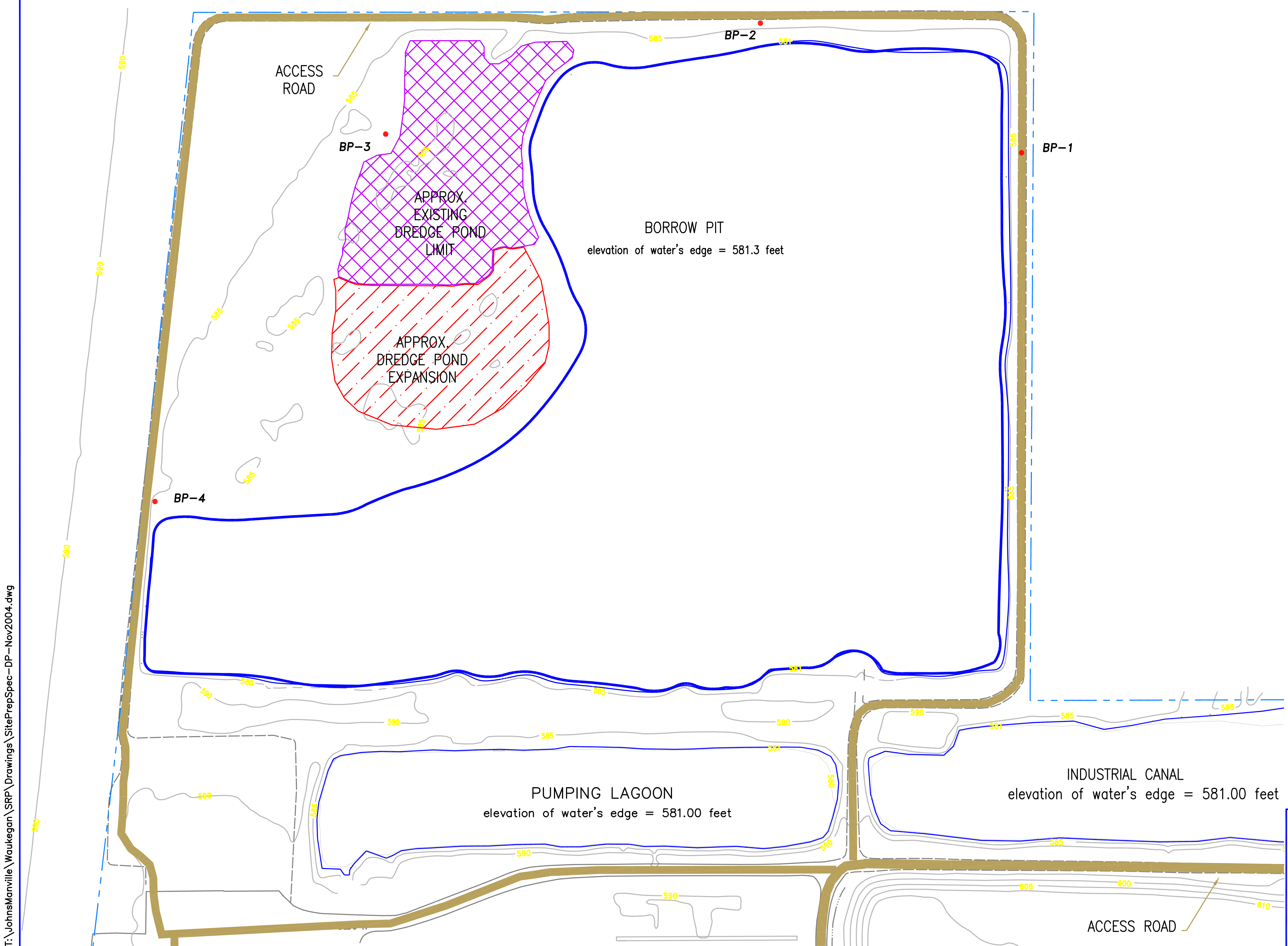
PROJECT: WWT PONDS & SETTLING BASIN CLOSURE

TOPOGRAPHIC MAP

CLIENT: JOHNS MANVILLE			PM: DMP
LOCATION: 1871 NORTH PERSHING ROAD WAUKEGAN, IL 60087			DRAWING: 1
DRAWN BY: DMP	REVIEWED BY: DMP	DATE: MAR. 2018	

ATTACHMENT O

Response 12: Borrow Pit Figures



N

GRAPHIC SCALE

0 100' 200'

GEOTECHNICAL TESTING RESULTS FROM AROUND BORROW PIT. RESULTS ARE PRESENTED IN ORDER OF BORINGS BP-1, BP-2, BP-3, AND BP-4.

ELEVATION (FT ASL)	BLOW COUNTS/FT (AT 4 LOCATIONS)
584-586	8, 16, NA, NA
582-584	27, 18, NA, NA
580-582	16, 23, 23, NA
578-580	20, 18, 20, NA
576-578	25, 21, 20, NA
574-576	28, 15, 24, NA
572-574	32, 30, 32, NA
570-572	39, 49, 19, NA
568-570	38, 37, 23, NA
566-568	64, 60, 44, 34
564-566	40, 42, 70, 98
562-564	39, 34, 68, >75
560-562	39, 35, >50, >50
558-560	36, 88, >50, X
556-562	39, NA, X, X
554-556	30, 88, X, X
552-554	69, X, X, X
550-552	72, X, X, X

FINE-MEDIUM GRADE SAND AND GRAVEL ABOVE CLAY.

SAND GRADATION:

SIEVE	%PASS (3 SAMPLES)
#4	98.4, 99.8, 98.0
#10	97.5, 99.4, 97.3
#40	95.2, 98.5, 95.0
#100	62.6, 57.7, 53.0
#200	6.4, 5.7, 6.2

LEGEND

EXISTING GRAVEL ACCESS ROAD

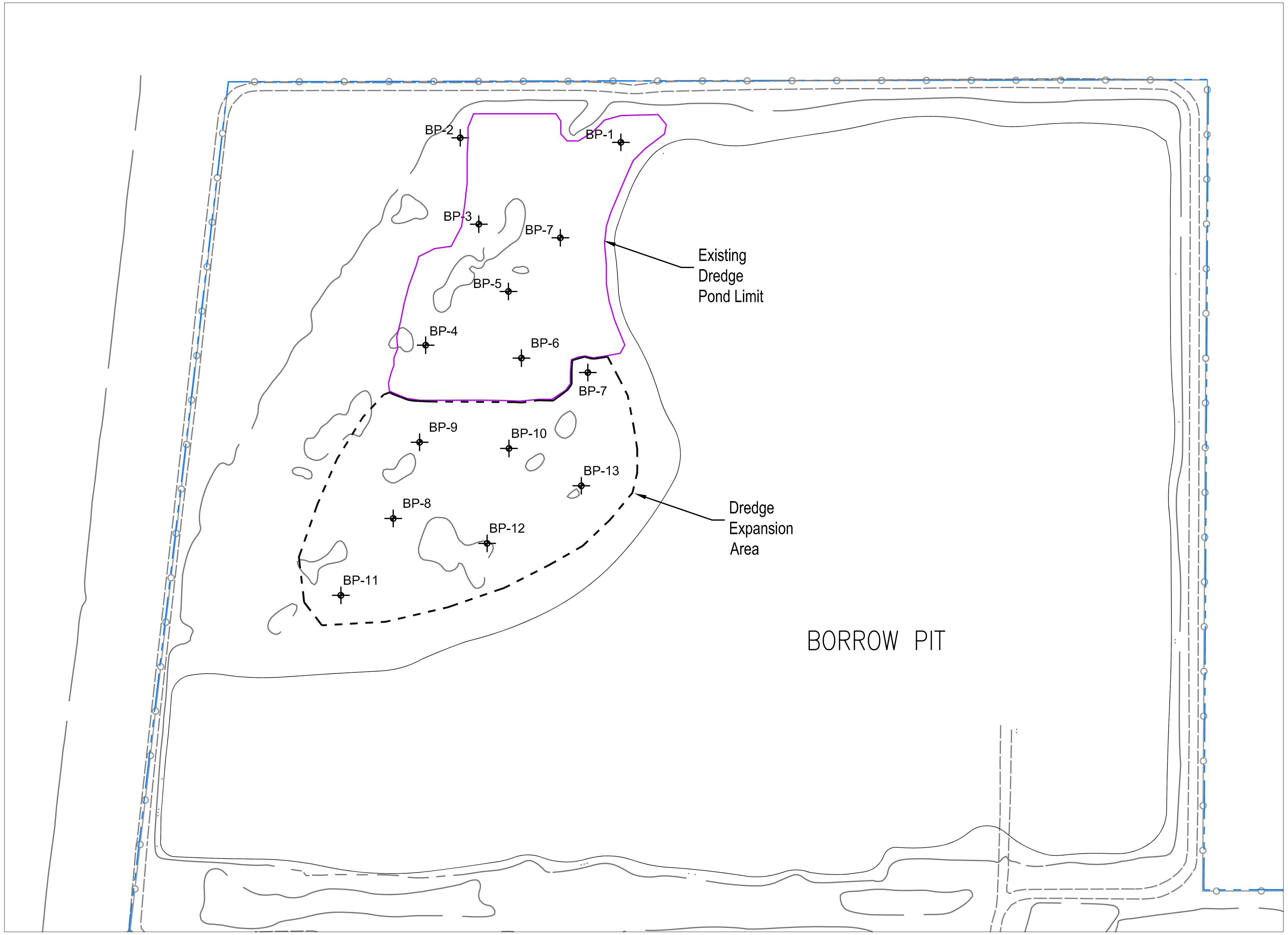
BP-1 GEOTECHNICAL SOIL BORING

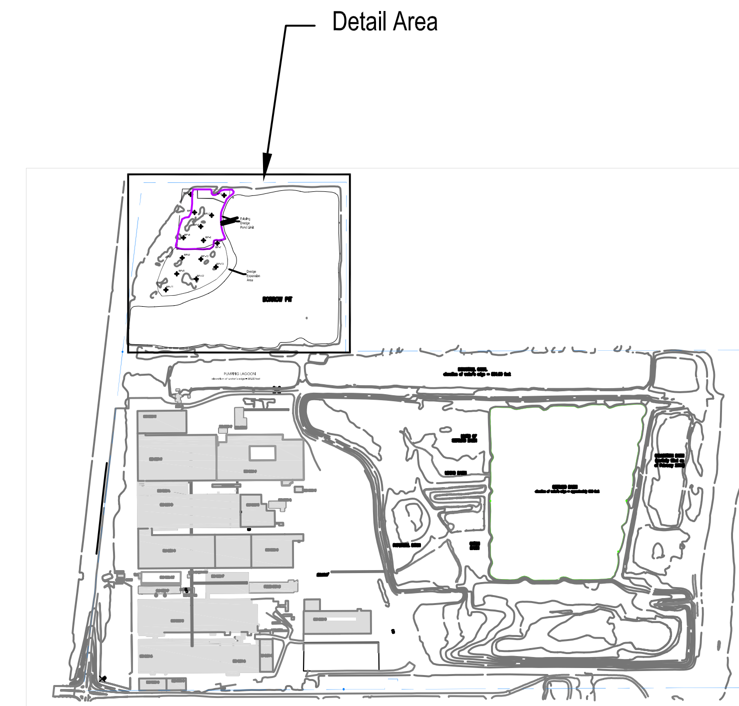
Johns Manville

Dredging Area
95% Design
12/01/05 Revision 0

LFR

FACD 09-02





LEGEND

Proposed Dry Area Excavation Limits

BP-6 Soil Sample Locations
Existing: BP-1 to BP-7
Proposed: BP-8 to BP-14

Notes:

A 30-foot width of undisturbed land shall remain between the excavation area and the current Borrow Pit shoreline and the Borrow Pit perimeter road.

N

GRAPHIC SCALE

0 200'

Johns Manville

Proposed Dry Area Excavation Limits and Soil Sample Locations
April 2006

LFR LEVINE•FRICKE

Figure 1

T:\JohnsManville\7992-00Waukegan\2ndESD\PhaseIIRemedial\DraftPhaseII\DraftRWP-WasteTrtPonds\Figures\Figure04-14.dwg

Appendix H

On-Site Landfill Response to September 13, 2018 Comments (RTC #3)

AECOM Imagine it. Delivered.

AECOM
303 East Wacker Drive
Chicago, IL 60601
aecom.com

September 26 2018

Mr. Matthew J. Ohl
Remedial Project Manager
United States Environmental Protection Agency Region 5
77 West Jackson Boulevard, SR-6J
Chicago, Illinois 60604-3590

Subject: **Response to U.S. EPA Comments Received September 13, 2018**
Final Closure Report, Non-Asbestos Containing On-Site Landfill, Permit Exempt "815" Facility #0971900014
Johns Manville, Waukegan, Lake County, Illinois

Dear Mr. Ohl:

AECOM Technical Services, Inc. (AECOM) is providing this document on behalf of Johns Manville (JM) to respond to comments provided by the U.S. Environmental Protection Agency (USEPA) on September 13, 2018 to the Response to Comments dated August 22, 2018 for the Final Closure Report for the Non-Asbestos Containing On-Site Landfill ("On-Site Landfill"), a permit exempt "815" facility at the former Johns Manville manufacturing facility located in Waukegan, Illinois (#0971900014) dated March 31, 2017. Remediation work was completed in accordance with the Final Phase II Remedial Work Plan (Revision 1) dated June 20, 2008 (RWP), and satisfactorily meets the full requirements of the First Amended Consent Decree, the Adjusted Standard Order dated December 6, 2007, and the general requirements for existing landfills set forth in 35 IAC Part 814, Subparts A and C. The Final Closure Report and this response to comments address work that was completed subsequent to approval of the RWP by the EPA.

Comment 01: *Response 06: Appendix D of the OSL final closure report contains regulatory correspondence regarding the Phase II Remedial Work Plan (Work Plan), and one of the modifications requested by the EPA was "The barrier layer must be verified to have 12-inch thickness after the cut and fill activities." A response letter from LFR explains that the barrier layer thickness verification is discussed in the Work Plan (Section 3.1.1) and Appendix D (Section 7.1 and 8.0), and calculated barrier thicknesses are provided in Appendix B (Tables B-1 and B-2). Figure 10 of the Work Plan shows the (C-Boring) locations in Tables B-1 and B-2, and it explains in Response 06 that CQM (Construction Quality Management) used the barrier design elevations from Figure 10 to create a topographic surface over the OSL. The number of surveying points were increased to achieve a minimum of one point every 5,000 square feet and to include features such as breaks, crests, and toes of slopes. A different survey point numbering system was applied due to the increased number of survey locations.*

Response 01: (Attachment A) CQM used the LFR barrier design elevations that were determined to be correct. LFR barrier design elevations were based upon a 2003 survey. CQM performed a survey of existing conditions on April 1, 2008 to document pre-construction conditions to determine if any elevations had changed since 2003. Some elevations had changed and, therefore, some of the design barrier elevations were modified. Those points include:

- LFR Boring C-16 (CQM Pt 1058): RWP Table B-1 barrier design elevation of 628.4 ft ASL changed to 628.88 ft ASL.
- LFR Boring C-28 (CQM Pt 1067): RWP Table B-1 barrier design elevation of 623.6 ft ASL changed to 624.49 ft ASL.
- LFR Boring C-31 (CQM Pt 1070): RWP Table B-1 barrier design elevation of 628.9 ft ASL changed to 628.83 ft ASL.
- LFR Boring C-43 (CQM Pt 1079): RWP Table B-1 barrier design elevation of 616.4 ft ASL changed to 616.70 ft ASL.
- LFR Boring C-47 (Near CQM Pt 1033): RWP Table B-1 barrier design elevation of 617.5 ft ASL changed to 617.59 ft ASL.
- LFR Boring C-52 (Near CQM Pt 1033): RWP Table B-1 barrier design elevation of 628.8 ft ASL changed to 628.44 ft ASL.

The pre-construction survey and design barrier layout are presented in **Attachment A**.

Comment 01a: *Response 06 includes a cross-reference table that contains some LFR Points (C-Borings) from Table B-1 of the Work Plan and the corresponding points shown in Construction Drawings A-4, A-5, and A-6 in Appendix A (Construction Drawings) of Appendix E (OSL Capping Construction Completion Report (CCR)). It can be observed from the cross-reference table that LFR Point (C-Boring) C-21 – Point 1121 corresponds with Point 1109, but Drawing A-4 shows that the design barrier elevation for this point (1109) is "NA." It is recommended that the OSL final closure report provide the reason the design barrier elevations for this and many other points were "NA." In general, it is further recommended that the OSL final closure report provide the details regarding the procedures that were followed, coordination with the EPA, and any documentation showing the revisions to barrier layer design elevations or the use of a different survey point numbering system. Evidently these changes were made after approval of the Work Plan and should have been highlighted in the OSL final closure report because, as mentioned above, the EPA specifically requested that the barrier layer must be verified to have a thickness of 12 inches after cut and fill activities.*

Response 01a: (Attachment B) Levine-Fricke Recon (LFR) point 1121 (C-21) corresponds to CQM point 1109. On Drawing A-4, this location was inadvertently labeled "NA" for the design barrier elevation. The top of waste or CERCLA cover was 634.9 ft ASL as shown in Table B-1 so the barrier surface needed to be at least 635.9 ft ASL (one foot higher). The recorded top of barrier was 638.30 ft ASL which exceeded the one foot thickness requirement. The design barrier elevation from Table B-1 was 638.37 ft ASL which provided a greater barrier thickness to allow for storm water drainage. The recorded barrier elevation of 638.30 ft ASL also allows for storm water drainage.

Design barrier surface elevations labeled "NA" were locations that were surveyed after the barrier was completed. No design barrier surface elevations were provided by LFR at these locations. The recorded barrier elevations were a basis to measure the sand drainage layer and protective clay cover thicknesses.

The surveying point numbering system had to be changed to meet the requirements of the RWP as previously described. There was no coordination of renumbering with the USEPA as this was a minor modification.

Per the CCP, minor modifications do not have a significant impact on the project. Examples of minor modifications include, but are not limited to, minor elevation changes and minor procedural modification for installation and construction requirements of the final cover. Major modifications require regulatory concurrence prior to field implementation. Examples of major modifications include changes to approved design drawings and specifications regarding the site preparation and grading activities, final cover construction, and installation of monitoring wells.

Attachment B contains comprehensive tables of the LFR design elevations, CQM design elevations, and CQM record elevations for the barrier. The LFR design elevations were derived from a 2003 survey. The CQM design elevations were derived from the 2008 pre-construction survey. At some locations the 2003 elevations had changed and, in those instances, the 2008 elevations were used as the design elevations.

Barrier design elevations were targeted and ultimately varied a little from the design while allowing for at least a one foot thickness. These changes were minor modifications that still provided a drainage slope. The barrier layer was confirmed to have a minimum thickness of one foot after cut and fill activities as described in the August 22, 2018 response to comments.

Comment 01b: *Notes below the table on Drawing A-4 in Appendix A (Construction Drawings) of Appendix E (OSL CCR) indicate several points had record barrier elevations approved by LFR. Appendix D (Construction Compliance Plan (CCP)) of the Work Plan suggests that changes to the Work Plan were to be documented, approved, and, at a minimum, should have been coordinated with the EPA. Project modifications are discussed in Section 6.0 of the CCP, and the OSL final closure report should have provided documentation of all notifications of major or minor project modifications to the EPA and Illinois EPA. Moreover, LFR prepared the Work Plan, and the CCP indicates LFR would provide engineering support, but the Executive Summary and Introduction sections of Appendix E (OSL CCR) indicate that LFR was not involved in the cap construction, and three (3) other contractors completed the work on behalf of Johns Manville. Nonetheless, Drawing A-4 suggests LFR was responsible for approving changes to the design elevations for the barrier layer, so it is recommended that the OSL final closure report provide information about the responsibilities of LFR after approval of the Work Plan. The documentation should clarify whether LFR or one of the other contractors was responsible for engineering support during the OSL capping construction activities, and if LFR contributed to the preparation of the OSL final closure report. It is presumed that the engineering support responsibilities for closure of the OSL were later transferred to AECOM. If so, the OSL final closure report should provide the dates and rationale for these changes.*

Response 01b: LFR approved minor changes to the barrier elevations during the construction of the OSL cap in telephone calls between CQM (in the field) and LFR (in the office). These minor changes were made at the limits of waste so had no effect on the barrier thickness; they only served as basis elevations for measuring the thicknesses of the sand drainage layer and protective clay cover. This will be clarified in the final Closure Report once all comments are addressed. LFR no longer exists as a company. LFR was acquired by Arcadis in 2008. Key project personnel from Arcadis joined AECOM in 2012.

