

# 2018 Annual Groundwater Monitoring and Corrective Action Report

**Weston Disposal Site No. 3 Landfill**  
Town of Knowlton, Wisconsin

**Wisconsin Public Service Corporation**

January 31, 2019



JANUARY 31, 2019 | PROJECT #71202

# 2018 Annual Groundwater Monitoring and Corrective Action Report

Weston Disposal Site No. 3 Landfill

Town of Knowlton, Wisconsin

Prepared for:

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## TABLE OF CONTENTS

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<b>TABLES .....</b>	<b>ii</b>
<b>FIGURES.....</b>	<b>ii</b>
<b>APPENDICES .....</b>	<b>ii</b>
<b>ACRONYMS AND ABBREVIATIONS.....</b>	<b>iii</b>
<b>1 INTRODUCTION .....</b>	<b>1</b>
<b>2 MONITORING AND CORRECTIVE ACTION PROGRAM STATUS.....</b>	<b>2</b>
<b>3 KEY ACTIONS COMPLETED IN 2018 .....</b>	<b>3</b>
<b>4 PROBLEMS ENCOUNTERED AND ACTIONS TO RESOLVE PROBLEMS .....</b>	<b>4</b>
<b>5 KEY ACTIVITIES PLANNED FOR 2019 .....</b>	<b>5</b>
<b>REFERENCES.....</b>	<b>6</b>

## TABLES

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Table 1	Detection Monitoring Program Summary
Table 2	Weston Disposal Site No. 3 Landfill: Appendix III Analytical Results

## FIGURES

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Figure 1	Groundwater Sampling Well Location Map
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## APPENDICES

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Appendix A	40 CFR 257.94(e)(2) Alternate Source Demonstration (ASD) – April 15, 2018
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## ACRONYMS AND ABBREVIATIONS

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ASD	Alternate Source Demonstration
B	Boron
Ca	Calcium
CCR	Coal Combustion Residual
CFR	Code of Federal Regulations
Cl	Chloride
mg/L	milligrams per liter
OBG	O'Brien & Gere Engineers, Inc., part of Ramboll
SO <sub>4</sub>	Sulfate
SSI	Statistically Significant Increase
TBD	To be Determined
TDS	Total Dissolved Solids
WDS3	Weston Disposal Site No. 3
WPSC	Wisconsin Public Service Corporation

## 1 INTRODUCTION

This report has been prepared on behalf of Wisconsin Public Service Corporation (WPSC) by O'Brien & Gere Engineers, Inc., part of Ramboll (OBG), to provide the information required by Title 40 of the Code of Federal Regulations (40 CFR) 257.90(e) for the Weston Disposal Site No. 3 (WDS3) Landfill located in the Town of Knowlton, Wisconsin.

In accordance with 40 CFR 257.90(e), the owner or operator of an existing coal combustion residual (CCR) unit must prepare an annual groundwater monitoring and corrective action report (Annual Report) for the preceding calendar year. The Annual Report must document the status of the groundwater monitoring and corrective action program for the CCR unit and summarize key actions completed, describe any problems encountered, discuss actions to resolve the problems, and project key activities for the upcoming year. At a minimum, the Annual Report must contain the following information, to the extent available:

- (1) A map, aerial image, or diagram showing the CCR unit and all background (or upgradient) and downgradient monitoring wells, to include the well identification numbers, that are part of the groundwater monitoring program for the CCR unit;
- (2) Identification of any monitoring wells that were installed or decommissioned during the preceding year, along with a narrative description of why those actions were taken;
- (3) In addition to all the monitoring data obtained under 40 CFR 257.90 through 257.98, a summary including the number of groundwater samples that were collected for analysis for each background and downgradient well, the dates the samples were collected, and whether the sample was required by the detection monitoring or assessment monitoring programs;
- (4) A narrative discussion of any transition between monitoring programs (*e.g.*, the date and circumstances for transitioning from detection monitoring to assessment monitoring in addition to identifying the constituent(s) detected at a statistically significant increase over background levels); and
- (5) Other information required to be included in the annual report as specified in 40 CFR 257.90 through 257.98.<sup>1</sup>

This report provides the required information for the WDS3 Landfill for calendar year 2018.

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<sup>1</sup> For calendar year 2018, corrective action and other information required to be included in the annual report as specified in 40 CFR 257.95 through 257.98 is not applicable.

## 2 MONITORING AND CORRECTIVE ACTION PROGRAM STATUS

The WDS3 Landfill remained in Detection Monitoring (40 CFR 257.94) during 2018. Detection Monitoring Program sampling dates and parameters collected are provided in Table 1. Analytical results from the two sampling rounds collected and those statistically analyzed in 2018 are included in Table 2.

In accordance with 40 CFR 257.93(h)(2), the *Statistical Analysis Plan, Weston Disposal Site No. 3 Landfill* (Natural Resource Technology, an OBG Company, 2017), and within 90 days of completing sampling and analysis (receipt of data); analytical data was evaluated for statistically significant increases (SSIs) over background concentrations for Appendix III constituents at monitoring wells at the WDS3 Landfill. SSIs and the SSI determination dates are provided in Table 1.

40 CFR 257.94(e)(2) allows 90 days to demonstrate that a SSI was caused by a source other than the CCR unit or resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality (i.e., an alternate source demonstration). An alternate source demonstration (ASD) was completed for the WDS3 Landfill on the date provided in Table 1. The ASD document is provided in Appendix A.

**Table 1. Detection Monitoring Program Summary**

Detection Monitoring Round	Sampling Date	Parameters Collected	Data Received	SSI Determination Date	SSI Parameters	Resample Date	ASD Date
1	10/11/2017	Appendix III	10/26/2017	1/15/2018	B, Ca, Cl, SO <sub>4</sub> , TDS	NA	4/15/2018
2	4/26/2018	Appendix III	5/10/2018	8/8/2018	B, Ca, SO <sub>4</sub> , TDS	NA	4/15/2018
3	10/25/2018	Appendix III	11/26/2018	TBD (before 2/24/2019)	TBD	TBD	TBD

B – Boron  
Ca – Calcium  
Cl – Chloride  
NA – Not applicable  
SO<sub>4</sub> – Sulfate  
TBD – To Be Determined  
TDS – Total Dissolved Solids

The WDS3 Landfill remains in the Detection Monitoring Program in accordance with 40 CFR 257.94.

### 3 KEY ACTIONS COMPLETED IN 2018

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Two groundwater sampling events were completed in 2018 as part of the Detection Monitoring Program, Rounds 2 and 3. One groundwater sample was collected from each background and downgradient well in the monitoring system during each event. Sampling dates are summarized in Table 1. All samples were collected and analyzed in accordance with the *Sampling and Analysis Plan, Weston Disposal Site No. 3 Landfill* (Natural Resource Technology, an OBG Company, 2017). All monitoring data obtained under 40 CFR 257.90 through 257.98 (as applicable) in 2018 are presented in Table 2.

A map showing the groundwater monitoring system, including the CCR unit and all background (upgradient) and downgradient monitoring wells with well identification numbers, for the WDS3 Landfill is presented on Figure 1. There were no changes to the monitoring system in 2018.

Statistical evaluation, including SSI determinations, of analytical data from the Detection Monitoring Program for October 11, 2017 (Detection Monitoring Round 1) and April 26, 2018 (Detection Monitoring Round 2) were completed within 90 days of receipt of the analytical data. Statistical evaluation of analytical data is being performed in accordance with the *Statistical Analysis Plan, Weston Disposal Site No. 3 Landfill* (Natural Resource Technology, an OBG Company, 2017).

An ASD dated April 15, 2018 was prepared for the WDS3 Landfill in 2018 and is provided in Appendix A; the April 15, 2018 ASD is applicable to wells and parameters with SSIs during Detection Monitoring Rounds 1 and 2, as indicated in Table 1. The ASD was prepared in accordance with 40 CFR 257.94(e)(2) and provides a description, data, and pertinent information supporting an alternate source applicable to the wells and parameters with SSIs at the WDS3 Landfill. The ASD supports the position that the SSIs observed during the Detection Monitoring Program were not due to a release from the CCR unit but were either from anthropogenic impacts in the area of WDS3 Landfill or from naturally occurring conditions (e.g. natural variation in groundwater quality).

#### 4 PROBLEMS ENCOUNTERED AND ACTIONS TO RESOLVE PROBLEMS

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No problems were encountered during implementation of the Detection Monitoring Program during 2018. Groundwater samples were collected and analyzed in accordance with the *Sampling and Analysis Plan, Weston Disposal Site No. 3 Landfill* (Natural Resource Technology, an OBG Company, 2017), and all data was accepted.

## 5 KEY ACTIVITIES PLANNED FOR 2019

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The following key activities are planned for 2019:

- Continuation of the Detection Monitoring Program with semi-annual sampling scheduled for the 2<sup>nd</sup> and 4<sup>th</sup> quarters of 2019.
- Complete statistical evaluation of analytical data from the downgradient wells, using background data to determine whether a SSI of Appendix III parameters over background concentrations has occurred.
- If an SSI is identified, potential alternate sources (*i.e.*, a source other than the CCR unit caused the SSI or that that SSI resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality) will be evaluated. If an alternate source is demonstrated to be the cause of the SSI, a written demonstration will be completed within 90 days of SSI determination and included in the annual groundwater monitoring and corrective action report for 2019.
  - » If an alternate source(s) is not identified to be the cause of the SSI, the applicable requirements of 40 CFR 257.94 through 257.98 (*e.g.*, assessment monitoring) will apply in 2019, including associated recordkeeping/notifications required by 40 CFR 257.105 through 257.108.

## REFERENCES

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Natural Resource Technology, an OBG Company, 2017, Sampling and Analysis Plan, Weston Disposal Site No. 3 Landfill, Town of Knowlton, Wisconsin, October 3, 2017.

Natural Resource Technology, an OBG Company, 2017, Statistical Analysis Plan, Weston Disposal Site No. 3 Landfill, Town of Knowlton, Wisconsin, October 17, 2017.

