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496696

Prepared for

BFI Waste Systems North America, LLC
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TECHNICAL MEMORANDUM

MODIFIED REMEDY

MIG/DeWANE LANDFILL SUPERFUND SITE
BELVIDERE, BOONE COUNTY, ILLINOIS

EPA ID# ILD980497788

Prepared by

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Project Number CHE8214

5 September 2012
Revision 1

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5 September 2012

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Response to Comments:
IEPA Review Comments on the 5 June 2012 Technical Memorandum – Modified Remedy
MIG/DeWane Landfill Superfund Site (Site)
Belvidere-Boone County, Illinois

Dear Ms. Wilson:

On behalf of BFI Waste Systems of North America, LLC (BFINA), this letter presents a response to Illinois Environmental Protection Agency (IEPA) Comments dated 30 July 2012 on the subject document submitted by Geosyntec on behalf of BFINA. Geosyntec is providing the responses to the comments below to supplement the revised technical memorandum. The revised technical memorandum is attached for your review. All items that have been revised in the technical memorandum have been indicated in the following responses.

The following paragraphs address the 30 July 2012 IEPA Comments.

IEPA Comments and Geosyntec Responses

The IEPA Comments on the subject document are presented in Arial font and Geosyntec's responses are presented in Times New Roman font. In the comments, "Paragraph 1" refers to the first complete paragraph on a page.

Comment 1. General

As previously stated, the Tech Memo proposed a minimum two foot thickness for the low permeability layer. For those areas of the landfill which have less than the minimum thickness of two feet, the low permeability layer thickness would be increased to two feet. With the removal of GCL component of the cover remedy, a two foot thick permeability layer would not comply with the Illinois Administrative Code (IAC) Part 811 requirements on some of the side slopes. Minimizing the area of disturbance is one of the important arguments for the modified

landfill cover. Please provide figures and area estimates for the: (a) landfill surface area that would be needed to be disturbed in order to achieve a two foot thickness for the low permeability layer, and (b) landfill surface area that would need to be disturbed in order to achieve minimum of three foot thickness for the low permeability layer.

Geosyntec has added **Figures 8** and **9** to Section 5 of the revised technical memorandum. **Figures 8** and **9** show the surface areas that would need to be disturbed to reach 2 feet and 3 feet of thickness, respectively. Geosyntec has also added text to Section 5 introducing the figures, which is shown below, underlined and italicized:

- ***"Reduced Potential for Soil Erosion and Fugitive Dust Emissions.*** The Modified Remedy would significantly reduce the potential for soil erosion and fugitive dust emissions during remedy implementation. Significantly less land area would be disturbed and the land disturbance would be over a significantly less period of time for the Modified Remedy compared to the ROD Remedy. ***Figure 8*** *shows the approximate area (4.1 acres) that would need to be disturbed to bring the clay cover thickness to 2 feet or greater over the entire landfill (47 acres).* ***Figure 9*** *shows the approximate area (19.3 acres) that would need to be disturbed to bring the clay cover thickness to 3 feet or greater over the entire landfill (47 acres). However, based on HELP modeling, increasing the thickness of the IRM landfill cover on the sideslope essentially does not increase the hydraulic efficiency of the cover and is not likely to significantly impact the volume of leachate generated by the landfill.* ***Table A2-2*** *in* ***Appendix 2*** *shows the results of the HELP model of the IRM landfill cover hydraulic efficiency. The hydraulic efficiency was modeled using the areas of the slopes with differing thicknesses (t) and a subset of the results is presented below:*

    - *t < 2 feet has a hydraulic efficiency of 98.03%*
    - *t = 2-3 feet has a hydraulic efficiency of 98.10%*
    - *t = 3-5 feet has a hydraulic efficiency of 98.15%*

  Based on HELP model results shown above and listed in ***Table A2-2****, the thickness of the IRM landfill cover on the side slopes can be increased, however, composite hydraulic efficiency for the sideslope will remain approximately 98%.*"

Comment 2. General

The Tech Memo makes several statements that natural attenuation has been effective in improving groundwater quality. These statements applied to both organic and inorganic

contaminants of concern. All statements regarding natural attenuation should be removed from the document unless a detailed evaluation of natural attenuation is intended to be performed.

The technical memorandum has been revised to remove any conclusions that natural attenuation has been effective in improving groundwater quality. General references to natural attenuation as part of both the existing and proposed remedy remain in the revised document.

Comment 3. Section 3.2.1 (Thickness, Configuration, and Vegetation) Page 8 Paragraph 1

The text should clarify the thickness values (maximum, average, and minimum thickness) for landfill side slopes (summary table titled IRM Landfill Cover thickness). Do the values represent the combined thickness of low permeable layer and landfill cover grading layers? The critical cover system element is the low permeability layer. If the values do represent a combined thickness, the side slope minimum and the average thicknesses for the low permeability layer would be even less than noted in the table.

Can the low permeability layer be able to be distinguished from the landfill grading layer (both layers were identified as silty clay)? If so, the reported permeability (3.8 x 10'8 em/sec) may apply to the landfill grading layer.

Section 3.2.1 of the technical memorandum has been revised to include the following text, which is italicized and underlined below. Additionally, revisions the acreage and percentages of the total landfill area have been made to more clearly represent the cover areas less than 2.0 feet, greater than 2.0 feet but less than 3.0 feet, and greater than 3.0 feet to compliment the response included for Comment 1:

"Eighty-six individual *clay thickness* data points were used to assess the thickness of the IRM landfill *clay portion of the* cover. *The topsoil thickness measurements from these data points were not included in the clay cover thickness assessment.* The data indicated that the IRM landfill *clay* cover top (crest) averages 11.5 feet thick with some locations up to 19 feet thick. These data included *clay thickness* soil boring data from 41 gas vents and 17 dual-phase gas wells installed in 2008 as documented in the *Completion Report for Remedial Construction* (Geosyntec Consultants, 2010a), data from 24 Geoprobe® soil borings advanced in 2006 to assess the cover thickness as documented in the *Predesign Field Investigation Report* (Geosyntec Consultants, 2007b), and data from four gas probes installed in 1993 as documented in the *Final Remedial Investigation Report* (Clayton Environmental Consultants, 1997). *The clay cover thickness data points include the combined thickness of the IRM cover, which consists of the low permeability layer and the grading layer (not the topsoil). The low permeability layer and the grading layer were visually indistinguishable when collecting the soil boring data during above-mentioned installation activities. The two layers were not able to be distinguished due to several*

contributing factors which are described in the Final Construction Report - Construction Activities, Interim Remedial Measures (Golder Associates, Inc., 1993). The primary reasons are as follows:

- *The soils used for the low permeability layer and the grading layer were excavated from the same borrow pit directly west of the landfill.*
- *The soils were both comprised of silty clay (CL). Preconstruction and construction testing data indicated that the grading layer soil was described as predominantly silty clay (CL) and the low permeability layer was classified as silty clay (CL).*
- *Both soil layers were compacted to a similar degree. Construction compaction testing data documented that the grading layer soil and low permeability layer soil was compacted to an average 96 percent and 97 percent of maximum standard Proctor (ASTM D-698) dry density, respectively.*
- *The average water contents of the placed clay soils were 13.6 percent for the low permeability layer and 12.2 percent for the grading layer which are very similar and would yield similar compaction results.*

Data from 23 measurement points were collected from the top (crest) of the landfill and data from 63 of the measurement points were collected from the landfill side slopes. These cover thickness measurement data are summarized in **Table 1**, from the reports documented above.

The measured IRM landfill cover minimum and maximum and calculated average thickness data for the landfill crest, the landfill side slopes, and the entire landfill are summarized below:

Measured/Calculated	**IRM Landfill Cover Thickness (feet)**		
	Landfill Crest	**Landfill Side Slopes**	**Entire Landfill**
Maximum	19.0	12.5	19.0
Average	11.5	3.8	5.8
Minimum	5.0	1.5	1.5

The measured IRM landfill cover thickness was 3.0 feet or greater at 60 of 86 measurement locations and 2.0 feet or greater at 77 of the 86 measurement locations. **Figure 2** illustrates the extent of the cover thickness greater than 3.0 feet (*approximately 28* acres or *57%* of the landfill cover), *greater than* 2.0 *feet* and *less than* 3.0 feet (*approximately 15* acres or *33%* of the landfill cover), and limited areas less than 2.0 feet (only approximately 4 acres or 9% of the landfill cover). The significant thickness of the soil cover on the crest, as much as 19.0 feet, is the result

of the significant quantity of IRM grading layer soil used to fill the flat and depressed areas of the landfill prior to the IRM compacted clay layer construction."

Comment 4. Section 3.2.2 (Hydraulic Efficiency)

Appendix 2 presents the HELP model inputs in Table 1, Table 2 and Table 3. Two issues were identified in the HELP modeling.

a. The HELP model does a mass balance which has a non-linear response to the thickness of the cover materials. To address this issue, the Agency suggests that multiple HELP model runs be performed to cover the full range of cover thicknesses for both the top deck of the landfill and for the landfill side slopes. This would include two or three HELP model runs for the top deck and two or three HELP model runs for the side slopes. Based on the results of the individual model runs, the total hydraulic efficiency can be calculated.

b. The calculation ofthe total hydraulic efficiency is not a simple average of the individual values of hydraulic efficiency for each subarea of the landfill. The calculation needs to take into account the proportion of the total surface area associated with each subarea:

Average Hydraulic Efficiency= hi *(sa1/A)+ h2*(a2/A) + h3*(a3/A) + h4*(a4/A) + ...

where: h1 = hydraulic efficiency for Subarea 1
sa1 = surface area of Subarea 1
A= Total Surface Area of the landfill.

Section 3.2.2 of the technical memorandum has been revised to include the following text, which is italicized and underlined below. Additionally, **Appendix 2** of the technical memorandum has been revised to address Comment 4:

"When modeled, the new IRM landfill cover thickness measurement data indicate that the hydraulic efficiency or effectiveness of the IRM landfill cover is more than 98%. That is, the IRM landfill cover is at least 98% effective in reducing infiltration into the landfill. The ROD Remedy landfill cover is estimated to have a hydraulic efficiency of 99%.

Reducing water infiltration through the cover system into the landfill waste provides long-term control of the quantity of leachate generated and subsequently reduces the potential for migration of leachate constituents to groundwater.

Hydraulic efficiency is a parameter that is used to quantify the effectiveness of cover systems in minimizing water infiltration into the landfill waste. The hydraulic efficiency is the percent of

infiltration that is blocked by the cover; therefore, the highest possible hydraulic efficiency is 100%. The hydraulic efficiency was calculated for each of the following three landfill covers using the Hydrologic Evaluation of Landfill Performance (HELP) model developed by the U.S. Army Corps of Engineers for the U.S. EPA *(see **Appendix 2**).*

- *ROD Remedy landfill cover*
  - *The ROD Remedy cover was split into one subarea for the crest and one subarea for the side slopes. This HELP model assumes a uniform cover thickness for each the crest and the side slopes. The crest and side slope hydraulic efficiencies were compiled to determine the total hydraulic efficiency of 99% using the equation below*

- *IRM landfill cover*
  - *The IRM landfill cover was split into three subareas for the existing crest and five subareas for the existing side slopes based on the existing differential cover thickness measurements.*
  - *The hydraulic efficiencies of each subarea were compiled to determine the total hydraulic efficiency of 98% using the equation below.*

- *Generic IAC § 811 landfill soil cover (the ROD documented that IEPA and U.S. EPA consider IAC § 811 relevant and appropriate)*
  - *The 811 landfill cover was split into one subarea for the crest and one subarea for the side slopes. This HELP model assumes a uniform cover thickness for each the crest and the side slopes*
  - *The crest and side slope hydraulic efficiencies were compiled to determine the total hydraulic efficiency of 95% using the equation below*

The total average hydraulic efficiency was calculated for each cover using the following formula:

$$\Sigma[h_i \times (sa_i / A)]$$

Where: h_i=hydraulic efficiency for Subarea i

sa_i = surface area of Subarea i
A = total surface area of the landfill

Comment 5. Section 3.2.3 (Leachate Level Reduction) Page 10 Figure 4

The Figure 4 indicates areas of the landfill that have experienced a reduction in leachate levels (particularly in the middle portions of the landfill). However, there are areas of the landfill which have experienced increased leachate levels (particularly in the northern and western portions of the landfill). Based on the cross sections, a quick comparison of volumes suggests that there is not a significant difference between the leachate volumes in 1995 and 2008. This is important in the assessment of the proposed modified landfill cover, because the data suggest that leachate levels have increased in areas beneath the landfill side slopes while decreasing beneath the center of the landfill (likely due in large part to the significant quantity of fill added to the top deck of the landfill). Please provide further discussion of these conditions, reconciling this with the observation that the leachate surface impoundment has been dry.

Section 3.2.3 has been revised to include the following text, which is italicized and underlined below. Additionally, **Figures 4** and **5** have been added to the technical memorandum and the former **Figure 4**, has been renamed **Figure 6**. **Appendix 3** of the technical memorandum has also been revised to address Comment 5 and reflect the text in the revised document:

"New leachate level data indicate a significant leachate level reduction since IRM landfill cover construction demonstrating that the IRM landfill cover has been effective in significantly reducing infiltration of precipitation into the landfill by promoting precipitation runoff and eliminating ponding on the landfill.

Leachate level measurement data were collected from 34 gas vents and 14 dual-phase gas wells in 2008 (approximately 15 years after the IRM landfill cover installation) as documented in the *Completion Report for Remedial Construction* (Geosyntec Consultants, 2010a). These data were compared to 1995 leachate level information (surveyed ground elevation data at former seep locations and leachate well level data) as documented in the *Preliminary Remedial Design Report* (Geosyntec Consultants, 2007c). The 2008 and 1995 leachate level data used in this comparison are summarized in **Table 2**.

***Figures 4** and 5 are leachate elevation contour maps that were generated using the 2008 and 1995 leachate level data in **Table 2**. Additionally, **Figure 6** depicts two cross-sections comparing the 1995 and 2008 leachate level data. The difference in volume of leachate between the **Figure 4** and 5 contour maps indicates a significant leachate level reduction over time (see calculations in **Appendix 3**). These data calculations indicate that leachate levels in the landfill have reduced an average of approximately two (2) feet between 1995 and 2008, based on the available data.*

*As **Figures 4** and **5** illustrate, the 2008 data is from data points that are uniformly located across the entire landfill, whereas the 1995 data is located primarily along the edge of the landfill where leachate seeps were observed and on the top where there are 2 leachate wells. The relative increases in leachate at the side slopes from 1995 to 2008 which are illustrated in the cross-section in **Figure 6** are likely caused by the lack of data points along these areas from 1995. However, any increase or build-up of leachate at the side slopes of the landfill will be mitigated with the installation of the proposed leachate collection system. The proposed remedy includes leachate collection trenches along the side slopes which would convey leachate from these areas for treatment and/or disposal.*"

Should you have any questions on the above response to comments or the revised technical memorandum, please contact Mr. John Seymour at (312) 416-3919 or myself at (312) 416-3909 or (312) 658-0500.

Sincerely,

Brad Bodine, PE
Project Engineer

for

John Seymour, PE
Principal

Enclosure

Copies to: Eric Ballenger; BFINA (1 copy)
Rustin Kimmel; BFINA (1 copy)
Howard Caine; U.S. EPA (1 copy)
John Grabs CDM (1 copy)
Jay Timm; IEPA Community Relations Coordinator (1 copy)
Site Document Repository (to Jay Timm) (1 copy)
IEPA Bureau of Land file copy (to Nicole Wilson) (1 copy)

TECHNICAL MEMORANDUM

MODIFIED REMEDY

MIG/DeWANE LANDFILL SUPERFUND SITE
Belvidere, Boone County, Illinois

EPA ID# ILD980497788

Prepared for

BFI Waste Systems North America, LLC
26 West 580 Schick Road
Hanover Park, IL 60133

Prepared by

Geosyntec Consultants
134 N. LaSalle Street, Suite 300
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Project Number CHE8214

5 September 2012
Revision 1

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John Seymour, P.E.
Principal

Geosyntec consultants

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EXECUTIVE SUMMARY

A Modified Remedy is proposed for the MIG/DeWane Landfill Superfund Site based on new and significant information collected since the Record of Decision (ROD) was issued.

Description of Modified Remedy

The proposed Modified Remedy includes modifying the landfill cover component of the ROD Remedy. No other changes to the ROD Remedy are proposed. The Modified Remedy would include making improvements to the substantial Interim Remedial Measures (IRM) landfill cover instead of constructing the new landfill cover component of the ROD Remedy. The IRM landfill cover was installed in 1993 in accordance with an U.S. Environmental Protection Agency (U.S. EPA) Administrative Order on Consent and an U.S. EPA and Illinois Environmental Protection Agency (IEPA) approved scope of work.

The proposed improvements to the IRM landfill cover would include placing additional compacted clay cover in limited areas on the side slopes where the cover is less than two (2) feet thick and grading of the existing landfill crest to establish a minimum slope of three (3) percent, consistent with the ROD Remedy. The improved areas would receive a minimum of six (6) inches of topsoil and seeded to establish and sustain vegetative growth.

Rationale for Modified Remedy

The Modified Remedy is proposed because new and significant data have been collected since the ROD was issued that support the Modified Remedy. These new and significant data are not included elsewhere in the Administrative Record file for the site. These data, which include significant additional IRM landfill cover thickness measurement data, leachate level measurement data, and groundwater quality data, indicate that the IRM landfill cover system has achieved an effectiveness that is substantially equivalent to that predicted for the ROD Remedy landfill cover component. These data are summarized as follows:

- ***New Measurements of the Thickness and Modeled Hydraulic Efficiency of the IRM Landfill Cover.*** Eighty-six new cover thickness measurements were used to assess the thickness of the IRM landfill cover. The data indicated that the IRM landfill cover top (crest) averages 11.5 feet thick with some locations up to 19 feet thick. When modeled, these new measurement data indicate that the hydraulic efficiency or effectiveness of the IRM landfill cover is 98%. That is, the IRM landfill cover is 98% effective in reducing infiltration into the landfill. The ROD Remedy landfill cover is estimated to have a hydraulic efficiency of 99%. The generic IAC § 811 soil cover (considered relevant and appropriate by

the U.S. EPA and IEPA), is estimated to have a hydraulic efficiency of 95%. The benefits of the very thick IRM landfill cover are demonstrated by significant reductions in landfill leachate levels and significant improvement in groundwater quality as summarized below.

- ***New Data Indicating Significant Reduction in Leachate Level.*** The effectiveness of the IRM landfill cover has been demonstrated by the significant reduction in the leachate levels within the landfill. In 2008, the leachate head was measured in 58 gas vents/wells and two remedial investigation (RI) leachate wells. These data indicate that leachate levels in the landfill have reduced an average of approximately two (2) feet between 1995 and 2008.

- ***New Data Indicating Significant Improvement in Groundwater Quality.*** Comparison of recent groundwater quality data (April 2010, December 2010, and December 2011) to data collected during the RI indicate a significant decrease in groundwater concentrations of contaminants of concern (CoCs) identified in the ROD. Since April 2010, only one organic CoC (benzene) has been detected at the site at a single groundwater monitoring well location (MW06S), which is located immediately adjacent to the landfill. The benzene concentrations at MW06S in each of the recent three groundwater monitoring events have just exceeded the EPA Maximum Contaminant Level (MCL)/Illinois State Class I Groundwater Standard (ICGS). In contrast, during the RI, benzene and other organic CoCs, including 1,1-dichloroethene, 1,1-dichloropropane, tetrachloroethene, trichloroethene, and vinyl chloride, were detected in multiple groundwater monitoring wells at concentrations significantly above their respective MCLs/ICGSs. These data indicate that the CoC concentrations have been reducing more quickly than estimates documented in the Focused Feasibility Study.

Evaluation of Modified Remedy

The Modified Remedy was evaluated with respect to the NCP §300.430 remedy selection requirements (nine evaluation criteria). This evaluation demonstrated that the Modified Remedy satisfies the statutory requirements.

- The Modified Remedy is protective of human health and the environment; compliant with Federal and State requirements that are applicable or relevant and appropriate, and/or compliant with NCP § 300.430(f)(1)(ii)(c), which documents that a remedy may be selected (under specific conditions) that does not meet all potentially applicable or relevant and appropriate requirements; and provides long-term effectiveness and permanence in a manner that is essentially equivalent to the ROD Remedy.

- The Modified Remedy provides a higher degree of short-term effectiveness and implementability than the ROD Remedy. The Modified Remedy would: (i) significantly reduce the period of time needed to implement the remedy; (ii) significantly reduce the risk posed to workers, the community and the environment during construction; and (iii) significantly limit potentially substantial rainfall infiltration and subsequent leachate generation during the construction of the ROD Remedy landfill cover (while a portion of the IRM landfill cover is being removed and the new cover is being constructed).

- The Modified Remedy is expected to have a cost approximately 30 percent less than the ROD remedy with essentially an equivalent effectiveness.

The Modified Remedy was also evaluated with respect to *Superfund Green Remediation Strategy* (U.S. EPA, 2010). This evaluation demonstrated that the Modified Remedy would have a significantly smaller environmental footprint than the ROD Remedy during remedy implementation.

Consistent with providing a higher degree of Short-Term Effectiveness, reducing the environmental footprint for the Modified Remedy also serves to reduce the risk of adverse impacts to site workers and local community residents during remediation implementation. This is significant considering that approximately 1,500 people live within one (1) mile of the site and nearby residences within Wycliffe Estates are located within approximately 800 feet from the landfill.

The proposed Modified Remedy represents an appropriate remedy change for the MIG/DeWane Landfill Superfund Site. The Modified Remedy meets the statutory requirements, has an essentially equivalent effectiveness as the ROD Remedy, is significantly more cost-effective than the ROD Remedy, and would be more protective of human health and the environment and have a smaller environmental footprint than the ROD Remedy during implementation.

1. INTRODUCTION

This Technical Memorandum proposes a Modified Remedy for the MIG/DeWane Landfill Superfund Site ("site") located in Boone County, Illinois (**Figure 1**). This Technical Memorandum was prepared for BFI Waste Systems North America, LLC (BFINA) by Geosyntec Consultants (Geosyntec).

This Technical Memorandum provides: (i) a description of the proposed Modified Remedy, including the primary differences between the Modified Remedy and the Record of Decision (ROD) Remedy (U.S. EPA, 2000); (ii) the rationale for the Modified Remedy; and (iii) an evaluation of the Modified Remedy with respect to the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) §300.430 remedy selection requirements (nine evaluation criteria). The Modified Remedy was also evaluated with respect to the U.S. EPA's *Superfund Green Remediation Strategy* (U.S. EPA, 2010).

The rationale for the Modified Remedy is based on new and significant information collected since the ROD was issued. This new information, which is not included elsewhere in the Administrative Record file for the site, includes significant additional IRM landfill cover system thickness measurement data, leachate level measurement data, and groundwater quality data.

Submittal of this Technical Memorandum follows a 28 February 2012 meeting with the Illinois Environmental Protection Agency (IEPA) in which BFINA and Geosyntec presented a summary of the rationale for the Modified Remedy documented herein. The presentation handouts are included in **Appendix 1**.

2. DESCRIPTION OF MODIFIED REMEDY

This section provides a description of the proposed Modified Remedy, including the primary differences between the Modified Remedy and the ROD Remedy.

The Modified Remedy includes modifying the landfill cover component of the ROD Remedy. No other changes to the ROD Remedy are proposed. A summary of the ROD Remedy and Modified Remedy components is presented below:

Remedy Component	ROD Remedy	Modified Remedy
leachate collection and monitoring system	✓	✓
active and passive landfill gas collection system and monitoring program	✓	✓
leachate surface impoundment closure	✓	✓
surface water diversion system	✓	✓
access restrictions and institutional controls	✓	✓
natural attenuation of groundwater	✓	✓
long-term groundwater monitoring	✓	✓
long-term operation and maintenance program	✓	✓
new landfill cover system	new landfill cover	***improve IRM landfill cover***

The Modified Remedy would include making improvements to the substantial Interim Remedial Measures (IRM) landfill cover instead of constructing the new landfill cover component of the ROD Remedy. A summary comparison of the landfill cover components of the ROD Remedy and the proposed Modified Remedy is presented below:

ROD Remedy Landfill Cover Component	Modified Remedy Landfill Cover Component
▪ ***Soil Protection and Vegetative Layer*** - minimum 2 ½ feet thick on the crest of the landfill with a taper to a minimum of 2 feet at the toe of the slope. ▪ ***Drainage Layer*** - geosynthetic (geonet and geotextile). ▪ ***Barrier Layer*** - geosynthetic clay liner (GCL), bentonite between a geosynthetic flexible membrane and a geotextile. ▪ ***Subsoil/Grading Layer*** - minimum 12 inches thick to provide protective base for Barrier Layer (re-compacted IRM cover material). ▪ Minimum final grade of the total cover system of 3 percent.	▪ ***IRM landfill cover*** - consisting of an average of 11.5 feet compacted clay and topsoil on the landfill crest and an average of 3.8 feet of compacted clay and topsoil on side slopes. The IRM landfill cover generally consists of the following components: ✓ Variable thickness grading layer; ✓ 2-foot thick minimum compacted low-permeability clay soil layer on the crest; ✓ 6-inch thick topsoil/vegetation soil layer; and ✓ Established vegetation. ▪ ***IRM landfill cover improvements*** - placing additional compacted clay cover in limited areas on the side slopes where the cover is less than 2 feet thick and grading of the crest to establish a minimum slope of 3 percent. The improved and graded areas would receive a minimum of 6 inches of topsoil and seeded to establish and sustain vegetative growth.

The IRM landfill cover was constructed in accordance with an U.S. EPA Administrative Order on Consent (AOC) and an U.S. EPA and IEPA approved IRM scope of work documented in *Revised Technical Memorandum on Interim Response Measures* (Golder Associates, Inc. 1991). The purpose of the IRM landfill cover was to address exposed waste and a 5 to 10-acre depression on the crest of the landfill that was resulting in leachate seeps. The IRM landfill cover was constructed in 1993 and as documented herein, it has been very effective in significantly reducing infiltration of precipitation into the landfill by promoting precipitation runoff and eliminating ponding on the landfill.

The IRM landfill cover construction included a substantial thickness grading layer (backfilling and grading of the top and side slopes of the landfill to cover exposed waste and promote precipitation runoff); a 2-foot thick compacted low-permeability clay soil layer; a 6-inch thick topsoil/vegetation soil layer; and establishment of vegetation. As documented in Section 3.2.1, the substantial grading layer thickness needed to meet the AOC, resulted in an average IRM landfill cover thickness on the crest of 11.5 feet thick with some locations up to 19 feet thick.

A summary of the construction of the primary IRM landfill cover layers, as documented in the *Final Construction Report - Construction Activities, Interim Remedial Measures* (Golder Associates, Inc., 1993), is presented below:

- ***IRM Landfill Cover Grading Layer.*** The variable thickness grading layer was placed over the crest of the landfill to achieve a minimum four (4) percent slope. Approximately 168,500 cubic yards of compacted soil was placed for the grading layer. The grading layer soil was obtained from the onsite borrow area located directly west of the landfill. Preconstruction and construction testing data indicated that the grading layer soil was predominantly silty clay (CL). Construction compaction testing data documented that the grading layer soil was compacted to an average 96 percent of maximum standard Proctor (ASTM D-698) dry density.

- ***IRM Landfill Cover Low-Permeability Layer.*** The low-permeability layer was placed over the grading layer. Two (2) feet of clay soil was placed and compacted in 6-inch lifts. The low-permeability layer soil was obtained from the borrow area located directly west of the landfill. Preconstruction and construction testing data indicated that the low-permeability layer soil was silty clay (CL). Construction compaction testing data documented that the low permeability layer was compacted to an average 97 percent of maximum standard Proctor dry density. Laboratory permeability testing data documented an average permeability of 3.8×10^{-8} centimeters per second. In addition,

construction confirmation thickness measurement data documented that the low-permeability layer was thicker than two (2) feet at each measurement location.

The Modified Remedy would include placing additional compacted clay cover in limited areas on the side slopes where the cover is less than two (2) feet thick and grading of the IRM landfill crest to establish a minimum slope of three (3) percent, consistent with the ROD Remedy. It is estimated that the area of the landfill side slopes requiring improvement to achieve a minimum 2-foot thick compacted clay cover is approximately 4.1 acres. It is estimated that approximately 15 to 20 percent of the crest (2.5 to 3.4 acres) would require regrading to achieve a minimum slope of 3 percent. It is anticipated that the onsite borrow area located west of the landfill, and previously used to provide soil for the IRM landfill cover, would be utilized for the landfill cover improvements.

The improved landfill cover areas would receive a minimum of 6 inches of topsoil and seeded to establish and sustain vegetative growth. Erosion controls would be maintained until the vegetation has been adequately established.

3. RATIONALE FOR MODIFIED REMEDY

3.1 Overview

New and significant information has been collected since the ROD was issued that support the proposed Modified Remedy. These new and significant data are not included elsewhere in the Administrative Record file for the site. These data, which include significant additional IRM landfill cover system thickness measurement data, leachate level measurement data, and groundwater quality data, indicate that the IRM landfill cover system has achieved an effectiveness that is substantially equivalent to that predicted for the ROD Remedy landfill cover component.

The following sections summarize the new and significant information that has been collected since the ROD was issued.

3.2 IRM Cover Effectiveness

3.2.1 Thickness, Configuration, and Vegetation

Eighty-six individual clay thickness data points were used to assess the thickness of the IRM landfill clay portion of the cover. The topsoil thickness measurements from these data points were not included in the clay cover thickness assessment. The data indicated that the IRM landfill clay cover top (crest) averages 11.5 feet thick with some locations up to 19 feet thick. These data included clay thickness soil boring data from 41 gas vents and 17 dual-phase gas wells installed in 2008 as documented in the *Completion Report for Remedial Construction* (Geosyntec Consultants, 2010a), data from 24 Geoprobe® soil borings advanced in 2006 to assess the cover thickness as documented in the *Predesign Field Investigation Report* (Geosyntec Consultants, 2007b), and data from four gas probes installed in 1993 as documented in the *Final Remedial Investigation Report* (Clayton Environmental Consultants, 1997).

The clay cover thickness data points include the combined thickness of the IRM cover, which consists of the low permeability layer and the grading layer (not the topsoil). The low permeability layer and the grading layer were visually indistinguishable when collecting the soil boring data during above-mentioned installation activities. The two layers were not able to be distinguished due to several contributing factors which are described in the *Final Construction Report - Construction Activities, Interim Remedial Measures* (Golder Associates, Inc., 1993). The primary reasons are as follows:

- The soils used for the low permeability layer and the grading layer were excavated from the same borrow pit directly west of the landfill.
- The soils were both comprised of silty clay (CL). Preconstruction and construction testing data indicated that the grading layer soil was described as predominantly silty clay (CL) and the low permeability layer was classified as

silty clay (CL).

- Both soil layers were compacted to a similar degree. Construction compaction testing data documented that the grading layer soil and low permeability layer soil was compacted to an average 96 percent and 97 percent of maximum standard Proctor (ASTM D-698) dry density, respectively.
- The average water contents of the placed clay soils were 13.6 percent for the low permeability layer and 12.2 percent for the grading layer which are very similar and would yield similar compaction results.

Data from 23 measurement points were collected from the top (crest) of the landfill and data from 63 of the measurement points were collected from the landfill side slopes. These cover thickness measurement data are summarized in **Table 1**, from the reports documented above.

The measured IRM landfill cover minimum and maximum and calculated average thickness data for the landfill crest, the landfill side slopes, and the entire landfill are summarized below:

Measured/Calculated	IRM Landfill Cover Thickness (feet)		
	Landfill Crest	**Landfill Side Slopes**	**Entire Landfill**
Maximum	19.0	12.5	19.0
Average	11.5	3.8	5.8
Minimum	5.0	1.5	1.5

The measured IRM landfill cover thickness was 3.0 feet or greater at 60 of 86 measurement locations and 2.0 feet or greater at 77 of the 86 measurement locations. **Figure 2** illustrates the extent of the cover thickness greater than 3.0 feet (approximately 28 acres or 57% of the landfill cover), greater than 2.0 feet and less than 3.0 feet (approximately 15 acres or 33% of the landfill cover), and limited areas less than 2.0 feet (only approximately 4 acres or 9% of the landfill cover). The significant thickness of the soil cover on the crest, as much as 19.0 feet, is the result of the significant quantity of IRM grading layer soil used to fill the flat and depressed areas of the landfill prior to the IRM compacted clay layer construction.

Uniform and dense grass vegetative growth has been established on the IRM landfill cover. **Figure 3** presents a comparison of aerial photographs from 1991 (prior to construction of the IRM landfill cover) and from 2011. **Figure 3** depicts that in 1991, prior to placement of the IRM landfill cover, that the site contained areas of apparent ponding and was sparsely vegetated. The 2011 aerial photograph depicts uniform and dense vegetative growth, no ponding, and no evidence of significant erosion. This is indicative of an landfill cover configuration that effectively promotes runoff while minimizing cover erosion.

3.2.2 Hydraulic Efficiency

When modeled, the new IRM landfill cover thickness measurement data indicate that the hydraulic efficiency or effectiveness of the IRM landfill cover is more than 98%. That is, the IRM landfill cover is at least 98% effective in reducing infiltration into the landfill. The ROD Remedy landfill cover is estimated to have a hydraulic efficiency of 99%.

Reducing water infiltration through the cover system into the landfill waste provides long-term control of the quantity of leachate generated and subsequently reduces the potential for migration of leachate constituents to groundwater.

Hydraulic efficiency is a parameter that is used to quantify the effectiveness of cover systems in minimizing water infiltration into the landfill waste. The hydraulic efficiency is the percent of infiltration that is blocked by the cover; therefore, the highest possible hydraulic efficiency is 100%. The hydraulic efficiency was calculated for each of the following three landfill covers using the Hydrologic Evaluation of Landfill Performance (HELP) model developed by the U.S. Army Corps of Engineers for the U.S. EPA (see **Appendix 2**).

- ROD Remedy landfill cover
  - The ROD Remedy cover was split into one subarea for the crest and one subarea for the side slopes. This HELP model assumes a uniform cover thickness for each the crest and the side slopes. The crest and side slope hydraulic efficiencies were compiled to determine the total hydraulic efficiency of 99% using the equation below

- IRM landfill cover
  - The IRM landfill cover was split into three subareas for the existing crest and five subareas for the existing side slopes based on the existing differential cover thickness measurements.
  - The hydraulic efficiencies of each subarea were compiled to determine the total hydraulic efficiency of 98% using the equation below.

- Generic IAC § 811 landfill soil cover (the ROD documented that IEPA and U.S. EPA consider IAC § 811 relevant and appropriate)
  - The 811 landfill cover was split into one subarea for the crest and one subarea for the side slopes. This HELP model assumes a uniform cover thickness for each the crest and the side slopes
  - The crest and side slope hydraulic efficiencies were compiled to determine the total hydraulic efficiency of 95% using the equation below

The total average hydraulic efficiency was calculated for each cover using the following formula:

$$\Sigma[h_i \times (sa_i / A)]$$

Where: h_i=hydraulic efficiency for Subarea i

sa_i = surface area of Subarea i
A = total surface area of the landfill

The hydraulic efficiency results are documented in **Appendix 2** and summarized below:

Cover System	Calculated Hydraulic Efficiency (percent)[1]
ROD Remedy landfill cover	99%
IRM landfill cover	98%
generic IAC § 811 landfill soil cover	95%

[1]The calculated hydraulic efficiency for the ROD Remedy landfill cover and the generic IAC § 811 landfill soil cover were documented previously to the IEPA in the *Alternative Landfill Cover System Evaluation (Revision 1)* (Geosyntec Consultants, 2007a).

These results indicate that the IRM landfill cover is more effective in reducing infiltration into the landfill waste than the generic IAC § 811 soil cover and that the IRM landfill cover effectiveness is essentially equivalent to the ROD Remedy landfill cover.

3.2.3 Leachate Level Reduction

New leachate level data indicate a significant leachate level reduction since IRM landfill cover construction demonstrating that the IRM landfill cover has been effective in significantly reducing infiltration of precipitation into the landfill by promoting precipitation runoff and eliminating ponding on the landfill.

Leachate level measurement data were collected from 34 gas vents and 14 dual-phase gas wells in 2008 (approximately 15 years after the IRM landfill cover installation) as documented in the *Completion Report for Remedial Construction* (Geosyntec Consultants, 2010a). These data were compared to 1995 leachate level information (surveyed ground elevation data at former seep locations and leachate well level data) as documented in the *Preliminary Remedial Design Report* (Geosyntec Consultants, 2007c). The 2008 and 1995 leachate level data used in this comparison are summarized in **Table 2**.

Figures 4 and **5** are leachate elevation contour maps that were generated using the 2008 and 1995 leachate level data in **Table 2**. Additionally, **Figure 6** depicts two cross-sections comparing the 1995 and 2008 leachate level data. The difference in volume of leachate between the **Figure 4** and **5** contour maps indicates a significant leachate level reduction over time (see calculations in **Appendix 3**). These data calculations indicate

that leachate levels in the landfill have reduced an average of approximately two (2) feet between 1995 and 2008, based on the available data.

As **Figures 4** and **5** illustrate, the 2008 data is from data points that are uniformly located across the entire landfill, whereas the 1995 data is located primarily along the edge of the landfill where leachate seeps were observed and on the top where there are 2 leachate wells. The relative increases in leachate at the side slopes from 1995 to 2008 which are illustrated in the cross-section in **Figure 6** are likely caused by the lack of data points along these areas from 1995. However, any increase or build-up of leachate at the side slopes of the landfill will be mitigated with the installation of the proposed leachate collection system. The proposed remedy includes leachate collection trenches along the side slopes which would convey leachate from these areas for treatment and/or disposal.

Further evidence of a reduction of leachate generation and leachate levels in the landfill is that the leachate surface impoundment, which receives leachate from the landfill's leachate collection system, is essentially dry. Prior to the implementation of the IRM landfill cover, several response actions were conducted to prevent leachate from overflowing the leachate surface impoundment. In 1989, approximately 80,000 gallons of leachate was removed from the leachate surface impoundment. In 1990, approximately 75,000 additional gallons of leachate was removed from the surface impoundment and the leachate surface impoundment berms were repaired and increased in height. The leachate impoundment containing leachate is visible on the eastern margin of the site in the pre-IRM (1991) aerial photograph on **Figure 3**. The need for the 1989/1990 response actions indicated the significant level of leachate that was generated and the lack of hydraulic efficiency of the landfill's cover prior to implementation of the IRM landfill cover. Therefore, now that the surface impoundment is essentially dry it further demonstrates the effectiveness of the IRM landfill cover in reducing infiltration into the landfill and subsequent leachate generation.

3.3 Groundwater Quality Improvement

Recent groundwater sampling data indicate a significant improvement in groundwater quality since the RI. Groundwater sampling was conducted in April 2010, December 2010 and December 2011. The sampling results are documented in the following letter reports to IEPA.

- *2010 Groundwater and Leachate Sampling and Related Activities Summary* (Geosyntec Consultants, 2010b).
- *December 2010 Groundwater and Leachate Sampling Summary and Request to Discontinue Monitoring of Herbicides, Pesticides and PCBs* (Geosyntec Consultants, 2011).

- *December 2011 Groundwater Sampling Summary* (Geosyntec Consultants, 2012).

The groundwater sample analytical results are summarized in **Table 3**, which also includes previous groundwater analytical data for comparison purposes. A summary of these results are presented below for organic and inorganic site CoCs:

Organic CoCs

The site organic CoCs, as identified in the ROD, are volatile organic compounds (VOCs), including benzene, 1,1-dichloroethene (DCE), 1,2-dicholopropane (DCP), trichloroethene (TCE), tetrachloroethene (PCE), and vinyl chloride (VC).

The 2010/2011 groundwater sample laboratory analytical results indicated that benzene was the only organic CoC detected at a concentration greater than EPA Maximum Contaminant Levels (MCLs) or Illinois State Class I Groundwater Standards (ICGSs). Benzene was detected at one groundwater monitoring well location (MW06S) at a concentration that just exceeded the MCL/ICGS of 5 micrograms per liter (µg/L) during the three recent sampling events. Additionally, the benzene concentration at MW06S (7 µg/L) is significantly less than the site-specific groundwater action level of 1,370 µg/L (for the North Interface hydrostratigraphic unit) that triggers the requirement for groundwater remediation as established in the ROD. MW06S is located adjacent to the north-central portion of the landfill as depicted on **Figure 7**. No other organic CoCs were detected at concentrations greater than MCLs/ICGSs. A comparison of the recent groundwater analytical data to the RI data (from 1993, 1994 and 1995) is depicted on **Figure 7** and in concentration bar charts in **Appendix 4** and is summarized below:

- During the RI in 1995, benzene was detected at concentrations greater than the MCL/ICGS of 5 µg/L at three (3) groundwater monitoring well locations (MW06S, MW13, and MW15) at concentrations ranging between 6 µg/L and 12 µg/L. Benzene was not detected at concentrations greater than the MCL/ICGS except at one (1) groundwater monitoring location (MW06S) during the April and December 2010 and December 2011 groundwater monitoring events when benzene was detected a concentrations of 7.6, 7.7, and 7.6 µg/L, respectively.

- During the RI, DCE was detected at one (1) groundwater monitoring well location at a concentration greater than the MCL/ICGS of 7 µg/L (MW02D, 1993, 15 µg/L). DCE was not detected at any groundwater monitoring well location during the April and December 2010 and December 2011 groundwater monitoring events.

- During the RI, DCP was detected at two (2) groundwater monitoring well locations at concentrations greater than the MCL/ICGS 5 µg/L (MW14, 1995,

10 μg/L and MW16, 1995, 6 μg/L). DCP was not detected at any groundwater monitoring well location during the April and December 2010 and December 2011 groundwater monitoring events.

- During the RI, PCE was detected at two (2) groundwater monitoring well locations at concentrations greater than the MCL/ICGS of 5 μg/L (MW02S, 1993, 6 μg/L and MW14, 1995, 7 μg/L). PCE was not detected at any groundwater monitoring well location during the April and December 2010 and December 2011 groundwater monitoring events.

- During the RI, TCE was detected at two (2) groundwater monitoring well locations at concentrations greater than the MCL/ICGS of 5 μg/L (MW14, 1995, 7 and 10 μg/L and MW15, 1995, 6 μg/L). TCE was not detected at any groundwater monitoring well location during the April and December 2010 and December 2011 groundwater monitoring events.

- During the RI in 1995, VC was detected at concentrations greater than the MCL/ICGS of 2 μg/L at five (5) groundwater monitoring well locations (MW03S, MW13, MW14, MW15, and MW16) at concentrations ranging between 3 μg/L (MW16) and 28 μg/L (MW15). Since 1995, VC has been detected at a concentration greater than the MCL/ICGS one time at one (1) groundwater monitoring well location (MW03S, 2000, 6 μg/L). VC was not detected at any groundwater monitoring well location during the April and December 2010 and December 2011 groundwater monitoring events.

The organic CoC groundwater quality improvement, documented above and illustrated on **Figure 7** and in bar charts provided in **Appendix 4**, demonstrates the IRM landfill cover's hydraulic efficiency has been effective in significantly improving groundwater quality. Based on these data, it is expected that groundwater quality will continue to improve and achieve concentrations less than MCL/ICGS for all organic CoCs.

During the 2010/2011 groundwater monitoring events, no organic CoCs were detected in the West Glacial Pathway groundwater monitoring wells at concentrations greater than MCLs/ICGSs and only one CoC (benzene) was detected in one North Interface Pathway groundwater monitoring well (MW06S) at concentrations that just exceeded the MCL/ICGS.

Inorganic CoCs

Historically, six (6) metals have been detected at groundwater monitoring well locations at concentrations greater than their respective MCLs (antimony, arsenic, chromium, lead, mercury, zinc) and 10 metals have been detected at concentrations greater than

their respective ICGSs (antimony, arsenic, boron, chromium, iron, lead, mercury, magnesium, nickel, zinc).

During the April and December 2010 and December 2011 groundwater monitoring events only arsenic was detected above its MCL and only five (5) metals were detected above their respective ICGSs (arsenic, boron, iron, manganese, and nickel). Further, these metals were typically detected at concentrations just exceeding (within same order of magnitude of) their respective MCLs/ICGSs.

Based on these data, it is expected groundwater quality would continue to improve and achieve concentrations less than MCLs/ICGSs for all inorganic CoCs.

4. EVALUATION OF MODIFIED REMEDY

This section presents an evaluation to confirm that the Modified Remedy satisfies statutory requirements.

The Modified Remedy was evaluated with respect to the NCP §300.430 remedy selection requirements (nine evaluation criteria) including:

- two threshold criteria - Overall Protection of Human Health and the Environment and Compliance with Applicable or Relevant and Appropriate Requirements;
- five balancing criteria - Long-Term Effectiveness and Permanence; Reduction of Toxicity, Mobility, or Volume through Treatment; Short-Term Effectiveness; Implementability; and Cost; and
- two modifying criteria - State Acceptance and Community Acceptance.

This evaluation focuses on the landfill cover component of the remedy which is the only difference between the Modified Remedy and the ROD Remedy.

4.1 Threshold Criteria

Overall Protection of Human Health and the Environment

This criterion considers whether the Modified Remedy provides adequate protection of human health and the environment and how risks posed by applicable exposure pathways are eliminated, reduced, or controlled.

The Modified Remedy would provide adequate protection of human health and the environment by reliably preventing exposure to the landfill waste and to site contaminants over time by providing adequate storm water drainage and reducing precipitation infiltration and subsequent leachate generation and migration to groundwater. As documented in Section 3.2.2, the IRM landfill cover (98% hydraulic efficiency) is more effective in reducing infiltration into the landfill than the generic IAC § 811 landfill soil cover (95% hydraulic efficiency) and that the landfill cover effectiveness is essentially equivalent to the ROD Remedy landfill cover (99% hydraulic efficiency).

Moreover, based on the leachate level reduction and groundwater quality improvement documented in Sections 3.2.3 and 3.3, it should be feasible to ultimately attain groundwater quality MCLs/ICGSs with the Modified Remedy landfill cover component and complimentary unchanged non-landfill cover components of the ROD Remedy.

The following table provides an evaluation of the Modified Remedy with respect to the remedial action objectives pertinent to the landfill cover component of the remedy to

demonstrate how risks posed by applicable exposure pathways are eliminated, reduced, or controlled.

Pertinent Remedial Action Objective (*ROD Section VIII*)	**Analysis Summary**
"Mitigate potential human and ecological risks associated with leachate seeps, including leachate waters, sediments, and corresponding offsite precipitation."	The new and significant data indicate that the leachate level in the landfill has reduced significantly since IRM landfill cover implementation. The Modified Remedy includes placing additional compacted clay cover in limited areas on the side slopes where the IRM landfill cover is less than 2 feet thick. This landfill cover improvement and complimentary non-landfill cover components of the ROD Remedy that remain unchanged, including leachate collection and monitoring and surface water diversion systems, and a long-term operation and maintenance program, would provide long-term mitigation of these risks.
"Minimize the impacts of precipitation runoff on the surface water and sediment quality of the drainage channels and intermittent stream."	The IRM included excavation of impacted soil from the intermittent drainage channels located north of the site and backfilling of the excavated areas with clean soil and topsoil mitigating the risk associated with previously detected impacts. The Modified Remedy landfill cover component (improving IRM landfill cover) and complementary non-landfill cover components of the ROD Remedy that remain unchanged, including leachate collection and monitoring and surface water diversion systems, and a long-term operation and maintenance program, would provide long-term mitigation of this risk.
"Minimize leachate migration potential to groundwater."	The modeled hydraulic efficiency of the IRM landfill cover (98% hydraulic efficiency) is essentially equivalent to the ROD Remedy landfill cover (99% hydraulic efficiency). This efficiency has been demonstrated by a significant reduction in leachate levels and groundwater quality improvement. The expected continued reduction in leachate generation would minimize leachate contaminant migration to groundwater to a degree essentially equivalent to the ROD Remedy.
"Return groundwater to drinking water quality through landfill containment/control measures and natural attenuation, and will comply with water quality criteria for Class I aquifers established under Illinois 35 IAC Part 620 (Groundwater Standards)."	The new and significant data indicate that the leachate level in the landfill has significantly reduced and groundwater quality has significantly improved since the IRM landfill cover implementation. The Modified Remedy landfill cover component (improving the IRM landfill cover) and complimentary non-landfill cover components of the ROD Remedy that remain unchanged, including leachate collection and monitoring and surface water diversion systems, and a long-term operation

Pertinent Remedial Action Objective (*ROD Section VIII*)	Analysis Summary
	and maintenance program are expected to continue to be effective in reducing the generation of leachate and groundwater contamination at the site to achieve MCLs/ICGSs.
"Address potential future impacts to surface water from migration of contaminated groundwater."	The new and significant data indicate that the leachate level in the landfill has significantly reduced and groundwater quality has significantly improved since the IRM landfill cover implementation. The Modified Remedy landfill cover component (improving the IRM landfill cover) and complimentary non-landfill cover components of the ROD Remedy that remain unchanged, including leachate collection and monitoring and surface water diversion systems, and a long-term operation and maintenance program are expected to continue to be effective in reducing the generation of leachate and groundwater contamination at the site to achieve MCLs/ICGSs and address potential future impacts to surface water (via the migration of contaminated groundwater to surface water).
"Address potential ecological risks associated with leachate seeps runoff to the intermittent stream, drainage channels to the north, and the Kishwaukee River."	The IRM included excavation of impacted soil from the intermittent drainage channels located north of the site and backfilling of the excavated areas with clean soil and topsoil mitigating the risk associated with previously detected impacts. The Modified Remedy landfill cover component (improving the IRM landfill cover) and complementary non-landfill cover components of the ROD Remedy that remain unchanged, including leachate collection and monitoring and surface water diversion systems, and a long-term operation and maintenance program would provide long-term mitigation of this risk.

Compliance with Applicable or Relevant and Appropriate Requirements

This criterion considers whether the Modified Remedy complies with applicable or relevant and appropriate Federal and State requirements, standards, criteria, and limitations which are collectively referred to as "ARARs," unless such ARARs are waived under CERCLA § 121.

ARARs can be chemical-specific, action-specific and location-specific. For the subject remedy change component, the primary ARARs are action-specific ARARs for landfill closure requirements for: (i) preventing exposure to the landfill waste and to site contaminants, (ii) providing adequate storm water drainage, and (iii) reducing

precipitation infiltration and leachate generation and leachate contaminant migration to groundwater. In addition, chemical-specific ARARs for groundwater are also applicable in regards to evaluating the effectiveness of the Modified Remedy landfill cover component in reducing infiltration, leachate generation and subsequently achieving groundwater quality standards.

The site is classified as a Type I landfill, a co-disposal facility where hazardous wastes were disposed of with municipal solid wastes. In February 1969, the landfill was registered with the State of Illinois (State) and disposal operations began in a former gravel pit portion of the site. The State required the placement of a 5-foot compacted clay liner across the bottom of the former gravel pit, and vertically along the sidewalls. The landfill operated from 1969 until 1988. The landfill was permitted to receive residential, municipal, commercial and industrial wastes and the facility operated under IAC § 807. With the enactment of Resource Conservation and Recovery Act (RCRA) regulations in the early 1980s, the wastes received by the landfill were later restricted to non-hazardous. It is estimated that the landfill contains approximately 3,700,000 cubic yards of waste.

The ROD identified IAC § 807 and IAC § 811/814 as ARARs for the landfill cover component of the remedy. The ROD documented that IEPA and U.S. EPA consider that IAC § 807 is applicable and that IAC 811/814 are relevant and appropriate.

- IAC § 807 (Solid Waste) provides requirements for Municipal Solid Waste Landfills (MSWLFs) closed prior to 1990. IAC § 807 specifies that the landfill must be covered by a final cover consisting of a minimum of two (2) feet of compacted soil.

- IAC § 811 (Standards for New Solid Waste Landfills) provides requirements for new landfills after 1990. IAC § 811 specifies that the landfill must be covered by a final cover consisting of a low-permeability layer overlain by a final protective layer. The low-permeability layer must be a minimum of three (3) feet of compacted soil or a geomembrane/other low-permeability layer provided the layer is of equivalent or superior performance to the soil layer. The final protective layer must be a minimum of three (3) feet of soil.

- IAC § 814 (Standards for Existing Landfills and Units) provides requirements for MSWLFs that existed prior to 1990 and continue to operate, essentially requiring that IAC § 811 final closure provision are satisfied. IAC § 814 further allows, as a "grandfather" provision, existing facilities to close under IAC § 807 if closure was initiated by September 18, 1992.

The new and significant data document that the average thickness of the IRM landfill cover is 5.8 feet and 91% of the cover is greater than two (2) feet thick. The Modified

Remedy landfill cover component would include placing additional compacted clay cover in those limited areas on the side slopes where the cover is less than two (2) feet thick. The improved areas would also receive a minimum of six (6) inches of topsoil to establish and maintain vegetative growth. Therefore, the Modified Remedy substantially meets the IAC § 807 final cover requirements. Furthermore, as documented in Section 3.2.2, the IRM landfill cover is more effective in reducing infiltration into the landfill than the generic IAC § 811 soil cover and that the IRM landfill cover effectiveness is essentially equivalent to the ROD Remedy landfill cover.

The ROD identified IAC § 620 and CFR § 141 as chemical-specific ARARs for evaluating groundwater quality at the site.

- IAC § 620 (Groundwater Quality) establishes groundwater classes and water quality standards (ICGSs) for the State of Illinois.

- CFR § 141 (National Primary Drinking Water Regulations) establishes primary and secondary maximum contaminant levels (MCLs), which are enforceable standards of maximum permissible levels of contaminants in drinking water.

The new and significant leachate level and groundwater quality data, documented in Sections 3.2.3 and 3.3, indicate that the Modified Remedy landfill cover component would effectively reduce the generation of leachate and groundwater contamination at the site. Groundwater quality has improved since the RI in 1994/1995 when six (6) groundwater monitoring wells had concentrations of one (1) to four (4) CoCs greater than MCLs/ICGSs compared to the most recent groundwater sampling event in 2011 when only one (1) CoC (benzene) was detected at one (1) groundwater monitoring well location (MW06S) at a concentration that exceeded MCLs/ICGSs. Based on these data, it is expected that groundwater quality would continue to improve and achieve concentrations less than groundwater quality MCLs/ICGSs for all CoCs.

This ARARs evaluation also considered 40 CFR § 300.430(f)(1)(ii)(c), which documents that an alternative that does not meet an ARAR under federal environmental or state environmental or facility siting laws may be selected under specific conditions. The following is a summary of the evaluation of these conditions applicable for the Modified Remedy:

- *Compliance with the requirement will result in greater risk to human health and the environment than other alternatives.*

  The Modified Remedy would significantly reduce the risk posed to workers, the community and the environment during construction compared to the ROD Remedy.

  The ROD remedy landfill cover would require removal of top six (6) inches of

topsoil and regrading of the underlying compacted clay that would be replaced by a vegetative/protective layer over a drainage layer and GCL. It is estimated that the ROD Remedy landfill cover would require 5,000 to 7,000 additional trucks to place an additional 150,000 cubic yards of vegetative/protective layer soil above the GCL and drainage layer. This quantity of soil is not available in the west borrow area and a new south borrow area has been contemplated for the remedy. If a new borrow area cannot be developed south of the site, the cover soil would have to be imported from an offsite location. All of the above factors would increase the traffic (accident) risk along the onsite and offsite travel routes compared to the Modified Remedy.

The Modified Remedy would reduce construction impacts to the community due to significantly less material hauling and handling activities. Construction of the ROD Remedy landfill cover would increase the potential for dust generation which could potentially affect downwind residences. This is significant considering that approximately 1,500 people live within one (1) mile of the site (U.S. EPA, 2012) and nearby residences within Wycliffe Estates are located within approximately 800 feet from the landfill.

The Modified Remedy would significantly limit potentially substantial rainfall infiltration and subsequent leachate generation during the construction of the ROD Remedy landfill cover while a portion of the IRM cover is being removed and the new cover is being constructed.

- *The alternative will attain a standard of performance that is equivalent to that required under the otherwise applicable standard, requirement, or limitation through use of another method or approach.*

  As documented in Section 3.2.2, the IRM landfill cover is more effective in reducing infiltration into the landfill than the generic IAC § 811 landfill soil cover (considered relevant and appropriate by IEPA and U.S. EPA) and the IRM landfill cover effectiveness is essentially equivalent to the ROD Remedy landfill cover. The new and significant leachate level and groundwater quality data, documented in Sections 3.2.3 and 3.3, indicate that the Modified Remedy would continue to effectively reduce the generation of leachate and groundwater impacts at the site. Based on these data, it is expected that groundwater quality would continue to improve and achieve concentrations less than groundwater quality MCLs/ICGSs. The proposed Modified Remedy landfill cover improvements would add to the performance and effectiveness of the IRM landfill cover.

4.2 Balancing Criteria

Long-Term Effectiveness and Permanence

This criterion considers the expected residual risk and the ability of the Modified Remedy to maintain reliable protection of human health and the environment over time, once the remedy is implemented.

Consistent with the above evaluation of Overall Protection of Human Health and the Environment, the Modified Remedy would provide adequate long-term effectiveness and permanence by reliably preventing exposure to landfill waste and to site contaminants over time by providing adequate storm water drainage and reducing precipitation infiltration and subsequent leachate generation and migration to groundwater. With the reduction in leachate generation, it is expected that groundwater quality would continue to improve and achieve concentrations less than groundwater quality MCLs/ICGSs.

The Modified Remedy would adequately address long-term cover durability issues considering the substantial thickness and character of the IRM landfill cover and the proposed landfill cover improvements. In addition, the Modified Remedy cover and the planned landfill gas management component of the ROD Remedy that remains unchanged would provide for adequate long-term landfill gas control.

Reduction of Toxicity, Mobility, or Volume through Treatment

This criterion considers the anticipated performance of treatment technologies in reducing the toxicity, mobility, or volume of contaminants at the site.

For the Modified Remedy, groundwater quality is improved by reducing precipitation infiltration and the subsequent continued reduction in leachate generation and leachate migration to groundwater. As documented in Section 3.2.2, the IRM landfill cover (98% hydraulic efficiency) is more effective in reducing infiltration into the landfill than the generic IAC § 811 soil cover (95% hydraulic efficiency) and the IRM landfill cover effectiveness is essentially equivalent to the ROD Remedy landfill cover (99% hydraulic efficiency). Further, based on the leachate level reduction and groundwater quality improvement documented in Sections 3.2.3 and 3.3, it is expected that groundwater quality would continue to improve and achieve concentrations less than groundwater quality MCLs/ICGSs.

Short-Term Effectiveness

This criterion considers the period of time needed to implement the remedy and any adverse impacts that may be posed to workers, the community and the environment during construction and operation of the remedy.

The Modified Remedy consists of improving the IRM landfill cover, as opposed to removing a portion of the IRM cover and constructing the ROD proposed new cover. The Modified Remedy would have greater short-term effectiveness than the ROD Remedy as the Modified Remedy would:

- Significantly reduce the period needed to implement the remedy. It is estimated that the Modified Remedy would be implemented approximately one year faster than the ROD remedy.

- Significantly reduce the risk posed to workers, the community and the environment during construction compared to the ROD Remedy. The ROD Remedy landfill cover would require removal of six (6) inches of topsoil and regarding of the underlying compacted clay that would be replaced by a vegetative/protective layer over a drainage layer and GCL. It is estimated that the ROD Remedy landfill cover would require 5,000 to 7,000 additional trucks to place an additional 150,000 cubic yards of vegetative/protective layer soil above the drainage layer and GCL. Further, if a new borrow area cannot be developed south of the site, the cover soil would have to be imported from an offsite location. All of the above factors would increase the traffic (accident) risk along the onsite and offsite travel routes compared to the Modified Remedy. In addition, construction of the ROD Remedy landfill cover would increase the potential for dust generation which could potentially affect downwind residences. This is significant considering that approximately 1,500 people live within one (1) mile of the site (U.S. EPA, 2012) and nearby residences within Wycliffe Estates are located within approximately 800 feet from the landfill.

- Limit potentially substantial rainfall infiltration and subsequent leachate generation during the construction of the ROD proposed landfill cover while a portion of the IRM landfill cover is being removed and replaced.

As documented in Section 5, the Modified Remedy would have a significantly smaller environmental footprint compared to the ROD Remedy during remedy implementation.

Implementability

This criterion considers the technical and administrative feasibility of a remedy from design through construction and operation. Factors such as availability of services and materials, administrative feasibility, and coordination with other governmental entities are also considered.

The Modified Remedy landfill cover component is readily implemented with commonly used construction materials and techniques. It is more easily implemented than the

ROD Remedy landfill cover. It is estimated that the Modified Remedy would be implemented approximately one year faster than the ROD remedy.

Cost

This criterion considers the cost of the Modified Remedy. The cost of the Modified Remedy is expected to be approximately 30 percent less than the ROD remedy.

Pursuant to NCP §300.430(f)(1)(ii)(D), a remedy is considered cost-effective if its costs are proportional to its overall effectiveness. The analysis herein demonstrates that the Modified Remedy satisfies the threshold criteria (protective of human health and the environment and ARAR-compliant) and the other balancing criteria (long-term effectiveness and permanence, short-term effectiveness and implementability). Therefore, the relationship of the overall effectiveness of the Modified Remedy is considered to be proportional to its costs and hence the Modified Remedy is considered cost-effective. Moreover, considering the IRM landfill cover effectiveness is essentially equivalent to the ROD Remedy landfill cover, the Modified Remedy is significantly more cost effective than the ROD Remedy.

4.3 Modifying Criteria

State Acceptance

It is anticipated that the Modified Remedy would require administrative approval from U.S. EPA and IEPA through an Explanation of Significant Differences (ESD) or a ROD Amendment. In the interim, BFINA will continue to seek active agency participation related to the Modified Remedy to ensure timely resolution of agency concerns. As indicated in Section 1, submittal of this Technical Memorandum follows a 28 February 2012 meeting with IEPA in which BFINA and Geosyntec presented a summary of the rationale for the Modified Remedy documented herein. The presentation handouts are included in **Appendix 1**.

Community Acceptance

Community acceptance of the Modified Remedy would be assessed through public comments received as part of the ESD or ROD Amendment process.

4.4 Evaluation Summary

A summary of the above NCP criteria evaluation, confirming that the Modified Remedy satisfies statutory requirements, is presented below. This summary focuses on the landfill cover component of the remedy which is the only difference between the Modified Remedy and the ROD Remedy.

NCP Criteria	Satisfied by Modified Remedy?
Overall Protectiveness of Human Health and the Environment	***YES*** - The Modified Remedy would provide adequate protection of human health and the environment by reliably preventing exposure to the landfill waste and to site contaminants over time by providing adequate storm water drainage and reducing precipitation infiltration and subsequent leachate generation and migration to groundwater. The evaluation of the Modified Remedy with respect to the remedial action objectives pertinent to the landfill cover component of the remedy demonstrated that the Modified Remedy substantially eliminates, reduces or controls applicable site exposure pathways.
Compliance with ARARs	***YES*** - Action-Specific ARARs: The Modified Remedy landfill cover component meets the IAC § 807 final cover requirements (considered applicable by IEPA and U.S. EPA), is more effective in reducing infiltration into the landfill than the generic IAC § 811 landfill soil cover (considered relevant and appropriate by IEPA and U.S. EPA), and has essentially an equivalent effectiveness in reducing infiltration into the landfill as the ROD Remedy landfill cover. Chemical-Specific ARARs: Based on new groundwater quality (improvement) data, it is expected that groundwater quality would continue to improve and achieve concentrations less than groundwater quality MCLs/ICGSs for all CoCs.
Long-Term Effectiveness and Permanence	***YES*** - The Modified Remedy provides long-term effectiveness and permanence by preventing exposure to landfill waste and to site contaminants over time by providing adequate storm water drainage and reducing precipitation infiltration and subsequent leachate generation and migration to groundwater in a manner that is essentially equivalent to the ROD Remedy. The Modified Remedy would adequately address long-term cover durability issues considering the substantial thickness and character of the IRM landfill cover and the proposed landfill cover improvements. In addition, the Modified Remedy cover and the planned landfill gas management component of the ROD Remedy that remains unchanged would provide for adequate long-term landfill gas control.
Reduction of Toxicity, Mobility, or Volume through Treatment	***YES*** - Based on the new and significant leachate level reduction and groundwater quality improvement data, it is expected that groundwater quality will continue to improve and achieve concentrations less than groundwater quality MCLs/ICGSs.
Short-Term Effectiveness	***YES*** - The Modified Remedy provides a higher degree of short-term effectiveness than the ROD Remedy. The Modified Remedy would significantly reduce the period needed to implement the remedy; significantly reduce the risk posed to workers, the community and the environment during construction; and significantly limit potentially substantial rainfall infiltration and subsequent leachate generation

NCP Criteria	Satisfied by Modified Remedy?
	during the construction of the ROD Remedy landfill cover while a portion of the IRM landfill cover is being removed and the new cover is being constructed. As documented in Section 5, the Modified Remedy would have a significantly smaller environmental footprint compared to the ROD Remedy during remedy implementation.
Implementability	***YES*** - The Modified Remedy is more easily implemented than the ROD Remedy; estimated to be implemented approximately one year faster than ROD Remedy.
Cost	***YES*** - The Modified Remedy is more cost effective than the ROD Remedy. The Modified Remedy is expected to have a cost approximately 30 percent less than the ROD remedy with essentially an equivalent effectiveness.
State Acceptance	Contingent upon approval from U.S. EPA and IEPA through an ESD or ROD Amendment.
Community Acceptance	Public comments would be solicited through an ESD or ROD Amendment.