Comment 01c: *The cross-reference table in Response 06 shows that LFR Point (C-Boring) C-28 – Point 1128 is cross-referenced to Point 1067, and Drawing A-4 shows that the design barrier elevation for this point is 624.49. Table B-1 shows the planned top of barrier layer elevation for (C-Boring) C-28 – Point 1128 was 623.6, which is the same elevation as the top of the waste or top of the CERCLA cover, whichever is higher. The record barrier elevation for Point 1067 in Drawing A-4 is 624.52, and 623.6 is slightly less than a foot below that elevation. Response 06 mentions that the LFR design barrier elevations were compared to the actual recorded barrier elevations constructed in the field on Drawing A-4, and the actual barrier elevation was either equal to, or higher than, the design barrier elevation, indicating that the minimum barrier elevation was achieved.*

Although Response 06 included a cross-reference table, the procedure used by CQM to create the topographic surface and receive approval for certain elevations by LFR needs to be documented. In addition, the OSL final closure report should clearly describe the comparison between the planned top of barrier layer elevations in Tables B-1 and B-2 of the Work Plan and the design barrier elevations in Drawing A-4, including example calculations and cross-references to the LFR points (C-Borings) and coordinates that were used create Figure 10 for the Work Plan. All the details should be provided in one table, so the barrier layer thickness can be verified for all the points and coordinates in the Work Plan. Incidentally, the coordinates for the LFR points (C-Borings) for Tables B-1 and B-2 in the Work Plan and the coordinates for the wells in Appendix B (Well Logs) of the OSL final closure report were not provided, so the OSL final closure report should cite the original documents and/or provide attachments with these coordinates.

A note below Table B-1 indicates that LFR Point (C-Boring) C-28 was one of the areas in which the barrier layer was to be re-established after the completion of cut-fill operations, and another note below Table B-1 indicates that at a few boring locations the CERCLA cover was at the ground surface. Figure 10 indicates that the boring locations where the CERCLA cover was at the ground surface were typically located outside the limits of Fill Areas 1 and 2. Since Figure 10 of the Work Plan was based upon the calculated barrier thicknesses in Tables B-1 and B-2, and Figure 10 was used to create the topographic surface over the OSL, the planned top of barrier layer elevations for the LFR points (C-Borings) would be expected to coincide with the design barrier elevations shown in the table in Drawing A-4. However, if these elevations do not coincide with the elevations in Drawing A-4 for one or more locations, the OSL final closure report should provide an explanation.

Response 01c: (Attachment B) LFR point 1128 (C-28) corresponds to CQM point 1067. The design barrier location was determined based upon Table B-1 to be 624.6 ft ASL (1 ft higher than the waste that was surveyed in 2003 to be 623.6 ft ASL). In 2008, prior to commencing OSL capping activities, surveying was completed and that data was used to determine that the CQM design elevation was 624.49 ft ASL, rather than 624.6 ft ASL. This could be due to 0.11 feet of settlement from 2003 to 2008. However, detailed records explaining this change could not be located. The recorded barrier elevation was 624.52 ft ASL.

Attachment B contains comprehensive tables of the survey point coordinates, LFR design elevations, CQM design elevations, and CQM record elevations for the barrier.

The minimum barrier thickness and compaction were achieved, and a drainage slope was present; therefore, the project objectives were met.

Comment 01d: *The construction drawings in Appendix A (Construction Drawings) of Appendix E (OSL CCR) are dated Jan. 2009, and Drawing A-2 includes a note that says "Existing conditions generated from various surveys performed between April 2, and December 3, 2008." In order to more clearly document the construction of the OSL cap, the sheets with surveying measurements should note the actual dates the surveys were performed and the vertical datum (mean sea level - MSL). In addition, Note 3 below the table on Drawing A-4 says "Top of sand elevation modified 8/21/08 to depict 1.0 above record barrier layer elevation." Since the table on Drawing A-4 contains barrier layer elevations, and the sand drainage layer and piping elevations are shown in the tables on Drawing A-5, provide the reason for the modification and its location on Drawing A-4 in Note 3.*

Response 01d: The purpose of Drawing A-2 is to provide an overall site map that shows the location of the OSL with respect to other site features. These features were surveyed at various times and those surveying dates do not affect the OSL. The drawing is an accurate reflection of site features at the time it was made. Since the construction completion of the OSL, site remediation has altered the site features. Not all the features identified in Drawing A-2 are accurate at this time.

Note 3 on Drawing A-4 identifies that the sand elevation was modified on 8/21/08 to be 1.0 foot above the record barrier elevation because the barrier layer recorded elevation was completed on 8/21/08. The design sand elevation was then adjusted to be one foot higher than the recorded barrier elevation. The design sand elevation is shown on Drawing A-5.

Comment 01e *Response 06 notes that much of the existing clay came from Fill Area 2, but both relocated existing barrier clay and stockpiled clay were successfully compacted to meet the same specifications. Section Five (5.0) of Appendix E (OSL CCR) indicates the clay for the final protective layer was hauled from Clay Stockpile 12. Appendix E (Clayey Soil Geotech Results) of Appendix E (OSL CCR) contains a summary of laboratory geotechnical testing results, and Section 2.2 (Lake County Clayey Soils) of the CCR notes that six (6) samples were collected from Clay Stockpile 12 and two (2) samples were collected from clay stockpiled in Fill Area 2. The laboratory information in Appendix E of Appendix E only says these samples were collected from "test pits." The documentation should include coordinates, a drawing, and a description of the locations and procedures used for collecting the eight (8) samples. This summary indicates the samples had an average maximum dry density of 128.6 pounds/cubic foot (pcf) and an average water content of 10 percent. These average values are different from the values used for the in-place barrier layer and protective layer moisture content and compaction testing. According to Appendices F and G of the OSL CCR, the in-place clay compaction testing used a maximum dry density of 130.1 pcf at a moisture content of 8.4%, and these values correspond to the results for Sample JM-TP-2. It is recommended that the OSL final closure report discuss the rationale for selecting these in-place clay compaction testing values and explain whether they were based on Sample JM-TP-2. If the values were solely based on the one sample, the report should describe the reason these values were deemed representative of the clay placed within the barrier layer as well as the protective layer.*

Response 01e An excavator was used to dig test pits at six random locations around the perimeter of Clay Stockpile 12. Similarly, the excavator was used to excavate two test pits into the Fill Area 2 clay. Test pits were excavated approximately four feet into the clay. A shovel was then used to scrape clay from the internal side walls of the excavations and fill 5-gallon buckets. One 5-gallon bucket of clay was collected from each test pit for each sample. The buckets were then transported to the geotechnical testing laboratory for analysis. The locations of the test pits were not surveyed.

Samples JM-TP-1 through JM-TP-6 were collected from Clay Stockpile 12. Samples JM-TP-7 and JM-TP-8 were collected from Fill Area 2 clay. Stockpile 12 was used for both the barrier and the protective cover. Sample JM-TP-2 provided the maximum density via modified proctor testing for Clay Stockpile 12. Sample JM-TP-2 also had a higher maximum density than the average of JM-TP-7 and JM-TP-8. Consequently, due to its use in both the barrier and compacted clay cover, sample JM-TP-2 was used for all compaction testing.

Comment 01f *Drawing A-7 in Appendix A (Construction Drawings) of Appendix E (OSL CCR) shows the locations of density tests for the protective layer. It can be observed from this drawing that the density tests were performed for five (5) different lifts. A note on this drawing suggests the compacted clay was initially placed in lifts approximately eight (8)-inches thick, and then each lift was compacted to a thickness of roughly six (6) inches. As a consequence, the cumulative thickness of the protective layer would be around thirty (30) inches, but the thickness of protective layer was actually about thirty-six (36) inches (three (3) feet). Based on this information, it seems possible that a six (6)-inch lift may not have been compacted, tested, and documented, or possibly the compacted thickness for the eight (8)-inch lifts may have been closer to seven (7) inches, so the OSL final closure report should provide the reason for this discrepancy.*

In addition, Section 6.0 (Vegetative Cover) of Appendix E (OSL CCR) mentions that the surface of the final protective layer was placed in a manner that minimized compaction and facilitated growth of the vegetative cover, and this is further discussed at the end of Response 06. There is somewhat conflicting information regarding the compaction of the upper surface of the protective layer, so it is recommended that OSL final closure report clarify the procedure for placement of the upper lifts, particularly with respect to compaction, testing, and surveying, and then preparation of the top surface by pulverizing, amending the soil with fertilizer, seeding, and covering the soil with erosion control matting.

Response 01f The final compacted thickness of each lift was not surveyed. Placement of the lifts involved the use of bulldozers as well as tracking over the clay with loaded and unloaded off-road dump trucks. Therefore, the sheepsfoot compactor probably did not substantially reduce the clay thickness. The number of lifts that were installed is accurately represented in the drawings and compaction testing tables. No additional, undocumented lifts were installed.

The final lift was placed using bulldozers and tracking over the clay with loaded and unloaded off-road trucks. A sheepsfoot compactor was not used. A skid steer equipped with a spiked rolling pulverizer was used to pulverize the clay surface prior to seeding. After the clay was pulverized, fertilizer and seed were applied before it was covered with erosion control matting secured with landscape staples.

Comment 01g *The CCP in Appendix D of the Work Plan provides instructions and requirements for documenting the OSL closure work, and Section Four (4) of the CCP says "All inspection, measurement, and testing activities shall be documented as they occur by the field team." Nevertheless, it is evident from the documentation included with OSL final closure report that some documentation is absent and some of the inspection, measurement, and testing activities were not documented by the field team as they occurred.*

Section Five (5) of the CCP says the following information was to be included, at a minimum, in daily field reports, "Inspection observations, measurements, and testing results collected in the field for purposes of CQA (construction quality assurance) as described in this CCP will be recorded daily in bound field books or on other field forms, as developed." Section Seven (7) provides a table that summarizes the quality assurance/quality control (QA/QC) inspections, measurements, and testing anticipated to be performed during the remedial action associated with closure of the OSL, and Section Eight (8) includes a tabular summary of QA/QC testing.

Response 06 explains that in an effort to demonstrate that the constructed barrier clay was a minimum of one-foot thick, additional field notes were procured from CQM (Attachment I), but upon review of the field notes, such data was absent. As a consequence of this missing data, a Geoprobe was used on August 15th and 16th, 2018 to help verify the thickness of the barrier layer in the clay relocation areas (Attachment J). However, when additional measurements or testing are proposed, such as the use of the Geoprobe, the EPA and Illinois EPA should be contacted in advance to allow them the opportunity to comment on the proposed procedures and to independently observe, verify, and document the results. It should be recognized that the use of independent assessments, made by qualified personnel that are independent, external, and not part of the organization performing and accountable for the work, are standard practice for quality assurance.

Response 01g (Attachment C) As the lead agency, the USEPA was notified via email on August 10, 2018 that Geoprobe testing was to be completed the week of August 13 (see **Attachment C)**. No inquiries, requests, or site visits were made by the USEPA or any other agencies to observe the Geoprobe work.

Comment 02: *Response 11 states the following:*

"Documentation that construction of the OSL cap achieved the designed layer thickness and compaction requirements was dependent upon final surveying and density testing data. Intermediate measurements are not necessarily representative of final conditions. Compacting and testing continued until the compaction requirement was achieved, then the final result was recorded."

Response 11 further explains that intermediate tests were taken to provide verbal compaction feedback to the contractor so that means and methods could be adjusted to achieve the necessary requirements, and this likely occurred at other times during the project. "This data was not recorded on a permanent record and does not represent a compaction deficiency, retesting, or challenge." Response 13 also notes that "Only conforming test results were recorded."

Verification testing for an entire barrier layer can be difficult, so only certain locations are typically tested on a pre-established frequency, such as one test every 5,000 square feet. As a consequence, on-going QA/QC field inspections, testing, and documentation are common practice to help ensure the achievement of design objectives for the entire barrier layer. Based on the submitted information and responses to comments, it appears the QA/QC documentation submitted with the OSL final closure report does not meet some of the requirements described in the CCP, particularly with respect to the daily field reports and recording of observations, measurements, and test results as they occurred.

Under the column named "Type of Test", the summary table of QA/QC testing in Section Eight (8) of the CCP lists the thickness of barrier layer, thickness of sand, and thickness of clay. The "Applicable Test Method or Standard" column suggests that the sand and clay layers should have been "measured with a ruler" at a frequency of every 5,000 square feet. This same section further specifies for the testing of the "density of clayey soil" that the acceptance criteria required beneath the barrier layer, a minimum four (4) passes with a CAT 815 sheepsfoot compactor, or equivalent, with minimal soil deflections. Documentation of such testing and measurements were not found in the OSL final closure report, and the report indicates that the thicknesses of the clay barrier soil layer, sand (lateral drainage) layer, and final protective clay layer were only documented by the surveyed elevations shown in Drawings A-4, A-5, and A-6.

According to the Introduction section of Appendix E (OSL CCR), after the Work Plan received approval, the cap construction work was completed by three (3) different companies, which were apparently intended to act as independent contractors that reported to Johns Manville. The documentation that was recorded and submitted indicates that all the compaction tests were acceptable, and the barrier layer, sand drainage layer, final protective layer, and vegetative cover were constructed in accordance with the design specifications and objectives. Nevertheless, as mentioned earlier, some documentation was absent or insufficient in comparison to the requirements of the CCP, and there is almost no documentation regarding independent assessments and oversight by personnel that were not performing and accountable for the work, i.e., reporting to Johns Manville. One minor exception is Page 6 of Attachment I for Response 06, which documents the EPA was on the site on 21 Aug. 08. Due to the concerns mentioned above, increase the frequency of the periodic O&M inspections of the OSL cap to ensure proper maintenance and to identify potential problems or deficiencies. In the event problems are identified post-construction quality assurance testing may be required, such as the investigations recently performed using a Geoprobe.

Response 11 also includes that "Only those areas where the barrier layer was disturbed were tested for compaction," but information in Section 3.1.1 (Site Preparation and Barrier Layer Construction) of the Work Plan indicates that the final 12-inch barrier soil layer in Fill Areas 1 and 2 will be compacted to 90% of modified Proctor density (ASTM D1557) at 0 to 6% above optimum moisture content, or 95% of standard Proctor density (ASTM D698) at 0 to 4% above the optimum moisture content. Drawing A-8 in Appendix A (Construction Drawings) of Appendix E (OSL CCR) shows that the one-foot thick barrier layer is the layer directly below the one-foot thick sand drainage layer, and Section 3.1 of the Work Plan describes the barrier soil layer as "minimum 12-inch vertical thickness of previously placed clay (as interim *cover), or equivalent." Apparently the site preparation included clearing and grubbing, soil cutting and filling operations, and grading to achieve final barrier layer elevations, so it seems as if the soil for the barrier layer was likely disturbed. Provide additional information in the closure report to explain the reason large portions of the barrier layer in Fill Areas 1 and 2, located outside the relocation areas shown in Attachment J, were not disturbed and were not compacted or tested for density prior to placement of the sand drainage layer, and whether any tests were performed in these locations to verify the thickness of the barrier layer.*

Response 02: Construction was completed of the OSL cap in 2008. Consequently, from January 2009 to the present, the OSL cap has been undergoing operation and maintenance (O&M). During this time, the OSL surface has been inspected, the vegetative cover has been maintained, no significant erosion has occurred, landfill gas monitoring is no longer required, and there has been no recoverable leachate since 2011. Consequently, the OSL cap is functioning as designed and no additional visual inspections (more than applied to the rest of the site), nor post construction quality testing, is necessary.

Clearing and grubbing of the OSL resulted in vegetation that was approximately two inches high and left the barrier clay intact. Therefore, barrier clay was not tested following clearing and grubbing.

If you have any questions, please contact me at (312) 861-4030.

Sincerely,

Tim Dull, P.E.
Senior Project Manager
timothy.dull@aecom.com

Attachments

Attachment A - Response 01: 2008 Pre-Construction Survey and Design Barrier Layout
Attachment B - Response 01a and 01c: OSL Barrier Layer Design and Record Elevations
Attachment C - Response 01g: USEPA Email

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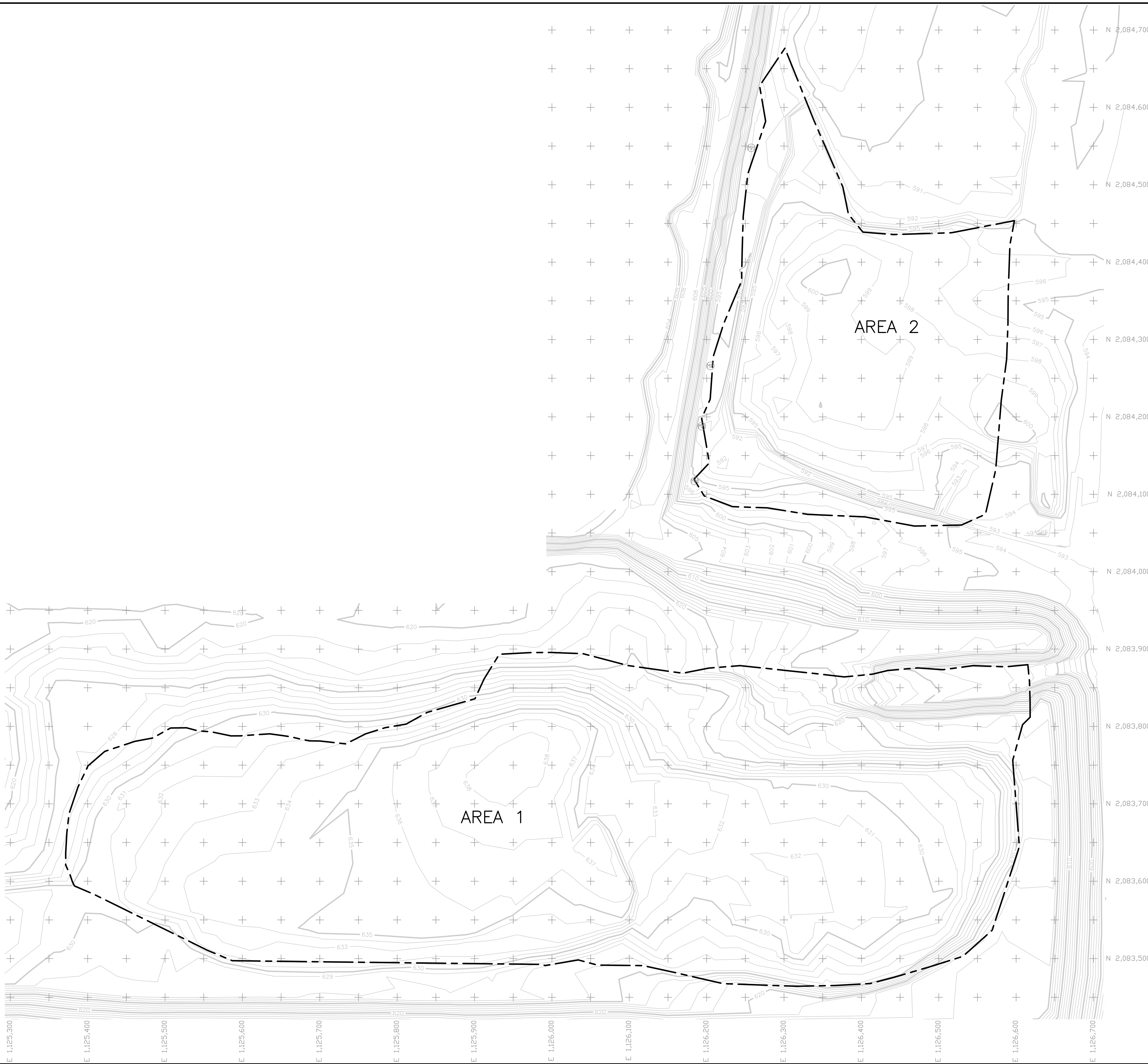
ATTACHMENT A

Responses 01: 2008 Pre-Construction Survey and Design Barrier Layout



LEGEND

— - —	LIMITS OF WASTE
——594——	EXISTING CONDITIONS CONTOURS

NOTES:

1. EXISTING CONDITIONS WERE SURVEYED BY CQM, INC. ON APRIL 1, 2008.

RELEASE	DATE:	BY:
Project Review		
5		
4		
3		
2		
1		
NO.	DATE:	BY:
DESCRIPTION		

REVISIONS

JM Johns Manville

CQM, INC.
Engineering–Surveying–Material Testing
2679 Continental Drive
Green Bay, WI 54311

Existing Conditions
April 1, 2008

Construction Documentation Drawings
Area 1 & 2 Final Cover
Johns Manville Waukegan Plant
Waukegan, IL

DRAWN BY: WBE

DATE: Sept. 2018

SCALE: 1"=60'

DRAWING NO.