**Tables**



**Weston Disposal Site No. 3 Landfill**  
**Table 2. Weston Disposal Site No. 3 Landfill: Appendix III Analytical Results**

**Date Range: 10/01/2017 to 10/25/2018**

Well Id	Date Sampled	Lab Id	B, tot, mg/L	Ca, tot, mg/L	Cl, tot, mg/L	F, tot, mg/L	pH (field), STD	SO4, tot, mg/L
LS-100	10/11/2017	40158568002	0.0559	11.000	0.860	<0.100	6.270	15.700
	04/26/2018	40168127002	0.0292	6.550	0.720	<0.100	6.970	13.100
	10/25/2018	AE31422	0.0250	11.000	0.290	0.066	6.300	17.000
LS-101	10/11/2017	40158568003	0.0138	11.400	0.760	<0.100	5.750	5.900
	04/26/2018	40168127003	<0.0067	4.180	0.540	<0.100	6.450	4.100
	10/25/2018	AE31423	0.0140	3.000	0.400	0.061	6.100	3.100
LS-105	10/11/2017	40158568004	0.0452	18.800	3.600	<0.500	7.240	31.000
	04/26/2018	40168127004	0.0161	18.700	2.600	<0.500	7.430	15.900
	10/25/2018	AE31424	0.0300	20.000	0.740	0.085	6.500	16.000
LS-106	10/11/2017	40158568005	0.1060	15.500	3.600	<0.500	6.580	11.400
	04/26/2018	40168127005	0.0544	6.160	<2.500	<0.500	7.510	<5.000
	10/25/2018	AE31425	0.0540	6.000	0.470	0.066	6.400	3.200
LS-107	10/11/2017	40158568006	0.0143	26.000	6.200	<0.100	6.130	25.500
	04/26/2018	40168127006	0.0097	20.100	3.000	<0.100	6.850	17.500
	10/25/2018	AE31426	0.0170	21.000	2.700	0.065	6.000	26.000

**Weston Disposal Site No. 3 Landfill**  
**Table 2. Weston Disposal Site No. 3 Landfill: Appendix III Analytical Results**

**Date Range: 10/01/2017 to 10/25/2018**

Well Id	Date Sampled	Lab Id	TDS, mg/L
LS-100	10/11/2017	40158568002	80.000
	04/26/2018	40168127002	82.000
	10/25/2018	AE31422	50.000
LS-101	10/11/2017	40158568003	62.000
	04/26/2018	40168127003	58.000
	10/25/2018	AE31423	44.000
LS-105	10/11/2017	40158568004	100.000
	04/26/2018	40168127004	118.000
	10/25/2018	AE31424	110.000
LS-106	10/11/2017	40158568005	108.000
	04/26/2018	40168127005	88.000
	10/25/2018	AE31425	58.000
LS-107	10/11/2017	40158568006	134.000
	04/26/2018	40168127006	128.000
	10/25/2018	AE31426	120.000






## Figures



Y:\GIS\Projects\161660\MXD\2018\Annual\_GWM\_CAR\Figure 1\_GW Samp Well Loc\_Webster\_DSS.mxd Author: GalenMC; Date/Time: 1/16/2019, 4:01:46 PM



- NOTES:**
1. THE TOPOGRAPHIC BASE MAP HAS BEEN CREATED FROM AERIAL PHOTOGRAPHY AND LIDAR ACQUISITION BY AERO-METRIC, INC., SHEBOYGAN, WI. DATE FLOWN: NOVEMBER 5, 2010.
  2. HORIZONTAL DATUM IS REFERENCED TO WISCONSIN STATE PLANE COORDINATE SYSTEM, CENTRAL ZONE, NORTH AMERICAN DATUM (NAD 83/2007), US SURVEY FEET.
  3. VERTICAL DATUM IS NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88). CONTOUR INTERVAL IS 2 FEET.

 CCR RULE DOWNGRADE MONITORING WELL LOCATION  
 CCR RULE UPGRADIENT MONITORING WELL LOCATION  
 WESTON DISPOSAL SITE NO. 3 LANDFILL


DRAWN BY/DATE:  
 MPG 1/16/19  
 REVIEWED BY/DATE:  
 GRL 1/16/19  
 APPROVED BY/DATE:  
 GRL 1/16/19

**GROUNDWATER SAMPLING WELL LOCATION MAP**  
  
 2018 ANNUAL GROUNDWATER MONITORING AND  
 CORRECTIVE ACTION REPORT  
 WESTON DISPOSAL SITE NO. 3 LANDFILL  
 TOWN OF KNOWLTON, WISCONSIN

PROJECT NO: 71202  
 FIGURE NO: 1







**Appendix A**  
**40 CFR 257.94(e)(2)**  
**Alternate Source**  
**Demonstration (ASD) –**  
**April 15, 2018**

**OBG**

# **Alternate Source Demonstration**

**Weston Disposal Site No. 3 Landfill  
Town of Knowlton, WI**

**Wisconsin Public Service Corporation**

April 15, 2018



APRIL 15, 2018 | PROJECT #67985

# Alternate Source Demonstration

Weston Disposal Site No. 3 Landfill  
Town of Knowlton, Wisconsin

Prepared for:

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## TABLE OF CONTENTS

<b>LIST OF TABLES</b> .....	<b>i</b>
<b>LIST OF FIGURES</b> .....	<b>i</b>
<b>LIST OF ATTACHMENTS</b> .....	<b>ii</b>
<b>ACRONYMS AND ABBREVIATIONS</b> .....	<b>iii</b>
<b>1 INTRODUCTION</b> .....	<b>1</b>
1.1 Overview.....	1
1.2 Background.....	1
1.3 Groundwater Monitoring.....	2
1.4 Geology.....	2
<b>2 ALTERNATE SOURCE DEMONSTRATION</b> .....	<b>4</b>
2.1 Summary.....	4
2.2 ASD Supporting Information.....	5
2.2.1 Existing Groundwater Concentrations.....	5
2.2.2 Landfill Design.....	10
2.2.3 Variability of Uppermost Aquifer and Geochemistry.....	11
2.2.4 Changes in Geochemical Conditions From Landfill Construction.....	15
<b>3 CONCLUSIONS AND CERTIFICATION</b> .....	<b>17</b>
<b>REFERENCES</b> .....	<b>19</b>

### LIST OF TABLES

Table 1	CCR Rule Groundwater Monitoring Well Information
Table 2	Weston Disposal Site No. 3: Appendix III Analytical Results
Table 3	Summary of Average Ion Ratios

### LIST OF FIGURES

Figure 1	Groundwater Sampling Well Location Map
Figure 2	Groundwater Elevation Contour Map – March 10, 2017
Figure 3	Groundwater Elevation Contour Map, October 11, 2017
Figure 4	Time Series Plot of Calcium, Boron, and Sulfate in LS-100
Figure 5	Historical Concentrations Calcium and Sulfate in LS-100
Figure 6	Historical Concentrations of Calcium and Sulfate in LS-101
Figure 7	Time Series of SSI Parameters at LS-105
Figure 8	Time Series Plot of Calcium Concentrations at LS-105
Figure 9	Time Series of SSI Parameters at LS-106
Figure 10	Time Series of SSI Parameters at LS-107
Figure 11	Summary of Well Screen Intervals, High and Low Groundwater Elevations, and Bedrock Surface
Figure 12	Piper Diagram of Water Quality
Figure 13	Stiff Diagram of Water Quality
Figure 14	Site Aerial Photograph- Summer 2015
Figure 15	Time Series of pH Measurements in CCR Rule Wells



## LIST OF ATTACHMENTS

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- Attachment A Select Cross-Sections and Drawings from Previous Reports
- Attachment B WDNR Construction Documentation Approval for Cell 1 & 2
- Attachment C Construction Documentation Report Appendix C – Phase I Closure Report



## ACRONYMS AND ABBREVIATIONS

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ASD	alternate source demonstration
CCR	Coal Combustion Residuals
CFR	Code of Federal Regulations
HDPE	high density polyethylene
mg/L	milligrams per liter
msl	mean sea level
NRT	Natural Resource Technology, an OBG Company
OBG	O'Brien & Gere Engineers, Inc.
SSI	statistically significant increase
STD	standard units
TDS	Total dissolved solids
WAC	Wisconsin Administrative Code
WDNR	Wisconsin Department of Natural Resources
WDS3	Weston Disposal Site No. 3

## 1 INTRODUCTION

### 1.1 OVERVIEW

This document has been prepared on behalf of Wisconsin Public Service Corporation (WPSC) by O'Brien & Gere Engineers, Inc. (OBG) to provide pertinent information for an alternate source demonstration (ASD) as allowed by 40 CFR § 257.94(e)(2) for the Weston Disposal Site No. 3 (WDS3) Landfill located in the Town of Knowlton, Wisconsin.

Initial background groundwater monitoring consisting of a minimum of eight samples as required under 40 CFR § 257.94(b) was initiated in February 2016 and completed prior to October 17, 2017. The first semi-annual detection monitoring sample was collected on October 12, 2017 for which analytical data was received on October 25, 2017. Statistical analysis of the first detection monitoring sample for statistically significant increases (SSIs) of 40 CFR Part 257 Subpart D (CCR Rule) Appendix III parameters over background concentrations was completed within 90 days of collection of the sample (January 15, 2018). The determination identified the following SSIs at downgradient monitoring wells:

- Boron above the background prediction interval at wells LS-100, LS-105, and LS-106
- Calcium above the background prediction interval at wells LS-100, LS-105, LS-106, and LS-107
- Chloride above the background prediction interval at well LS-107
- Sulfate above the background prediction interval at wells LS-100, LS-105, and LS-107
- Total dissolved solids (TDS) above the background prediction interval at wells LS-105, LS-106, and LS-107

40 CFR § 257.94(e)(2) allows the owner or operator 90 days from the date of determination to demonstrate that a source other than the coal combustion residual (CCR) unit caused the SSI, or that the apparent SSI was from a source other than the CCR unit, or that the SSI resulted from errors in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. Pursuant to 40 CFR § 257.94(e)(2), the following demonstrates that sources other than the recently reconstructed landfill were the cause of the SSIs listed above. This ASD was completed within 90 days of determination of the SSIs (April 15, 2018) as required by 40 CFR § 257.94(e)(2).