5. MODIFIED REMEDY ENVIRONMENTAL FOOTPRINT

In *Superfund Green Remediation Strategy* (U.S. EPA, 2010), "*EPA defines green remediation as the practice of considering all environmental effects of remedy implementation and incorporating options to minimize the environmental footprints of cleanup actions.*" This U.S. EPA strategy document further states that "*Environmental and community effects from cleanup activities, including fossil fuel consumption, emission of GHG and air pollutants, disruption to water cycle balances, and soil erosion, need to be considered.*"

The Modified Remedy would have a significantly smaller environmental footprint than the ROD Remedy during remedy implementation based on reduced fossil fuel consumption and emissions and reduced potential for soil erosion and fugitive dust emissions as described below.

- ***Reduced Fossil Fuel Consumption and Emissions.*** The Modified Remedy would reduce the consumption of fossil fuels and associated emissions of GHG and air pollutant emissions compared to the ROD Remedy.

  It is estimated that the Modified Remedy would be implemented approximately one year faster than the ROD Remedy, significantly reducing the use of heavy construction equipment onsite and the consumption of fossil fuels and associated emissions.

  It is estimated that the ROD Remedy would require an estimated 5,000 to 7,000 additional truck loads to haul an additional 150,000 cubic yards of landfill cover materials. Further, if a new borrow area cannot be developed south of the site, this cover soil would need to be imported from an offsite location further increasing the consumption of fossil fuels and associated emissions.

  The Modified Remedy significantly limits potentially substantial rainfall infiltration and subsequent leachate generation during the construction compared to the ROD Remedy (while a portion of the vegetation and topsoil of the IRM landfill cover is removed and the new cover is constructed). This reduces the quantity of leachate that would be collected by the leachate collection system and potentially require off-site hauling (and further consumption of fossil fuels and associated emissions).

- ***Reduced Potential for Soil Erosion and Fugitive Dust Emissions.*** The Modified Remedy would significantly reduce the potential for soil erosion and fugitive dust emissions during remedy implementation. Significantly less land area would be disturbed and the land disturbance would be over a significantly less period of time for the Modified Remedy compared to the ROD Remedy.

Figure 8 shows the approximate area (4.1 acres) that would need to be disturbed to bring the clay cover thickness to 2 feet or greater over the entire landfill (47 acres). **Figure 9** shows the approximate area (19.3 acres) that would need to be disturbed to bring the clay cover thickness to 3 feet or greater over the entire landfill (47 acres). However, based on HELP modeling, increasing the thickness of the IRM landfill cover on the sideslope essentially does not increase the hydraulic efficiency of the cover and is not likely to significantly impact the volume of leachate generated by the landfill. **Table A2-2** in **Appendix 2** shows the results of the HELP model of the IRM landfill cover hydraulic efficiency. The hydraulic efficiency was modeled using the areas of the slopes with differing thicknesses (t) and a subset of the results is presented below:

- t < 2 feet has a hydraulic efficiency of 98.03%
- t = 2-3 feet has a hydraulic efficiency of 98.10%.
- t = 3-5 feet has a hydraulic efficiency of 98.15%

Based on HELP model results shown above and listed in **Table A2-2**, the thickness of the IRM landfill cover on the side slopes can be increased, however, composite hydraulic efficiency for the sideslope will remain approximately 98%.

Consistent with providing a higher degree of Short-Term Effectiveness, reducing the environmental footprint for the Modified Remedy also serves to reduce the risk of adverse impacts to site workers and local community residents during remediation implementation. This is significant considering that approximately 1,500 people live within one (1) mile of the site (U.S. EPA, 2012) and nearby residences within Wycliffe Estates are located within approximately 800 feet from the landfill.

6. SUMMARY AND CONCLUSIONS

A Modified Remedy is proposed for the MIG/DeWane Landfill Superfund Site based on new and significant information collected since the ROD was issued.

The Modified Remedy includes modifying the landfill cover component of the ROD Remedy. No other changes to the ROD Remedy are proposed. The Modified Remedy would include making improvements to the substantial IRM landfill cover instead of constructing the new landfill cover system component of the ROD Remedy. The proposed improvements would include placing additional compacted clay cover in limited areas on the side slopes where the cover is less than two (2) feet thick and grading of the IRM landfill crest to establish a minimum slope of three (3) percent, consistent with the ROD Remedy. The improved areas would receive a minimum of six (6) inches of topsoil and seeded to establish and sustain vegetative growth.

The Modified Remedy is based on new and significant information collected since the ROD was issued. This new information, which is not included elsewhere in the Administrative Record file for the site, includes significant additional IRM landfill cover system thickness measurement data, leachate level measurement data, and groundwater quality data.

These data document: (i) a substantial IRM landfill cover thickness consisting of an average of 11.5 feet of compacted clay and topsoil on the landfill crest and an average of 3.8 feet of compacted clay and topsoil on the landfill side slopes; (ii) a modeled hydraulic efficiency (98%), which is essentially equivalent to the ROD Remedy landfill cover, and which has been empirically demonstrated by a significant leachate level reduction (an average 2-foot reduction in leachate levels between 1995 and 2008); and (iii) significant groundwater quality improvement since the RI.

The evaluation of the Modified Remedy with respect to the NCP criteria demonstrated that the Modified Remedy satisfies the statutory requirements.

The Modified Remedy is protective of human health and the environment; compliant with Federal and State requirements that are applicable or relevant and appropriate, and/or compliant with NCP § 300.430(f)(1)(ii)(c), which documents that a remedy may be selected (under specific conditions) that does not meet all potentially applicable or relevant and appropriate requirements; and provides long-term effectiveness and permanence in a manner that is essentially equivalent to the ROD Remedy.

The Modified Remedy provides a higher degree of short-term effectiveness and implementability than the ROD Remedy. The Modified Remedy would: (i) significantly reduce the period needed to implement the remedy; (ii) significantly reduce the risk posed to workers, the community and the environment during construction; and (iii) significantly limit potentially substantial rainfall infiltration and

subsequent leachate generation during the construction of the ROD proposed landfill cover while a portion of the IRM landfill cover is being removed and replaced.

The Modified Remedy is expected to have a cost approximately 30 percent less than the ROD remedy with essentially an equivalent effectiveness.

The Modified Remedy was also evaluated with respect to the *Superfund Green Remediation Strategy* (U.S. EPA, 2010). This evaluation demonstrated that the Modified Remedy would have a significantly smaller environmental footprint than the ROD Remedy during remedy implementation.

Consistent with providing a higher degree of Short-Term Effectiveness, reducing the environmental footprint for the Modified Remedy also serves to reduce the risk of adverse impacts to site workers and local community residents during remediation implementation. This is significant considering that approximately 1,500 people live within one (1) mile of the site (U.S. EPA, 2012) and nearby residences within Wycliffe Estates are located within approximately 800 feet from the landfill.

It is concluded that the proposed Modified Remedy represents an appropriate remedy change for the MIG/DeWane Landfill Superfund Site. The Modified Remedy meets the statutory requirements, has an essentially equivalent effectiveness as the ROD Remedy, is significantly more cost-effective than the ROD Remedy, and would be more protective of human health and the environment and have a smaller environmental footprint than the ROD Remedy during implementation.

7. REFERENCES

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Tables

TABLE 1
Summary of IRM Landfill Cover Thickness Measurement Data
MIG/DeWane Landfill Superfund Site
Boone County, Belvidere, Illinois

Location ID	Date	Measurement Location			Cover Thickness (ft)
		Description	Northing	Easting	
DP01	11/19/2008	Sideslope	2036729.42	854754.03	7.0
DP02	11/19/2008	Sideslope	2036534.35	854715.34	4.0
DP03	11/25/2008	Sideslope	2036348.47	854699.4	5.0
DP04	12/2/2008	Sideslope	2035985.4	854669.37	3.5
DP05	11/18/2008	Crest	2036377.69	855281.44	11.0
DP06	11/25/2008	Crest	2036044.29	854928.97	12.0
DP07	11/19/2008	Crest	2036493.59	854861.42	15.0
DP08	11/24/2008	Crest	2036208.87	855089.96	10.0
DP09	11/24/2008	Crest	2036191.81	855329.84	10.0
DP10	11/19/2008	Crest	2036439.9	855073.8	10.0
DP11	11/18/2008	Crest	2036339.57	855493.77	10.5
DP12	11/12/2008	Crest	2036031.73	855436.51	9.0
DP13	11/12/2008	Crest	2036164.6	855582.63	11.0
DP14	12/2/2008	Sideslope	2036007.91	855651.21	9.0
DP15	11/18/2008	Crest	2036271.65	855703.64	10.5
DP16	11/21/2008	Sideslope	2036398.67	855811.52	3.5
DP17	11/25/2008	Sideslope	2036519.58	855474.21	3.0
GV01	12/1/2008	Sideslope	2036675.37	854575.36	3.0
GV02	12/1/2008	Sideslope	2036517.91	854560.53	3.0
GV03	12/1/2008	Sideslope	2036361.32	854579.51	3.0
GV04	12/1/2008	Sideslope	2036184.5	854590.71	2.0
GV05	12/1/2008	Sideslope	2036039.45	854559.82	3.0
GV06	12/1/2008	Sideslope	2035802.41	854626.92	2.5
GV07	12/1/2008	Sideslope	2035771.78	854817.76	2.5
GV08	11/26/2008	Sideslope	2035743.9	854976.18	3.5
GV09	12/1/2008	Sideslope	2035904.35	854807	9.0
GV10	12/2/2008	Sideslope	2035898.2	855051.2	11.0
GV11	11/25/2008	Crest	2035973.8	855184.79	8.0
GV12	12/2/2008	Sideslope	2035846.24	855312.4	3.0
GV13	12/2/2008	Sideslope	2035862.64	855488.95	2.0
GV14	11/11/2008	Sideslope	2035835.64	855656.46	2.5
GV15	11/26/2008	Sideslope	2035693.15	855792.55	2.5
GV16	11/11/2008	Sideslope	2035839.14	855829.94	3.0
GV17	11/25/2008	Sideslope	2035888.81	855985.84	2.5
GV18	11/25/2008	Sideslope	2035973.77	855902.43	3.0
GV19	11/21/2008	Sideslope	2036228.97	856092.92	3.5
GV20	11/21/2008	Sideslope	2036320.77	855975.01	3.0
GV21	11/21/2008	Sideslope	2036467.22	855647.33	3.0
GV22	11/20/2008	Sideslope	2036654.86	855344.23	2.0
GV23	11/20/2008	Sideslope	2036710.13	855164.26	2.0
GV24	11/20/2008	Sideslope	2036830.99	854915.97	2.5
GV25	11/20/2008	Sideslope	2036892.8	854721.02	3.0
GV26	11/20/2008	Sideslope	2036834.79	854625.38	3.0
GV27	11/26/2008	Sideslope	2035765.74	855166.54	3.5
GV28	12/1/2008	Sideslope	2035908.83	854537.12	3.0
GV29	11/20/2008	Sideslope	2036771.88	855037.21	2.5
GV30	11/24/2008	Crest	2036135.97	854750.34	7.0
GV31	11/25/2008	Sideslope	2036060.11	855794.73	10.0

TABLE 1
Summary of IRM Landfill Cover Thickness Measurement Data
MIG/DeWane Landfill Superfund Site
Boone County, Belvidere, Illinois

Location ID	Date	Measurement Location			Cover Thickness (ft)
		Description	Northing	Easting	
GV32	11/18/2008	Sideslope	2036202.35	855861.98	10.5
GV33	11/20/2008	Crest	2036654.14	854944.17	9.0
GV34	11/24/2008	Crest	2036257.64	854877.83	14.0
GV35	11/20/2008	Sideslope	2036587	855177.18	6.0
GV36	11/20/2008	Sideslope	2036531.71	855357.26	6.5
GV37	12/2/2008	Sideslope	2035899.94	854957.44	11.5
GV38	11/20/2008	Sideslope	2036874.39	854804.15	2.0
GV39	12/1/2008	Sideslope	2035732.78	854697.63	2.5
GV40	11/26/2008	Sideslope	2035724.2	854873.6	3.5
GV41	11/26/2008	Sideslope	2035717.23	855043.67	4.0
CB-01	11/13/2006	Sideslope	2036025.98	856072.80	2.0
CB-02	11/13/2006	Sideslope	2035803.41	855949.24	1.8
CB-03	11/13/2006	Sideslope	2035640.16	855821.77	1.5
CB-04	11/13/2006	Sideslope	2035563.05	855522.66	2.0
CB-05	11/13/2006	Sideslope	2035676.05	855200.51	1.5
CB-06	11/13/2006	Sideslope	2035690.08	854931.47	1.8
CB-07	11/13/2006	Sideslope	2035679.14	854662.03	1.5
CB-08	11/13/2006	Sideslope	2035916.89	854873.70	12.5
CB-09	11/13/2006	Sideslope	2035882.91	855199.68	2.5
CB-10	11/13/2006	Sideslope	2035862.57	855370.83	3.0
CB-11	11/13/2006	Sideslope	2035887.34	855744.38	4.0
CB-12	11/13/2006	Crest	2036166.32	855649.40	13.5
CB-13	11/13/2006	Crest	2036196.34	855332.45	18.5
CB-14	11/13/2006	Crest	2036217.63	855110.72	18.5
CB-15	11/13/2006	Crest	2036162.62	854828.41	13.5
CB-16	11/13/2006	Sideslope	2036154.50	854527.70	3.5
CB-17	11/13/2006	Sideslope	2036442.91	854501.25	1.5
CB-18	11/13/2006	Crest	2036511.79	854803.28	19.0
CB-19	11/15/2006	Sideslope	2036940.57	854792.37	2.5
CB-20	11/15/2006	Sideslope	2036877.63	855055.85	1.5
CB-21	11/15/2006	Sideslope	2036745.07	855257.88	1.5
CB-22	11/15/2006	Sideslope	2036549.74	855582.84	3.5
CB-23	11/15/2006	Sideslope	2036378.98	855900.80	1.5
CB-24	11/15/2006	Sideslope	2036247.70	856166.43	3.5
GP-01	6/29/1993	Crest	2036023.18	854953.68	13.0
GP-02	6/29/1993	Crest	2036466.11	854953.48	10.0
GP-03	6/30/1993	Crest	2036092.61	855652.51	7.0
GP-04	6/30/1993	Crest	2036367.21	855529.78	5.0

Notes:

Coordinate system for Northing and Easting is NAD_1983_StatePlane_Illinois_East_FIPS_1201_Feet

TABLE 2
Summary of Leachate Level Measurement Data
MIG/DeWane Landfill Superfund Site
Boone County, Belvidere, Illinois

Location ID	Measurement Location		Leachate Elevation (ft)
	Northing	Easting	
Historical Leachate Elevations			
LS-01	2036866.32	854521.77	793.50
LS-02	2036926.73	854543.12	791.20
LS-03	2036985.59	854615.78	790.60
LS-04	2036992.88	854629.06	789.80
LS-05	2036991.32	854645.21	789.60
LS-06	2036976.21	854695.21	792.20
LS-07	2036980.64	854722.81	791.60
LS-08	2036975.43	854766.04	792.60
LS-09	2036971.27	854791.56	793.30
LS-10	2036968.4	854812.39	794.50
LS-11	2036965.54	854854.06	794.70
LS-12	2036956.94	854889.74	795.00
LS-13	2036952	854908.49	795.40
LS-14	2036950.43	854926.46	793.80
LS-15	2036937.93	854981.14	792.90
LS-16	2036911.11	855023.33	792.90
LS-17	2036847.57	855192.34	791.80
LS-18	2036833.77	855245.47	790.80
LS-19	2036809.55	855270.99	792.00
LS-20	2036686.37	855460.83	807.20
LS-21	2036547.31	855759.79	806.60
LS-22	2036230.12	856278.8	788.50
LS-23	2036096.01	855971.25	808.60
LS-24	2035677.26	855941.04	779.50
LS-25	2035588.71	855784.79	783.00
LS-26	2035686.11	855572.81	801.90
LS-27	2035670.48	855539.48	802.10
LS-28	2035679.34	855445.21	803.90
LS-29	2035588.71	855335.31	788.50
LW-1	2036093.01	854787.03	808.40
LW-2	2036494.36	855202.84	806.30
December 2008 Leachate Levels			
DP-01	2036729.42	854754.03	802.1
DP-02	2036534.35	854715.34	798.7
DP-04	2035985.4	854669.37	800
DP-05	2036377.69	855281.44	802.1
DP-06	2036044.29	854928.97	821
DP-07	2036493.59	854861.42	798.2
DP-08	2036208.87	855089.96	803.5
DP-09	2036191.81	855329.84	792.8
DP-10	2036439.9	855073.80	798.8
DP-11	2036339.57	855493.77	790.7
DP-12	2036031.73	855436.51	800.7
DP-13	2036164.6	855582.63	794.3
DP-15	2036271.65	855703.64	794.5

TABLE 2
Summary of Leachate Level Measurement Data
MIG/DeWane Landfill Superfund Site
Boone County, Belvidere, Illinois

Location ID	Measurement Location		Leachate Elevation (ft)
	Northing	Easting	
DP-16	2036398.67	855811.52	799.3
GV-01	2036675.37	854575.36	800.4
GV-03	2036361.32	854579.51	805.95
GV-05	2036039.45	854559.82	811.2
GV-06	2035802.41	854626.92	808.4
GV-07	2035771.78	854817.76	800.65
GV-08	2035743.9	854976.18	791.24
GV-09	2035904.35	854807.00	808.2
GV-10	2035898.2	855051.20	807.2
GV-11	2035973.8	855184.79	804.8
GV-14	2035835.64	855656.46	795.3
GV-15	2035693.15	855792.55	782.7
GV-16	2035839.14	855829.94	788.4
GV-17	2035888.81	855985.84	786.10
GV-18	2035973.77	855902.43	797.50
GV-20	2036320.77	855975.01	802.40
GV-21	2036467.22	855647.33	808.60
GV-22	2036654.86	855344.23	803.60
GV-23	2036710.13	855164.26	807.00
GV-24	2036830.99	854915.97	803.10
GV-25	2036892.80	854721.02	801.10
GV-26	2036834.79	854625.38	802.61
GV-27	2035765.74	855166.54	799.36
GV-30	2036135.97	854750.34	822.80
GV-31	2036060.11	855794.73	810.70
GV-32	2036202.35	855861.98	817.70
GV-33	2036654.14	854944.17	810.60
GV-34	2036257.64	854877.83	807.40
GV-35	2036587.00	855177.18	813.70
GV-36	2036531.71	855357.26	812.00
GV-37	2035899.94	854957.44	811.30
GV-38	2036874.39	854804.15	803.88
GV-39	2035732.78	854697.63	802.40
GV-40	2035724.20	854873.60	792.05
GV-41	2035717.23	855043.67	791.33

Notes:
Coordinate system for Northing and Easting is NAD_1983_StatePlane_Illinois_East_FIPS_1201_Feet

Table 3
Summary of Groundwater Analytical Data
MIG/DeWane Landfill Superfund Site
Boone County, Belvidere, Illinois

Location				MW-01D						MW-01S						MW-02D									
Date Sampled	Units	MCL	IL Class I GW	10/1/1993	10/1/1993-DUP	12/1/1994	12/1/1994-DUP	9/1/1995	9/1/1995-DUP	10/1/1993	10/1/1993-DUP	12/1/1994	12/1/1994-DUP	9/1/1995	9/1/1995-DUP	10/1/1993	10/1/1993-DUP	12/1/1994	12/1/1994-DUP	9/1/1995	9/1/1995-DUP	4/8/2010	12/6/2010	12/6/2010-DUP	12/28/2011
VOC																									
1,1,1-Trichloroethane	µg/L	200	200	<10 U	NA	<1 U	NA	<1 U	NA	<10 U	NA	<1 U	NA	<1 U	NA	<10 U	NA	<1 U	<1 U	<1 U	<1 U	<5 UJ	<5 UJ	<5 UJ	NA
1,1-Dichloroethane	µg/L	NS	NS	<10 U	NA	<1 U	NA	<1 U	NA	<10 U	NA	<1 U	NA	<1 U	NA	<10 U	NA	<1 U	<1 U	<1 U	<1 U	<5 UJ	<5 UJ	<5 UJ	NA
1,1-Dichloroethene	µg/L	7	7	<10 U	NA	<1 U	NA	<1 U	NA	<10 U	NA	<1 U	NA	<1 U	NA	**15**	NA	<1 U	<1 U	<1 U	<1 U	<5 U	<5 U	<5 U	<5 U
1,2-Dibromo-3-chloropropane	µg/L	0.2	0.2	NA	NA	<1 U	NA	NA	NA	NA	NA	<1 U	NA	NA	NA	NA	NA	<1 U	<1 U	<1 U	NA	<10 UJ	<10 UJ	<10 UJ	NA
1,2-Dichloroethane	µg/L	5	5	<10 U	NA	<1 U	NA	<1 U	NA	<10 U	NA	<1 U	NA	<1 U	NA	<10 U	NA	<1 U	<1 U	<1 U	<1 U	<5 UJ	<5 UJ	<5 UJ	NA
1,2-Dichloroethene (Total)	µg/L	NS	NS	<10 U	NA	NA	NA	NA	NA	<10 U	NA	NA	NA	NA	NA	**190**	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	µg/L	5	5	<10 U	NA	<1 U	NA	<1 U	NA	<10 U	NA	<1 U	NA	<1 U	NA	<10 U	NA	<1 U	<1 U	<1 U	<1 U	<5 UJ	<5 UJ	<5 UJ	<5 U
1,4-Dioxane	µg/L	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<400 UJ	<400 UJ	<400 UJ	NA
Acetone	µg/L	NS	NS	<10 U	NA	<7 U	NA	NA	NA	<10 U	NA	<5 U	NA	NA	NA	<10 U	NA	<5 U	<5 U	NA	NA	<100 UJ	<100 UJ	<100 UJ	NA
Benzene	µg/L	5	5	<10 U	NA	<1 U	NA	<1 U	NA	<10 U	NA	<1 U	NA	<1 U	NA	<10 U	NA	<1 U	<1 U	<1 U	<1 U	<5 U	<5 U	<5 U	<5 U
Bromomethane	µg/L	NS	NS	<10 U	NA	<1 U	NA	<1 U	NA	<10 U	NA	<1 U	NA	<1 U	NA	<10 U	NA	<1 U	<1 U	<1 U	<1 U	<5 UJ	<5 UJ	<5 UJ	NA
Carbon disulfide	µg/L	NS	NS	<10 U	NA	<1 U	NA	<1 U	NA	<10 U	NA	<1 U	NA	<1 U	NA	<10 U	NA	<1 U	<1 U	<1 U	<1 U	<5 UJ	<5 UJ	<5 UJ	NA
Chlorobenzene	µg/L	100	NS	<10 U	NA	<1 U	NA	<1 U	NA	<10 U	NA	<1 U	NA	<1 U	NA	<10 U	NA	<1 U	<1 U	<1 U	<1 U	<5 U	<5 U	<5 U	NA
Chloroethane	µg/L	NS	NS	<10 U	NA	<1 U	NA	<1 U	NA	<10 U	NA	<1 U	NA	<1 U	NA	<10 U	NA	<1 U	<1 U	<1 U	<1 U	<10 UJ	<10 UJ	<10 UJ	NA
Chloroform	µg/L	NS	NS	<10 U	NA	<1 U	NA	**0.1 J**	NA	<10 U	NA	<1 U	NA	<1 U	NA	<10 U	NA	<1 U	<1 U	<1 U	<1 U	<1 UJ	<1 UJ	<1 UJ	NA
Chloromethane	µg/L	NS	NS	<10 U	NA	<1 U	NA	**0.3 J**	NA	<10 U	NA	<1 U	NA	**0.4 J**	NA	<10 U	NA	<1 U	<1 U	<1 U	<1 U	<10 UJ	<10 UJ	<10 UJ	NA
cis-1,2-Dichloroethene	µg/L	70	70	NA	NA	<1 U	NA	<1 U	NA	NA	NA	<1 U	NA	<1 U	NA	NA	NA	<1 U	<1 U	<1 U	<1 U	<5 UJ	<5 UJ	<5 UJ	NA
Ethyl benzene	µg/L	700	700	<10 U	NA	<1 U	NA	<1 U	NA	<10 U	NA	<1 U	NA	<1 U	NA	<10 U	NA	<1 U	<1 U	<1 U	<1 U	<5 UJ	<5 UJ	<5 UJ	NA
Methylene chloride	µg/L	NS	NS	<10 U	NA	<2 U	NA	<2 U	NA	<10 U	NA	<2 U	NA	<2 U	NA	<10 U	NA	<2 U	<2 U	<2 U	<2 U	<5 UJ	<5 UJ	<5 UJ	<5 U
Tetrachloroethene	µg/L	5	5	<10 U	NA	<1 U	NA	<1 U	NA	<10 U	NA	<1 U	NA	<1 U	NA	<10 U	NA	<1 U	<1 U	<1 U	<1 U	<5 UJ	<5 UJ	<5 UJ	<5 U
Toluene	µg/L	1000	1000	<10 U	NA	<1 U	NA	<1 U	NA	<10 U	NA	<1 U	NA	<1 U	NA	<10 U	NA	<1 U	<1 U	<1 U	<1 U	<5 U	<5 U	<5 U	NA
trans-1,2-Dichloroethene	µg/L	100	100	NA	NA	<1 U	NA	<1 U	NA	NA	NA	<1 U	NA	<1 U	NA	NA	NA	<1 U	<1 U	<1 U	<1 U	<5 UJ	<5 UJ	<5 UJ	NA
Trichloroethene	µg/L	5	5	<10 U	NA	<1 U	NA	<1 U	NA	<10 U	NA	<1 U	NA	<1 U	NA	**5 J**	NA	<1 U	<1 U	<1 U	<1 U	<5 U	<5 U	<5 U	<5 U
Vinyl chloride	µg/L	2	2	<10 U	NA	<1 U	NA	<1 U	NA	<10 U	NA	<1 U	NA	<1 U	NA	<10 U	NA	<1 U	<1 U	<1 U	<1 U	<2 UJ	<2 UJ	<2 UJ	<2 UJ
Xylene, Total	µg/L	10000	10000	<10 U	NA	<1 U	NA	<1 U	NA	<10 U	NA	<1 U	NA	<1 U	NA	<10 U	NA	<1 U	<1 U	<1 U	<1 U	<5 UJ	<5 UJ	<5 UJ	NA
SVOC																									
2-Methylnaphthalene	µg/L	NS	NS	<10 U	NA	<10 U	NA	<10 U	NA	<10 U	NA	<10 U	NA	<10 U	NA	<10 U	NA	<10 U	NA	<10 U	<10 U	<10 UJ	<10 UJ	<10 UJ	NA
2-Methylphenol	µg/L	NS	NS	<10 U	NA	<10 U	NA	<10 U	NA	<10 U	NA	<10 U	NA	<10 U	NA	<10 U	NA	<10 U	NA	<10 U	<10 U	<10 UJ	<10 UJ	<10 UJ	NA
bis(2-Ethylhexyl) phthalate	µg/L	NS	NS	<10 U	NA	<10 U	NA	<10 U	NA	<10 U	NA	<10 U	NA	<10 U	NA	**2 J**	NA	**1 J**	NA	<10 U	<10 U	<5 UJ	<5 UJ	<5 UJ	NA
Diethylphthalate	µg/L	NS	NS	<10 U	NA	<10 U	NA	<10 U	NA	<10 U	NA	<10 U	NA	<10 U	NA	<10 U	NA	<10 U	NA	<10 U	<10 U	<10 UJ	<10 UJ	<10 UJ	NA
Di-n-butylphthalate	µg/L	NS	NS	<10 U	NA	<10 U	NA	<10 U	NA	<10 U	NA	<10 U	NA	<10 U	NA	<10 U	NA	**1 J**	NA	<10 U	<10 U	<10 UJ	<10 UJ	<10 UJ	NA
Naphthalene	µg/L	NS	NS	<10 U	NA	<10 U	NA	<10 U	NA	<10 U	NA	<10 U	NA	<10 U	NA	<10 U	NA	<10 U	NA	<10 U	<10 U	<10 UJ	<10 UJ	<10 UJ	NA
Metals																									
Antimony	mg/L	0.006	0.006	<0.0015 U	**0.0045 J**	**0.0017 B**	<0.0018 U	<0.001 U	<0.001 U	<0.0015 U	**0.0034 J**	**0.0032 B**	<0.0054 U	<0.001 U	<0.001 U	<0.0015 U	<0.0015 U	**0.0011 B**	<0.001 U	<0.001 U	<0.001 U	<0.006 U	<0.006 U	<0.006 U	<0.006 U
Arsenic	mg/L	0.01	0.05	<0.001 U	<0.001 U	<0.001 U	<0.001 U	<0.003 U	<0.003 U	<0.001 U	<0.001 U	<0.001 U	<0.001 U	<0.003 U	<0.003 U	<0.001 U	<0.001 U	<0.001 U	<0.001 U	<0.003 U	<0.003 U	<0.002 U	<0.002 U	<0.002 U	<0.002 U
Barium	mg/L	2	2	**0.0622 J**	**0.0606 J**	**0.061 B**	**0.0543 B**	**0.0599 B**	**0.0589 B**	**0.0659 J**	**0.0647 J**	**0.0548 B**	**0.0497 B**	**0.0612 B**	**0.0526 B**	**0.0697 J**	**0.0714 J**	**0.0635 B**	**0.0643 B**	**0.0728 B**	**0.0717 B**	**0.099**	**0.104**	**0.106**	NA
Boron	mg/L	NS	2	<0.1 U	<0.1 U	<0.1 U	<0.1 U	**0.0154 B**	NA	<0.1 U	<0.1 U	<0.1 U	<0.1 U	**0.0536 B**	NA	<0.1 U	<0.1 U	<0.1 U	<0.1 U	**0.0173 B**	**0.0168 B**	<0.01 UJ	**0.03 J-**	**0.02 J-**	**0.02**
Chromium	mg/L	0.1	0.1	<0.003 U	<0.003 U	<0.002 U	<0.002 U	<0.001 U	<0.001 U	<0.003 U	<0.003 U	**0.0351**	<0.0039 U	**0.264**	**0.0017**	<0.003 U	<0.003 U	**0.0029 B**	<0.002 U	<0.001 U	<0.001 U	**0.008**	<0.001 U	<0.001 U	<0.001 U
Cobalt	mg/L	NS	1	**0.0043 J**	**0.0032 J**	<0.003 U	<0.003 U	<0.001 U	<0.001 U	**0.0039 J**	<0.003 U	<0.003 U	<0.003 U	**0.0055 B**	<0.001 U	**0.0042 J**	<0.003 U	<0.003 U	<0.003 U	<0.001 U	<0.001 U	<0.001 U	<0.001 U	<0.001 U	NA
Copper	mg/L	1.3	0.65	<0.0116 U	**0.0346**	<0.002 U	<0.001 U	<0.002 U	<0.002 U	<0.00218 U	**0.0759**	<0.004 U	<0.0114 U	<0.002 U	<0.002 U	<0.0116 U	**0.0206 J**	<0.002 U	<0.0043 U	<0.002 U	<0.002 U	<0.001 U	**0.002**	**0.004**	NA
Iron	mg/L	NS	5	**1.24**	**0.748**	**0.627**	**0.468**	**0.536**	**0.679**	**0.0898 J**	<0.087 U	**0.704**	**0.191**	**3.92**	<0.015 U	**0.173**	**0.167**	<0.102 U	<0.0801 U	**0.159**	**0.101**	**1.66 J**	**2.04**	**3.49**	**0.43**
Lead	mg/L	0.015	0.0075	<0.001 U	<0.001 U	<0.002 U	<0.001 U	<0.002 U	<0.002 U	<0.001 U	**0.0018 J**	<0.001 U	<0.001 U	**0.0021 B**	**0.0023 B**	**0.0087**	**0.0016 J**	<0.001 U	<0.001 U	<0.002 U	**0.0024 B**	<0.002 U	<0.002 U	<0.002 U	<0.002 U
Manganese	mg/L	NS	0.15	**0.078**	**0.0579**	**0.0522**	**0.0474**	**0.0491**	**0.0546**	**0.0104 J**	**0.0104 J**	**0.0244**	**0.0088 B**	**0.0585**	**0.0073 B**	**0.0478**	**0.0527**	**0.0569**	**0.0587**	**0.0542**	**0.0535**	**0.16**	**0.085**	**0.11**	**0.067**
Mercury	mg/L	0.002	0.002	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0005 UJ
Nickel	mg/L	NS	0.1	<0.011 U	<0.011 U	**0.0081 B**	<0.0093 U	**0.0107 B**	**0.0101 B**	<0.011 U	<0.011 U	**0.164**	**0.145**	**0.209**	**0.178**	<0.011 U	<0.011 U	**0.0107 B**	**0.0135 B**	**0.006 B**	**0.0068 B**	**0.008**	**0.01**	**0.01**	**0.007**
Zinc	mg/L	NS	5	**0.0186 J**	**0.0161 J**	**0.0262**	<0.0142 U	**0.004 B**	**0.0046 B**	**0.0383**	**0.033**	**0.0669**	<0.01 U	**0.0102 B**	**0.0081 B**	**0.0267**	**0.02**	**0.021**	**0.026**	**0.0137 B**	**0.0523**	**7.76**	**0.463**	**0.345**	NA
Inorganics																									
Cyanide	mg/L	0.2	0.2	<0.001 U	NA	<0.001 U	NA	<0.001 U	NA	<0.001 U	NA	<0.001 U	NA	<0.001 U	NA	<0.01 U	NA	<0.01 U	<0.01 U	<0.01 U	<0.01 U	<0.005 U	<0.005	<0.005 U	NA
Sulfide	mg/L	NS	NS	<0.001 U	NA	<0.001 U	NA	<0.001 U	NA	<0.001 U	NA	<0.001 U	NA	<0.001 U	NA	<0.001 U	NA	<0.001 U	<0.001 U	<0.001 U	<0.001 U	<0.05 U	<0.05 U	<0.05 U	NA

Notes:
1. Bolded cells indicate detection
2. Shaded cells indicate exceedance of maximum contaminant level (MCL) or Illinois Class I Groundwater Standard
3. NS=No Standard for MCL values or Illinois Class I Groundwater
4. NA=Not Analyzed
5. Units for VOCs and SVOCs are µg/L
6. Units for metals and inorganics are mg/L
7. D=Deep
8. S=Shallow
9. R=Replacement
10. DUP=Duplicate Sample
11. MCLs can be found at http://www.epa.gov/safewater/contaminants/index.html
12. This table includes analytical results for parameters that were detected at any time at the site. If a parameter was never detected it is not included on this table
13. The Illinois Class I Groundwater Standards are located in Section 620.410 of Title 35 of the Illinois Administrative Code

Data Qualifiers:
1. U indicates the analyte was analyzed for, but was not detected above the report sample quantitation limit
2. UJ indicates the analyte was not detected above the reported sample quantitation limit, however, the reported quantitation limit is approximate
3. J indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample
4. B indicates the analyte result was between IDL (instrument detection limit) and contract required detection limit
5. N indicates spiked sample recovery not within control limits
6. J- indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte with a low bias
7. J+ indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte with a high bias

Table 3
Summary of Groundwater Analytical Data
MIG/DeWane Landfill Superfund Site
Boone County, Belvidere, Illinois

Location				MW-02S									MW-03D									
Date Sampled	Units	MCL	IL Class I GW	10/1/1993	10/1/1993-DUP	12/1/1994	12/1/1994-DUP	9/1/1995	9/1/1995-DUP	4/7/2010	12/7/2010	12/28/2011	10/1/1993	10/1/1993-DUP	12/1/1994	12/1/1994-DUP	9/1/1995	9/1/1995-DUP	4/12/2010	12/8/2010	12/8/2010-DUP	12/27/2011
VOC																						
1,1,1-Trichloroethane	µg/L	200	200	<10 U	<10 U	<1 U	<1 U	<1 U	NA	<5 UJ	<5 UJ	NA	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<5 UJ	NA
1,1-Dichloroethane	µg/L	NS	NS	<10 U	<10 U	<1 U	<1 U	<1 U	NA	<5 UJ	<5 UJ	NA	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<5 UJ	NA
1,1-Dichloroethene	µg/L	7	7	<10 U	<10 U	<1 U	<1 U	<1 U	NA	<5 U	<5 U	<5 U	<10 U	NA	<1 U	NA	<1 U	NA	<5 U	<5 U	<5 U	<5 U
1,2-Dibromo-3-chloropropane	µg/L	0.2	0.2	NA	NA	<1 U	<1 U	NA	NA	<10 UJ	<10 UJ	NA	NA	NA	<1 U	NA	NA	NA	<10 UJ	<10 UJ	<10 UJ	NA
1,2-Dichloroethane	µg/L	5	5	<10 U	<10 U	<1 U	<1 U	<1 U	NA	<5 UJ	<5 UJ	NA	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<5 UJ	NA
1,2-Dichloroethene (Total)	µg/L	NS	NS	<10 U	**8 J**	NA	NA	NA	NA	NA	NA	NA	<10 U	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	µg/L	5	5	<10 U	<10 U	<1 U	<1 U	<1 U	NA	<5 UJ	<5 UJ	<5 U	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<5 UJ	<5 U
1,4-Dioxane	µg/L	NS	NS	NA	NA	NA	NA	NA	NA	<400 UJ	<400 UJ	NA	NA	NA	NA	NA	NA	NA	<400 UJ	<400 UJ	<400 UJ	NA
Acetone	µg/L	NS	NS	<10 UJ	<10 UJ	<10 U	<5 U	NA	NA	<100 UJ	<100 UJ	NA	<10 UJ	NA	**4 J**	NA	NA	NA	<100 UJ	<100 UJ	<100 UJ	NA
Benzene	µg/L	5	5	<10 U	<10 U	<1 U	<1 U	<1 U	NA	<5 U	<5 U	<5 U	<10 U	NA	<1 U	NA	<1 U	NA	<5 U	<5 U	<5 U	<5 U
Bromomethane	µg/L	NS	NS	<10 U	<10 U	<1 U	<1 U	<1 U	NA	<5 UJ	<5 UJ	NA	<10 U	NA	**0.1**	NA	<1 U	NA	<5 UJ	<5 UJ	<5 UJ	NA
Carbon disulfide	µg/L	NS	NS	<10 U	<10 U	<1 U	<1 U	<1 U	NA	<5 UJ	<5 UJ	NA	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<5 UJ	NA
Chlorobenzene	µg/L	100	NS	<10 U	<10 U	<1 U	<1 U	<1 U	NA	<5 U	<5 U	NA	<10 U	NA	<1 U	NA	<1 U	NA	<5 U	<5 U	<5 U	NA
Chloroethane	µg/L	NS	NS	<10 U	<10 U	<1 U	<1 U	<1 U	NA	<10 UJ	<10 UJ	NA	<10 U	NA	<1 U	NA	<1 U	NA	<10 UJ	<10 UJ	<10 UJ	NA
Chloroform	µg/L	NS	NS	<10 U	<10 U	<1 U	<1 U	<1 U	NA	<1 UJ	<1 UJ	NA	<10 U	NA	<1 U	NA	<1 U	NA	<1 UJ	<1 UJ	<1 UJ	NA
Chloromethane	µg/L	NS	NS	<10 U	<10 U	<1 U	<1 U	<1 U	NA	<10 UJ	<10 UJ	NA	<10 U	NA	**0.5 J**	NA	<1 U	NA	<10 UJ	<10 UJ	<10 UJ	NA
cis-1,2-Dichloroethene	µg/L	70	70	NA	NA	<1 U	<1 U	<1 U	NA	<5 UJ	<5 UJ	NA	NA	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<5 UJ	NA
Ethyl benzene	µg/L	700	700	<10 U	<10 U	<1 U	<1 U	<1 U	NA	<5 UJ	<5 UJ	NA	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<5 UJ	NA
Methylene chloride	µg/L	NS	NS	<10 U	<10 U	<2 U	<2 U	<2 U	NA	<5 UJ	<5 UJ	<5 U	<10 U	NA	<1 U	NA	<2 U	NA	<5 UJ	<5 UJ	<5 UJ	<5 U
Tetrachloroethene	µg/L	5	5	**6 J**	<10 U	<1 U	<1 U	<1 U	NA	<5 UJ	<5 UJ	<5 U	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<5 UJ	<5 U
Toluene	µg/L	1000	1000	<10 U	<1 U	<1 U	<1 U	<1 U	NA	<5 U	<5 U	NA	<10 U	NA	<1 U	NA	<1 U	NA	<5 U	<5 U	<5 U	NA
trans-1,2-Dichloroethene	µg/L	100	100	NA	NA	<1 U	<1 U	<1 U	NA	<5 UJ	<5 UJ	NA	NA	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<5 UJ	NA
Trichloroethene	µg/L	5	5	**1 J**	**3 J**	<1 U	<1 U	<1 U	NA	<5 U	<5 U	<5 U	<10 U	NA	<1 U	NA	<1 U	NA	<5 U	<5 U	<5 U	<5 U
Vinyl chloride	µg/L	2	2	<10 U	<10 U	<1 U	<1 U	<1 U	NA	<2 UJ	<2 UJ	<2 UJ	<10 U	NA	<1 U	NA	<1 U	NA	<2 UJ	<2 UJ	<2 UJ	<2 UJ
Xylene, Total	µg/L	10000	10000	<10 U	<10 U	<1 U	<1 U	<1 U	NA	<5 UJ	<5 UJ	NA	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<5 UJ	NA
SVOC																						
2-Methylnaphthalene	µg/L	NS	NS	<10 U	<10 U	<10 U	<10 U	<10 U	NA	<10 UJ	<10 UJ	NA	<10 U	NA	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ	<10 UJ	NA
2-Methylphenol	µg/L	NS	NS	<10 U	<10 U	<10 U	<10 U	<10 U	NA	<10 UJ	<10 UJ	NA	<10 U	NA	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ	<10 UJ	NA
bis(2-Ethylhexyl) phthalate	µg/L	NS	NS	<10 U	**1 J**	<10 U	<10 U	<10 U	NA	<5 UJ	<5 UJ	NA	**2 J**	NA	<10 U	NA	<10 U	NA	<5 UJ	<5 UJ	<5 UJ	NA
Diethylphthalate	µg/L	NS	NS	<10 U	**2 J**	<10 U	<10 U	<10 U	NA	<10 UJ	<10 UJ	NA	<10 U	NA	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ	<10 UJ	NA
Di-n-butylphthalate	µg/L	NS	NS	<10 U	<10 U	<10 U	<10 U	<10 U	NA	<10 UJ	<10 UJ	NA	<10 U	NA	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ	<10 UJ	NA
Naphthalene	µg/L	NS	NS	<10 U	<10 U	<10 U	<10 U	<10 U	NA	<10 UJ	<10 UJ	NA	<10 U	NA	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ	<10 UJ	NA
Metals																						
Antimony	mg/L	0.006	0.006	<0.0015 U	<0.0015 U	<0.001 U	<0.001 U	<0.001 U	<0.001 U	<0.006 U	<0.006 U	<0.006 U	<0.0015 U	**0.0033 B**	**0.0013 J**	<0.0044 U	<0.001 U	<0.001 U	<0.006 U	<0.006 U	<0.006 U	<0.006 U
Arsenic	mg/L	0.01	0.05	<0.001 U	<0.001 U	<0.001 U	<0.001 U	<0.003 U	<0.003 U	<0.002 U	<0.002 U	<0.002 U	**0.0011 J**	<0.001 U	<0.001 U	<0.001 U	<0.003 U	<0.003 U	<0.002 U	<0.002 U	<0.002 U	<0.002 U
Barium	mg/L	2	2	**0.0684 J**	**0.0672 J**	**0.0573 B**	**0.0569 B**	**0.0572 B**	**0.0564 B**	**0.056**	**0.063**	NA	**0.192 J**	**0.207**	**0.282**	**0.182**	**0.204**	**0.206**	**0.226**	**0.241**	**0.238**	NA
Boron	mg/L	NS	2	<0.1 U	<0.1 U	<0.1 U	<0.1 U	**0.0281 B**	NA	<0.01 UJ	**0.03 J-**	**0.04**	<0.1 U	<0.1 U	<0.1 U	<0.1 U	**0.0117 B**	NA	<0.01 UJ	**0.02 J-**	**0.02 J-**	**0.02**
Chromium	mg/L	0.1	0.1	<0.003 U	<0.003 U	<0.002 U	<0.002 U	<0.001 U	<0.001 U	<0.001 U	**0.001**	**0.007**	<0.003 U	<0.003 U	**0.0047 B**	<0.002 U	<0.001 U	<0.001 U	<0.001 U	**0.002**	**0.002**	**0.001**
Cobalt	mg/L	NS	1	<0.003 U	**0.005 J**	<0.003 U	<0.003 U	<0.001 U	<0.001 U	<0.001 U	<0.001 U	NA	**0.0042 J**	<0.003 U	<0.003 U	<0.003 U	<0.001 U	<0.001 U	<0.001 U	<0.001 U	<0.001 U	NA
Copper	mg/L	1.3	0.65	<0.0113 U	<0.007 U	<0.0028 U	<0.002 U	<0.001 U	<0.001 U	<0.001 U	**0.001**	NA	<0.007 U	**0.0105 J**	<0.0022 U	<0.002 U	<0.002 U	<0.002 U	<0.001 U	<0.001 U	<0.001 U	NA
Iron	mg/L	NS	5	**0.545**	**0.529**	**1.08**	**1.36**	<0.015 U	<0.015 U	**0.28 J**	**0.05**	**0.44**	**3.48**	**1.64**	**4.52**	**1.42**	**1.62**	**1.56**	**2.19 J**	**1.79**	**1.77**	**1.75**
Lead	mg/L	0.015	0.0075	<0.001 U	<0.001 U	**0.0013 J**	**0.0014 J**	**0.0021 B**	**0.003**	<0.002 U	<0.002 U	<0.002 U	<0.0014 U	**0.0037**	**0.0018 B**	<0.001 U	**0.0022 B**	<0.002 U	<0.002 U	<0.002 U	<0.002 U	<0.002 U
Manganese	mg/L	NS	0.15	**0.0465**	**0.0465**	**0.0494**	**0.0501**	**0.0478**	**0.0484**	**0.086**	**0.082**	**0.415**	**0.0564**	**0.05**	**0.0673**	**0.0401**	**0.0475**	**0.0472**	**0.078**	**0.049**	**0.049**	**0.053**
Mercury	mg/L	0.002	0.002	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0005 UJ	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0005 UJ
Nickel	mg/L	NS	0.1	<0.011 U	<0.011 U	**0.0089 B**	<0.008 U	**0.002 B**	**0.0026 B**	<0.001 U	**0.002**	**0.005**	<0.011 U	<0.011 U	**0.0105 B**	<0.008 U	**0.0034 B**	**0.0019 B**	**0.024**	**0.023**	**0.022**	**0.011**
Zinc	mg/L	NS	5	**0.0236**	**0.0163 J**	**0.0156 B**	**0.0171 B**	**0.0164 B**	**0.0067 B**	**1.36**	<0.005 U	NA	**0.0156 J**	**0.0112 J**	**0.058**	<0.0182 U	**0.0092 B**	**0.0072 B**	**1.03**	**0.034**	**0.034**	NA
Inorganics																						
Cyanide	mg/L	0.2	0.2	<0.01 U	<0.01 U	<0.01 U	<0.01 U	<0.01 U	NA	<0.005 U	<0.005 U	NA	<0.01 U	NA	<0.01 U	NA	<0.01 U	NA	<0.005 U	<0.005 U	<0.005 U	NA
Sulfide	mg/L	NS	NS	<0.001 U	<0.001 U	<0.001 U	<0.001 U	<0.001 U	NA	<0.05 U	<0.05 U	NA	<0.001 U	NA	<0.001 U	NA	<0.001 U	NA	<0.05 U	<0.05 U	<0.05 U	NA

Notes:
1. Bolded cells indicate detection
2. Shaded cells indicate exceedance of maximum contaminant level (MCL) or Illinois Class I Groundwater Standard
3. NS=No Standard for MCL values or Illinois Class I Groundwater
4. NA=Not Analyzed
5. Units for VOCs and SVOCs are µg/L
6. Units for metals and inorganics are mg/L
7. D=Deep
8. S=Shallow
9. R=Replacement
10. DUP=Duplicate Sample
11. MCLs can be found at http://www.epa.gov/safewater/contaminants/index.html
12. This table includes analytical results for parameters that were detected at any time at the site. If a parameter was never detected it is not included on this table
13. The Illinois Class I Groundwater Standards are located in Section 620.410 of Title 35 of the Illinois Administrative Code

Data Qualifiers:
1. U indicates the analyte was analyzed for, but was not detected above the report sample quantitation limit
2. UJ indicates the analyte was not detected above the reported sample quantitation limit, however, the reported quantitation limit is approximate
3. J indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample
4. B indicates the analyte result was between IDL (instrument detection limit) and contract required detection limit
5. N indicates spiked sample recovery not within control limits
6. J- indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte with a low bias
7. J+ indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte with a high bias

Table 3
Summary of Groundwater Analytical Data
MIG/DeWane Landfill Superfund Site
Boone County, Belvidere, Illinois

Location				MW-03S											MW-04D							
Date Sampled	Units	MCL	IL Class I GW	10/1/1993	10/1/1993-DUP	12/1/1994	12/1/1994-DUP	9/1/1995	9/1/1995-DUP	2/1/2000	11/1/2006	4/12/2010	12/7/2010	12/27/2011	11/1/1993	11/1/1993-DUP	12/1/1994	12/1/1994-DUP	9/1/1995	9/1/1995-DUP	4/7/2010	12/7/2010
VOC																						
1,1,1-Trichloroethane	µg/L	200	200	<10 U	<10 U	<10 U	NA	**0.3 J**	NA	<1 U	<5 U	<5 UJ	<5 UJ	NA	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ
1,1-Dichloroethane	µg/L	NS	NS	<10 U	<10 U	**31**	NA	**22**	NA	**46**	NA	<5 UJ	<5 UJ	NA	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ
1,1-Dichloroethene	µg/L	7	7	<10 U	<10 U	<10 U	NA	<1 U	NA	<1 U	NA	<5 U	<5 U	<5 U	<10 U	NA	<1 U	NA	<1 U	NA	<5 U	<5 U
1,2-Dibromo-3-chloropropane	µg/L	0.2	0.2	NA	NA	<10 U	NA	NA	NA	NA	NA	<10 UJ	<10 UJ	NA	NA	NA	<1 U	NA	NA	NA	<10 UJ	<10 UJ
1,2-Dichloroethane	µg/L	5	5	<10 U	<10 U	<10 U	NA	<1 U	NA	**2**	<5 U	<5 UJ	<5 UJ	NA	<10 U	NA	<1 U	NA	<2 U	NA	<5 UJ	<5 UJ
1,2-Dichloroethene (Total)	µg/L	NS	NS	<10 U	<10 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	<10 U	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	µg/L	5	5	<10 U	<10 U	<10 U	NA	<1 U	NA	<1 U	<5 U	<5 UJ	<5 UJ	<5 U	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ
1,4-Dioxane	µg/L	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	<400 UJ	<400 UJ	NA	NA	NA	NA	NA	NA	NA	<400 UJ	<400 UJ
Acetone	µg/L	NS	NS	**12 J**	<10 UJ	<50 U	NA	NA	NA	NA	NA	<100 UJ	<100 UJ	NA	<10 UJ	NA	<5 U	NA	NA	NA	<100 UJ	<100 UJ
Benzene	µg/L	5	5	<10 U	<10 U	<10 U	NA	**0.6 J**	NA	**4**	<5 U	<5 U	<5 U	<5 U	<10 U	NA	<1 U	NA	<1 U	NA	<5 U	<5 U
Bromomethane	µg/L	NS	NS	<10 U	<10 U	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	NA	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ
Carbon disulfide	µg/L	NS	NS	<10 U	<10 U	<10 U	NA	<1 U	NA	<5 U	NA	<5 UJ	<5 UJ	NA	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ
Chlorobenzene	µg/L	100	NS	<10 U	<10 U	<10 U	NA	<1 U	NA	<1 U	NA	<5 U	<5 U	NA	<10 U	NA	<1 U	NA	<1 U	NA	<5 U	<5 U
Chloroethane	µg/L	NS	NS	<10 U	<10 U	**6 J**	NA	**2**	NA	**4**	NA	<10 UJ	<10 UJ	NA	<10 U	NA	<1 U	NA	<1 U	NA	<10 UJ	<10 UJ
Chloroform	µg/L	NS	NS	<10 U	<10 U	<10 U	NA	<1 U	NA	<1 U	NA	<1 UJ	<1 UJ	NA	<10 U	NA	<1 U	NA	<1 U	NA	<1 UJ	<1 UJ
Chloromethane	µg/L	NS	NS	<10 U	<10 U	<10 U	NA	**0.4 J**	NA	<1 U	NA	<10 UJ	<10 UJ	NA	<10 U	NA	<1 U	NA	**0.6 J**	NA	<10 UJ	<10 UJ
cis-1,2-Dichloroethene	µg/L	70	70	NA	NA	**2 J**	NA	**1**	NA	**8**	<5 U	<5 UJ	<5 UJ	NA	NA	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ
Ethyl benzene	µg/L	700	700	<10 U	<10 U	<10 U	NA	<1 U	NA	<1 U	<5 U	<5 UJ	<5 UJ	NA	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ
Methylene chloride	µg/L	NS	NS	**12**	**9 J**	<2 U	NA	<2 U	NA	<2 U	NA	<5 UJ	<5 UJ	<5 U	<10 U	NA	<2 U	NA	<2 U	NA	<5 UJ	<5 UJ
Tetrachloroethene	µg/L	5	5	<10 U	<10 U	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<5 U	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ
Toluene	µg/L	1000	1000	<10 U	<10 U	<10 U	NA	<1 U	NA	<1 U	<5 U	<5 U	<5 U	NA	<10 U	NA	<1 U	NA	<1 U	NA	<5 U	<5 U
trans-1,2-Dichloroethene	µg/L	100	100	NA	NA	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	NA	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ
Trichloroethene	µg/L	5	5	<10 U	<10 U	<10 U	NA	**0.1 J**	NA	**4**	<5 U	<5 U	<5 U	<5 U	<10 U	NA	<1 U	NA	<1 U	NA	<5 U	<5 U
Vinyl chloride	µg/L	2	2	<10 U	<10 U	**2 J**	NA	**0.7 J**	NA	**6**	<2 U	<2 UJ	<2 UJ	<2 UJ	<10 U	NA	<1 U	NA	<1 U	NA	<2 UJ	<2 UJ
Xylene, Total	µg/L	10000	10000	<10 U	<10 U	<10 U	NA	<1 U	NA	<1 U	<5 U	<5 UJ	<5 UJ	NA	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ
SVOC																						
2-Methylnaphthalene	µg/L	NS	NS	<10 U	<10 U	<10 U	NA	<10 U	NA	NA	NA	<10 UJ	<10 UJ	NA	<10 U	NA	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ
2-Methylphenol	µg/L	NS	NS	<10 U	<10 U	<10 U	NA	<10 U	NA	NA	NA	<10 UJ	<10 UJ	NA	<10 U	NA	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ
bis(2-Ethylhexyl) phthalate	µg/L	NS	NS	<10 U	<10 U	<10 U	NA	**2 J**	NA	NA	NA	<5 UJ	<5 UJ	NA	<10 U	NA	<10 U	NA	<10 U	NA	<5 UJ	<5 UJ
Diethylphthalate	µg/L	NS	NS	<10 U	<10 U	<10 U	NA	<10 U	NA	NA	NA	<10 UJ	<10 UJ	NA	<10 U	NA	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ
Di-n-butylphthalate	µg/L	NS	NS	<10 U	<10 U	**1 J**	NA	<10 U	NA	NA	NA	<10 UJ	<10 UJ	NA	<10 U	NA	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ
Naphthalene	µg/L	NS	NS	<10 U	<10 U	<10 U	NA	<10 U	NA	NA	NA	<10 UJ	<10 UJ	NA	<10 U	NA	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ
Metals																						
Antimony	mg/L	0.006	0.006	<0.0015 U	<0.0015 U	<0.001 U	<0.001 U	<0.001 U	<0.001 U	NA	<0.006 U	<0.006 U	<0.006 U	<0.006 U	<0.0015 U	**0.0034 J**	<0.001 U	<0.0025 U	<0.001 U	<0.001 U	<0.006 U	<0.006 U
Arsenic	mg/L	0.01	0.05	<0.001 U	<0.001 U	<0.001 U	<0.001 U	<0.003 U	<0.003 U	NA	<0.002 U	<0.002 U	<0.002 U	<0.002 U	**0.0028 J**	<0.001 U	<0.001 U	<0.001 U	<0.003 U	<0.003 U	<0.002 U	<0.002 U
Barium	mg/L	2	2	**0.0509 J**	**0.0496 J**	**0.0936 B**	**0.0729 B**	**0.0543 B**	**0.0538 B**	NA	NA	**0.081**	**0.083**	NA	**0.0999 J**	**0.101 J**	**0.11 B**	**0.104 B**	**0.118 B**	**0.105 B**	**0.153**	**0.163**
Boron	mg/L	NS	2	<0.1 U	<0.1 U	<0.1 U	<0.1 U	**0.0176 B**	NA	NA	**0.06**	**0.03 J**	**0.02 J-**	**0.04**	<0.1 U	<0.1 U	<0.1 U	<0.1 U	**0.023 B**	NA	<0.01 UJ	**0.03 J-**
Chromium	mg/L	0.1	0.1	<0.003 U	<0.003 U	**0.0029 B**	<0.002 U	<0.001 U	<0.001 U	NA	**0.005**	<0.001 U	<0.001 U	<0.001 U	<0.003 U	<0.003 U	<0.002 U	<0.007 U	<0.001 U	<0.001 U	<0.001 U	<0.001 U
Cobalt	mg/L	NS	1	**0.0037 J**	**0.0031 J**	<0.003 U	<0.003 U	<0.001 U	<0.001 U	NA	NA	**0.007**	**0.006**	NA	**0.0037 J**	<0.003 U	<0.003 U	<0.003 U	<0.001 U	<0.001 U	<0.001 U	**0.002**
Copper	mg/L	1.3	0.65	<0.007 U	<0.007 U	<0.0084 U	<0.0057 U	<0.002 U	<0.002 U	NA	NA	<0.001 U	**0.001**	NA	<0.007 U	<0.007 U	<0.002 U	<0.002 U	<0.002 U	<0.002 U	<0.001 U	<0.001 U
Iron	mg/L	NS	5	**0.117**	**0.129**	<0.0488 U	<0.0757 U	<0.015 U	<0.015 U	NA	**0.61**	**1.3 J**	**1.12**	**1.22**	**0.461**	**0.317**	<0.214 U	<0.035 U	**1.38**	**1.07**	**0.24 J**	**1.79**
Lead	mg/L	0.015	0.0075	<0.001 U	<0.0018 U	**0.0012 J**	<0.001 U	<0.002 U	**0.0021 B**	NA	**0.002**	<0.002 U	<0.002 U	<0.002 U	<0.0011 U	<0.001 U	<0.001 U	<0.001 U	**0.0024 B**	<0.002 U	<0.002 U	<0.002 U
Manganese	mg/L	NS	0.15	**0.0986**	**0.0998**	**0.222**	**0.184**	**0.0986**	**0.112**	NA	**2.77**	**1.16**	**1.14**	**1.22**	**0.159**	**0.173**	**0.231**	**0.224**	**0.235**	**0.212**	**0.196**	**0.234**
Mercury	mg/L	0.002	0.002	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	NA	<0.0005 U	<0.0002 U	<0.0002 U	<0.0005 UJ	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U
Nickel	mg/L	NS	0.1	<0.011 U	<0.011 U	**0.0195 B**	<0.0151 U	**0.0079 B**	**0.009 B**	NA	**0.079**	**0.01**	**0.014**	**0.016**	<0.011 U	<0.011 U	**0.0147 B**	<0.008 U	**0.0034 B**	**0.0032 B**	<0.001 U	**0.005**
Zinc	mg/L	NS	5	**0.0095 J**	**0.0095 J**	**0.0235**	<0.0308 U	**0.006 B**	**0.009 B**	NA	NA	**1.34**	**0.14**	NA	**0.0048 J**	**0.0094 J**	**0.0546**	<0.0162 U	**0.0074 B**	**0.0055 B**	<0.005 U	**0.378**
Inorganics																						
Cyanide	mg/L	0.2	0.2	<0.01 U	<0.01 U	<0.01 U	NA	<0.01 U	NA	NA	NA	<0.005 U	<0.005 U	NA	<0.01 U	NA	<0.01 U	NA	<0.01 U	NA	<0.005 U	<0.005 U
Sulfide	mg/L	NS	NS	<0.001 U	<0.001 U	<0.001 U	NA	<0.001 U	NA	NA	NA	<0.05 U	<0.05 U	NA	<0.001 U	NA	<0.001 U	NA	<0.001 U	NA	<0.05 U	<0.05 U

Notes:
1. Bolded cells indicate detection
2. Shaded cells indicate exceedance of maximum contaminant level (MCL) or Illinois Class I Groundwater Standard
3. NS=No Standard for MCL values or Illinois Class I Groundwater
4. NA=Not Analyzed
5. Units for VOCs and SVOCs are µg/L
6. Units for metals and inorganics are mg/L
7. D=Deep
8. S=Shallow
9. R=Replacement
10. DUP=Duplicate Sample
11. MCLs can be found at http://www.epa.gov/safewater/contaminants/index.html
12. This table includes analytical results for parameters that were detected at any time at the site. If a parameter was never detected it is not included on this table
13. The Illinois Class I Groundwater Standards are located in Section 620.410 of Title 35 of the Illinois Administrative Code

Data Qualifiers:
1. U indicates the analyte was analyzed for, but was not detected above the report sample quantitation limit
2. UJ indicates the analyte was not detected above the reported sample quantitation limit, however, the reported quantitation limit is approximate
3. J indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample
4. B indicates the analyte result was between IDL (instrument detection limit) and contract required detection limit
5. N indicates spiked sample recovery not within control limits
6. J- indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte with a low bias
7. J+ indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte with a high bias

Table 3
Summary of Groundwater Analytical Data
MIG/DeWane Landfill Superfund Site
Boone County, Belvidere, Illinois