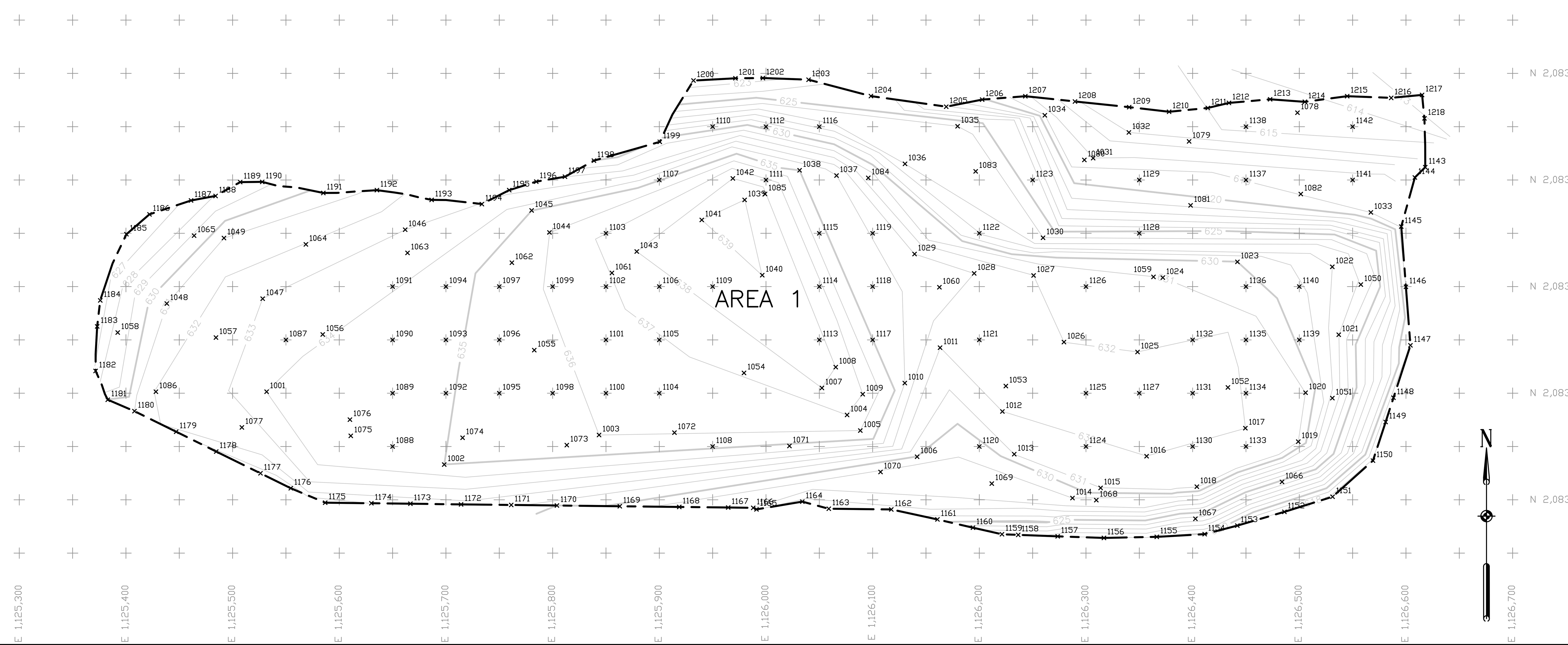
1

Area 1 Barrier Layer

Point No.	Coordinate North	Coordinate East	Design Barrier Elevation	Description
1001	2083601.39	1125531.87	634.00	
1002	2083533.08	1125698.37	635.00	
1003	2083560.80	1125843.53	636.00	
1004	2083579.59	1126076.07	637.00	
1005	2083564.95	1126088.45	636.00	
1006	2083540.43	1126141.71	630.00	
1007	2083604.91	1126052.48	638.00	
1008	2083624.47	1126065.40	638.00	
1009	2083599.05	1126090.72	637.00	
1010	2083609.53	1126130.18	634.00	
1011	2083642.70	1126163.22	632.00	
1012	2083582.86	1126221.64	632.00	
1013	2083542.79	1126232.77	631.00	
1014	2083501.65	1126287.37	629.00	
1015	2083511.17	1126313.73	631.00	
1016	2083540.89	1126356.84	632.00	
1017	2083567.23	1126449.45	632.00	
1018	2083512.29	1126403.94	631.00	
1019	2083554.56	1126499.06	631.00	
1020	2083600.45	1126505.89	631.00	
1021	2083654.86	1126537.02	627.00	
1022	2083718.54	1126530.96	628.00	
1023	2083723.20	1126442.00	630.00	
1024	2083708.44	1126372.04	631.00	
1025	2083638.68	1126348.35	632.00	
1026	2083647.94	1126279.35	632.00	
1027	2083710.45	1126250.93	632.00	
1028	2083712.42	1126195.19	633.00	
1029	2083730.55	1126139.31	633.00	
1030	2083745.81	1126259.75	626.00	
1031	2083820.50	1126306.73	618.00	
1032	2083844.61	1126340.26	616.50	
1033	2083769.60	1126567.10	619.00	
1034	2083860.69	1126261.48	619.00	
1035	2083850.41	1126179.65	626.00	
1036	2083815.16	1126130.35	627.00	
1037	2083804.16	1126066.18	634.00	
1038	2083809.12	1126031.54	635.00	
1039	2083781.32	1125980.01	639.00	
1040	2083710.71	1125996.50	639.00	
1041	2083762.53	1125939.80	639.00	
1042	2083801.44	1125968.99	638.00	
1043	2083732.90	1125878.87	638.00	
1044	2083750.79	1125797.02	636.00	
1045	2083771.44	1125780.31	635.00	
1046	2083753.38	1125661.76	633.00	
1047	2083688.67	1125528.19	633.00	
1048	2083684.10	1125438.30	631.00	
1049	2083745.57	1125491.87	631.00	
1050	2083701.9	1126557.7	626.71	
1051	2083595.4	1126531.0	627.74	
1052	2083605.4	1126433.1	632.00	
1053	2083606.7	1126224.9	632.00	
1054	2083619.0	1125979.4	637.23	
1055	2083640.4	1125782.8	635.72	
1056	2083655.1	1125584.5	633.86	
1057	2083652.2	1125484.4	632.38	
1058	2083656.9	1125392.3	628.88	
1059	2083709.1	1126363.3	631.00	
1060	2083699.4	1126162.6	633.40	
1061	2083712.8	1125855.6	637.06	
1062	2083722.4	1125761.8	635.51	
1063	2083731.6	1125664.0	633.47	
1064	2083739.6	1125568.7	632.03	
1065	2083747.8	1125463.9	629.13	
1066	2083516.8	1126483.8	624.64	
1067	2083482.2	1126402.6	624.49	
1068	2083499.7	1126309.7	628.87	
1069	2083515.2	1126211.7	628.41	
1070	2083526.1	1126107.4	628.83	
1071	2083550.5	1126022.0	634.86	
1072	2083563.0	1125914.2	636.07	
1073	2083551.3	1125813.3	635.60	

Point No.	Coordinate North	Coordinate East	Design Barrier Elevation	Description
1074	2083558.2	1125715.6	635.10	
1075	2083560.0	1125610.8	634.24	
1076	2083575.2	1125610.0	634.25	
1077	2083567.9	1125508.7	632.39	
1078	2083863.1	1126498.3	614.64	
1079	2083836.2	1126396.7	616.70	
1080	2083818.8	1126298.5	618.36	
1081	2083776.2	1126398.1	620.91	
1082	2083786.8	1126501.4	618.98	
1083	2083808.1	1126196.6	626.50	
1084	2083802.0	1126095.9	631.59	
1085	2083786.9	1125999.1	638.03	
1086	2083601.4	1125428.1	632.02	
1087	2083550.00	1125550.00	NA	
1088	2083550.00	1125650.00	NA	
1089	2083600.00	1125650.00	NA	
1090	2083650.00	1125650.00	NA	
1091	2083700.00	1125650.00	NA	
1092	2083600.00	1125700.00	NA	
1093	2083650.00	1125700.00	NA	
1094	2083700.00	1125700.00	NA	
1095	2083600.00	1125750.00	NA	
1096	2083650.00	1125750.00	NA	
1097	2083700.00	1125750.00	NA	
1098	2083600.00	1125800.00	NA	
1099	2083700.00	1125800.00	NA	
1100	2083600.00	1125850.00	NA	
1101	2083650.00	1125850.00	NA	
1102	2083700.00	1125850.00	NA	
1103	2083750.00	1125850.00	NA	
1104	2083600.00	1125900.00	NA	
1105	2083650.00	1125900.00	NA	
1106	2083700.00	1125900.00	NA	
1107	2083800.00	1125900.00	NA	
1108	2083550.00	1125950.00	NA	
1109	2083700.00	1125950.00	NA	
1110	2083850.00	1125950.00	NA	
1111	2083800.00	1126000.00	NA	
1112	2083850.00	1126000.00	NA	
1113	2083650.00	1126050.00	NA	
1114	2083700.00	1126050.00	NA	
1115	2083750.00	1126050.00	NA	
1116	2083850.00	1126050.00	NA	
1117	2083650.00	1126100.00	NA	
1118	2083700.00	1126100.00	NA	
1119	2083750.00	1126100.00	NA	
1120	2083550.00	1126200.00	NA	
1121	2083650.00	1126200.00	NA	
1122	2083750.00	1126200.00	NA	
1123	2083800.00	1126250.00	NA	
1124	2083550.00	1126300.00	NA	
1125	2083600.00	1126300.00	NA	
1126	2083700.00	1126300.00	NA	
1127	2083600.00	1126350.00	NA	
1128	2083750.00	1126350.00	NA	
1129	2083800.00	1126350.00	NA	
1130	2083550.00	1126400.00	NA	
1131	2083600.00	1126400.00	NA	
1132	2083650.00	1126400.00	NA	
1133	2083550.00	1126450.00	NA	
1134	2083600.00	1126450.00	NA	
1135	2083650.00	1126450.00	NA	
1136	2083700.00	1126450.00	NA	
1137	2083800.00	1126450.00	NA	
1138	2083850.00	1126450.00	NA	
1139	2083650.00	1126500.00	NA	
1140	2083700.00	1126500.00	NA	
1141	2083800.00	1126500.00	NA	
1142	2083850.00	1126550.00	NA	
1143	2083811.99	1126618.09	617.48	Limits of Waste
1144	2083802.34	1126608.35	617.40	Limits of Waste
1145	2083756.31	1126595.58	618.84	Limits of Waste
1146	2083699.78	1126599.97	619.00	Limits of Waste

Point No.	Coordinate North	Coordinate East	Design Barrier Elevation	Description
1147	2083644.90	1126604.19	619.47	Limits of Waste
1148	2083595.75	1126588.31	618.65	Limits of Waste
1149	2083572.99	1126580.93	618.27	Limits of Waste
1150	2083536.75	1126569.08	617.93	Limits of Waste
1151	2083502.89	1126531.21	617.59	Limits of Waste
1152	2083488.72	1126486.04	617.95	Limits of Waste
1153	2083475.81	1126441.88	619.25	Limits of Waste
1154	2083467.80	1126411.32	620.93	Limits of Waste
1155	2083465.25	1126366.39	623.31	Limits of Waste
1156	2083464.28	1126316.87	621.69	Limits of Waste
1157	2083465.74	1126273.50	621.79	Limits of Waste
1158	2083467.13	1126236.51	622.00	Limits of Waste
1159	2083467.69	1126221.24	622.32	Limits of Waste
1160	2083473.85	1126194.06	623.54	Limits of Waste
1161	2083481.62	1126160.75	625.48	Limits of Waste
1162	2083490.97	1126117.53	627.00	Limits of Waste
1163	2083491.64	1126058.91	627.81	Limits of Waste
1164	2083498.29	1126034.09	627.70	Limits of Waste
1165	2083491.04	1125991.12	627.56	Limits of Waste
1166	2083492.47	1125988.07	628.00	Limits of Waste
1167	2083492.79	1125964.64	628.25	Limits of Waste
1168	2083493.32	1125918.73	628.74	Limits of Waste
1169	2083493.97	1125863.00	629.70	Limits of Waste
1170	2083494.68	1125804.05	630.00	Limits of Waste
1171	2083495.19	1125761.20	631.18	Limits of Waste
1172	2083495.70	1125714.18	631.67	Limits of Waste
1173	2083496.36	1125666.67	631.30	Limits of Waste
1174	2083496.79	1125630.07	631.02	Limits of Waste
1175	2083497.33	1125586.80	630.47	Limits of Waste
1176	2083510.84	1125554.51	631.15	Limits of Waste
1177	2083524.89	1125526.12	631.40	Limits of Waste
1178	2083545.26	1125484.64	631.14	Limits of Waste
1179	2083563.87	1125447.08	631.53	Limits of Waste
1180	2083583.16	1125407.99	631.20	Limits of Waste
1181	2083593.87	1125382.95	631.00	Limits of Waste
1182	2083620.87	1125371.52	628.30	Limits of Waste
1183	2083662.64	1125373.04	625.90	Limits of Waste
1184	2083687.07	1125375.95	625.70	Limits of Waste
1185	2083749.14	1125400.42	627.40	Limits of Waste
1186	2083767.76	1125422.09	627.10	Limits of Waste
1187	2083780.81	1125461.03	628.00	Limits of Waste
1188	2083785.01	1125484.04	628.85	Limits of Waste
1189	2083798.05	1125507.11	629.90	Limits of Waste
1190	2083798.22	1125527.76	630.00	Limits of Waste
1191	2083787.80	1125585.03	630.40	Limits of Waste
1192	2083790.48	1125635.30	631.40	Limits of Waste
1193	2083781.33	1125686.60	632.40	Limits of Waste
1194	2083777.37	1125733.67	633.10	Limits of Waste
1195	2083790.51	1125759.32	632.60	Limits of Waste
1196	2083798.46	1125784.70	632.10	Limits of Waste
1197	2083803.10	1125811.58	631.97	Limits of Waste
1198	2083818.15	1125838.74	630.20	Limits of Waste
1199	2083835.81	1125900.49	630.38	Limits of Waste
1200	2083893.30	1125932.09	623.40	Limits of Waste
1201	2083895.43	1125971.39	623.30	Limits of Waste
1202	2083895.62	1125997.12	623.60	Limits of Waste
1203	2083894.04	1126039.98	624.60	Limits of Waste
1204	2083878.72	1126098.41	625.80	Limits of Waste
1205	2083868.73	1126169.02	623.57	Limits of Waste
1206	2083875.42	1126202.71	621.30	Limits of Waste
1207	2083878.55	1126243.18	618.40	Limits of Waste
1208	2083873.61	1126289.71	616.40	Limits of Waste
1209	2083868.30	1126340.53	616.50	Limits of Waste
1210	2083864.01	1126377.96	615.60	Limits of Waste
1211	2083867.55	1126414.25	614.98	Limits of Waste
1212	2083872.29	1126434.07	614.55	Limits of Waste
1213	2083875.68	1126472.67	614.45	Limits of Waste
1214	2083873.34	1126505.25	614.46	Limits of Waste
1215	2083878.61	1126544.88	613.75	Limits of Waste
1216	2083877.02	1126586.17	613.45	Limits of Waste
1217	2083879.77	1126615.12	612.71	Limits of Waste
1218	2083857.80	1126617.40	613.57	Limits of Waste



Area 2 Barrier Layer

Point No.	Coordinate North	Coordinate East	Design Barrier Elevation	Description
1	2084098.87	1126211.56	597.00	
2	2084095.52	1126259.36	596.44	
3	2084095.52	1126309.36	597.32	
4	2084095.52	1126359.36	598.22	
5	2084095.52	1126409.36	599.00	
6	2084095.52	1126459.36	598.06	
7	2084095.52	1126509.36	597.07	
8	2084095.52	1126559.36	596.08	
9	2084095.52	1126609.36	595.10	Outside Limits of Waste
10	2084145.52	1126209.36	595.08	
11	2084145.52	1126259.36	595.98	
12	2084145.52	1126309.36	596.89	
13	2084145.52	1126359.36	597.79	
14	2084145.52	1126409.36	598.69	
15	2084145.52	1126459.36	597.89	
16	2084145.52	1126509.36	596.90	
17	2084145.52	1126559.36	595.92	
18	2084145.52	1126609.36	594.93	Outside Limits of Waste
19	2084195.52	1126209.36	594.65	
20	2084195.52	1126259.36	595.55	
21	2084195.52	1126309.36	596.46	
22	2084195.52	1126359.36	597.36	
23	2084195.52	1126409.36	598.26	
24	2084195.52	1126459.36	597.72	
25	2084195.52	1126509.36	596.74	
26	2084195.52	1126559.36	595.75	
27	2084195.52	1126609.36	594.75	Outside Limits of Waste
28	2084245.52	1126209.36	594.61	
29	2084245.52	1126259.36	595.12	
30	2084245.52	1126309.36	596.02	
31	2084245.52	1126359.36	596.93	
32	2084245.52	1126409.36	597.83	
33	2084245.52	1126459.36	597.56	
34	2084245.52	1126509.36	596.57	
35	2084245.52	1126559.36	595.59	
36	2084245.52	1126609.36	594.58	Outside Limits of Waste
37	2084295.52	1126259.36	594.69	
38	2084295.52	1126309.36	595.59	
39	2084295.52	1126359.36	596.50	
40	2084295.52	1126409.36	597.40	
41	2084295.52	1126459.36	597.39	
42	2084295.52	1126509.36	596.41	
43	2084295.52	1126559.36	595.42	
44	2084295.52	1126609.36	594.41	Outside Limits of Waste
45	2084345.52	1126259.36	594.26	
46	2084345.52	1126309.36	595.16	
47	2084345.52	1126359.36	596.07	
48	2084345.52	1126409.36	596.97	
49	2084345.52	1126459.36	597.22	
50	2084345.52	1126509.36	596.24	
51	2084345.52	1126559.36	595.25	
52	2084345.52	1126609.36	594.25	Outside Limits of Waste
53	2084395.52	1126259.36	593.83	
54	2084395.52	1126309.36	594.73	
55	2084395.52	1126359.36	595.62	
56	2084395.52	1126409.36	596.54	
57	2084395.52	1126459.36	597.05	
58	2084395.52	1126509.36	596.07	
59	2084395.52	1126559.36	595.09	
60	2084445.52	1126259.36	593.40	
61	2084445.52	1126309.36	594.30	
62	2084445.52	1126359.36	595.00	
63	2084495.52	1126309.36	593.87	
64	2084495.52	1126359.36	594.36	
65	2084492.67	1126482.23	590.85	Outside Limits of Waste
66	2084497.46	1126559.54	591.50	Outside Limits of Waste
67	2084545.52	1126309.36	593.44	
68	2084595.52	1126309.36	592.83	
69	2084645.52	1126309.36	591.13	
70	2084109.22	1126409.16	599.00	
71	2084158.74	1126416.11	598.70	
72	2084208.25	1126423.05	598.40	
73	2084257.76	1126430.00	598.10	
74	2084307.27	1126436.98	597.79	
75	2084356.78	1126443.98	597.49	
76	2084406.29	1126450.97	597.18	
77	2084117.90	1126191.69	595.00	
78	2084557.99	1126347.72	594.00	
79	2084038.13	1126626.53	594.00	Outside Limits of Waste
80	2084037.88	1126632.53	594.00	Outside Limits of Waste
81	2084095.89	1126628.87	593.76	Outside Limits of Waste
82	2084095.30	1126634.85	593.76	Outside Limits of Waste
83	2084145.93	1126630.89	593.54	Outside Limits of Waste
84	2084145.45	1126636.88	593.55	Outside Limits of Waste
85	2084195.62	1126632.91	593.33	Outside Limits of Waste
86	2084195.18	1126638.89	593.34	Outside Limits of Waste
87	2084244.80	1126634.90	593.13	Outside Limits of Waste
88	2084296.34	1126636.98	592.91	Outside Limits of Waste
89	2084296.03	1126642.97	592.92	Outside Limits of Waste
90	2084345.03	1126638.95	592.70	Outside Limits of Waste
91	2084345.16	1126644.96	592.70	Outside Limits of Waste
92	2084396.59	1126641.04	592.48	Outside Limits of Waste
93	2084395.48	1126647.00	592.48	Outside Limits of Waste
94	2084445.85	1126643.03	592.27	Outside Limits of Waste
95	2084445.34	1126649.02	592.26	Outside Limits of Waste
96	2084479.46	1126644.39	592.13	Outside Limits of Waste
97	2084484.18	1126650.59	592.13	Outside Limits of Waste
98	2084487.97	1126606.70	592.00	Outside Limits of Waste
99	2084494.23	1126608.12	592.00	Outside Limits of Waste
100	2084491.45	1126560.06	591.50	Outside Limits of Waste
101	2084498.99	1126425.55	589.20	Outside Limits of Waste
102	2084504.66	1126428.89	589.20	Outside Limits of Waste
103	2084522.22	1126409.06	589.09	Outside Limits of Waste
104	2084525.02	1126414.43	589.09	Outside Limits of Waste
105	2084777.41	1126349.61	588.01	Outside Limits of Waste
106	2084777.89	1126355.59	588.01	Outside Limits of Waste
107	2084585.29	1126303.97	593.00	
108	2084463.76	1126356.77	595.00	
109	2084121.22	1126187.77	594.90	
110	2084170.18	1126197.87	594.66	
111	2084219.15	1126207.98	594.42	
112	2084268.12	1126218.09	594.18	
113	2084317.14	1126227.94	593.94	
114	2084366.32	1126236.94	593.68	
115	2084415.50	1126245.94	593.42	
116	2084464.68	1126254.94	593.15	
117	2084493.71	1126260.26	593.00	
118	2084560.50	1126282.80	592.50	
119	2084607.87	1126298.79	592.14	
120	2084676.45	1126301.10	591.50	Limit of Waste
121	2084583.67	1126338.40	593.42	Limit of Waste
122	2084497.12	1126376.03	594.50	Limit of Waste
123	2084435.65	1126441.23	596.77	Limit of Waste
124	2084446.87	1126562.60	594.85	Limit of Waste
125	2084422.31	1126591.96	594.36	Limit of Waste
126	2084320.78	1126589.44	594.74	Limit of Waste
127	2084221.44	1126580.78	595.24	Limit of Waste
128	2084131.81	1126573.62	595.68	Limit of Waste
129	2084060.25	1126529.25	596.79	Limit of Waste
130	2084073.11	1126432.36	598.66	Limit of Waste
131	2084084.04	1126233.61	597.75	Limit of Waste
132	2084140.60	1126203.47	595.02	Limit of Waste
133	2084222.83	1126204.54	594.73	Limit of Waste
134	2084319.94	1126221.84	594.52	Limit of Waste
135	2084414.85	1126249.22	593.48	Limit of Waste
136	2084514.01	1126253.21	594.23	Limit of Waste
137	2084627.77	1126268.43	594.89	Limit of Waste
138	2084438.84	1126401.89	596.04	Limit of Waste
139	2084461.98	1126383.25	594.90	Limit of Waste
140	2084453.64	1126597.81	594.14	Limit of Waste
141	2084358.43	1126589.71	594.60	Limit of Waste
142	2084274.39	1126587.72	594.93	Limit of Waste
143	2084074.16	1126560.33	596.13	Limit of Waste
144	2084058.96	1126468.51	598.00	Limit of Waste
145	2084070.81	1126404.74	599.00	Limit of Waste
146	2084074.05	1126330.72	598.00	Limit of Waste
147	2084098.00	1126196.74	597.37	Limit of Waste
148	2084119.54	1126183.62	595.53	Limit of Waste
149	2084198.25	1126193.55	595.69	Limit of Waste
150	2084278.26	1126208.58	595.15	Limit of Waste
151	2084375.78	1126245.15	593.74	Limit of Waste
152	2084459.33	1126247.26	594.01	Limit of Waste
153	2084582.05	1126276.27	592.84	Limit of Waste
154	2084082.46	1126278.68	597.55	Limit of Waste
155	2084437.98	1126516.41	595.79	Limit of Waste