### 1.2 BACKGROUND

The WDS3 Landfill is located in the E 1/2 of the NW 1/4 and W 1/2 of the NE 1/4, Section 23, Township 26 North, Range 7 East, Town of Knowlton, Marathon County, Wisconsin. The landfill was originally permitted by the Wisconsin Department of Natural Resources (WDNR) on October 20, 1986, with the issuance of a Conditional Plan of Operation Approval. The original facility was licensed and approved to consist of 8 cells covering 35 acres and having a total design capacity of 873,000 cubic yards. Former Cell 1 was constructed and placed into operation with the construction documentation approval on December 18, 1990.

However, due to WPSC's beneficial use program, the former cell was only partially filled, temporarily capped, and remained dormant. In 2011, WPSC began a permitting effort to expand the WDS3 landfill from 35 acres and 873,000 cubic yards to 57.6 acre and 4,075,500 cubic yards. The new expanded landfill was permitted December 11, 2014, with the issuance of a Conditional Plan of Operation Approval by WDNR.

As part of that permitting effort the geologic and hydrogeologic investigation program defined the geologic conditions, groundwater quality, and groundwater flow regimes for the site. All of the information for permitting of the reconfigured landfill is included in the report titled; *Feasibility Report, Proposed Weston Disposal Site No. 3 Expansion* (AECOM, 2012). Table 1 summarizes the location and applicable elevations of the CCR groundwater monitoring wells. Figure 1 shows the location of all existing groundwater monitoring wells.

Cells 1 and 2 of the existing landfill were constructed during the 2015 construction season, with completion of the new landfill cells and installation of a new leachate force main, storage tank, and load-out system in late December 2015. The construction of Cells 1 and 2 of the new landfill included the removal and off-site disposal of all CCR from the former Cell 1 at a licensed municipal solid waste landfill (TRC, 2016).

### 1.3 GROUNDWATER MONITORING

Background groundwater sampling in compliance with the CCR Rule was initiated in February 2016, with the final round of background groundwater samples collected in October 2017. Groundwater is also sampled to meet the requirements of a WDNR program and groundwater samples have been collected on other portions of the site since the late 1980's. The CCR Rule monitoring program includes background well LS-101, and downgradient wells LS-100, and LS-105 to LS-107. A map showing the groundwater monitoring system, including the WDNR program and CCR Rule monitoring wells, is presented on Figure 1. Groundwater generally flows both southeast and northwest from a bedrock high that trends southwest to northeast (Figure 2 and 3).

All monitoring data obtained under 40 CFR § 257.90 through 257.98 (as applicable) are presented in Table 2. Statistical evaluation of analytical data was performed in accordance with the Statistical Analysis Plan, Weston Disposal Site No. 3, Wisconsin Public Service (Natural Resource Technology, an OBG Company, 2017b).

### 1.4 GEOLOGY

Based on the AECOM investigation and previous geologic investigations at the site, the geology at the landfill property is characterized as a thin layer of glacial till and weathered bedrock overlying a shallow, variable granitic bedrock surface that has been previously influenced by glaciation. The underlying bedrock is an igneous Precambrian granite, quartz diorite, and/or amphibole. The unconsolidated sediments are generally between 0.5 and 20.0 feet thick, consisting of a relatively thin and discontinuous unit of glacial till and weathered bedrock identified as the Marathon Formation (undifferentiated). The weathered bedrock layer was derived from the parent bedrock material, via erosion and/or by glacial processes, which also leaves behind glacially transported material. Typically, it is difficult to differentiate the till from the weathered bedrock. The Marathon Formation (undifferentiated) tends to exhibit some degree of sorting, with no relict textures of the parent bedrock.

The weathered bedrock gradually transitions from the overlying Marathon Formation (undifferentiated) or more sharply from the thin overlying topsoil. The weathered bedrock is predominately a silty sand (SM) derived from the bedrock directly beneath it. Fragments of gravel to cobble-sized competent pieces of the parent rock are found in-place throughout this silty sand. Relics of the parent material can be observed. The contact with the underlying competent bedrock is generally abrupt. The 2012 AECOM geologic investigation encountered three rock types: quartz diorite, amphibolite, and granite.

Borings completed for both prior work at the site and the 2012 AECOM investigation indicate there is a bedrock high on the west side of the landfill site near LS-16 OW at an elevation of approximately 1,200 feet mean sea level (msl). The bedrock surface slopes radially away from this area. A smaller bedrock high exists southwest of well LS-101 in the northeast corner of the site at approximately the same elevation; this high is located beneath the northwest corner of the newly constructed Cell 1.

Details of geology near WDS3 Landfill are found on the cross-sections provided in Attachment A (Sheets FR-15, FR-17, FR-24, Sheet 19 of 29).

The landfill site is located along a regional bedrock high between Johnson Creek, 0.6 mile to the east and Peplin Creek, 1.25 miles west. It is an area of groundwater recharge, with groundwater flow moving radially from the bedrock high located on the west side of the site.

Groundwater flow mimics the surface topography and the bedrock surface, with a groundwater mound roughly centered near well LS-16 OW, and groundwater flowing generally to the northwest, southwest, and southeast away from the bedrock high and off the site. This is also observed at the smaller bedrock high near LS-101, with groundwater flowing generally to the southeast and northwest. Measured water elevations along the bedrock highs can be four or more feet higher than lower elevation bedrock (and topographic) areas, reflecting areas of

recharge proximate to the west-central part of the WDS3 Landfill (future Cells 7-9) and the northern portion of Cell 1.

There is an observed southwest to northeast trending groundwater divide, with components of groundwater flow to the north and south. The groundwater divide has implications for the design of a groundwater monitoring network compliant with the CCR Rule. Most of Cell 1, all of Cells 2 and future Cell 3, and the southern portions of future Cells 4 and 5 are predominantly east and south of the groundwater flow divide, so monitoring wells southeast of Cells 1-2 and future Cells 3-5 are downgradient. For the west half of the property and future Cells 6-9 the groundwater flow is south to southwest and northwest to northeast.

Based on field testing for the AECOM 2012 Feasibility Report, the unconsolidated glacial till deposit was reported to have a saturated hydraulic conductivity of  $1.1E-04$  centimeters per second (cm/s). Hydraulic conductivities for the granitic bedrock were lower, ranging from approximately  $2.1E-05$  to  $9.0E-07$  cm/s.

## 2 ALTERNATE SOURCE DEMONSTRATION

### 2.1 SUMMARY

Statistical analysis of the first detection monitoring sample for SSIs of 40 CFR Part 257 Appendix III parameters over background concentrations identified the following SSIs at downgradient monitoring wells:

- Boron above the background prediction interval at wells LS-100, LS-105, and LS-106
- Calcium above the background prediction interval at wells LS-100, LS-105, LS-106, and LS-107
- Chloride above the background prediction interval at well LS-107
- Sulfate above the background prediction interval at wells LS-100, LS-105, and LS-107
- Total dissolved solids above the background prediction interval at wells LS-105, LS-106, and LS-107

As allowed by 40 CFR § 257.94(e)(2), this ASD demonstrates that sources other than the WDS3 Landfill caused the SSI or that the apparent SSI was a result of natural variation in groundwater quality. Lines of evidence supporting this ASD include the following:

- Existing Groundwater Concentrations: From about 1990 to 2015 a prior CCR landfill was present onsite, occupying a footprint adjacent to and west of the current landfill extent. In 2015 the former landfill including all existing CCR material was removed and hauled to a municipal solid waste facility. The closure of the former landfill and construction of the existing WDS3 Landfill Cells 1 and 2 was approved by the WDNR on April 22, 2016 (Attachment B). Construction was completed in late 2015 and CCR was placed in Cell 2 beginning on June 27, 2016. Concentrations of some CCR indicator parameters in groundwater, prior to placement of CCR in the new landfill, were similar to those detected during both the background and first detection monitoring events for WDS3 Landfill. Existing Cell 1 is complete but does not contain CCR at this time.
- Landfill Design: The former Cell 1 (now removed) was constructed in the late 1980's with a 5-foot clay liner with leachate collection; a revised design was approved in 2015 during an expansion request. The current CCR unit (WDS3 Landfill) was constructed with a composite 60-mil high density polyethylene (HDPE) and geosynthetic clay liner with leachate collection system and groundwater gradient control system.
- Variability of Uppermost Aquifer and Groundwater Geochemistry: The geology of the site and uppermost aquifer composition are variable based on the elevation of the underlying granitic bedrock. The upgradient well, LS-101 is screened almost entirely in the bedrock, while downgradient well LS-106 is screened in unlithified materials overlying the bedrock. The composition of the aquifer (bedrock, weathered bedrock, and unlithified materials) controls the naturally occurring inorganic constituents and groundwater geochemistry.
- Changes in Geochemical Conditions from Landfill Construction: During removal of the old landfill and construction of the existing WDS3 Landfill, the ground surface was disturbed and non-native materials (clay, general fill) were placed to construct the new landfill. Groundwater and precipitation interactions with the new materials above and within the uppermost aquifer, likely resulted in both release of inorganic compounds into the groundwater and geochemical changes impacting downgradient groundwater quality. Groundwater recharge along the bedrock surface, with general groundwater flow direction towards lower bedrock elevations, would result in elevated inorganic constituent concentrations downgradient. Following construction of liner for existing Cells 1 and 2 of the WDS3 Landfill, inorganic constituent concentrations in the uppermost aquifer may be increased further due to longer residence time of groundwater (i.e. slower flow paths) and reduced localized recharge.