Location				MW-04S								MW-05D								
Date Sampled	Units	MCL	IL Class I GW	11/1/1993	11/1/1993-DUP	12/1/1994	12/1/1994-DUP	9/1/1995	9/1/1995-DUP	4/6/2010	12/7/2010	11/1/1993	11/1/1993-DUP	12/1/1994	12/1/1994-DUP	9/1/1995	9/1/1995-DUP	4/14/2010	4/14/2010-DUP	12/2/2010
VOC																				
1,1,1-Trichloroethane	µg/L	200	200	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<5 UJ
1,1-Dichloroethane	µg/L	NS	NS	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<10 U	NA	**0.3 J**	NA	**0.2 J**	NA	<5 UJ	<5 UJ	<5 UJ
1,1-Dichloroethene	µg/L	7	7	<10 U	NA	<1 U	NA	<1 U	NA	<5 U	<5 U	<10 U	NA	<1 U	NA	<1 U	NA	<5 U	<5 U	<5 U
1,2-Dibromo-3-chloropropane	µg/L	0.2	0.2	NA	NA	<1 U	NA	NA	NA	<10 UJ	<10 UJ	NA	NA	<1 U	NA	NA	NA	<10 UJ	<10 UJ	<10 UJ
1,2-Dichloroethane	µg/L	5	5	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<5 UJ
1,2-Dichloroethene (Total)	µg/L	NS	NS	<10 U	NA	NA	NA	NA	NA	NA	NA	<10 U	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	µg/L	5	5	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<5 UJ
1,4-Dioxane	µg/L	NS	NS	NA	NA	NA	NA	NA	NA	<400 UJ	<400 UJ	NA	NA	NA	NA	NA	NA	<400 UJ	<400 UJ	<400 UJ
Acetone	µg/L	NS	NS	<10 UJ	NA	<5 U	NA	NA	NA	<100 UJ	<100 UJ	<10 UJ	NA	NA	NA	NA	NA	<100 UJ	<100 UJ	<100 UJ
Benzene	µg/L	5	5	<10 U	NA	<1 U	NA	<1 U	NA	<5 U	<5 U	<10 U	NA	**0.4 J**	NA	**0.4 J**	NA	<5 U	<5 U	<5 U
Bromomethane	µg/L	NS	NS	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<5 UJ
Carbon disulfide	µg/L	NS	NS	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<5 UJ
Chlorobenzene	µg/L	100	NS	<10 U	NA	<1 U	NA	<1 U	NA	<5 U	<5 U	<10 U	NA	<1 U	NA	<1 U	NA	<5 U	<5 U	<5 U
Chloroethane	µg/L	NS	NS	<10 U	NA	<1 U	NA	<1 U	NA	<10 UJ	<10 UJ	<10 U	NA	**0.6 J**	NA	**0.5 J**	NA	<10 UJ	<10 UJ	<10 UJ
Chloroform	µg/L	NS	NS	<10 U	NA	<1 U	NA	<1 U	NA	<1 UJ	<1 UJ	<10 U	NA	<1 U	NA	<1 U	NA	<1 UJ	<1 UJ	<1 UJ
Chloromethane	µg/L	NS	NS	<10 U	NA	<1 U	NA	**0.2 J**	NA	<10 UJ	<10 UJ	<10 U	NA	**0.2 J**	NA	<1 U	NA	<10 UJ	<10 UJ	<10 UJ
cis-1,2-Dichloroethene	µg/L	70	70	NA	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	NA	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<5 UJ
Ethyl benzene	µg/L	700	700	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<5 UJ
Methylene chloride	µg/L	NS	NS	<10 U	NA	<2 U	NA	<2 U	NA	<5 UJ	<5 UJ	<10 U	NA	<1 U	NA	<2 U	NA	<5 UJ	<5 UJ	<5 UJ
Tetrachloroethene	µg/L	5	5	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<5 UJ
Toluene	µg/L	1000	1000	<10 U	NA	<1 U	NA	<1 U	NA	<5 U	<5 U	<10 U	NA	<1 U	NA	<1 U	NA	<5 U	<5 U	<5 U
trans-1,2-Dichloroethene	µg/L	100	100	NA	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	NA	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<5 UJ
Trichloroethene	µg/L	5	5	<10 U	NA	<1 U	NA	<1 U	NA	<5 U	<5 U	<10 U	NA	<1 U	NA	<1 U	NA	<5 U	<5 U	<5 U
Vinyl chloride	µg/L	2	2	<10 U	NA	<1 U	NA	<1 U	NA	<2 UJ	<2 UJ	<10 U	NA	<1 U	NA	**0.1 J**	NA	<2 UJ	<2 UJ	<2 UJ
Xylene, Total	µg/L	10000	10000	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<5 UJ
SVOC																				
2-Methylnaphthalene	µg/L	NS	NS	<10 U	NA	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ	<10 U	NA	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ	<10 UJ
2-Methylphenol	µg/L	NS	NS	<10 U	NA	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ	<10 U	NA	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ	<10 UJ
bis(2-Ethylhexyl) phthalate	µg/L	NS	NS	<10 U	NA	<10 U	NA	<10 U	NA	<5 UJ	<5 UJ	**1 J**	NA	<10 U	NA	<10 U	NA	<5 UJ	<5 UJ	<5 UJ
Diethylphthalate	µg/L	NS	NS	<10 U	NA	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ	**5 J**	NA	**1 J**	NA	<10 U	NA	<10 UJ	<10 UJ	<10 UJ
Di-n-butylphthalate	µg/L	NS	NS	**4 J**	NA	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ	<10 U	NA	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ	<10 UJ
Naphthalene	µg/L	NS	NS	<10 U	NA	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ	<10 U	NA	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ	<10 UJ
Metals																				
Antimony	mg/L	0.006	0.006	<0.0015 U	<0.0015 U	<0.001 U	<0.0022 U	<0.001 U	<0.001 UJ	<0.006 U	<0.006 U	<0.0015 U	**0.002 J**	<0.001 U	<0.005 U	<0.001 U	<0.001 U	<0.006 U	<0.006 U	<0.006 U
Arsenic	mg/L	0.01	0.05	<0.001 U	<0.001 U	<0.001 U	<0.001 U	<0.003 U	<0.003 U	<0.002 U	<0.002 U	<0.001 U	<0.001 U	<0.001 U	<0.001 U	<0.003 U	<0.003 U	<0.002 U	<0.002 U	<0.002 U
Barium	mg/L	2	2	**0.077 J**	**0.0616 J**	**0.0812 B**	**0.0764 B**	**0.0786 B**	**0.0762 B**	**0.064**	**0.074**	**0.557**	**0.519**	**1.03**	**0.986**	**0.914**	**0.916**	**0.931**	**0.874**	**0.856**
Boron	mg/L	NS	2	<0.1 U	<0.1 U	<0.1 U	<0.1 U	**0.0232 B**	NA	<0.01 UJ	**0.02 J-**	<0.1 U	<0.1 U	**0.723**	**0.708**	**0.864**	NA	**0.5 J**	**0.5 J**	**0.35 J-**
Chromium	mg/L	0.1	0.1	<0.003 U	<0.003 U	<0.002 U	<0.002 U	<0.001 U	<0.001 U	<0.001 U	<0.001 U	<0.0079 U	<0.003 U	<0.002 U	<0.002 U	<0.001 U	<0.001 U	<0.001 U	<0.001 U	<0.001 U
Cobalt	mg/L	NS	1	<0.003 U	<0.003 U	<0.003 U	<0.003 U	<0.001 U	<0.001 U	<0.001 U	<0.001 U	<0.003 U	<0.003 U	<0.003 U	<0.003 U	**0.0045 B**	**0.0047 B**	<0.001 U	<0.001 U	<0.001 U
Copper	mg/L	1.3	0.65	<0.0088 U	<0.007 U	<0.002 U	<0.002 U	<0.002 U	<0.002 U	<0.001 U	**0.002**	**0.0248 J**	<0.007 U	<0.002 U	<0.002 U	<0.002 U	<0.002 U	<0.001 U	<0.001 U	<0.001 U
Iron	mg/L	NS	5	<0.087 U	<0.087 U	**0.37**	<0.015 U	<0.015 U	<0.015 U	<0.01 UJ	**0.91**	**3.08**	**0.399**	**1.47**	**1.34**	**1.11**	**1.17**	**1.33 J**	**1.23 J**	**1.66**
Lead	mg/L	0.015	0.0075	<0.002 U	**0.0047**	**0.0021 J**	<0.0012 U	**0.0021 B**	**0.0028 B**	<0.002 U	<0.002 U	**0.0045**	<0.002 U	<0.002 U	<0.001 U	<0.002 U	<0.002 U	<0.002 U	<0.002 U	<0.002 U
Manganese	mg/L	NS	0.15	<0.002 U	<0.002 U	**0.0118 B**	**0.0023 B**	<0.001 U	<0.002 U	< 0.001 U	**0.056**	**0.179**	**0.108**	**0.0955**	**0.085**	**0.0453**	**0.0516**	**0.034**	**0.029**	**0.048**
Mercury	mg/L	0.002	0.002	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U
Nickel	mg/L	NS	0.1	<0.011 U	<0.011 U	<0.008 U	<0.008 U	**0.0168 B**	**0.0015 B**	<0.001 U	**0.003**	**0.02 J**	**0.0244 J**	**0.0443**	<0.0344 U	**0.0441**	**0.0429**	**0.027**	**0.027**	**0.018**
Zinc	mg/L	NS	5	<0.0164 U	<0.0046 U	**0.0223**	<0.0152 U	**0.0101 B**	**0.0043 B**	<0.005 U	**0.025**	**0.0454**	<0.0134 U	**0.0354**	<0.0282 U	**0.0112 B**	**0.0057 B**	<0.005 U	<0.005 U	<0.005 U
Inorganics																				
Cyanide	mg/L	0.2	0.2	<0.01 U	NA	<0.01 U	NA	<0.01 U	NA	<0.005 U	<0.005 U	<0.01 U	NA	<0.01 U	NA	<0.01 U	NA	<0.005 U	<0.005 U	<0.005 U
Sulfide	mg/L	NS	NS	<0.001 U	NA	<0.001 U	NA	<0.001 U	NA	<0.05 U	<0.05 U	**0.0012**	NA	<0.001 U	NA	<0.001 U	NA	**0.09**	**0.08**	**0.05**

Notes:
1. Bolded cells indicate detection
2. Shaded cells indicate exceedance of maximum contaminant level (MCL) or Illinois Class I Groundwater Standard
3. NS=No Standard for MCL values or Illinois Class I Groundwater
4. NA=Not Analyzed
5. Units for VOCs and SVOCs are µg/L
6. Units for metals and inorganics are mg/L
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12. This table includes analytical results for parameters that were detected at any time at the site. If a parameter was never detected it is not included on this table
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Data Qualifiers:
1. U indicates the analyte was analyzed for, but was not detected above the report sample quantitation limit
2. UJ indicates the analyte was not detected above the reported sample quantitation limit, however, the reported quantitation limit is approximate
3. J indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample
4. B indicates the analyte result was between IDL (instrument detection limit) and contract required detection limit
5. N indicates spiked sample recovery not within control limits
6. J- indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte with a low bias
7. J+ indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte with a high bias

Table 3
Summary of Groundwater Analytical Data
MIG/DeWane Landfill Superfund Site
Boone County, Belvidere, Illinois

Location				MW-05S								MW-06D								
Date Sampled	Units	MCL	IL Class I GW	11/1/1993	11/1/1993-DUP	12/1/1994	12/1/1994-DUP	9/1/1995	9/1/1995-DUP	4/13/2010	12/2/2010	10/1/1993	11/1/1993	11/1/1993-DUP	12/1/1994	12/1/1994-DUP	9/1/1995	9/1/1995-DUP	4/14/2010	12/3/2010
VOC																				
1,1,1-Trichloroethane	µg/L	200	200	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	NA	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ
1,1-Dichloroethane	µg/L	NS	NS	<10 U	NA	**2**	NA	**3**	NA	<5 UJ	<5 UJ	NA	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ
1,1-Dichloroethene	µg/L	7	7	<10 U	NA	<1 U	NA	<1 U	NA	<5 U	<5 U	NA	<10 U	NA	<1 U	NA	<1 U	NA	<5 U	<5 U
1,2-Dibromo-3-chloropropane	µg/L	0.2	0.2	NA	NA	NA	NA	NA	NA	<10 UJ	<10 UJ	NA	NA	NA	<1 U	NA	NA	NA	<10 UJ	<10 UJ
1,2-Dichloroethane	µg/L	5	5	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	NA	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ
1,2-Dichloroethene (Total)	µg/L	NS	NS	<10 U	NA	NA	NA	NA	NA	NA	NA	NA	<10 U	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	µg/L	5	5	<10 U	NA	**0.1 J**	NA	<1 U	NA	<5 UJ	<5 UJ	NA	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ
1,4-Dioxane	µg/L	NS	NS	NA	NA	NA	NA	NA	NA	<400 UJ	<400 UJ	NA	NA	NA	NA	NA	NA	NA	<400 UJ	<400 UJ
Acetone	µg/L	NS	NS	<10 UJ	NA	NA	NA	NA	NA	<100 UJ	<100 UJ	NA	<10 UJ	NA	<5 U	NA	NA	NA	<100 UJ	<100 UJ
Benzene	µg/L	5	5	<10 U	NA	<1 U	NA	**0.1 J**	NA	<5 U	<5 U	NA	<10 U	NA	<1 U	NA	<1 U	NA	<5 U	<5 U
Bromomethane	µg/L	NS	NS	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	NA	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ
Carbon disulfide	µg/L	NS	NS	<10 U	NA	<1 U	NA	**0.1 J**	NA	<5 UJ	<5 UJ	NA	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ
Chlorobenzene	µg/L	100	NS	<10 U	NA	<1 U	NA	<1 U	NA	<5 U	<5 U	NA	<10 U	NA	<1 U	NA	<1 U	NA	<5 U	<5 U
Chloroethane	µg/L	NS	NS	<10 U	NA	**2**	NA	**4**	NA	<10 UJ	<10 UJ	NA	<10 U	NA	<1 U	NA	<1 U	NA	<10 UJ	<10 UJ
Chloroform	µg/L	NS	NS	<10 U	NA	<1 U	NA	<1 U	NA	<1 UJ	<1 UJ	NA	<10 U	NA	<1 U	NA	<1 U	NA	<1 UJ	<1 UJ
Chloromethane	µg/L	NS	NS	<10 U	NA	<1 U	NA	**0.2 J**	NA	<10 UJ	<10 UJ	NA	<10 U	NA	<1 U	NA	<1 U	NA	<10 UJ	<10 UJ
cis-1,2-Dichloroethene	µg/L	70	70	NA	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	NA	NA	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ
Ethyl benzene	µg/L	700	700	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	NA	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ
Methylene chloride	µg/L	NS	NS	<10 U	NA	<1 U	NA	<2 U	NA	<5 UJ	<5 UJ	NA	<10 U	NA	<2 U	NA	<2 U	NA	<5 UJ	<5 UJ
Tetrachloroethene	µg/L	5	5	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	NA	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ
Toluene	µg/L	1000	1000	<10 U	NA	<1 U	NA	<1 U	NA	<5 U	<5 U	NA	<10 U	NA	<1 U	NA	<1 U	NA	<5 U	<5 U
trans-1,2-Dichloroethene	µg/L	100	100	NA	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	NA	NA	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ
Trichloroethene	µg/L	5	5	<10 U	NA	<1 U	NA	<1 U	NA	<5 U	<5 U	NA	<10 U	NA	<1 U	NA	<1 U	NA	<5 U	<5 U
Vinyl chloride	µg/L	2	2	<10 U	NA	**0.2 J**	NA	**0.5 J**	NA	<2 UJ	<2 UJ	NA	<10 U	NA	<1 U	NA	<1 U	NA	<2 UJ	<2 UJ
Xylene, Total	µg/L	10000	10000	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	NA	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ
SVOC																				
2-Methylnaphthalene	µg/L	NS	NS	<10 U	NA	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ	<10 U	NA	NA	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ
2-Methylphenol	µg/L	NS	NS	<10 U	NA	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ	<10 U	NA	NA	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ
bis(2-Ethylhexyl) phthalate	µg/L	NS	NS	<10 U	NA	<10 U	NA	<10 U	NA	<5 UJ	<5 UJ	<10 U	NA	NA	<10 U	NA	**27**	NA	<5 UJ	<5 UJ
Diethylphthalate	µg/L	NS	NS	<10 U	NA	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ	<10 U	NA	NA	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ
Di-n-butylphthalate	µg/L	NS	NS	<10 U	NA	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ	<10 U	NA	NA	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ
Naphthalene	µg/L	NS	NS	<10 U	NA	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ	<10 U	NA	NA	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ
Metals																				
Antimony	mg/L	0.006	0.006	<0.0015 U	**0.0024 J**	<0.001 U	<0.0058 U	<0.001 U	<0.001 U	<0.006 U	<0.006 U	NA	<0.0015 U	<0.0015 U	<0.001 U	<0.0018 U	<0.001 U	<0.001 U	<0.006 U	<0.006 U
Arsenic	mg/L	0.01	0.05	**0.0034 J**	**0.0034 J**	**0.0048 B**	**0.005 B**	<0.003 U	**0.0046 B**	<0.002 U	<0.002 U	NA	**0.0021 J**	**0.0016 J**	<0.001 U	<0.001 U	<0.003 U	<0.003 U	<0.002 U	<0.002 U
Barium	mg/L	2	2	**0.185 J**	**0.185 J**	**0.181 B**	**0.181 B**	**0.143 B**	**0.148 B**	**0.202**	**0.13**	NA	**0.145 J**	**0.148 J**	**0.187 B**	**0.148 B**	**0.223**	**0.188 B**	**0.196**	**0.194**
Boron	mg/L	NS	2	<0.1 U	<0.1 U	<0.1 U	<0.1 U	**0.0213 B**	NA	**1.28 J**	**1.04 J-**	NA	<0.1 U	<0.1 U	<0.1 U	<0.1 U	**0.0146 B**	NA	**0.05 J**	**0.07 J-**
Chromium	mg/L	0.1	0.1	<0.003 U	<0.003 U	<0.002 U	<0.002 U	<0.001 U	<0.001 U	<0.001 U	<0.001 U	NA	<0.003 U	<0.003 U	<0.002 U	<0.002 U	**0.004 B**	<0.003 U	**0.042**	**0.002**
Cobalt	mg/L	NS	1	<0.003 U	<0.003 U	<0.003 U	<0.003 U	**0.0024 B**	**0.0032 B**	<0.001 U	**0.001**	NA	**0.003 J**	<0.003 U	<0.003 U	<0.003 U	<0.003 U	<0.003 U	**0.006**	**0.004**
Copper	mg/L	1.3	0.65	<0.0154 U	<0.007 U	<0.002 U	<0.002 U	<0.001 U	<0.001 U	<0.001 U	**0.001**	NA	<0.0131 U	**0.0498**	<0.002 U	<0.002 U	<0.006 U	<0.006 U	**0.005**	**0.002**
Iron	mg/L	NS	5	**1.01**	**0.849**	**1.48**	**1.14**	**2.75**	**2.93**	**0.26 J**	**3.25**	NA	**0.802**	**0.303**	**1.69**	<0.171 U	**0.812**	**0.199**	**0.69 J**	**0.33**
Lead	mg/L	0.015	0.0075	<0.002 U	<0.002 U	<0.002 U	<0.001 U	<0.002 U	<0.002 U	<0.002 U	<0.002 U	NA	<0.0017 U	<0.001 U	**0.0053 J**	<0.0012 U	**0.0063**	<0.0024 U	<0.002 U	<0.002 U
Manganese	mg/L	NS	0.15	**0.253**	**0.226**	**0.255**	**0.262**	**0.299**	**0.373**	**0.098**	**0.146**	NA	**0.13**	**0.131**	**0.12**	**0.0857**	**0.0563**	**0.0361**	**0.147**	**0.094**
Mercury	mg/L	0.002	0.002	<0.0002 U	**0.0052**	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	NA	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U
Nickel	mg/L	NS	0.1	**0.0369 J**	**0.0303 J**	**0.0214 J**	<0.0223 U	**0.0515**	**0.0583**	**0.074**	**0.064**	NA	<0.011 U	<0.011 U	<0.008 U	<0.008 U	<0.007 U	<0.007 U	**0.394**	**0.269**
Zinc	mg/L	NS	5	<0.0224 U	<0.0114 U	**0.0452**	<0.0244 U	**0.0131 B**	**0.008 B**	<0.005 U	<0.005 U	NA	**0.026**	**0.0175 J**	**0.052**	<0.0248 U	**0.0243**	**0.0546 J**	<0.005 U	**0.016**
Inorganics																				
Cyanide	mg/L	0.2	0.2	<0.01 U	NA	<0.01 U	NA	<0.01 U	NA	<0.005 U	<0.005 U	NA	<0.01 U	NA	<0.01 U	NA	<0.01 U	NA	<0.005 U	<0.005 U
Sulfide	mg/L	NS	NS	<0.001 U	NA	<0.001 U	NA	<0.001 U	NA	<0.05 U	<0.05 U	NA	<0.001 U	NA	**0.0025**	NA	<0.001 U	NA	<0.05 U	<0.05 U

Notes:
1. Bolded cells indicate detection
2. Shaded cells indicate exceedance of maximum contaminant level (MCL) or Illinois Class I Groundwater Standard
3. NS=No Standard for MCL values or Illinois Class I Groundwater
4. NA=Not Analyzed
5. Units for VOCs and SVOCs are µg/L
6. Units for metals and inorganics are mg/L
7. D=Deep
8. S=Shallow
9. R=Replacement
10. DUP=Duplicate Sample
11. MCLs can be found at http://www.epa.gov/safewater/contaminants/index.html
12. This table includes analytical results for parameters that were detected at any time at the site. If a parameter was never detected it is not included on this table
13. The Illinois Class I Groundwater Standards are located in Section 620.410 of Title 35 of the Illinois Administrative Code

Data Qualifiers:
1. U indicates the analyte was analyzed for, but was not detected above the report sample quantitation limit
2. UJ indicates the analyte was not detected above the reported sample quantitation limit, however, the reported quantitation limit is approximate
3. J indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample
4. B indicates the analyte result was between IDL (instrument detection limit) and contract required detection limit
5. N indicates spiked sample recovery not within control limits
6. J- indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte with a low bias
7. J+ indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte with a high bias

Table 3
Summary of Groundwater Analytical Data
MIG/DeWane Landfill Superfund Site
Boone County, Belvidere, Illinois

Location				MW-06S										MW-07D									
Date Sampled	Units	MCL	IL Class I GW	10/1/1993	11/1/1993	11/1/1993-DUP	12/1/1994	12/1/1994-DUP	9/1/1995	9/1/1995-DUP	4/13/2010	12/3/2010	12/27/2011	10/1/1993	11/1/1993	11/1/1993-DUP	12/1/1994	12/1/1994-DUP	9/1/1995	9/1/1995-DUP	4/13/2010	4/13/2010-DUP	12/2/2010
VOC																							
1,1,1-Trichloroethane	µg/L	200	200	NA	<10 U	NA	<5 U	NA	<5 U	NA	<5 UJ	<5 UJ	NA	NA	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<5 UJ
1,1-Dichloroethane	µg/L	NS	NS	NA	**56**	NA	**55**	NA	**56**	NA	**16.3 J**	**20.4**	NA	NA	<10 U	NA	**1 J**	NA	**1**	NA	<5 UJ	<5 UJ	<5 UJ
1,1-Dichloroethene	µg/L	7	7	NA	<10 U	NA	<5 U	NA	<5 U	NA	<5 U	<5 U	<5 U	NA	<10 U	NA	<1 U	NA	<1 U	NA	<5 U	<5 U	<5 U
1,2-Dibromo-3-chloropropane	µg/L	0.2	0.2	NA	NA	NA	<5 U	NA	NA	NA	<10 UJ	<10 UJ	NA	NA	NA	NA	<1 U	NA	NA	NA	<10 UJ	<10 UJ	<10 UJ
1,2-Dichloroethane	µg/L	5	5	NA	<10 U	NA	<5 U	NA	<5 U	NA	<5 UJ	<5 UJ	NA	NA	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<5 UJ
1,2-Dichloroethene (Total)	µg/L	NS	NS	NA	**1 J**	NA	NA	NA	NA	NA	NA	NA	NA	NA	<10 U	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	µg/L	5	5	NA	<10 U	NA	<5 U	NA	<5 U	NA	<5 UJ	<5 UJ	<5 U	NA	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<5 UJ
1,4-Dioxane	µg/L	NS	NS	NA	NA	NA	NA	NA	NA	NA	<400 UJ	<400 UJ	NA	NA	NA	NA	NA	NA	NA	NA	<400 UJ	<400 UJ	<400 UJ
Acetone	µg/L	NS	NS	NA	<10 UJ	NA	<25 U	NA	NA	NA	<100 UJ	<100 UJ	NA	NA	<10 UJ	NA	<5 U	NA	NA	NA	<100 UJ	<100 UJ	<100 UJ
Benzene	µg/L	5	5	NA	**4**	NA	**5**	NA	**6 J**	NA	**7.6**	**7.7**	**7.6**	NA	<10 U	NA	**0.4 J**	NA	**0.7 J**	NA	<5 U	<5 U	<5 U
Bromomethane	µg/L	NS	NS	NA	<10 U	NA	<5 U	NA	<5 U	NA	<5 UJ	<5 UJ	NA	NA	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<5 UJ
Carbon disulfide	µg/L	NS	NS	NA	<10 U	NA	<5 U	NA	<5 U	NA	<5 UJ	<5 UJ	NA	NA	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<5 UJ
Chlorobenzene	µg/L	100	NS	NA	<10 U	NA	<5 U	NA	<5 U	NA	<5 U	<5 U	NA	NA	<10 U	NA	<1 U	NA	<1 U	NA	<5 U	<5 U	<5 U
Chloroethane	µg/L	NS	NS	NA	**5 J**	NA	**9**	NA	**12**	NA	<10 UJ	<10 UJ	NA	NA	**13**	NA	**21**	NA	**20**	NA	<10 UJ	<10 UJ	<10 UJ
Chloroform	µg/L	NS	NS	NA	<10 U	NA	**6**	NA	**10**	NA	<1 UJ	<1 UJ	NA	NA	<10 U	NA	<1 U	NA	<1 U	NA	<1 UJ	<1 UJ	<1 UJ
Chloromethane	µg/L	NS	NS	NA	<10 U	NA	<5 U	NA	<5 U	NA	<10 UJ	<10 UJ	NA	NA	<10 U	NA	**1**	NA	**1**	NA	<10 UJ	<10 UJ	<10 UJ
cis-1,2-Dichloroethene	µg/L	70	70	NA	NA	NA	**2 J**	NA	**2 J**	NA	<5 UJ	<5 UJ	NA	NA	NA	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<5 UJ
Ethyl benzene	µg/L	700	700	NA	<10 U	NA	<5 U	NA	<5 U	NA	<5 UJ	<5 UJ	NA	NA	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<5 UJ
Methylene chloride	µg/L	NS	NS	NA	<10 U	NA	<2 U	NA	<10 U	NA	<5 UJ	<5 UJ	<5 U	NA	<10 U	NA	<1 U	NA	<2 U	NA	<5 UJ	<5 UJ	<5 UJ
Tetrachloroethene	µg/L	5	5	NA	<10 U	NA	<5 U	NA	<5 U	NA	<5 UJ	<5 UJ	<5 U	NA	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<5 UJ
Toluene	µg/L	1000	1000	NA	<10 U	NA	<5 U	NA	<5 U	NA	<5 U	<5 U	NA	NA	<10 U	NA	<1 U	NA	<1 U	NA	<5 U	<5 U	<5 U
trans-1,2-Dichloroethene	µg/L	100	100	NA	NA	NA	**0.6 J**	NA	**0.6 J**	NA	<5 UJ	<5 UJ	NA	NA	NA	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<5 UJ
Trichloroethene	µg/L	5	5	NA	**1 J**	NA	**2 J**	NA	**2 J**	NA	<5 U	<5 U	<5 U	NA	<10 U	NA	<1 U	NA	<1 U	NA	<5 U	<5 U	<5 U
Vinyl chloride	µg/L	2	2	NA	<10 U	NA	**2 J**	NA	**2 J**	NA	<2 UJ	<2 UJ	<2 UJ	NA	<10 U	NA	**0.2 J**	NA	<1 U	NA	<2 UJ	<2 UJ	<2 UJ
Xylene, Total	µg/L	10000	10000	NA	<10 U	NA	<5 U	NA	<5 U	NA	<5 UJ	<5 UJ	NA	NA	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<5 UJ
SVOC																							
2-Methylnaphthalene	µg/L	NS	NS	<10 U	NA	NA	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ	NA	<10 U	NA	NA	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ	<10 UJ
2-Methylphenol	µg/L	NS	NS	<10 U	NA	NA	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ	NA	<10 U	NA	NA	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ	<10 UJ
bis(2-Ethylhexyl) phthalate	µg/L	NS	NS	<10 U	NA	NA	<10 U	NA	**3 J**	NA	<5 UJ	<5 UJ	NA	<10 U	NA	NA	<10 U	NA	**20**	NA	<5 UJ	<5 UJ	<5 UJ
Diethylphthalate	µg/L	NS	NS	<10 U	NA	NA	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ	NA	<10 U	NA	NA	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ	<10 UJ
Di-n-butylphthalate	µg/L	NS	NS	<10 U	NA	NA	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ	NA	<10 U	NA	NA	<10 U	NA	**6 J**	NA	<10 UJ	<10 UJ	<10 UJ
Naphthalene	µg/L	NS	NS	<10 U	NA	NA	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ	NA	<10 U	NA	NA	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ	<10 UJ
Metals																							
Antimony	mg/L	0.006	0.006	NA	<0.0015 U	**0.0034**	<0.001 U	<0.001 U	<0.001 U	<0.001 U	<0.006 U	<0.006 U	<0.006 U	NA	<0.0015 U	**0.0029**	<0.001 U	<0.0047 U	<0.001 U	<0.001 U	<0.006 U	<0.006 U	<0.006 U
Arsenic	mg/L	0.01	0.05	NA	<0.001 U	<0.001 U	<0.001 U	<0.001 U	<0.003 U	<0.003 U	<0.002 U	**0.006**	**0.007**	NA	**0.005 J**	**0.0014 J**	**0.0027 B**	**0.0025 B**	<0.003 U	**0.0031 B**	<0.002 U	**0.015**	**0.008**
Barium	mg/L	2	2	NA	**0.0867 J**	**0.089 J**	**0.0932 B**	**0.0904 B**	**0.124 B**	**0.118 B**	**0.687**	**0.802**	NA	NA	**0.155 J**	**0.145 J**	**0.159 B**	**0.151 B**	**0.22**	**0.205**	**0.272**	**0.254**	**0.273**
Boron	mg/L	NS	2	NA	<0.1 U	<0.1 U	<0.1 U	<0.1 U	**0.0091 B**	NA	**3.6 J**	**3.28 J-**	**2.96**	NA	<0.1 U	<0.1 U	<0.1 U	**0.112**	**0.148**	NA	**0.39 J**	**0.41 J**	**0.32 J-**
Chromium	mg/L	0.1	0.1	NA	<0.003 U	<0.003 U	<0.002 U	<0.002 U	<0.003 U	<0.003 U	<0.001 U	**0.008**	**0.003**	NA	<0.003 U	<0.003 U	**0.0043 B**	<0.002 U	<0.003 U	**0.0032 B**	**0.004**	<0.001 U	**0.005**
Cobalt	mg/L	NS	1	NA	**0.0069 J**	<0.003 U	<0.003 U	<0.003 U	<0.003 U	<0.003 U	**0.02**	**0.022**	NA	NA	**0.0056 J**	<0.003 U	<0.003 U	<0.003 U	**0.0058 B**	**0.0057 B**	**0.008**	**0.007**	**0.004**
Copper	mg/L	1.3	0.65	NA	<0.0152 U	**0.0568**	<0.0043 U	<0.002 U	<0.006 U	<0.006 U	<0.001 U	**0.003**	NA	NA	<0.007 U	**0.0082 J**	<0.002 U	<0.002 U	<0.006 U	<0.006 U	<0.001 U	<0.001 U	**0.001**
Iron	mg/L	NS	5	NA	**0.214**	**0.0893**	**1.08**	**0.905**	**1.23**	**1.09**	**2.81 J**	**4.02**	**2.62**	NA	**2.11**	**1.65**	**3.27**	**2.95**	**5.2**	**5.09**	**3.84 J**	**4.08 J**	**4.53**
Lead	mg/L	0.015	0.0075	NA	<0.001 U	<0.001 U	**0.0022**	<0.001 U	**0.0038**	<0.0022 U	<0.002 U	<0.002 U	<0.002 U	NA	<0.0015 U	**0.0064**	<0.002 U	<1 U	**0.0025 B**	<0.002 U	<0.002 U	<0.002 U	<0.002 U
Manganese	mg/L	NS	0.15	NA	**0.392**	**0.373**	**0.262**	**0.257**	**0.3**	**0.29**	**0.639**	**0.667**	**0.509**	NA	**0.219**	**0.213**	**0.388**	**0.382**	**0.549**	**0.576**	**0.176**	**0.166**	**0.117**
Mercury	mg/L	0.002	0.002	NA	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0005 UJ	NA	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U
Nickel	mg/L	NS	0.1	NA	**0.0122**	<0.011 U	**0.0248**	<0.008 U	**0.0187**	**0.0171**	**0.376**	**0.443**	**0.354**	NA	**0.0355 J**	**0.0348 J**	**0.0412**	<0.0391 U	**0.0651**	**0.0577**	**0.439**	**0.117**	**0.21**
Zinc	mg/L	NS	5	NA	**0.0365**	**0.027**	**0.0466**	<0.0101 U	**0.117**	**0.0387 J**	<0.005 U	**0.005**	NA	NA	**0.0083 J**	**0.0185 J**	**0.0221**	<0.0168 U	**0.0993**	**0.0211**	<0.005 U	<0.005 U	<0.005 U
Inorganics																							
Cyanide	mg/L	0.2	0.2	NA	<0.01 U	NA	<0.01 U	NA	<0.01 U	NA	<0.005 U	**0.008**	NA	NA	<0.01 U	NA	<0.01 U	NA	<0.01 U	NA	<0.005 U	<0.005 U	<0.005 U
Sulfide	mg/L	NS	NS	NA	<0.001 U	NA	<0.001 U	NA	<0.001 U	NA	<0.05 U	<0.05 U	NA	NA	**0.0018**	NA	**0.0016**	NA	<0.001 U	NA	<0.05 U	<0.05 U	<0.05 U

Notes:
1. Bolded cells indicate detection
2. Shaded cells indicate exceedance of maximum contaminant level (MCL) or Illinois Class I Groundwater Standard
3. NS=No Standard for MCL values or Illinois Class I Groundwater
4. NA=Not Analyzed
5. Units for VOCs and SVOCs are µg/L
6. Units for metals and inorganics are mg/L
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8. S=Shallow
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13. The Illinois Class I Groundwater Standards are located in Section 620.410 of Title 35 of the Illinois Administrative Code

Data Qualifiers:
1. U indicates the analyte was analyzed for, but was not detected above the report sample quantitation limit
2. UJ indicates the analyte was not detected above the reported sample quantitation limit, however, the reported quantitation limit is approximate
3. J indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample
4. B indicates the analyte result was between IDL (instrument detection limit) and contract required detection limit
5. N indicates spiked sample recovery not within control limits
6. J- indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte with a low bias
7. J+ indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte with a high bias

Table 3
Summary of Groundwater Analytical Data
MIG/DeWane Landfill Superfund Site
Boone County, Belvidere, Illinois

Location				MW-07S										MW-08D								
Date Sampled	Units	MCL	IL Class I GW	10/1/1993	11/1/1993	11/1/1993-DUP	12/1/1994	12/1/1994-DUP	9/1/1995	9/1/1995-DUP	4/12/2010	12/1/2010	12/28/2011	11/1/1993	11/1/1993-DUP	12/1/1994	12/1/1994-DUP	9/1/1995	9/1/1995-DUP	4/12/2010	12/2/2010	12/2/2010-DUP
VOC																						
1,1,1-Trichloroethane	µg/L	200	200	<10 U	NA	NA	<1 U	<1 U	<1 U	NA	<5 UJ	<5 UJ	NA	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<5 UJ
1,1-Dichloroethane	µg/L	NS	NS	<10 U	NA	NA	<1 U	<1 U	<1 U	NA	<5 UJ	<5 UJ	NA	<10 U	NA	**0.5 J**	NA	**0.4 J**	NA	<5 UJ	<5 UJ	<5 UJ
1,1-Dichloroethene	µg/L	7	7	<10 U	NA	NA	<1 U	<1 U	<1 U	NA	<5 U	<5 U	<5 U	<10 U	NA	<1 U	NA	<1 U	NA	<5 U	<5 U	<5 U
1,2-Dibromo-3-chloropropane	µg/L	0.2	0.2	NA	NA	NA	NA	NA	NA	NA	<10 UJ	<10 UJ	NA	NA	NA	<1 U	NA	NA	NA	<10 UJ	<10 UJ	<10 UJ
1,2-Dichloroethane	µg/L	5	5	<10 U	NA	NA	<1 U	<1 U	<1 U	NA	<5 UJ	<5 UJ	NA	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<5 UJ
1,2-Dichloroethene (Total)	µg/L	NS	NS	**6 J**	NA	NA	NA	NA	NA	NA	NA	NA	NA	<10 U	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	µg/L	5	5	<10 U	NA	NA	<1 U	<1 U	<1 U	NA	<5 UJ	<5 UJ	<5 U	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<5 UJ
1,4-Dioxane	µg/L	NS	NS	NA	NA	NA	NA	NA	NA	NA	<400 UJ	<400 UJ	NA	NA	NA	NA	NA	NA	NA	<400 UJ	<400 UJ	<400 UJ
Acetone	µg/L	NS	NS	<10 UJ	NA	NA	NA	NA	NA	NA	<100 UJ	<100 UJ	NA	<10 UJ	NA	<5 U	NA	NA	NA	<100 UJ	<100 UJ	<100 UJ
Benzene	µg/L	5	5	<10 U	NA	NA	<1 U	<1 U	<1 U	NA	<5 U	<5 U	<5 U	<10 U	NA	<1 U	NA	<1 U	NA	<5 U	<5 U	<5 U
Bromomethane	µg/L	NS	NS	<10 U	NA	NA	<1 U	<1 U	<1 U	NA	<5 UJ	<5 UJ	NA	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<5 UJ
Carbon disulfide	µg/L	NS	NS	<10 U	NA	NA	<1 U	<1 U	<1 U	NA	<5 UJ	<5 UJ	NA	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<5 UJ
Chlorobenzene	µg/L	100	NS	<10 U	NA	NA	<1 U	<1 U	<1 U	NA	<5 U	<5 U	NA	<10 U	NA	<1 U	NA	<1 U	NA	<5 U	<5 U	<5 U
Chloroethane	µg/L	NS	NS	**4 J**	NA	NA	<1 U	<1 U	**0.2 J**	NA	<10 UJ	<10 UJ	NA	<10 U	NA	**0.6 J**	NA	**0.5 J**	NA	<10 UJ	<10 UJ	<10 UJ
Chloroform	µg/L	NS	NS	<10 U	NA	NA	<1 U	<1 U	<1 U	NA	<1 UJ	<1 UJ	NA	<10 U	NA	<1 U	NA	<1 U	NA	<1 UJ	<1 UJ	<1 UJ
Chloromethane	µg/L	NS	NS	<10 U	NA	NA	<1 U	**0.1 J**	<1 U	NA	<10 UJ	<10 UJ	NA	<10 U	NA	<1 U	NA	**0.1**	NA	<10 UJ	<10 UJ	<10 UJ
cis-1,2-Dichloroethene	µg/L	70	70	NA	NA	NA	<1 U	<1 U	<1 U	NA	<5 UJ	<5 UJ	NA	NA	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<5 UJ
Ethyl benzene	µg/L	700	700	<10 U	NA	NA	<1 U	<1 U	<1 U	NA	<5 UJ	<5 UJ	NA	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<5 UJ
Methylene chloride	µg/L	NS	NS	<10 U	NA	NA	<2 U	<2 U	<2 U	NA	<5 UJ	<5 UJ	<5 U	<10 U	NA	<2 U	NA	<2 U	NA	<5 UJ	<5 UJ	<5 UJ
Tetrachloroethene	µg/L	5	5	<10 U	NA	NA	<1 U	<1 U	<1 U	NA	<5 UJ	<5 UJ	<5 U	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<5 UJ
Toluene	µg/L	1000	1000	<10 U	NA	NA	<1 U	<1 U	<1 U	NA	<5 U	<5 U	NA	<10 U	NA	<1 U	NA	<1 U	NA	<5 U	<5 U	<5 U
trans-1,2-Dichloroethene	µg/L	100	100	NA	NA	NA	<1 U	<1 U	<1 U	NA	<5 UJ	<5 UJ	NA	NA	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<5 UJ
Trichloroethene	µg/L	5	5	<10 U	NA	NA	<1 U	<1 U	<1 U	NA	<5 U	<5 U	<5 U	<10 U	NA	<1 U	NA	<1 U	NA	<5 U	<5 U	<5 U
Vinyl chloride	µg/L	2	2	<10 U	NA	NA	<1 U	<1 U	<1 U	NA	<2 UJ	<2 UJ	<2 UJ	<10 U	NA	<1 U	NA	<1 U	NA	<2 UJ	<2 UJ	<2 UJ
Xylene, Total	µg/L	10000	10000	<10 U	NA	NA	<1 U	<1 U	<1 U	NA	<5 UJ	<5 UJ	NA	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<5 UJ
SVOC																						
2-Methylnaphthalene	µg/L	NS	NS	<10 U	NA	NA	<10 U	<10 U	<10 U	NA	<10 UJ	<10 UJ	NA	<10 U	NA	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ	<10 UJ
2-Methylphenol	µg/L	NS	NS	<10 U	NA	NA	<10 U	<10 U	<10 U	NA	<10 UJ	<10 UJ	NA	<10 U	NA	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ	<10 UJ
bis(2-Ethylhexyl) phthalate	µg/L	NS	NS	<10 U	NA	NA	<10 U	**2 J**	**9 J**	NA	<5 UJ	<5 UJ	NA	<10 U	NA	**5 J**	NA	<10 U	NA	<5 UJ	<5 UJ	<5 UJ
Diethylphthalate	µg/L	NS	NS	<10 U	NA	NA	<10 U	<10 U	**13**	NA	<10 UJ	<10 UJ	NA	<10 U	NA	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ	<10 UJ
Di-n-butylphthalate	µg/L	NS	NS	<10 U	NA	NA	<10 U	<10 U	<10 U	NA	<10 UJ	<10 UJ	NA	<10 U	NA	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ	<10 UJ
Naphthalene	µg/L	NS	NS	<10 U	NA	NA	<10 U	<10 U	<10 U	NA	<10 UJ	<10 UJ	NA	<10 U	NA	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ	<10 UJ
Metals																						
Antimony	mg/L	0.006	0.006	NA	<0.0015 U	**0.0054 J**	<0.001 U	<0.001 U	<0.001 U	<0.001 U	<0.006 U	<0.006 U	<0.006 U	<0.0015 U	**0.0058 J**	<0.001 U	<0.0013 U	<0.001 U	<0.001 U	<0.006 U	<0.006 U	<0.006 U
Arsenic	mg/L	0.01	0.05	NA	**0.0034 J**	<0.001 U	<0.001 U	<0.001 U	<0.003 U	<0.003 U	<0.002 U	<0.002 U	<0.002 U	**0.0033 J**	**0.0032 J**	**0.0055 B**	**0.0041 B**	<0.003 U	**0.0059 B**	<0.002 U	**0.009**	**0.008**
Barium	mg/L	2	2	NA	**0.129 J**	**0.137 J**	**0.138 B**	**0.171 B**	**0.175 B**	**0.165 B**	**0.245**	**0.269**	NA	**0.0943 J**	**0.11 J**	**0.185 B**	**0.122 B**	**0.134 B**	**0.121 B**	**0.196**	**0.192**	**0.178**
Boron	mg/L	NS	2	NA	<0.1 U	<0.1 U	<0.1 U	<0.1 U	**0.063 B**	NA	**0.47 J**	**0.56 J-**	**0.57**	<0.1 U	<0.1 U	<0.1 U	<0.1 U	**0.0222 B**	NA	<0.01 UJ	**0.02 J-**	**0.02 J-**
Chromium	mg/L	0.1	0.1	NA	<0.003 U	<0.003 U	<0.002 U	<0.002 U	<0.003 U	<0.003 U	<0.001 U	**0.001**	**0.001**	<0.003 U	<0.003 U	**0.0031 B**	<0.002 U	<0.003 U	<0.003 U	<0.001 U	<0.001 U	<0.001 U
Cobalt	mg/L	NS	1	NA	**0.0036 J**	<0.003 U	<0.003 U	<0.003 U	<0.003 U	<0.003 U	<0.001 U	<0.001 U	NA	<0.003 U	<0.003 U	<0.003 U	<0.003 U	<0.003 U	<0.003 U	<0.001 U	<0.001 U	**0.001**
Copper	mg/L	1.3	0.65	NA	<0.007 U	**0.0101 J**	<0.002 U	<0.002 U	<0.006 U	<0.006 U	<0.001 U	**0.001**	NA	<0.0128 U	<0.007 U	<0.002 U	<0.002 U	<0.006 U	<0.006 U	<0.001 U	**0.002**	**0.002**
Iron	mg/L	NS	5	NA	**1.61**	**1.67**	**2.27**	**2.83**	**2.63**	**2.44**	**2.99 J**	**3.06**	**2.95**	**0.725**	**0.274**	**1.63**	**0.403**	**0.826**	**0.471**	**1.3 J**	**1.34**	**1.22**
Lead	mg/L	0.015	0.0075	NA	<0.001 U	<0.001 U	<0.001 U	<0.001 U	**0.0026 B**	<0.002 U	<0.002 U	<0.002 U	<0.002 U	<0.002 U	<0.002 U	**0.0043 J**	<0.0016 U	**0.0034**	<0.0021 U	<0.002 U	<0.002 U	<0.002 U
Manganese	mg/L	NS	0.15	NA	**0.101**	**0.11**	**0.0428**	**0.0551**	**0.0459**	**0.0433**	**0.046**	**0.026**	**0.028**	**0.118**	**0.108**	**0.145**	**0.0852**	**0.0921**	**0.0889**	**0.095**	**0.077**	**0.073**
Mercury	mg/L	0.002	0.002	NA	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0005 UJ	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U
Nickel	mg/L	NS	0.1	NA	**0.0161 J**	**0.16 J**	**0.0162 B**	**0.0162 B**	**0.0283 B**	**0.0193 B**	**0.048**	**0.049**	**0.049**	<0.011 U	**0.0144 J**	**0.0123 B**	<0.008 U	**0.0162 B**	<0.007 U	**0.004**	**0.008**	**0.008**
Zinc	mg/L	NS	5	NA	**0.0068 J**	**0.0185 J**	**0.0202**	**0.0202**	**0.0734**	**0.015 J**	<0.005 U	<0.005 U	NA	<0.0185 U	<0.0082 U	**0.0327**	<0.014 U	**0.0995**	**0.0277 J**	<0.005 U	**0.005**	<0.005 U
Inorganics																						
Cyanide	mg/L	0.2	0.2	NA	<0.01 U	NA	<0.01 U	<0.01 U	<0.01 U	NA	<0.005 U	<0.005 U	NA	<0.01 U	NA	<0.01 U	NA	<0.01 U	NA	<0.005 U	<0.005 U	<0.005 U
Sulfide	mg/L	NS	NS	NA	<0.001 U	NA	<0.001 U	<0.001 U	<0.001 U	NA	<0.05 U	<0.05 U	NA	<0.001 U	NA	<0.001 U	NA	<0.001 U	NA	<0.05 U	<0.05 U	<0.05 U

Notes:
1. Bolded cells indicate detection
2. Shaded cells indicate exceedance of maximum contaminant level (MCL) or Illinois Class I Groundwater Standard
3. NS=No Standard for MCL values or Illinois Class I Groundwater
4. NA=Not Analyzed
5. Units for VOCs and SVOCs are µg/L
6. Units for metals and inorganics are mg/L
7. D=Deep
8. S=Shallow
9. R=Replacement
10. DUP=Duplicate Sample
11. MCLs can be found at http://www.epa.gov/safewater/contaminants/index.html
12. This table includes analytical results for parameters that were detected at any time at the site. If a parameter was never detected it is not included on this table
13. The Illinois Class I Groundwater Standards are located in Section 620.410 of Title 35 of the Illinois Administrative Code

Data Qualifiers:
1. U indicates the analyte was analyzed for, but was not detected above the report sample quantitation limit
2. UJ indicates the analyte was not detected above the reported sample quantitation limit, however, the reported quantitation limit is approximate
3. J indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample
4. B indicates the analyte result was between IDL (instrument detection limit) and contract required detection limit
5. N indicates spiked sample recovery not within control limits
6. J- indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte with a low bias
7. J+ indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte with a high bias

Table 3
Summary of Groundwater Analytical Data
MIG/DeWane Landfill Superfund Site
Boone County, Belvidere, Illinois

Location				MW-08S									MW-09D								
Date Sampled	Units	MCL	IL Class I GW	11/1/1993	11/1/1993-DUP	12/1/1994	12/1/1994-DUP	9/1/1995	9/1/1995-DUP	4/12/2010	12/1/2010	12/27/2011	11/1/1993	11/1/1993-DUP	12/1/1994	12/1/1994-DUP	9/1/1995	9/1/1995-DUP	4/9/2010	12/1/2010	12/27/2011
VOC																					
1,1,1-Trichloroethane	µg/L	200	200	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	NA	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	NA
1,1-Dichloroethane	µg/L	NS	NS	<10 U	NA	**9**	NA	**5**	NA	**12.5 J**	**10.9**	NA	<10 U	NA	**0.3 J**	NA	**1**	NA	<5 UJ	<5 UJ	NA
1,1-Dichloroethene	µg/L	7	7	<10 U	NA	<1 U	NA	<1 U	NA	<5 U	<5 U	<5 U	<10 U	NA	<1 U	NA	<1 U	NA	<5 U	<5 U	<5 U
1,2-Dibromo-3-chloropropane	µg/L	0.2	0.2	NA	NA	<1 U	NA	NA	NA	<10 UJ	<10 UJ	NA	NA	NA	<1 U	NA	NA	NA	<10 UJ	<10 UJ	NA
1,2-Dichloroethane	µg/L	5	5	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	NA	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	NA
1,2-Dichloroethene (Total)	µg/L	NS	NS	<10 U	NA	NA	NA	NA	NA	NA	NA	NA	<10 U	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	µg/L	5	5	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<5 U	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<5 U
1,4-Dioxane	µg/L	NS	NS	NA	NA	NA	NA	NA	NA	<400 UJ	<400 UJ	NA	NA	NA	NA	NA	NA	NA	<400 UJ	<400 UJ	NA
Acetone	µg/L	NS	NS	<10 UJ	NA	NA	NA	NA	NA	<100 UJ	<100 UJ	NA	<10 UJ	NA	<5 U	NA	NA	NA	<100 UJ	<100 UJ	NA
Benzene	µg/L	5	5	<10 U	NA	**0.3 J**	NA	**0.2 J**	NA	<5 U	<5 U	<5 U	<10 U	NA	<1 U	NA	<1 U	NA	<5 U	<5 U	<5 U
Bromomethane	µg/L	NS	NS	<10 U	NA	**0.1**	NA	<1 U	NA	<5 UJ	<5 UJ	NA	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	NA
Carbon disulfide	µg/L	NS	NS	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	NA	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	NA
Chlorobenzene	µg/L	100	NS	<10 U	NA	<1 U	NA	<1 U	NA	<5 U	<5 U	NA	<10 U	NA	<1 U	NA	<1 U	NA	<5 U	<5 U	NA
Chloroethane	µg/L	NS	NS	<10 U	NA	**2**	NA	**2**	NA	<10 UJ	<10 UJ	NA	<10 U	NA	<1 U	NA	<1 U	NA	<10 UJ	<10 UJ	NA
Chloroform	µg/L	NS	NS	<10 U	NA	<1 U	NA	<1 U	NA	<1 UJ	<1 UJ	NA	<10 U	NA	<1 U	NA	<1 U	NA	<1 UJ	<1 UJ	NA
Chloromethane	µg/L	NS	NS	<10 U	NA	**0.6 J**	NA	**0.2 J**	NA	<10 UJ	<10 UJ	NA	<10 U	NA	<1 U	NA	<1 U	NA	<10 UJ	<10 UJ	NA
cis-1,2-Dichloroethene	µg/L	70	70	NA	NA	**0.5 J**	NA	**0.2 J**	NA	<5 UJ	<5 UJ	NA	NA	NA	**0.1 J**	NA	**0.5 J**	NA	<5 UJ	<5 UJ	NA
Ethyl benzene	µg/L	700	700	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	NA	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	NA
Methylene chloride	µg/L	NS	NS	<10 U	NA	<1 U	NA	<2 U	NA	<5 UJ	<5 UJ	<5 U	<10 U	NA	<2 U	NA	<2 U	NA	<5 UJ	<5 UJ	<5 U
Tetrachloroethene	µg/L	5	5	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<5 U	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<5 U
Toluene	µg/L	1000	1000	<10 U	NA	<1 U	NA	<1 U	NA	<5 U	<5 U	NA	<10 U	NA	<1 U	NA	<1 U	NA	<5 U	<5 U	NA
trans-1,2-Dichloroethene	µg/L	100	100	NA	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	NA	NA	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	NA
Trichloroethene	µg/L	5	5	<10 U	NA	<1 U	NA	<1 U	NA	<5 U	<5 U	<5 U	<10 U	NA	<1 U	NA	**0.1 J**	NA	<5 U	<5 U	<5 U
Vinyl chloride	µg/L	2	2	<10 U	NA	**0.6 J**	NA	**0.3 J**	NA	<2 UJ	<2 UJ	<2 UJ	<10 U	NA	<1 U	NA	**0.2 J**	NA	<2 UJ	<2 UJ	<2 UJ
Xylene, Total	µg/L	10000	10000	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	NA	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	NA
SVOC																					
2-Methylnaphthalene	µg/L	NS	NS	<10 U	NA	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ	NA	<10 U	NA	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ	NA
2-Methylphenol	µg/L	NS	NS	<10 U	NA	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ	NA	<10 U	NA	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ	NA
bis(2-Ethylhexyl) phthalate	µg/L	NS	NS	<10 U	NA	<10 U	NA	<10 U	NA	<5 UJ	<5 UJ	NA	<10 U	NA	<10 U	NA	**6 J**	NA	<5 UJ	<5 UJ	NA
Diethylphthalate	µg/L	NS	NS	<10 U	NA	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ	NA	<10 U	NA	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ	NA
Di-n-butylphthalate	µg/L	NS	NS	<10 U	NA	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ	NA	<10 U	NA	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ	NA
Naphthalene	µg/L	NS	NS	<10 U	NA	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ	NA	<10 U	NA	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ	NA
Metals																					
Antimony	mg/L	0.006	0.006	<0.0015 U	**0.0033 J**	<0.001 U	<0.0014 U	<0.001 U	<0.001 U	<0.006 U	<0.006 U	<0.006 U	<0.0015 U	**0.0047 J**	<0.001 U	<0.0012 U	<0.001 U	<0.001 U	<0.006 U	<0.006 U	<0.006 U
Arsenic	mg/L	0.01	0.05	**0.0118**	**0.0121**	**0.0095 B**	**0.0104**	**0.0067 B**	**0.009 B**	**0.052**	**0.056**	**0.055**	**0.0098 J**	**0.0055 J**	**0.0062 B**	**0.0067 B**	**0.0054 B**	**0.0079 B**	<0.002 U	**0.007**	**0.009**
Barium	mg/L	2	2	**0.185 J**	**0.185 J**	**0.174 B**	**0.16 B**	**0.196 B**	**0.203**	**0.523**	**0.381**	NA	**0.466**	**0.462**	**0.426**	**0.418**	**0.521**	**0.479**	**0.509**	**0.562**	NA
Boron	mg/L	NS	2	<0.1 U	<0.1 U	<0.1 U	<0.1 U	**0.016 B**	NA	**0.25 J**	**0.26 J-**	**0.29**	**0.101**	**0.137**	<0.1 U	<0.1 U	**0.123**	NA	**0.05 J**	**0.06 J-**	**0.04**
Chromium	mg/L	0.1	0.1	<0.003 U	<0.003 U	<0.002 U	<0.002 U	<0.003 U	<0.003 U	**0.009**	**0.007**	**0.006**	<0.003 U	<0.003 U	<0.002 U	<0.002 U	**0.0032 B**	<0.003 U	<0.001 U	<0.001 U	<0.001 U
Cobalt	mg/L	NS	1	<0.003 U	<0.003 U	<0.003 U	<0.003 U	<0.003 U	<0.003 U	<0.001 U	<0.001 U	NA	**0.004 J**	<0.003 U	<0.003 U	<0.003 U	<0.003 U	<0.003 U	<0.001 U	<0.001 U	NA
Copper	mg/L	1.3	0.65	<0.0152 U	<0.007 U	<0.002 U	<0.002 U	<0.006 U	<0.006 U	<0.001 U	<0.001 U	NA	<0.007 U	<0.007 U	<0.002 U	<0.002 U	<0.006 U	<0.006 U	<0.001 U	<0.001 U	NA
Iron	mg/L	NS	5	**4.1**	**4.36**	**2.71**	**2.8**	**2.34**	**2.41**	**6.53 J**	**5.54**	**5.48**	**2.35**	**1.55**	**1.81**	**1.36**	**2.32**	**1.68**	**1.66 J**	**1.33**	**0.99**
Lead	mg/L	0.015	0.0075	<0.002 U	**0.0052**	<0.001 U	<0.001 U	**0.0037**	<0.002 U	<0.002 U	<0.002 U	<0.002 U	<0.002 U	**0.001**	**0.0013**	<0.001 U	**0.0039**	<0.0075 U	<0.002 U	<0.002 U	<0.002 U
Manganese	mg/L	NS	0.15	**0.0666**	**0.0714**	**0.0522**	**0.0515**	**0.0656**	**0.0669**	**0.109**	**0.073**	**0.067**	**0.0378**	**0.0336**	**0.0318**	**0.0255**	**0.0398**	**0.0341**	**0.033**	**0.022**	**0.019**
Mercury	mg/L	0.002	0.002	<0.0002 U	<0.0002 U	<0.0002 U	<0.0003 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0005 UJ	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0005 UJ
Nickel	mg/L	NS	0.1	<0.011 U	<0.011 U	<0.008 U	<0.008 U	**0.0101 B**	<0.007 U	**0.037**	**0.039**	**0.039**	**0.0137 J**	**0.0132 J**	**0.0125 B**	<0.008 U	**0.0229 B**	**0.0221 B**	**0.003**	**0.005**	**0.004**
Zinc	mg/L	NS	5	<0.0225 U	<0.0124 U	**0.0226**	<0.0247 U	**0.116**	**0.0375 J**	<0.005 U	<0.005 U	NA	**0.0169 J**	**0.0083 J**	**0.0208**	<0.01 U	**0.0632**	**0.119 J**	<0.005 U	<0.005 U	NA
Inorganics																					
Cyanide	mg/L	0.2	0.2	<0.01 U	NA	<0.01 U	NA	<0.01 U	NA	<0.005 U	<0.005 U	NA	<0.01 U	NA	<0.01 U	NA	<0.01 U	NA	<0.005 U	<0.005 U	NA
Sulfide	mg/L	NS	NS	<0.001 U	NA	<0.001 U	NA	<0.001 U	NA	<0.05 U	<0.05 U	NA	<0.001 U	NA	<0.001 U	NA	<0.001 U	NA	**0.13**	**0.3**	NA

Notes:
1. Bolded cells indicate detection
2. Shaded cells indicate exceedance of maximum contaminant level (MCL) or Illinois Class I Groundwater Standard
3. NS=No Standard for MCL values or Illinois Class I Groundwater
4. NA=Not Analyzed
5. Units for VOCs and SVOCs are µg/L
6. Units for metals and inorganics are mg/L
7. D=Deep
8. S=Shallow
9. R=Replacement
10. DUP=Duplicate Sample
11. MCLs can be found at http://www.epa.gov/safewater/contaminants/index.html
12. This table includes analytical results for parameters that were detected at any time at the site. If a parameter was never detected it is not included on this table
13. The Illinois Class I Groundwater Standards are located in Section 620.410 of Title 35 of the Illinois Administrative Code

Data Qualifiers:
1. U indicates the analyte was analyzed for, but was not detected above the report sample quantitation limit
2. UJ indicates the analyte was not detected above the reported sample quantitation limit, however, the reported quantitation limit is approximate
3. J indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample
4. B indicates the analyte result was between IDL (instrument detection limit) and contract required detection limit
5. N indicates spiked sample recovery not within control limits
6. J- indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte with a low bias
7. J+ indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte with a high bias

Table 3
Summary of Groundwater Analytical Data
MIG/DeWane Landfill Superfund Site
Boone County, Belvidere, Illinois