LEGEND

LIMITS OF WASTE

594 DESIGN BARRIER LAYER CONTOURS

100 SURVEY POINT NUMBER AND LOCATION

RELEASE	DATE:	BY:
Project Review		
5		
4		
3		
2		
1		
NO.	DATE:	BY:
DESCRIPTION		

REVISIONS

JM Johns Manville

CQM, INC.
Engineering-Surveying-Material Testing
2679 Continental Drive
Green Bay, WI 54311

Design Barrier Layer

Construction Documentation Drawings
Area 1 & 2 Final Cover
Johns Manville Waukegan Plant
Waukegan, IL

DRAWN BY: WBE

DATE: Sept. 2018

SCALE: 1"=60'

DRAWING NO. 2

ATTACHMENT B

Responses 01a and 01c: OSL Barrier Layer Design and Record Elevations

Johns Manville - Waukegan Plant
On-Site Landfill Closure - Fill Area 1 (Miscellaneous Disposal Pit)
Barrier Layer Design and Record Elevations

LFR RWP Dwg 10 C-Boring ID	LFR RWP Dwg 10 Point ID	CQM Dwg A-4 Point ID	Northing	Easting	2003 LFR RWP Table B-2 Design Barrier Elevation	2008 CQM Dwg A-4 Design Barrier Elevation	2008 CQM Dwg A-4 Record Barrier Elevation	Calculated Barrier Elevation Delta	Notes
NLP	NLP	1001	2083601	1125532	NLP	634.00	634.03	0.03	
NLP	NLP	1002	2083533	1125698	NLP	635.00	635.10	0.10	
NLP	NLP	1003	2083561	1125844	NLP	636.00	636.02	0.02	
NLP	NLP	1004	2083580	1126076	NLP	637.00	637.01	0.01	
NLP	NLP	1005	2083565	1126088	NLP	636.00	636.06	0.06	Boring Confirmed ≥ 1 ft thick
NLP	NLP	1006	2083540	1126142	NLP	630.00	630.15	0.15	
NLP	NLP	1007	2083605	1126052	NLP	638.00	638.02	0.02	Boring Confirmed ≥ 1 ft thick
NLP	NLP	1008	2083624	1126065	NLP	638.00	638.00	0.00	
NLP	NLP	1009	2083599	1126091	NLP	637.00	637.01	0.01	
NLP	NLP	1010	2083610	1126130	NLP	634.00	634.00	0.00	Boring Confirmed ≥ 1 ft thick
NLP	NLP	1011	2083643	1126163	NLP	632.00	632.22	0.22	Boring Confirmed ≥ 1 ft thick
NLP	NLP	1012	2083583	1126222	NLP	632.00	632.07	0.07	
NLP	NLP	1013	2083543	1126233	NLP	631.00	631.11	0.11	
NLP	NLP	1014	2083502	1126287	NLP	629.00	629.10	0.10	
NLP	NLP	1015	2083511	1126314	NLP	631.00	631.12	0.12	
NLP	NLP	1016	2083541	1126357	NLP	632.00	632.00	0.00	
NLP	NLP	1017	2083567	1126449	NLP	632.00	632.01	0.01	
NLP	NLP	1018	2083512	1126404	NLP	631.00	631.08	0.08	
NLP	NLP	1019	2083555	1126499	NLP	631.00	631.03	0.03	
NLP	NLP	1020	2083600	1126506	NLP	631.00	631.01	0.01	
NLP	NLP	1021	2083655	1126537	NLP	627.00	627.16	0.16	
NLP	NLP	1022	2083719	1126531	NLP	628.00	628.00	0.00	
NLP	NLP	1023	2083723	1126442	NLP	630.00	630.02	0.02	
NLP	NLP	1024	2083708	1126372	NLP	631.00	631.02	0.02	
NLP	NLP	1025	2083639	1126348	NLP	632.00	632.01	0.01	
NLP	NLP	1026	2083648	1126279	NLP	632.00	632.01	0.01	
NLP	NLP	1027	2083710	1126251	NLP	632.00	632.03	0.03	
NLP	NLP	1028	2083712	1126195	NLP	633.00	633.03	0.03	
NLP	NLP	1029	2083731	1126139	NLP	633.00	633.07	0.07	Boring Confirmed ≥ 1 ft thick
NLP	NLP	1030	2083746	1126260	NLP	626.00	626.27	0.27	
NLP	NLP	1031	2083821	1126307	NLP	618.00	618.22	0.22	Boring Confirmed ≥ 1 ft thick
NLP	NLP	1032	2083845	1126340	NLP	616.50	616.74	0.24	Boring Confirmed ≥ 1 ft thick
NLP	NLP	1033	2083770	1126567	NLP	619.00	619.02	0.02	Boring Confirmed ≥ 1 ft thick
NLP	NLP	1034	2083861	1126261	NLP	619.00	619.16	0.16	Boring Confirmed ≥ 1 ft thick
NLP	NLP	1035	2083850	1126180	NLP	626.00	626.16	0.16	Boring Confirmed ≥ 1 ft thick
NLP	NLP	1036	2083815	1126130	NLP	627.00	627.16	0.16	Boring Confirmed ≥ 1 ft thick
NLP	NLP	1037	2083804	1126066	NLP	634.00	634.10	0.10	Boring Confirmed ≥ 1 ft thick
NLP	NLP	1038	2083809	1126032	NLP	635.00	635.01	0.01	
NLP	NLP	1039	2083781	1125980	NLP	639.00	639.31	0.31	
NLP	NLP	1040	2083711	1125997	NLP	639.00	639.01	0.01	Boring Confirmed ≥ 1 ft thick
NLP	NLP	1041	2083763	1125940	NLP	639.00	639.05	0.05	
NLP	NLP	1042	2083801	1125969	NLP	638.00	638.02	0.02	
NLP	NLP	1043	2083733	1125879	NLP	638.00	638.01	0.01	
NLP	NLP	1044	2083751	1125797	NLP	636.00	636.04	0.04	
NLP	NLP	1045	2083771	1125780	NLP	635.00	635.02	0.02	
NLP	NLP	1046	2083753	1125662	NLP	633.00	633.02	0.02	
NLP	NLP	1047	2083689	1125528	NLP	633.00	633.01	0.01	
NLP	NLP	1048	2083684	1125438	NLP	631.00	631.01	0.01	
NLP	NLP	1049	2083746	1125492	NLP	631.00	631.03	0.03	
C-01	1101	Beyond LOW	2083456	1126114	626.00	NA	NA	Beyond LOW	
C-02	1102	1050	2083702	1126558	626.71	626.71	626.85	0.14	
C-03	1103	Near 1136	2083708	1126455	630.10	NDE	630.30	0.20	Estimated Delta
C-04	1104	1051	2083595	1126531	627.74	627.74	627.75	0.01	
C-05	1105	1052	2083605	1126433	632.00	632.00	632.04	0.04	
C-06	1106	Near 1127	2083609	1126339	632.00	NDE	631.93	-0.07	Estimated Delta
C-07	1107	1053	2083607	1126225	632.00	632.00	632.08	0.08	
C-08	1108	Near 1010	2083619	1126127	634.30	NDE	634.00	-0.30	Estimated Delta, Boring Confirmed ≥ 1 ft thick
C-09	1109	Near 1009	2083620	1126080	637.21	NDE	637.01	-0.20	Estimated Delta
C-10	1110	1054	2083619	1125979	637.23	637.23	637.25	0.02	
C-11	1111	Near 1105	2083639	1125883	636.79	NDE	636.81	0.02	Estimated Delta
C-12	1112	1055	2083640	1125783	635.72	635.72	635.73	0.01	
C-13	1113	Near 1093	2083649	1125684	634.78	NDE	634.61	-0.17	Estimated Delta
C-14	1114	1056	2083655	1125584	633.86	633.86	633.86	0.00	
C-15	1115	1057	2083652	1125484	632.38	632.38	632.39	0.01	
C-16	1116	1058	2083657	1125392	628.88	628.88	628.92	0.04	Table B-1 value of 628.40 ft ASL had changed
C-17	1117	1059	2083709	1126363	631.00	631.00	631.08	0.08	
C-18	1118	Near 1027	2083706	1126262	631.20	NDE	632.03	0.83	Estimated Delta
C-19	1119	1060	2083699	1126163	633.40	633.40	633.43	0.03	Boring Confirmed ≥ 1 ft thick
C-20	1120	Near 1114	2083698	1126060	636.51	NDE	633.86	-2.65	Estimated Delta, Boring Confirmed ≥ 1 ft thick
C-21	1121	1109	2083703	1125952	638.37	638.37	638.30	-0.07	Table B-1: Waste at 634.9 ft ASL. Barrier >635.9 ft ASL so exceeds the 1 ft thickness requirement.
C-22	1122	1061	2083713	1125856	637.06	637.06	637.09	0.03	
C-23	1123	1062	2083722	1125762	635.51	635.51	635.51	0.00	

Johns Manville - Waukegan Plant
On-Site Landfill Closure - Fill Area 1 (Miscellaneous Disposal Pit)
Barrier Layer Design and Record Elevations

LFR RWP Dwg 10 C-Boring ID	LFR RWP Dwg 10 Point ID	CQM Dwg A-4 Point ID	Northing	Easting	2003 LFR RWP Table B-2 Design Barrier Elevation	2008 CQM Dwg A-4 Design Barrier Elevation	2008 CQM Dwg A-4 Record Barrier Elevation	Calculated Barrier Elevation Delta	Notes
C-24	1124	1063	2083732	1125664	633.47	633.47	633.60	0.13	
C-25	1125	1064	2083740	1125569	632.03	632.03	632.04	0.01	
C-26	1126	1065	2083748	1125464	629.13	629.13	629.19	0.06	
C-27	1127	1066	2083517	1126484	624.64	624.64	624.74	0.10	
C-28	1128	1067	2083482	1126403	624.49	624.49	624.52	0.03	Table B-1 value of 623.60 ft ASL had changed
C-29	1129	1068	2083500	1126310	628.87	628.87	629.03	0.16	
C-30	1130	1069	2083515	1126212	628.41	628.41	628.55	0.14	
C-31	1131	1070	2083526	1126107	628.83	628.83	629.19	0.36	Table B-1 value of 628.90 ft ASL had changed
C-32	1132	1071	2083551	1126022	634.86	634.86	634.87	0.01	
C-33	1133	1072	2083563	1125914	636.07	636.07	636.20	0.13	
C-34	1134	1073	2083551	1125813	635.60	635.60	635.61	0.01	
C-35	1135	1074	2083558	1125716	635.10	635.10	635.10	0.00	
C-36	1136	1075	2083560	1125611	634.24	634.24	634.27	0.03	
C-37	1137	1076	2083575	1125610	634.25	634.25	634.25	0.00	
C-38	1138	1077	2083568	1125509	632.39	632.39	632.73	0.34	
C-39	1139	Near 1142	2083860	1126607	613.72	NDE	614.68	0.96	Estimated Delta, Boring Confirmed ≥ 1 ft thick
C-40	1140	Near 1142	2083875	1126598	613.41	NDE	614.68	1.27	Estimated Delta, Boring Confirmed ≥ 1 ft thick
C-41	1141	1078	2083863	1126498	614.64	614.64	614.69	0.05	
C-42	1142	Beyond LOW	2083875	1126395	615.21	NA	NA	Beyond LOW	
C-43	1143	1079	2083836	1126397	616.70	616.70	616.74	0.04	Table B-1 value of 616.40 ft ASL had changed. Boring Confirmed 1 ft min.
C-44	1144	1080	2083819	1126299	618.36	618.36	618.55	0.19	
C-45	1145	1081	2083776	1126398	620.91	620.91	621.09	0.18	Boring Confirmed ≥ 1 ft thick
C-46	1146	1082	2083787	1126501	618.98	618.98	619.09	0.11	Boring Confirmed ≥ 1 ft thick
C-47	1147	Near 1033	2083778	1126606	617.59	NDE	619.02	1.43	Table B-1 value of 617.50 ft ASL had changed. Boring Confirmed 1 ft min.
C-48	1148	Beyond LOW	2083775	1126639	617.80	NA	NA	Beyond LOW	
C-49	1149	1083	2083808	1126197	626.50	626.50	626.54	0.04	Boring Confirmed ≥ 1 ft thick
C-50	1150	1084	2083802	1126096	631.59	631.59	631.59	0.00	
C-51	1151	1085	2083787	1125999	638.03	638.03	638.08	0.05	
C-52	1152	Beyond LOW	2083844	1125893	628.44	NA	NA	Beyond LOW	Table B-1 value of 628.80 ft ASL had changed.
C-53	1153	Beyond LOW	2083805	1125798	631.50	NA	NA	Beyond LOW	
C-54	1154	At LOW	2083781	1125700	632.60	NA	NA	At LOW	
C-55	1155	At LOW	2083788	1125598	630.60	NA	NA	At LOW	
C-56	1156	Beyond LOW	2083816	1125498	627.20	NA	NA	Beyond LOW	
C-57	1157	Beyond LOW	2083788	1125377	625.30	NA	NA	Beyond LOW	
C-58	1158	1086	2083601	1125428	632.02	632.02	632.06	0.04	
C-86	1186	Near 1102	2083679	1125856	636.83	NDE	636.86	0.03	Estimated Delta
LF-SB01	1187	Near 1025	2083664	1126347	631.66	NDE	632.01	0.35	Estimated Delta
LF-SB02	1188	Near 1011	2083610	1126170	631.18	NDE	632.22	1.04	Estimated Delta
LF-SB03	1189	Near 1109	2083669	1125946	637.78	NDE	638.30	0.52	Estimated Delta
LF-SB04	1190	Near 1090	2083654	1125644	634.51	NDE	634.24	-0.27	Estimated Delta
LGW-01	1193	Near 1025	2083661	1126370	631.73	NDE	632.01	0.28	Estimated Delta
LMW-01	1194	Near 1025	2083666	1126363	631.63	NDE	632.01	0.38	Estimated Delta
LMW-02	1195	Near 1025	2083662	1126360	631.68	NDE	632.01	0.33	Estimated Delta
LMW-03	1196	Near 1125	2083622	1126315	632.00	NDE	631.86	-0.14	Estimated Delta
LMW-04	1197	Near 1043	2083733	1125934	638.60	NDE	638.01	-0.59	Estimated Delta
LMW-05	1198	Near 1093	2083655	1125687	634.79	NDE	634.61	-0.18	Estimated Delta
LWM-06	NLP	Beyond LOW	2083711	1125286	618.10	NA	NA	Beyond LOW	
LMW-07	1199	Beyond LOW	2083928	1125590	620.20	NA	NA	Beyond LOW	
NLP	NLP	1087	2083650	1125550	NDE-Basis	NDE-Basis	633.64	Basis Survey	
NLP	NLP	1088	2083550	1125650	NDE-Basis	NDE-Basis	634.13	Basis Survey	
NLP	NLP	1089	2083600	1125650	NDE-Basis	NDE-Basis	634.39	Basis Survey	
NLP	NLP	1090	2083650	1125650	NDE-Basis	NDE-Basis	634.24	Basis Survey	
NLP	NLP	1091	2083700	1125650	NDE-Basis	NDE-Basis	633.85	Basis Survey	
NLP	NLP	1092	2083600	1125700	NDE-Basis	NDE-Basis	634.80	Basis Survey	
NLP	NLP	1093	2083650	1125700	NDE-Basis	NDE-Basis	634.61	Basis Survey	
NLP	NLP	1094	2083700	1125700	NDE-Basis	NDE-Basis	634.54	Basis Survey	
NLP	NLP	1095	2083600	1125750	NDE-Basis	NDE-Basis	635.16	Basis Survey	
NLP	NLP	1096	2083650	1125750	NDE-Basis	NDE-Basis	635.18	Basis Survey	
NLP	NLP	1097	2083700	1125750	NDE-Basis	NDE-Basis	635.29	Basis Survey	
NLP	NLP	1098	2083600	1125800	NDE-Basis	NDE-Basis	635.71	Basis Survey	
NLP	NLP	1099	2083700	1125800	NDE-Basis	NDE-Basis	636.06	Basis Survey	
NLP	NLP	1100	2083600	1125850	NDE-Basis	NDE-Basis	636.03	Basis Survey	
NLP	NLP	1101	2083650	1125850	NDE-Basis	NDE-Basis	636.40	Basis Survey	
NLP	NLP	1102	2083700	1125850	NDE-Basis	NDE-Basis	636.86	Basis Survey	
NLP	NLP	1103	2083750	1125850	NDE-Basis	NDE-Basis	636.93	Basis Survey	
NLP	NLP	1104	2083600	1125900	NDE-Basis	NDE-Basis	636.41	Basis Survey	
NLP	NLP	1105	2083650	1125900	NDE-Basis	NDE-Basis	636.81	Basis Survey	
NLP	NLP	1106	2083700	1125900	NDE-Basis	NDE-Basis	637.78	Basis Survey	
NLP	NLP	1107	2083800	1125900	NDE-Basis	NDE-Basis	634.94	Basis Survey	
NLP	NLP	1108	2083550	1125950	NDE-Basis	NDE-Basis	634.90	Basis Survey	
NLP	NLP	1110	2083850	1125950	NDE-Basis	NDE-Basis	629.16	Basis Survey	