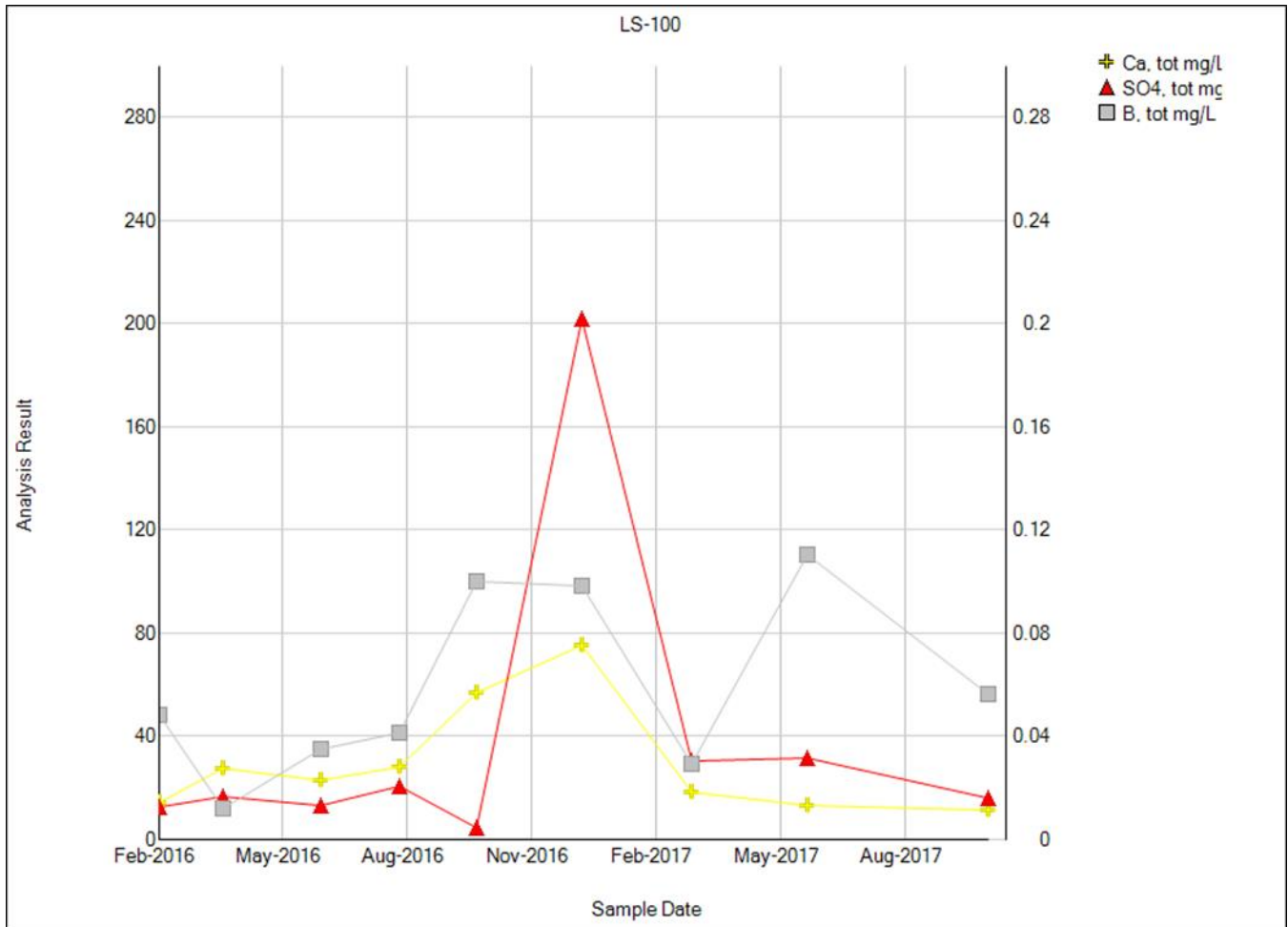
Data and information supporting these ASD lines of evidence are discussed in more detail below.

**2.2 ASD SUPPORTING INFORMATION**

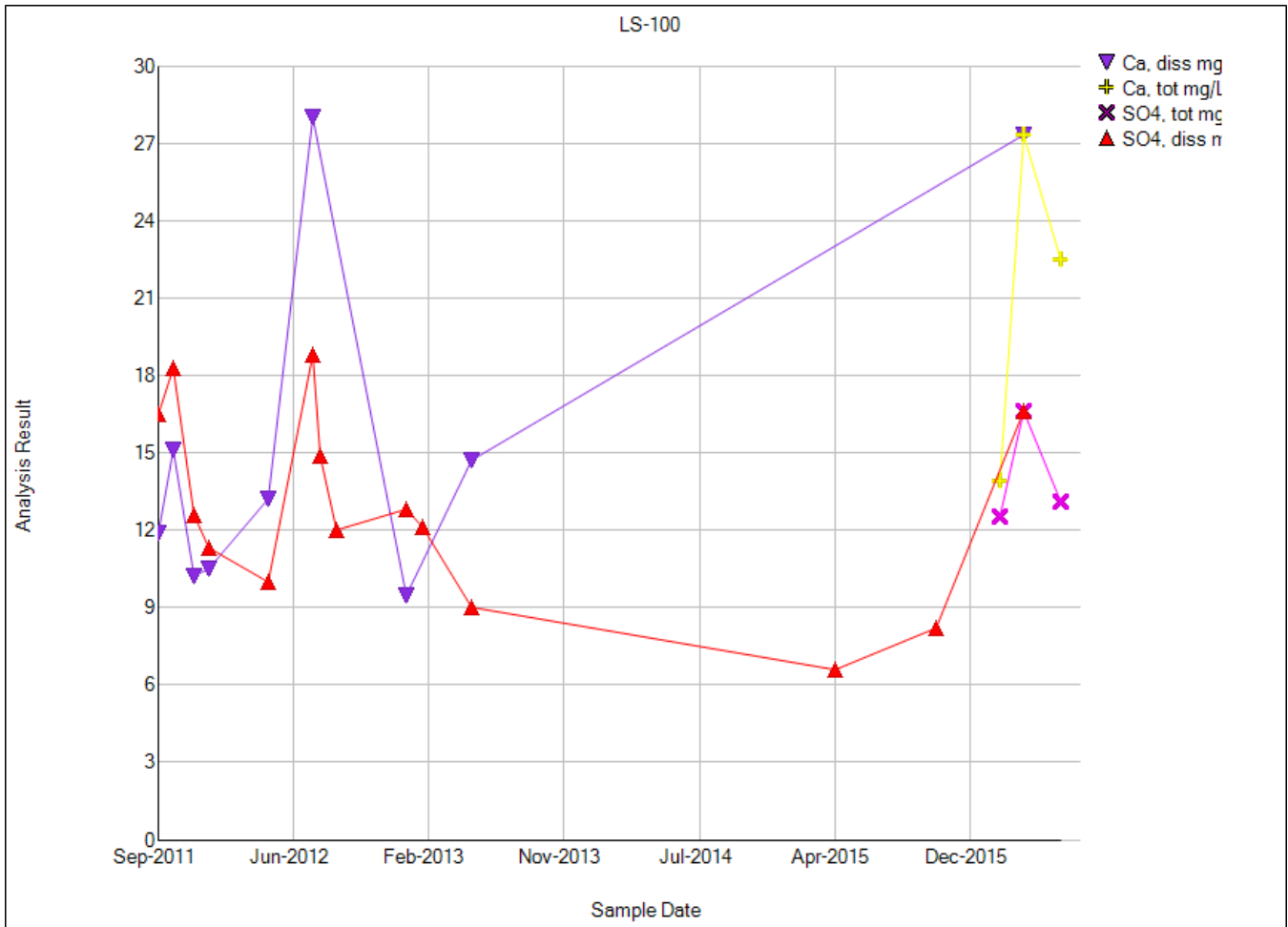
**2.2.1 Existing Groundwater Concentrations**

A times series plot for parameters in groundwater from LS-100 is included in Figure 4 (below). CCR was first placed in Cell 2 of the Landfill in June, 2016. The concentration of sulfate during detection monitoring (15.7 mg/L) is less than that detected prior to CCR placement in WDS3 Landfill which were higher in February 2016 (16.6 mg/ L) and October, 2011 (18.8 mg/L, Figure 5).

The calcium concentration in LS-100 during detection monitoring (11 mg/L) was also lower than concentrations detected historically in this well prior to CCR placement (pre-filling average 15.6 mg/L, and median 13.2 mg/L) (Figure 5).