Location				MW-09S										MW-10D							
Date Sampled	Units	MCL	IL Class I GW	11/1/1993	11/1/1993-DUP	12/1/1994	12/1/1994-DUP	9/1/1995	9/1/1995-DUP	11/1/1995	4/9/2010	12/1/2010	12/27/2011	11/1/1993	11/1/1993-DUP	12/1/1994	12/1/1994-DUP	9/1/1995	9/1/1995-DUP	4/6/2010	12/2/2010
VOC																					
1,1,1-Trichloroethane	µg/L	200	200	<10 U	NA	<1 U	NA	<2 U	<1 U	<2 U	<5 UJ	<5 UJ	NA	<10 U	<10 U	<1 U	NA	<1 U	<1 U	<5 UJ	<5 UJ
1,1-Dichloroethane	µg/L	NS	NS	**9 J**	NA	<1 U	NA	**22**	**24**	**22**	<5 UJ	<5 UJ	NA	<10 U	<10 U	<1 U	NA	<1 U	<1 U	<5 UJ	<5 UJ
1,1-Dichloroethene	µg/L	7	7	<10 U	NA	<1 U	NA	<2 U	<1 U	<2 U	<5 U	<5 U	<5 U	<10 U	<10 U	<1 U	NA	<1 U	<1 U	<5 U	<5 U
1,2-Dibromo-3-chloropropane	µg/L	0.2	0.2	NA	NA	<1 U	NA	NA	NA	<2 U	<10 UJ	<10 UJ	NA	NA	NA	<1 U	NA	NA	NA	<10 UJ	<10 UJ
1,2-Dichloroethane	µg/L	5	5	<10 U	NA	<1 U	NA	<2 U	<1 U	<2 U	<5 UJ	<5 UJ	NA	<10 U	<10 U	<1 U	NA	<1 U	<1 U	<5 UJ	<5 UJ
1,2-Dichloroethene (Total)	µg/L	NS	NS	<10 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	<10 U	<10 U	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	µg/L	5	5	<10 U	NA	<1 U	NA	<2 U	**1 J**	**1 J**	<5 UJ	<5 UJ	<5 U	<10 U	<10 U	<1 U	NA	<1 U	<1 U	<5 UJ	<5 UJ
1,4-Dioxane	µg/L	NS	NS	NA	NA	NA	NA	NA	NA	NA	<400 UJ	<400 UJ	NA	NA	NA	NA	NA	NA	NA	<400 UJ	<400 UJ
Acetone	µg/L	NS	NS	<10 UJ	NA	<12 U	NA	NA	NA	NA	<100 UJ	<100 UJ	NA	<10 UJ	<10 UJ	<5 U	NA	NA	NA	<100 UJ	<100 UJ
Benzene	µg/L	5	5	<10 U	NA	<1 U	NA	**3**	**3**	**3**	<5 U	<5 U	<5 U	<10 U	<10 U	<1 U	NA	<1 U	<1 U	<5 U	<5 U
Bromomethane	µg/L	NS	NS	<10 U	NA	<1 U	NA	<2 U	<1 U	<2 U	<5 UJ	<5 UJ	NA	<10 U	<10 U	<1 U	NA	<1 U	<1 U	<5 UJ	<5 UJ
Carbon disulfide	µg/L	NS	NS	<10 U	NA	<1 U	NA	<2 U	<1 U	<2 U	<5 UJ	<5 UJ	NA	<10 U	<10 U	<1 U	NA	<1 U	<1 U	<5 UJ	<5 UJ
Chlorobenzene	µg/L	100	NS	<10 U	NA	<1 U	NA	<2 U	<1 U	<2 U	<5 U	<5 U	NA	<10 U	<10 U	<1 U	NA	<1 U	<1 U	<5 U	<5 U
Chloroethane	µg/L	NS	NS	<10 U	NA	<1 U	NA	**1 J**	**2**	**1 J**	<10 UJ	<10 UJ	NA	<10 U	<10 U	<1 U	NA	<1 U	<1 U	<10 UJ	<10 UJ
Chloroform	µg/L	NS	NS	<10 U	NA	<1 U	NA	**3**	**4**	**4**	<1 UJ	<1 UJ	NA	<10 U	<10 U	<1 U	NA	<1 U	<1 U	<1 UJ	<1 UJ
Chloromethane	µg/L	NS	NS	<10 U	NA	<1 U	NA	**0.2 J**	<1 U	<2 U	<10 UJ	<10 UJ	NA	<10 U	<10 U	<1 U	NA	<1 U	<1 U	<10 UJ	<10 UJ
cis-1,2-Dichloroethene	µg/L	70	70	NA	NA	<1 U	NA	**6**	**6**	**6**	<5 UJ	<5 UJ	NA	NA	NA	<1 U	NA	<1 U	<1 U	<5 UJ	<5 UJ
Ethyl benzene	µg/L	700	700	<10 U	NA	<1 U	NA	<2 U	<1 U	<2 U	<5 UJ	<5 UJ	NA	<10 U	<10 U	<1 U	NA	<1 U	<1 U	<5 UJ	<5 UJ
Methylene chloride	µg/L	NS	NS	<10 U	NA	<3 U	NA	<4 U	<2 U	<4 U	<5 UJ	<5 UJ	<5 U	<10 U	<10 U	<2 U	NA	<2 U	<2 U	<5 UJ	<5 UJ
Tetrachloroethene	µg/L	5	5	**2 J**	NA	<1 U	NA	**2**	**3**	**2 J**	<5 UJ	<5 UJ	<5 U	<10 U	<10 U	<1 U	NA	<1 U	<1 U	<5 UJ	<5 UJ
Toluene	µg/L	1000	1000	<10 U	NA	<1 U	NA	<2 U	<1 U	<2 U	<5 U	<5 U	NA	<10 U	<10 U	<1 U	NA	<1 U	<1 U	<5 U	<5 U
trans-1,2-Dichloroethene	µg/L	100	100	NA	NA	<1 U	NA	**0.6 J**	**0.7 J**	**0.7 J**	<5 UJ	<5 UJ	NA	NA	NA	<1 U	NA	<1 U	<1 U	<5 UJ	<5 UJ
Trichloroethene	µg/L	5	5	<10 U	NA	<1 U	NA	**1 J**	**1**	**1 J**	<5 U	<5 U	<5 U	<10 U	<10 U	<1 U	NA	<1 U	<1 U	<5 U	<5 U
Vinyl chloride	µg/L	2	2	<10 U	NA	<1 U	NA	**2 J**	**2**	**2**	<2 UJ	<2 UJ	<2 UJ	<10 U	<10 U	<1 U	NA	<1 U	<1 U	<2 UJ	<2 UJ
Xylene, Total	µg/L	10000	10000	<10 U	NA	<1 U	NA	<2 U	<1 U	<2 U	<5 UJ	<5 UJ	NA	<10 U	<10 U	<1 U	NA	<1 U	<1 U	<5 UJ	<5 UJ
SVOC																					
2-Methylnaphthalene	µg/L	NS	NS	<10 U	NA	<10 U	NA	<10 U	<10 U	NA	<10 UJ	<10 UJ	NA	<10 U	<10 U	<10 U	NA	<10 U	<10 U	<10 UJ	<10 UJ
2-Methylphenol	µg/L	NS	NS	<10 U	NA	<10 U	NA	<10 U	<10 U	NA	<10 UJ	<10 UJ	NA	<10 U	<10 U	<10 U	NA	<10 U	<10 U	<10 UJ	<10 UJ
bis(2-Ethylhexyl) phthalate	µg/L	NS	NS	<10 U	NA	<10 U	NA	**12**	**19**	NA	<5 UJ	<5 UJ	NA	<10 U	<10 U	<10 U	NA	**6 J**	**3 J**	<5 UJ	<5 UJ
Diethylphthalate	µg/L	NS	NS	<10 U	NA	<10 U	NA	<10 U	<10 U	NA	<10 UJ	<10 UJ	NA	<10 U	<10 U	<10 U	NA	<10 U	<10 U	<10 UJ	<10 UJ
Di-n-butylphthalate	µg/L	NS	NS	<10 U	NA	<10 U	NA	<10 U	<10 U	NA	<10 UJ	<10 UJ	NA	<10 U	<10 U	<10 U	NA	<10 U	<10 U	<10 UJ	<10 UJ
Naphthalene	µg/L	NS	NS	<10 U	NA	<10 U	NA	<10 U	<10 U	NA	<10 UJ	<10 UJ	NA	<10 U	<10 U	<10 U	NA	<10 U	<10 U	<10 UJ	<10 UJ
Metals																					
Antimony	mg/L	0.006	0.006	<0.0015 U	**0.0022 J**	<0.001 U	<0.001 U	<0.001 U	<0.001 U	NA	<0.006 U	<0.006 U	<0.006 U	**0.0017**	<0.0015 U	<0.001 U	<0.001 U	<0.001 U	<0.001 U	<0.006 U	<0.006 U
Arsenic	mg/L	0.01	0.05	**0.0015 J**	<0.001 U	<0.001 U	<0.001 U	<0.003 U	<0.003 U	NA	<0.002 U	<0.002 U	<0.002 U	**0.0018 J**	**0.0019 J**	<0.001 U	<0.001 U	<0.003 U	<0.003 U	<0.002 U	<0.002 U
Barium	mg/L	2	2	**0.0647 J**	**0.0667 J**	**0.103 B**	**0.1 B**	**0.0926 B**	**0.0926 B**	NA	**0.089**	**0.082**	NA	**0.185 J**	**0.185 J**	**0.169 B**	**0.148 B**	**0.208**	**0.208**	**0.262**	**0.273**
Boron	mg/L	NS	2	<0.1 U	**0.1**	<0.1 U	<0.1 U	**0.196**	**0.197**	NA	**0.13 J**	**0.12 J-**	**0.17**	<0.1 U	<0.1 U	<0.1 U	<0.1 U	**0.0154 B**	**0.0109 B**	<0.01 UJ	**0.02 J-**
Chromium	mg/L	0.1	0.1	<0.003 U	<0.003 U	**0.0043 B**	<0.002 U	**0.005 B**	**0.0057 B**	NA	<0.001 U	**0.001**	**0.002**	<0.003 U	<0.003 U	<0.002 U	<0.002 U	<0.003 U	<0.003 U	<0.001 U	<0.001 U
Cobalt	mg/L	NS	1	<0.003 U	<0.003 U	<0.003 U	<0.003 U	<0.003 U	<0.003 U	NA	<0.001 U	<0.001 U	NA	<0.003 U	<0.003 U	<0.003 U	<0.003 U	<0.003 U	<0.003 U	<0.001 U	<0.001 U
Copper	mg/L	1.3	0.65	<0.007 U	**0.0074 J**	<0.0038 U	<0.002 U	<0.006 U	<0.006 U	NA	<0.001 U	**0.002**	NA	<0.008 U	<0.007 U	<0.002 U	<0.002 U	<0.006 U	<0.006 U	<0.001 U	<0.001 U
Iron	mg/L	NS	5	**0.182**	<0.087 U	<0.155 U	<0.0449 U	**0.14**	**0.132**	NA	<0.01 UJ	**0.06**	**0.17 J+**	**1.79**	**1.9**	**2.92**	**2.83**	**2.6**	**2.55**	**3.62 J**	**4.58**
Lead	mg/L	0.015	0.0075	<0.001 U	**0.0034**	<0.001 U	<0.001 U	**0.0026 B**	**0.0026 B**	NA	<0.002 U	<0.002 U	<0.002 U	<0.002 U	<0.002 U	<0.001 U	<0.001 U	**0.0037**	**0.003**	<0.002 U	<0.002 U
Manganese	mg/L	NS	0.15	**0.0085 J**	**0.0078 J**	**0.0385**	**0.0376**	**0.03**	**0.0295**	NA	**0.004**	**0.004**	**0.010**	**0.111**	**0.116**	**0.048**	**0.049**	**0.0356**	**0.0336**	**0.055**	**0.068**
Mercury	mg/L	0.002	0.002	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	NA	<0.0002 U	<0.0002 U	<0.0005 UJ	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U
Nickel	mg/L	NS	0.1	<0.011 U	<0.011 U	**0.0701**	<0.0646 U	**0.0378 B**	**0.0346 B**	NA	**0.014**	**0.014**	**0.029**	<0.011 U	<0.011 U	<0.008 U	<0.0082 U	**0.0148 B**	<0.007 U	**0.02**	**0.002**
Zinc	mg/L	NS	5	**0.0076 J**	**0.0123 J**	**0.0165 B**	<0.0208 U	**0.0482**	**0.0283**	NA	<0.005 U	<0.005 U	NA	<0.0134 U	<0.0116 U	**0.0333**	<0.0131 U	**0.313**	**0.133**	<0.005 U	<0.005 U
Inorganics																					
Cyanide	mg/L	0.2	0.2	<0.01 U	NA	<0.01 U	NA	<0.01 U	<0.01 U	NA	<0.005 U	<0.005 U	NA	<0.01 U	<0.01 U	<0.01 U	NA	<0.01 U	<0.01 U	<0.005 U	<0.005 U
Sulfide	mg/L	NS	NS	<0.001 U	NA	<0.001 U	NA	<0.001 U	<0.001 U	NA	<0.05 U	<0.05 U	NA	<0.001 U	<0.001 U	<0.001 U	NA	<0.001 U	<0.001 U	<0.05 U	<0.05 U

Notes:
1. Bolded cells indicate detection
2. Shaded cells indicate exceedance of maximum contaminant level (MCL) or Illinois Class I Groundwater Standard
3. NS=No Standard for MCL values or Illinois Class I Groundwater
4. NA=Not Analyzed
5. Units for VOCs and SVOCs are µg/L
6. Units for metals and inorganics are mg/L
7. D=Deep
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Data Qualifiers:
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3. J indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample
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5. N indicates spiked sample recovery not within control limits
6. J- indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte with a low bias
7. J+ indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte with a high bias

Table 3
Summary of Groundwater Analytical Data
MIG/DeWane Landfill Superfund Site
Boone County, Belvidere, Illinois

Location				MW-10S								MW-11				MW-11R				MW-12D								
Date Sampled	Units	MCL	IL Class I GW	11/1/1993	11/1/1993-DUP	12/1/1994	12/1/1994-DUP	9/1/1995	9/1/1995-DUP	4/6/2010	12/2/2010	9/1/1995	9/1/1995-DUP	11/1/1995	11/1/1995-DUP	4/26/2010	4/26/2010-DUP	12/3/2010	12/28/2011	9/1/1995	9/1/1995-DUP	11/1/1995	11/1/1995-DUP	4/9/2010	4/9/2010-DUP	12/1/2010	12/28/2011	12/28/2011-DUP
VOC																												
1,1,1-Trichloroethane	µg/L	200	200	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<1 U	NA	<1 U	<1 U	<5 UJ	<5 UJ	<5 UJ	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<5 UJ	NA	NA
1,1-Dichloroethane	µg/L	NS	NS	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	**3**	NA	**4**	**3**	<5 UJ	<5 UJ	<5 UJ	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<5 UJ	NA	NA
1,1-Dichloroethene	µg/L	7	7	<10 U	NA	<1 U	NA	<1 U	NA	<5 U	<5 U	<1 U	NA	<1 U	<1 U	<5 U	<5 U	<5 U	<5 U	<1 U	NA	<1 U	NA	<5 U	<5 U	<5 U	<5 U	<5 U
1,2-Dibromo-3-chloropropane	µg/L	0.2	0.2	NA	NA	<1 U	NA	NA	NA	<10 UJ	<10 UJ	NA	NA	<1 U	<1 U	<10 UJ	<10 UJ	<10 UJ	NA	NA	NA	<1 U	NA	<10 UJ	<10 UJ	<10 UJ	NA	NA
1,2-Dichloroethane	µg/L	5	5	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<1 U	NA	<1 U	<1 U	<5 UJ	<5 UJ	<5 UJ	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<5 UJ	NA	NA
1,2-Dichloroethene (Total)	µg/L	NS	NS	<10 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	µg/L	5	5	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<1 U	NA	**0.3 J**	**0.3 J**	<5 UJ	<5 UJ	<5 UJ	<5 U	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<5 UJ	<5 U	<5 U
1,4-Dioxane	µg/L	NS	NS	NA	NA	NA	NA	NA	NA	<400 UJ	<400 UJ	NA	NA	NA	NA	<400 UJ	<400 UJ	<400 UJ	NA	NA	NA	NA	NA	<400 UJ	<400 UJ	<400 UJ	NA	NA
Acetone	µg/L	NS	NS	<10 U	NA	<5 U	NA	NA	NA	<100 UJ	<100 UJ	NA	NA	NA	NA	<100 UJ	<100 UJ	<100 UJ	NA	NA	NA	NA	NA	<100 UJ	<100 UJ	<100 UJ	NA	NA
Benzene	µg/L	5	5	<10 U	NA	<1 U	NA	<1 U	NA	<5 U	<5 U	<1 U	NA	<1 U	<1 U	<5 U	<5 U	<5 U	<5 U	<1 U	NA	<1 U	NA	<5 U	<5 U	<5 U	<5 U	<5 U
Bromomethane	µg/L	NS	NS	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<1 U	NA	<1 U	<1 U	<5 UJ	<5 UJ	<5 UJ	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<5 UJ	NA	NA
Carbon disulfide	µg/L	NS	NS	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<1 U	NA	<1 U	<1 U	<5 UJ	<5 UJ	<5 UJ	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<5 UJ	NA	NA
Chlorobenzene	µg/L	100	NS	<10 U	NA	<1 U	NA	<1 U	NA	<5 U	<5 U	<1 U	NA	<1 U	<1 U	<5 U	<5 U	<5 U	NA	<1 U	NA	<1 U	NA	<5 U	<5 U	<5 U	NA	NA
Chloroethane	µg/L	NS	NS	<10 U	NA	<1 U	NA	<1 U	NA	<10 UJ	<10 UJ	**0.8 J**	NA	**1 J**	**0.9 J**	<10 UJ	<10 UJ	<10 UJ	NA	<1 U	NA	<1 U	NA	<10 UJ	<10 UJ	<10 UJ	NA	NA
Chloroform	µg/L	NS	NS	<10 U	NA	<1 U	NA	<1 U	NA	<1 UJ	<1 UJ	<1 U	NA	<1 U	<1 U	<1 UJ	<1 UJ	<1 UJ	NA	<1 U	NA	<1 U	NA	<1 UJ	<1 UJ	<1 UJ	NA	NA
Chloromethane	µg/L	NS	NS	<10 U	NA	<1 U	NA	**0.2 J**	NA	<10 UJ	<10 UJ	<1 U	NA	**0.1 J**	<1 U	<10 UJ	<10 UJ	<10 UJ	NA	<1 U	NA	<1 U	NA	<10 UJ	<10 UJ	<10 UJ	NA	NA
cis-1,2-Dichloroethene	µg/L	70	70	NA	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	**2**	NA	**3**	**3**	<5 UJ	<5 UJ	<5 UJ	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<5 UJ	NA	NA
Ethyl benzene	µg/L	700	700	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<1 U	NA	<1 U	<1 U	<5 UJ	<5 UJ	<5 UJ	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<5 UJ	NA	NA
Methylene chloride	µg/L	NS	NS	<10 U	NA	<2 U	NA	<2 U	NA	<5 UJ	<5 UJ	<2 U	NA	<2 U	<2 U	<5 UJ	<5 UJ	<5 UJ	<5 U	<2 U	NA	<2 U	NA	<5 UJ	<5 UJ	<5 UJ	<5 U	<5 U
Tetrachloroethene	µg/L	5	5	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	**0.1 J**	NA	**0.2 J**	**0.1 J**	<5 UJ	<5 UJ	<5 UJ	<5 U	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<5 UJ	<5 U	<5 U
Toluene	µg/L	1000	1000	<10 U	NA	<1 U	NA	<1 U	NA	<5 U	<5 U	<1 U	NA	<1 U	<1 U	<5 U	<5 U	<5 U	NA	<1 U	NA	<1 U	NA	<5 U	<5 U	<5 U	NA	NA
trans-1,2-Dichloroethene	µg/L	100	100	NA	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<1 U	NA	**0.1 J**	**0.1 J**	<5 UJ	<5 UJ	<5 UJ	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<5 UJ	NA	NA
Trichloroethene	µg/L	5	5	<10 U	NA	<1 U	NA	<1 U	NA	<5 U	<5 U	**0.2 J**	NA	**0.4 J**	**0.4 J**	<5 U	<5 U	<5 U	<5 U	<1 U	NA	<1 U	NA	<5 U	<5 U	<5 U	<5 U	<5 U
Vinyl chloride	µg/L	2	2	<10 U	NA	<1 U	NA	<1 U	NA	<2 UJ	<2 UJ	<1 U	NA	<1 U	<1 U	<2 UJ	<2 UJ	<2 UJ	<2 UJ	<1 U	NA	<1 U	NA	<2 UJ	<2 UJ	<2 UJ	<2 UJ	<2 UJ
Xylene, Total	µg/L	10000	10000	<10 U	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<1 U	NA	<1 U	<1 U	<5 UJ	<5 UJ	<5 UJ	NA	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<5 UJ	NA	NA
SVOC																												
2-Methylnaphthalene	µg/L	NS	NS	<10 U	NA	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ	<10 U	NA	<10 U	<10 U	<10 UJ	<10 UJ	<10 UJ	NA	NA	NA	NA	NA	<10 UJ	<10 UJ	<10 UJ	NA	NA
2-Methylphenol	µg/L	NS	NS	<10 U	NA	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ	<10 U	NA	<10 U	<10 U	<10 UJ	<10 UJ	<10 UJ	NA	NA	NA	NA	NA	<10 UJ	<10 UJ	<10 UJ	NA	NA
s(2-Ethylhexyl) phthalate	µg/L	NS	NS	<10 U	NA	<10 U	NA	**17**	NA	<5 UJ	<5 UJ	**8 J**	NA	<10 U	<10 U	<5 UJ	<5 UJ	<5 UJ	NA	NA	NA	NA	NA	<5 UJ	<5 UJ	<5 UJ	NA	NA
ethylphthalate	µg/L	NS	NS	**19**	NA	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ	<10 U	NA	<10 U	<10 U	<10 UJ	<10 UJ	<10 UJ	NA	NA	NA	NA	NA	<10 UJ	<10 UJ	<10 UJ	NA	NA
i-n-butylphthalate	µg/L	NS	NS	<10 U	NA	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ	<10 U	NA	<10 U	<10 U	<10 UJ	<10 UJ	<10 UJ	NA	NA	NA	NA	NA	<10 UJ	<10 UJ	<10 UJ	NA	NA
Naphthalene	µg/L	NS	NS	<10 U	NA	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ	<10 U	NA	<10 U	<10 U	<10 UJ	<10 UJ	<10 UJ	NA	NA	NA	NA	NA	<10 UJ	<10 UJ	<10 UJ	NA	NA
Metals																												
Antimony	mg/L	0.006	0.006	<0.0015 U	**0.0039 J**	<0.001 U	<0.0031 U	<0.001 U	<0.001 U	<0.006 U	<0.006 U	<0.001 U	<0.001 U	<0.001 U	<0.001 U	<0.006 U	<0.006 U	<0.006 U	<0.006 U	<0.001 U	<0.001 U	<0.001 U	<0.001 UN	<0.006 U	<0.006 U	<0.006 U	<0.006 U	<0.006 U
Arsenic	mg/L	0.01	0.05	**0.0053 J**	**0.0065 J**	**0.005 B**	**0.0056 B**	**0.0057 B**	**0.0069 B**	<0.002 U	**0.02**	<0.003 U	<0.003 U	<0.001 U	<0.001 U	<0.002 U	<0.002 U	<0.002 U	<0.002 U	**0.0087 B**	**0.0078 B**	<0.001 U	**0.0085 B**	<0.002 U	<0.002 U	**0.015**	**0.017**	**0.017**
Barium	mg/L	2	2	**0.431**	**0.431**	**0.528**	**0.528**	**0.483**	**0.45**	**0.175**	**0.416**	**0.112 B**	**0.107 B**	**0.0919 B**	**0.0947 B**	**0.04**	**0.042**	**0.098**	NA	**0.297**	**0.278**	**0.424**	**0.273**	**0.338**	**0.332**	**0.348**	NA	NA
Boron	mg/L	NS	2	<0.1 U	<0.1 U	<0.1 U	<0.1 U	<0.1 U	**0.0503 B**	<0.01 UJ	**0.05 J-**	**0.965**	NA	**0.982**	**0.962**	**0.32 J**	**0.34 J**	**1.04 J-**	**0.78**	**0.0125 B**	NA	**0.0132 B**	NA	<0.01 UJ	<0.01 UJ	**0.02 J-**	**0.02**	**0.02**
Chromium	mg/L	0.1	0.1	<0.0032 U	<0.003 U	**0.0026 B**	<0.002 U	<0.003 U	<0.003 U	<0.001 U	<0.001 U	**0.0044 B**	<0.003 U	**0.002 B**	**0.0012 B**	<0.001 U	<0.001 U	**0.011**	**0.019**	**0.002 B**	<0.001 U	**0.002 B**	<0.003 U	<0.001 U	<0.001 U	<0.001 U	<0.001 U	<0.001 U
Cobalt	mg/L	NS	1	**0.0053**	<0.003 U	**0.0035 B**	**0.0038 B**	<0.003 U	<0.003 U	<0.001 U	**0.002**	**0.0063 B**	**0.005 B**	**0.0056 B**	**0.0061 B**	<0.001 U	<0.001 U	**0.009**	NA	<0.001 U	<0.001 U	<0.001 U	<0.004 U	<0.001 U	<0.001 U	<0.001 U	NA	NA
Copper	mg/L	1.3	0.65	<0.0091 U	<0.007 U	<0.002 U	<0.002 U	<0.006 U	<0.006 U	<0.001 U	<0.001 U	<0.006 U	**0.0078 B**	**0.0123 B**	**0.0135 B**	<0.001 U	<0.001 U	**0.01**	NA	<0.002 U	<0.002 U	**0.0021 B**	**0.0037 B**	<0.001 U	<0.001 U	**0.002**	NA	NA
Iron	mg/L	NS	5	**1.53**	**1.42**	**1.74**	**1.75**	**1.66**	**0.533**	**1.25 J**	**4.96**	**0.142**	**0.248**	<0.01 U	**0.0164 B**	**0.44 J**	**0.38 J**	**1.85**	**2.87**	**0.933**	**0.0946 B**	**0.326**	**0.146**	**0.49 J**	**0.45 J**	**0.56**	**0.48**	**0.47**
Lead	mg/L	0.015	0.0075	<0.002 U	**0.0079**	<0.001 U	<0.001 U	**0.0026 B**	<0.002 U	<0.002 U	<0.002 U	<0.002 U	<0.002 U	**0.007**	**0.0088**	<0.002 U	<0.002 U	<0.002 U	<0.002 U	**0.0032**	**0.0037**	**0.0127**	**0.0082**	<0.002 U	<0.002 U	<0.002 U	<0.002 U	<0.002 U
Manganese	mg/L	NS	0.15	**0.5**	**0.496**	**0.564**	**0.586**	**0.528**	**0.515**	**0.565**	**0.462**	**0.0842**	**0.0834**	**0.152**	**0.142**	**0.246**	**0.236**	**0.239**	**0.100**	**0.237**	**0.207**	**0.249**	**0.194**	**0.166**	**0.164**	**0.176**	**0.183**	**0.179**
Mercury	mg/L	0.002	0.002	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0005 UJ	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0005 UJ	<0.0005 UJ
Nickel	mg/L	NS	0.1	<0.011 U	<0.011 U	<0.008 U	<0.008 U	<0.007 U	<0.007 U	<0.001 U	**0.005**	**0.118**	**0.138**	**0.0926**	**0.0918**	**0.037**	**0.04**	**0.378**	**0.163**	**0.0033 B**	**0.0023 B**	**0.009 B**	<0.011 U	<0.001 U	<0.001 U	**0.002**	**0.001**	<0.001 U
Zinc	mg/L	NS	5	<0.0125 U	<0.0079 U	**0.0219**	<0.0131 U	**0.0623**	**0.063**	<0.005 U	<0.005 U	**0.145**	**0.0172 J**	**0.0179 B**	**0.0253**	**1.66**	**1.63**	**0.455**	NA	**0.0089 B**	**0.0106 B**	**0.0192 B**	**0.0096 B**	<0.005 U	<0.005 U	<0.005 U	NA	NA
Inorganics																												
Cyanide	mg/L	0.2	0.2	<0.01 U	NA	<0.01 U	NA	<0.01 U	NA	<0.005 U	<0.005 U	<0.01 U	NA	<0.01 U	<0.01 U	<0.005 U	<0.005 U	<0.005 U	NA	<0.01 U	NA	<0.01 U	NA	<0.005 U	<0.005 U	<0.005 U	NA	NA
Sulfide	mg/L	NS	NS	<0.001 U	NA	<0.001 U	NA	<0.001 U	NA	<0.05 U	<0.05 U	<0.001 U	NA	<0.001 U	<0.001 U	<0.05 U	<0.05 U	<0.05 U	NA	<0.001 U	NA	<0.001 U	NA	<0.05 U	<0.05 U	<0.05 U	NA	NA

Notes:
1. Bolded cells indicate detection
2. Shaded cells indicate exceedance of maximum contaminant level (MCL) or Illinois Class I Groundwater Standard
3. NS=No Standard for MCL values or Illinois Class I Groundwater
4. NA=Not Analyzed
5. Units for VOCs and SVOCs are µg/L
6. Units for metals and inorganics are mg/L
7. D=Deep
8. S=Shallow
9. R=Replacement
10. DUP=Duplicate Sample
11. MCLs can be found at http://www.epa.gov/safewater/contaminants/index.html
12. This table includes analytical results for parameters that were detected at any time at the site. If a parameter was never detected it is not included on this table
13. The Illinois Class I Groundwater Standards are located in Section 620.410 of Title 35 of the Illinois Administrative Code

Data Qualifiers:
1. U indicates the analyte was analyzed for, but was not detected above the report sample quantitation limit
2. UJ indicates the analyte was not detected above the reported sample quantitation limit, however, the reported quantitation limit is approximate
3. J indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample
4. B indicates the analyte result was between IDL (instrument detection limit) and contract required detection limit
5. N indicates spiked sample recovery not within control limits
6. J- indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte with a low bias
7. J+ indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte with a high bias

Table 3
Summary of Groundwater Analytical Data
MIG/DeWane Landfill Superfund Site
Boone County, Belvidere, Illinois

Location				MW-12S							MW-13											MW-14								
Date Sampled	Units	MCL	IL Class I GW	9/1/1995	9/1/1995-DUP	11/1/1995	11/1/1995-DUP	4/9/2010	12/3/2010	12/28/2011	9/1/1995	9/1/1995-DUP	11/1/1995	11/1/1995-DUP	2/1/2000	11/1/2006	11/1/2006-DUP	4/12/2010	12/8/2010	12/27/2011	12/27/2011-DUP	9/1/1995	9/1/1995-DUP	11/1/1995	11/1/1995-DUP	2/1/2000	11/1/2006	4/12/2010	12/8/2010	12/27/2011
VOC																														
1,1,1-Trichloroethane	µg/L	200	200	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	NA	<5 U	NA	<5 U	NA	<1 U	<5 U	<5 U	<5 UJ	<5 UJ	NA	NA	<2 U	<2 U	<2 U	NA	<1 U	<5 U	<5 UJ	<5 UJ	NA
1,1-Dichloroethane	µg/L	NS	NS	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	NA	**26**	NA	**17**	NA	**7**	NA	NA	<5 UJ	**5.5**	NA	NA	**23**	**25**	**22**	NA	**2**	<5 U	<5 UJ	<5 UJ	NA
1,1-Dichloroethene	µg/L	7	7	<1 U	NA	<1 U	NA	<5 U	<5 U	<5 U	<5 U	NA	**0.6 J**	NA	<1 U	NA	NA	<5 U	<5 U	<5 U	<5 U	<2 U	<2 U	<2 U	NA	<1 U	NA	<5 U	<5 U	<5 U
1,2-Dibromo-3-chloropropane	µg/L	0.2	0.2	NA	NA	<1 U	NA	<10 UJ	<10 UJ	NA	NA	NA	<5 U	NA	NA	NA	NA	<10 UJ	<10 UJ	NA	NA	NA	NA	<2 U	NA	NA	NA	<10 UJ	<10 UJ	NA
1,2-Dichloroethane	µg/L	5	5	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	NA	<5 U	NA	<5 U	NA	<1 U	<5 U	<5 U	<5 UJ	<5 UJ	NA	NA	<2.5 U	<2.5 U	<2 U	NA	<1 U	<5 U	<5 UJ	<5 UJ	NA
1,2-Dichloroethene (Total)	µg/L	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	µg/L	5	5	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<5 U	**5**	NA	**3 J**	NA	**2**	<5 U	<5 U	<5 UJ	<5 UJ	<5 U	<5 U	**10**	**10**	**8**	NA	**2**	<5 U	<5 UJ	<5 UJ	<5 U
1,4-Dioxane	µg/L	NS	NS	NA	NA	NA	NA	<400 UJ	<400 UJ	NA	NA	NA	NA	NA	NA	NA	NA	<400 UJ	<400 UJ	NA	NA	NA	NA	NA	NA	NA	NA	<400 UJ	<400 UJ	NA
Acetone	µg/L	NS	NS	NA	NA	NA	NA	<100 UJ	<100 UJ	NA	NA	NA	NA	NA	NA	NA	NA	<100 UJ	<100 UJ	NA	NA	NA	NA	NA	NA	NA	NA	<100 UJ	<100 UJ	NA
Benzene	µg/L	5	5	<1 U	NA	<1 U	NA	<5 U	<5 U	<5 U	**11**	NA	**7**	NA	**4**	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U	**4**	**4**	**4**	NA	<1 U	<5 U	<5 U	<5 U	<5 U
Bromomethane	µg/L	NS	NS	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	NA	<5 U	NA	<5 U	NA	<1 U	NA	NA	<5 UJ	<5 UJ	NA	NA	<2 U	<2 U	<2 U	NA	<1 U	NA	<5 UJ	<5 UJ	NA
Carbon disulfide	µg/L	NS	NS	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	NA	<5 U	NA	**0.6 J**	NA	<5 U	NA	NA	<5 UJ	<5 UJ	NA	NA	<2 U	<2 U	<2 U	NA	<5 U	NA	<5 UJ	<5 UJ	NA
Chlorobenzene	µg/L	100	NS	<1 U	NA	<1 U	NA	<5 U	<5 U	NA	**2 J**	NA	**2 J**	NA	<1 U	NA	NA	<5 U	<5 U	NA	NA	**3**	**4**	**3**	NA	<1 U	NA	<5 U	<5 U	NA
Chloroethane	µg/L	NS	NS	<1 U	NA	<1 U	NA	<10 UJ	<10 UJ	NA	**4 J**	NA	**3 J**	NA	**1**	NA	NA	<10 UJ	<10 UJ	NA	NA	**0.6 J**	**0.8 J**	**0.7 J**	NA	<1 U	NA	<10 UJ	<10 UJ	NA
Chloroform	µg/L	NS	NS	<1 U	NA	<1 U	NA	<1 UJ	<1 UJ	NA	<5 U	NA	<5 U	NA	<1 U	NA	NA	<1 UJ	<1 UJ	NA	NA	<2 U	<2 U	<2 U	NA	<1 U	NA	<1 UJ	<1 UJ	NA
Chloromethane	µg/L	NS	NS	<1 U	NA	<1 U	NA	<10 UJ	<10 UJ	NA	<5 U	NA	**0.5 J**	NA	<1 U	NA	NA	<10 UJ	<10 UJ	NA	NA	<2 U	<2 U	<2 U	NA	<1 U	NA	<10 UJ	<10 UJ	NA
cis-1,2-Dichloroethene	µg/L	70	70	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	NA	**54**	NA	**38**	NA	**12**	NA	NA	<5 UJ	<5 UJ	NA	NA	**28**	**30**	**40**	NA	**4**	<5 U	<5 UJ	<5 UJ	NA
Ethyl benzene	µg/L	700	700	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	NA	**14**	NA	**12**	NA	<1 U	<5 U	<5 U	<5 UJ	<5 UJ	NA	NA	<2 U	<2 U	<2 U	NA	<1 U	<5 U	<5 UJ	<5 UJ	NA
Methylene chloride	µg/L	NS	NS	<2 U	NA	<2 U	NA	<5 UJ	<5 UJ	<5 U	<10 U	NA	<10 U	NA	<2 U	NA	NA	<5 UJ	<5 UJ	<5 U	<5 U	<5 U	<5 U	<4 U	NA	<2 U	NA	<5 UJ	<5 UJ	<5 U
Tetrachloroethene	µg/L	5	5	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	<5 U	**0.2 J**	NA	<5 U	NA	<1 U	NA	NA	<5 UJ	<5 UJ	<5 U	<5 U	**7**	**7**	**7**	NA	<1 U	NA	<5 UJ	<5 UJ	<5 U
Toluene	µg/L	1000	1000	<1 U	NA	<1 U	NA	<5 U	<5 U	NA	**47**	NA	**54**	NA	<1 U	<5 U	<5 U	<5 U	<5 U	NA	NA	<2 U	<2 U	<2 U	NA	<1 U	<5 U	<5 U	<5 U	NA
trans-1,2-Dichloroethene	µg/L	100	100	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	NA	**2 J**	NA	**2 J**	NA	<1 U	NA	NA	<5 UJ	<5 UJ	NA	NA	**2 J**	**2 J**	**2**	NA	<1 U	NA	<5 UJ	<5 UJ	NA
Trichloroethene	µg/L	5	5	<1 U	NA	<1 U	NA	<5 U	<5 U	<5 U	**4 J**	NA	**3 J**	NA	**4**	<5 U	<5 U	<5 U	<5 U	<5 U	<5 U	**7**	**7**	**10**	NA	<1 U	<5 U	<5 U	<5 U	<5 U
Vinyl chloride	µg/L	2	2	<1 U	NA	<1 U	NA	<2 UJ	<2 UJ	<2 UJ	**12**	NA	**5**	NA	**1**	<2 U	<2 U	<2 UJ	<2 UJ	<2 UJ	<2 UJ	**10**	**11**	**10**	NA	<1 U	<2 U	<2 UJ	<2 UJ	<2 UJ
Xylene, Total	µg/L	10000	10000	<1 U	NA	<1 U	NA	<5 UJ	<5 UJ	NA	**32**	NA	**33**	NA	<1 U	<5 U	<5 U	<5 UJ	<5 UJ	NA	NA	<2 U	<2 U	<2 U	NA	<1 U	<5 U	<5 UJ	<5 UJ	NA
SVOC																														
2-Methylnaphthalene	µg/L	NS	NS	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ	NA	<10 U	NA	<10 U	NA	NA	NA	NA	<10 UJ	<10 UJ	NA	NA	<10 U	<10 U	<10 U	NA	NA	NA	<10 UJ	<10 UJ	NA
2-Methylphenol	µg/L	NS	NS	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ	NA	**0.9 J**	NA	**1 J**	NA	NA	NA	NA	<10 UJ	<10 UJ	NA	NA	<10 U	<10 U	<10 U	NA	NA	NA	<10 UJ	<10 UJ	NA
(2-Ethylhexyl) phthalate	µg/L	NS	NS	<10 U	NA	<10 U	NA	<5 UJ	<5 UJ	NA	**8 J**	NA	<10 U	NA	NA	NA	NA	<5 UJ	<5 UJ	NA	NA	<10 U	<10 U	<10 U	NA	NA	NA	<5 UJ	<5 UJ	NA
thylphthalate	µg/L	NS	NS	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ	NA	<10 U	NA	<10 U	NA	NA	NA	NA	<10 UJ	<10 UJ	NA	NA	<10 U	<10 U	<10 U	NA	NA	NA	<10 UJ	<10 UJ	NA
-n-butylphthalate	µg/L	NS	NS	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ	NA	<10 U	NA	<10 U	NA	NA	NA	NA	<10 UJ	<10 UJ	NA	NA	<10 U	<10 U	<10 U	NA	NA	NA	<10 UJ	<10 UJ	NA
Naphthalene	µg/L	NS	NS	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ	NA	<10 U	NA	<10 U	NA	NA	NA	NA	<10 UJ	<10 UJ	NA	NA	<10 U	<10 U	<10 U	NA	NA	NA	<10 UJ	<10 UJ	NA
Metals																														
Antimony	mg/L	0.006	0.006	<0.001 U	<0.001 U	<0.001 U	<0.001 UN	<0.006 U	<0.006 U	<0.006 U	<0.001 U	<0.001 UN	<0.001 U	<0.001 UN	NA	<0.006 U	<0.006 U	<0.006 U	<0.006 U	<0.006 U	<0.006 U	<0.001 UJ	<0.001 U	<0.001 U	<0.001 UN	NA	<0.006 U	<0.006 U	<0.006 U	<0.006 U
Arsenic	mg/L	0.01	0.05	<0.003 U	<0.003 U	<0.001 U	<0.001 U	<0.002 U	<0.002 U	<0.002 U	**0.0458**	**0.0504**	**0.05**	**0.0486**	NA	**0.044**	**0.046**	**0.038**	**0.036**	**0.044**	**0.044**	<0.003 U	<0.003 U	**0.0021 B**	**0.0022 B**	NA	**0.021 B**	**0.02**	**0.011**	**0.020**
Barium	mg/L	2	2	**0.1 B**	**0.0982 B**	**0.051**	**0.026**	**0.092**	**0.145**	NA	**0.53**	**0.534**	**0.481**	**0.507**	NA	NA	NA	**0.151**	**0.169**	NA	NA	**0.184 B**	**0.184 B**	**0.166 B**	**0.173 B**	NA	NA	**0.141**	**0.136**	NA
Boron	mg/L	NS	2	**0.278**	NA	**0.157**	NA	**0.08 J**	**0.11 J-**	**0.09**	**0.581**	NA	**0.506**	NA	NA	**0.4**	**0.42**	**0.34 J**	**0.43 J-**	**0.63**	**0.60**	**0.135**	**0.133**	**0.0955 B**	NA	NA	**0.09**	**0.19 J**	**0.22 J-**	**0.23**
Chromium	mg/L	0.1	0.1	<0.001 U	<0.001 U	<0.001 U	<0.003 U	<0.001 U	**0.001**	<0.001 U	**0.0057 B**	<0.003 U	**0.002 B**	<0.003 U	NA	<0.001 U	<0.001 U	<0.001 U	<0.001 U	<0.001 U	<0.001 U	<0.001 U	<0.001 U	**0.0022 B**	**0.004 B**	NA	**0.002**	<0.001 U	<0.001 U	<0.001 U
Cobalt	mg/L	NS	1	<0.001 U	<0.001 U	<0.001 U	<0.004 U	<0.001 U	<0.001 U	NA	**0.0322 B**	**0.0299 B**	**0.0288 B**	**0.0279 B**	NA	NA	NA	**0.007**	**0.006**	NA	NA	**0.0064 B**	**0.0064 B**	**0.0042 B**	**0.0053 B**	NA	NA	**0.006**	**0.006**	NA
Copper	mg/L	1.3	0.65	<0.002 U	<0.002 U	<0.001 U	**0.0044 B**	<0.001 U	**0.003**	NA	<0.006 U	<0.006 U	**0.0028 B**	<0.003 U	NA	NA	NA	<0.001 U	**0.002**	NA	NA	<0.002 U	<0.002 U	**0.002 B**	**0.0049 B**	NA	NA	<0.001 U	**0.002**	NA
Iron	mg/L	NS	5	<0.015 U	<0.015 U	<0.01 U	**0.0548 B**	**2.82 J**	**0.48**	**1.63**	**29.9**	**28.5**	**25.5**	**23.1**	NA	**8.01**	**8.36**	**6.12 J**	**6.25**	**8.90**	**8.33**	**0.973**	**0.96**	**1.53**	**1.55**	NA	**4.78**	**5.61 J**	**6.49**	**4.89**
Lead	mg/L	0.015	0.0075	<0.002 U	**0.0032**	<0.016 U	<0.016 U	<0.002 U	<0.002 U	<0.002 U	**0.0028 B**	<0.0034 U	**0.0104**	**0.007**	NA	<0.002 U	<0.002 U	<0.002 U	<0.002 U	<0.002 U	<0.002 U	<0.002 U	<0.002 U	**0.0101**	**0.0191**	NA	<0.002 U	<0.002 U	<0.002 U	<0.002 U
Manganese	mg/L	NS	0.15	**0.388**	**0.4**	**0.0051 B**	**0.0023 B**	**0.737**	**0.64**	**0.176**	**0.172**	**0.166**	**0.147**	**0.139**	NA	**0.056**	**0.056**	**0.054**	**0.057**	**0.079**	**0.074**	**0.603**	**0.6**	**0.47**	**0.456**	NA	**0.257**	**0.292**	**0.313**	**0.181**
Mercury	mg/L	0.002	0.002	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0005 UJ	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	NA	<0.0005 U	<0.0005 U	<0.0002 U	<0.0002 U	<0.0005 UJ	<0.0005 UJ	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	NA	<0.0005 U	<0.0002 U	<0.0002 U	<0.0005 UJ
Nickel	mg/L	NS	0.1	**0.0117 B**	**0.0112 B**	**0.0058 B**	<0.011 U	**0.005**	**0.011**	**0.004**	**0.0993**	**0.0954**	**0.0874**	**0.0824**	NA	**0.062**	**0.064**	**0.041**	**0.053**	**0.075**	**0.072**	**0.0259 B**	**0.026 B**	**0.0179 B**	**0.0144 B**	NA	**0.017**	**0.024**	**0.03**	**0.029**
Zinc	mg/L	NS	5	**0.0098 B**	**0.0046 B**	**0.0011 B**	**0.0126 B**	**0.969**	**1.4**	NA	**0.03**	**0.105 J**	**0.0253**	**0.0215**	NA	NA	NA	**0.03**	**0.012**	NA	NA	**0.0073 B**	**0.0092 B**	**0.0154 B**	**0.0183 B**	NA	NA	**0.053**	**0.025**	NA
Inorganics																														
Cyanide	mg/L	0.2	0.2	<0.01 U	NA	<0.01 U	NA	<0.005 U	<0.005 U	NA	<0.01 U	NA	<0.01 U	NA	NA	NA	NA	<0.005 U	<0.005 U	NA	NA	<0.01 U	<0.01 U	<0.01 U	NA	NA	NA	<0.005 U	<0.005 U	NA
Sulfide	mg/L	NS	NS	<0.001 U	NA	<0.001 U	NA	<0.05 U	<0.05 U	NA	<0.001 U	NA	<0.001 U	NA	NA	NA	NA	<0.05 U	<0.05 U	NA	NA	<0.001 U	<0.001 U	<0.001 U	NA	NA	NA	<0.05 U	<0.05 U	NA

Notes:
1. Bolded cells indicate detection
2. Shaded cells indicate exceedance of maximum contaminant level (MCL) or Illinois Class I Groundwater Standard
3. NS=No Standard for MCL values or Illinois Class I Groundwater
4. NA=Not Analyzed
5. Units for VOCs and SVOCs are µg/L
6. Units for metals and inorganics are mg/L
7. D=Deep
8. S=Shallow
9. R=Replacement
10. DUP=Duplicate Sample
11. MCLs can be found at http://www.epa.gov/safewater/contaminants/index.html
12. This table includes analytical results for parameters that were detected at any time at the site. If a parameter was never detected it is not included on this table
13. The Illinois Class I Groundwater Standards are located in Section 620.410 of Title 35 of the Illinois Administrative Code

Data Qualifiers:
1. U indicates the analyte was analyzed for, but was not detected above the report sample quantitation limit
2. UJ indicates the analyte was not detected above the reported sample quantitation limit, however, the reported quantitation limit is approximate
3. J indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample
4. B indicates the analyte result was between IDL (instrument detection limit) and contract required detection limit
5. N indicates spiked sample recovery not within control limits
6. J- indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte with a low bias
7. J+ indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte with a high bias

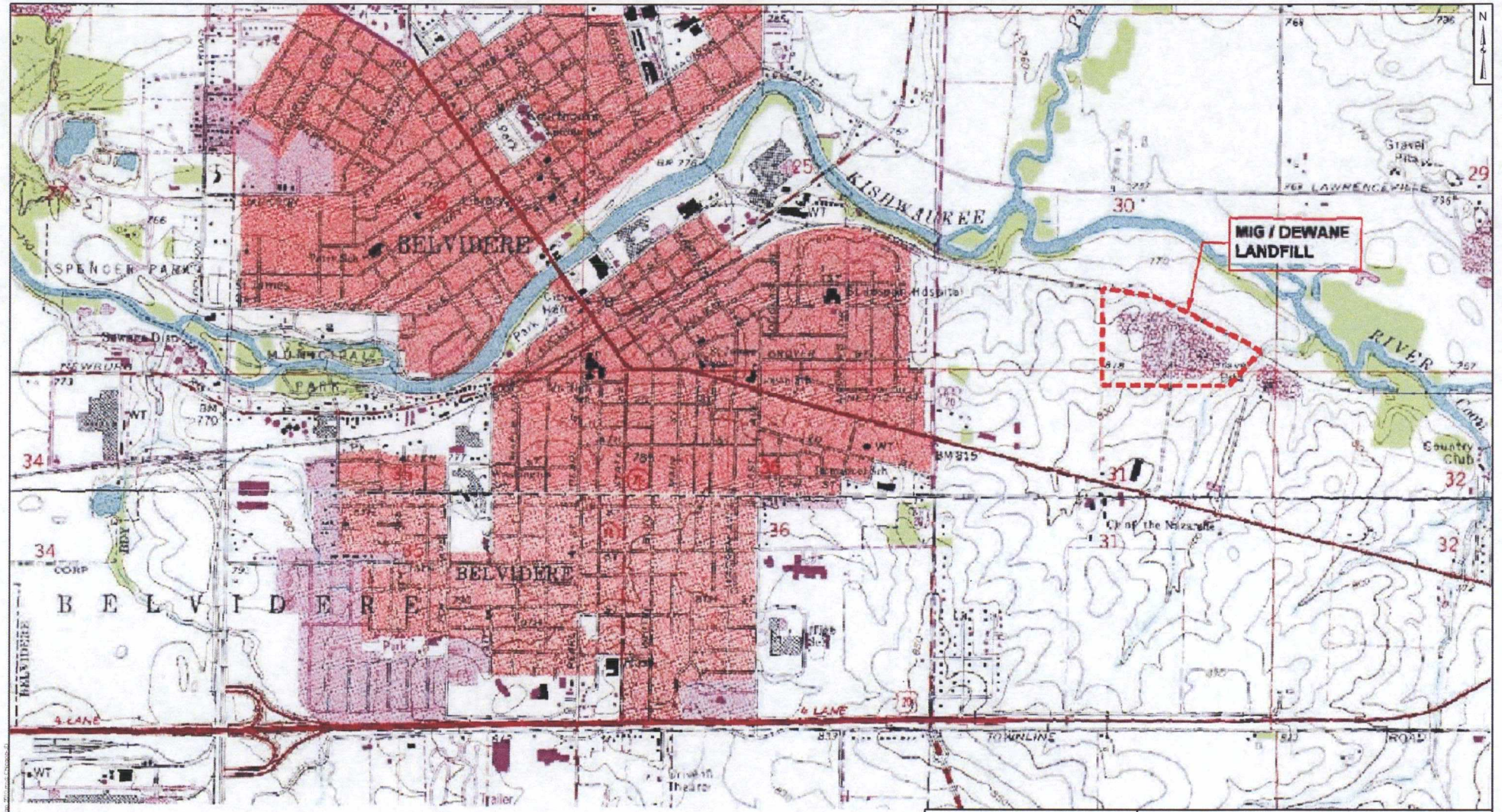
Table 3
Summary of Groundwater Analytical Data
MIG/DeWane Landfill Superfund Site
Boone County, Belvidere, Illinois

Location				MW-15							MW-16							GP-11	GP-12	GP-15		GP-20	GP-22			GP-23	GP-24	GP-25	
Date Sampled	Units	MCL	IL Class I GW	9/1/1995	9/1/1995-DUP	11/1/1995	11/1/1995-DUP	4/13/2010	12/3/2010	12/28/2011	11/1/1995	11/1/1995-DUP	9/1/1995	9/1/1995-DUP	4/13/2010	12/3/2010	12/28/2011	2/16/2000	2/16/2000	2/16/2000	11/21/2006	2/16/2000	2/16/2000	2/16/2000-DUP	11/21/2006	2/16/2000	2/16/200	2/16/2000	11/21/2006
VOC																													
1,1,1-Trichloroethane	µg/L	200	200	<2 U	NA	<2 U	NA	<5 UJ	<5 UJ	NA	<2 U	<2 U	<2 U	NA	<5 UJ	<5 UJ	NA	<1	<1	**22**	**5.8**	<1	<1	<1	<5	<5	<1	<1	<5
1,1-Dichloroethane	µg/L	NS	NS	**18**	NA	**16**	NA	<5 UJ	<5 UJ	NA	**27**	**27**	**30**	NA	<5 UJ	**5**	NA	<1	**1**	**48**	**6.3**	<1	**29**	**30**	**7**	**5**	<1	<1	<5
1,1-Dichloroethene	µg/L	7	7	**1 J**	NA	**1 J**	NA	<5 U	<5 U	<5 U	<2 U	<2 U	<2 U	NA	<5 U	<5 U	<5 U	<1	<1	<1	<5	<1	<1	<1	<5	<1	<1	<1	<5
1,2-Dibromo-3-chloropropane	µg/L	0.2	0.2	NA	NA	<2 U	NA	<10 UJ	<10 UJ	NA	**0.2 J**	<2 U	NA	NA	<10 UJ	<10 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane	µg/L	5	5	<2 U	NA	<2 U	NA	<5 UJ	<5 UJ	NA	<3 U	<3 U	<4 U	NA	<5 UJ	<5 UJ	NA	<1	<1	**12**	<5	<1	**1**	**1**	<5	<1	<1	<1	<5
1,2-Dichloroethene (Total)	µg/L	NS	NS	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloropropane	µg/L	5	5	**2 J**	NA	**2**	NA	<5 UJ	<5 UJ	<5 U	**5**	**5**	**6**	NA	<5 UJ	<5 UJ	<5 U	<1	<1	**33**	<5	<1	**5**	**5**	<5	<1	<1	<1	<5
1,4-Dioxane	µg/L	NS	NS	NA	NA	NA	NA	**420 J**	<400 UJ	NA	NA	NA	NA	NA	<400 UJ	<400 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	µg/L	NS	NS	NA	NA	NA	NA	<100 UJ	<100 UJ	NA	NA	NA	NA	NA	<100 UJ	<100 UJ	NA	<5	<5	<5	<100	<5	<5	<5	<100	<5	<5	<5	<100
Benzene	µg/L	5	5	**12**	NA	**12**	NA	<5 U	<5 U	<5 U	**4**	**4**	**5**	NA	<5 U	<5 U	<5 U	<1	<1	**9**	<5	<1	**2**	**2**	<5	<1	<1	<1	<5
Bromomethane	µg/L	NS	NS	<2 U	NA	<2 U	NA	<5 UJ	<5 UJ	NA	<2 U	**0.3 J**	<2 U	NA	<5 UJ	<5 UJ	NA	<1	<1	<1	<5	<1	<1	<1	<5	<1	<1	<1	<5
Carbon disulfide	µg/L	NS	NS	<2 U	NA	<2 U	NA	<5 UJ	<5 UJ	NA	<2 U	<2 U	<2 U	NA	<5 UJ	<5 UJ	NA	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Chlorobenzene	µg/L	100	NS	**1 J**	NA	**1 J**	NA	<5 U	<5 U	NA	<2 U	<2 U	<2 U	NA	<5 U	<5 U	NA	<1	<1	<1	<5	<1	<1	<1	<5	<1	<1	<1	<5
Chloroethane	µg/L	NS	NS	**3**	NA	**4**	NA	<10 UJ	<10 UJ	NA	**25**	**26**	**26**	NA	**16.2 J**	<10 UJ	NA	<1	<1	**4**	<10	<1	**3**	**3**	<10	<1	<1	<1	<10
Chloroform	µg/L	NS	NS	<2 U	NA	**0.4 J**	NA	<1 UJ	<1 UJ	NA	**0.4 J**	<2 U	<2 U	NA	<1 UJ	<1 UJ	NA	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chloromethane	µg/L	NS	NS	<2 U	NA	**0.2 J**	NA	<10 UJ	<10 UJ	NA	**3**	**3**	**5**	NA	<10 UJ	<10 UJ	NA	<1	<1	<1	<10	<1	<1	<1	<10	<1	<1	<1	<10
cis-1,2-Dichloroethene	µg/L	70	70	**20**	NA	**17**	NA	<5 UJ	<5 UJ	NA	**1 J**	**1 J**	**0.9 J**	NA	<5 UJ	<5 UJ	NA	<1	**1**	**59**	<5	<1	**50**	**53**	<5	<1	**1**	**1**	<5
Ethyl benzene	µg/L	700	700	**2**	NA	**4**	NA	<5 UJ	<5 UJ	NA	<2 U	**0.4 J**	<2 U	NA	<5 UJ	<5 UJ	NA	<1	<1	<1	<5	<1	<1	<1	<5	<1	<1	<1	<5
Methylene chloride	µg/L	NS	NS	<4 U	NA	<4 U	NA	<5 UJ	<5 UJ	<5 U	<4 U	<4 U	<4 U	NA	<5 UJ	<5 UJ	<5 U	<2	<2	<2	<5	<2	<2	<2	<5	<2	<2	<2	<5
Tetrachloroethene	µg/L	5	5	**0.2 J**	NA	<2 U	NA	<5 UJ	<5 UJ	<5 U	<2 U	<2 U	<2 U	NA	<5 UJ	<5 UJ	<5 U	<1	**3**	**10**	<5	<1	<1	<1	<5	<1	<1	<1	<5
Toluene	µg/L	1000	1000	**0.9 J**	NA	**0.5 J**	NA	<5 U	<5 U	NA	<2 U	**0.5 J**	<2 U	NA	<5 U	<5 U	NA	<1	<1	<1	<5	<1	<1	<1	<5	<1	<1	<1	<5
trans-1,2-Dichloroethene	µg/L	100	100	**1 J**	NA	**1 J**	NA	<5 UJ	<5 UJ	NA	**1 J**	**1 J**	**2 J**	NA	<5 UJ	<5 UJ	NA	<1	<1	**3**	<1	<1	**2**	**2**	<1	<1	<1	<1	<1
Trichloroethene	µg/L	5	5	**6**	NA	**6**	NA	<5 U	<5 U	<5 U	**0.6 J**	**0.7 J**	**0.7 J**	NA	<5 U	<5 U	<5 U	<1	**1**	**47**	**8.8**	<1	<1	<1	<5	<1	<1	<1	<5
Vinyl chloride	µg/L	2	2	**24**	NA	**28**	NA	<2 UJ	<2 UJ	<2 UJ	**3**	**3**	**3**	NA	<2 UJ	<2 UJ	<2 UJ	<1	<1	**6**	<2	**1**	**7**	**7**	<2	<1	<1	<1	<2
Xylene, Total	µg/L	10000	10000	**2 J**	NA	**2**	NA	<5 UJ	<5 UJ	NA	<2 U	**2 J**	<2 U	NA	<5 UJ	<5 UJ	NA	<1	<1	<1	<5	<1	<1	<1	<5	<1	<1	<1	<5
SVOC																													
2-Methylnaphthalene	µg/L	NS	NS	NA	NA	NA	NA	<10 UJ	<10 UJ	NA	<10 U	NA	**5 J**	NA	<10 UJ	<10 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylphenol	µg/L	NS	NS	NA	NA	NA	NA	<10 UJ	<10 UJ	NA	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl) phthalate	µg/L	NS	NS	NA	NA	NA	NA	<5 UJ	<5 UJ	NA	<10 U	NA	**24**	NA	<5 UJ	<5 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Diethylphthalate	µg/L	NS	NS	NA	NA	NA	NA	<10 UJ	<10 UJ	NA	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Di-n-butylphthalate	µg/L	NS	NS	NA	NA	NA	NA	<10 UJ	<10 UJ	NA	<10 U	NA	<10 U	NA	<10 UJ	<10 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	µg/L	NS	NS	NA	NA	NA	NA	<10 UJ	<10 UJ	NA	<10 U	NA	**2 J**	NA	<10 UJ	<10 UJ	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Metals																													
Antimony	mg/L	0.006	0.006	<0.001 U	<0.001 U	<0.001 UJ	<0.001 UN	<0.006 U	<0.006 U	<0.006 U	<0.001 U	**0.0093 B**	<0.001 U	<0.001 U	<0.006 U	<0.006 U	<0.006 U	NA	NA	NA	<0.006	NA	NA	NA	<0.006	NA	NA	NA	<0.006
Arsenic	mg/L	0.01	0.05	**0.0385**	**0.0406**	**0.039**	**0.0377**	**0.034**	**0.039**	**0.034**	**0.0299**	**0.0288**	**0.0213**	**0.0244**	**0.014**	**0.015**	**0.013**	NA	NA	NA	<0.002	NA	NA	NA	<0.002	NA	NA	NA	<0.002
Barium	mg/L	2	2	**0.286**	**0.264**	**0.286**	**0.277**	**0.316**	**0.646**	NA	**0.341**	**0.269**	**0.343**	**0.333**	**0.248**	**0.278**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Boron	mg/L	NS	2	**2.38**	NA	**2.59**	NA	**2.03 J**	**3.13 J-**	**2.78**	**0.431**	NA	**0.447**	NA	**0.85 J**	**0.74 J-**	**0.68**	NA	NA	NA	**0.03**	NA	NA	NA	**0.07**	NA	NA	NA	**0.02**
Chromium	mg/L	0.1	0.1	<0.003 U	**0.0034 B**	**0.0048 B**	<0.003 U	<0.001 U	<0.001 U	**0.001**	**0.0024 B**	**0.004 B**	<0.003 U	<0.003 U	<0.001 U	<0.001 U	**0.002**	NA	NA	NA	**0.002**	NA	NA	NA	**0.005**	NA	NA	NA	**0.039**
Cobalt	mg/L	NS	1	**0.0114 B**	**0.0114 B**	**0.0126 B**	**0.0141 B**	**0.009**	**0.017**	NA	**0.0052 B**	**0.0057 B**	**0.0044 B**	**0.0054 B**	**0.007**	**0.006**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	mg/L	1.3	0.65	<0.006 U	<0.006 U	**0.0017 B**	<0.003 U	<0.001 U	<0.001 U	NA	**0.0028 B**	<0.003 U	<0.006 U	<0.006 U	<0.001 U	<0.001 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Iron	mg/L	NS	5	**18.3**	**16.6**	**17.5**	**16.2**	**13 J**	**21.1**	**13.1**	**9.92**	**9.18**	**9.81**	**9.7**	**8.01 J**	**7.5**	**5.54**	NA	NA	NA	**0.07**	NA	NA	NA	**0.26**	NA	NA	NA	**3.44**
Lead	mg/L	0.015	0.0075	**0.0022 B**	<0.002 U	**0.127**	**0.0019 B**	<0.002 U	<0.002 U	<0.002 U	**0.0079**	**0.0144**	**0.0024 B**	<0.002 U	<0.002 U	<0.002 U	<0.002 U	NA	NA	NA	<0.002	NA	NA	NA	<0.002	NA	NA	NA	**0.004**
Manganese	mg/L	NS	0.15	**0.168**	**0.162**	**0.164**	**0.155**	**0.208**	**0.391**	**0.239**	**0.78**	**0.728**	**1.18**	**1.13**	**0.996**	**1.17**	**0.883**	NA	NA	NA	**0.006**	NA	NA	NA	**0.123**	NA	NA	NA	**0.055**
Mercury	mg/L	0.002	0.002	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0005 UJ	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0002 U	<0.0005 UJ	NA	NA	NA	<0.0005	NA	NA	NA	<0.0005	NA	NA	NA	<0.0005
Nickel	mg/L	NS	0.1	**0.201**	**0.201**	**0.243**	**0.234**	**0.116**	**0.268**	**0.219**	**0.0779**	**0.0728**	**0.0735**	**0.0689**	**0.118**	**0.137**	**0.111**	NA	NA	NA	**0.004**	NA	NA	NA	**0.014**	NA	NA	NA	**0.035**
Zinc	mg/L	NS	5	**0.062**	**0.0426 J**	**0.0198 B**	**0.016 B**	<0.005 U	<0.005 U	NA	**0.0275**	**0.0278**	**0.0432**	**0.0939 J**	<0.005 U	**0.947**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganics																													
Cyanide	mg/L	0.2	0.2	<0.01 U	NA	<0.01 U	NA	<0.005 U	<0.005 U	NA	<0.01 U	NA	<0.01 U	NA	<0.005 U	<0.005 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Sulfide	mg/L	NS	NS	<0.001 U	NA	<0.001 U	NA	<0.05 U	<0.05 U	NA	<0.001 U	NA	<0.001 U	NA	<0.05 U	<0.05 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
1. Bolded cells indicate detection
2. Shaded cells indicate exceedance of maximum contaminant level (MCL) or Illinois Class I Groundwater Standard
3. NS=No Standard for MCL values or Illinois Class I Groundwater
4. NA=Not Analyzed
5. Units for VOCs and SVOCs are µg/L
6. Units for metals and inorganics are mg/L
7. D=Deep
8. S=Shallow
9. R=Replacement
10. DUP=Duplicate Sample
11. MCLs can be found at http://www.epa.gov/safewater/contaminants/index.html
12. This table includes analytical results for parameters that were detected at any time at the site. If a parameter was never detected it is not included on this table
13. The Illinois Class I Groundwater Standards are located in Section 620.410 of Title 35 of the Illinois Administrative Code

Data Qualifiers:
1. U indicates the analyte was analyzed for, but was not detected above the report sample quantitation limit
2. UJ indicates the analyte was not detected above the reported sample quantitation limit, however, the reported quantitation limit is approximate
3. J indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample
4. B indicates the analyte result was between IDL (instrument detection limit) and contract required detection limit
5. N indicates spiked sample recovery not within control limits
6. J- indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte with a low bias
7. J+ indicates the analyte was positively identified; the associated numerical value is the approximate concentration of the analyte with a high bias

Figures



800 400 0 800 Feet

Base map source: USGS 7.5 minute quadrangele maps Belvidere north and Belvidere south.