Johns Manville - Waukegan Plant
On-Site Landfill Closure - Fill Area 1 (Miscellaneous Disposal Pit)
Barrier Layer Design and Record Elevations

LFR RWP Dwg 10 C-Boring ID	LFR RWP Dwg 10 Point ID	CQM Dwg A-4 Point ID	Northing	Easting	2003 LFR RWP Table B-2 Design Barrier Elevation	2008 CQM Dwg A-4 Design Barrier Elevation	2008 CQM Dwg A-4 Record Barrier Elevation	Calculated Barrier Elevation Delta	Notes
NLP	NLP	1111	2083800	1126000	NDE-Basis	NDE-Basis	637.10	Basis Survey	
NLP	NLP	1112	2083850	1126000	NDE-Basis	NDE-Basis	629.34	Basis Survey	
NLP	NLP	1113	2083650	1126050	NDE-Basis	NDE-Basis	637.78	Basis Survey	Boring Confirmed ≥ 1 ft thick
NLP	NLP	1114	2083700	1126050	NDE-Basis	NDE-Basis	637.11	Basis Survey	Boring Confirmed ≥ 1 ft thick
NLP	NLP	1115	2083750	1126050	NDE-Basis	NDE-Basis	635.27	Basis Survey	Boring Confirmed ≥ 1 ft thick
NLP	NLP	1116	2083850	1126050	NDE-Basis	NDE-Basis	627.67	Basis Survey	
NLP	NLP	1117	2083650	1126100	NDE-Basis	NDE-Basis	635.10	Basis Survey	
NLP	NLP	1118	2083700	1126100	NDE-Basis	NDE-Basis	634.46	Basis Survey	Boring Confirmed ≥ 1 ft thick
NLP	NLP	1119	2083750	1126100	NDE-Basis	NDE-Basis	633.92	Basis Survey	
NLP	NLP	1120	2083550	1126200	NDE-Basis	NDE-Basis	629.85	Basis Survey	
NLP	NLP	1121	2083650	1126200	NDE-Basis	NDE-Basis	632.21	Basis Survey	
NLP	NLP	1122	2083750	1126200	NDE-Basis	NDE-Basis	628.28	Basis Survey	Boring Confirmed ≥ 1 ft thick
NLP	NLP	1123	2083800	1126250	NDE-Basis	NDE-Basis	624.69	Basis Survey	Boring Confirmed ≥ 1 ft thick
NLP	NLP	1124	2083550	1126300	NDE-Basis	NDE-Basis	631.69	Basis Survey	
NLP	NLP	1125	2083600	1126300	NDE-Basis	NDE-Basis	631.86	Basis Survey	
NLP	NLP	1126	2083700	1126300	NDE-Basis	NDE-Basis	631.40	Basis Survey	
NLP	NLP	1127	2083600	1126350	NDE-Basis	NDE-Basis	631.93	Basis Survey	
NLP	NLP	1128	2083750	1126350	NDE-Basis	NDE-Basis	625.20	Basis Survey	Boring Confirmed ≥ 1 ft thick
NLP	NLP	1129	2083800	1126350	NDE-Basis	NDE-Basis	619.40	Basis Survey	Boring Confirmed ≥ 1 ft thick
NLP	NLP	1130	2083550	1126400	NDE-Basis	NDE-Basis	631.90	Basis Survey	
NLP	NLP	1131	2083600	1126400	NDE-Basis	NDE-Basis	631.97	Basis Survey	
NLP	NLP	1132	2083650	1126400	NDE-Basis	NDE-Basis	631.94	Basis Survey	
NLP	NLP	1133	2083550	1126450	NDE-Basis	NDE-Basis	631.61	Basis Survey	
NLP	NLP	1134	2083600	1126450	NDE-Basis	NDE-Basis	631.74	Basis Survey	
NLP	NLP	1135	2083650	1126450	NDE-Basis	NDE-Basis	631.47	Basis Survey	
NLP	NLP	1136	2083700	1126450	NDE-Basis	NDE-Basis	630.30	Basis Survey	
NLP	NLP	1137	2083800	1126450	NDE-Basis	NDE-Basis	619.01	Basis Survey	Boring Confirmed ≥ 1 ft thick
NLP	NLP	1138	2083850	1126450	NDE-Basis	NDE-Basis	615.14	Basis Survey	Boring Confirmed ≥ 1 ft thick
NLP	NLP	1139	2083650	1126500	NDE-Basis	NDE-Basis	629.66	Basis Survey	
NLP	NLP	1140	2083700	1126500	NDE-Basis	NDE-Basis	629.29	Basis Survey	
NLP	NLP	1141	2083800	1126550	NDE-Basis	NDE-Basis	618.40	Basis Survey	Boring Confirmed ≥ 1 ft thick
NLP	NLP	1142	2083850	1126550	NDE-Basis	NDE-Basis	614.68	Basis Survey	Boring Confirmed ≥ 1 ft thick

Notes:
1. NA = Not Applicable, either beyond limit of waste (Beyond LOW) or at limit of waste (At LOW).
2. NDE = No Design Elevation since not surveyed at exact location.
3. Delta = Record Barrier Elevation - Design Barrier Elevation
4. Estimated Delta results from NDE, the nearest (not exact) Record Barrier Elevation is compared to the LFR design elevation. Data presented as estimate only, not actual result.
5. NDE-Basis = No Design Elevation since these points were surveyed only to serve as a basis for the sand drainage layer and protective clay cap thickness measurements.
6. NLP = No LFR point for this location.
7. Boring Confirmed ≥ 1 ft thick are those locations where a Geoprobe was used to measure the barrier thickness ≥ 1 ft thick in August 2018.
8. Database survey elevations differed from Table B-1 PDF elevations.
9. Installation of the C-Borings occurred from April 8 to 18, 2003. During the completion of the borings, the locations were flagged. Following the completion of the borings, a topographical survey was completed by Harrington Land Surveyors on April 23, 2003. The 2003 surveying was the basis for tables B-1 and B-2 in the June 2008 Remedial Work Plan. Surveying performed by CQM in 2008 at the C-Boring locations prior to commencing work indicated that some of these elevations had changed, as noted.
10. CQM survey locations at or beyond limits of waste not shown on table since there is no barrier thickness at the limits of waste.

Johns Manville - Waukegan Plant
On-Site Landfill Closure - Fill Area 2 (Collection Basin)
Barrier Layer Design and Record Elevations

LFR RWP Dwg 10 C-Boring ID	LFR RWP Dwg 10 Point ID	CQM Dwg A-4 Point ID	Northing	Easting	2003 LFR RWP Table B-2 Design Barrier Elevation	2008 CQM Dwg A-4 Design Barrier Elevation	2008 CQM Dwg A-4 Record Barrier Elevation	Calculated Barrier Elevation Delta	Notes
NLP	NLP	1	2084099	1126212	NLP	597.00	597.10	0.10	
NLP	NLP	2	2084096	1126259	NLP	596.44	596.60	0.16	
NLP	NLP	3	2084096	1126309	NLP	597.32	597.51	0.19	Boring Confirmed ≥ 1 ft thick
NLP	NLP	4	2084096	1126359	NLP	598.22	598.40	0.18	
NLP	NLP	5	2084096	1126409	NLP	599.00	599.08	0.08	Boring Confirmed ≥ 1 ft thick
NLP	NLP	6	2084096	1126459	NLP	598.06	598.07	0.01	
NLP	NLP	7	2084096	1126509	NLP	597.07	597.19	0.12	Boring Confirmed ≥ 1 ft thick
NLP	NLP	8	2084096	1126559	NLP	596.08	596.10	0.02	
NLP	NLP	10	2084146	1126209	NLP	595.08	595.09	0.01	
NLP	NLP	11	2084146	1126259	NLP	595.98	596.00	0.02	Boring Confirmed ≥ 1 ft thick
NLP	NLP	12	2084146	1126309	NLP	596.89	597.01	0.12	
NLP	NLP	13	2084146	1126359	NLP	597.79	597.94	0.15	Boring Confirmed ≥ 1 ft thick
NLP	NLP	14	2084146	1126409	NLP	598.69	598.73	0.04	
NLP	NLP	15	2084146	1126459	NLP	597.89	597.90	0.01	Boring Confirmed ≥ 1 ft thick
NLP	NLP	16	2084146	1126509	NLP	596.90	596.97	0.07	
NLP	NLP	17	2084146	1126559	NLP	595.92	595.93	0.01	Boring Confirmed ≥ 1 ft thick
NLP	NLP	19	2084196	1126209	NLP	594.65	594.73	0.08	
NLP	NLP	20	2084196	1126259	NLP	595.55	595.61	0.06	
NLP	NLP	21	2084196	1126309	NLP	596.46	596.47	0.01	Boring Confirmed ≥ 1 ft thick
NLP	NLP	22	2084196	1126359	NLP	597.36	597.39	0.03	
NLP	NLP	23	2084196	1126409	NLP	598.26	598.27	0.01	Boring Confirmed ≥ 1 ft thick
NLP	NLP	24	2084196	1126459	NLP	597.72	597.78	0.06	
NLP	NLP	25	2084196	1126509	NLP	596.74	596.74	0.00	Boring Confirmed ≥ 1 ft thick
NLP	NLP	26	2084196	1126559	NLP	595.75	595.85	0.10	
NLP	NLP	28	2084246	1126209	NLP	594.61	594.63	0.02	
NLP	NLP	29	2084246	1126259	NLP	595.12	595.31	0.19	
NLP	NLP	30	2084246	1126309	NLP	596.02	596.18	0.16	
NLP	NLP	31	2084246	1126359	NLP	596.93	597.03	0.10	
NLP	NLP	32	2084246	1126409	NLP	597.83	597.96	0.13	
NLP	NLP	33	2084246	1126459	NLP	597.56	597.58	0.02	
NLP	NLP	34	2084246	1126509	NLP	596.57	596.69	0.12	
NLP	NLP	35	2084246	1126559	NLP	595.59	595.63	0.04	
NLP	NLP	37	2084296	1126259	NLP	594.69	594.76	0.07	
NLP	NLP	38	2084296	1126309	NLP	595.59	595.63	0.04	
NLP	NLP	39	2084296	1126359	NLP	596.50	596.59	0.09	
NLP	NLP	40	2084296	1126409	NLP	597.40	597.48	0.08	
NLP	NLP	41	2084296	1126459	NLP	597.39	597.39	0.00	
NLP	NLP	42	2084296	1126509	NLP	596.41	596.41	0.00	
NLP	NLP	43	2084296	1126559	NLP	595.42	595.43	0.01	
NLP	NLP	45	2084346	1126259	NLP	594.26	594.32	0.06	
NLP	NLP	46	2084346	1126309	NLP	595.16	595.16	0.00	
NLP	NLP	47	2084346	1126359	NLP	596.07	596.19	0.12	
NLP	NLP	48	2084346	1126409	NLP	596.97	596.99	0.02	
NLP	NLP	49	2084346	1126459	NLP	597.22	597.22	0.00	
NLP	NLP	50	2084346	1126509	NLP	596.24	596.24	0.00	
NLP	NLP	51	2084346	1126559	NLP	595.25	595.34	0.09	
NLP	NLP	53	2084396	1126259	NLP	593.83	593.99	0.16	
NLP	NLP	54	2084396	1126309	NLP	594.73	594.81	0.08	
NLP	NLP	55	2084396	1126359	NLP	595.62	595.62	0.00	
NLP	NLP	56	2084396	1126409	NLP	596.54	596.59	0.05	
NLP	NLP	57	2084396	1126459	NLP	597.05	597.06	0.01	
NLP	NLP	58	2084396	1126509	NLP	596.07	596.09	0.02	
NLP	NLP	59	2084396	1126559	NLP	595.09	595.10	0.01	
NLP	NLP	60	2084446	1126259	NLP	593.40	593.49	0.09	
NLP	NLP	61	2084446	1126309	NLP	594.30	594.39	0.09	
NLP	NLP	62	2084446	1126359	NLP	595.00	595.18	0.18	
NLP	NLP	63	2084496	1126309	NLP	593.87	594.03	0.16	
NLP	NLP	64	2084496	1126359	NLP	594.36	594.56	0.20	
NLP	NLP	67	2084546	1126309	NLP	593.44	593.56	0.12	
NLP	NLP	68	2084596	1126309	NLP	592.83	592.91	0.08	
NLP	NLP	69	2084646	1126309	NLP	591.13	591.29	0.16	
NLP	NLP	70	2084109	1126409	NLP	599.00	599.00	0.00	
NLP	NLP	71	2084159	1126416	NLP	598.70	598.71	0.01	
NLP	NLP	72	2084208	1126423	NLP	598.40	598.45	0.05	
NLP	NLP	73	2084258	1126430	NLP	598.10	598.19	0.09	
NLP	NLP	74	2084307	1126437	NLP	597.79	597.89	0.10	
NLP	NLP	75	2084257	1126444	NLP	597.49	597.50	0.01	
NLP	NLP	76	2084406	1126451	NLP	597.18	597.21	0.03	
NLP	NLP	77	2084118	1126192	NLP	595.00	595.29	0.29	
NLP	NLP	78	2084558	1126348	NLP	594.00	594.05	0.05	
NLP	NLP	107	2084585	1126304	NLP	593.00	593.02	0.02	
NLP	NLP	108	2084464	1126357	NLP	595.00	595.01	0.01	
NLP	NLP	109	2084121	1126188	NLP	594.90	595.13	0.23	

Johns Manville - Waukegan Plant
On-Site Landfill Closure - Fill Area 2 (Collection Basin)
Barrier Layer Design and Record Elevations

LFR RWP Dwg 10 C-Boring ID	LFR RWP Dwg 10 Point ID	CQM Dwg A-4 Point ID	Northing	Easting	2003 LFR RWP Table B-2 Design Barrier Elevation	2008 CQM Dwg A-4 Design Barrier Elevation	2008 CQM Dwg A-4 Record Barrier Elevation	Calculated Barrier Elevation Delta	Notes
NLP	NLP	110	2084170	1126198	NLP	594.66	594.74	0.08	
NLP	NLP	111	2084219	1126208	NLP	594.42	594.66	0.24	
NLP	NLP	112	2084268	1126218	NLP	594.18	594.22	0.04	
NLP	NLP	113	2084317	1126228	NLP	593.94	594.14	0.20	
NLP	NLP	114	2084366	1126237	NLP	593.68	593.71	0.03	
NLP	NLP	115	2084416	1126246	NLP	593.42	593.59	0.17	
NLP	NLP	116	2084465	1126260	NLP	593.15	593.29	0.14	
NLP	NLP	117	2084494	1126283	NLP	593.00	593.16	0.16	
NLP	NLP	118	2084561	1126299	NLP	592.50	592.62	0.12	
NLP	NLP	119	2084608	1126301	NLP	592.14	592.20	0.06	
C-59	1159	Beyond LOW	2084415	1126596	592.30	NA	NA	Beyond LOW	
C-60	1160	Near 58	2084414	1126498	594.24	NDE	596.09	1.85	Estimated Delta
C-61	1161	Near 56	2084413	1126400	594.21	NDE	596.59	2.38	Estimated Delta
C-62	1162	Near 54	2084410	1126298	592.40	NDE	594.81	2.41	Estimated Delta
C-63	1163	Near 63	2084510	1126323	591.99	NDE	594.03	2.04	Estimated Delta
C-64	1164	Near 107	2084580	1126326	591.39	NDE	593.02	1.63	Estimated Delta
C-65	1165	Near 37	2084322	1126273	592.71	NDE	594.76	2.05	Estimated Delta
C-66	1166	Near 39	2084294	1126377	594.83	NDE	596.59	1.76	Estimated Delta
C-67	1167	Near 41	2084289	1126487	594.86	NDE	597.39	2.53	Estimated Delta
C-68	1168	Beyond LOW	2084288	1126592	592.80	NA	NA	Beyond LOW	
C-69	1169	Beyond LOW	2084184	1126563	593.71	NA	NA	Beyond LOW	
C-72	1172	Near 15	2084173	1126473	595.53	NDE	597.90	2.37	Estimated Delta
C-73	1173	Near 13	2084173	1126356	595.49	NDE	597.94	2.45	Estimated Delta
C-74	1174	Near 21	2084195	1126286	594.05	NDE	596.47	2.42	Estimated Delta
C-75	1175	Beyond LOW	2084046	1126559	593.67	NA	NA	Beyond LOW	
C-76	1176	At LOW	2084067	1126460	596.20	NA	NA	At LOW	
C-77	1177	Beyond LOW	2084068	1126360	596.60	NA	NA	Beyond LOW	
C-78	1178	Beyond LOW	2084080	1126262	594.60	NA	NA	Beyond LOW	
C-79	1179	Beyond LOW	2084136	1126191	592.84	NA	NA	Beyond LOW	
C-80	1180	Near 112	2084264	1126220	592.26	NDE	594.22	1.96	Estimated Delta
C-81	1181	Beyond LOW	2084347	1126225	593.70	NA	NA	Beyond LOW	
C-82	1182	Beyond LOW	2084434	1126244	592.45	NA	NA	Beyond LOW	
C-83	1183	Near 117	2084529	1126267	590.84	NDE	593.16	2.32	Estimated Delta
C-84	1184	Near 119	2084626	1126292	592.60	NDE	592.20	-0.40	Estimated Delta
C-85	1185	Near 118	2084588	1126276	593.09	NDE	592.62	-0.47	Estimated Delta
LF-SB05	1191	Near 6	2084146	1126479	595.50	NDE	598.07	2.57	Estimated Delta
LF-SB06	1192	Near 48	2084376	1126431	595.10	NDE	596.99	1.89	Estimated Delta
LMW-08	1200	Beyond LOW	2084273	1126628	592.11	NA	NA	Beyond LOW	
LMW-09	NLP	Beyond LOW	Near LMW-08	Near LMW-08	592.20	NA	NA	Beyond LOW	
LMW-10	1201	Near 34	2084277	1126530	594.06	NDE	596.69	2.63	Estimated Delta

Notes:

1. NA = Not Applicable, either beyond limit of waste (Beyond LOW) or at limit of waste (At LOW).
2. NDE = No Design Elevation since not surveyed at exact location.
3. Delta = Record Barrier Elevation - Design Barrier Elevation
4. Estimated Delta results from NDE, the nearest (not exact) Record Barrier Elevation is compared to the LFR design elevation. Data presented as estimate only, not actual result.
5. NLP = No LFR point for this location.
6. Boring Confirmed ≥ 1 ft thick are those locations where a Geoprobe was used to measure the barrier thickness ≥ 1 ft thick in August 2018.
7. CQM survey locations at or beyond limits of waste not shown on table since there is no barrier thickness at the limits of waste.

ATTACHMENT C

Responses 01g: USEPA Email

From:	Ohl, Matthew
To:	Dull, Timothy
Cc:	Myers, Scott; Dave Peterson (dmpete@dmpete.cnc.net); Charlene Falco
Subject:	RE: Johns Manville Corp. On-site Landfill (OSL) Closure Report Review / Request for Extension
Date:	Monday, August 13, 2018 11:16:24 AM

Good morning:

We concur with the request. Thank you for all of your efforts in moving these reports forward. We hope to provide completion letters soon after resolving comments on the reports.