**Figure 4. Time Series Plot of Calcium, Boron, and Sulfate in LS-100**

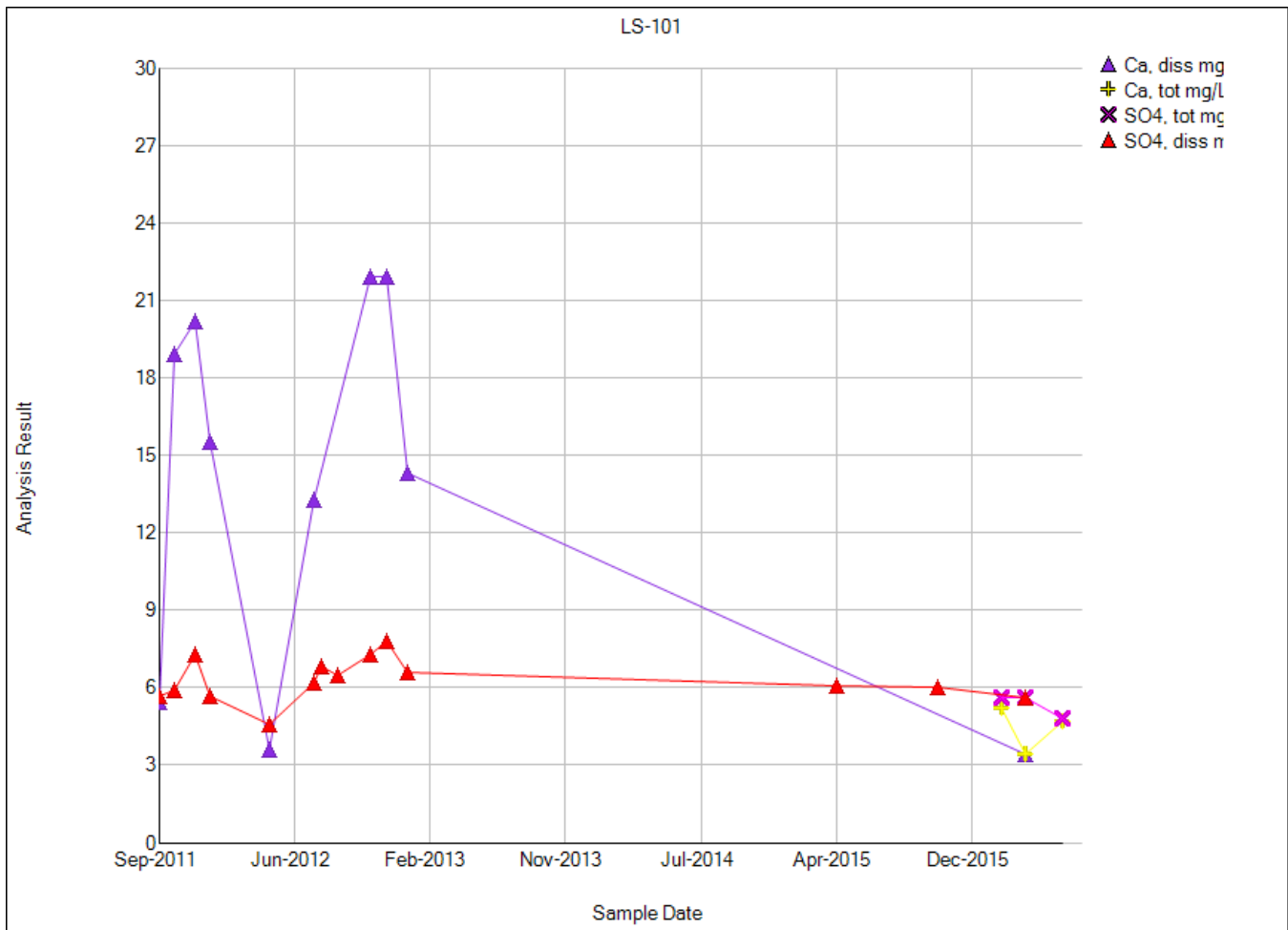


**Figure 5. Historical Concentrations of Calcium and Sulfate in LS-100**

Elevated concentrations of calcium and sulfate at upgradient well LS-101 also occurred prior to CCR placement in October and November, 2011 and 2012 (Figure 6). This indicates that these compounds were present both upgradient and downgradient at concentrations similar to or above those reported during detection monitoring prior to landfill construction. SSIs are attributable to variability in groundwater concentrations and not the CCR unit.

A SSI was reported for boron in LS-100, however, initial placement of CCR material began in June 2016 in Cell 2; and LS-100 is located upgradient to sidegradient of Cell 2 (Figures 2 and 3) and groundwater from below Cell 2 of the CCR unit does not flow toward LS-100. Based on existing groundwater flow directions and placement of CCR in Cell 2, boron concentrations observed in groundwater at LS-100 are unrelated to WDS3 Landfill.





**Figure 6. Historical Concentrations of Calcium and Sulfate in LS-101**

Concentrations of boron, calcium, sulfate, and TDS were reported above background for LS-105 (Figure 7, below). However, the concentration of calcium (18.8 mg/L) reported during detection monitoring has been detected at higher levels prior to the construction of the landfill including October, November, and December, 2011 (20 mg/L), and in November 2013 (20.4 mg/L) (Figure 8). Calcium has also been detected above this concentration in background well LS-101 in October and November, 2011, and 2012 as shown previously in Figure 5.

Groundwater flow below the landfill is controlled by a groundwater gradient control system, such that groundwater flows towards the drainage lines when groundwater elevations are elevated (Figure 2 and 3). Based on the interpreted flow directions, the boron (0.0452 mg/L), sulfate (31 mg/L), and TDS concentrations (100 mg/L) reported for LS-105 are less than concentrations reported in well LS-100 (0.11, 202, and 360 mg/L, respectively) which is located upgradient of LS-105. Because concentrations of these parameters are not increasing downgradient of the landfill and groundwater flow toward LS-105 is limited by gradient control systems, WDS3 Landfill is not impacting groundwater.