Site Location
MIG/DeWane Landfill
Belvidere, IL

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Figure 1

Legend

Clay Cover Thickness (ft)

- <2
- 2-3
- >3

- Edge of Landfill Waste
- Measuring Point
- Top of Landfill
- Fence Line

200 100 0 200 Feet

N

IRM Landfill Cover Thickness Map
MIG/DeWane Landfill
Belvidere, IL

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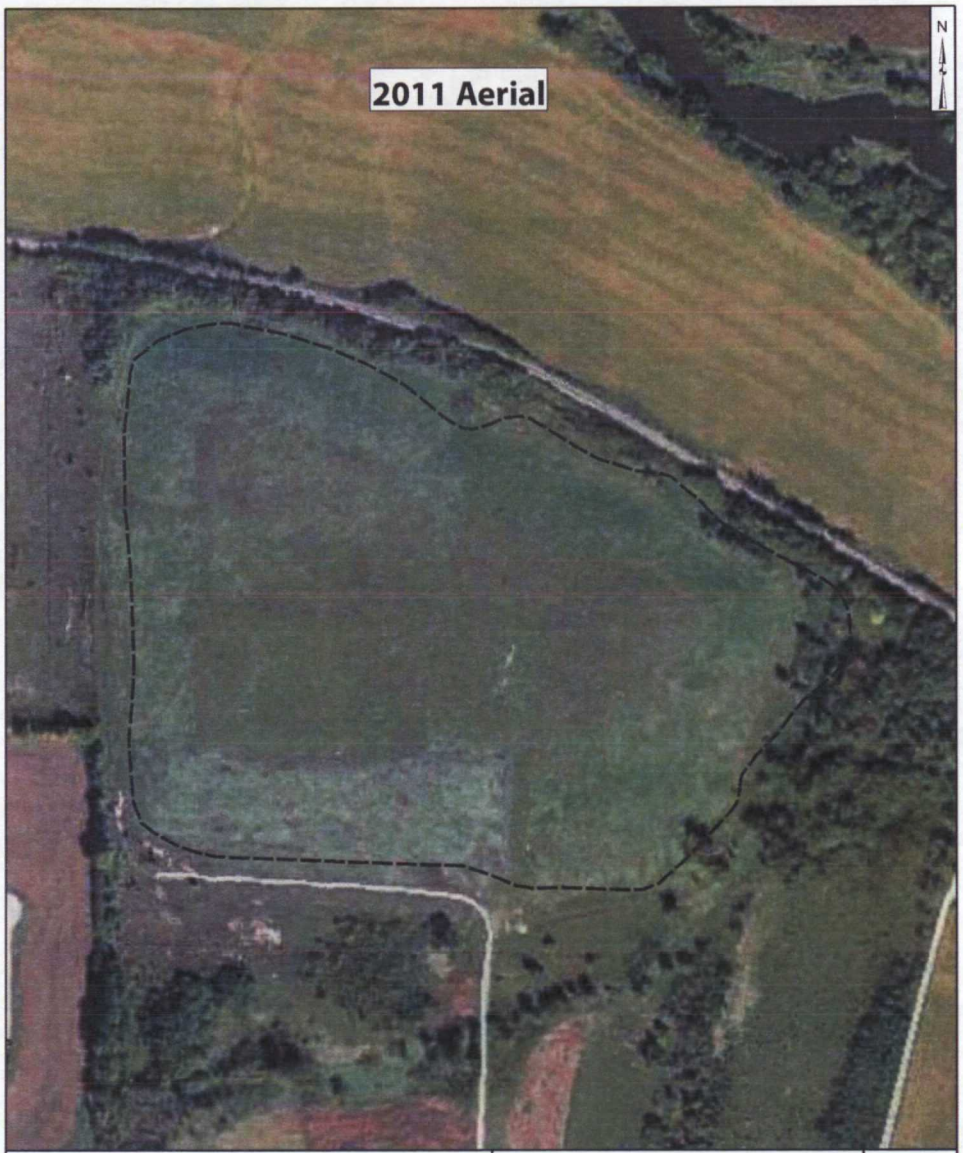
Figure **2**



1991 and 2011 Aerial Photograph Comparison
MIG/DeWane Landfill
Belvidere, IL

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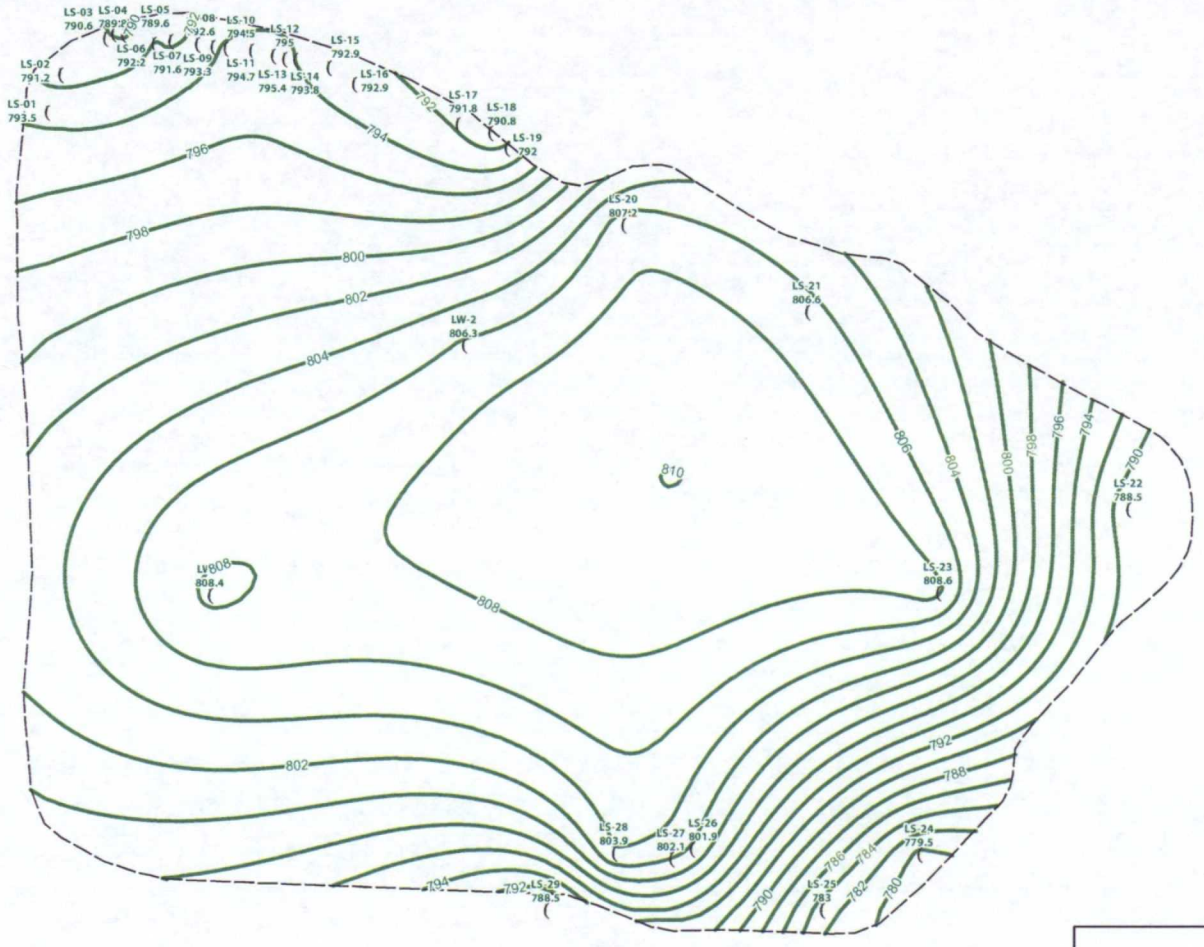
Chicago | 20-Apr-2012

Figure 3



Legend

LS-01
793.5
(Leachate Well or Leachate Seep Leachate Elevation Data Point

1995 Leachate Elevation Contour

Edge of Landfill Waste

200 100 0 200 Feet

1995 Leachate Elevation Contours
MIG/DeWane Landfill

Belvidere, IL

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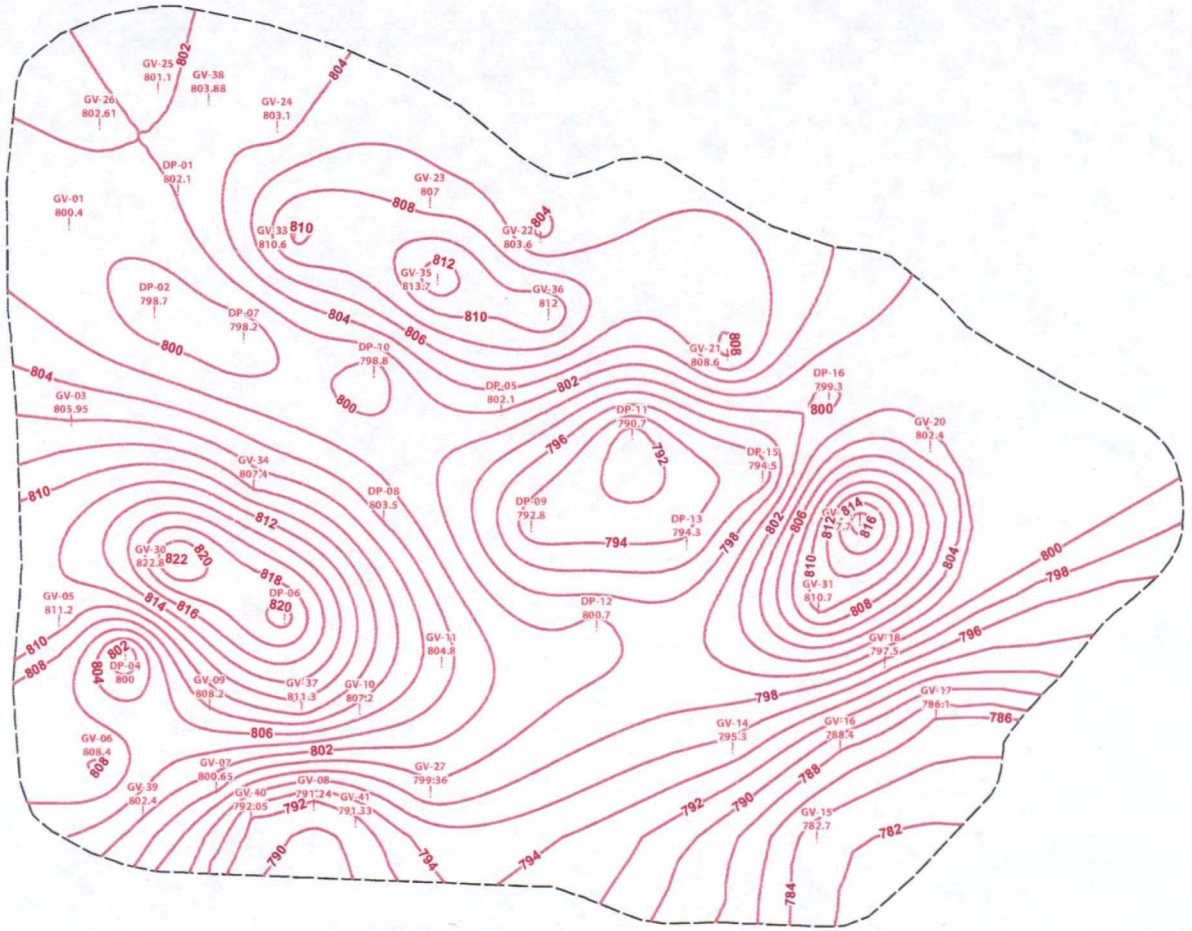
Chicago | 14-Aug-2012

Figure 4



Legend

GV-01
800.4
Gas Vent or Dual Phase Well Leachate Elevation Data Point

2008 Leachate Elevation Contour

Edge of Landfill Waste

200 100 0 200 Feet

2008 Leachate Elevation Contours
MIG/DeWane Landfill

Belvidere, IL

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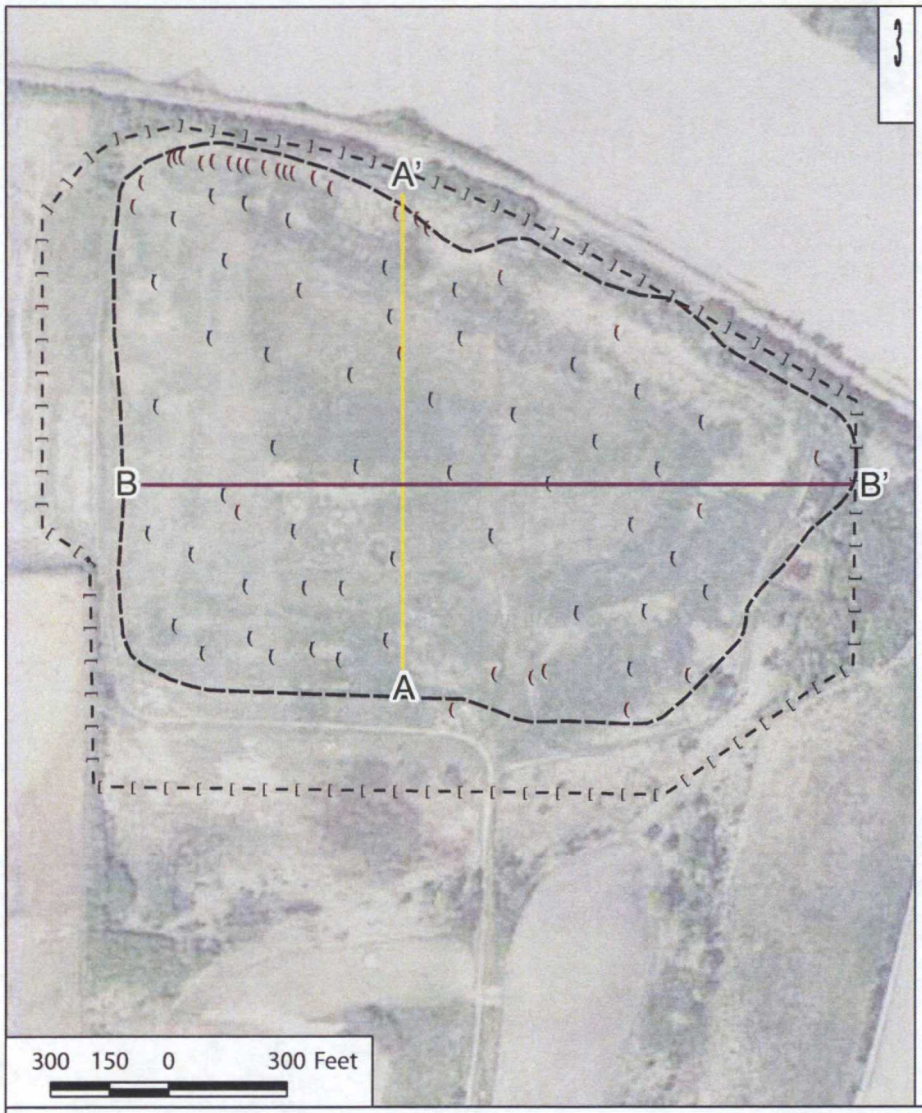
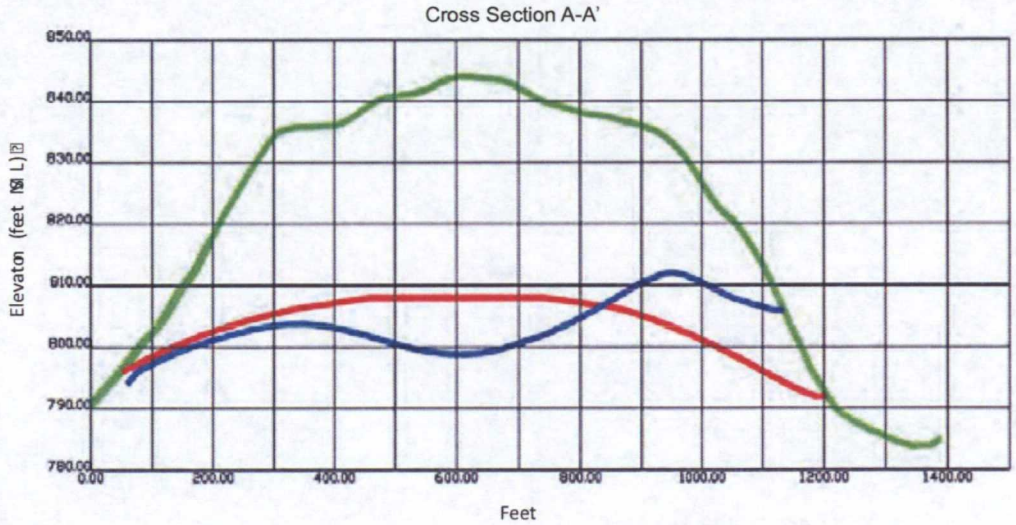
Figure 5





Legend

- Fence Line
- Edge of Landfill Waste
- 1995 Leachate Measurements
- 2008 Leachate Measurements
- Cross Section A
- Cross Section B
- Existing Ground Surface
- Leachate Surface 2008
- Leachate Surface 1995

Notes

1. 1995 leachate surface determined by seep locations and two leachate wells on landfill crest.
2. 2008 leachate surface based on leachate elevation measurements in gas vents and dual-phase gas wells.

Landfill Leachate Level Cross Sections
MIG/DeWane Landfill, Belvidere, IL

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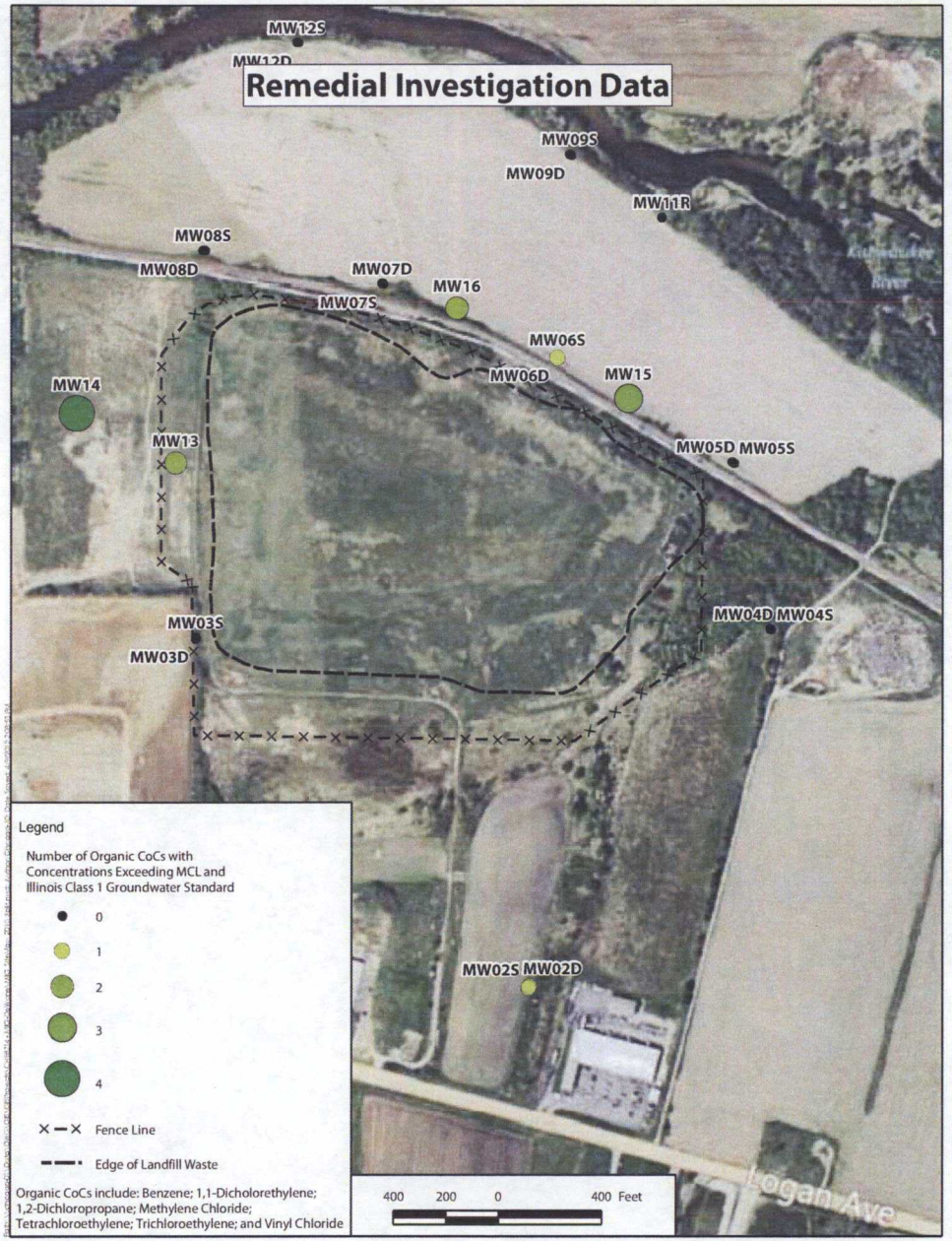
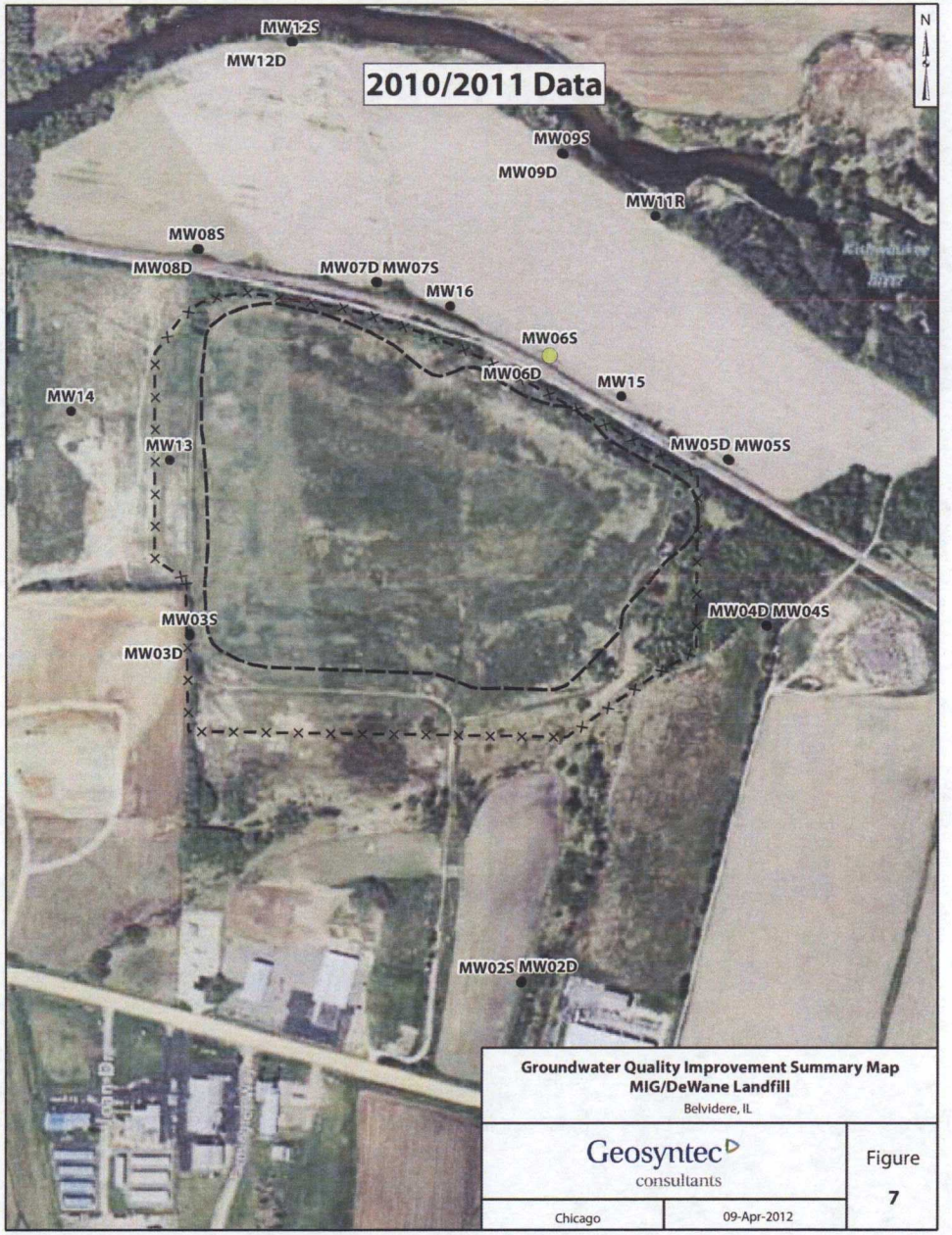
Figure 6





Groundwater Quality Improvement Summary Map
MIG/DeWane Landfill
Belvidere, IL

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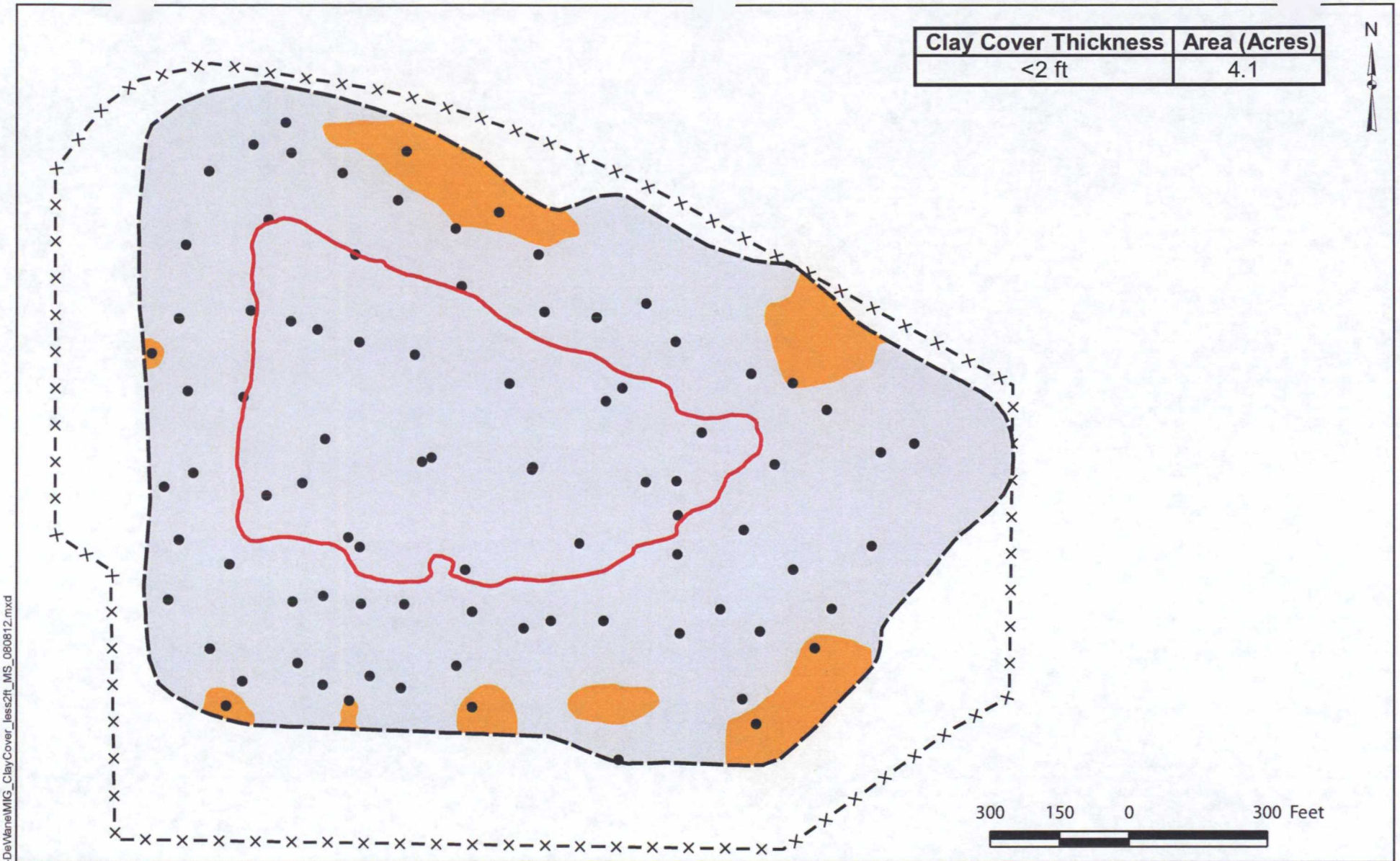
Figure 7



Legend

Clay Cover Thickness (ft)

- <2
- >2

- Edge of Landfill Waste
- Measuring Point
- Top of Landfill
- Fence Line

Landfill Cover Thickness <2 ft
MIG/DeWane Landfill
Belvidere, IL

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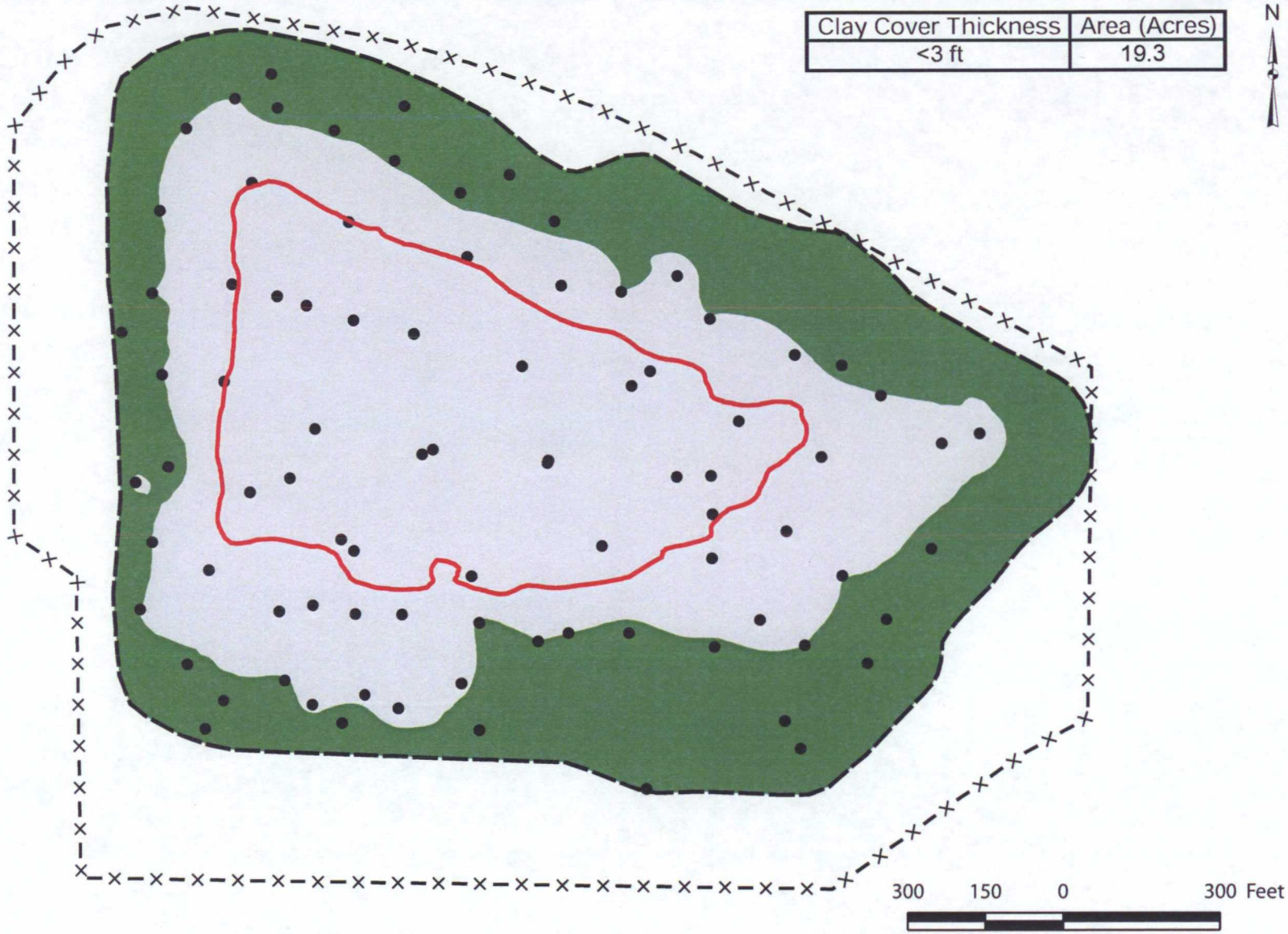
Figure **8**

P:\GIS\GISProjects\CHE8214 - MIG-DeWane\MIG_ClayCover_less2ft_MS_080812.mxd



Legend

Clay Cover Thickness (ft)

- <3
- >3

- Edge of Landfill Waste
- Measuring Point
- Top of Landfill
- Fence Line

Landfill Cover Thickness <3 ft
MIG/DeWane Landfill
Belvidere, IL

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Figure 9

P:\GIS\GISProjects\CHE8214 - MIG-DeWane\MIG_ClayCover_less3ft_MS_080812.mxd

Appendix 1

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MIG DeWane Landfill Project Status Meeting 28 February 2012

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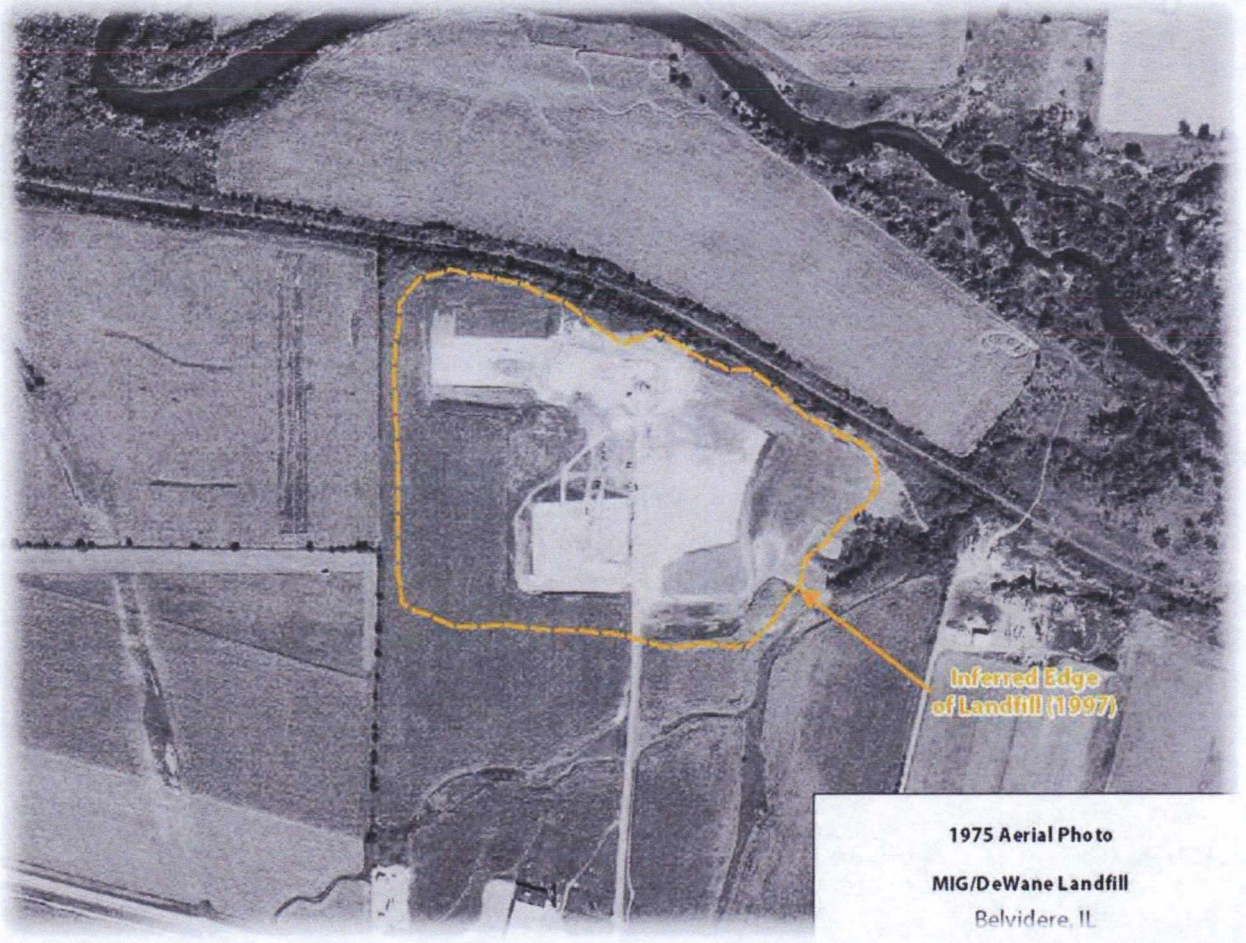
Historical Aerial Photographs

1975 Aerial

Landfill Operation



1975 Aerial Photo

MIG/DeWane Landfill

Belvidere, IL

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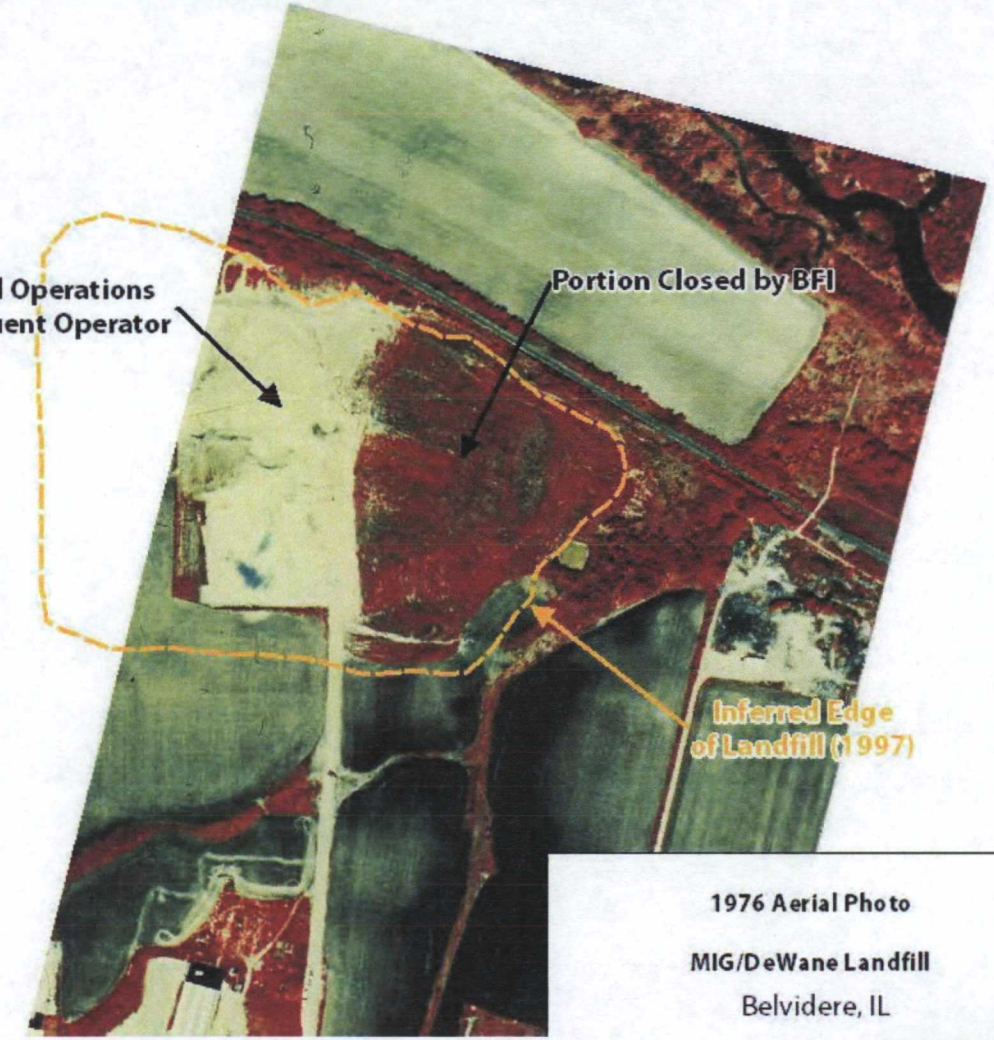
Historical Aerial Photographs

1976
Infrared Aerial

Landfill Operation



1976 Aerial Photo

MIG/DeWane Landfill
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Historical Aerial Photographs

1988 Aerial

Landfill Operation

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Historical Aerial Photographs

1991Aerial

Landfill Prior to Interim Remedial Measures

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Historical Aerial Photographs

1993 Aerial

Post Interim Remedial Measures

1993 Aerial Photo

MIG/DeWane Landfill

Belvidere, IL

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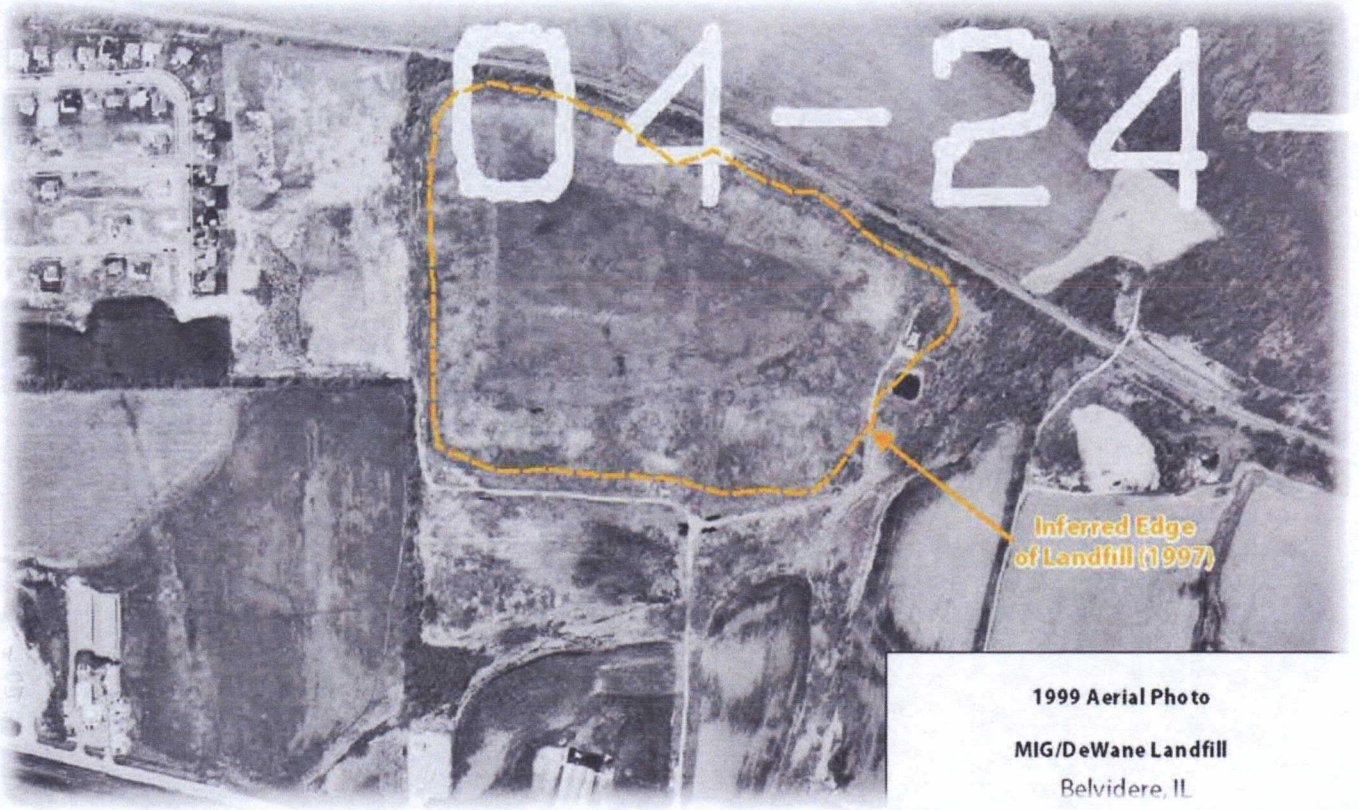
Historical Aerial Photographs

1999 Aerial

Wycliffe Estates partially populated



1999 Aerial Photo

MIG/DeWane Landfill

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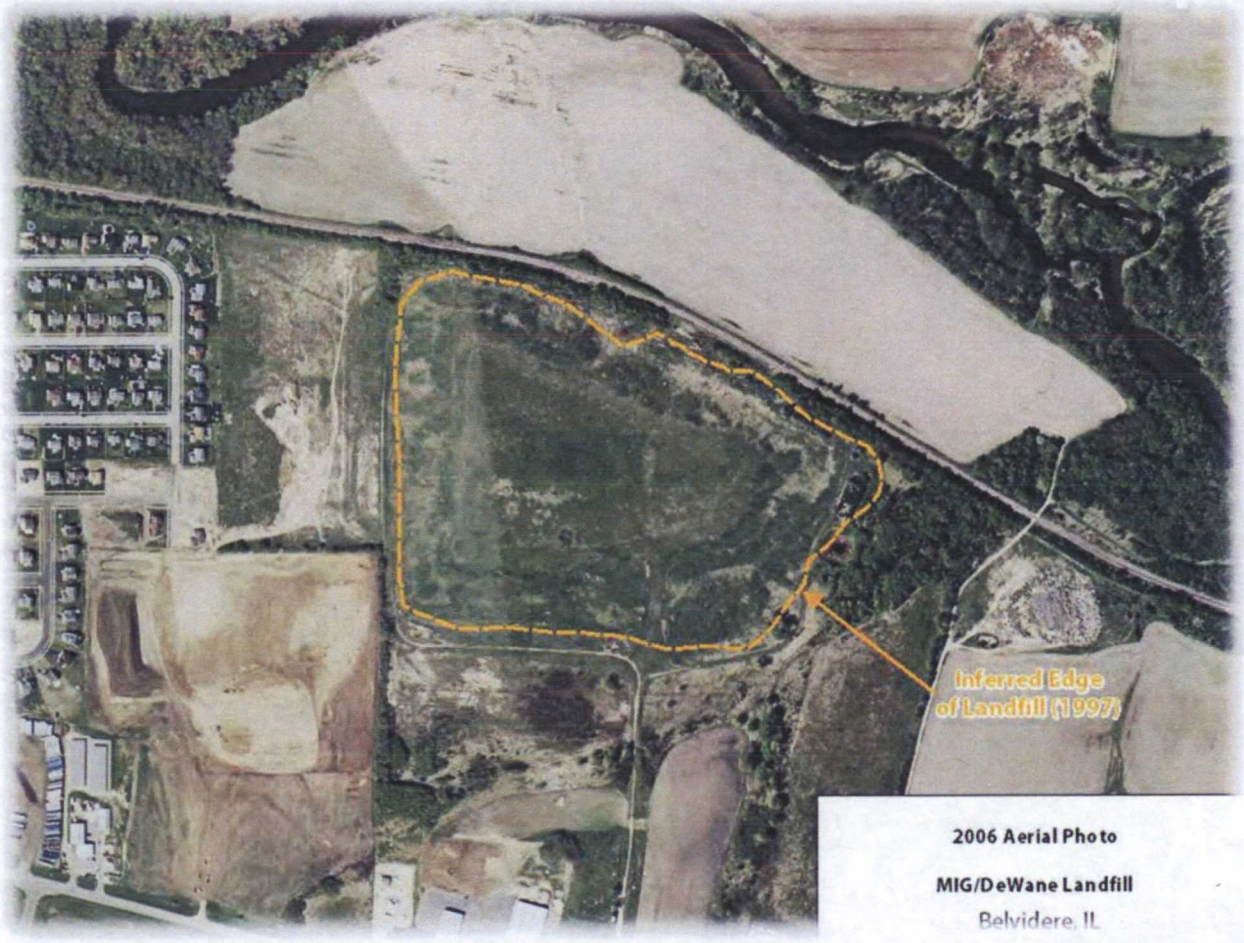
Historical Aerial Photographs

2006 Aerial

Landfill with Fully Vegetated Cover



2006 Aerial Photo

MIG/DeWane Landfill

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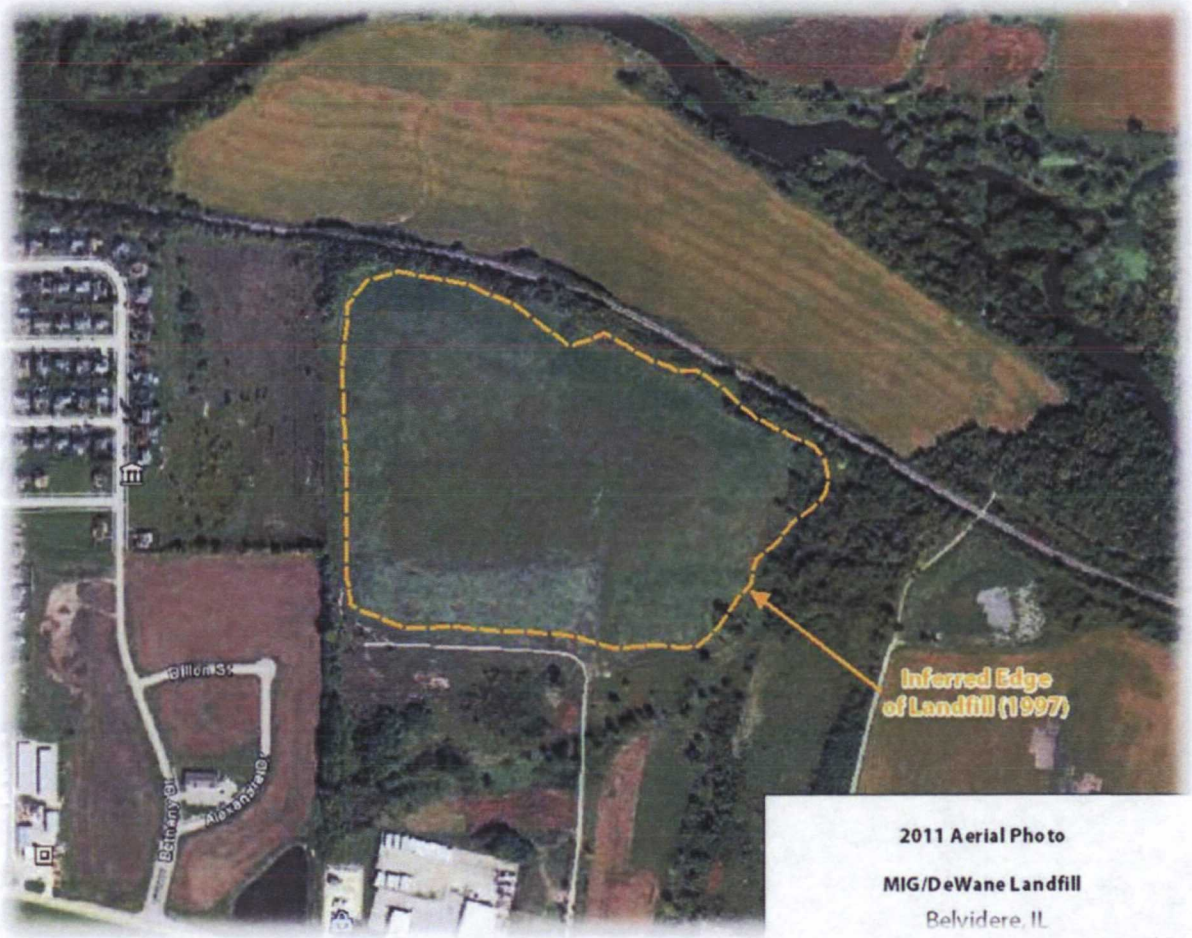
Historical Aerial Photographs

2011Aerial

Most Recent Landfill Aerial Photograph



2011 Aerial Photo

MIG/DeWane Landfill

Belvidere, IL

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Landfill Clay Cover Thickness

A majority of the Landfill has more than 3 feet of Clay Cover

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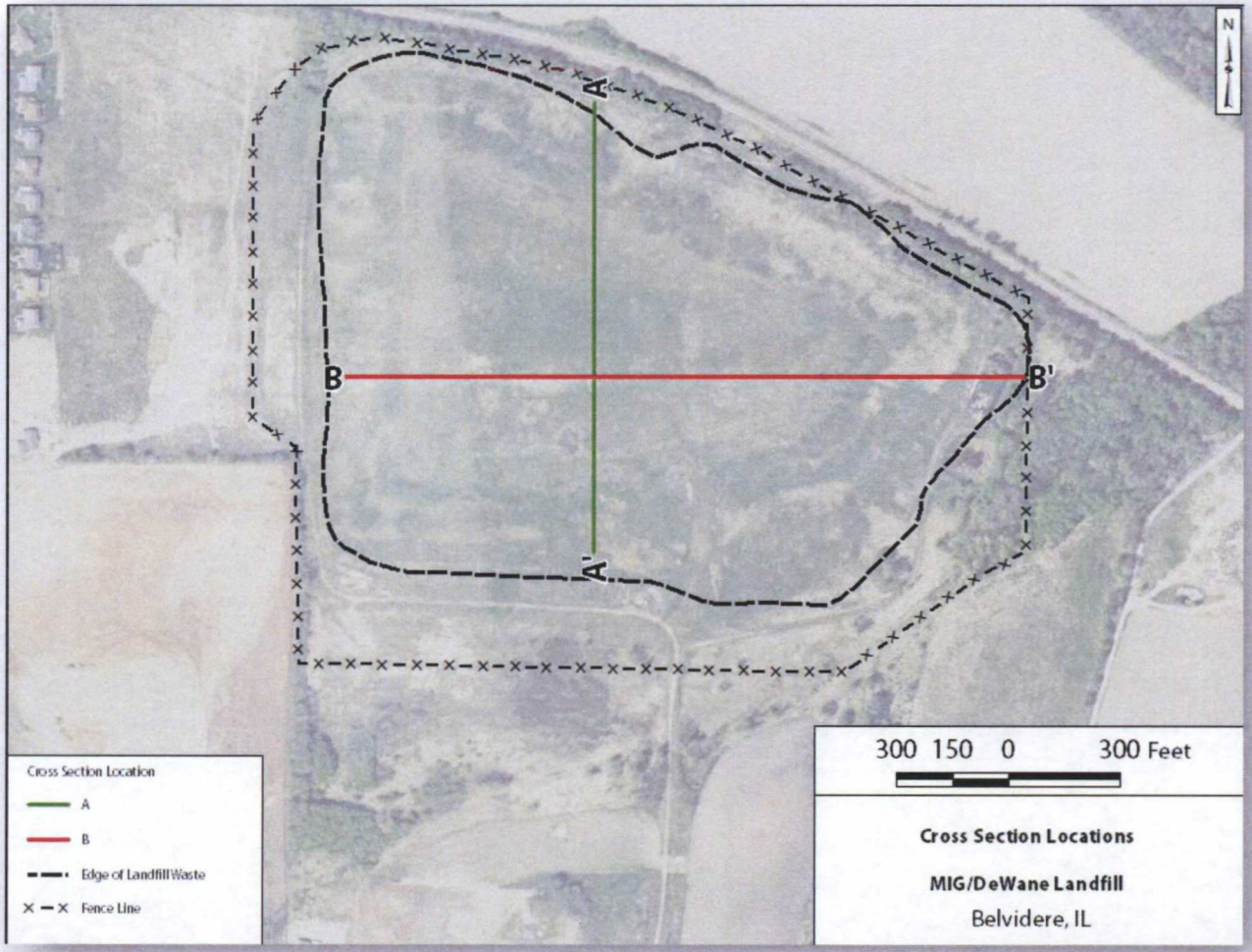
Landfill Clay Cover Cross-Sections

Cross-Section locations of the current Landfill Cover System



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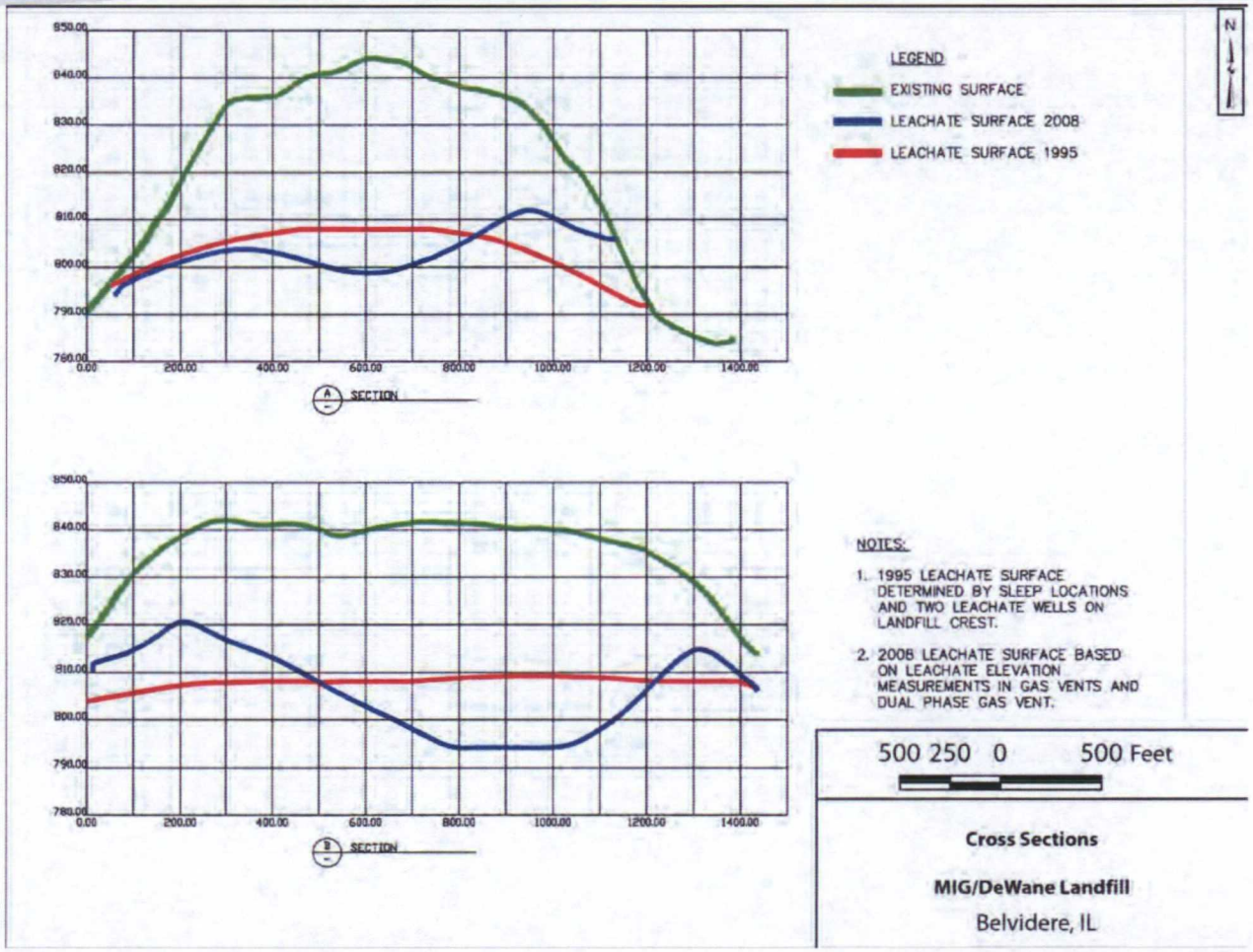
Landfill Clay Cover Cross-Sections

Cross-Sections of the current Landfill Cover System with current and historical leachate levels

Estimated 9.5 Million gallons less leachate in 2008 than in 1995



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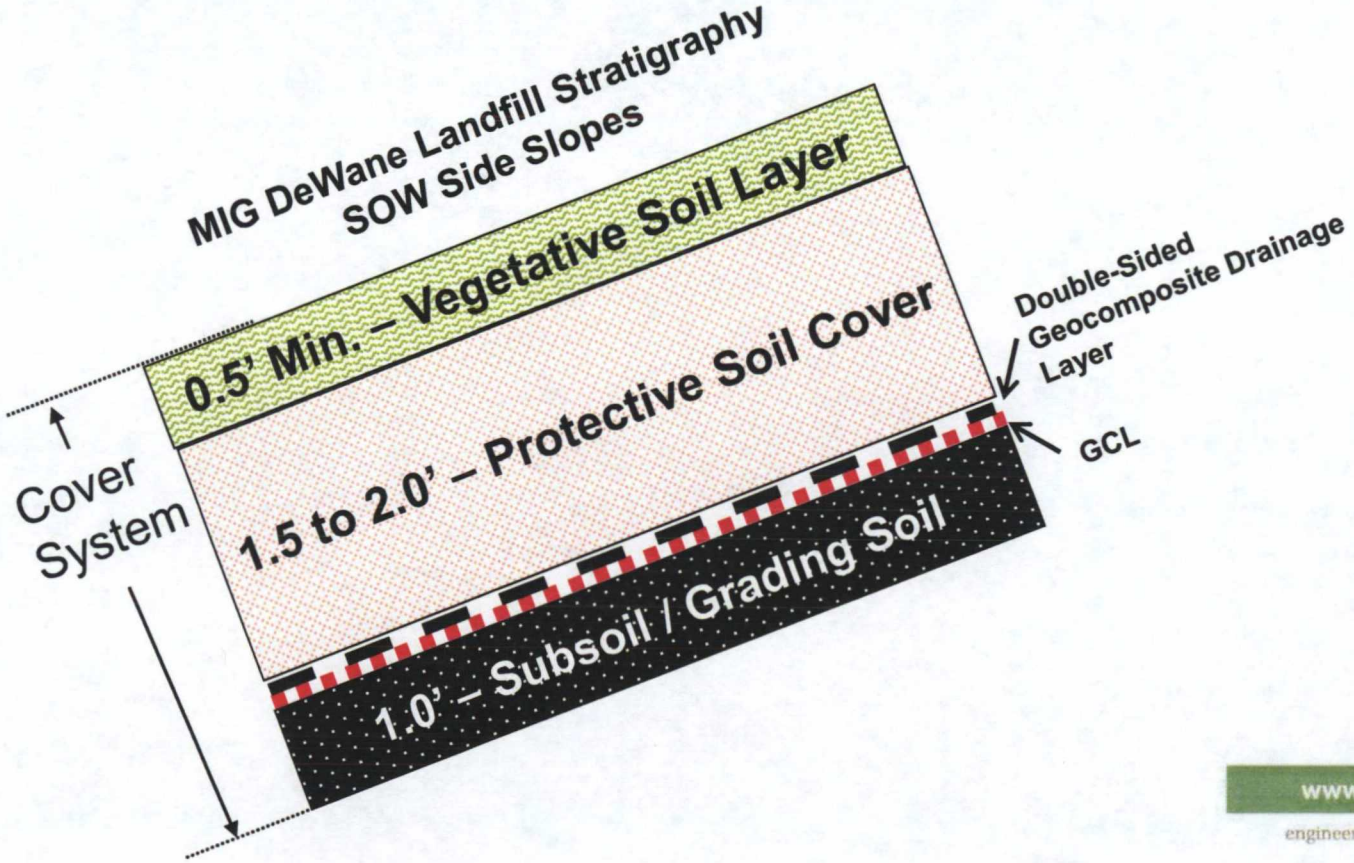
Effectiveness of Clay Cover

- Prescribed Cover in ROD/SOW
- HELP Model Hydraulic Efficiency of 99 %



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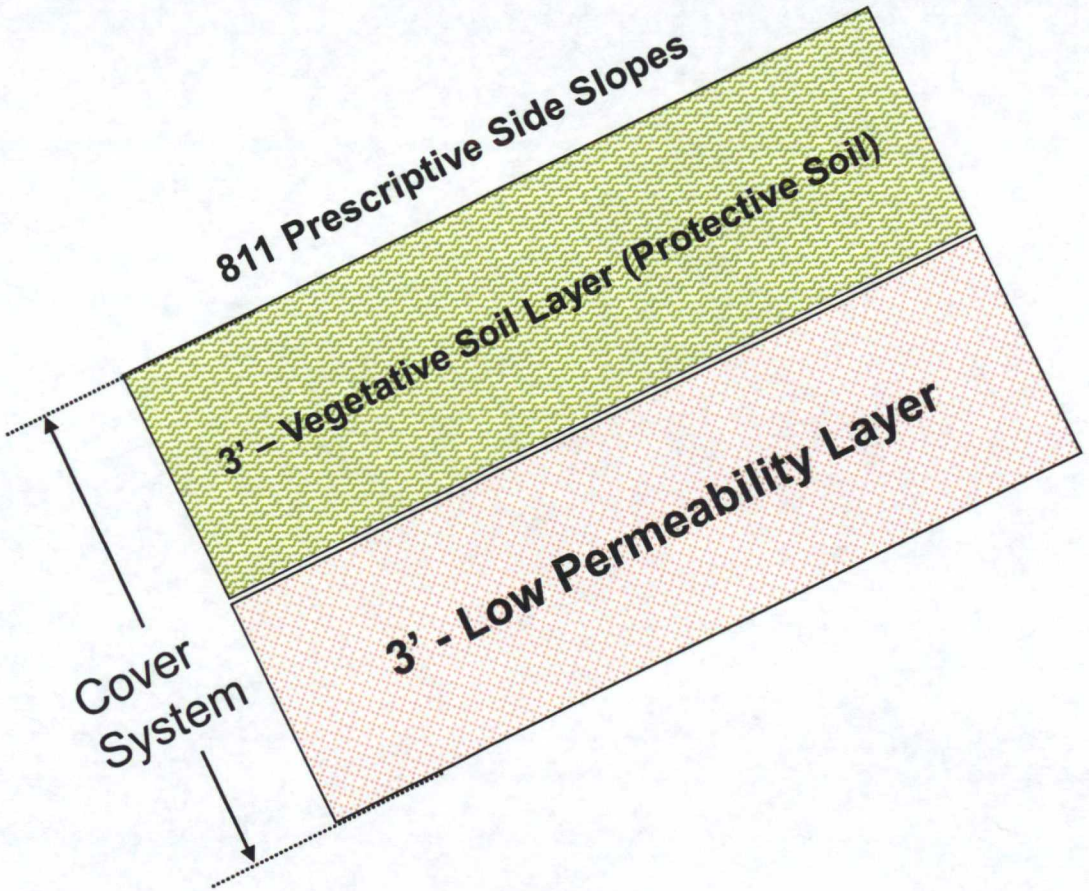
Effectiveness of Clay Cover