Thank you,

Matt

Matthew J. Ohl
Remedial Project Manager
United States Environmental Protection Agency
77 West Jackson Boulevard, SR-6J
Chicago, IL 60604-3590

phone: 312.886.4442
fax: 312.692.2447
e-mail: ohl.matthew@epa.gov

From: Dull, Timothy [mailto:timothy.dull@aecom.com]
Sent: Friday, August 10, 2018 9:22 AM
To: Ohl, Matthew <ohl.matthew@epa.gov>
Cc: Myers, Scott <Scott.Myers@jm.com>; Dave Peterson (dmpete@dmpete.cnc.net) <dmpete@dmpete.cnc.net>
Subject: Johns Manville Corp. On-site Landfill (OSL) Closure Report Review / Request for Extension

Hi Matt,

I am writing to request a one-week extension to provide a response to comments on the On-site Landfill (OSL) Closure Report received on July 26, 2018. Our project team plans to conduct geoprobe work the week of August 13, 2018 to gather information to support our response to comments. We plan to submit a response to comments on August 23, 2018. The revised closure report will be submitted once comments are adequately addressed.

We appreciate your consideration of this request.

Sincerely,

Tim Dull, P.E.
Senior Project Manager, Environment, Midwest
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Appendix I

On-Site Landfill Response to October 19, 2018 Comments (RTC #4)

AECOM
303 East Wacker Drive
Chicago, IL 60601
aecom.com

November 9, 2018 *(Submitted as part of Final Closure Report only, not as a separate stand-alone letter)*

Mr. Matthew J. Ohl
Remedial Project Manager
United States Environmental Protection Agency Region 5
77 West Jackson Boulevard, SR-6J
Chicago, Illinois 60604-3590

Subject: **Response to U.S. EPA Comments Received October 19, 2018**
Final Closure Report, Non-Asbestos Containing On-Site Landfill, Permit Exempt "815" Facility #0971900014
Johns Manville, Waukegan, Lake County, Illinois

Dear Mr. Ohl:

AECOM Technical Services, Inc. (AECOM) is providing this document on behalf of Johns Manville (JM) to respond to comments provided by the U.S. Environmental Protection Agency (USEPA) on October 19, 2018 to the Response to Comments dated September 26, 2018 for the Final Closure Report for the Non-Asbestos Containing On-Site Landfill ("On-Site Landfill"), a permit exempt "815" facility at the former Johns Manville manufacturing facility located in Waukegan, Illinois (#0971900014) dated March 31, 2017. Remediation work was completed in accordance with the Final Phase II Remedial Work Plan (Revision 1) dated June 20, 2008 (RWP), and satisfactorily meets the full requirements of the First Amended Consent Decree, the Adjusted Standard Order dated December 6, 2007, and the general requirements for existing landfills set forth in 35 IAC Part 814, Subparts A and C. The Final Closure Report and this response to comments address work that was completed subsequent to approval of the RWP by the EPA.

References

a. *Response to USEPA Comments Received September 13, 2018 – Final Closure Report, Non-Asbestos Containing On-Site Landfill, Permit Exempt "815" Facility #0971900014, Johns Manville, Waukegan, Lake County, Illinois, dated 26 Sep. 2018.*

b. *USEPA Comments on the Final Closure Report, Non-Asbestos Containing On-Site Landfill, Permit Exempt "815" Facility #0971900014, Johns Manville, Waukegan, Lake County, Illinois, e-mail dated 13 Sep. 2018.*

c. Response to USEPA Comments Received July 26, 2018 – Final Closure Report, Non-Asbestos-Containing On-Site Landfill, Permit Exempt "815" Facility #0971900014, Johns Manville, Waukegan, Illinois, dated 22 Aug. 2018.

d. USEPA Comments e-mail dated 26 Jul 2018 including (as an attachment) Memorandum for Record: Subject: Review of Response to December 5, 2017 USEPA Comments Final Closure Report, Non-Asbestos-Containing On-Site Landfill, Permit Exempt "815" Facility #0971900014, Johns Manville, Waukegan, Illinois, dated 16 Jul. 2018.

e. Response to December 5, 2017 USEPA Comments – Final Closure Report, Non-Asbestos-Containing On-Site Landfill, Permit Exempt "815" Facility #0971900014, Johns Manville, Waukegan, Illinois, dated 25 Apr. 2018.

f. USEPA Comments on the Final Closure Report, Non-Asbestos-Containing On-Site Landfill, Permit Exempt "815" Facility #0971900014, Johns Manville, Waukegan, Illinois, e-mail dated 5 Dec. 2017.

Introduction: *The final closure report for the On-Site Landfill (OSL) on the Johns Manville property at 1871 North Pershing Road in Waukegan, Illinois was prepared by AECOM Technical Services, Inc. (AECOM) on behalf of Johns Manville (JM). The report was submitted to the U.S. Environmental Protection Agency (USEPA) for review and the Illinois Environmental Protection Agency and the U.S. Army Corps of Engineers (USACE), Chicago District, Hydraulics and Environmental Engineering Section (TSD-DH) assisted with the review and provided comments in previous memoranda (references 1.b., 1.d., and 1.f.). AECOM prepared responses to the comments in corresponding documents (references 1.a., 1.c. and 1.e.). The following comments and recommendations are in regards to the most recent response from AECOM (reference 1.a):*

Comment 01: *In Appendix D (Phase II Remedial Work Plan Regulatory Correspondence) of the OSL final closure report there is a letter that shows the USEPA reviewed the Final Phase II Remedial Work Plan (Work Plan), and one of the comments notes that the barrier layer must be verified to have a thickness of twelve (12) inches after cut and fill activities. An earlier response (reference 1.c.) explains that in an effort to demonstrate that the constructed barrier clay was a minimum of one-foot thick, additional field notes were procured, but such data were absent. Due to this absent* *data, a Geoprobe® was used to help confirm the barrier clay was at least twelve (12) inches thick. In addition, Response 01a of the most recent document (reference 1.a.) explains that when the survey point numbering system was changed, "There was no coordination of renumbering with the USEPA as this was a minor modification," but the lack of coordination does not appear to conform with the procedures for modifications and notifications discussed in the Construction Compliance Plan (CCP) in Appendix D of the Work Plan, and Section 5.0 (Documentation Requirements) of the CCP specifies that "All project modification changes (major or minor) must be shown on the drawings." It is evident from these examples that errors were made when following certain procedures and when recording information, and there should have been better communication and coordination between the USEPA and JM, especially with respect to project changes and documentation requirements.*

The OSL final closure report is supposed to provide the documentation to confirm the remedial activity was completed in accordance with the Work Plan and regulatory requirements. Although some deficiencies and problems with the documentation were identified, the information that was submitted generally suggests the project was constructed correctly. As explained in the Construction Completion Report (CCR) in Appendix E of the OSL final closure report, the one-foot thick low permeability barrier layer was overlain by a one-foot thick sand drainage layer that was further overlain by a three (3) foot thick protective layer of compacted clay, and then a vegetative cover layer was established over the protective layer. The construction work for the OSL final cover was completed back in 2008, subsequent inspections have not identified any major issues, and the final cover appears to be performing as designed. As a consequence, at the present time, additional post-construction investigations and/or testing to improve the documentation does not appear to be necessary or warranted. Nevertheless, as a result of the deficiencies and problems with the documentation, if there are future remedial activities with such requirements, it is recommended that the USEPA and JM coordinate prior to the start of operations to develop a detailed quality control and quality assurance (QA/QC) plan. It is critical for this plan to include specific instructions and requirements that are clearly written and are unambiguous, and the plan needs to contain procedures for verification and appropriate corrective actions to ensure the information is properly recorded, reviewed, and submitted in a timely manner.

Response 01: Noted.

Comment 02: *An earlier response (reference 1.c.) explained that the barrier design elevations from Figure 10 of Work Plan were used to create a topographic surface over the OSL. Response 01 of the most recent response provided new information that a survey of existing conditions was performed on April 1, 2008 to document pre-construction conditions and determine whether any elevations had changed since 2003. This response further says "Some of the elevations had changed, and, therefore, some of the design barrier elevations were modified." Although the approved Work Plan (Revision 1) was dated June 20, 2008, the drawings included with the contract specifications in Appendix C are based on the old elevation survey performed in 2003. The table in Attachment B of the latest response contains the coordinates and cross-references between the 2003 and 2008 surveys, as well as the design and record elevations. It is important to recognize that this table provides the coordinates for the points (boring locations) shown in the 2003 survey, because they were not previously included with the Work Plan or OSL final closure report. Evidently the construction drawings for the contract shown in the Work Plan were subsequently modified to the drawings with the design elevations based on Figure 10 of the Work Plan and the April 1, 2008 pre-construction survey. As mentioned above, it seems that JM viewed such modifications as minor, so there was no coordination with the USEPA, and the OSL final closure report did not previously describe these changes. Notes below the table in Attachment B for Fill Area 1 of the response indicate there may be a database with topographical survey data for the 2003 and, possibly, the 2008 surveys. Nevertheless, in Response 01c, it is speculated that at one of the points, LFR Boring C-28, there was 0.11 feet of settlement from 2003 to 2008, and it further explains that the reason the amount of settlement is unknown is because detailed records explaining this change could not be located. Although detailed records for LFR Boring C-28 could not be located, if there are other records or documentation with measurements, survey or database information, contractual changes, or other documents pertaining to the construction of the OSL that have not previously been included, it is recommended that all such documentation be amended to the OSL final closure report to help confirm the remedial activity was completed in accordance with the Work Plan and regulatory requirements.*

Response 02: All such documentation will be amended to the OSL Final Closure Report.

Comment 03: *Response 01 contains six (6) points in Fill Area 1 for which the barrier design elevations changed since 2003. At two (2) of these points, LFR Borings C-31 and C-52,* *the barrier design elevations decreased, and, at the other four (4) points, i.e., LFR Borings C-16, C-28, C-43, and C-47, the barrier design elevations increased. The table in Attachment B and Table B-1 of the Work Plan both indicate that LFR Boring C-52 is beyond the limits of the waste. In addition, Response 01 suggests that LFR Boring C-52 is located near CQM Pt. 1033, but this was most likely a typographical error. The reason it is likely an error is because CQM Pt 1033 is located near LFR Boring C-47, and "(Near CQM Pt. 1033)" was repeated for LFR Borings C-47 and C-52. Table B-1 of the Work Plan indicates that the ground surface elevation of LFR Boring C-52 was 628.8 ft., and this was the same elevation as the top of the waste or the top of the CERCLA cover, whichever is higher. Response 01 and the notes in the table in Attachment B both indicate that the design barrier elevation at LFR Boring C-52 decreased to 628.44 ft., but, since this survey point was beyond the limits of the waste, the 0.36 ft. reduction may be attributed to settlement or differences in the 2003 and 2008 survey locations. It is therefore recommended that the OSL final closure report documentation provide verification that LFR Boring C-52 is beyond the limits of the waste and it is not located near CQM Pt. 1033. The documentation also needs to explain the reason it was determined that there needed to be a 0.36 ft. reduction in the barrier design elevation at this location.*

Response 03: LFR Boring C-52 is not located near CQM Point 1033, this was a typographical error. LFR Boring C-52 is located beyond the limit of waste as shown in the RWP on Figures 3, 9 and 10 and consistent with Table B-1 that indicated no barrier thickness was necessary. Table B-1 also indicates that the elevation provided was the existing ground elevation (628.8 ft ASL). No reduction in barrier elevation was necessary since no barrier was necessary at C-52. It appears C-52 settled between 2003 and 2008 from 628.8 ft ASL to 628.44 ft ASL (by 0.36 ft). This information will be provided in the OSL Final Closure Report.

Comment 04: It was noted above that the table in Attachment B indicates LFR Boring C-47 is located near CQM Pt 1033. There was no design elevation in this table if the point was not surveyed at the exact location, but Response 01 suggests that at a nearby point, CQM Pt. 1033, the elevation of LFR Boring C-47 changed from 617.5 ft. to 617.59 ft. Using the coordinates on Drawing A-4 in Appendix A of Appendix E of the OSL final closure report for CQM Pt. 1033 (2083769.60, 1126567.10) and the coordinates in the table in Attachment B for LFR Boring C-47 (2083778, 1126606), it appears that CQM Pt. 1033 is located roughly 40 feet west of LFR Boring C-47. Consequently, the change in elevation may be a result of the slope and spatial *variation rather than uplift. The LFR Borings (2003 survey points) provides reasonably precise locations (coordinates) where measurements determined the elevation of the top of the waste or the top of the CERCLA cover, whichever was higher, and Section 3.1.1 (Site Preparation and Barrier Layer Construction) of the Work Plan explains that the calculations for the design barrier layer shown in Tables B-1 and B-2 were based upon the results from the soil borings. It is therefore recommended that the table in Attachment B be updated for CQM points "near" LFR Borings, so the documentation provides the approximate distances and directions between these coordinates, as well as a drawing showing both locations.*

Response 04: (Attachment A) **Attachment A** contains a drawing overlaying all LFR points and CQM points. The table on the drawing identifies the coordinates of all the points. These coordinates, and the drawing scale, can be used to measure distances and directions between LFR points and CQM points. This drawing will be included in the OSL final Closure Report.

Comment 05: *Although the JM CERCLA O&M Manual, Revision 3, indicates the soil cover shall be visually inspected for differential settlement and asbestos migration up through the soil cover resulting from the freeze-thaw phenomenon, it does not describe plans to perform survey measurements at the site to assess the amount of settlement or differential settlement. While visual inspections are critical for identifying ponding and other visually recognizable issues, Subpart A: General Standards for All Landfills, of Title 35 of the Illinois Administrative Code (IAC), Section 811.104 (Survey Controls) requires vertical elevations to be periodically checked by a professional land surveyor. According to Table 1 (Chronology of Events and Construction Activities) of the OSL final closure report, interim clay was placed over the fill areas in April 2003. The settlement could be evaluated if the 2008 survey performed prior to the start of the construction activities included the same data points as the 2003 survey and the OSL final closure report included corresponding ground surface elevations. Section 2.2 (Property History) of the OSL final closure report explains that the predominant waste placed in the OSL was calcium silicate, an inert and nonhazardous material, so the substantial settlement that commonly occurs at municipal solid waste landfills should not be anticipated. Paragraph 9.0 (Conclusion) of the CCR in Appendix E of the OSL final closure report further suggests that the surface of the OSL is stable. However, the 6 December 2007 Opinion and Order from the Illinois Pollution Control Board mentions that the landfill received some putrescible waste and the OSL is located within a CERCLA landfill. As a consequence,* *as described in 35 IAC Section 811.104, it recommended that a requirement to conduct periodic surveys no less frequently than once in five (5) years be included with the O&M activities. Such surveys should be conducted between one to two years in advance of each Five-year Review (FYR) for the site so the results may be incorporated in the FYR.*

Response 05: (Attachment B) The Fifth 5-Year Post-Remedial Construction Ambient Air, Groundwater, Surface Water, and Soil Monitoring Event Report 2017 was submitted to the U.S. EPA in February 2018. The Sixth 5-Year Monitoring Event will be completed in 2022. Consequently, the OSL will be surveyed in 2022 and 2027 to the same CQM points presented on Drawing A-6 (Protective Layer) in Appendix A of Appendix E of the Final OSL Closure Report. If the settlement between the 2022 and 2027 surveying events is less than or equal to 0.25 feet (3 inches), then those particular points will no longer be surveyed. Surveying will continue on the remaining points every five years until the settlement is less than or equal to 0.25 feet between surveying events.

This information will be contained within a revised O&M Manual. A revised O&M Manual encompassing all CERCLA obligations (not just those associated with the OSL) will be provided following approval of the Southwest Sites Closure Report to allow for any further modifications. **Attachment B** contains a figure identifying the locations for future surveying of the OSL.

Comment 06: The last comment of reference 1.b. recommended additional information be provided in the OSL final closure report to explain the reason large portions of the barrier layer in Fill Areas 1 and 2, located outside the relocation areas shown in Attachment J (of reference 1.c.) were not disturbed and were not compacted or tested for density prior to placement of the sand drainage layer. In Response 02, it says "Clearing and grubbing of the OSL resulted in vegetation that was approximately two inches high and left the barrier clay intact. Therefore, barrier clay was not tested following clearing and grubbing." Typically, clearing and grubbing with heavy equipment destroys and removes vegetation. A portion of the soil is frequently removed along with the vegetative layer since the roots can extend several inches into the soil layer. As a consequence, the documentation in the OSL final closure report needs to explain the reasons these activities would result in vegetation that was approximately two (2) inches high and would leave the barrier clay intact. Furthermore, it is recommended that the documentation explain the reason the barrier clay would be intact at locations such as at LFR Boring C-28, where the *ground surface elevation in the 2003 survey was 627.4 ft. and roughly 2.9 ft. of clay was cut and removed in order to reach the record barrier elevation at this location of 624.52 ft.*

Response 06: Clearing and grubbing of the OSL was performed by a skid steer equipped with a mowing blade. Roots were not pulled from the soil, the vegetation was only mowed. Therefore, the barrier layer was not damaged.

Since there is lacking data to support the final elevation at LFR Boring C-28, AECOM utilized a hand auger to bore a hole at this location on October 24, 2018. The results of the hand auger boring confirmed a minimum of 3 feet of protective clay cover (37 inches were measured), 1 foot of sand drainage layer (12 inches were measured), and 1 foot of barrier clay were present (15 inches were measured). This information will be noted in the OSL Final Closure Report.

If you have any questions, please contact me at (312) 861-4030.

Sincerely,

Tim Dull, P.E.
Senior Project Manager
timothy.dull@aecom.com

Attachments

Attachment A - Response 04: OSL LFR Boring and CQM Point Locations
Attachment B - Response 05: Five Year Protective Survey Locations

cc: Scott Myers, Johns Manville, Scott.Myers@jm.com (electronic copy only)
Dave Peterson, DMP, dmpete@dmpete.cnc.net (electronic copy only)