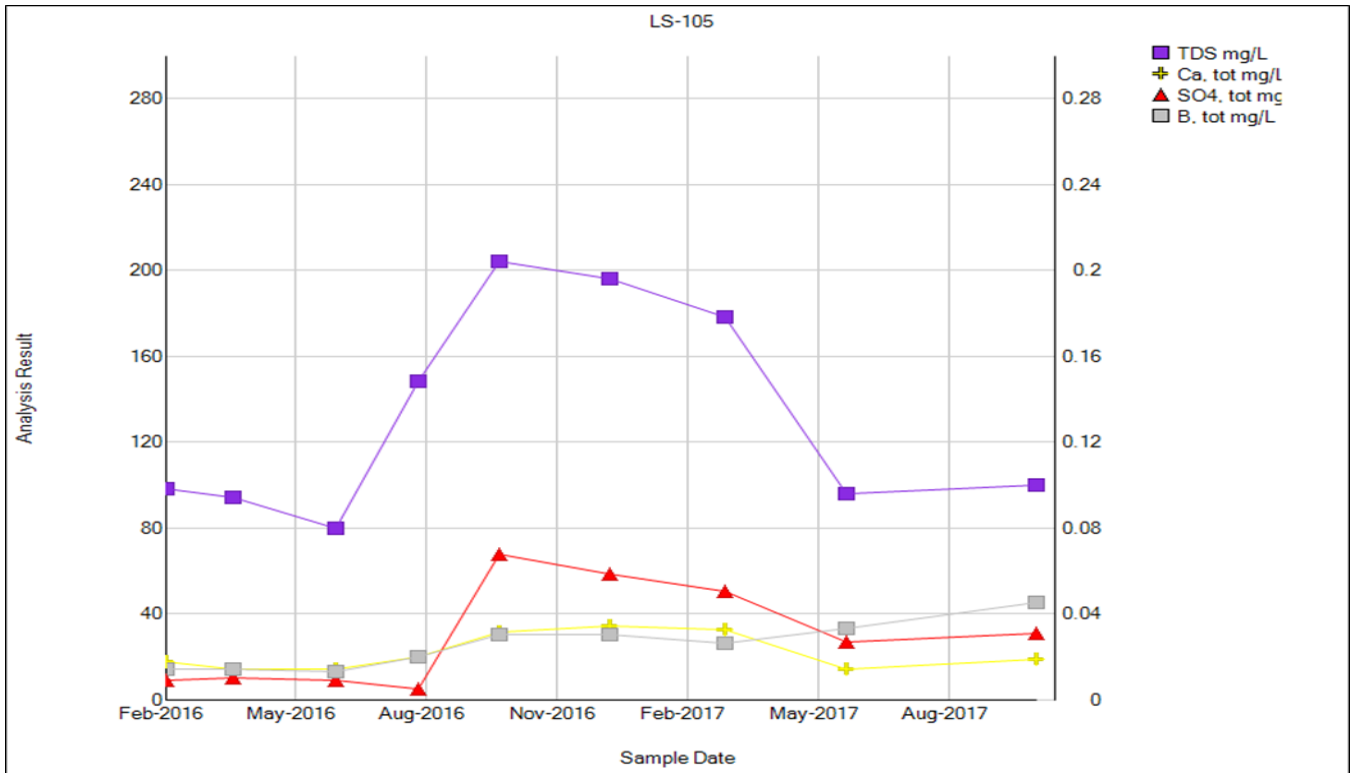


Figure 7. Time Series of SSI Parameters for LS-105

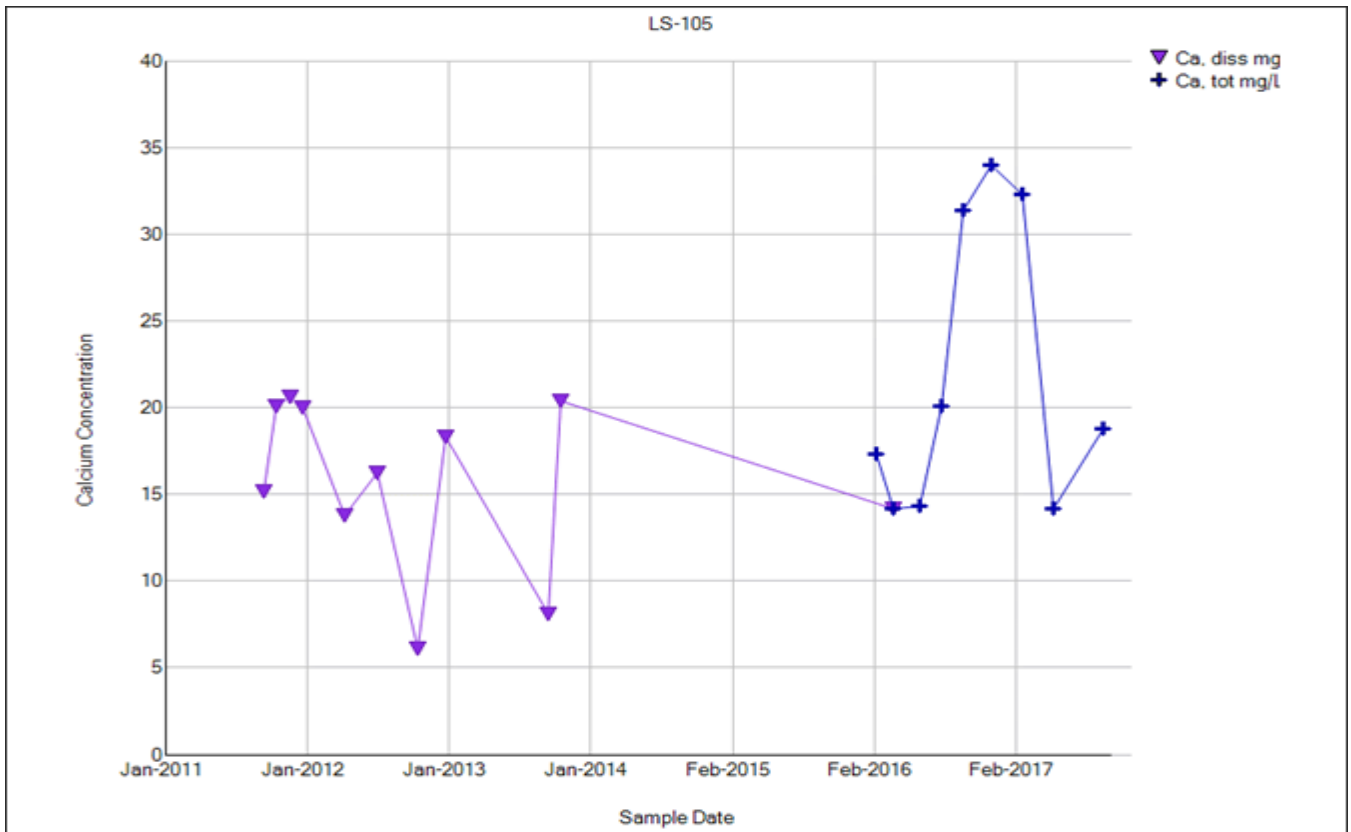


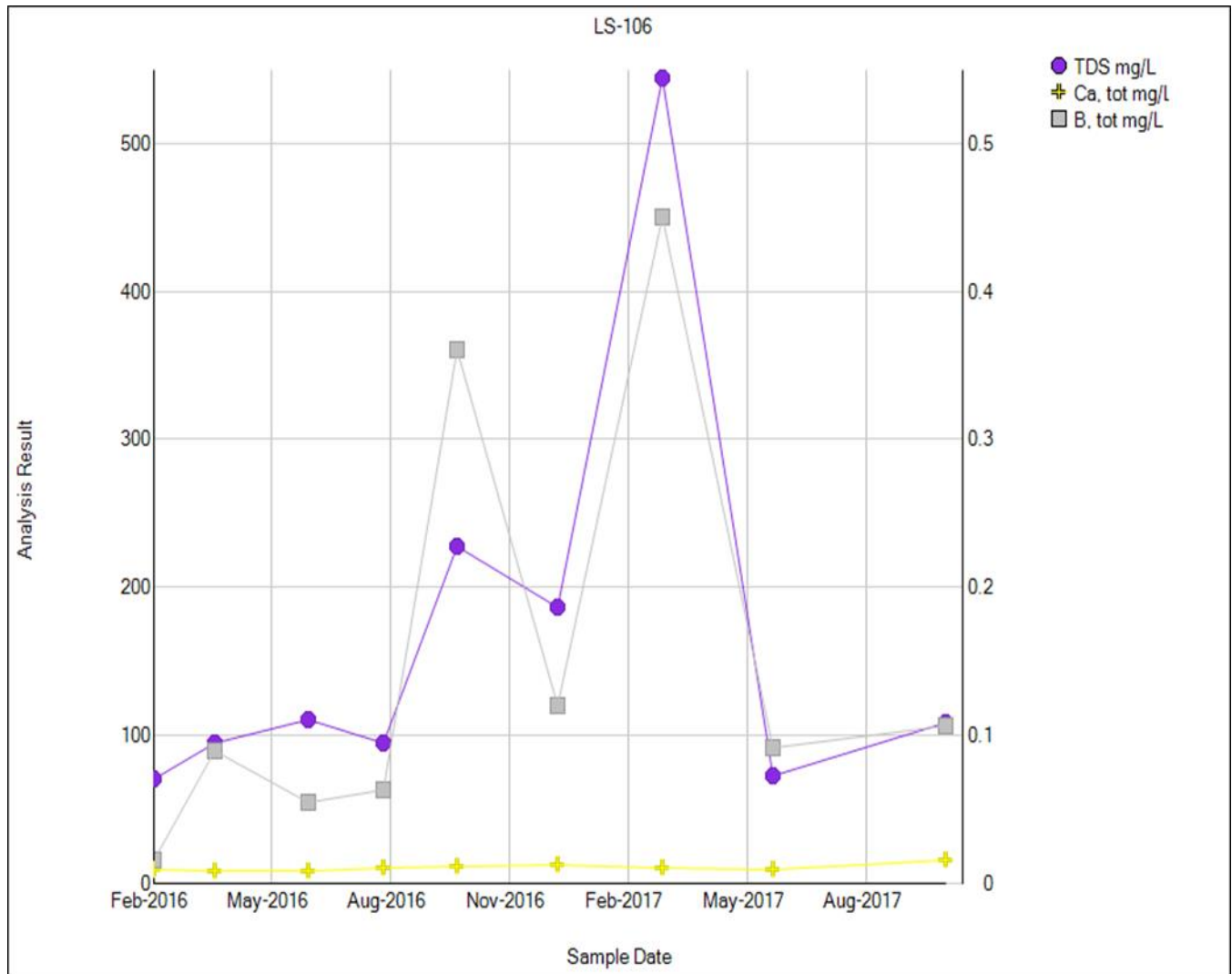
Figure 8. Time Series Plot of Calcium Concentrations at LS-105

Concentrations of boron, calcium, and TDS were also reported above background for LS-106 (Figure 9, below). However, ion ratios of boron and calcium with other primary and secondary CCR indicators indicate that the groundwater from LS-106 is not affected by CCR leachate (Table 3). In the six ion ratios below, LS-106 never falls between background (LS-101) and the leachate sample, demonstrating that the leachate is not the source of elevated calcium and boron.

**Table 3. Summary of Average Ion Ratios**

Location ID	B/Ca	B/Cl	B/SO4	Ca/B	Ca/SO4	Ca/Cl
Leachate	0.003	0.017	0.001	290	0.28	4.9
LS-106	0.014	0.076	0.033	156	1.8	4.1
LS-101	0.004	0.022	0.003	517	1.2	5.9

TDS concentrations incorporate a number of dissolved constituents; however, because boron and sulfate are not elevated as a result of the CCR Unit, the TDS concentrations are also not attributable to the Unit.



**Figure 9. Time series of SSI Parameters in LS-106**

Concentrations of calcium, chloride, sulfate, and TDS were reported above background for LS-107 (Figure 10, below). However, the concentration of chloride reported during detection monitoring (6.2 mg/L) was at lower levels than observed prior to construction of the CCR Unit (9.4, 7.4, and 7.9mg/L, respectively, in February, April, and June, 2016). Since concentrations exceeding this level were present prior to CCR placement into WDS3 Landfill, chloride concentrations are not attributable to the WDS3.

Boron is a conservative and non-reactive tracer of potential CCR impacts. Concentrations of boron are not elevated in groundwater collected from LS-107. The lack of elevated boron concentrations in LS-107 indicates that SSIs reported for chloride, calcium, sulfate, and TDS are from an alternate source and not attributable to WDS3 Landfill. Also, LS-107 is located downgradient of Cell 1 of WDS3 Landfill, but no CCR material has been placed in this cell, therefore SSIs reported in LS-107 are not attributable to the landfill.