- 811 Soil Cover
- HELP Model Hydraulic Efficiency of 95%



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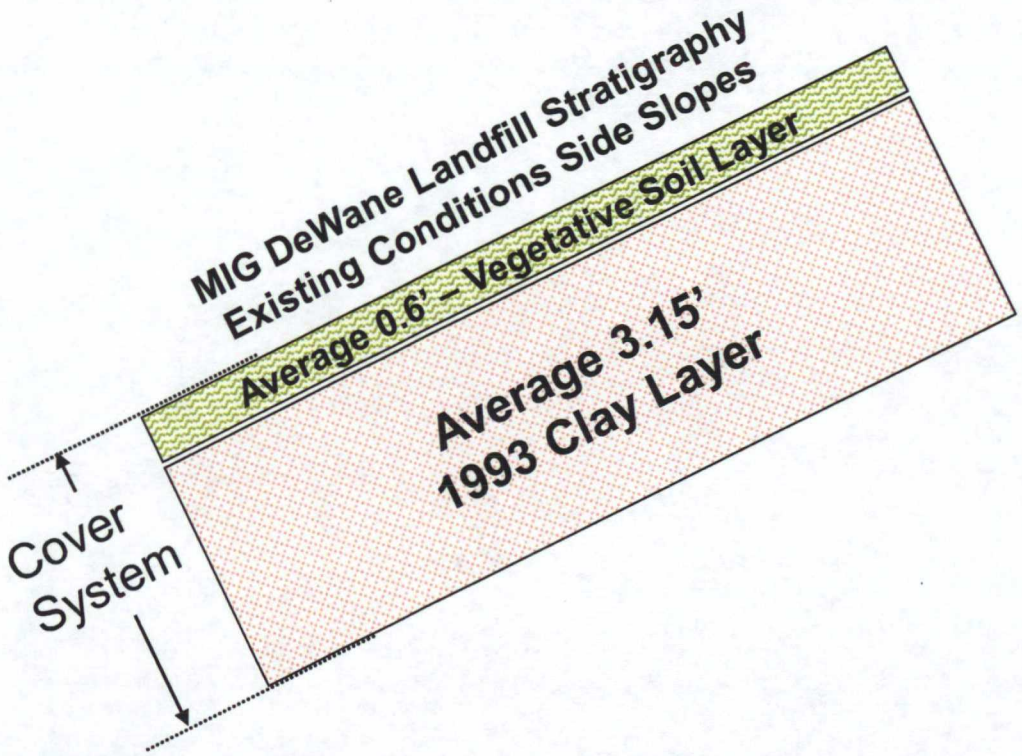
Effectiveness of Clay Cover

- Existing Conditions
- HELP Model Hydraulic Efficiency of 98%



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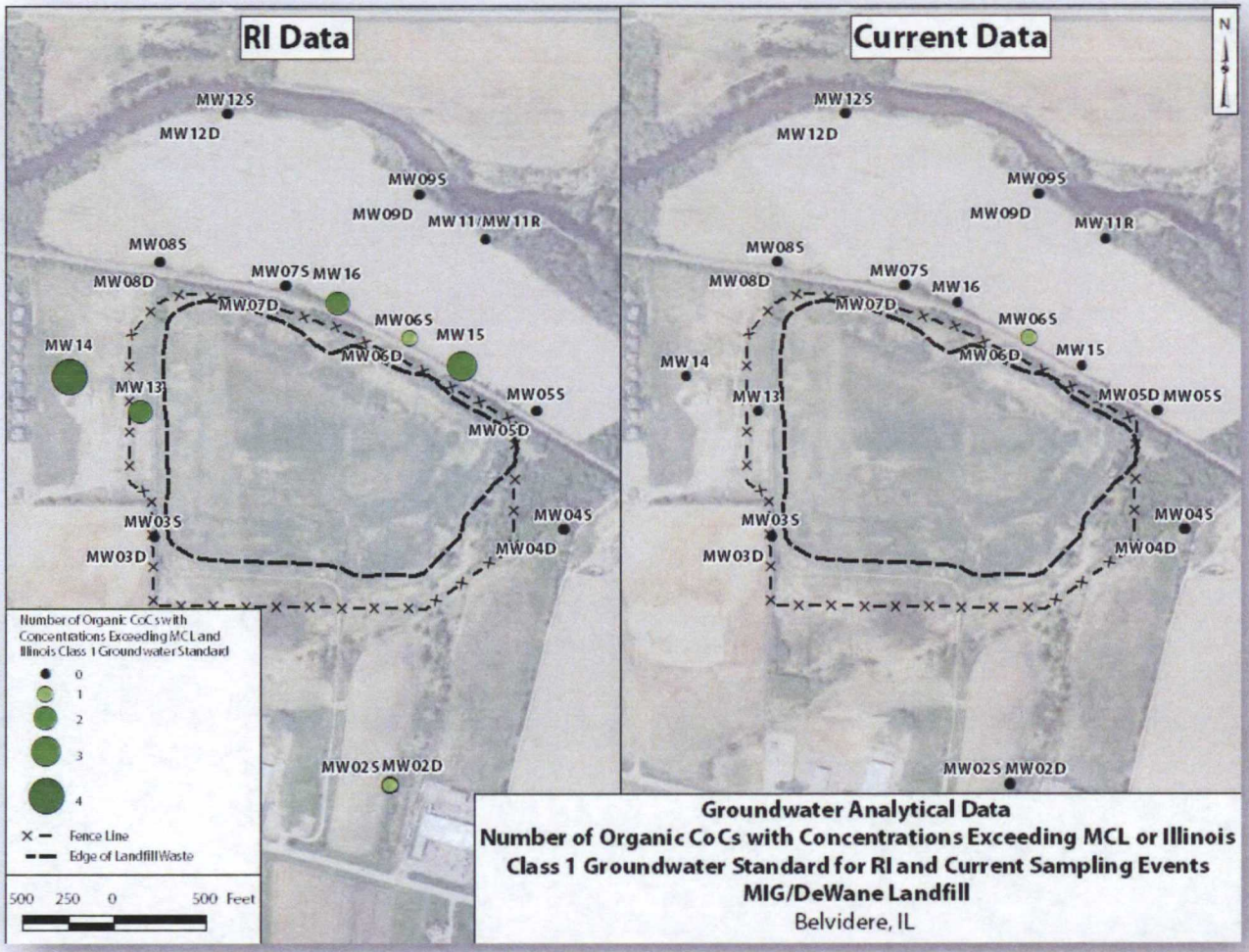
Groundwater Improvement

A decrease in the number of detections of Organic CoCs above MCLs and Illinois Class 1 Groundwater Standards over time



Groundwater Analytical Data
Number of Organic CoCs with Concentrations Exceeding MCL or Illinois Class 1 Groundwater Standard for RI and Current Sampling Events
MIG/DeWane Landfill
Belvidere, IL

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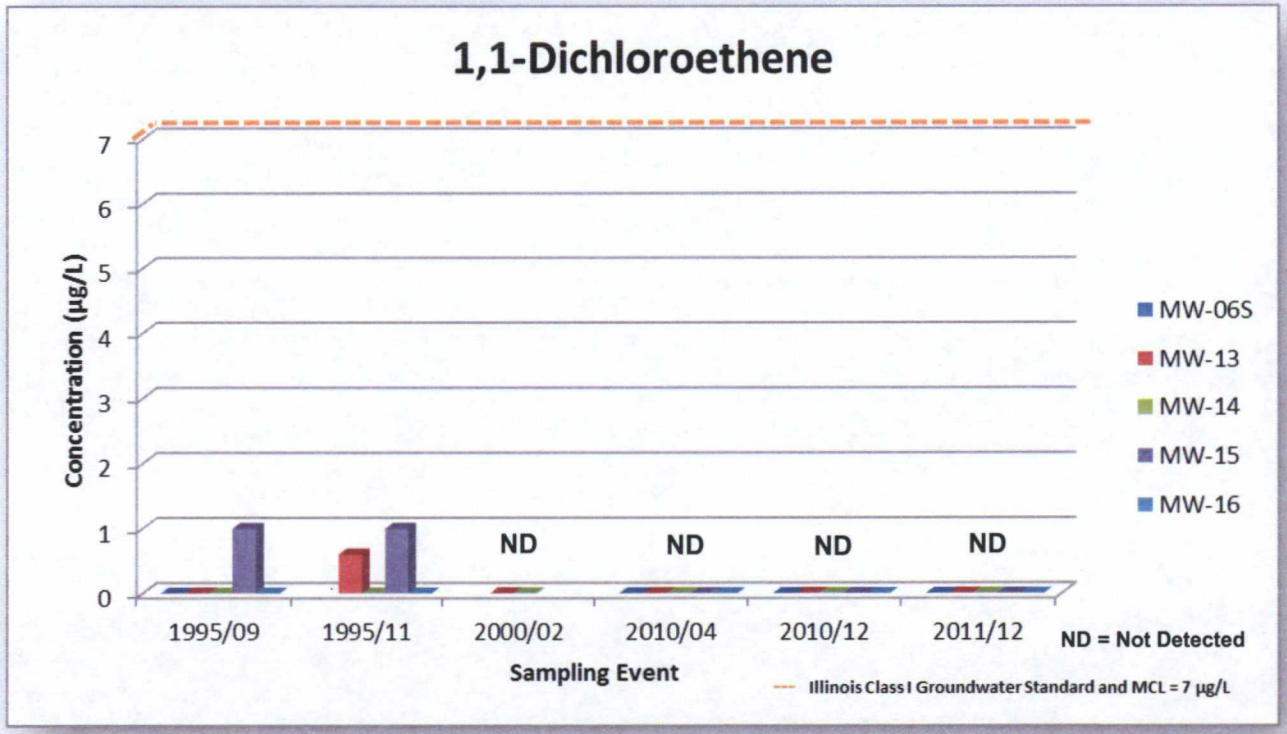
Groundwater Analytical

- Monitoring Wells: MW13, MW14, MW15, MW16, and MW06S
- 1,1-Dichloroethene detected in 1995, not detected thereafter
- All detections below the Federal MCL and Illinois Class I Groundwater Standard



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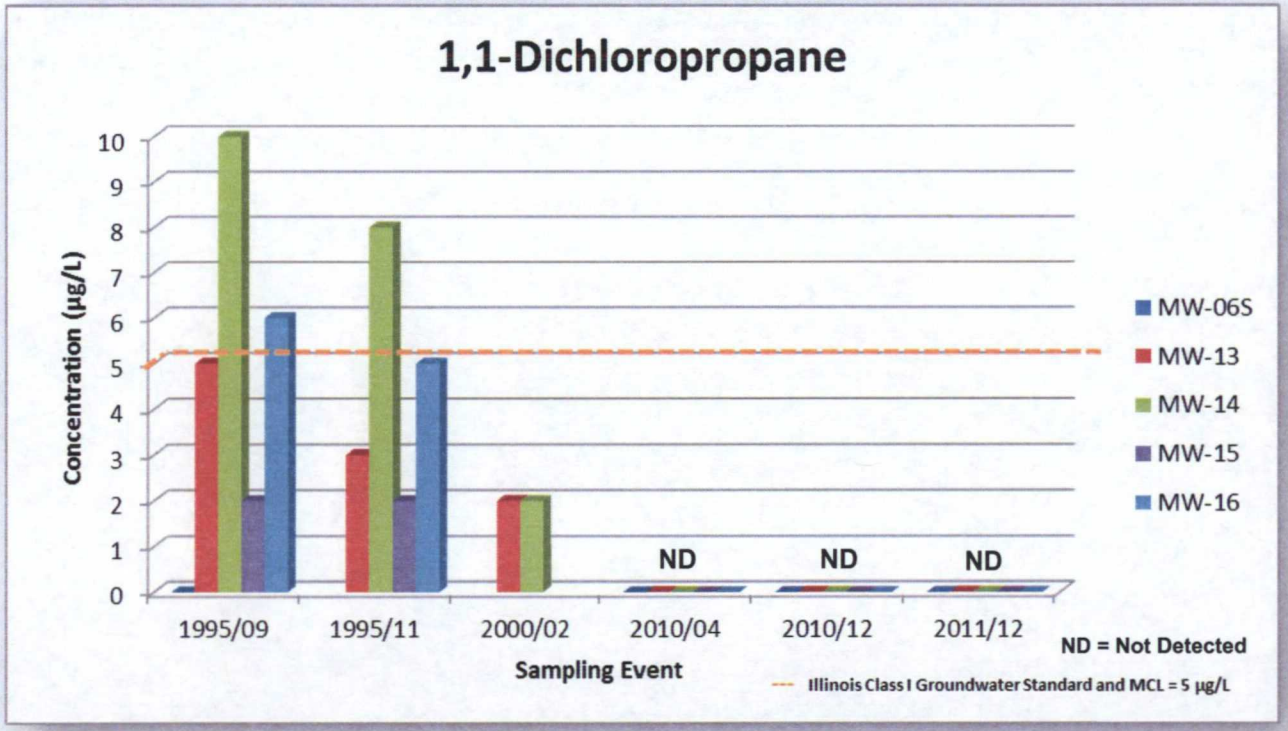
Groundwater Analytical

- Monitoring Wells: MW13, MW14, MW15, MW16, and MW06S
- 1,1-Dichloropropane detected in 1995 & 2000, not detected thereafter
- Below the Federal MCL and Illinois Class I Groundwater Standard after 1995



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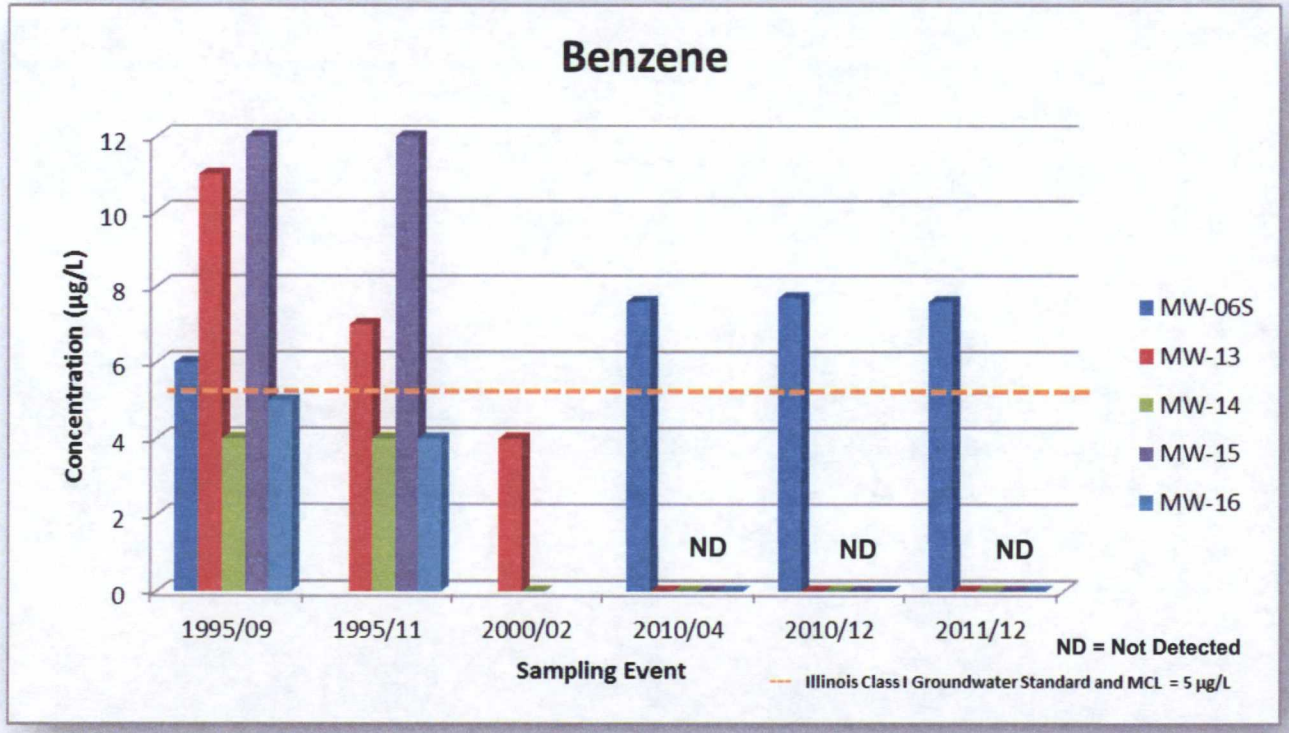
Groundwater Analytical

- Monitoring Wells: MW13, MW14, MW15, MW16, and MW06S
- Benzene detected in 1995 & 2000, and only in MW06S there after
- Below the Federal MCL and Illinois Class I Groundwater Standard after 1995, except for location MW06S



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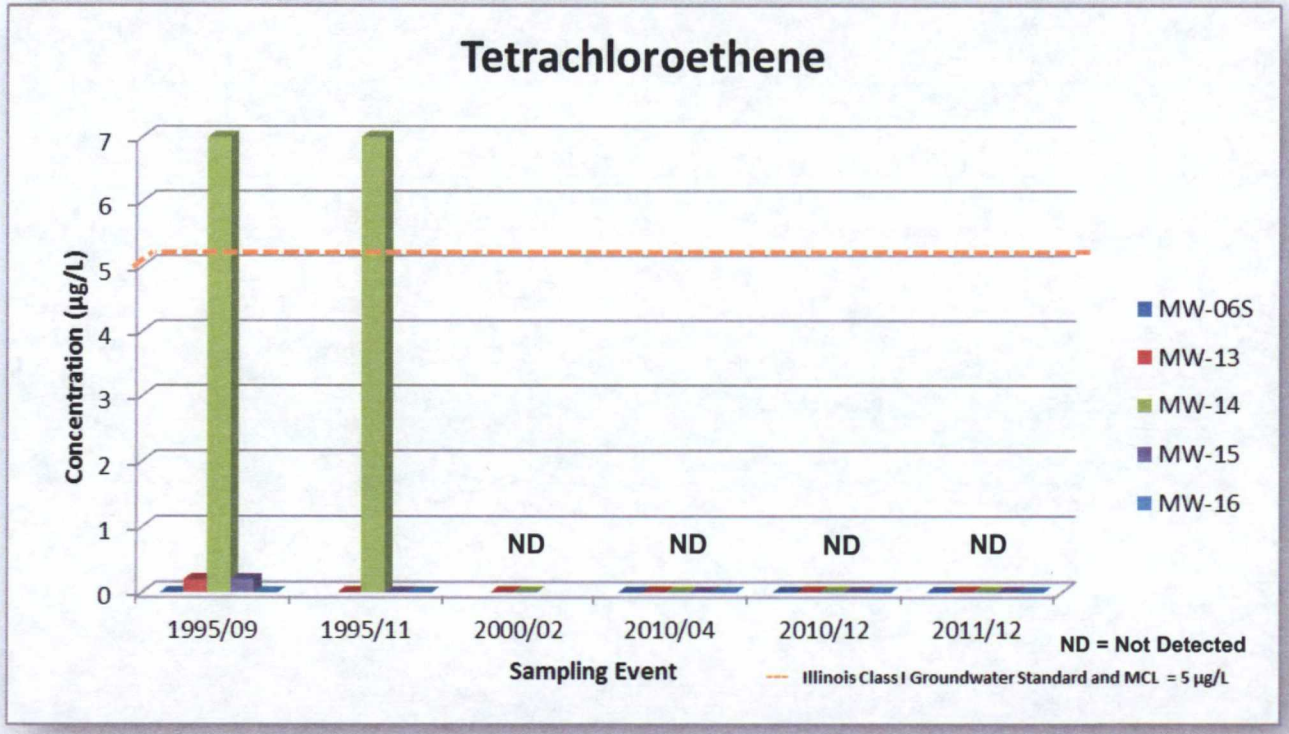
Groundwater Analytical

- Monitoring Wells: MW13, MW14, MW15, MW16, and MW06S
  Tetrachloroethene detected in 1995, not detected thereafter
- Below the Federal MCL and Illinois Class I Groundwater Standard after 1995



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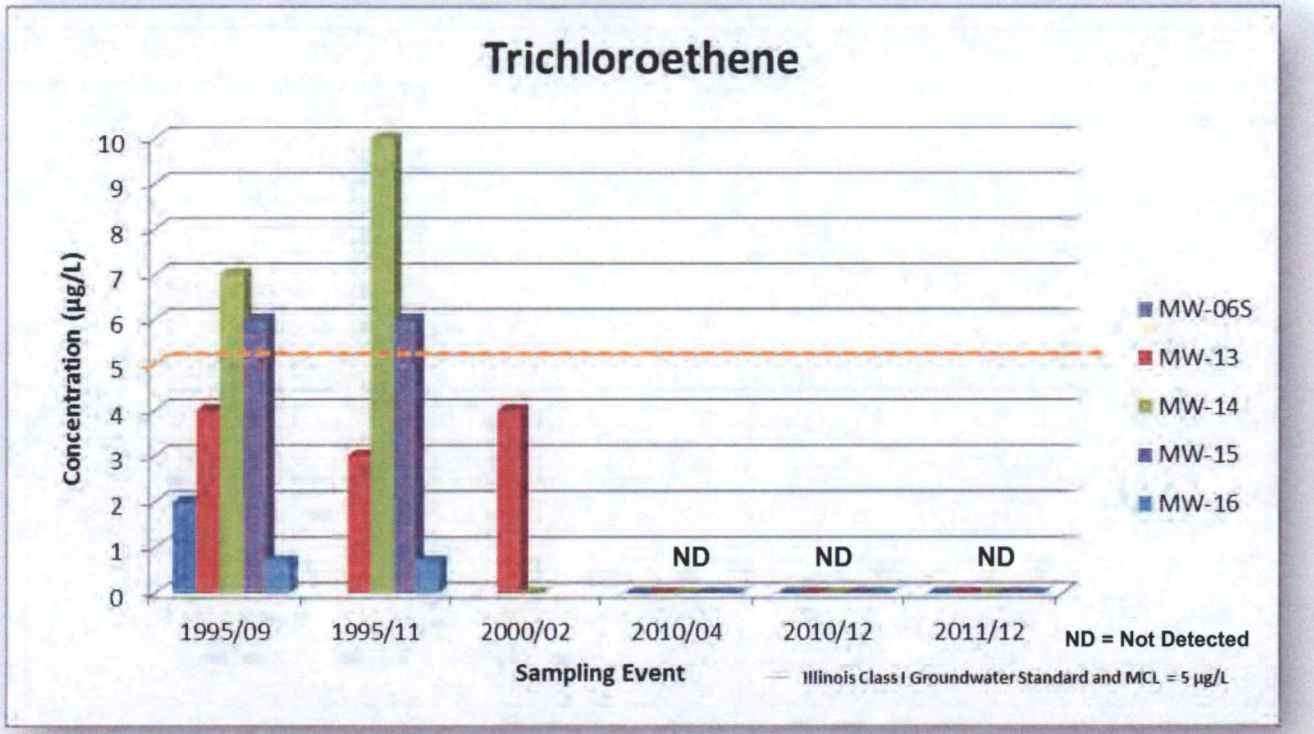
Groundwater Analytical

- Monitoring Wells: MW13, MW14, MW15, MW16, MW06S
- Trichloroethene detected in 1995 & 2000, not detected thereafter
- Below the Federal MCL and Illinois Class I Groundwater Standard after 1995



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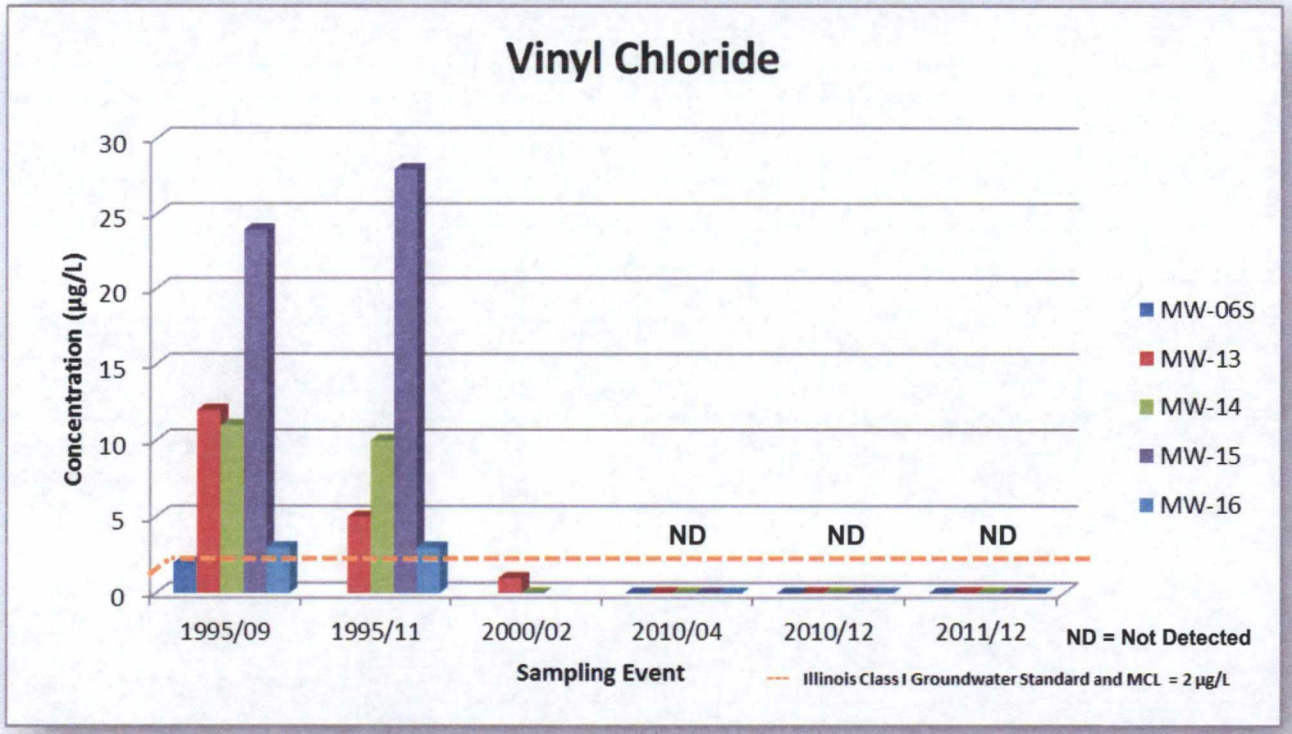
Groundwater Analytical

- Monitoring Wells: MW13, MW14, MW15, MW16, and MW06S
- Vinyl Chloride detected in 1995 & 2000, not detected thereafter
- Below the Federal MCL and Illinois Class I Groundwater Standard after 1995



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Construction Impacts

- Traffic
- Noise
- Dust
- Siltation

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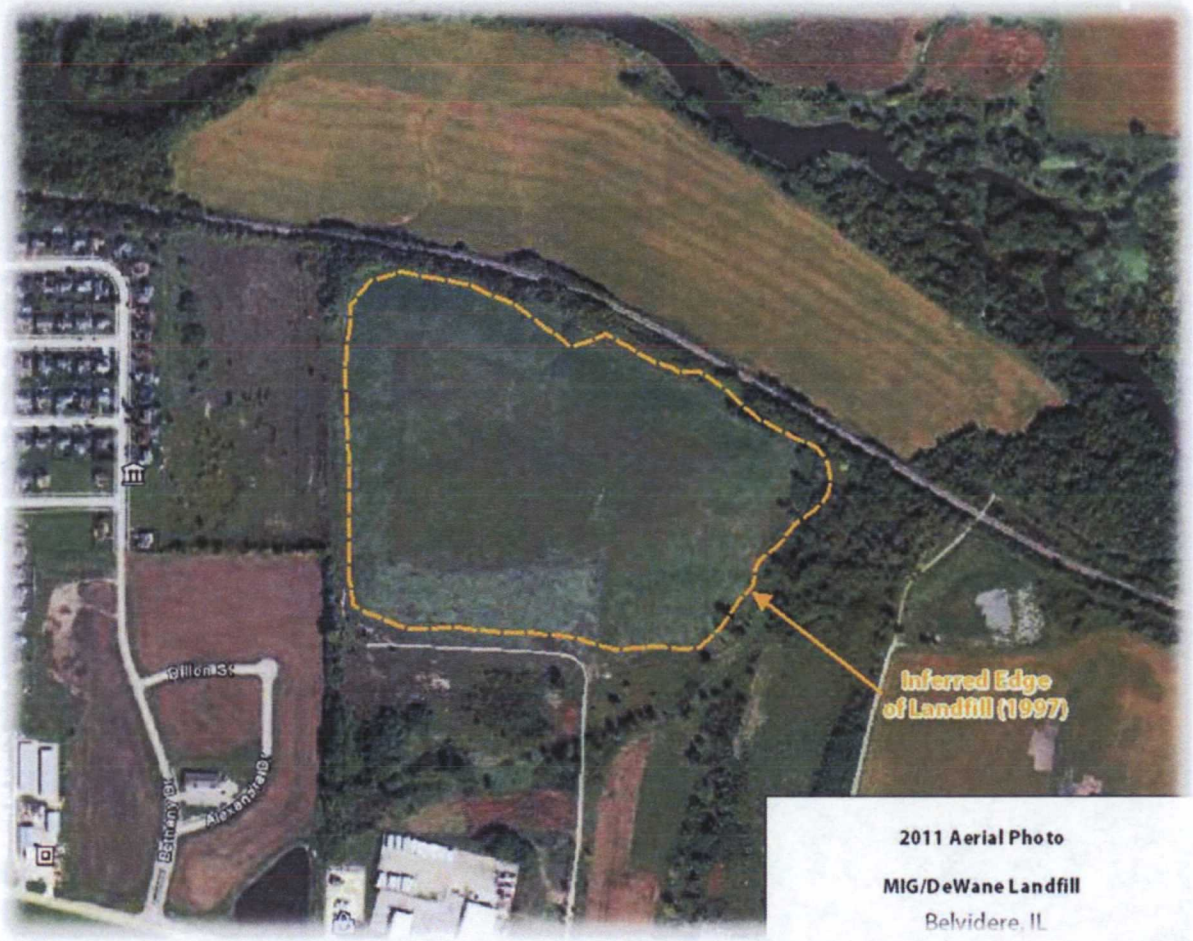
Construction Impacts

Removing the current cover will generate more leachate

- Less evapotranspiration will take place
- Increased infiltration of precipitation will generate millions of gallons of leachate which can undo the progress achieved with groundwater



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Reassessment of Remedy

- National Contingency Plan presupposes reevaluation and alteration of remedies after the ROD is issued. *See* 40 CFR § 300.825;

  55 FR 8771

- RD/RA Consent Decree presupposes reevaluation and alteration of the remedy. *See* RD/RA Consent Decree § XXXI (Modification)

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Post-ROD Information Triggering Reassessment of Remedy

- Information is significant.
  - Clay cover thickness measured at many locations
  - Multiple rounds of groundwater analysis
- Information substantially supports the need to significantly alter the response action.
  - Clay cover thickness measured at averages of 11.5 feet on the crest and 3.15 feet on the side slopes (98% Hydraulic Efficiency)
  - Groundwater Improvement
  - Leachate volume reduction
- Information is not contained elsewhere in the Administrative record and could not have been submitted during the public comment period.

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RD/RA Consent Decree Remedy Modifications

- Modifications to work specified in the SOW may be made by written agreement between IEPA and BFI if the work does not materially alter the SOW.

- Material Modifications to SOW can be made upon written notification to and written approval of IEPA, BFI, and the Court.

RD/RA Consent Decree ¶ 162

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When a remedial alternative does not need to meet an ARAR

- Compliance with the ARAR will result in greater risk to human health and the environment than other alternatives.
- The alternative will attain a standard of performance that is equivalent to that required through use of another method or approach.
- State exercised its regulatory discretion to determine compliance with a particular ARAR was not required in similar circumstances at other remedial actions within the State.

40 CFR § 300.430(f)(1)(ii)(c)

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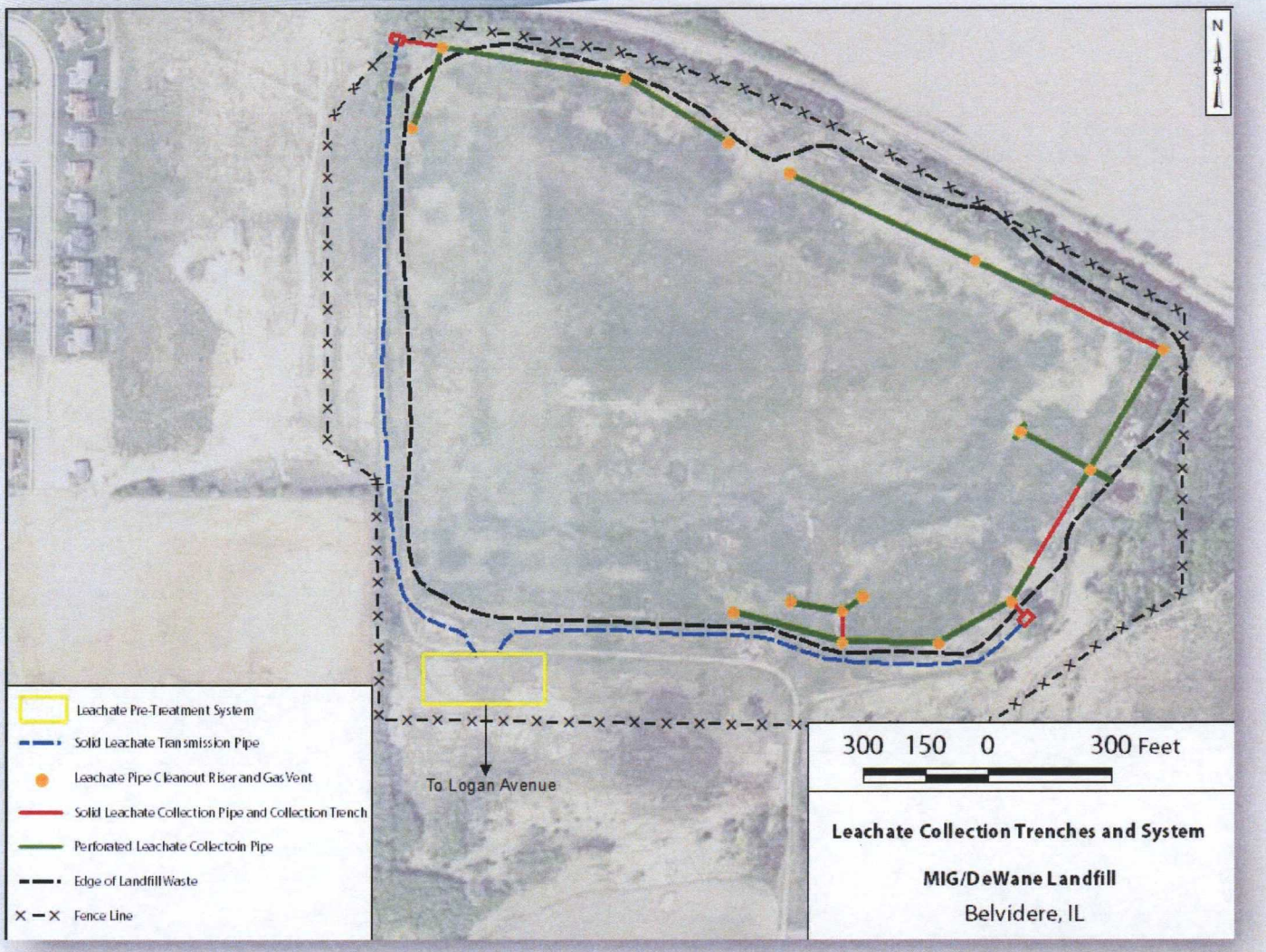
Planned Landfill Improvements

Installation of Leachate Collection Trenches and Pre-Treatment System



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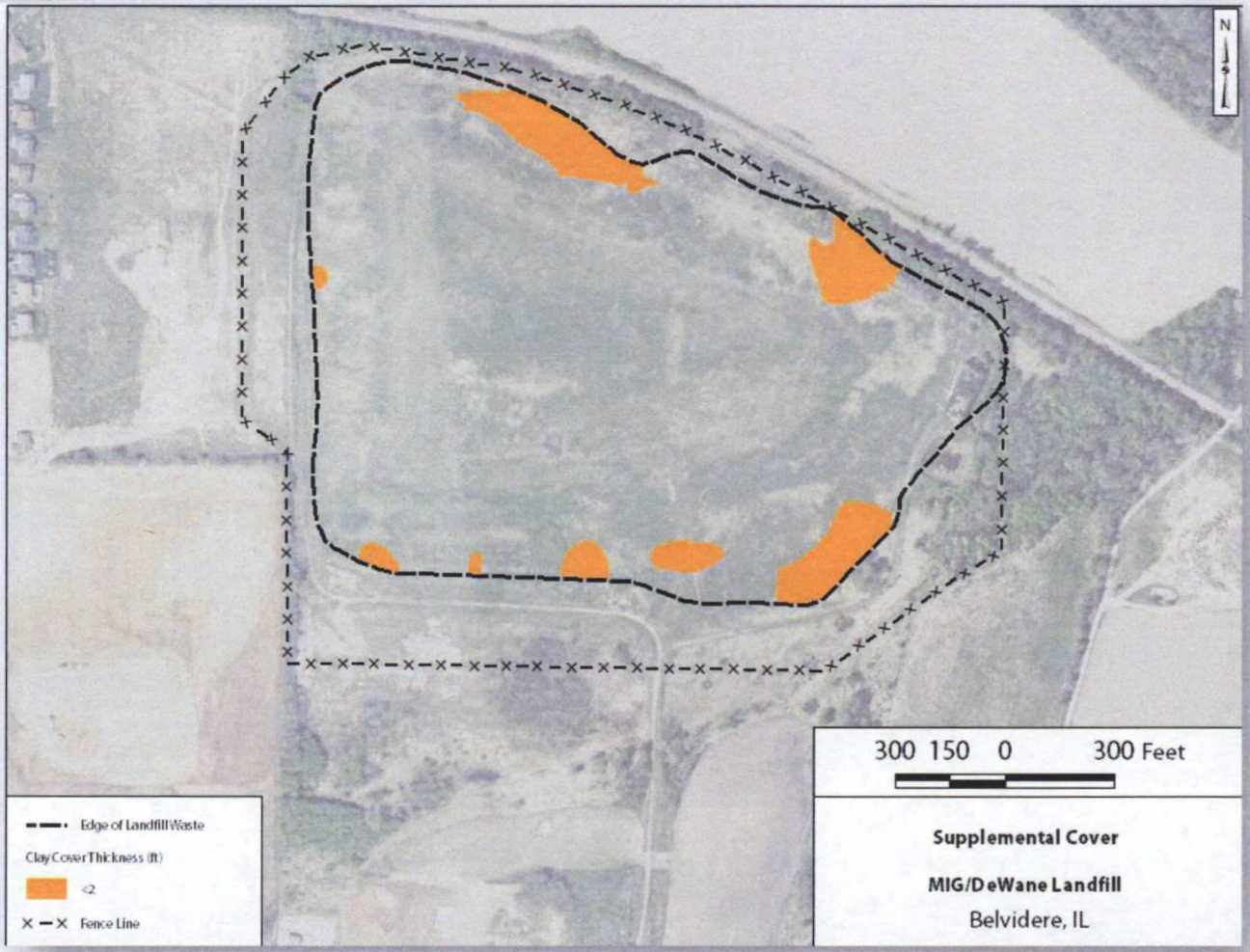
Planned Landfill Improvements

Improvement of the of the existing cover by adding supplemental compacted clay soil where needed



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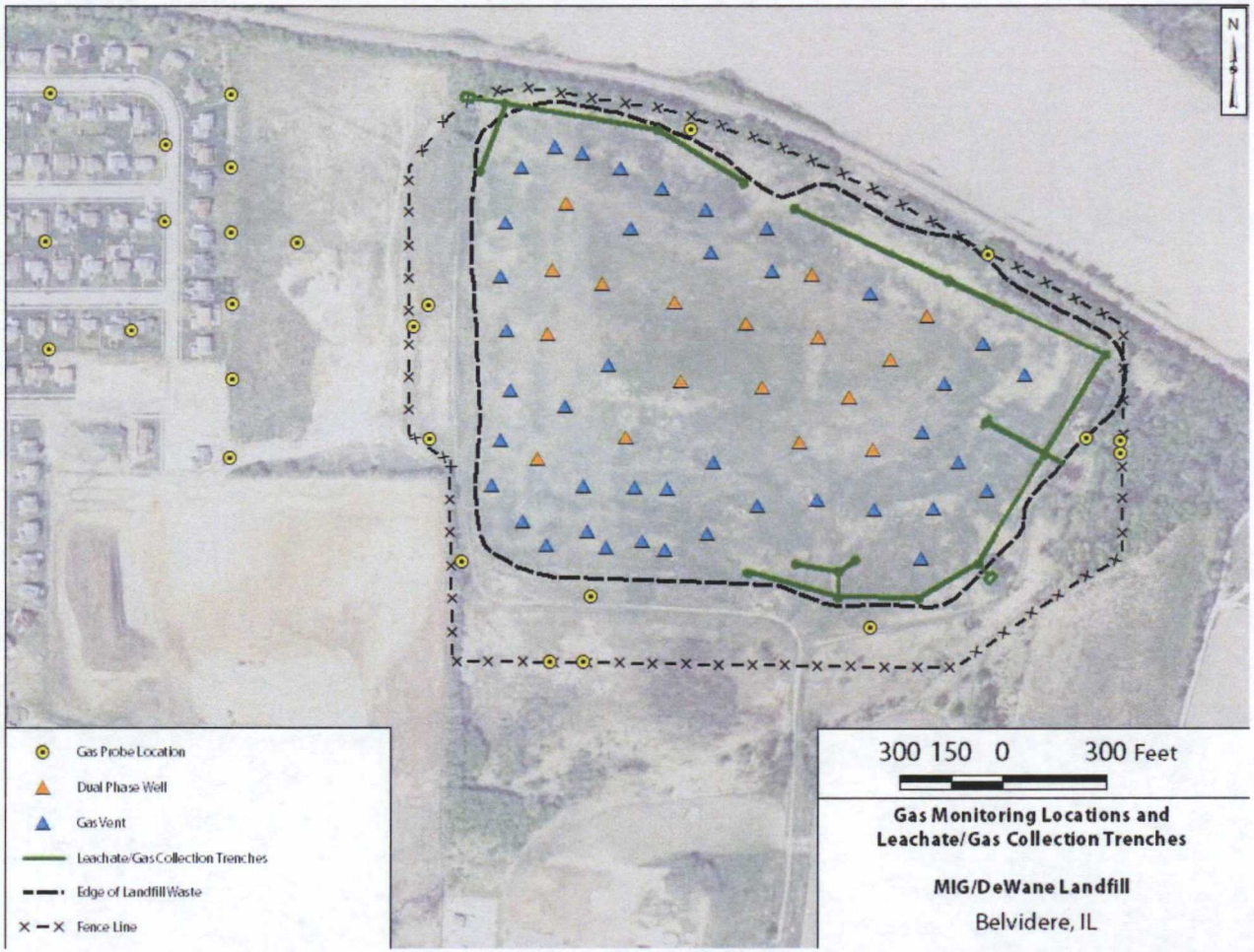
Geosyntec consultants

Planned Landfill Improvements

Construct gas management system and continue gas monitoring program



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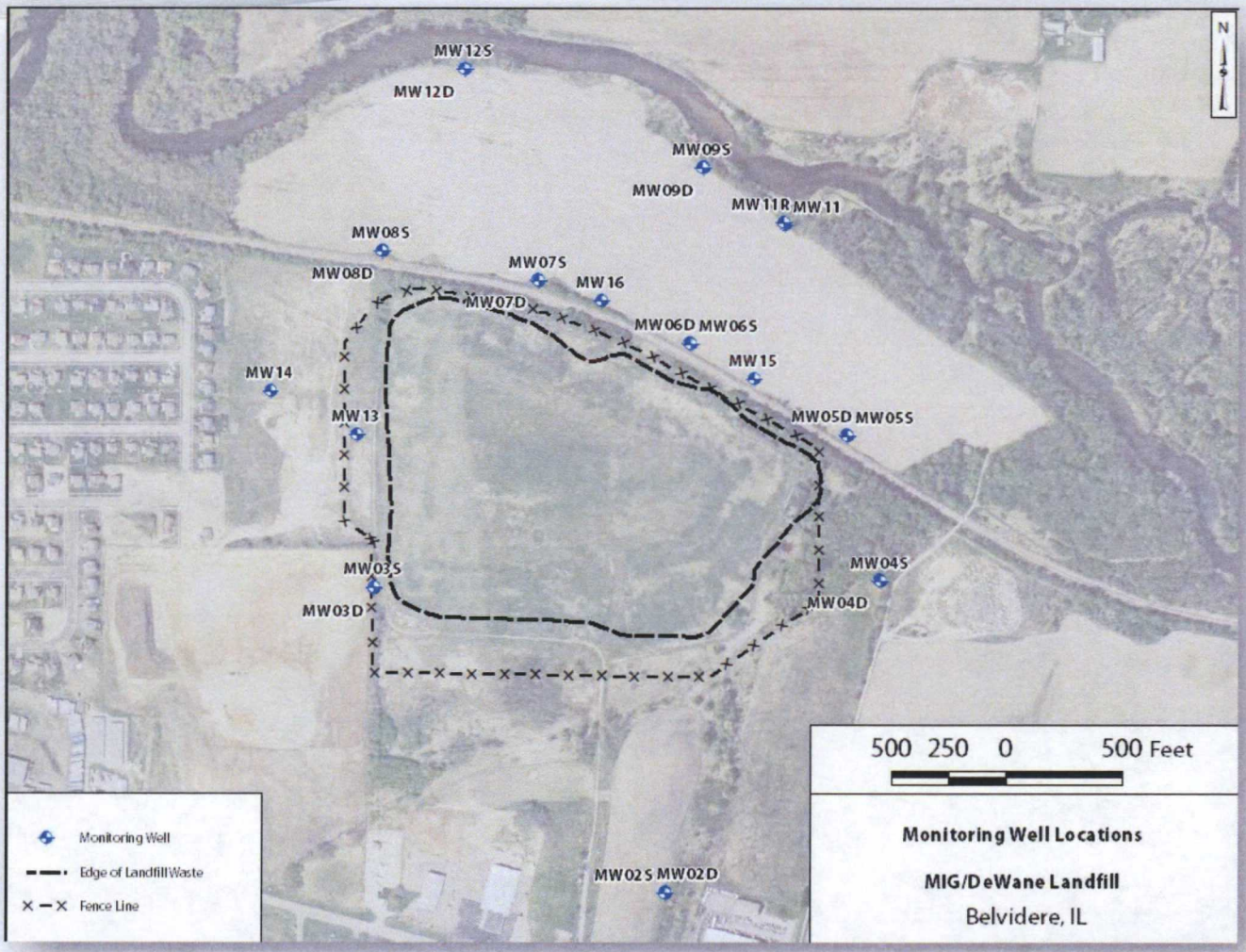
Planned Landfill Improvements

Begin the post-remedy groundwater monitoring program



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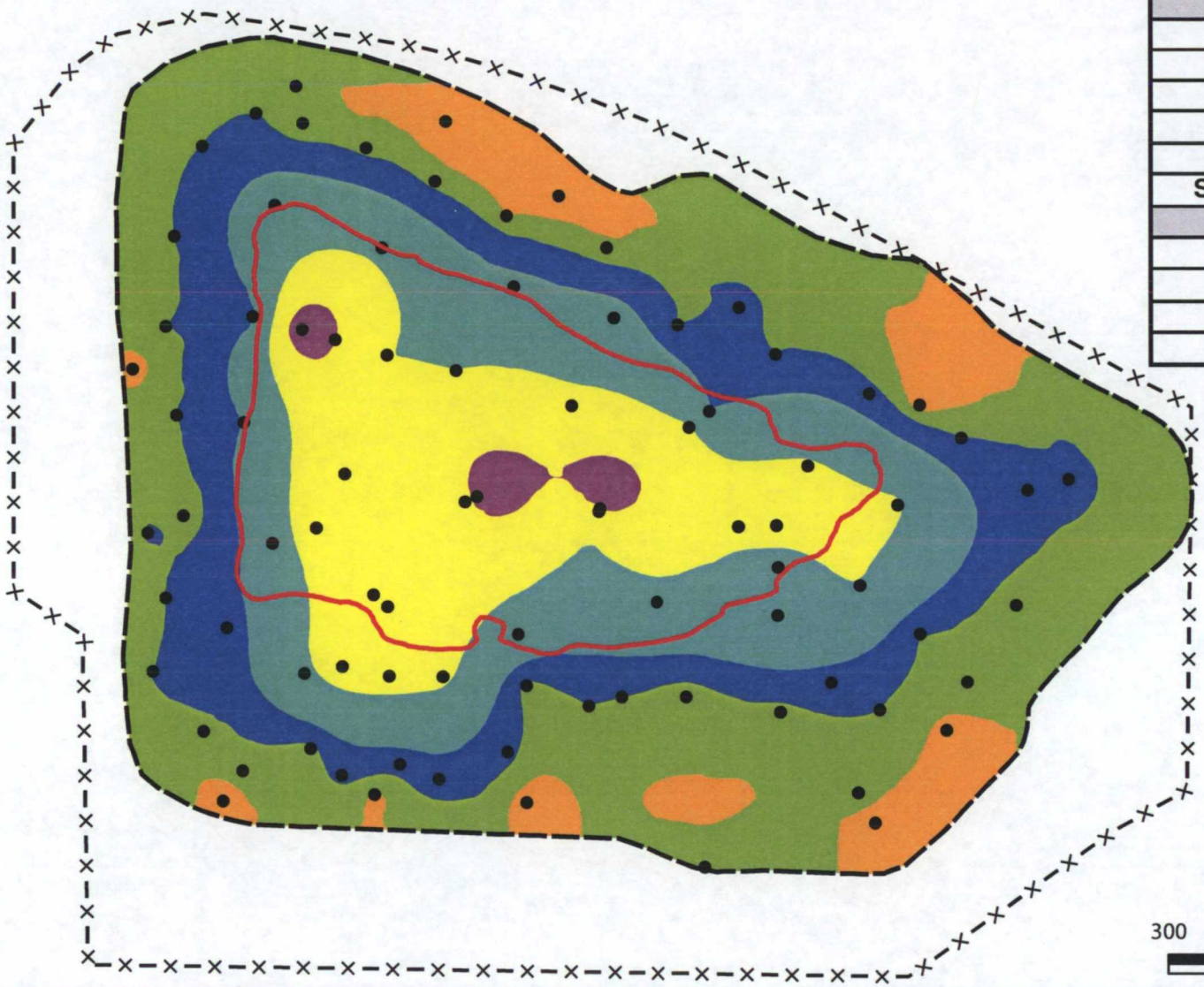
Appendix 2



Clay Cover Thickness	Area (Acres)
Side Slope	
<2 ft	4.08
2 to 3 ft	15.18
3 to 5 ft	8.15
5 to 10 ft	5.41
10 to 15 ft	0.96
Side Slope Total	**33.78**
Crest	
<10 ft	4.63
10 to 15 ft	7.71
>15 ft	0.66
Crest Total	**13.00**

N

300 150 0 300 Feet

Legend

Clay Cover Thickness (ft)

- <2
- 2-3
- 3-5
- 5-10
- 10-15
- >15

- Edge of Landfill Waste
- Measuring Point
- Top of Landfill
- Fence Line

Landfill Cover Thickness Map
MIG/DeWane Landfill
Belvidere, IL

Geosyntec consultants

Chicago | 10-Aug-2012

Figure **A2-1**

Table A2-1. Hydraulic Efficiency . ates for ROD Cover System
MIG/DeWane

Cover System	Area (ac)	Precipitation (cf/ac/yr)(1)	Total Annual Precipitation (cf/yr)(2)	Infiltration (cf/ac/yr)(3)	Total Annual Infiltration (cf/yr)(4)	Hydraulic Efficiency (%)(5)	Total Average Hydraulic Efficiency (%)(6)
ROD Cover Crest	13.00	118,300	1,538,000	54.86	713.2	99.95%	99.96%
ROD Cover Sideslope	33.78	118,300	3,996,000	46.23	1,562	99.96%	

Notes:
(1) All data is rounded to 4 significant digits
(2) The precipitation is determined from the output of HELP analyses.
(3) Total annual precipitation is calculated by multiplying the precipitation by the respective landfill area.
(4) The infiltration is determined from the output of HELP analyses, assuming the following inputs:

	Soil layer	Soil layer for HELP	Layer thickness (in)	Hydraulic Conductivity (cm/s)
Crest	Vegetative Layer	Vertical percolation layer	6.00	3.70E-04
	Protective Layer	Vertical percolation layer	24.00	9.00E-06
	Geocomposite	Lateral drainage layer	0.25	3.30E+00
	GCL w/ GM on tip	Flexible membrane liner	0.20	5.00E-09
	Low permeability la	Vertical percolation layer	24.00	1.00E-07
Sideslope	Vegetative Layer	Vertical percolation layer	6.00	3.70E-04
	Protective Layer	Vertical percolation layer	24.00	9.00E-06
	Geocomposite	Lateral drainage layer	0.25	3.30E+00
	GCL w/ GM on tip	Flexible membrane liner	0.20	5.00E-09
	Subsoil	Vertical percolation layer	24.00	1.00E-05

(4) Total annual infiltration is calculated by multiplying the infiltration by the respective landfill area.
(5) The hydraulic efficiency is calculated by the following formula:

1 - (Total Annual Infiltration / Total Annual Precipitation)

(6) The total average hydraulic efficiency is calculated by the following formula:

$$\Sigma[h_i \times (sa_i / A)]$$

Where: h_i=hydraulic efficiency for Subarea i
sa_i=surface area of Subarea i
A=total surface area of the landfill

```
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**                                                                          **
**                                                                          **
**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE               **
**                HELP MODEL VERSION 3.07  (1 NOVEMBER 1997)                **
**                  DEVELOPED BY ENVIRONMENTAL LABORATORY                   **
**                    USAE WATERWAYS EXPERIMENT STATION                     **
**             FOR USEPA RISK REDUCTION ENGINEERING LABORATORY              **
**                                                                          **
**                                                                          **
******************************************************************************
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PRECIPITATION DATA FILE:     C:\help3\DATA4.D4
TEMPERATURE DATA FILE:       c:\help3\DATA7.D7
SOLAR RADIATION DATA FILE:   c:\help3\DATA13.D13
EVAPOTRANSPIRATION DATA:     c:\help3\DATA11.D11
SOIL AND DESIGN DATA FILE:   c:\help3\SOW-SS.D10
OUTPUT DATA FILE:            c:\help3\SOW-SS.OUT


TIME:  16: 3     DATE:   5/ 7/2012


******************************************************************************

     TITLE:  SOW - Side

******************************************************************************


     NOTE:  INITIAL MOISTURE CONTENT OF THE LAYERS AND SNOW WATER WERE
              COMPUTED AS NEARLY STEADY-STATE VALUES BY THE PROGRAM.


                                   LAYER  1
                                   --------

                     TYPE 1 - VERTICAL PERCOLATION LAYER
                         MATERIAL TEXTURE NUMBER   8
          THICKNESS                    =      6.00   INCHES
          POROSITY                     =      0.4630 VOL/VOL
          FIELD CAPACITY               =      0.2320 VOL/VOL
          WILTING POINT                =      0.1160 VOL/VOL
          INITIAL SOIL WATER CONTENT   =      0.3476 VOL/VOL
          EFFECTIVE SAT. HYD. COND.    =  0.369999994000E-03 CM/SEC
        NOTE:  SATURATED HYDRAULIC CONDUCTIVITY IS MULTIPLIED BY  3.00
                 FOR ROOT CHANNELS IN TOP HALF OF EVAPORATIVE ZONE.


                                   LAYER  2
                                   --------
```

```
          TYPE 1 - VERTICAL PERCOLATION LAYER
              MATERIAL TEXTURE NUMBER  23
THICKNESS                    =     24.00   INCHES
POROSITY                     =      0.4610 VOL/VOL
FIELD CAPACITY               =      0.3600 VOL/VOL
WILTING POINT                =      0.2030 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.3960 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.900000032000E-05 CM/SEC


                        LAYER  3
                        --------

            TYPE 2 - LATERAL DRAINAGE LAYER
              MATERIAL TEXTURE NUMBER   0
THICKNESS                    =      0.25   INCHES
POROSITY                     =      0.8500 VOL/VOL
FIELD CAPACITY               =      0.0100 VOL/VOL
WILTING POINT                =      0.0050 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.0158 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =   3.29999995000     CM/SEC
SLOPE                        =     13.00   PERCENT
DRAINAGE LENGTH              =    260.0    FEET


                        LAYER  4
                        --------

            TYPE 4 - FLEXIBLE MEMBRANE LINER
              MATERIAL TEXTURE NUMBER   0
THICKNESS                    =      0.20   INCHES
POROSITY                     =      0.0000 VOL/VOL
FIELD CAPACITY               =      0.0000 VOL/VOL
WILTING POINT                =      0.0000 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.0000 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.499999997000E-08 CM/SEC
FML PINHOLE DENSITY          =      1.00   HOLES/ACRE
FML INSTALLATION DEFECTS     =      5.00   HOLES/ACRE
FML PLACEMENT QUALITY        =  3 - GOOD


                        LAYER  5
                        --------

          TYPE 1 - VERTICAL PERCOLATION LAYER
              MATERIAL TEXTURE NUMBER   0
THICKNESS                    =     24.00   INCHES
POROSITY                     =      0.4270 VOL/VOL
FIELD CAPACITY               =      0.4180 VOL/VOL
WILTING POINT                =      0.3670 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.4167 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.999999975000E-05 CM/SEC
```

GENERAL DESIGN AND EVAPORATIVE ZONE DATA

NOTE: SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT SOIL DATA BASE USING SOIL TEXTURE # 8 WITH A GOOD STAND OF GRASS, A SURFACE SLOPE OF 13.% AND A SLOPE LENGTH OF 260. FEET.

SCS RUNOFF CURVE NUMBER	=	74.00	
FRACTION OF AREA ALLOWING RUNOFF	=	100.0	PERCENT
AREA PROJECTED ON HORIZONTAL PLANE	=	1.000	ACRES
EVAPORATIVE ZONE DEPTH	=	20.0	INCHES
INITIAL WATER IN EVAPORATIVE ZONE	=	7.947	INCHES
UPPER LIMIT OF EVAPORATIVE STORAGE	=	9.232	INCHES
LOWER LIMIT OF EVAPORATIVE STORAGE	=	3.538	INCHES
INITIAL SNOW WATER	=	0.000	INCHES
INITIAL WATER IN LAYER MATERIALS	=	21.593	INCHES
TOTAL INITIAL WATER	=	21.593	INCHES
TOTAL SUBSURFACE INFLOW	=	0.00	INCHES/YEAR

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM CHICAGO ILLINOIS

STATION LATITUDE	=	42.26	DEGREES
MAXIMUM LEAF AREA INDEX	=	2.00	
START OF GROWING SEASON (JULIAN DATE)	=	117	
END OF GROWING SEASON (JULIAN DATE)	=	290	
EVAPORATIVE ZONE DEPTH	=	20.0	INCHES
AVERAGE ANNUAL WIND SPEED	=	10.30	MPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	71.00	%
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	65.00	%
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	70.00	%
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	72.00	%

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING COEFFICIENTS FOR CHICAGO ILLINOIS

NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
1.60	1.31	2.59	3.66	3.15	4.08
3.63	3.53	3.35	2.28	2.06	2.10

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING COEFFICIENTS FOR CHICAGO ILLINOIS

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
21.40	26.00	36.00	48.80	59.10	68.60

73.00	71.90	64.70	53.50	39.80	27.70

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR CHICAGO ILLINOIS
AND STATION LATITUDE = 42.26 DEGREES

****

AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 30

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	1.47	1.46	2.39	3.26	3.34	4.22
	3.43	3.42	3.11	2.19	2.10	2.22
STD. DEVIATIONS	0.68	0.71	1.18	1.52	1.65	2.14
	1.83	1.76	1.76	1.22	1.06	0.97
RUNOFF						
TOTALS	0.150	0.740	1.663	0.261	0.033	0.091
	0.093	0.040	0.031	0.005	0.003	0.090
STD. DEVIATIONS	0.309	0.647	1.389	0.491	0.175	0.364
	0.299	0.120	0.118	0.027	0.009	0.181
EVAPOTRANSPIRATION						
TOTALS	0.538	0.459	0.818	3.005	3.584	4.734
	3.816	3.212	2.273	1.369	0.941	0.581
STD. DEVIATIONS	0.111	0.083	0.438	0.689	1.067	1.077
	1.696	1.634	1.001	0.347	0.226	0.154
LATERAL DRAINAGE COLLECTED FROM LAYER 3						
TOTALS	0.0556	0.0000	0.5113	1.6535	0.5707	0.1249
	0.1281	0.0136	0.0118	0.1715	0.4334	0.4775
STD. DEVIATIONS	0.1730	0.0000	0.5877	0.9432	0.6945	0.2771
	0.4397	0.0528	0.0381	0.4561	0.8054	0.4957
PERCOLATION/LEAKAGE THROUGH LAYER 4						
TOTALS	0.0004	0.0000	0.0008	0.0037	0.0023	0.0006
	0.0004	0.0001	0.0001	0.0007	0.0013	0.0023
STD. DEVIATIONS	0.0010	0.0000	0.0010	0.0012	0.0016	0.0011
	0.0010	0.0004	0.0003	0.0015	0.0017	0.0019
PERCOLATION/LEAKAGE THROUGH LAYER 5						
TOTALS	0.0014	0.0000	0.0027	0.0014	0.0027	0.0014

	0.0000	0.0000	0.0000	0.0000	0.0000	0.0027
STD. DEVIATIONS	0.0074	0.0000	0.0103	0.0074	0.0103	0.0074
	0.0000	0.0000	0.0000	0.0000	0.0000	0.0103

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)

DAILY AVERAGE HEAD ON TOP OF LAYER 4

AVERAGES	0.0002	0.0000	0.0018	0.0060	0.0020	0.0005
	0.0005	0.0000	0.0000	0.0006	0.0016	0.0017
STD. DEVIATIONS	0.0006	0.0000	0.0021	0.0034	0.0024	0.0010
	0.0015	0.0002	0.0001	0.0016	0.0029	0.0018

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AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 30

	INCHES		CU. FEET	PERCENT
PRECIPITATION	32.60	(5.565)	118325.9	100.00
RUNOFF	3.200	(1.6964)	11616.77	9.818
EVAPOTRANSPIRATION	25.331	(4.0295)	91950.68	77.710
LATERAL DRAINAGE COLLECTED FROM LAYER 3	4.15205	(1.69465)	15071.948	12.73766
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.01274	(0.00460)	46.230	0.03907
AVERAGE HEAD ON TOP OF LAYER 4	0.001	(0.001)		
PERCOLATION/LEAKAGE THROUGH LAYER 5	0.01220	(0.01896)	44.301	0.03744
CHANGE IN WATER STORAGE	-0.099	(1.4253)	-357.80	-0.302

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PEAK DAILY VALUES FOR YEARS 1 THROUGH 30

	(INCHES)	(CU. FT.)
PRECIPITATION	4.09	14846.700
RUNOFF	1.860	6751.2715

DRAINAGE COLLECTED FROM LAYER 3	0.29456	1069.24341
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.000174	0.63327
AVERAGE HEAD ON TOP OF LAYER 4	0.032	
MAXIMUM HEAD ON TOP OF LAYER 4	0.064	
LOCATION OF MAXIMUM HEAD IN LAYER 3 (DISTANCE FROM DRAIN)	0.0 FEET	
PERCOLATION/LEAKAGE THROUGH LAYER 5	0.040710	147.77733
SNOW WATER	4.86	17650.7129

MAXIMUM VEG. SOIL WATER (VOL/VOL)	0.4578
MINIMUM VEG. SOIL WATER (VOL/VOL)	0.1769

*** Maximum heads are computed using McEnroe's equations. ***

Reference: Maximum Saturated Depth over Landfill Liner
by Bruce M. McEnroe, University of Kansas
ASCE Journal of Environmental Engineering
Vol. 119, No. 2, March 1993, pp. 262-270.