ATTACHMENT A

Responses 04: OSL LFR Boring and CQM Point Locations

Area 1 CQM Points

Point No.	Coordinate North	Coordinate East	Point No.	Coordinate North	Coordinate East	Point No.	Coordinate North	Coordinate East
1001	2083601.39	1125531.87	1074	2083558.18	1125715.64	1147	2083644.90	1126604.19
1002	2083533.08	1125698.37	1075	2083560.02	1125610.78	1148	2083595.75	1126588.31
1003	2083560.80	1125843.53	1076	2083575.21	1125610.00	1149	2083572.99	1126580.93
1004	2083579.59	1126076.07	1077	2083567.94	1125508.72	1150	2083536.75	1126569.08
1005	2083564.95	1126088.45	1078	2083863.12	1126498.33	1151	2083502.89	1126531.21
1006	2083540.43	1126141.71	1079	2083836.21	1126396.69	1152	2083488.72	1126486.04
1007	2083604.91	1126052.48	1080	2083818.77	1126298.51	1153	2083475.81	1126441.88
1008	2083624.47	1126065.40	1081	2083776.19	1126398.10	1154	2083467.80	1126411.32
1009	2083599.05	1126090.72	1082	2083786.76	1126501.38	1155	2083465.25	1126366.39
1010	2083609.53	1126130.18	1083	2083808.09	1126196.58	1156	2083464.28	1126316.87
1011	2083642.70	1126163.22	1084	2083802.01	1126095.89	1157	2083465.74	1126273.50
1012	2083582.86	1126221.64	1085	2083786.88	1125999.07	1158	2083467.13	1126236.51
1013	2083542.79	1126232.77	1086	2083601.37	1125428.14	1159	2083467.69	1126221.24
1014	2083501.65	1126287.37	1087	2083650.00	1125550.00	1160	2083473.85	1126194.06
1015	2083511.17	1126313.73	1088	2083550.00	1125650.00	1161	2083481.62	1126160.75
1016	2083540.89	1126356.84	1089	2083600.00	1125650.00	1162	2083490.97	1126117.53
1017	2083567.23	1126449.45	1090	2083650.00	1125650.00	1163	2083491.64	1126058.91
1018	2083512.29	1126403.94	1091	2083700.00	1125650.00	1164	2083498.29	1126034.09
1019	2083554.56	1126499.06	1092	2083600.00	1125700.00	1165	2083491.04	1125991.12
1020	2083600.45	1126505.89	1093	2083650.00	1125700.00	1166	2083492.47	1125988.07
1021	2083654.86	1126537.02	1094	2083700.00	1125700.00	1167	2083492.79	1125964.64
1022	2083718.54	1126530.96	1095	2083600.00	1125750.00	1168	2083493.32	1125918.73
1023	2083723.20	1126442.00	1096	2083650.00	1125750.00	1169	2083493.97	1125863.00
1024	2083708.44	1126372.04	1097	2083700.00	1125750.00	1170	2083494.68	1125864.05
1025	2083638.68	1126348.35	1098	2083600.00	1125800.00	1171	2083495.19	1125761.20
1026	2083647.94	1126279.35	1099	2083650.00	1125800.00	1172	2083495.70	1125714.18
1027	2083710.45	1126250.93	1100	2083600.00	1125850.00	1173	2083496.36	1125666.67
1028	2083712.42	1126195.19	1101	2083650.00	1125850.00	1174	2083496.79	1125630.07
1029	2083730.55	1126139.31	1102	2083700.00	1125850.00	1175	2083497.33	1125586.80
1030	2083745.81	1126259.75	1103	2083750.00	1125850.00	1176	2083510.84	1125554.51
1031	2083820.50	1126304.73	1104	2083600.00	1125900.00	1177	2083524.89	1125526.12
1032	2083844.61	1126340.26	1105	2083650.00	1125900.00	1178	2083545.26	1125484.64
1033	2083769.60	1126567.10	1106	2083700.00	1125900.00	1179	2083563.87	1125447.08
1034	2083860.69	1126261.48	1107	2083800.00	1125900.00	1180	2083583.16	1125407.99
1035	2083850.41	1126179.65	1108	2083550.00	1125950.00	1181	2083603.87	1125382.95
1036	2083815.16	1126130.35	1109	2083700.00	1125950.00	1182	2083620.87	1125371.52
1037	2083804.16	1126066.18	1110	2083850.00	1125950.00	1183	2083662.64	1125373.04
1038	2083809.12	1126031.54	1111	2083800.00	1126000.00	1184	2083687.07	1125375.95
1039	2083781.32	1125980.01	1112	2083850.00	1126000.00	1185	2083749.14	1125400.42
1040	2083710.71	1125996.50	1113	2083650.00	1126000.00	1186	2083767.76	1125422.09
1041	2083762.53	1125939.80	1114	2083700.00	1126050.00	1187	2083780.81	1125461.03
1042	2083801.44	1125968.99	1115	2083750.00	1126050.00	1188	2083875.00	1125484.04
1043	2083732.90	1125878.87	1116	2083850.00	1126050.00	1189	2083798.05	1125507.11
1044	2083750.79	1125797.02	1117	2083650.00	1126100.00	1190	2083798.22	1125527.76
1045	2083771.44	1125780.31	1118	2083700.00	1126100.00	1191	2083787.80	1125585.03
1046	2083753.38	1125661.76	1119	2083750.00	1126100.00	1192	2083790.48	1125635.30
1047	2083688.67	1125528.19	1120	2083550.00	1126200.00	1193	2083781.33	1125686.60
1048	2083684.10	1125438.30	1121	2083650.00	1126200.00	1194	2083777.37	1125733.67
1049	2083745.57	1125491.87	1122	2083750.00	1126200.00	1195	2083790.51	1125759.32
1050	2083701.92	1126557.69	1123	2083800.00	1126250.00	1196	2083798.46	1125784.70
1051	2083595.35	1126530.97	1124	2083550.00	1126300.00	1197	2083803.10	1125811.58
1052	2083605.37	1126433.09	1125	2083600.00	1126300.00	1198	2083818.15	1125838.74
1053	2083606.66	1126224.93	1126	2083700.00	1126300.00	1199	2083835.81	1125900.49
1054	2083619.02	1125979.37	1127	2083600.00	1126350.00	1200	2083893.30	1125932.09
1055	2083640.37	1125782.79	1128	2083750.00	1126350.00	1201	2083895.43	1125971.39
1056	2083655.10	1125584.45	1129	2083800.00	1126350.00	1202	2083895.62	1125997.12
1057	2083652.15	1125484.40	1130	2083550.00	1126400.00	1203	2083894.04	1126039.98
1058	2083656.91	1125392.34	1131	2083600.00	1126400.00	1204	2083878.72	1126098.41
1059	2083709.12	1126363.27	1132	2083650.00	1126400.00	1205	2083868.73	1126169.02
1060	2083699.37	1126162.62	1133	2083550.00	1126450.00	1206	2083875.42	1126202.71
1061	2083712.84	1125855.63	1134	2083600.00	1126450.00	1207	2083878.55	1126243.18
1062	2083722.42	1125761.78	1135	2083650.00	1126450.00	1208	2083873.61	1126289.71
1063	2083731.61	1125663.99	1136	2083700.00	1126450.00	1209	2083868.00	1126340.53
1064	2083739.63	1125568.74	1137	2083800.00	1126450.00	1210	2083864.01	1126377.96
1065	2083747.75	1125463.90	1138	2083850.00	1126450.00	1211	2083867.55	1126414.25
1066	2083516.76	1126483.80	1139	2083650.00	1126500.00	1212	2083872.29	1126434.07
1067	2083482.19	1126402.55	1140	2083700.00	1126500.00	1213	2083875.68	1126472.67
1068	2083499.70	1126309.72	1141	2083800.00	1126500.00	1214	2083873.34	1126505.25
1069	2083515.21	1126211.66	1142	2083850.00	1126550.00	1215	2083878.61	1126544.88
1070	2083526.12	1126107.41	1143	2083811.99	1126618.09	1216	2083877.02	1126586.17
1071	2083550.51	1126022.04	1144	2083802.34	1126608.35	1217	2083879.77	1126615.12
1072	2083563.00	1125914.16	1145	2083756.31	1126595.58	1218	2083857.80	1126617.40
1073	2083551.29	1125813.32	1146	2083699.78	1126599.97			

Area 1 LFR Points

Point No.	Coordinate North	Coordinate East
C-01	2083456.00	1126114.00
C-02	2083702.00	1126558.00
C-03	2083708.00	1126455.00
C-04	2083595.00	1126531.00
C-05	2083605.00	1126433.00
C-06	2083609.00	1126339.00
C-07	2083607.00	1126225.00
C-08	2083619.00	1126127.00
C-09	2083620.00	1126080.00
C-10	2083619.00	1125979.00
C-11	2083639.00	1125883.00
C-12	2083640.00	1125783.00
C-13	2083649.00	1125684.00
C-14	2083655.00	1125584.00
C-15	2083652.00	1125484.00
C-16	2083657.00	1125392.00
C-17	2083709.00	1126363.00
C-18	2083706.00	1126262.00
C-19	2083699.00	1126163.00
C-20	2083698.00	1126060.00
C-21	2083703.00	1125952.00
C-22	2083713.00	1125856.00
C-23	2083722.00	1125762.00
C-24	2083732.00	1125664.00
C-25	2083740.00	1125569.00
C-26	2083748.00	1125464.00
C-27	2083517.00	1126484.00
C-28	2083482.00	1126403.00
C-29	2083500.00	1126310.00
C-30	2083515.00	1126212.00
C-31	2083526.00	1126107.00
C-32	2083551.00	1126022.00
C-33	2083563.00	1125914.00
C-34	2083551.00	1125813.00
C-35	2083558.00	1125716.00
C-36	2083560.00	1125611.00
C-37	2083575.00	1125610.00
C-38	2083568.00	1125509.00
C-39	2083860.00	1126607.00
C-40	2083875.00	1126598.00
C-41	2083863.00	1126498.00
C-42	2083875.00	1126395.00
C-43	2083836.00	1126397.00
C-44	2083819.00	1126299.00
C-45	2083776.00	1126398.00
C-46	2083787.00	1126501.00
C-47	2083778.00	1126606.00
C-48	2083775.00	1126639.00
C-49	2083808.00	1126197.00
C-50	2083802.00	1126096.00
C-51	2083787.00	1125999.00
C-52	2083844.00	1125893.00
C-53	2083805.00	1125798.00
C-54	2083781.00	1125700.00
C-55	2083788.00	1125598.00
C-56	2083816.00	1125498.00
C-57	2083788.00	1125377.00
C-58	2083601.00	1125428.00
C-86	2083679.00	1125856.00
LF-SB01	2083664.00	1126347.00
LF-SB02	2083610.00	1126170.00
LF-SB03	2083669.00	1125946.00
LF-SB04	2083654.00	1125644.00
LGW-01	2083661.00	1126370.00

Area 2 CQM Points

Point No.	North	East	Point No.	North	East
1	2084098.87	1126211.56	79	2084038.13	1126626.53
2	2084095.52	1126259.36	80	2084037.88	1126632.53
3	2084095.52	1126309.36	81	2084095.89	1126628.87
4	2084095.52	1126359.36	82	2084095.30	1126634.85
5	2084095.52	1126409.36	83	2084145.93	1126630.89
6	2084095.52	1126459.36	84	2084145.45	1126636.88
7	2084095.52	1126509.36	85	2084195.62	1126632.91
8	2084095.52	1126559.36	86	2084195.18	1126638.89
9	2084095.52	1126609.36	87	2084244.80	1126634.90
10	2084145.52	1126209.36	88	2084296.34	1126636.98
11	2084145.52	1126259.36	89	2084296.03	1126642.97
12	2084145.52	1126309.36	90	2084345.03	1126638.95
13	2084145.52	1126359.36	91	2084345.16	1126644.96
14	2084145.52	1126409.36	92	2084396.59	1126641.04
15	2084145.52	1126459.36	93	2084395.48	1126647.00
16	2084145.52	1126509.36	94	2084445.85	1126643.03
17	2084145.52	1126559.36	95	2084445.34	1126649.02
18	2084145.52	1126609.36	96	2084479.46	1126644.39
19	2084195.52	1126209.36	97	2084484.18	1126650.59
20	2084195.52	1126259.36	98	2084487.97	1126606.70
21	2084195.52	1126309.36	99	2084494.23	1126608.12
22	2084195.52	1126359.36	100	2084491.45	1126560.06
23	2084195.52	1126409.36	101	2084498.99	1126425.55
24	2084195.52	1126459.36	102	2084504.66	1126428.89
25	2084195.52	1126509.36	103	2084522.22	1126409.06
26	2084195.52	1126559.36	104	2084525.02	1126414.43
27	2084195.52	1126609.36	105	2084777.41	1126349.61
28	2084245.52	1126209.36	106	2084777.89	1126355.59
29	2084245.52	1126259.36	107	2084585.29	1126303.97
30	2084245.52	1126309.36	108	2084463.76	1126356.77
31	2084245.52	1126359.36	109	2084121.22	1126187.77
32	2084245.52	1126409.36	110	2084170.18	1126197.87
33	2084245.52	1126459.36	111	2084219.15	1126207.98
34	2084245.52	1126509.36	112	2084268.12	1126218.09
35	2084245.52	1126559.36	113	2084317.14	1126227.94
36	2084245.52	1126609.36	114	2084366.32	1126236.94
37	2084295.52	1126259.36	115	2084415.50	1126245.94
38	2084295.52	1126309.36	116	2084464.68	1126254.94
39	2084295.52	1126359.36	117	2084493.71	1126260.26
40	2084295.52	1126409.36	118	2084560.50	1126282.80
41	2084295.52	1126459.36	119	2084607.87	1126298.79
42	2084295.52	1126509.36	120	2084676.45	1126301.10
43	2084295.52	1126559.36	121	2084583.67	1126338.40
44	2084295.52	1126609.36	122	2084497.12	1126376.03
45	2084345.52	1126259.36	123	2084435.65	1126441.23
46	2084345.52	1126309.36	124	2084446.87	1126562.60
47	2084345.52	1126359.36	125	2084422.31	1126591.96
48	2084345.52	1126409.36	126	2084320.78	1126589.44
49	2084345.52	1126459.36	127	2084221.44	1126580.78
50	2084345.52	1126509.36	128	2084131.81	1126573.62
51	2084345.52	1126559.36	129	2084060.25	1126529.25
52	2084345.52	1126609.36	130	2084073.11	1126432.36
53	2084395.52	1126259.36	131	2084084.04	1126233.61
54	2084395.52	1126309.36	132	2084140.60	1126203.47
55	2084395.52	1126359.36	133	2084222.83	1126204.54
56	2084395.52	1126409.36	134	2084319.94	1126221.84
57	2084395.52	1126459.36	135	2084414.85	1126249.22
58	2084395.52	1126509.36	136	2084514.01	1126253.21
59	2084395.52	1126559.36	137	2084627.77	1126268.43
60	2084445.52	1126259.36	138	2084438.84	1126401.89
61	2084445.52	1126309.36	139	2084461.98	1126383.25
62	2084445.52	1126359.36	140	2084453.64	1126597.81
63	2084495.52	1126309.36	141	2084358.43	1126589.71
64	2084495.52	1126359.36	142	2084274.39	1126587.72
65	2084492.67	1126482.23	143	2084074.16	1126560.33
66	2084497.46	1126559.54	144	2084058.96	1126468.51
67	2084545.52	1126309.36	145	2084070.81	1126404.74
68	2084595.52	1126309.36	146	2084074.05	1126330.72
69	2084645.52	1126309.36	147	2084098.00	1126196.74
70	2084109.22	1126409.16	148	2084119.54	1126183.62
71	2084158.74	1126416.11	149	2084198.25	1126193.55
72	2084208.25	1126423.05	150	2084278.26	1126208.58
73	2084257.76	1126430.00	151	2084375.78	1126245.15
74	2084307.27	1126436.98	152	2084459.33	1126247.26
75	2084356.78	1126443.98	153	2084582.05	1126276.27
76	2084406.29	1126450.97	154	2084082.46	1126278.68
77	2084117.90	1126191.69	155	2084437.98	1126516.41
78	2084557.99	1126347.72			

Area 2 LFG Points

Point No.	North	East
C-59	2084415.00	1126596.00
C-60	2084414.00	1126498.00
C-61	2084413.00	1126400.00
C-62	2084410.00	1126298.00
C-63	2084510.00	1126326.00
C-64	2084580.00	1126326.00
C-65	2084322.00	1126273.00
C-66	2084294.00	1126377.00
C-67	2084289.00	1126487.00
C-68	2084288.00	1126592.00
C-69	2084184.00	1126563.00
C-72	2084173.00	1126473.00
C-73	2084173.00	1126356.00
C-74	2084195.00	1126286.00
C-75	2084046.00	1126559.00
C-76	2084067.00	1126480.00
C-77	2084068.00	1126360.00
C-78	2084080.00	1126262.00
C-79	2084136.00	1126191.00
C-80	2084264.00	1126220.00
C-81	2084347.00	1126225.00
C-82	2084434.00	1126244.00
C-83	2084529.00	1126267.00
C-84	2084626.00	1126292.00
C-85	2084588.00	1126276.00
F-SB0	2084146.00	1126479.00
F-SB0	2084376.00	1126431.00

LEGEND

LIMITS OF WASTE

594 EXISTING CONDITIONS CONTOURS

C_44 LFR POINT NUMBER AND LOCATION

1140 CQM POINT NUMBER AND LOCATION

NOTES:

1. EXISTING CONDITIONS WERE SURVEYED BY CQM, INC. ON APRIL 1, 2008.

RELEASE	DATE:	BY:
Project Review		
5		
4		
3		
2		
1		
NO.	DATE:	BY:
DESCRIPTION		
REVISIONS		

JM Johns Manville

CQM, INC.
Engineering-Surveying-Material Testing
2679 Continental Drive
Green Bay, WI 54311

LFR Borings and CQM Points

Area 1 & 2 Final Cover
Johns Manville Waukegan Plant
Waukegan, IL

DRAWN BY: WBE

DATE: Oct. 2018

SCALE: 1"=60'

DRAWING NO.

1

ATTACHMENT B

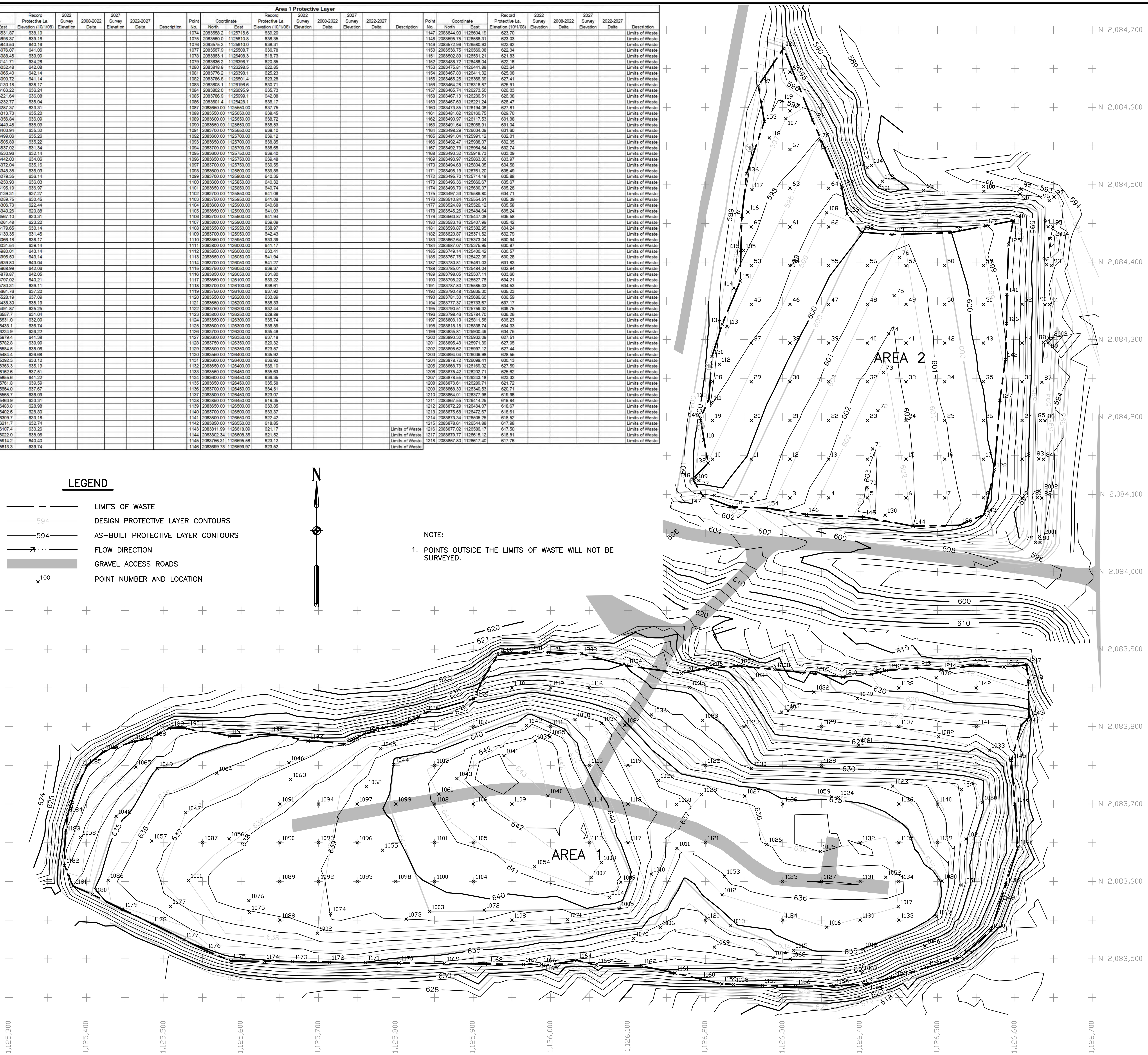
Responses 05: Five Year Protective Survey Locations