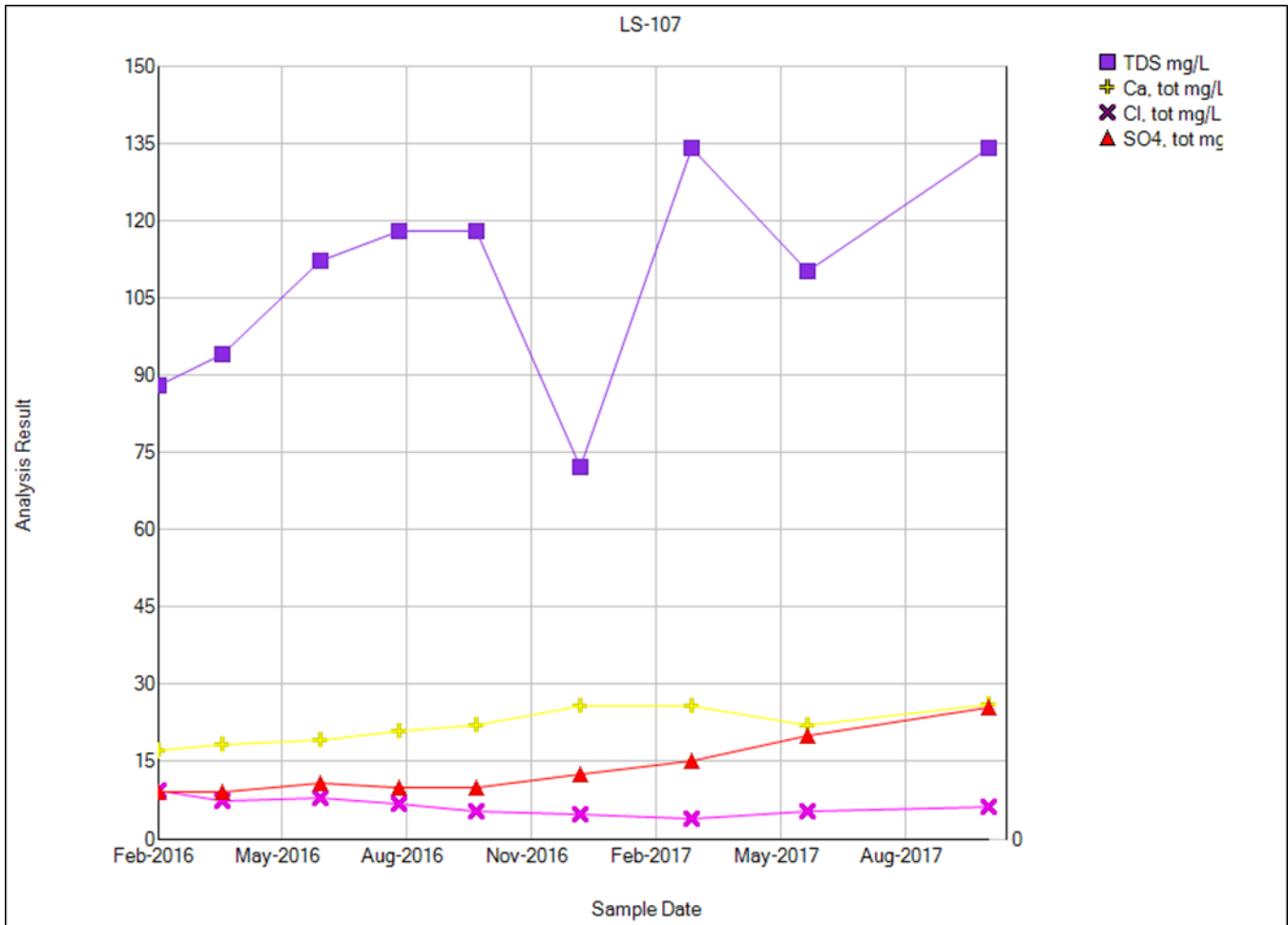


Figure 10. Time Series of SSI Parameters for LS-107

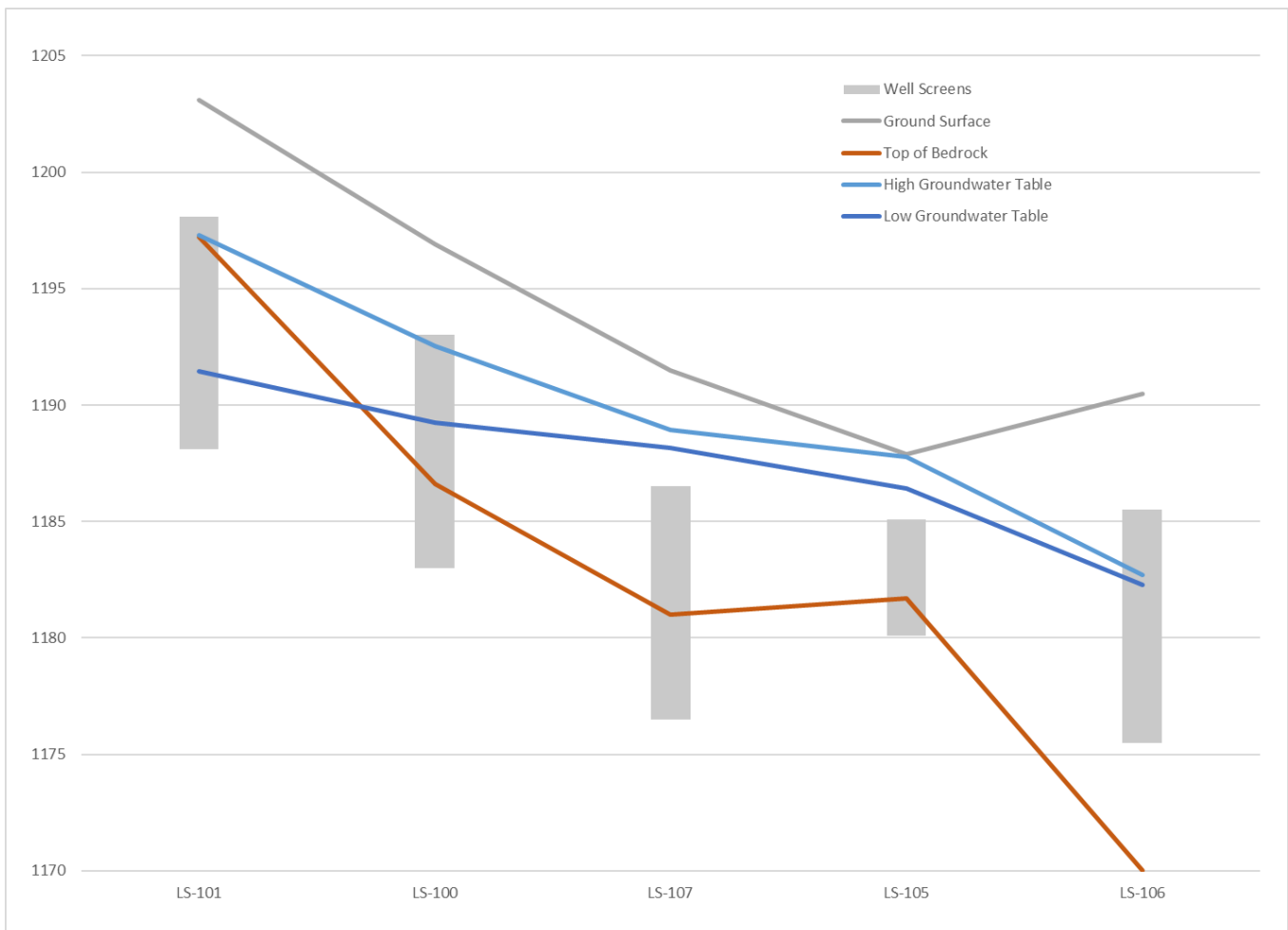
### 2.2.2 Landfill Design

This ASD is supported by the fact that the WDS3 Landfill was constructed with a composite 60-mil HDPE and geosynthetic clay liner with leachate collection system and groundwater gradient control system. Precipitation and/or leachate that collects on top of the HDPE liner is removed by a leachate collection system and managed in accordance with the landfill’s operating permit. Leachate levels are monitored within the landfill. The system is flushed annually as part of regular operation and maintenance. System monitoring and reporting indicate that the leachate collection system is functioning as designed and indicate there is not significant leachate migration into underlying materials.

In the unlikely event that leachate was not captured by the collection system, the CCR unit and liner system overlie a groundwater gradient control system which would also collect leachate and direct it south of the landfill. WDS3 has only accepted CCR materials since June 2016, making it unlikely that leachate could migrate into groundwater. Landfill design with leachate and groundwater gradient control systems are a line of evidence that any current SSIs are attributable to another source.

### 2.2.3 Variability of Uppermost Aquifer and Geochemistry

The uppermost aquifer on site is composed of silty sand and weathered bedrock, where encountered at shallow depths. Figure 11 (below) shows the well screen intervals, the ground surface, and the depth to the granitic bedrock. It is important to note that background well LS-101 is screened almost entirely in the granitic bedrock, while downgradient wells are screened in a combination of bedrock and silty sand. The different composition of the aquifer materials can play a significant role in the concentrations of naturally occurring inorganic constituents. In addition, variability in groundwater elevations may result in more water being sampled from the bedrock when groundwater levels are low, specifically in LS-100. In this well, approximately 6 to 7 feet of silty sand is saturated during periods of higher groundwater levels, while only 3 to 4 feet of silty sand is saturated during periods of lower groundwater levels.



**Figure 11. Summary of Well Screen Intervals, High and Low Groundwater Elevations, and Bedrock Surface**

The general water chemistry is plotted in the Piper diagram below (Figure 12). The downgradient monitoring wells plot between the background well and leachate, but LS-106, with the highest reported boron concentration, is closer to background than the other downgradient wells. LS-107, in which boron was not above

the prediction interval, also plots closer to leachate than the background well. LS-100 plots nearest the leachate sample, but based on flow directions and the current area of filling (Cell 2), this well is not downgradient of the CCR unit. Elevated parameter concentrations at well LS-100 may be affected by an alternate source east of the CCR unit impacting groundwater. This observation is supported by the concentrations in LS-105, which is also located on the eastern portion of the site and plots on the Piper diagram nearest LS-100, suggesting water of a similar origin.

The Stiff Diagram, Figure 13, further illustrates that downgradient groundwater quality is very similar to background well LS-101 and does not appear to be affected by the leachate.