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FINAL WATER STORAGE AT END OF YEAR 30

LAYER	(INCHES)	(VOL/VOL)
1	1.1635	0.1939
2	7.1375	0.2974
3	0.0025	0.0100
4	0.0000	0.0000
5	10.0158	0.4173
SNOW WATER	0.316	

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**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE               **
**                HELP MODEL VERSION 3.07  (1 NOVEMBER 1997)                **
**                  DEVELOPED BY ENVIRONMENTAL LABORATORY                   **
**                    USAE WATERWAYS EXPERIMENT STATION                     **
**             FOR USEPA RISK REDUCTION ENGINEERING LABORATORY              **
**                                                                          **
**                                                                          **
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PRECIPITATION DATA FILE:     C:\help3\DATA4.D4
TEMPERATURE DATA FILE:       c:\help3\DATA7.D7
SOLAR RADIATION DATA FILE:   c:\help3\DATA13.D13
EVAPOTRANSPIRATION DATA:     c:\help3\DATA11.D11
SOIL AND DESIGN DATA FILE:   c:\help3\SOW-CRST.D10
OUTPUT DATA FILE:            c:\help3\SOW-SD.OUT


TIME:  14:39     DATE:   4/23/2012


******************************************************************************

     TITLE:  SOW - Crest

******************************************************************************


     NOTE:  INITIAL MOISTURE CONTENT OF THE LAYERS AND SNOW WATER WERE
              COMPUTED AS NEARLY STEADY-STATE VALUES BY THE PROGRAM.


                                  LAYER  1
                                  --------

                  TYPE 1 - VERTICAL PERCOLATION LAYER
                      MATERIAL TEXTURE NUMBER   8
       THICKNESS                    =      6.00   INCHES
       POROSITY                     =      0.4630 VOL/VOL
       FIELD CAPACITY               =      0.2320 VOL/VOL
       WILTING POINT                =      0.1160 VOL/VOL
       INITIAL SOIL WATER CONTENT   =      0.3363 VOL/VOL
       EFFECTIVE SAT. HYD. COND.    =  0.369999994000E-03 CM/SEC
     NOTE:  SATURATED HYDRAULIC CONDUCTIVITY IS MULTIPLIED BY  3.00
              FOR ROOT CHANNELS IN TOP HALF OF EVAPORATIVE ZONE.


                                  LAYER  2
                                  --------
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```
          TYPE 1 - VERTICAL PERCOLATION LAYER
              MATERIAL TEXTURE NUMBER  23
THICKNESS                    =     24.00   INCHES
POROSITY                     =      0.4610 VOL/VOL
FIELD CAPACITY               =      0.3600 VOL/VOL
WILTING POINT                =      0.2030 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.3974 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.900000032000E-05 CM/SEC


                        LAYER  3
                        --------

            TYPE 2 - LATERAL DRAINAGE LAYER
              MATERIAL TEXTURE NUMBER   0
THICKNESS                    =      0.25   INCHES
POROSITY                     =      0.8500 VOL/VOL
FIELD CAPACITY               =      0.0100 VOL/VOL
WILTING POINT                =      0.0050 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.0399 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =   3.29999995000     CM/SEC
SLOPE                        =      4.00   PERCENT
DRAINAGE LENGTH              =    410.0    FEET


                        LAYER  4
                        --------

            TYPE 4 - FLEXIBLE MEMBRANE LINER
              MATERIAL TEXTURE NUMBER   0
THICKNESS                    =      0.20   INCHES
POROSITY                     =      0.0000 VOL/VOL
FIELD CAPACITY               =      0.0000 VOL/VOL
WILTING POINT                =      0.0000 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.0000 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.499999997000E-08 CM/SEC
FML PINHOLE DENSITY          =      1.00   HOLES/ACRE
FML INSTALLATION DEFECTS     =      5.00   HOLES/ACRE
FML PLACEMENT QUALITY        =  3 - GOOD


                        LAYER  5
                        --------

          TYPE 1 - VERTICAL PERCOLATION LAYER
              MATERIAL TEXTURE NUMBER  16
THICKNESS                    =     24.00   INCHES
POROSITY                     =      0.4270 VOL/VOL
FIELD CAPACITY               =      0.4180 VOL/VOL
WILTING POINT                =      0.3670 VOL/VOL
INITIAL SOIL WATER CONTENT   =      0.4179 VOL/VOL
EFFECTIVE SAT. HYD. COND.    =  0.100000001000E-06 CM/SEC
```

GENERAL DESIGN AND EVAPORATIVE ZONE DATA

NOTE: SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT SOIL DATA BASE USING SOIL TEXTURE # 8 WITH A GOOD STAND OF GRASS, A SURFACE SLOPE OF 4.% AND A SLOPE LENGTH OF 410. FEET.

SCS RUNOFF CURVE NUMBER	=	72.30	
FRACTION OF AREA ALLOWING RUNOFF	=	100.0	PERCENT
AREA PROJECTED ON HORIZONTAL PLANE	=	1.000	ACRES
EVAPORATIVE ZONE DEPTH	=	20.0	INCHES
INITIAL WATER IN EVAPORATIVE ZONE	=	7.913	INCHES
UPPER LIMIT OF EVAPORATIVE STORAGE	=	9.232	INCHES
LOWER LIMIT OF EVAPORATIVE STORAGE	=	3.538	INCHES
INITIAL SNOW WATER	=	0.000	INCHES
INITIAL WATER IN LAYER MATERIALS	=	21.595	INCHES
TOTAL INITIAL WATER	=	21.595	INCHES
TOTAL SUBSURFACE INFLOW	=	0.00	INCHES/YEAR

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM CHICAGO ILLINOIS

STATION LATITUDE	=	42.26	DEGREES
MAXIMUM LEAF AREA INDEX	=	2.00	
START OF GROWING SEASON (JULIAN DATE)	=	117	
END OF GROWING SEASON (JULIAN DATE)	=	290	
EVAPORATIVE ZONE DEPTH	=	20.0	INCHES
AVERAGE ANNUAL WIND SPEED	=	10.30	MPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	71.00	%
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	65.00	%
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	70.00	%
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	72.00	%

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING COEFFICIENTS FOR CHICAGO ILLINOIS

NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
1.60	1.31	2.59	3.66	3.15	4.08
3.63	3.53	3.35	2.28	2.06	2.10

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING COEFFICIENTS FOR CHICAGO ILLINOIS

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
21.40	26.00	36.00	48.80	59.10	68.60

73.00	71.90	64.70	53.50	39.80	27.70

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR CHICAGO ILLINOIS
AND STATION LATITUDE = 42.26 DEGREES

****

AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 30

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	1.47	1.46	2.39	3.26	3.34	4.22
	3.43	3.42	3.11	2.19	2.10	2.22
STD. DEVIATIONS	0.68	0.71	1.18	1.52	1.65	2.14
	1.83	1.76	1.76	1.22	1.06	0.97
RUNOFF						
TOTALS	0.148	0.734	1.657	0.258	0.029	0.087
	0.090	0.037	0.032	0.006	0.001	0.089
STD. DEVIATIONS	0.308	0.646	1.391	0.490	0.154	0.359
	0.295	0.120	0.120	0.033	0.005	0.180
EVAPOTRANSPIRATION						
TOTALS	0.538	0.459	0.818	3.008	3.582	4.731
	3.809	3.212	2.277	1.373	0.943	0.582
STD. DEVIATIONS	0.111	0.083	0.438	0.689	1.070	1.081
	1.695	1.634	1.001	0.348	0.226	0.154
LATERAL DRAINAGE COLLECTED FROM LAYER 3						
TOTALS	0.0576	0.0000	0.5088	1.6608	0.5871	0.1304
	0.1297	0.0151	0.0118	0.1720	0.4296	0.4778
STD. DEVIATIONS	0.1764	0.0000	0.5902	0.9506	0.7083	0.2754
	0.4374	0.0660	0.0352	0.4563	0.8027	0.5028
PERCOLATION/LEAKAGE THROUGH LAYER 4						
TOTALS	0.0005	0.0000	0.0009	0.0039	0.0028	0.0010
	0.0006	0.0002	0.0002	0.0008	0.0016	0.0026
STD. DEVIATIONS	0.0011	0.0000	0.0010	0.0012	0.0015	0.0011
	0.0011	0.0005	0.0004	0.0016	0.0019	0.0021
PERCOLATION/LEAKAGE THROUGH LAYER 5						
TOTALS	0.0007	0.0000	0.0012	0.0053	0.0039	0.0013

	0.0008	0.0002	0.0003	0.0010	0.0021	0.0035
STD. DEVIATIONS	0.0017	0.0000	0.0014	0.0017	0.0022	0.0014
	0.0014	0.0006	0.0006	0.0021	0.0025	0.0029

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)

DAILY AVERAGE HEAD ON TOP OF LAYER 4

AVERAGES	0.0010	0.0000	0.0090	0.0304	0.0104	0.0024
	0.0023	0.0003	0.0002	0.0030	0.0079	0.0085
STD. DEVIATIONS	0.0031	0.0000	0.0104	0.0174	0.0125	0.0050
	0.0077	0.0012	0.0006	0.0081	0.0147	0.0089

AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 30

	INCHES		CU. FEET	PERCENT
PRECIPITATION	32.60	(5.565)	118325.9	100.00
RUNOFF	3.168	(1.6918)	11500.26	9.719
EVAPOTRANSPIRATION	25.332	(4.0335)	91953.53	77.712
LATERAL DRAINAGE COLLECTED FROM LAYER 3	4.18076	(1.69497)	15176.155	12.82572
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.01511	(0.00516)	54.855	0.04636
AVERAGE HEAD ON TOP OF LAYER 4	0.006	(0.003)		
PERCOLATION/LEAKAGE THROUGH LAYER 5	0.02029	(0.00695)	73.646	0.06224
CHANGE IN WATER STORAGE	-0.104	(1.4197)	-377.70	-0.319

PEAK DAILY VALUES FOR YEARS 1 THROUGH 30

	(INCHES)	(CU. FT.)
PRECIPITATION	4.09	14846.700
RUNOFF	1.857	6740.7139

DRAINAGE COLLECTED FROM LAYER 3	0.29296	1063.42981
PERCOLATION/LEAKAGE THROUGH LAYER 4	0.000171	0.61964
AVERAGE HEAD ON TOP OF LAYER 4	0.161	
MAXIMUM HEAD ON TOP OF LAYER 4	0.319	
LOCATION OF MAXIMUM HEAD IN LAYER 3 (DISTANCE FROM DRAIN)	2.8 FEET	
PERCOLATION/LEAKAGE THROUGH LAYER 5	0.000541	1.96318
SNOW WATER	4.86	17650.7129

MAXIMUM VEG. SOIL WATER (VOL/VOL)	0.4570
MINIMUM VEG. SOIL WATER (VOL/VOL)	0.1769

*** Maximum heads are computed using McEnroe's equations. ***

Reference: Maximum Saturated Depth over Landfill Liner
by Bruce M. McEnroe, University of Kansas
ASCE Journal of Environmental Engineering
Vol. 119, No. 2, March 1993, pp. 262-270.

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FINAL WATER STORAGE AT END OF YEAR 30

LAYER	(INCHES)	(VOL/VOL)
1	1.1636	0.1939
2	7.1165	0.2965
3	0.0025	0.0100
4	0.0000	0.0000
5	9.8750	0.4115
SNOW WATER	0.316	

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Table A2-2. Hydraulic Efficiency E es for Existing Cover System
MIG/DeWane

Cover System	Average Clay Thickness (in.)	Area (ac)[1]	Precipitation (cf/ac/yr)[2]	Total Annual Precipitation (cf/yr)[3]	Infiltration (cf/ac/yr)[4]	Total Annual Infiltration (cf/yr)[5]	Hydraulic Efficiency (%)[6]	Average Total Hydraulic Efficiency (%)[7]
Existing Crest								98.15%
< 10 ft Thick Clay	90.00	4.630	118,300	547,700	2,135	9,884	98.20%	
10 - 15 ft Thick Clay	137.5	7.710	118,300	912,100	2,116	16,310	98.21%	
> 15 ft Thick Clay	213.0	0.660	118,300	78,080	2,104	1,389	98.22%	
Existing Sideslope								
< 2 ft Thick Clay	18.800	4.080	118,300	482,700	2,326	9,491	98.03%	
2-3 ft Thick Clay	27.500	15.18	118,300	1,796,000	2,242	34,040	98.10%	
3-5 ft Thick Clay	39.500	8.150	118,300	964,100	2,184	17,800	98.15%	
5-10 ft Thick Clay	85.000	5.410	118,300	640,000	2,114	11,430	98.21%	
> 10 ft Thick Clay	133.2	0.960	118,300	113,600	2,086	2,002	98.24%	

Notes:
(1) All data is rounded to 4 significant digits
(2) The area of sideslope and crest clay thickness intervals was determined from Figure A2-1.
(3) The precipitation is determined from the output of HELP analyses.
(4) Total annual precipitation is calculated by multiplying the precipitation by the respective landfill area.
(5) The infiltration is determined from the output of HELP analyses, assuming the following inputs:

	Thickness (in.)	Effective Saturated Hydraulic Conductivity (cm/s)
Crest topsoil:	6	9.00E-06
Crest clay layer:	See Table Above	1.00E-07
Sideslope topsoil:	7.2	9.00E-06
Sideslope clay layer:	See Table Above	1.00E-07

(5) Total annual infiltration is calculated by multiplying the infiltration by the respective landfill area.
(6) The hydraulic efficiency is calculated by the following formula:

1 - (Total Annual Infiltration / Total Annual Precipitation)

(7) The total average hydraulic efficiency is calculated by the following formula:

$\Sigma[h_i \times (sa_i / A)]$

Where: h_i=hydraulic efficiency for Subarea i
sa_i=surface area of Subarea i
A=total surface area of the landfill

(8) The crest and side slope are separated by the 835 ft elevation contour.

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**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE               **
**                HELP MODEL VERSION 3.07  (1 NOVEMBER 1997)                **
**                  DEVELOPED BY ENVIRONMENTAL LABORATORY                   **
**                    USAE WATERWAYS EXPERIMENT STATION                     **
**             FOR USEPA RISK REDUCTION ENGINEERING LABORATORY              **
**                                                                          **
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PRECIPITATION DATA FILE:     C:\HELP3\MIG\DATA4.D4
TEMPERATURE DATA FILE:       C:\HELP3\MIG\DATA7.D7
SOLAR RADIATION DATA FILE:   C:\HELP3\MIG\DATA13.D13
EVAPOTRANSPIRATION DATA:     C:\HELP3\MIG\DATA11.D11
SOIL AND DESIGN DATA FILE:   C:\HELP3\MIG\CR15PLUS.D10
OUTPUT DATA FILE:            C:\HELP3\MIG\CR15PLUS.OUT


TIME:   9:34     DATE:   8/ 9/2012


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     TITLE:  Existing Top of Landfill - > 15 ft Thick

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     NOTE:  INITIAL MOISTURE CONTENT OF THE LAYERS AND SNOW WATER WERE
              COMPUTED AS NEARLY STEADY-STATE VALUES BY THE PROGRAM.


                                  LAYER  1
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                     TYPE 1 - VERTICAL PERCOLATION LAYER
                         MATERIAL TEXTURE NUMBER  23
        THICKNESS                    =      6.00   INCHES
        POROSITY                     =      0.4610 VOL/VOL
        FIELD CAPACITY               =      0.3600 VOL/VOL
        WILTING POINT                =      0.2030 VOL/VOL
        INITIAL SOIL WATER CONTENT   =      0.4541 VOL/VOL
        EFFECTIVE SAT. HYD. COND.    =  0.900000032000E-05 CM/SEC
      NOTE:  SATURATED HYDRAULIC CONDUCTIVITY IS MULTIPLIED BY  3.00
              FOR ROOT CHANNELS IN TOP HALF OF EVAPORATIVE ZONE.


                                  LAYER  2
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TYPE 3 - BARRIER SOIL LINER
MATERIAL TEXTURE NUMBER 16

THICKNESS	=	213.00	INCHES
POROSITY	=	0.4270	VOL/VOL
FIELD CAPACITY	=	0.4180	VOL/VOL
WILTING POINT	=	0.3670	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.4270	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.100000001000E-06	CM/SEC

GENERAL DESIGN AND EVAPORATIVE ZONE DATA

NOTE: SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT SOIL DATA BASE USING SOIL TEXTURE #23 WITH A GOOD STAND OF GRASS, A SURFACE SLOPE OF 4.% AND A SLOPE LENGTH OF 410. FEET.

SCS RUNOFF CURVE NUMBER	=	86.90	
FRACTION OF AREA ALLOWING RUNOFF	=	100.0	PERCENT
AREA PROJECTED ON HORIZONTAL PLANE	=	1.000	ACRES
EVAPORATIVE ZONE DEPTH	=	6.0	INCHES
INITIAL WATER IN EVAPORATIVE ZONE	=	2.724	INCHES
UPPER LIMIT OF EVAPORATIVE STORAGE	=	2.766	INCHES
LOWER LIMIT OF EVAPORATIVE STORAGE	=	1.218	INCHES
INITIAL SNOW WATER	=	0.000	INCHES
INITIAL WATER IN LAYER MATERIALS	=	93.675	INCHES
TOTAL INITIAL WATER	=	93.675	INCHES
TOTAL SUBSURFACE INFLOW	=	0.00	INCHES/YEAR

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM CHICAGO ILLINOIS

STATION LATITUDE	=	42.26	DEGREES
MAXIMUM LEAF AREA INDEX	=	2.00	
START OF GROWING SEASON (JULIAN DATE)	=	117	
END OF GROWING SEASON (JULIAN DATE)	=	290	
EVAPORATIVE ZONE DEPTH	=	6.0	INCHES
AVERAGE ANNUAL WIND SPEED	=	10.30	MPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	71.00	%
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	65.00	%
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	70.00	%
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	72.00	%

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING COEFFICIENTS FOR CHICAGO ILLINOIS

NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC

1.60	1.31	2.59	3.66	3.15	4.08
3.63	3.53	3.35	2.28	2.06	2.10

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR CHICAGO ILLINOIS

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
21.40	26.00	36.00	48.80	59.10	68.60
73.00	71.90	64.70	53.50	39.80	27.70

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR CHICAGO ILLINOIS
AND STATION LATITUDE = 42.26 DEGREES

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AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 30

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	1.47	1.46	2.39	3.26	3.34	4.22
	3.43	3.42	3.11	2.19	2.10	2.22
STD. DEVIATIONS	0.68	0.71	1.18	1.52	1.65	2.14
	1.83	1.76	1.76	1.22	1.06	0.97
RUNOFF						
TOTALS	0.465	1.438	2.288	0.917	0.309	0.471
	0.473	0.484	0.549	0.433	0.624	0.602
STD. DEVIATIONS	0.568	1.012	1.695	0.984	0.816	0.869
	0.820	0.548	0.762	0.614	0.794	0.593
EVAPOTRANSPIRATION						
TOTALS	0.537	0.450	0.827	3.004	3.118	3.541
	3.162	2.906	2.202	1.563	1.063	0.617
STD. DEVIATIONS	0.117	0.086	0.483	0.753	1.099	1.268
	1.346	1.383	1.030	0.528	0.291	0.183
PERCOLATION/LEAKAGE THROUGH LAYER 2						
TOTALS	0.0616	0.0204	0.0536	0.0705	0.0346	0.0341
	0.0215	0.0222	0.0334	0.0661	0.0715	0.0899
STD. DEVIATIONS	0.0310	0.0191	0.0247	0.0256	0.0246	0.0192

	0.0176	0.0219	0.0293	0.0408	0.0420	0.0374

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)

DAILY AVERAGE HEAD ON TOP OF LAYER 2

AVERAGES	0.2960	0.0166	0.7661	1.8796	0.7087	0.7249
	0.4259	0.5258	0.9155	1.9353	2.5318	2.2124
STD. DEVIATIONS	0.4640	0.0206	0.7403	1.2132	0.7894	0.5383
	0.4349	0.5201	0.9161	1.4542	1.7767	1.2249

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AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 30

	INCHES		CU. FEET	PERCENT
PRECIPITATION	32.60	(5.565)	118325.9	100.00
RUNOFF	9.054	(3.3309)	32867.51	27.777
EVAPOTRANSPIRATION	22.991	(3.7400)	83455.80	70.530
PERCOLATION/LEAKAGE THROUGH LAYER 2	0.57965	(0.12446)	2104.139	1.77826
AVERAGE HEAD ON TOP OF LAYER 2	1.078	(0.312)		
CHANGE IN WATER STORAGE	-0.028	(1.3944)	-101.56	-0.086

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PEAK DAILY VALUES FOR YEARS 1 THROUGH 30

	(INCHES)	(CU. FT.)
PRECIPITATION	4.09	14846.700
RUNOFF	2.753	9993.3975
PERCOLATION/LEAKAGE THROUGH LAYER 2	0.003497	12.69534
AVERAGE HEAD ON TOP OF LAYER 2	6.000	
SNOW WATER	4.86	17650.7129

MAXIMUM VEG. SOIL WATER (VOL/VOL) 0.4610

MINIMUM VEG. SOIL WATER (VOL/VOL) 0.2030

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FINAL WATER STORAGE AT END OF YEAR 30

LAYER	(INCHES)	(VOL/VOL)
1	1.5686	0.2614
2	90.9510	0.4270
SNOW WATER	0.316	

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**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE               **
**                HELP MODEL VERSION 3.07  (1 NOVEMBER 1997)                **
**                  DEVELOPED BY ENVIRONMENTAL LABORATORY                   **
**                    USAE WATERWAYS EXPERIMENT STATION                     **
**             FOR USEPA RISK REDUCTION ENGINEERING LABORATORY              **
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PRECIPITATION DATA FILE:     C:\HELP3\MIG\DATA4.D4
TEMPERATURE DATA FILE:       C:\HELP3\MIG\DATA7.D7
SOLAR RADIATION DATA FILE:   C:\HELP3\MIG\DATA13.D13
EVAPOTRANSPIRATION DATA:     C:\HELP3\MIG\DATA11.D11
SOIL AND DESIGN DATA FILE:   C:\HELP3\MIG\CR10TO15.D10
OUTPUT DATA FILE:            C:\HELP3\MIG\CR10TO15.OUT


TIME:   9:34     DATE:   8/ 9/2012


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     TITLE:  Existing Top of Landfill - 10 to 15 ft Thick

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     NOTE:  INITIAL MOISTURE CONTENT OF THE LAYERS AND SNOW WATER WERE
              COMPUTED AS NEARLY STEADY-STATE VALUES BY THE PROGRAM.


                                  LAYER  1
                                  --------

                  TYPE 1 - VERTICAL PERCOLATION LAYER
                      MATERIAL TEXTURE NUMBER  23
        THICKNESS                    =      6.00   INCHES
        POROSITY                     =      0.4610 VOL/VOL
        FIELD CAPACITY               =      0.3600 VOL/VOL
        WILTING POINT                =      0.2030 VOL/VOL
        INITIAL SOIL WATER CONTENT   =      0.4541 VOL/VOL
        EFFECTIVE SAT. HYD. COND.    =  0.900000032000E-05 CM/SEC
      NOTE:  SATURATED HYDRAULIC CONDUCTIVITY IS MULTIPLIED BY  3.00
              FOR ROOT CHANNELS IN TOP HALF OF EVAPORATIVE ZONE.


                                  LAYER  2
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TYPE 3 - BARRIER SOIL LINER
MATERIAL TEXTURE NUMBER 16

THICKNESS	=	137.50	INCHES
POROSITY	=	0.4270	VOL/VOL
FIELD CAPACITY	=	0.4180	VOL/VOL
WILTING POINT	=	0.3670	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.4270	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.100000001000E-06	CM/SEC

GENERAL DESIGN AND EVAPORATIVE ZONE DATA

NOTE: SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT SOIL DATA BASE USING SOIL TEXTURE #23 WITH A GOOD STAND OF GRASS, A SURFACE SLOPE OF 4.% AND A SLOPE LENGTH OF 410. FEET.

SCS RUNOFF CURVE NUMBER	=	86.90	
FRACTION OF AREA ALLOWING RUNOFF	=	100.0	PERCENT
AREA PROJECTED ON HORIZONTAL PLANE	=	1.000	ACRES
EVAPORATIVE ZONE DEPTH	=	6.0	INCHES
INITIAL WATER IN EVAPORATIVE ZONE	=	2.724	INCHES
UPPER LIMIT OF EVAPORATIVE STORAGE	=	2.766	INCHES
LOWER LIMIT OF EVAPORATIVE STORAGE	=	1.218	INCHES
INITIAL SNOW WATER	=	0.000	INCHES
INITIAL WATER IN LAYER MATERIALS	=	61.437	INCHES
TOTAL INITIAL WATER	=	61.437	INCHES
TOTAL SUBSURFACE INFLOW	=	0.00	INCHES/YEAR

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM CHICAGO ILLINOIS

STATION LATITUDE	=	42.26	DEGREES
MAXIMUM LEAF AREA INDEX	=	2.00	
START OF GROWING SEASON (JULIAN DATE)	=	117	
END OF GROWING SEASON (JULIAN DATE)	=	290	
EVAPORATIVE ZONE DEPTH	=	6.0	INCHES
AVERAGE ANNUAL WIND SPEED	=	10.30	MPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	71.00	%
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	65.00	%
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	70.00	%
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	72.00	%

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING COEFFICIENTS FOR CHICAGO ILLINOIS

NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC

1.60	1.31	2.59	3.66	3.15	4.08
3.63	3.53	3.35	2.28	2.06	2.10

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR CHICAGO ILLINOIS

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
21.40	26.00	36.00	48.80	59.10	68.60
73.00	71.90	64.70	53.50	39.80	27.70

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR CHICAGO ILLINOIS
AND STATION LATITUDE = 42.26 DEGREES

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AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 30

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	1.47	1.46	2.39	3.26	3.34	4.22
	3.43	3.42	3.11	2.19	2.10	2.22
STD. DEVIATIONS	0.68	0.71	1.18	1.52	1.65	2.14
	1.83	1.76	1.76	1.22	1.06	0.97
RUNOFF						
TOTALS	0.465	1.438	2.288	0.916	0.309	0.472
	0.473	0.484	0.550	0.432	0.623	0.602
STD. DEVIATIONS	0.568	1.012	1.695	0.984	0.816	0.871
	0.821	0.548	0.763	0.613	0.793	0.592
EVAPOTRANSPIRATION						
TOTALS	0.537	0.450	0.827	3.005	3.119	3.538
	3.161	2.906	2.199	1.567	1.064	0.617
STD. DEVIATIONS	0.117	0.087	0.484	0.754	1.103	1.263
	1.345	1.383	1.028	0.526	0.292	0.183
PERCOLATION/LEAKAGE THROUGH LAYER 2						
TOTALS	0.0616	0.0204	0.0538	0.0707	0.0348	0.0342
	0.0216	0.0224	0.0340	0.0667	0.0722	0.0905
STD. DEVIATIONS	0.0310	0.0191	0.0249	0.0258	0.0248	0.0196

0.0177	0.0220	0.0301	0.0411	0.0424	0.0376

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)

DAILY AVERAGE HEAD ON TOP OF LAYER 2

AVERAGES	0.2952	0.0166	0.7658	1.8770	0.7066	0.7259
	0.4260	0.5268	0.9192	1.9349	2.5284	2.2117
STD. DEVIATIONS	0.4635	0.0205	0.7399	1.2152	0.7881	0.5403
	0.4372	0.5189	0.9213	1.4543	1.7747	1.2254

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AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 30

	INCHES		CU. FEET	PERCENT
PRECIPITATION	32.60	(5.565)	118325.9	100.00
RUNOFF	9.052	(3.3350)	32859.42	27.770
EVAPOTRANSPIRATION	22.990	(3.7426)	83451.97	70.527
PERCOLATION/LEAKAGE THROUGH LAYER 2	0.58294	(0.12565)	2116.067	1.78834
AVERAGE HEAD ON TOP OF LAYER 2	1.078	(0.312)		
CHANGE IN WATER STORAGE	-0.028	(1.3949)	-101.55	-0.086

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PEAK DAILY VALUES FOR YEARS 1 THROUGH 30

	(INCHES)	(CU. FT.)
PRECIPITATION	4.09	14846.700
RUNOFF	2.756	10003.3437
PERCOLATION/LEAKAGE THROUGH LAYER 2	0.003550	12.88632
AVERAGE HEAD ON TOP OF LAYER 2	6.000	
SNOW WATER	4.86	17650.7129

MAXIMUM VEG. SOIL WATER (VOL/VOL) 0.4610

MINIMUM VEG. SOIL WATER (VOL/VOL) 0.2030

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FINAL WATER STORAGE AT END OF YEAR 30

LAYER	(INCHES)	(VOL/VOL)
1	1.5686	0.2614
2	58.7125	0.4270
SNOW WATER	0.316	

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**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE               **
**                HELP MODEL VERSION 3.07  (1 NOVEMBER 1997)                **
**                  DEVELOPED BY ENVIRONMENTAL LABORATORY                   **
**                    USAE WATERWAYS EXPERIMENT STATION                     **
**             FOR USEPA RISK REDUCTION ENGINEERING LABORATORY              **
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PRECIPITATION DATA FILE:     C:\HELP3\MIG\DATA4.D4
TEMPERATURE DATA FILE:       C:\HELP3\MIG\DATA7.D7
SOLAR RADIATION DATA FILE:   C:\HELP3\MIG\DATA13.D13
EVAPOTRANSPIRATION DATA:     C:\HELP3\MIG\DATA11.D11
SOIL AND DESIGN DATA FILE:   C:\HELP3\MIG\CR5TO10.D10
OUTPUT DATA FILE:            C:\HELP3\MIG\CR5TO10.OUT


TIME:   9:33     DATE:   8/ 9/2012


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     TITLE:  Existing Top of Landfill - 5 to 10 ft Thick

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     NOTE:  INITIAL MOISTURE CONTENT OF THE LAYERS AND SNOW WATER WERE
              COMPUTED AS NEARLY STEADY-STATE VALUES BY THE PROGRAM.


                                  LAYER  1
                                  --------

                     TYPE 1 - VERTICAL PERCOLATION LAYER
                         MATERIAL TEXTURE NUMBER  23
          THICKNESS                    =      6.00   INCHES
          POROSITY                     =      0.4610 VOL/VOL
          FIELD CAPACITY               =      0.3600 VOL/VOL
          WILTING POINT                =      0.2030 VOL/VOL
          INITIAL SOIL WATER CONTENT   =      0.4540 VOL/VOL
          EFFECTIVE SAT. HYD. COND.    =  0.900000032000E-05 CM/SEC
        NOTE:  SATURATED HYDRAULIC CONDUCTIVITY IS MULTIPLIED BY  3.00
                 FOR ROOT CHANNELS IN TOP HALF OF EVAPORATIVE ZONE.


                                  LAYER  2
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TYPE 3 - BARRIER SOIL LINER
MATERIAL TEXTURE NUMBER 16

THICKNESS	=	90.00	INCHES
POROSITY	=	0.4270	VOL/VOL
FIELD CAPACITY	=	0.4180	VOL/VOL
WILTING POINT	=	0.3670	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.4270	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.100000001000E-06	CM/SEC

GENERAL DESIGN AND EVAPORATIVE ZONE DATA

NOTE: SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT SOIL DATA BASE USING SOIL TEXTURE #23 WITH A GOOD STAND OF GRASS, A SURFACE SLOPE OF 4.% AND A SLOPE LENGTH OF 410. FEET.

SCS RUNOFF CURVE NUMBER	=	86.90	
FRACTION OF AREA ALLOWING RUNOFF	=	100.0	PERCENT
AREA PROJECTED ON HORIZONTAL PLANE	=	1.000	ACRES
EVAPORATIVE ZONE DEPTH	=	6.0	INCHES
INITIAL WATER IN EVAPORATIVE ZONE	=	2.724	INCHES
UPPER LIMIT OF EVAPORATIVE STORAGE	=	2.766	INCHES
LOWER LIMIT OF EVAPORATIVE STORAGE	=	1.218	INCHES
INITIAL SNOW WATER	=	0.000	INCHES
INITIAL WATER IN LAYER MATERIALS	=	41.154	INCHES
TOTAL INITIAL WATER	=	41.154	INCHES
TOTAL SUBSURFACE INFLOW	=	0.00	INCHES/YEAR

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM CHICAGO ILLINOIS

STATION LATITUDE	=	42.26	DEGREES
MAXIMUM LEAF AREA INDEX	=	2.00	
START OF GROWING SEASON (JULIAN DATE)	=	117	
END OF GROWING SEASON (JULIAN DATE)	=	290	
EVAPORATIVE ZONE DEPTH	=	6.0	INCHES
AVERAGE ANNUAL WIND SPEED	=	10.30	MPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	71.00	%
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	65.00	%
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	70.00	%
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	72.00	%

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING COEFFICIENTS FOR CHICAGO ILLINOIS

NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC

1.60	1.31	2.59	3.66	3.15	4.08
3.63	3.53	3.35	2.28	2.06	2.10

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR CHICAGO ILLINOIS

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
21.40	26.00	36.00	48.80	59.10	68.60
73.00	71.90	64.70	53.50	39.80	27.70

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR CHICAGO ILLINOIS
AND STATION LATITUDE = 42.26 DEGREES

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AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 30

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	1.47	1.46	2.39	3.26	3.34	4.22
	3.43	3.42	3.11	2.19	2.10	2.22
STD. DEVIATIONS	0.68	0.71	1.18	1.52	1.65	2.14
	1.83	1.76	1.76	1.22	1.06	0.97
RUNOFF						
TOTALS	0.465	1.437	2.288	0.917	0.309	0.472
	0.473	0.484	0.549	0.432	0.623	0.601
STD. DEVIATIONS	0.568	1.012	1.695	0.983	0.816	0.870
	0.820	0.548	0.761	0.613	0.792	0.592
EVAPOTRANSPIRATION						
TOTALS	0.537	0.450	0.827	3.005	3.117	3.539
	3.163	2.904	2.201	1.565	1.063	0.617
STD. DEVIATIONS	0.117	0.086	0.483	0.754	1.103	1.267
	1.344	1.379	1.027	0.527	0.291	0.183
PERCOLATION/LEAKAGE THROUGH LAYER 2						
TOTALS	0.0615	0.0203	0.0541	0.0717	0.0353	0.0344
	0.0218	0.0226	0.0343	0.0674	0.0732	0.0914
STD. DEVIATIONS	0.0311	0.0190	0.0251	0.0262	0.0255	0.0196

CR5TO10

0.0179	0.0222	0.0303	0.0416	0.0430	0.0380

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)

DAILY AVERAGE HEAD ON TOP OF LAYER 2

AVERAGES	0.2939	0.0165	0.7660	1.8808	0.7060	0.7241
	0.4254	0.5233	0.9211	1.9345	2.5282	2.2079
STD. DEVIATIONS	0.4623	0.0202	0.7401	1.2143	0.7918	0.5393
	0.4385	0.5141	0.9224	1.4528	1.7745	1.2225

AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 30

	INCHES		CU. FEET	PERCENT
PRECIPITATION	32.60	(5.565)	118325.9	100.00
RUNOFF	9.049	(3.3316)	32847.71	27.760
EVAPOTRANSPIRATION	22.988	(3.7391)	83444.94	70.521
PERCOLATION/LEAKAGE THROUGH LAYER 2	0.58810	(0.12711)	2134.803	1.80417
AVERAGE HEAD ON TOP OF LAYER 2	1.077	(0.312)		
CHANGE IN WATER STORAGE	-0.028	(1.3949)	-101.55	-0.086

PEAK DAILY VALUES FOR YEARS 1 THROUGH 30

	(INCHES)	(CU. FT.)
PRECIPITATION	4.09	14846.700
RUNOFF	2.755	9999.2256
PERCOLATION/LEAKAGE THROUGH LAYER 2	0.003628	13.17069
AVERAGE HEAD ON TOP OF LAYER 2	6.000	
SNOW WATER	4.86	17650.7129

MAXIMUM VEG. SOIL WATER (VOL/VOL) 0.4610

MINIMUM VEG. SOIL WATER (VOL/VOL) 0.2030

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FINAL WATER STORAGE AT END OF YEAR 30

LAYER	(INCHES)	(VOL/VOL)
1	1.5685	0.2614
2	38.4300	0.4270
SNOW WATER	0.316	

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**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE               **
**                HELP MODEL VERSION 3.07  (1 NOVEMBER 1997)                **
**                  DEVELOPED BY ENVIRONMENTAL LABORATORY                   **
**                    USAE WATERWAYS EXPERIMENT STATION                     **
**             FOR USEPA RISK REDUCTION ENGINEERING LABORATORY              **
**                                                                          **
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PRECIPITATION DATA FILE:     C:\HELP3\MIG\DATA4.D4
TEMPERATURE DATA FILE:       C:\HELP3\MIG\DATA7.D7
SOLAR RADIATION DATA FILE:   C:\HELP3\MIG\DATA13.D13
EVAPOTRANSPIRATION DATA:     C:\HELP3\MIG\DATA11.D11
SOIL AND DESIGN DATA FILE:   C:\HELP3\MIG\SS10PLUS.D10
OUTPUT DATA FILE:            C:\HELP3\MIG\SS10PLUS.OUT


TIME:   9:35     DATE:   8/ 9/2012


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     TITLE:  Existing Side Slope - > 10 ft Thick

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     NOTE:  INITIAL MOISTURE CONTENT OF THE LAYERS AND SNOW WATER WERE
              COMPUTED AS NEARLY STEADY-STATE VALUES BY THE PROGRAM.


                                   LAYER  1
                                   --------

                     TYPE 1 - VERTICAL PERCOLATION LAYER
                         MATERIAL TEXTURE NUMBER  23
          THICKNESS                  =      7.20   INCHES
          POROSITY                   =      0.4610 VOL/VOL
          FIELD CAPACITY             =      0.3600 VOL/VOL
          WILTING POINT              =      0.2030 VOL/VOL
          INITIAL SOIL WATER CONTENT =      0.4545 VOL/VOL
          EFFECTIVE SAT. HYD. COND.  =  0.900000032000E-05 CM/SEC
        NOTE:  SATURATED HYDRAULIC CONDUCTIVITY IS MULTIPLIED BY  3.00
                 FOR ROOT CHANNELS IN TOP HALF OF EVAPORATIVE ZONE.


                                   LAYER  2
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SS10PLUS

TYPE 3 - BARRIER SOIL LINER
MATERIAL TEXTURE NUMBER 16

THICKNESS	=	133.20	INCHES
POROSITY	=	0.4270	VOL/VOL
FIELD CAPACITY	=	0.4180	VOL/VOL
WILTING POINT	=	0.3670	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.4270	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.100000001000E-06	CM/SEC

GENERAL DESIGN AND EVAPORATIVE ZONE DATA

NOTE: SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT SOIL DATA BASE USING SOIL TEXTURE #23 WITH A GOOD STAND OF GRASS, A SURFACE SLOPE OF 13.% AND A SLOPE LENGTH OF 260. FEET.

SCS RUNOFF CURVE NUMBER	=	87.50	
FRACTION OF AREA ALLOWING RUNOFF	=	100.0	PERCENT
AREA PROJECTED ON HORIZONTAL PLANE	=	1.000	ACRES
EVAPORATIVE ZONE DEPTH	=	7.2	INCHES
INITIAL WATER IN EVAPORATIVE ZONE	=	3.272	INCHES
UPPER LIMIT OF EVAPORATIVE STORAGE	=	3.319	INCHES
LOWER LIMIT OF EVAPORATIVE STORAGE	=	1.462	INCHES
INITIAL SNOW WATER	=	0.000	INCHES
INITIAL WATER IN LAYER MATERIALS	=	60.149	INCHES
TOTAL INITIAL WATER	=	60.149	INCHES
TOTAL SUBSURFACE INFLOW	=	0.00	INCHES/YEAR

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM CHICAGO ILLINOIS

STATION LATITUDE	=	42.26	DEGREES
MAXIMUM LEAF AREA INDEX	=	2.00	
START OF GROWING SEASON (JULIAN DATE)	=	117	
END OF GROWING SEASON (JULIAN DATE)	=	290	
EVAPORATIVE ZONE DEPTH	=	7.2	INCHES
AVERAGE ANNUAL WIND SPEED	=	10.30	MPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	71.00	%
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	65.00	%
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	70.00	%
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	72.00	%

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING COEFFICIENTS FOR CHICAGO ILLINOIS

NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC

1.60	1.31	2.59	3.66	3.15	4.08
3.63	3.53	3.35	2.28	2.06	2.10

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR CHICAGO ILLINOIS

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
21.40	26.00	36.00	48.80	59.10	68.60
73.00	71.90	64.70	53.50	39.80	27.70

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR CHICAGO ILLINOIS
AND STATION LATITUDE = 42.26 DEGREES

****

AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 30

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	1.47	1.46	2.39	3.26	3.34	4.22
	3.43	3.42	3.11	2.19	2.10	2.22
STD. DEVIATIONS	0.68	0.71	1.18	1.52	1.65	2.14
	1.83	1.76	1.76	1.22	1.06	0.97
RUNOFF						
TOTALS	0.455	1.423	2.279	0.898	0.276	0.395
	0.400	0.385	0.439	0.318	0.597	0.577
STD. DEVIATIONS	0.547	0.999	1.689	0.977	0.752	0.776
	0.727	0.441	0.645	0.530	0.806	0.581
EVAPOTRANSPIRATION						
TOTALS	0.538	0.450	0.828	3.124	3.278	3.658
	3.242	2.980	2.251	1.578	1.077	0.614
STD. DEVIATIONS	0.116	0.087	0.484	0.714	1.114	1.315
	1.425	1.444	1.038	0.503	0.273	0.183
PERCOLATION/LEAKAGE THROUGH LAYER 2						
TOTALS	0.0696	0.0199	0.0515	0.0763	0.0342	0.0232
	0.0167	0.0202	0.0331	0.0664	0.0744	0.0891
STD. DEVIATIONS	0.0331	0.0200	0.0268	0.0283	0.0299	0.0194

0.0203	0.0220	0.0339	0.0455	0.0418	0.0401

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)

DAILY AVERAGE HEAD ON TOP OF LAYER 2

AVERAGES	0.3990	0.0204	0.9580	2.5061	0.7869	0.5743
	0.3869	0.5272	1.0290	2.2646	3.0340	2.6101
STD. DEVIATIONS	0.5829	0.0364	0.9325	1.5134	1.0169	0.6022
	0.5542	0.5416	1.1355	1.8270	2.3073	1.6118

AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 30

	INCHES		CU. FEET	PERCENT
PRECIPITATION	32.60	(5.565)	118325.9	100.00
RUNOFF	8.443	(3.1731)	30646.91	25.900
EVAPOTRANSPIRATION	23.618	(3.8502)	85731.91	72.454
PERCOLATION/LEAKAGE THROUGH LAYER 2	0.57453	(0.13623)	2085.541	1.76254
AVERAGE HEAD ON TOP OF LAYER 2	1.258	(0.415)		
CHANGE IN WATER STORAGE	-0.038	(1.3600)	-138.46	-0.117

PEAK DAILY VALUES FOR YEARS 1 THROUGH 30

	(INCHES)	(CU. FT.)
PRECIPITATION	4.09	14846.700
RUNOFF	2.449	8889.6182
PERCOLATION/LEAKAGE THROUGH LAYER 2	0.003585	13.01495
AVERAGE HEAD ON TOP OF LAYER 2	7.200	
SNOW WATER	4.86	17650.7129

MAXIMUM VEG. SOIL WATER (VOL/VOL) 0.4610

MINIMUM VEG. SOIL WATER (VOL/VOL) 0.2030

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FINAL WATER STORAGE AT END OF YEAR 30

LAYER	(INCHES)	(VOL/VOL)
1	1.8116	0.2516
2	56.8764	0.4270
SNOW WATER	0.316	

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**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE               **
**                HELP MODEL VERSION 3.07  (1 NOVEMBER 1997)                **
**                  DEVELOPED BY ENVIRONMENTAL LABORATORY                   **
**                    USAE WATERWAYS EXPERIMENT STATION                     **
**             FOR USEPA RISK REDUCTION ENGINEERING LABORATORY              **
**                                                                          **
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PRECIPITATION DATA FILE:     C:\HELP3\MIG\DATA4.D4
TEMPERATURE DATA FILE:       C:\HELP3\MIG\DATA7.D7
SOLAR RADIATION DATA FILE:   C:\HELP3\MIG\DATA13.D13
EVAPOTRANSPIRATION DATA:     C:\HELP3\MIG\DATA11.D11
SOIL AND DESIGN DATA FILE:   C:\HELP3\MIG\SS5TO10.D10
OUTPUT DATA FILE:            C:\HELP3\MIG\SS5TO10.OUT


TIME:   9:36     DATE:   8/ 9/2012


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     TITLE:  Existing Side Slope - 5 to 10 ft Thick

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     NOTE:  INITIAL MOISTURE CONTENT OF THE LAYERS AND SNOW WATER WERE
              COMPUTED AS NEARLY STEADY-STATE VALUES BY THE PROGRAM.


                                   LAYER  1
                                   --------

                     TYPE 1 - VERTICAL PERCOLATION LAYER
                         MATERIAL TEXTURE NUMBER  23
        THICKNESS                    =      7.20   INCHES
        POROSITY                     =      0.4610 VOL/VOL
        FIELD CAPACITY               =      0.3600 VOL/VOL
        WILTING POINT                =      0.2030 VOL/VOL
        INITIAL SOIL WATER CONTENT   =      0.4545 VOL/VOL
        EFFECTIVE SAT. HYD. COND.    =  0.900000032000E-05 CM/SEC
      NOTE:  SATURATED HYDRAULIC CONDUCTIVITY IS MULTIPLIED BY  3.00
               FOR ROOT CHANNELS IN TOP HALF OF EVAPORATIVE ZONE.


                                   LAYER  2
                                   --------
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TYPE 3 - BARRIER SOIL LINER
MATERIAL TEXTURE NUMBER 16

THICKNESS	=	85.00	INCHES
POROSITY	=	0.4270	VOL/VOL
FIELD CAPACITY	=	0.4180	VOL/VOL
WILTING POINT	=	0.3670	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.4270	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.100000001000E-06	CM/SEC

GENERAL DESIGN AND EVAPORATIVE ZONE DATA

NOTE: SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT SOIL DATA BASE USING SOIL TEXTURE #23 WITH A GOOD STAND OF GRASS, A SURFACE SLOPE OF 13.% AND A SLOPE LENGTH OF 260. FEET.

SCS RUNOFF CURVE NUMBER	=	87.50	
FRACTION OF AREA ALLOWING RUNOFF	=	100.0	PERCENT
AREA PROJECTED ON HORIZONTAL PLANE	=	1.000	ACRES
EVAPORATIVE ZONE DEPTH	=	7.2	INCHES
INITIAL WATER IN EVAPORATIVE ZONE	=	3.272	INCHES
UPPER LIMIT OF EVAPORATIVE STORAGE	=	3.319	INCHES
LOWER LIMIT OF EVAPORATIVE STORAGE	=	1.462	INCHES
INITIAL SNOW WATER	=	0.000	INCHES
INITIAL WATER IN LAYER MATERIALS	=	39.567	INCHES
TOTAL INITIAL WATER	=	39.567	INCHES
TOTAL SUBSURFACE INFLOW	=	0.00	INCHES/YEAR

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM CHICAGO ILLINOIS

STATION LATITUDE	=	42.26	DEGREES
MAXIMUM LEAF AREA INDEX	=	2.00	
START OF GROWING SEASON (JULIAN DATE)	=	117	
END OF GROWING SEASON (JULIAN DATE)	=	290	
EVAPORATIVE ZONE DEPTH	=	7.2	INCHES
AVERAGE ANNUAL WIND SPEED	=	10.30	MPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	71.00	%
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	65.00	%
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	70.00	%
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	72.00	%

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING COEFFICIENTS FOR CHICAGO ILLINOIS

NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC

1.60	1.31	2.59	3.66	3.15	4.08
3.63	3.53	3.35	2.28	2.06	2.10

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR CHICAGO ILLINOIS

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
21.40	26.00	36.00	48.80	59.10	68.60
73.00	71.90	64.70	53.50	39.80	27.70

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR CHICAGO ILLINOIS
AND STATION LATITUDE = 42.26 DEGREES

****

AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 30

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	1.47	1.46	2.39	3.26	3.34	4.22
	3.43	3.42	3.11	2.19	2.10	2.22
STD. DEVIATIONS	0.68	0.71	1.18	1.52	1.65	2.14
	1.83	1.76	1.76	1.22	1.06	0.97
RUNOFF						
TOTALS	0.454	1.423	2.279	0.897	0.276	0.395
	0.400	0.387	0.440	0.319	0.596	0.576
STD. DEVIATIONS	0.547	0.999	1.688	0.977	0.753	0.775
	0.727	0.443	0.647	0.530	0.806	0.581
EVAPOTRANSPIRATION						
TOTALS	0.538	0.450	0.828	3.122	3.277	3.657
	3.243	2.976	2.249	1.577	1.077	0.614
STD. DEVIATIONS	0.116	0.087	0.484	0.715	1.114	1.314
	1.425	1.441	1.036	0.506	0.273	0.183
PERCOLATION/LEAKAGE THROUGH LAYER 2						
TOTALS	0.0696	0.0198	0.0519	0.0774	0.0352	0.0237
	0.0167	0.0206	0.0338	0.0675	0.0758	0.0903
STD. DEVIATIONS	0.0331	0.0200	0.0271	0.0289	0.0310	0.0194

SS5TO10

0.0206	0.0224	0.0345	0.0462	0.0426	0.0406

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)

DAILY AVERAGE HEAD ON TOP OF LAYER 2

AVERAGES	0.3973	0.0201	0.9572	2.5072	0.7977	0.5723
	0.3866	0.5303	1.0326	2.2626	3.0315	2.6055
STD. DEVIATIONS	0.5817	0.0360	0.9316	1.5132	1.0205	0.5977
	0.5538	0.5461	1.1363	1.8256	2.3052	1.6110

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AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 30

	INCHES		CU. FEET	PERCENT
PRECIPITATION	32.60	(5.565)	118325.9	100.00
RUNOFF	8.442	(3.1788)	30646.16	25.900
EVAPOTRANSPIRATION	23.610	(3.8508)	85704.65	72.431
PERCOLATION/LEAKAGE THROUGH LAYER 2	0.58224	(0.13809)	2113.518	1.78618
AVERAGE HEAD ON TOP OF LAYER 2	1.258	(0.415)		
CHANGE IN WATER STORAGE	-0.038	(1.3594)	-138.44	-0.117

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PEAK DAILY VALUES FOR YEARS 1 THROUGH 30

	(INCHES)	(CU. FT.)
PRECIPITATION	4.09	14846.700
RUNOFF	2.451	8898.5420
PERCOLATION/LEAKAGE THROUGH LAYER 2	0.003690	13.39343
AVERAGE HEAD ON TOP OF LAYER 2	7.200	
SNOW WATER	4.86	17650.7129

MAXIMUM VEG. SOIL WATER (VOL/VOL) 0.4610

MINIMUM VEG. SOIL WATER (VOL/VOL) 0.2030

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FINAL WATER STORAGE AT END OF YEAR 30

LAYER	(INCHES)	(VOL/VOL)
1	1.8116	0.2516
2	36.2950	0.4270
SNOW WATER	0.316	

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**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE               **
**                HELP MODEL VERSION 3.07  (1 NOVEMBER 1997)                **
**                 DEVELOPED BY ENVIRONMENTAL LABORATORY                    **
**                   USAE WATERWAYS EXPERIMENT STATION                      **
**             FOR USEPA RISK REDUCTION ENGINEERING LABORATORY              **
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PRECIPITATION DATA FILE:     C:\HELP3\MIG\DATA4.D4
TEMPERATURE DATA FILE:       C:\HELP3\MIG\DATA7.D7
SOLAR RADIATION DATA FILE:   C:\HELP3\MIG\DATA13.D13
EVAPOTRANSPIRATION DATA:     C:\HELP3\MIG\DATA11.D11
SOIL AND DESIGN DATA FILE:   C:\HELP3\MIG\SS3TO5.D10
OUTPUT DATA FILE:            C:\HELP3\MIG\SS3TO5.OUT


TIME:   9:36     DATE:   8/ 9/2012


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     TITLE:  Existing Side Slope - 3 to 5 ft Thick

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     NOTE:  INITIAL MOISTURE CONTENT OF THE LAYERS AND SNOW WATER WERE
              COMPUTED AS NEARLY STEADY-STATE VALUES BY THE PROGRAM.


                                  LAYER  1
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                     TYPE 1 - VERTICAL PERCOLATION LAYER
                         MATERIAL TEXTURE NUMBER  23
        THICKNESS                    =      7.20   INCHES
        POROSITY                     =      0.4610 VOL/VOL
        FIELD CAPACITY               =      0.3600 VOL/VOL
        WILTING POINT                =      0.2030 VOL/VOL
        INITIAL SOIL WATER CONTENT   =      0.4544 VOL/VOL
        EFFECTIVE SAT. HYD. COND.    =  0.900000032000E-05 CM/SEC
      NOTE:  SATURATED HYDRAULIC CONDUCTIVITY IS MULTIPLIED BY  3.00
              FOR ROOT CHANNELS IN TOP HALF OF EVAPORATIVE ZONE.


                                  LAYER  2
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SS3TO5

TYPE 3 - BARRIER SOIL LINER
MATERIAL TEXTURE NUMBER 16

THICKNESS	=	39.50	INCHES
POROSITY	=	0.4270	VOL/VOL
FIELD CAPACITY	=	0.4180	VOL/VOL
WILTING POINT	=	0.3670	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.4270	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.100000001000E-06	CM/SEC

GENERAL DESIGN AND EVAPORATIVE ZONE DATA

NOTE: SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT SOIL DATA BASE USING SOIL TEXTURE #23 WITH A GOOD STAND OF GRASS, A SURFACE SLOPE OF 13.% AND A SLOPE LENGTH OF 260. FEET.

SCS RUNOFF CURVE NUMBER	=	87.50	
FRACTION OF AREA ALLOWING RUNOFF	=	100.0	PERCENT
AREA PROJECTED ON HORIZONTAL PLANE	=	1.000	ACRES
EVAPORATIVE ZONE DEPTH	=	7.2	INCHES
INITIAL WATER IN EVAPORATIVE ZONE	=	3.272	INCHES
UPPER LIMIT OF EVAPORATIVE STORAGE	=	3.319	INCHES
LOWER LIMIT OF EVAPORATIVE STORAGE	=	1.462	INCHES
INITIAL SNOW WATER	=	0.000	INCHES
INITIAL WATER IN LAYER MATERIALS	=	20.138	INCHES
TOTAL INITIAL WATER	=	20.138	INCHES
TOTAL SUBSURFACE INFLOW	=	0.00	INCHES/YEAR

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM CHICAGO ILLINOIS

STATION LATITUDE	=	42.26	DEGREES
MAXIMUM LEAF AREA INDEX	=	2.00	
START OF GROWING SEASON (JULIAN DATE)	=	117	
END OF GROWING SEASON (JULIAN DATE)	=	290	
EVAPORATIVE ZONE DEPTH	=	7.2	INCHES
AVERAGE ANNUAL WIND SPEED	=	10.30	MPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	71.00	%
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	65.00	%
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	70.00	%
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	72.00	%

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING COEFFICIENTS FOR CHICAGO ILLINOIS

NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
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1.60	1.31	2.59	3.66	3.15	4.08
3.63	3.53	3.35	2.28	2.06	2.10

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR CHICAGO ILLINOIS

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
21.40	26.00	36.00	48.80	59.10	68.60
73.00	71.90	64.70	53.50	39.80	27.70

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR CHICAGO ILLINOIS
AND STATION LATITUDE = 42.26 DEGREES

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AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 30

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	1.47	1.46	2.39	3.26	3.34	4.22
	3.43	3.42	3.11	2.19	2.10	2.22
STD. DEVIATIONS	0.68	0.71	1.18	1.52	1.65	2.14
	1.83	1.76	1.76	1.22	1.06	0.97
RUNOFF						
TOTALS	0.454	1.422	2.278	0.896	0.276	0.394
	0.400	0.385	0.437	0.317	0.592	0.574
STD. DEVIATIONS	0.547	0.999	1.687	0.975	0.755	0.775
	0.727	0.441	0.644	0.529	0.803	0.579
EVAPOTRANSPIRATION						
TOTALS	0.538	0.450	0.828	3.120	3.284	3.659
	3.232	2.980	2.250	1.578	1.076	0.614
STD. DEVIATIONS	0.116	0.087	0.483	0.715	1.107	1.300
	1.429	1.441	1.036	0.502	0.273	0.183
PERCOLATION/LEAKAGE THROUGH LAYER 2						
TOTALS	0.0695	0.0194	0.0531	0.0808	0.0358	0.0244
	0.0174	0.0213	0.0353	0.0707	0.0799	0.0940
STD. DEVIATIONS	0.0335	0.0197	0.0281	0.0309	0.0318	0.0202

SS3TO5

0.0216	0.0232	0.0362	0.0485	0.0454	0.0424

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)

DAILY AVERAGE HEAD ON TOP OF LAYER 2

AVERAGES	0.3909	0.0196	0.9540	2.4999	0.7942	0.5717
	0.3911	0.5307	1.0316	2.2531	3.0180	2.5955
STD. DEVIATIONS	0.5773	0.0347	0.9283	1.5147	1.0268	0.5921
	0.5639	0.5475	1.1374	1.8198	2.3018	1.5983

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AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 30

	INCHES		CU. FEET	PERCENT
PRECIPITATION	32.60	(5.565)	118325.9	100.00
RUNOFF	8.425	(3.1703)	30583.96	25.847
EVAPOTRANSPIRATION	23.608	(3.8499)	85696.48	72.424
PERCOLATION/LEAKAGE THROUGH LAYER 2	0.60160	(0.14398)	2183.806	1.84559
AVERAGE HEAD ON TOP OF LAYER 2	1.254	(0.412)		
CHANGE IN WATER STORAGE	-0.038	(1.3581)	-138.36	-0.117

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PEAK DAILY VALUES FOR YEARS 1 THROUGH 30

	(INCHES)	(CU. FT.)
PRECIPITATION	4.09	14846.700
RUNOFF	2.451	8898.0156
PERCOLATION/LEAKAGE THROUGH LAYER 2	0.004022	14.59822
AVERAGE HEAD ON TOP OF LAYER 2	7.200	
SNOW WATER	4.86	17650.7129

MAXIMUM VEG. SOIL WATER (VOL/VOL) 0.4610

MINIMUM VEG. SOIL WATER (VOL/VOL) 0.2030

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FINAL WATER STORAGE AT END OF YEAR 30

LAYER	(INCHES)	(VOL/VOL)
1	1.8116	0.2516
2	16.8665	0.4270
SNOW WATER	0.316	

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**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE               **
**                HELP MODEL VERSION 3.07  (1 NOVEMBER 1997)                **
**                  DEVELOPED BY ENVIRONMENTAL LABORATORY                   **
**                    USAE WATERWAYS EXPERIMENT STATION                     **
**             FOR USEPA RISK REDUCTION ENGINEERING LABORATORY              **
**                                                                          **
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PRECIPITATION DATA FILE:     C:\HELP3\MIG\DATA4.D4
TEMPERATURE DATA FILE:       C:\HELP3\MIG\DATA7.D7
SOLAR RADIATION DATA FILE:   C:\HELP3\MIG\DATA13.D13
EVAPOTRANSPIRATION DATA:     C:\HELP3\MIG\DATA11.D11
SOIL AND DESIGN DATA FILE:   C:\HELP3\MIG\SS2TO3.D10
OUTPUT DATA FILE:            C:\HELP3\MIG\SS2TO3.OUT


TIME:   9:35     DATE:   8/ 9/2012


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     TITLE:  Existing Side Slope - 2 to 3 ft Thick

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     NOTE:  INITIAL MOISTURE CONTENT OF THE LAYERS AND SNOW WATER WERE
              COMPUTED AS NEARLY STEADY-STATE VALUES BY THE PROGRAM.


                                  LAYER  1
                                  --------

                  TYPE 1 - VERTICAL PERCOLATION LAYER
                      MATERIAL TEXTURE NUMBER  23
        THICKNESS                    =      7.20   INCHES
        POROSITY                     =      0.4610 VOL/VOL
        FIELD CAPACITY               =      0.3600 VOL/VOL
        WILTING POINT                =      0.2030 VOL/VOL
        INITIAL SOIL WATER CONTENT   =      0.4543 VOL/VOL
        EFFECTIVE SAT. HYD. COND.    =  0.900000032000E-05 CM/SEC
      NOTE:  SATURATED HYDRAULIC CONDUCTIVITY IS MULTIPLIED BY  3.00
               FOR ROOT CHANNELS IN TOP HALF OF EVAPORATIVE ZONE.


                                  LAYER  2
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SS2TO3

TYPE 3 - BARRIER SOIL LINER
MATERIAL TEXTURE NUMBER 16

THICKNESS	=	27.50	INCHES
POROSITY	=	0.4270	VOL/VOL
FIELD CAPACITY	=	0.4180	VOL/VOL
WILTING POINT	=	0.3670	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.4270	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.100000001000E-06	CM/SEC

GENERAL DESIGN AND EVAPORATIVE ZONE DATA

NOTE: SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT SOIL DATA BASE USING SOIL TEXTURE #23 WITH A GOOD STAND OF GRASS, A SURFACE SLOPE OF 13.% AND A SLOPE LENGTH OF 260. FEET.

SCS RUNOFF CURVE NUMBER	=	87.50	
FRACTION OF AREA ALLOWING RUNOFF	=	100.0	PERCENT
AREA PROJECTED ON HORIZONTAL PLANE	=	1.000	ACRES
EVAPORATIVE ZONE DEPTH	=	7.2	INCHES
INITIAL WATER IN EVAPORATIVE ZONE	=	3.271	INCHES
UPPER LIMIT OF EVAPORATIVE STORAGE	=	3.319	INCHES
LOWER LIMIT OF EVAPORATIVE STORAGE	=	1.462	INCHES
INITIAL SNOW WATER	=	0.000	INCHES
INITIAL WATER IN LAYER MATERIALS	=	15.013	INCHES
TOTAL INITIAL WATER	=	15.013	INCHES
TOTAL SUBSURFACE INFLOW	=	0.00	INCHES/YEAR

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM CHICAGO ILLINOIS

STATION LATITUDE	=	42.26	DEGREES
MAXIMUM LEAF AREA INDEX	=	2.00	
START OF GROWING SEASON (JULIAN DATE)	=	117	
END OF GROWING SEASON (JULIAN DATE)	=	290	
EVAPORATIVE ZONE DEPTH	=	7.2	INCHES
AVERAGE ANNUAL WIND SPEED	=	10.30	MPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	71.00	%
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	65.00	%
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	70.00	%
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	72.00	%

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING COEFFICIENTS FOR CHICAGO ILLINOIS

NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC

1.60	1.31	2.59	3.66	3.15	4.08
3.63	3.53	3.35	2.28	2.06	2.10

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR CHICAGO ILLINOIS

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
21.40	26.00	36.00	48.80	59.10	68.60
73.00	71.90	64.70	53.50	39.80	27.70

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR CHICAGO ILLINOIS
AND STATION LATITUDE = 42.26 DEGREES

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AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 30

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	1.47	1.46	2.39	3.26	3.34	4.22
	3.43	3.42	3.11	2.19	2.10	2.22
STD. DEVIATIONS	0.68	0.71	1.18	1.52	1.65	2.14
	1.83	1.76	1.76	1.22	1.06	0.97
RUNOFF						
TOTALS	0.453	1.422	2.277	0.895	0.276	0.395
	0.400	0.388	0.439	0.317	0.588	0.572
STD. DEVIATIONS	0.547	0.999	1.687	0.975	0.755	0.775
	0.727	0.443	0.645	0.527	0.799	0.577
EVAPOTRANSPIRATION						
TOTALS	0.538	0.450	0.829	3.119	3.275	3.652
	3.244	2.979	2.248	1.573	1.076	0.614
STD. DEVIATIONS	0.116	0.087	0.483	0.714	1.111	1.309
	1.430	1.443	1.035	0.504	0.272	0.183
PERCOLATION/LEAKAGE THROUGH LAYER 2						
TOTALS	0.0695	0.0190	0.0542	0.0835	0.0372	0.0251
	0.0179	0.0219	0.0360	0.0732	0.0832	0.0970
STD. DEVIATIONS	0.0338	0.0195	0.0289	0.0323	0.0334	0.0210

SS2TO3

0.0221	0.0237	0.0367	0.0502	0.0476	0.0439

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)

DAILY AVERAGE HEAD ON TOP OF LAYER 2

AVERAGES	0.3861	0.0191	0.9530	2.4994	0.7962	0.5837
	0.3907	0.5250	1.0206	2.2451	3.0119	2.5918
STD. DEVIATIONS	0.5737	0.0338	0.9265	1.5169	1.0233	0.6130
	0.5611	0.5431	1.1236	1.8133	2.2949	1.5896

AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 30

	INCHES		CU. FEET	PERCENT
PRECIPITATION	32.60	(5.565)	118325.9	100.00
RUNOFF	8.422	(3.1698)	30571.46	25.837
EVAPOTRANSPIRATION	23.595	(3.8500)	85650.45	72.385
PERCOLATION/LEAKAGE THROUGH LAYER 2	0.61771	(0.14852)	2242.289	1.89501
AVERAGE HEAD ON TOP OF LAYER 2	1.252	(0.410)		
CHANGE IN WATER STORAGE	-0.038	(1.3569)	-138.31	-0.117

PEAK DAILY VALUES FOR YEARS 1 THROUGH 30

	(INCHES)	(CU. FT.)
PRECIPITATION	4.09	14846.700
RUNOFF	2.448	8887.7705
PERCOLATION/LEAKAGE THROUGH LAYER 2	0.004292	15.58035
AVERAGE HEAD ON TOP OF LAYER 2	7.200	
SNOW WATER	4.86	17650.7129

MAXIMUM VEG. SOIL WATER (VOL/VOL) 0.4610

MINIMUM VEG. SOIL WATER (VOL/VOL) 0.2030

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FINAL WATER STORAGE AT END OF YEAR 30

LAYER	(INCHES)	(VOL/VOL)
1	1.8115	0.2516
2	11.7425	0.4270
SNOW WATER	0.316	

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**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE               **
**                HELP MODEL VERSION 3.07  (1 NOVEMBER 1997)                **
**                 DEVELOPED BY ENVIRONMENTAL LABORATORY                    **
**                   USAE WATERWAYS EXPERIMENT STATION                      **
**             FOR USEPA RISK REDUCTION ENGINEERING LABORATORY              **
**                                                                          **
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PRECIPITATION DATA FILE:     C:\HELP3\MIG\DATA4.D4
TEMPERATURE DATA FILE:       C:\HELP3\MIG\DATA7.D7
SOLAR RADIATION DATA FILE:   C:\HELP3\MIG\DATA13.D13
EVAPOTRANSPIRATION DATA:     C:\HELP3\MIG\DATA11.D11
SOIL AND DESIGN DATA FILE:   C:\HELP3\MIG\SS-2.D10
OUTPUT DATA FILE:            C:\HELP3\MIG\SS-2.OUT


TIME:   9:35     DATE:   8/ 9/2012


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     TITLE:  Existing Side Slope - <2-ft Thick

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     NOTE:  INITIAL MOISTURE CONTENT OF THE LAYERS AND SNOW WATER WERE
              COMPUTED AS NEARLY STEADY-STATE VALUES BY THE PROGRAM.


                                  LAYER  1
                                  --------

                  TYPE 1 - VERTICAL PERCOLATION LAYER
                      MATERIAL TEXTURE NUMBER  23
        THICKNESS                    =      7.20   INCHES
        POROSITY                     =      0.4610 VOL/VOL
        FIELD CAPACITY               =      0.3600 VOL/VOL
        WILTING POINT                =      0.2030 VOL/VOL
        INITIAL SOIL WATER CONTENT   =      0.4542 VOL/VOL
        EFFECTIVE SAT. HYD. COND.    =  0.900000032000E-05 CM/SEC
      NOTE:  SATURATED HYDRAULIC CONDUCTIVITY IS MULTIPLIED BY  3.00
              FOR ROOT CHANNELS IN TOP HALF OF EVAPORATIVE ZONE.


                                  LAYER  2
                                  --------
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TYPE 3 - BARRIER SOIL LINER
MATERIAL TEXTURE NUMBER 16

THICKNESS	=	18.80	INCHES
POROSITY	=	0.4270	VOL/VOL
FIELD CAPACITY	=	0.4180	VOL/VOL
WILTING POINT	=	0.3670	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.4270	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.100000001000E-06	CM/SEC

GENERAL DESIGN AND EVAPORATIVE ZONE DATA

NOTE: SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT SOIL DATA BASE USING SOIL TEXTURE #23 WITH A GOOD STAND OF GRASS, A SURFACE SLOPE OF 13.% AND A SLOPE LENGTH OF 260. FEET.

SCS RUNOFF CURVE NUMBER	=	87.50	
FRACTION OF AREA ALLOWING RUNOFF	=	100.0	PERCENT
AREA PROJECTED ON HORIZONTAL PLANE	=	1.000	ACRES
EVAPORATIVE ZONE DEPTH	=	7.2	INCHES
INITIAL WATER IN EVAPORATIVE ZONE	=	3.270	INCHES
UPPER LIMIT OF EVAPORATIVE STORAGE	=	3.319	INCHES
LOWER LIMIT OF EVAPORATIVE STORAGE	=	1.462	INCHES
INITIAL SNOW WATER	=	0.000	INCHES
INITIAL WATER IN LAYER MATERIALS	=	11.298	INCHES
TOTAL INITIAL WATER	=	11.298	INCHES
TOTAL SUBSURFACE INFLOW	=	0.00	INCHES/YEAR

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM CHICAGO ILLINOIS

STATION LATITUDE	=	42.26	DEGREES
MAXIMUM LEAF AREA INDEX	=	2.00	
START OF GROWING SEASON (JULIAN DATE)	=	117	
END OF GROWING SEASON (JULIAN DATE)	=	290	
EVAPORATIVE ZONE DEPTH	=	7.2	INCHES
AVERAGE ANNUAL WIND SPEED	=	10.30	MPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	71.00	%
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	65.00	%
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	70.00	%
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	72.00	%

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING COEFFICIENTS FOR CHICAGO ILLINOIS

NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC

1.60	1.31	2.59	3.66	3.15	4.08
3.63	3.53	3.35	2.28	2.06	2.10

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR CHICAGO ILLINOIS

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
21.40	26.00	36.00	48.80	59.10	68.60
73.00	71.90	64.70	53.50	39.80	27.70

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR CHICAGO ILLINOIS
AND STATION LATITUDE = 42.26 DEGREES

****

AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 30

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	1.47	1.46	2.39	3.26	3.34	4.22
	3.43	3.42	3.11	2.19	2.10	2.22
STD. DEVIATIONS	0.68	0.71	1.18	1.52	1.65	2.14
	1.83	1.76	1.76	1.22	1.06	0.97
RUNOFF						
TOTALS	0.452	1.420	2.277	0.892	0.274	0.396
	0.399	0.387	0.437	0.313	0.584	0.568
STD. DEVIATIONS	0.547	0.998	1.686	0.973	0.749	0.775
	0.726	0.443	0.642	0.525	0.795	0.574
EVAPOTRANSPIRATION						
TOTALS	0.538	0.450	0.827	3.122	3.268	3.658
	3.239	2.978	2.249	1.577	1.075	0.614
STD. DEVIATIONS	0.116	0.087	0.481	0.715	1.123	1.312
	1.422	1.441	1.039	0.505	0.273	0.183
PERCOLATION/LEAKAGE THROUGH LAYER 2						
TOTALS	0.0693	0.0185	0.0558	0.0876	0.0377	0.0263
	0.0184	0.0228	0.0378	0.0772	0.0880	0.1015
STD. DEVIATIONS	0.0344	0.0189	0.0301	0.0347	0.0341	0.0222

	0.0229	0.0244	0.0387	0.0531	0.0511	0.0462

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)

DAILY AVERAGE HEAD ON TOP OF LAYER 2

AVERAGES	0.3784	0.0184	0.9505	2.4895	0.7850	0.5795
	0.3865	0.5263	1.0289	2.2374	2.9925	2.5713
STD. DEVIATIONS	0.5674	0.0320	0.9265	1.5143	1.0209	0.6072
	0.5541	0.5408	1.1350	1.8095	2.2906	1.5769

****

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AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 30

	INCHES		CU. FEET	PERCENT
PRECIPITATION	32.60	(5.565)	118325.9	100.00
RUNOFF	8.399	(3.1683)	30489.55	25.767
EVAPOTRANSPIRATION	23.595	(3.8448)	85648.34	72.383
PERCOLATION/LEAKAGE THROUGH LAYER 2	0.64082	(0.15587)	2326.174	1.96590
AVERAGE HEAD ON TOP OF LAYER 2	1.245	(0.410)		
CHANGE IN WATER STORAGE	-0.038	(1.3553)	-138.18	-0.117

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PEAK DAILY VALUES FOR YEARS 1 THROUGH 30

	(INCHES)	(CU. FT.)
PRECIPITATION	4.09	14846.700
RUNOFF	2.448	8885.4219
PERCOLATION/LEAKAGE THROUGH LAYER 2	0.004704	17.07641
AVERAGE HEAD ON TOP OF LAYER 2	7.200	
SNOW WATER	4.86	17650.7129

MAXIMUM VEG. SOIL WATER (VOL/VOL) 0.4610

MINIMUM VEG. SOIL WATER (VOL/VOL) 0.2030

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FINAL WATER STORAGE AT END OF YEAR 30

LAYER	(INCHES)	(VOL/VOL)
1	1.8117	0.2516
2	8.0276	0.4270
SNOW WATER	0.316	

****
****

Table A2-3. Hydraulic Efficiency E .es for Part 811 Cover System
MIG/DeWane

Cover System	Area (ac)	Precipitation (cf/ac/yr)[1]	Total Annual Precipitation (cf/yr)[2]	Infiltration (cf/ac/yr)[3]	Total Annual Infiltration (cf/yr)[4]	Hydraulic Efficiency (%)[5]	Total Average Hydraulic Efficiency (%)[6]
Part 811 Cover Crest	13.00	118,300	1,538,000	6,058	78,750	94.88%	94.90%
Part 811 Cover Sideslope	33.78	118,300	3,996,000	6,026	203,500	94.91%	

Notes:
(1) All data is rounded to 4 significant digits
(2) The precipitation is determined from the output of HELP analyses.
(3) Total annual precipitation is calculated by multiplying the precipitation by the respective landfill area.
(4) The infiltration is determined from the output of HELP analyses, assuming the following inputs:

	Thickness (in)	Effective Saturated Hydraulic Conductivity (cm/s)
Crest topsoil	36	9.00E-06
Crest clay layer	36	1.00E-07
Sideslope topsoil	36	9.00E-06
Sideslope clay layer	36	1.00E-07

(4) Total annual infiltration is calculated by multiplying the infiltration by the respective landfill area.
(5) The hydraulic efficiency is calculated by the following formula:

1 - (Total Annual Infiltration / Total Annual Precipitation)

(6) The total average hydraulic efficiency is calculated by the following formula:

$$\Sigma[h_i \times (sa_i / A)]$$

Where: h_i=hydraulic efficiency for Subarea i
sa_i=surface area of Subarea i
A=total surface area of the landfill

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**                                                                          **
**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE               **
**                HELP MODEL VERSION 3.07  (1 NOVEMBER 1997)                **
**                  DEVELOPED BY ENVIRONMENTAL LABORATORY                   **
**                    USAE WATERWAYS EXPERIMENT STATION                     **
**             FOR USEPA RISK REDUCTION ENGINEERING LABORATORY              **
**                                                                          **
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******************************************************************************
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PRECIPITATION DATA FILE:     C:\help3\DATA4.D4
TEMPERATURE DATA FILE:       c:\help3\DATA7.D7
SOLAR RADIATION DATA FILE:   c:\help3\DATA13.D13
EVAPOTRANSPIRATION DATA:     c:\help3\DATA11.D11
SOIL AND DESIGN DATA FILE:   c:\help3\811-SS.D10
OUTPUT DATA FILE:            c:\help3\811_SS.OUT


TIME:  14:10     DATE:   4/23/2012


******************************************************************************

     TITLE:  PRESCRIBED - Crest

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     NOTE:  INITIAL MOISTURE CONTENT OF THE LAYERS AND SNOW WATER WERE
              COMPUTED AS NEARLY STEADY-STATE VALUES BY THE PROGRAM.


                                  LAYER  1
                                  --------

                     TYPE 1 - VERTICAL PERCOLATION LAYER
                         MATERIAL TEXTURE NUMBER  23
          THICKNESS                    =     36.00   INCHES
          POROSITY                     =      0.4610 VOL/VOL
          FIELD CAPACITY               =      0.3600 VOL/VOL
          WILTING POINT                =      0.2030 VOL/VOL
          INITIAL SOIL WATER CONTENT   =      0.4067 VOL/VOL
          EFFECTIVE SAT. HYD. COND.    =  0.900000032000E-05 CM/SEC
        NOTE:  SATURATED HYDRAULIC CONDUCTIVITY IS MULTIPLIED BY  3.00
                 FOR ROOT CHANNELS IN TOP HALF OF EVAPORATIVE ZONE.


                                  LAYER  2
                                  --------
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                    TYPE 3 - BARRIER SOIL LINER
                    MATERIAL TEXTURE NUMBER  16
   THICKNESS                    =     36.00   INCHES
   POROSITY                     =      0.4270 VOL/VOL
   FIELD CAPACITY               =      0.4180 VOL/VOL
   WILTING POINT                =      0.3670 VOL/VOL
   INITIAL SOIL WATER CONTENT   =      0.4270 VOL/VOL
   EFFECTIVE SAT. HYD. COND.    =  0.100000001000E-06 CM/SEC


              GENERAL DESIGN AND EVAPORATIVE ZONE DATA
              ----------------------------------------

    NOTE:  SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT
             SOIL DATA BASE USING SOIL TEXTURE #23 WITH A
             GOOD STAND OF GRASS, A SURFACE SLOPE OF 13.%
             AND A SLOPE LENGTH OF  260. FEET.

   SCS RUNOFF CURVE NUMBER              =     87.50
   FRACTION OF AREA ALLOWING RUNOFF     =    100.0    PERCENT
   AREA PROJECTED ON HORIZONTAL PLANE   =      1.000  ACRES
   EVAPORATIVE ZONE DEPTH               =     20.0    INCHES
   INITIAL WATER IN EVAPORATIVE ZONE    =      8.325  INCHES
   UPPER LIMIT OF EVAPORATIVE STORAGE   =      9.220  INCHES
   LOWER LIMIT OF EVAPORATIVE STORAGE   =      4.060  INCHES
   INITIAL SNOW WATER                   =      0.000  INCHES
   INITIAL WATER IN LAYER MATERIALS     =     30.014  INCHES
   TOTAL INITIAL WATER                  =     30.014  INCHES
   TOTAL SUBSURFACE INFLOW              =      0.00   INCHES/YEAR


               EVAPOTRANSPIRATION AND WEATHER DATA
               -----------------------------------

    NOTE:  EVAPOTRANSPIRATION DATA WAS OBTAINED FROM
             CHICAGO                ILLINOIS

        STATION LATITUDE                          =  42.26 DEGREES
        MAXIMUM LEAF AREA INDEX                   =   2.00
        START OF GROWING SEASON (JULIAN DATE)     =    117
        END OF GROWING SEASON (JULIAN DATE)       =    290
        EVAPORATIVE ZONE DEPTH                    =  20.0  INCHES
        AVERAGE ANNUAL WIND SPEED                 =  10.30 MPH
        AVERAGE 1ST QUARTER RELATIVE HUMIDITY     =  71.00 %
        AVERAGE 2ND QUARTER RELATIVE HUMIDITY     =  65.00 %
        AVERAGE 3RD QUARTER RELATIVE HUMIDITY     =  70.00 %
        AVERAGE 4TH QUARTER RELATIVE HUMIDITY     =  72.00 %


    NOTE:  PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING
             COEFFICIENTS FOR    CHICAGO             ILLINOIS

             NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

JAN/JUL     FEB/AUG     MAR/SEP     APR/OCT     MAY/NOV     JUN/DEC
-------     -------     -------     -------     -------     -------
```