Area 1 Protective Layer

Point No.	Coordinate North	Coordinate East	Record Protective La. Elevation (10/1/08)	2022 Survey Elevation	2008-2022 Delta	2027 Survey Elevation	2022-2027 Delta	Description
1001	2083601.39	1125531.87	638.10					
1002	2083633.08	1125698.37	639.18					
1003	2083660.80	1125843.53	640.16					
1004	2083579.59	1126076.07	641.06					
1005	2083564.95	1126098.45	639.99					
1006	2083640.43	1126141.71	634.28					
1007	2083604.91	1126052.48	642.08					
1008	2083624.47	1126069.40	642.14					
1009	2083599.05	1126090.72	641.14					
1010	2083609.63	1126130.18	638.17					
1011	2083642.70	1126163.22	636.24					
1012	2083582.86	1126221.64	636.08					
1013	2083542.79	1126232.77	635.04					
1014	2083501.65	1126287.37	633.31					
1015	2083511.17	1126313.73	635.20					
1016	2083540.89	1126356.84	636.09					
1017	2083667.23	1126449.45	636.03					
1018	2083512.29	1126403.94	635.32					
1019	2083554.56	1126498.06	635.26					
1020	2083600.45	1126505.89	635.22					
1021	2083654.86	1126537.02	631.34					
1022	2083718.54	1126530.96	632.14					
1023	2083723.20	1126442.00	634.06					
1024	2083708.44	1126372.04	635.16					
1025	2083638.68	1126348.35	636.03					
1026	2083647.94	1126279.35	636.14					
1027	2083710.45	1126250.93	636.03					
1028	2083712.42	1126195.19	636.97					
1029	2083730.55	1126139.31	637.27					
1030	2083745.81	1126259.75	630.45					
1031	2083820.50	1126306.73	622.44					
1032	2083844.61	1126340.26	620.88					
1033	2083769.60	1126667.10	623.31					
1034	2083860.69	1126261.48	623.22					
1035	2083850.41	1126179.65	630.14					
1036	2083815.16	1126130.35	631.45					
1037	2083804.16	1126066.18	638.17					
1038	2083809.12	1126031.54	639.14					
1039	2083781.32	1125980.01	643.14					
1040	2083710.71	1125996.50	643.14					
1041	2083762.53	1125939.80	643.04					
1042	2083801.44	1125968.99	642.06					
1043	2083732.90	1125878.87	642.05					
1044	2083750.79	1125797.02	640.21					
1045	2083771.44	1125780.31	639.11					
1046	2083753.38	1125661.76	637.20					
1047	2083688.67	1125528.19	637.09					
1048	2083684.10	1125438.30	635.19					
1049	2083745.57	1125491.87	635.25					
1050	2083701.9	1126657.1	631.04					
1051	2083595.4	1126433.1	632.00					
1052	2083605.4	1126433.1	636.74					
1053	2083606.7	1126224.9	636.22					
1054	2083619.0	1125979.4	641.38					
1055	2083640.4	1125782.8	639.99					
1056	2083655.1	1125584.5	638.06					
1057	2083652.2	1125484.4	636.68					
1058	2083656.9	1125392.3	633.12					
1059	2083709.1	1126363.3	635.13					
1060	2083699.4	1126162.6	637.51					
1061	2083712.8	1125855.6	641.22					
1062	2083722.4	1125761.8	639.59					
1063	2083731.6	1125664.0	637.67					
1064	2083739.4	1125568.7	638.09					
1065	2083747.8	1125463.9	633.31					
1066	2083516.8	1126483.8	628.98					
1067	2083482.2	1126402.6	628.80					
1068	2083499.7	1126309.7	633.18					
1069	2083515.2	1126211.7	632.74					
1070	2083526.1	1126107.4	633.26					Limits of Waste
1071	2083550.6	1126022.0	638.96					Limits of Waste
1072	2083563.0	1125914.2	640.40					Limits of Waste
1073	2083551.3	1125813.3	639.74					Limits of Waste
1074	2083558.2	1125715.6	639.20					
1075	2083560.0	1125610.8	638.35					
1076	2083575.2	1125610.0	638.31					
1077	2083567.9	1125508.7	636.78					
1078	2083863.1	1126498.3	618.73					
1079	2083836.2	1126396.7	620.85					
1080	2083818.8	1126298.5	622.85					
1081	2083776.2	1126398.1	625.23					
1082	2083786.8	1126501.4	623.28					
1083	2083808.1	1126196.6	630.71					
1084	2083802.0	1126095.9	635.73					
1085	2083786.9	1125999.1	642.08					
1086	2083601.4	1125428.1	636.17					
1087	2083650.00	1125550.00	637.75					
1088	2083550.00	1125650.00	638.45					
1089	2083600.00	1125650.00	638.72					
1090	2083650.00	1125650.00	638.53					
1091	2083700.00	1125650.00	638.10					
1092	2083600.00	1125700.00	639.12					
1093	2083650.00	1125700.00	638.85					
1094	2083700.00	1125700.00	638.65					
1095	2083600.00	1125750.00	639.40					
1096	2083650.00	1125750.00	639.48					
1097	2083700.00	1125750.00	639.55					
1098	2083600.00	1125800.00	639.86					
1099	2083700.00	1125800.00	640.35					
1100	2083600.00	1125850.00	640.32					
1101	2083650.00	1125850.00	640.74					
1102	2083700.00	1125850.00	641.08					
1103	2083750.00	1125850.00	641.08					
1104	2083600.00	1125900.00	640.68					
1105	2083650.00	1125900.00	641.03					
1106	2083700.00	1125900.00	641.94					
1107	2083800.00	1125900.00	639.09					
1108	2083550.00	1125950.00	638.97					
1109	2083700.00	1125950.00	642.43					
1110	2083850.00	1125950.00	633.39					
1111	2083800.00	1126000.00	641.17					
1112	2083850.00	1126000.00	633.41					
1113	2083650.00	1126050.00	641.94					
1114	2083700.00	1126050.00	641.27					
1115	2083750.00	1126050.00	639.37					
1116	2083850.00	1126050.00	631.80					
1117	2083650.00	1126100.00	639.22					
1118	2083700.00	1126100.00	638.61					
1119	2083750.00	1126100.00	637.92					
1120	2083550.00	1126200.00	633.89					
1121	2083650.00	1126200.00	636.33					
1122	2083750.00	1126200.00	632.44					
1123	2083800.00	1126250.00	628.89					
1124	2083550.00	1126300.00	635.74					
1125	2083600.00	1126300.00	636.89					
1126	2083700.00	1126300.00	635.48					
1127	2083600.00	1126350.00	637.18					
1128	2083750.00	1126350.00	629.32					
1129	2083800.00	1126350.00	623.57					
1130	2083550.00	1126400.00	635.92					
1131	2083600.00	1126400.00	636.92					
1132	2083650.00	1126400.00	636.10					
1133	2083550.00	1126450.00	635.63					
1134	2083600.00	1126450.00	636.35					
1135	2083650.00	1126450.00	635.58					
1136	2083700.00	1126450.00	634.51					
1137	2083800.00	1126450.00	623.07					
1138	2083850.00	1126450.00	619.35					
1139	2083650.00	1126500.00	633.85					
1140	2083700.00	1126500.00	633.37					
1141	2083800.00	1126550.00	622.42					
1142	2083850.00	1126550.00	618.85					
1143	2083811.99	1126618.09	621.17					Limits of Waste
1144	2083802.34	1126608.35	621.52					Limits of Waste
1145	2083756.31	1126595.58	623.12					Limits of Waste
1146	2083699.78	1126599.97	623.52					Limits of Waste
1147	2083644.90	1126604.19	623.70					Limits of Waste
1148	2083595.75	1126588.31	623.03					Limits of Waste
1149	2083572.99	1126580.93	622.62					Limits of Waste
1150	2083536.75	1126569.08	622.34					Limits of Waste
1151	2083502.89	1126531.21	621.83					Limits of Waste
1152	2083488.72	1126486.04	622.16					Limits of Waste
1153	2083475.81	1126441.88	623.64					Limits of Waste
1154	2083467.80	1126411.32	625.08					Limits of Waste
1155	2083465.25	1126366.39	627.41					Limits of Waste
1156	2083464.28	1126316.87	625.91					Limits of Waste
1157	2083465.74	1126273.50	626.03					Limits of Waste
1158	2083467.13	1126236.51	626.38					Limits of Waste
1159	2083467.69	1126221.24	626.47					Limits of Waste
1160	2083473.85	1126194.06	627.81					Limits of Waste
1161	2083481.62	1126160.75	629.70					Limits of Waste
1162	2083490.97	1126117.53	631.38					Limits of Waste
1163	2083491.64	1126058.91	631.04					Limits of Waste
1164	2083498.29	1126034.09	631.60					Limits of Waste
1165	2083491.04	1125991.12	632.01					Limits of Waste
1166	2083492.47	1125988.07	632.35					Limits of Waste
1167	2083492.79	1125964.64	632.74					Limits of Waste
1168	2083493.32	1125918.73	633.09					Limits of Waste
1169	2083493.97	1125863.00	633.97					Limits of Waste
1170	2083494.68	1125804.05	634.58					Limits of Waste
1171	2083495.19	1125761.20	635.49					Limits of Waste
1172	2083495.70	1125714.18	635.88					Limits of Waste
1173	2083496.36	1125666.67	635.67					Limits of Waste
1174	2083496.79	1125630.07	635.26					Limits of Waste
1175	2083497.33	1125586.80	634.71					Limits of Waste
1176	2083510.84	1125554.51	635.39					Limits of Waste
1177	2083524.89	1125526.12	635.58					Limits of Waste
1178	2083545.26	1125484.64	635.24					Limits of Waste
1179	2083563.87	1125447.08	635.58					Limits of Waste
1180	2083583.16	1125407.99	635.42					Limits of Waste
1181	2083593.87	1125382.95	634.24					Limits of Waste
1182	2083620.87	1125371.52	632.79					Limits of Waste
1183	2083662.64	1125373.04	630.94					Limits of Waste
1184	2083687.07	1125375.95	630.87					Limits of Waste
1185	2083749.14	1125400.42	630.57					Limits of Waste
1186	2083767.76	1125422.09	630.28					Limits of Waste
1187	2083780.81	1125461.03	631.83					Limits of Waste
1188	2083785.01	1125484.04	632.94					Limits of Waste
1189	2083798.05	1125507.11	633.60					Limits of Waste
1190	2083798.22	1125527.76	634.21					Limits of Waste
1191	2083787.80	1125585.03	634.53					Limits of Waste
1192	2083790.48	1125635.30	635.23					Limits of Waste
1193	2083781.33	1125686.60	636.59					Limits of Waste
1194	2083777.37	1125733.67	637.17					Limits of Waste
1195	2083790.51	1125759.32	636.75					Limits of Waste
1196	2083798.46	1125784.70	636.26					Limits of Waste
1197	2083803.10	1125811.58	636.23					Limits of Waste
1198	2083818.15	1125838.74	634.33					Limits of Waste
1199	2083835.81	1125900.49	634.75					Limits of Waste
1200	2083893.30	1125932.09	627.51					Limits of Waste
1201	2083895.43	1125971.39	627.05					Limits of Waste
1202	2083895.62	1125997.12	627.44					Limits of Waste
1203	2083894.04	1126039.98	628.55					Limits of Waste
1204	2083878.72	1126098.41	630.13					Limits of Waste
1205	2083868.73	1126169.02	627.59					Limits of Waste
1206	2083875.42	1126202.71	625.62					Limits of Waste
1207	2083878.55	1126243.18	623.32					Limits of Waste
1208	2083873.61	1126289.71	621.72					Limits of Waste
1209	2083868.30	1126340.53	620.71					Limits of Waste
1210	2083864.01	1126377.96	619.96					Limits of Waste
1211	2083867.55	1126414.25	619.84					Limits of Waste
1212	2083872.29	1126434.07	618.67					Limits of Waste
1213	2083875.68	1126472.67	618.61					Limits of Waste
1214	2083873.34	1126505.25	618.52					Limits of Waste
1215	2083878.61	1126544.88	617.98					Limits of Waste
1216	2083877.02	1126586.17	617.50					Limits of Waste
1217	2083879.77	1126615.12	616.81					Limits of Waste
1218	2083857.80	1126617.40	617.76					Limits of Waste

Area 2 Protective Layer

Point No.	North	East	Record Protect. Layer Elevation	2022 Survey Elevation	2008-2022 Delta	2027 Survey Elevation	2022-2027 Delta	Description
1	2084098.87	1126211.56	601.21					
2	2084095.52	1126259.36	600.63					
3	2084095.52	1126309.36	601.60					
4	2084095.52	1126359.36	602.41					
5	2084095.52	1126409.36	603.21					
6	2084095.52	1126459.36	602.28					
7	2084095.52	1126509.36	601.27					
8	2084095.52	1126559.36	600.34					
9	2084095.52	1126609.36	-					Outside Limits of Waste
10	2084145.52	1126209.36	599.32					
11	2084145.52	1126259.36	600.16					
12	2084145.52	1126309.36	601.03					
13	2084145.52	1126359.36	601.99					
14	2084145.52	1126409.36	603.06					
15	2084145.52	1126459.36	602.11					
16	2084145.52	1126509.36	601.15					
17	2084145.52	1126559.36	600.22					
18	2084145.52	1126609.36	-					Outside Limits of Waste
19	2084195.52	1126209.36	599.08					
20	2084195.52	1126259.36	599.79					
21	2084195.52	1126309.36	600.84					
22	2084195.52	1126359.36	601.72					
23	2084195.52	1126409.36	602.67					
24	2084195.52	1126459.36	601.86					
25	2084195.52	1126509.36	601.02					
26	2084195.52	1126559.36	600.11					
27	2084195.52	1126609.36	-					Outside Limits of Waste
28	2084245.52	1126209.36	598.98					
29	2084245.52	1126259.36	599.38					
30	2084245.52	1126309.36	600.33					
31	2084245.52	1126359.36	601.08					
32	2084245.52	1126409.36	602.28					
33	2084245.52	1126459.36	601.68					
34	2084245.52	1126509.36	600.77					
35	2084245.52	1126559.36	599.81					
36	2084245.52	1126609.36	-					Outside Limits of Waste
37	2084295.52	1126259.36	598.89					
38	2084295.52	1126309.36	599.79					
39	2084295.52	1126359.36	600.72					
40	2084295.52	1126409.36	601.76					
41	2084295.52	1126459.36	601.60					
42	2084295.52	1126509.36	600.75					
43	2084295.52	1126559.36	599.77					
44	2084295.52	1126609.36	-					Outside Limits of Waste
45	2084345.52	1126259.36	598.50					
46	2084345.52	1126309.36	599.28					
47	2084345.52	1126359.36	600.37					
48	2084345.52	1126409.36	601.16					
49	2084345.52	1126459.36	601.34					
50	2084345.52	1126509.36	600.42					
51	2084345.52	1126559.36	599.47					
52	2084345.52	1126609.36	-					Outside Limits of Waste
53	2084395.52	1126259.36	598.20					
54	2084395.52	1126309.36	598.86					
55	2084395.52	1126359.36	599.72					
56	2084395.52	1126409.36	600.84					
57	2084395.52	1126459.36	601.41					
58	2084395.52	1126509.36	600.22					
59	2084395.52	1126559.36	599.38					
60	2084445.52	1126259.36	597.79					
61	2084445.52	1126309.36	598.57					
62	2084445.52	1126359.36	599.30					
63	2084495.52	1126309.36	599.04					
64	2084495.52	1126359.36	598.82					
65	2084492.67	1126482.23	-					Outside Limits of Waste
66	2084497.46	1126559.54	-					Outside Limits of Waste
67	2084545.52	1126309.36	597.72					
68	2084595.52	1126309.36	597.18					
69	2084645.52	1126309.36	596.67					
70	2084109.22	1126409.16	603.19					
71	2084158.74	1126416.11	603.00					
72	2084208.25	1126423.05	602.75					
73	2084257.76	1126430.00	602.43					
74	2084307.27	1126436.98	602.11					
75	2084356.78	1126443.98	601.76					
76	2084406.29	1126450.97	601.58					
77	2084117.90	1126191.69	599.64					
78	2084557.99	1126347.72	598.08					
79	2084038.13	1126526.53	-					Outside Limits of Waste
80	2084037.88	1126632.53	-					Outside Limits of Waste
81	2084095.89	1126628.87	-					Outside Limits of Waste
82	2084095.30	1126634.85	-					Outside Limits of Waste
83	2084145.93	1126630.89	-					Outside Limits of Waste
84	2084145.45	1126636.88	-					Outside Limits of Waste
85	2084195.62	1126632.91	-					Outside Limits of Waste
86	2084195.18	1126638.89	-					Outside Limits of Waste
87	2084244.80	1126634.90	-					Outside Limits of Waste
88	2084296.34	1126636.98	-					Outside Limits of Waste
89	2084296.03	1126642.97	-					Outside Limits of Waste
90	2084345.03	1126638.95	-					Outside Limits of Waste
91	2084345.16	1126644.90	-					Outside Limits of Waste
92	2084396.59	1126641.04	-					Outside Limits of Waste
93	2084395.48	1126647.00	-					Outside Limits of Waste
94	2084445.85	1126643.03	-					Outside Limits of Waste
95	2084445.34	1126649.02	-					Outside Limits of Waste
96	2084479.46	1126644.39	-					Outside Limits of Waste
97	2084484.18	1126650.59	-					Outside Limits of Waste
98	2084487.97	1126606.70	-					Outside Limits of Waste
99	2084494.23	1126608.12	-					Outside Limits of Waste
100	2084491.45	1126580.06	-					Outside Limits of Waste
101	2084498.99	1126425.53	-					Outside Limits of Waste
102	2084504.66	1126428.89	-					Outside Limits of Waste
103	2084522.22	1126409.06	-					Outside Limits of Waste
104	2084525.02	1126414.43	-					Outside Limits of Waste
105	2084777.41	1126349.61	-					Outside Limits of Waste
106	2084777.89	1126355.59	-					Outside Limits of Waste
107	2084585.29	1126303.97	597.24					
108	2084563.76	1126356.77	599.07					
109	2084121.22	1126187.77	599.65					
110	2084170.18	1126197.87	599.11					
111	2084219.15	1126207.98	599.02					
112	2084268.12	1126218.09	598.61					
113	2084317.14	1126227.94	598.34					
114	2084366.32	1126236.94	598.10					
115	2084415.50	1126245.94	597.75					
116	2084464.68	1126254.94	597.63					
117	2084513.71	1126260.26	597.60					
118	2084560.50	1126282.80	596.97					
119	2084607.87	1126298.79	596.96					
120	2084676.45	1126301.10	595.77					Limit of Waste
121	2084583.67	1126338.40	597.44					Limit of Waste
122	2084497.12	1126376.03	598.88					Limit of Waste
123	2084435.65	1126441.23	601.02					Limit of Waste
124	2084446.87	1126562.60	599.13					Limit of Waste
125	2084422.31	1126591.96	598.63					Limit of Waste
126	2084320.78	1126589.44	598.91					Limit of Waste
127	2084221.44	1126580.78	599.40					Limit of Waste
128	2084131.81	1126573.62	599.76					Limit of Waste
129	2084060.25	1126529.25	600.89					Limit of Waste
130	2084073.11	1126432.36	602.76					Limit of Waste
131	2084084.04	1126323.61	602.00					Limit of Waste
132	2084140.60	1126203.47	599.34					Limit of Waste
133	2084222.83	1126213.65	599.20					Limit of Waste
134	2084319.94	1126221.84	598.76					Limit of Waste
135	2084414.85	1126249.22	597.89					Limit of Waste
136	2084533.91	1126263.21	598.32					Limit of Waste
137	2084627.77	1126268.43	599.22					Limit of Waste
138	2084438.84	1126401.89	600.19					Limit of Waste
139	2084461.98	1126383.25	599.42					Limit of Waste
140	2084453.64	1126597.81	598.43					Limit of Waste
141	2084368.43	1126569.71	598.72					Limit of Waste
142	2084274.39	1126587.72	599.18					Limit of Waste
143	2084074.16	1126560.13	600.19					Limit of Waste
144	2084058.96	1126468.51	602.06					Limit of Waste
145	2084070.81	1126404.74	602.99					Limit of Waste
146	2084074.05	1126330.72	602.13					Limit of Waste
147	2084098.00	1126196.74	601.44					Limit of Waste
148	2084119.54	1126183.62	600.09					Limit of Waste
149	2084198.25	1126183.55	599.89					Limit of Waste
150	2084276.26	1126208.58	599.39					Limit of Waste
151	2084375.78	1126245.15	598.13					Limit of Waste
152	2084459.33	1126247.26	598.20					Limit of Waste
153	2084582.05	1126276.27	597.21					Limit of Waste
154	2084082.46	1126278.68	601.83					Limit of Waste
155	2084437.98	1126516.41	600.11					Limit of Waste



NOTE:

1. POINTS OUTSIDE THE LIMITS OF WASTE WILL NOT BE SURVEYED.

RELEASE	DATE:	BY:
Project Review		
5		
4		
3		
2		
1		
NO.	DATE:	BY:
DESCRIPTION		

REVISIONS

JM Johns Manville

CQM, INC.
Engineering-Surveying-Material Testing
2679 Continental Drive
Green Bay, WI 54311

Protective Layer

Area 1 & 2 Final Cover
Johns Manville Waukegan Plant
Waukegan, IL

DRAWN BY: WBE

DATE: Oct. 2018

SCALE: 1"=60'

DRAWING NO.

1