1.60	1.31	2.59	3.66	3.15	4.08
3.63	3.53	3.35	2.28	2.06	2.10

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR CHICAGO ILLINOIS

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
21.40	26.00	36.00	48.80	59.10	68.60
73.00	71.90	64.70	53.50	39.80	27.70

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR CHICAGO ILLINOIS
AND STATION LATITUDE = 42.26 DEGREES

****

AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 30

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	1.47	1.46	2.39	3.26	3.34	4.22
	3.43	3.42	3.11	2.19	2.10	2.22
STD. DEVIATIONS	0.68	0.71	1.18	1.52	1.65	2.14
	1.83	1.76	1.76	1.22	1.06	0.97
RUNOFF						
TOTALS	0.330	1.161	1.996	0.542	0.233	0.306
	0.265	0.258	0.194	0.068	0.105	0.292
STD. DEVIATIONS	0.455	0.824	1.659	0.661	0.576	0.518
	0.458	0.285	0.275	0.113	0.179	0.394
EVAPOTRANSPIRATION						
TOTALS	0.539	0.460	0.812	2.972	3.562	4.814
	4.069	3.127	2.140	1.323	0.906	0.573
STD. DEVIATIONS	0.110	0.082	0.424	0.670	1.057	1.044
	1.719	1.584	0.951	0.328	0.205	0.143
PERCOLATION/LEAKAGE THROUGH LAYER 2						
TOTALS	0.1326	0.1153	0.1280	0.1518	0.1604	0.1490
	0.1475	0.1411	0.1302	0.1319	0.1318	0.1402
STD. DEVIATIONS	0.0280	0.0275	0.0358	0.0249	0.0190	0.0158

0.0144	0.0105	0.0206	0.0266	0.0315	0.0337

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)

DAILY AVERAGE HEAD ON TOP OF LAYER 2

AVERAGES	10.4828	9.0663	9.9142	17.9833	18.7762	16.5772
	14.3692	12.1670	10.7794	10.2445	11.7002	13.0568
STD. DEVIATIONS	4.7221	4.1352	5.6392	7.6006	6.4778	5.5600
	4.9108	3.5757	3.3775	3.7495	7.1742	7.5258

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AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 30

	INCHES		CU. FEET	PERCENT
PRECIPITATION	32.60	(5.565)	118325.9	100.00
RUNOFF	5.750	(2.4877)	20874.24	17.641
EVAPOTRANSPIRATION	25.297	(4.0743)	91826.35	77.605
PERCOLATION/LEAKAGE THROUGH LAYER 2	1.65992	(0.21275)	6025.523	5.09231
AVERAGE HEAD ON TOP OF LAYER 2	12.926	(4.156)		
CHANGE IN WATER STORAGE	-0.110	(1.9327)	-400.23	-0.338

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PEAK DAILY VALUES FOR YEARS 1 THROUGH 30

	(INCHES)	(CU. FT.)
PRECIPITATION	4.09	14846.700
RUNOFF	1.824	6619.3691
PERCOLATION/LEAKAGE THROUGH LAYER 2	0.006803	24.69497
AVERAGE HEAD ON TOP OF LAYER 2	36.000	
SNOW WATER	4.86	17650.7129

MAXIMUM VEG. SOIL WATER (VOL/VOL) 0.4610

MINIMUM VEG. SOIL WATER (VOL/VOL) 0.2030

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FINAL WATER STORAGE AT END OF YEAR 30

LAYER	(INCHES)	(VOL/VOL)
1	11.0181	0.3061
2	15.3720	0.4270
SNOW WATER	0.316	

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**                                                                          **
**              HYDROLOGIC EVALUATION OF LANDFILL PERFORMANCE               **
**                HELP MODEL VERSION 3.07  (1 NOVEMBER 1997)                **
**                  DEVELOPED BY ENVIRONMENTAL LABORATORY                   **
**                    USAE WATERWAYS EXPERIMENT STATION                     **
**             FOR USEPA RISK REDUCTION ENGINEERING LABORATORY              **
**                                                                          **
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PRECIPITATION DATA FILE:     C:\help3\DATA4.D4
TEMPERATURE DATA FILE:       c:\help3\DATA7.D7
SOLAR RADIATION DATA FILE:   c:\help3\DATA13.D13
EVAPOTRANSPIRATION DATA:     c:\help3\DATA11.D11
SOIL AND DESIGN DATA FILE:   c:\help3\811_CRST.D10
OUTPUT DATA FILE:            c:\help3\811_CRST.OUT


TIME:  14: 5     DATE:   4/23/2012


******************************************************************************

     TITLE:  PRESCRIBED - Crest

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     NOTE:  INITIAL MOISTURE CONTENT OF THE LAYERS AND SNOW WATER WERE
              COMPUTED AS NEARLY STEADY-STATE VALUES BY THE PROGRAM.


                                  LAYER  1
                                  --------

                     TYPE 1 - VERTICAL PERCOLATION LAYER
                         MATERIAL TEXTURE NUMBER  23
        THICKNESS                    =     36.00   INCHES
        POROSITY                     =      0.4610 VOL/VOL
        FIELD CAPACITY               =      0.3600 VOL/VOL
        WILTING POINT                =      0.2030 VOL/VOL
        INITIAL SOIL WATER CONTENT   =      0.4076 VOL/VOL
        EFFECTIVE SAT. HYD. COND.    =  0.900000032000E-05 CM/SEC
      NOTE:  SATURATED HYDRAULIC CONDUCTIVITY IS MULTIPLIED BY  3.00
               FOR ROOT CHANNELS IN TOP HALF OF EVAPORATIVE ZONE.


                                  LAYER  2
                                  --------
```

TYPE 3 - BARRIER SOIL LINER
MATERIAL TEXTURE NUMBER 16

THICKNESS	=	36.00	INCHES
POROSITY	=	0.4270	VOL/VOL
FIELD CAPACITY	=	0.4180	VOL/VOL
WILTING POINT	=	0.3670	VOL/VOL
INITIAL SOIL WATER CONTENT	=	0.4270	VOL/VOL
EFFECTIVE SAT. HYD. COND.	=	0.100000001000E-06	CM/SEC

GENERAL DESIGN AND EVAPORATIVE ZONE DATA

NOTE: SCS RUNOFF CURVE NUMBER WAS COMPUTED FROM DEFAULT SOIL DATA BASE USING SOIL TEXTURE #23 WITH A GOOD STAND OF GRASS, A SURFACE SLOPE OF 4.% AND A SLOPE LENGTH OF 410. FEET.

SCS RUNOFF CURVE NUMBER	=	86.90	
FRACTION OF AREA ALLOWING RUNOFF	=	100.0	PERCENT
AREA PROJECTED ON HORIZONTAL PLANE	=	1.000	ACRES
EVAPORATIVE ZONE DEPTH	=	20.0	INCHES
INITIAL WATER IN EVAPORATIVE ZONE	=	8.328	INCHES
UPPER LIMIT OF EVAPORATIVE STORAGE	=	9.220	INCHES
LOWER LIMIT OF EVAPORATIVE STORAGE	=	4.060	INCHES
INITIAL SNOW WATER	=	0.000	INCHES
INITIAL WATER IN LAYER MATERIALS	=	30.046	INCHES
TOTAL INITIAL WATER	=	30.046	INCHES
TOTAL SUBSURFACE INFLOW	=	0.00	INCHES/YEAR

EVAPOTRANSPIRATION AND WEATHER DATA

NOTE: EVAPOTRANSPIRATION DATA WAS OBTAINED FROM CHICAGO ILLINOIS

STATION LATITUDE	=	42.26	DEGREES
MAXIMUM LEAF AREA INDEX	=	2.00	
START OF GROWING SEASON (JULIAN DATE)	=	117	
END OF GROWING SEASON (JULIAN DATE)	=	290	
EVAPORATIVE ZONE DEPTH	=	20.0	INCHES
AVERAGE ANNUAL WIND SPEED	=	10.30	MPH
AVERAGE 1ST QUARTER RELATIVE HUMIDITY	=	71.00	%
AVERAGE 2ND QUARTER RELATIVE HUMIDITY	=	65.00	%
AVERAGE 3RD QUARTER RELATIVE HUMIDITY	=	70.00	%
AVERAGE 4TH QUARTER RELATIVE HUMIDITY	=	72.00	%

NOTE: PRECIPITATION DATA WAS SYNTHETICALLY GENERATED USING COEFFICIENTS FOR CHICAGO ILLINOIS

NORMAL MEAN MONTHLY PRECIPITATION (INCHES)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC

1.60	1.31	2.59	3.66	3.15	4.08
3.63	3.53	3.35	2.28	2.06	2.10

NOTE: TEMPERATURE DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR CHICAGO ILLINOIS

NORMAL MEAN MONTHLY TEMPERATURE (DEGREES FAHRENHEIT)

JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
21.40	26.00	36.00	48.80	59.10	68.60
73.00	71.90	64.70	53.50	39.80	27.70

NOTE: SOLAR RADIATION DATA WAS SYNTHETICALLY GENERATED USING
COEFFICIENTS FOR CHICAGO ILLINOIS
AND STATION LATITUDE = 42.26 DEGREES

****

AVERAGE MONTHLY VALUES IN INCHES FOR YEARS 1 THROUGH 30

	JAN/JUL	FEB/AUG	MAR/SEP	APR/OCT	MAY/NOV	JUN/DEC
PRECIPITATION						
TOTALS	1.47	1.46	2.39	3.26	3.34	4.22
	3.43	3.42	3.11	2.19	2.10	2.22
STD. DEVIATIONS	0.68	0.71	1.18	1.52	1.65	2.14
	1.83	1.76	1.76	1.22	1.06	0.97
RUNOFF						
TOTALS	0.333	1.164	2.001	0.532	0.223	0.284
	0.251	0.232	0.174	0.059	0.099	0.293
STD. DEVIATIONS	0.456	0.826	1.667	0.662	0.577	0.498
	0.456	0.264	0.253	0.103	0.174	0.397
EVAPOTRANSPIRATION						
TOTALS	0.539	0.460	0.813	2.977	3.570	4.823
	4.104	3.151	2.145	1.328	0.908	0.574
STD. DEVIATIONS	0.110	0.082	0.426	0.673	1.059	1.049
	1.745	1.595	0.957	0.324	0.206	0.144
PERCOLATION/LEAKAGE THROUGH LAYER 2						
TOTALS	0.1332	0.1166	0.1286	0.1526	0.1612	0.1495
	0.1481	0.1415	0.1310	0.1327	0.1327	0.1410
STD. DEVIATIONS	0.0281	0.0257	0.0359	0.0249	0.0189	0.0155

0.0143	0.0102	0.0188	0.0269	0.0320	0.0339

AVERAGES OF MONTHLY AVERAGED DAILY HEADS (INCHES)

DAILY AVERAGE HEAD ON TOP OF LAYER 2

AVERAGES	10.6679	9.2434	10.1200	18.2523	19.0377	16.7547
	14.5704	12.3203	10.9404	10.4969	12.0313	13.3447
STD. DEVIATIONS	4.7040	4.1322	5.6602	7.5616	6.4472	5.4740
	4.8845	3.4972	3.3249	3.8921	7.3858	7.5869

****

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AVERAGE ANNUAL TOTALS & (STD. DEVIATIONS) FOR YEARS 1 THROUGH 30

	INCHES		CU. FEET	PERCENT
PRECIPITATION	32.60	(5.565)	118325.9	100.00
RUNOFF	5.645	(2.4941)	20490.31	17.317
EVAPOTRANSPIRATION	25.391	(4.0978)	92168.59	77.894
PERCOLATION/LEAKAGE THROUGH LAYER 2	1.66878	(0.21013)	6057.656	5.11947
AVERAGE HEAD ON TOP OF LAYER 2	13.148	(4.132)		
CHANGE IN WATER STORAGE	-0.108	(1.9372)	-390.66	-0.330

****

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PEAK DAILY VALUES FOR YEARS 1 THROUGH 30

	(INCHES)	(CU. FT.)
PRECIPITATION	4.09	14846.700
RUNOFF	1.758	6380.0669
PERCOLATION/LEAKAGE THROUGH LAYER 2	0.006803	24.69497
AVERAGE HEAD ON TOP OF LAYER 2	36.000	
SNOW WATER	4.86	17650.7129

MAXIMUM VEG. SOIL WATER (VOL/VOL) 0.4610

MINIMUM VEG. SOIL WATER (VOL/VOL) 0.2030

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FINAL WATER STORAGE AT END OF YEAR 30

LAYER	(INCHES)	(VOL/VOL)
1	11.1290	0.3091
2	15.3720	0.4270
SNOW WATER	0.316	

****
****

Appendix 3

Written by: BDB Date: 12 04 23 (YY MM DD) Reviewed by: _____ (YY MM DD)

Client: BFINA Project: MIG/DeWane Project/Proposal No.: CHE8214 Task No: 900/901

APPENDIX 3: ESTIMATED LEACHATE VOLUME CALCULATIONS

INTRODUCTION

The purpose of this calculation is to evaluate the difference in the estimated volume of leachate the MIG/DeWane landfill in Belvidere, Illinois between 1995 and 2008. Leachate elevation data from 1995 and 2008 were (see **Table 2** of the Technical Memorandum) used for this calculations package.

METHOD AND ANALYSIS

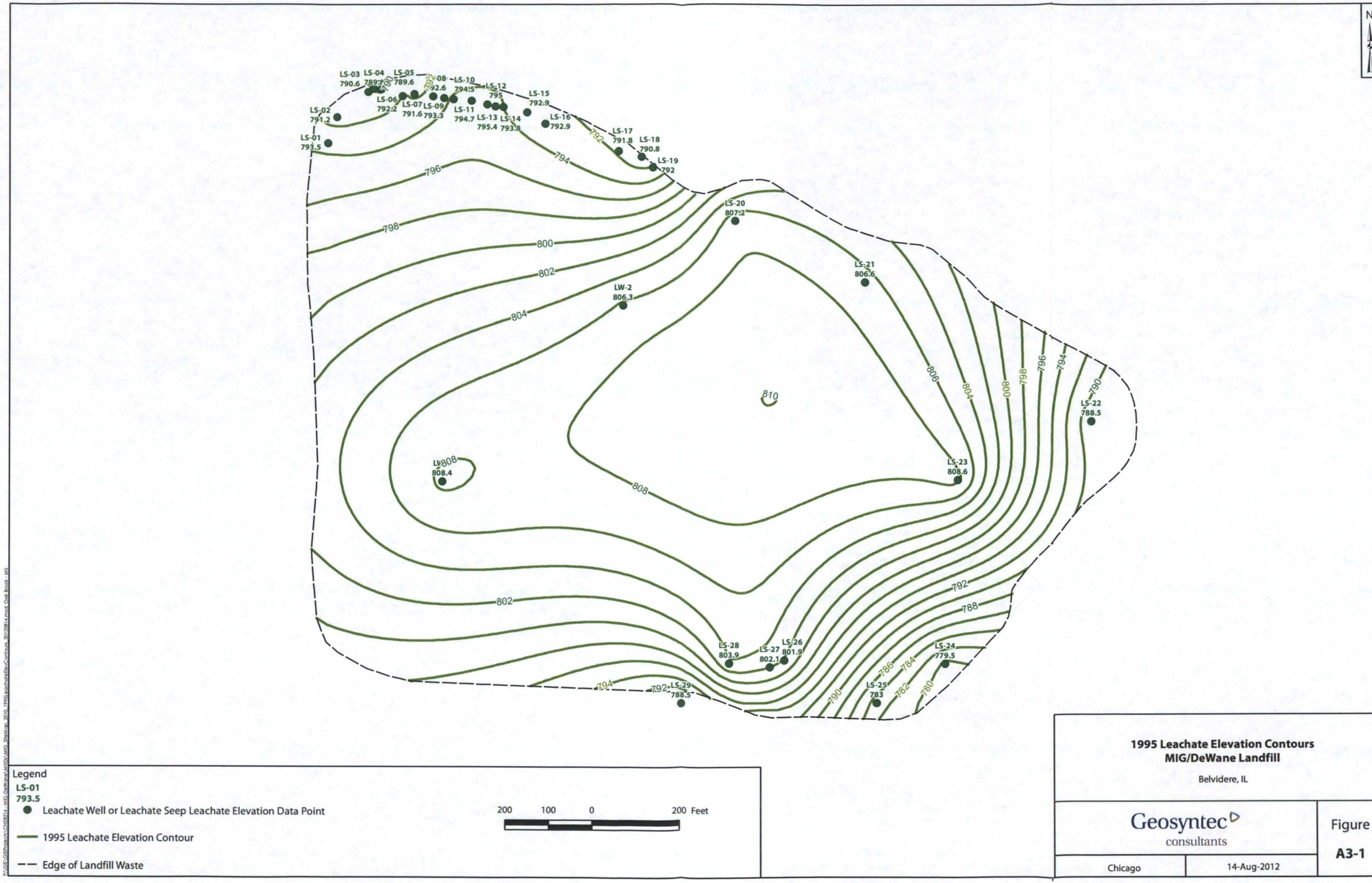
To calculate the estimated difference in volume between the 1995 and 2008, the data shown in **Table 2** (of the Technical Memorandum) was to develop leachate elevation contour maps for 1995 and 2008 (see attached Figures **A3-1** and **A3-2**) using the contouring software, Surfer® 7 by Golden Software, Inc. The difference in volume was then calculated between the contour maps using AutoCAD Civil 3D 2011 by Autodesk®. The AutoCAD Civil 3D 2011 calculation is presented below:

Base Surface:	Leachate Elev._1995 (see **Figure A3-1**)
Comparison Surface:	Leachate Elev._2008 (see **Figure A3-2**)
Cut Factor:	1.000
Fill Factor:	1.000
Cut volume (adjusted):	195,174.68 Cu. Yd (1995 Surface)
Fill volume (adjusted):	149,587.22 Cu. Yd. (2008 Surface)
Net volume (adjusted):	45,587.46 Cu. Yd.
Net volume (gallons):	9.207 Million gallons

Where the "Cut Volume" is the volume of leachate estimated during 1995 and the "Fill Volume" is the volume of leachate estimated in 2008. The "Net Volume" is the difference between 1995 volume and the 2008 volume of estimated leachate.

RESULTS

The results indicate that an estimated volume of leachate within the MIG/DeWane Landfill was approximately 9.207 million gallons less in 2008, than in 1995.



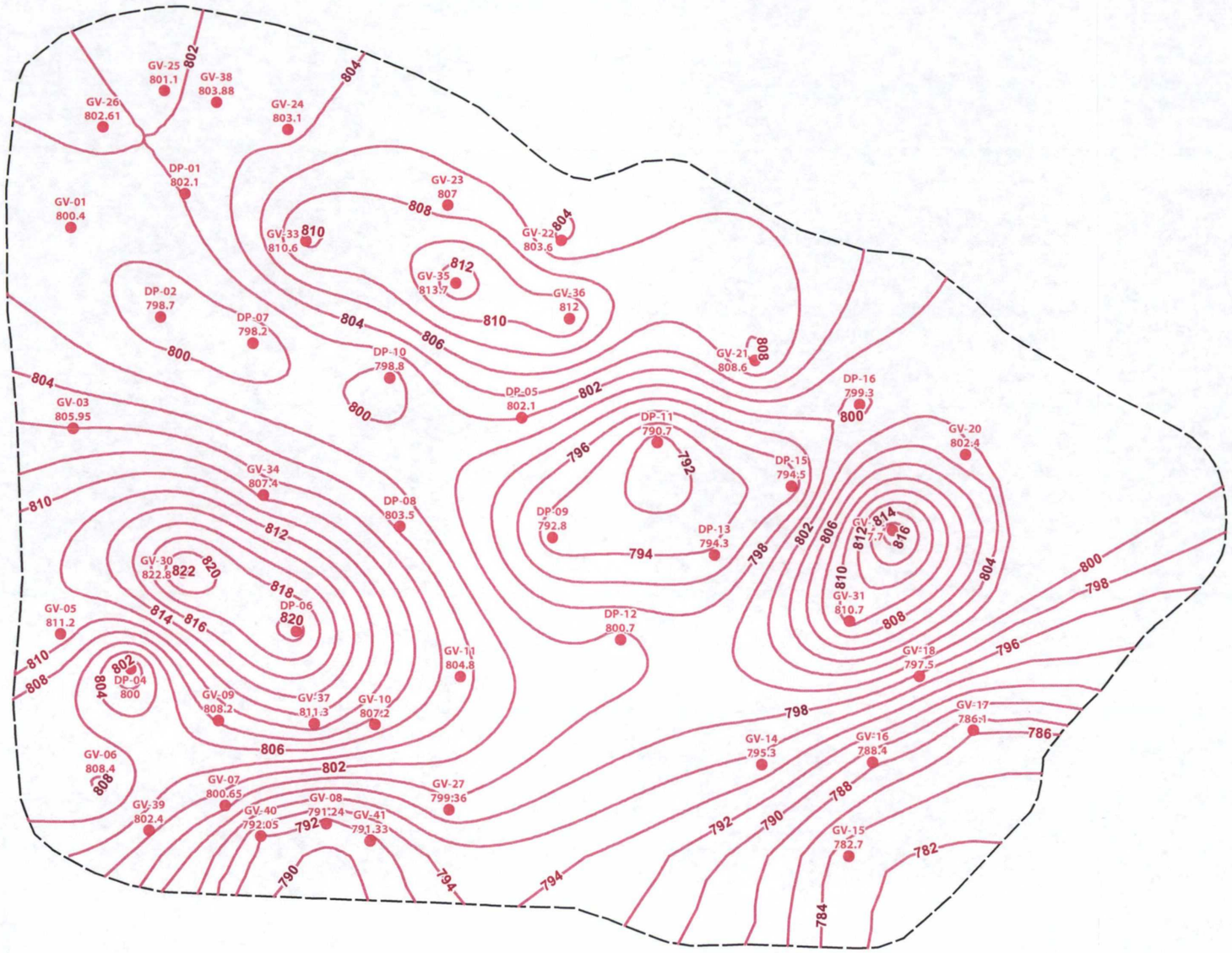
1995 Leachate Elevation Contours
MIG/DeWane Landfill

Belvidere, IL

Geosyntec consultants

Chicago | 14-Aug-2012

Figure **A3-1**



Legend

GV-01
800.4
Gas Vent or Dual Phase Well Leachate Elevation Data Point

2008 Leachate Elevation Contour

Edge of Landfill Waste

200 100 0 200 Feet

2008 Leachate Elevation Contours
MIG/DeWane Landfill

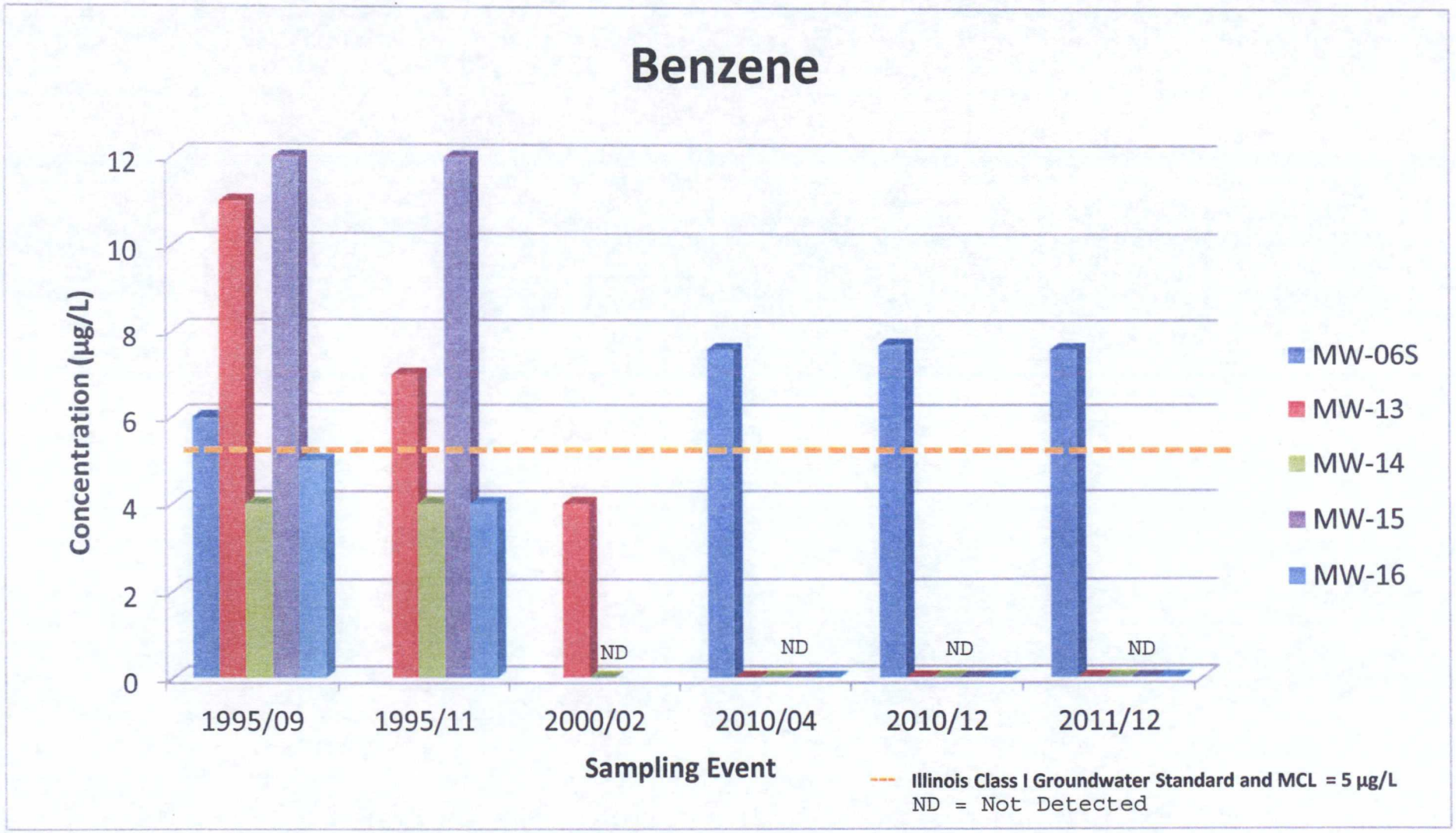
Belvidere, IL

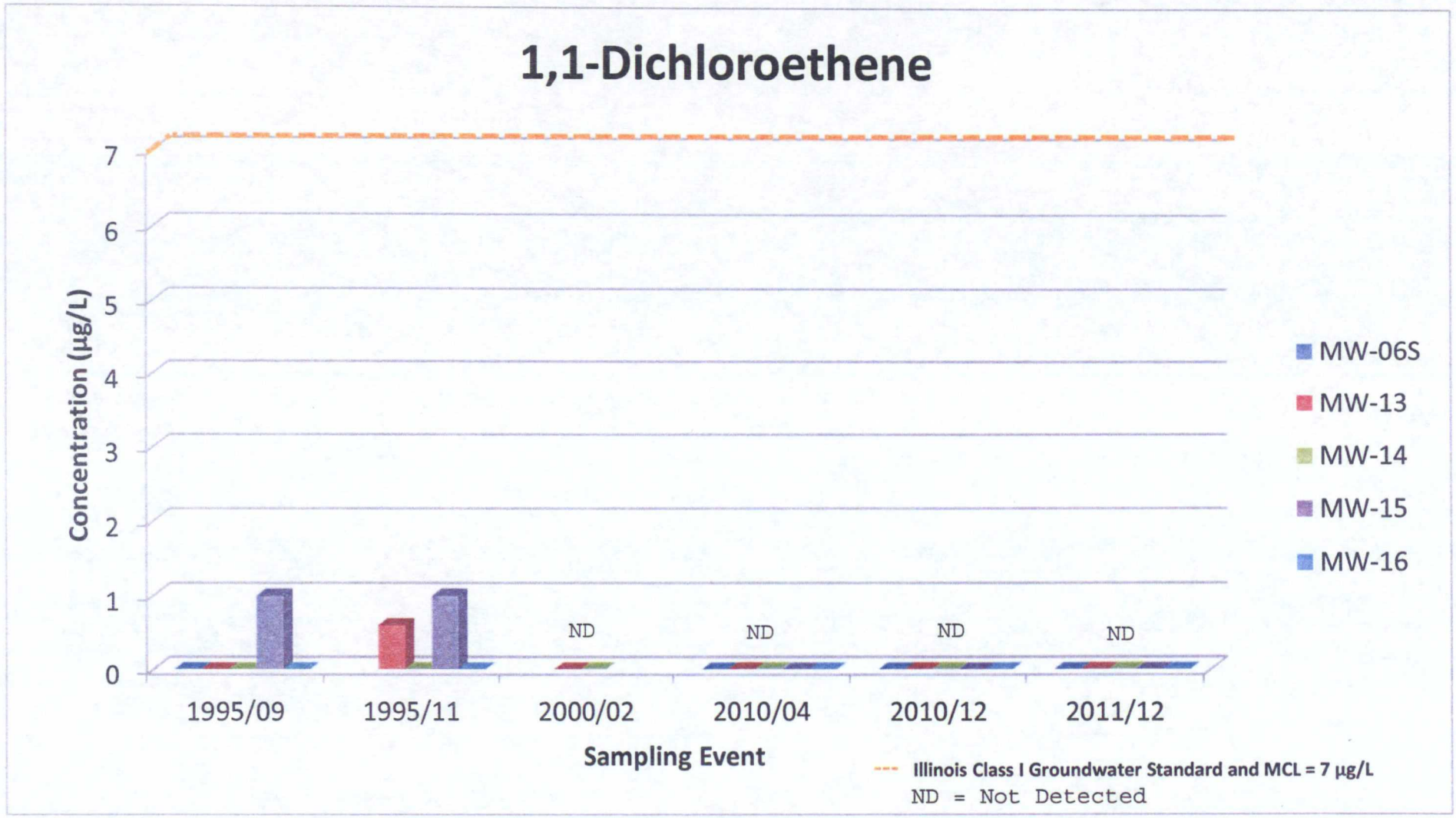
Geosyntec consultants

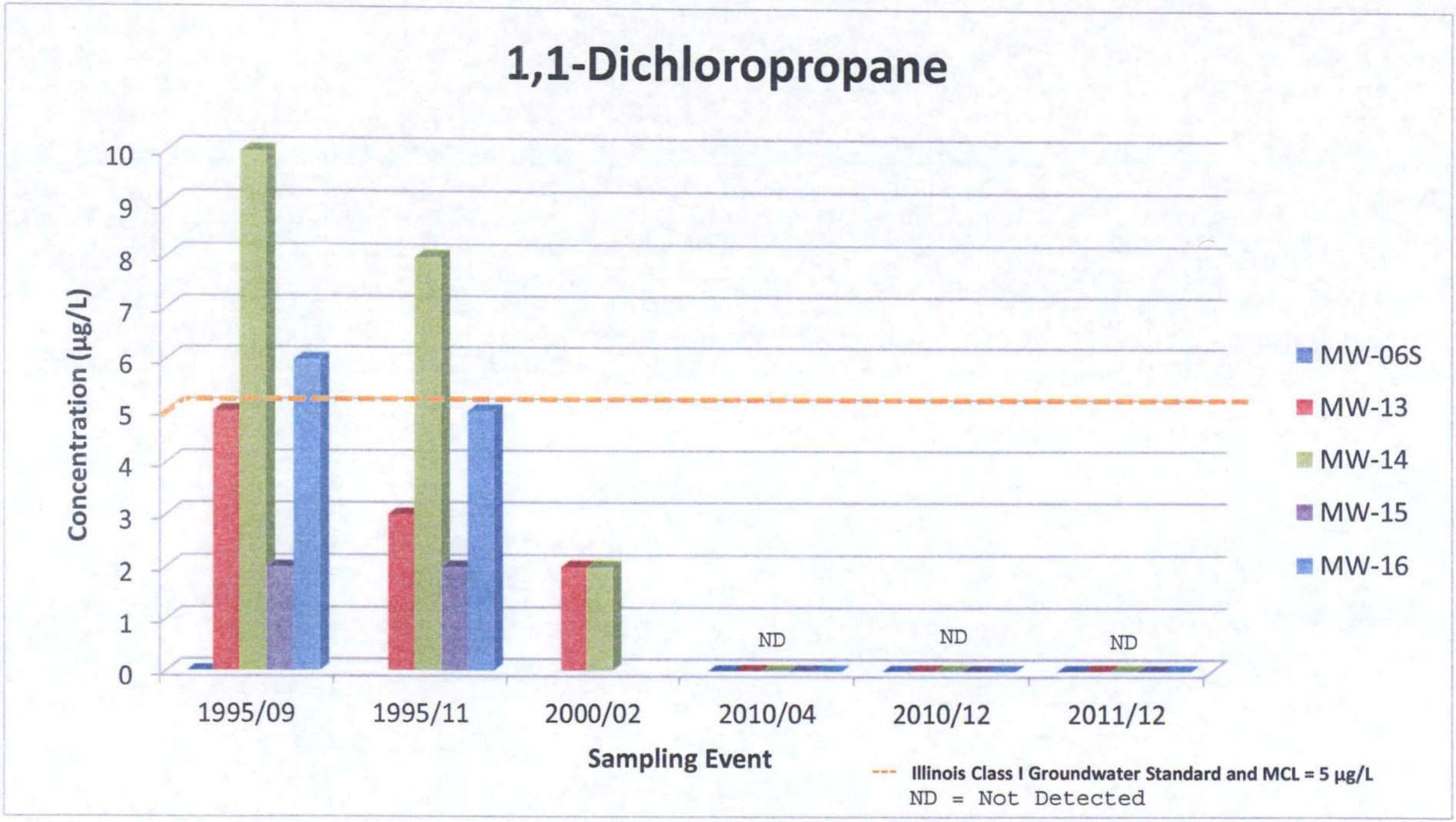
Chicago | 14-Aug-2012

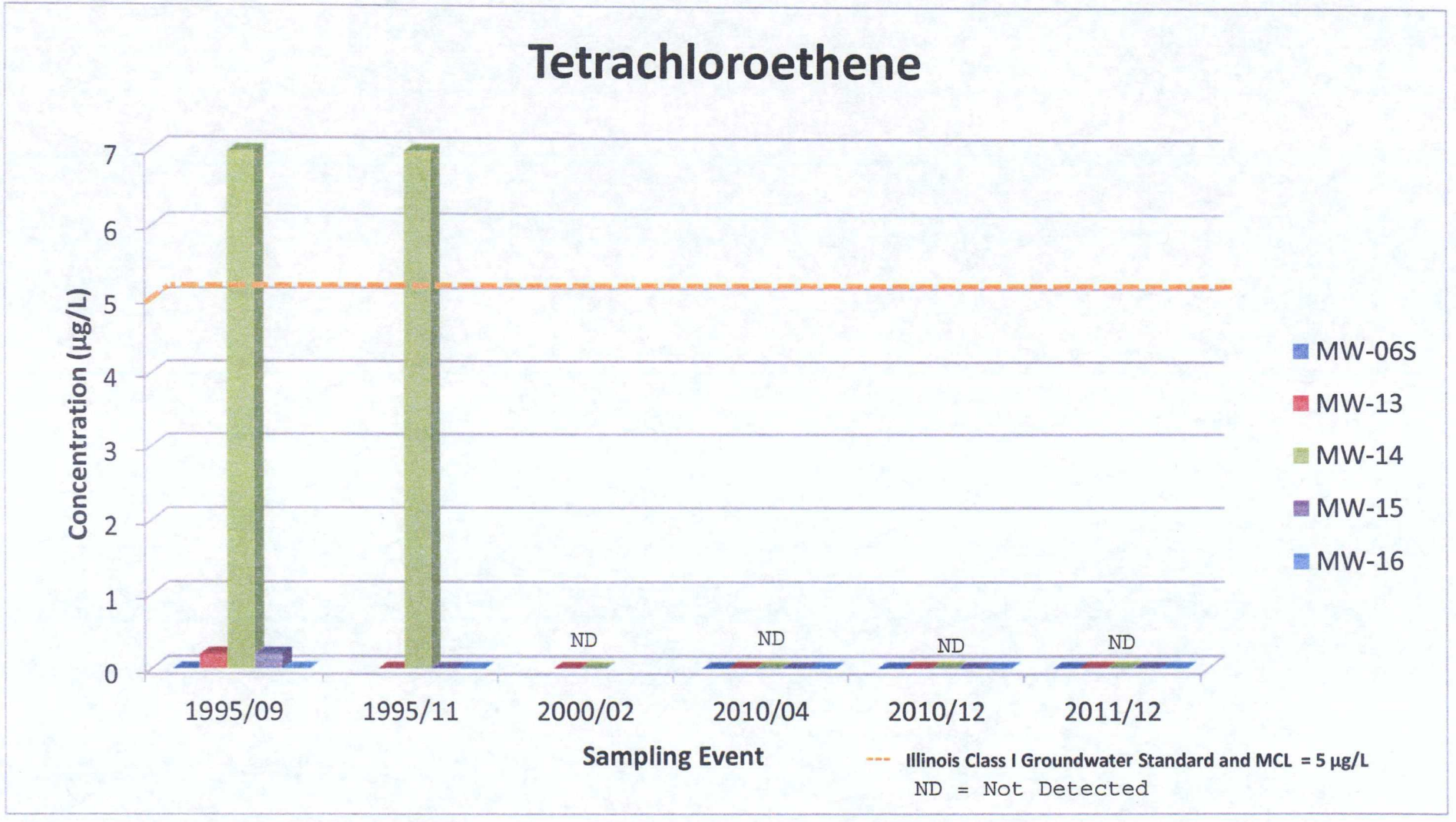
Figure **A3-2**

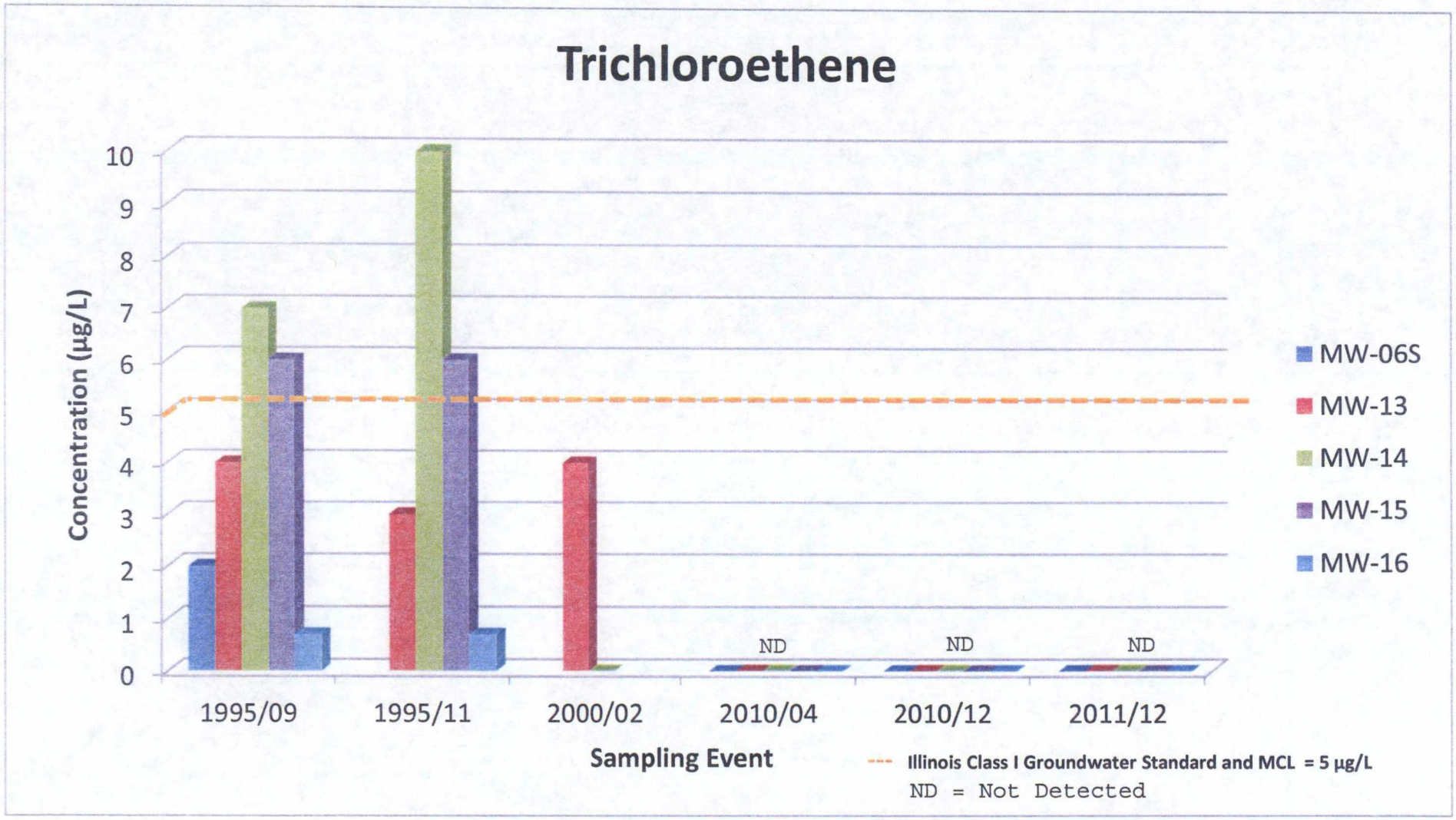
Appendix 4

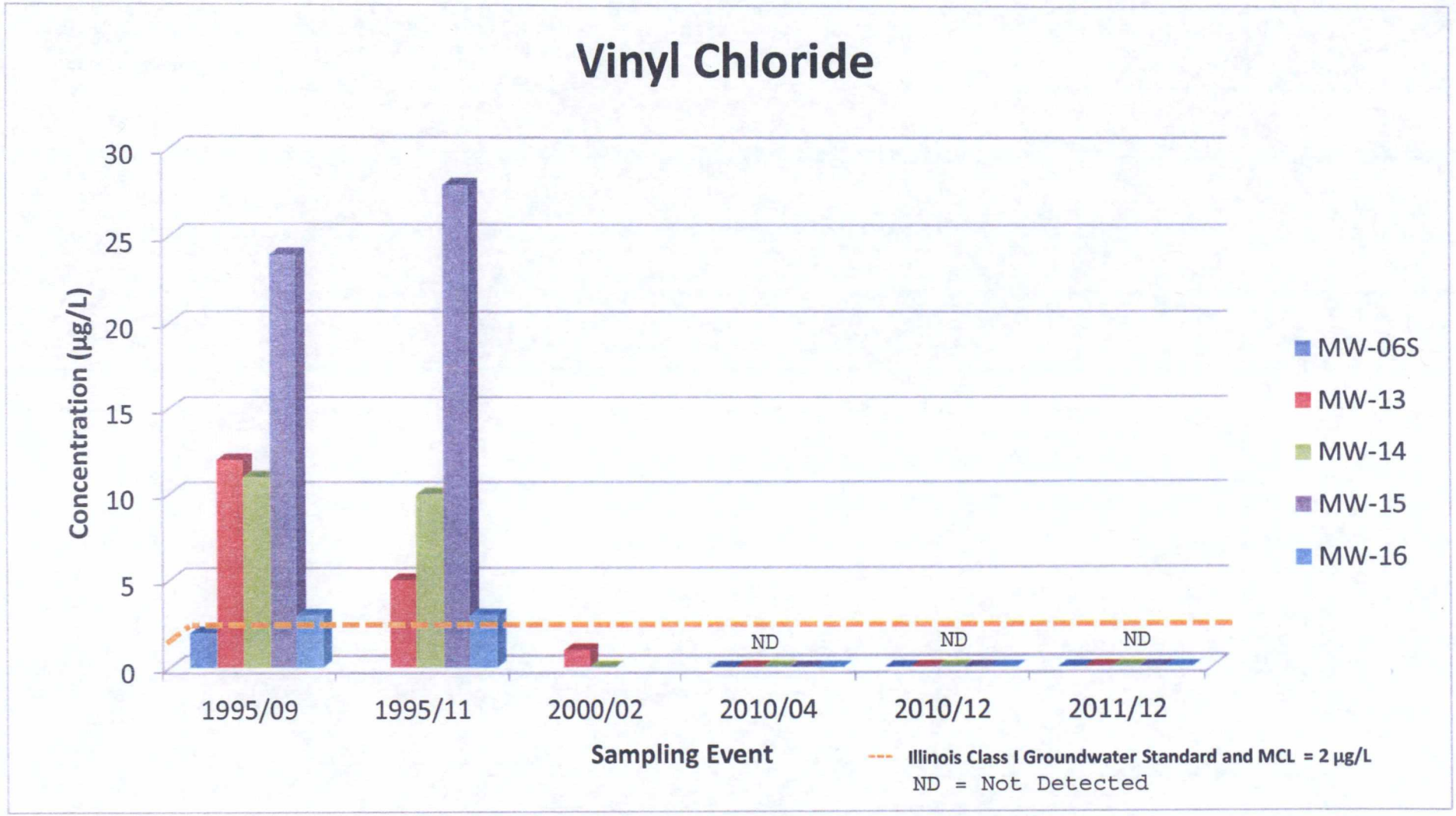

Benzene
Concentration (µg/L)
12
10
8
6
4
2
0
ND
ND
ND
ND
1995/09
1995/11
2000/02
2010/04
2010/12
2011/12
Sampling Event
MW-06S
MW-13
MW-14
MW-15
MW-16
Illinois Class I Groundwater Standard and MCL = 5 µg/L
ND = Not Detected


1,1-Dichloroethene
Concentration (µg/L)
7
6
5
4
3
2
1
0
ND
ND
ND
ND
1995/09
1995/11
2000/02
2010/04
2010/12
2011/12
Sampling Event
MW-06S
MW-13
MW-14
MW-15
MW-16
Illinois Class I Groundwater Standard and MCL = 7 µg/L
ND = Not Detected


1,1-Dichloropropane
Concentration (µg/L)
10
9
8
7
6
5
4
3
2
1
0
ND
ND
ND
1995/09
1995/11
2000/02
2010/04
2010/12
2011/12
Sampling Event
MW-06S
MW-13
MW-14
MW-15
MW-16
Illinois Class I Groundwater Standard and MCL = 5 µg/L
ND = Not Detected


Tetrachloroethene
Concentration (µg/L)
7
6
5
4
3
2
1
0
ND
ND
ND
ND
1995/09
1995/11
2000/02
2010/04
2010/12
2011/12
Sampling Event
MW-06S
MW-13
MW-14
MW-15
MW-16
Illinois Class I Groundwater Standard and MCL = 5 µg/L
ND = Not Detected


Trichloroethene
Concentration (µg/L)
10
9
8
7
6
5
4
3
2
1
0
ND
ND
ND
1995/09
1995/11
2000/02
2010/04
2010/12
2011/12
Sampling Event
MW-06S
MW-13
MW-14
MW-15
MW-16
Illinois Class I Groundwater Standard and MCL = 5 µg/L
ND = Not Detected


Vinyl Chloride
Concentration (µg/L)
30
25
20
15
10
5
0
ND
ND
ND
1995/09
1995/11
2000/02
2010/04
2010/12
2011/12
Sampling Event
MW-06S
MW-13
MW-14
MW-15
MW-16
Illinois Class I Groundwater Standard and MCL = 2 µg/L
ND = Not Detected