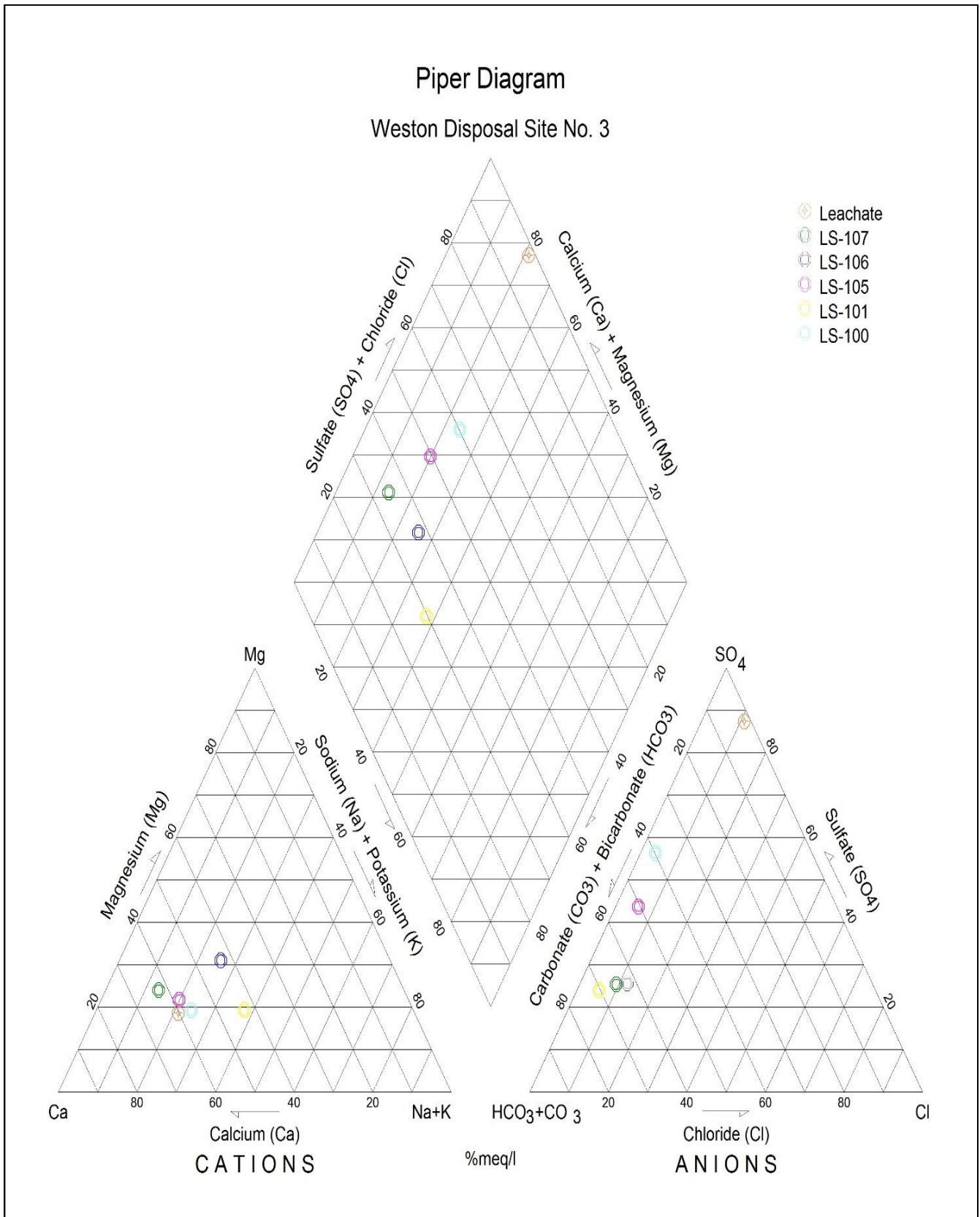


Figure 12. Piper Diagram of Water Quality

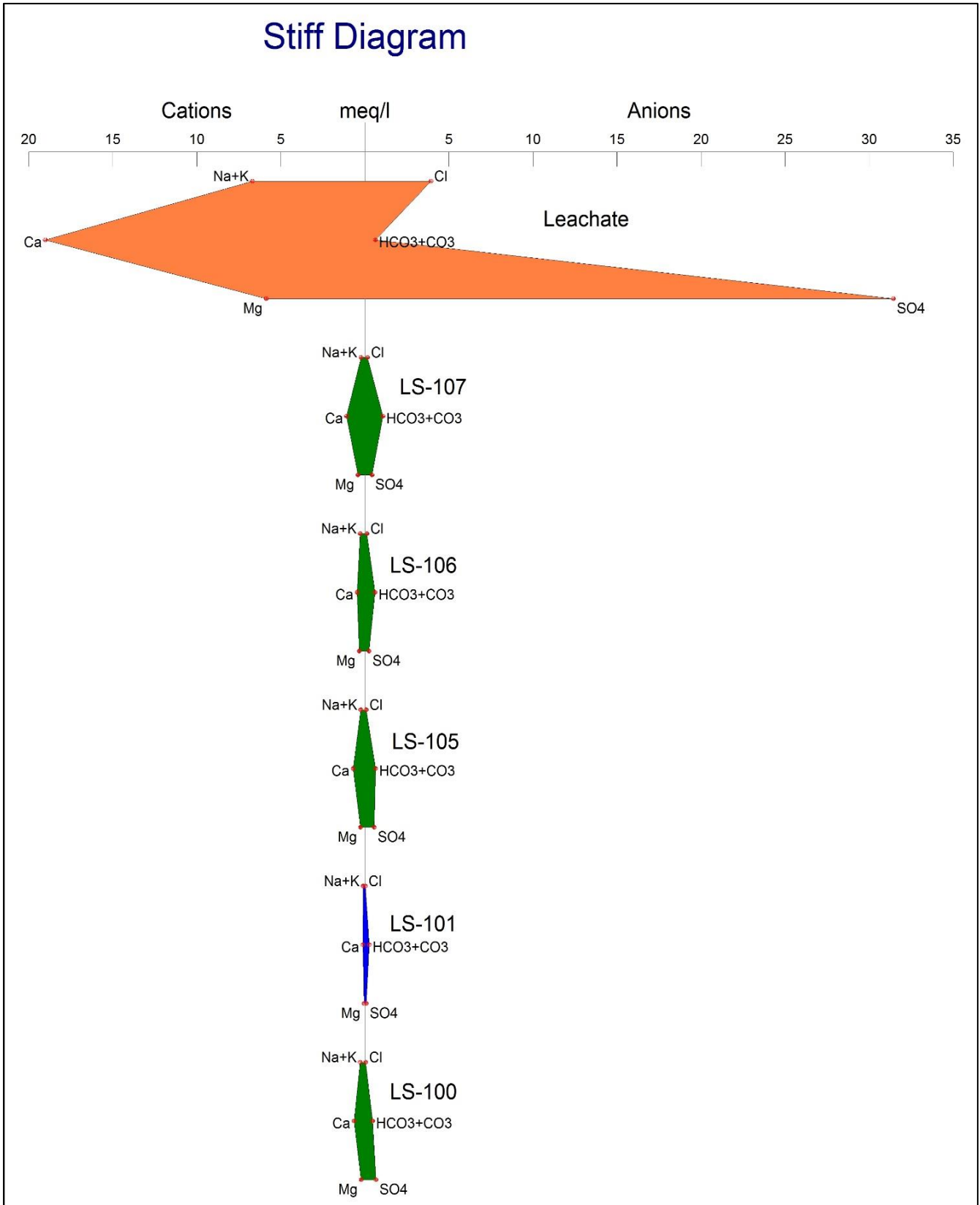


Figure 13. Stiff Diagram of Water Quality.



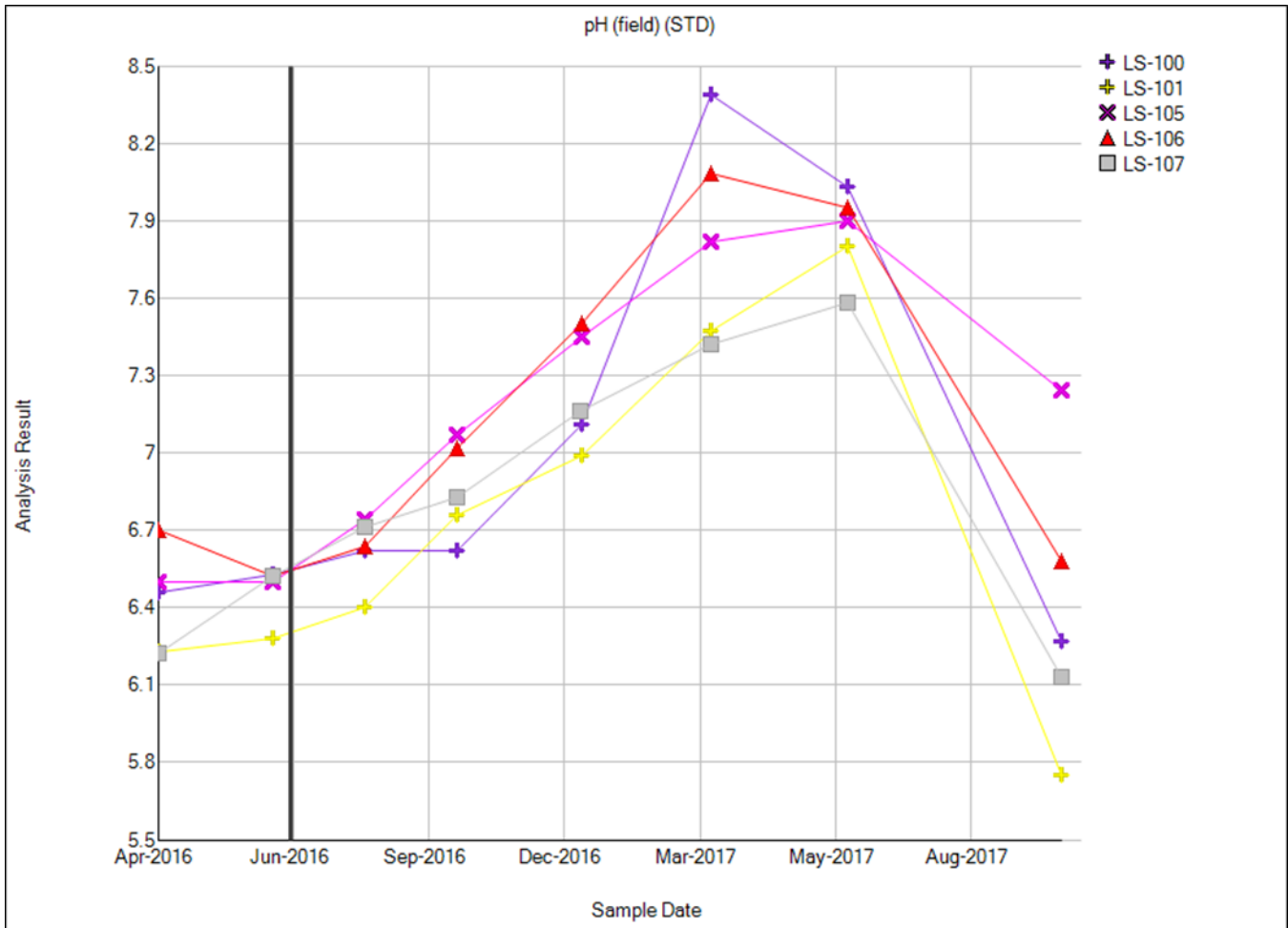
#### 2.2.4 Changes in Geochemical Conditions From Landfill Construction

Prior to construction of WDS3 Landfill, the site had not been significantly altered since 1990. In 2015 significant construction activities (including stripping of topsoil, trees, and vegetation and placement of general fill and clay) modified a large portion of the site (Figure 14). Given the shallow depth to groundwater and quick recharge of the uppermost aquifer it is expected that these modifications would significantly impact shallow groundwater quality. Precipitation that recharges the groundwater has a pH less than 7 STD; however, interaction with the clay minerals and general fill will result in dissolution of calcium carbonate and other minerals, which will elevate pH and increase concentrations of naturally occurring compounds. The clay liner material from the former landfill was tested to ensure that all CCR was removed (TRC, 2016). Testing results of samples from the former clay liner had calcium concentrations ranging from 1.35 to 2.6 mg/kg. Testing results of clay samples for use onsite during construction had concentrations of boron ranging from 0.1 to 0.2 mg/kg and sulfur from 10 to 50 mg/kg (Attachment C). Although this clay was not used for the liner it was used as general fill around the site and stockpiled for future use. Therefore, the clay from the former landfill and brought to the site for construction and general fill material provide a source of calcium and other minerals that may be mobilized by acidic precipitation and alter concentrations detected in monitoring wells downgradient.



Figure 14. Aerial photograph of site in Summer 2015

The change in geochemical conditions of groundwater following construction of the landfill is illustrated by changes in pH (Figure 15, below). The landfill construction was completed in late 2015 and in the spring of 2016 seasonal recharge due to snow melt and precipitation resulted in lower pH. In the fall of 2016 and winter of 2017, during a period of generally lower groundwater elevations, the pH increased. It declined again in the spring of 2017, again likely due to increased seasonal recharge. Due to the short time period since landfill construction was completed, it is not known if similar seasonal pH trends will be observed in the future. Historical data from the site, indicates seasonality in pH measurements similar to what was observed in these wells.



**Figure 15. Time Series of pH Measurements in CCR Rule Wells**

The placement of geologic materials from offsite to construct the landfill will change the geochemistry of the uppermost aquifer, specifically in locations where the materials become saturated or precipitation percolates through the materials to recharge the uppermost aquifer. Areas where water will likely migrate through placed materials include both the current sedimentation basins and the former sedimentation basin, which was filled prior to construction of Cell 2 of the landfill (See TRC Sheet 4 of 29 in Attachment A). These locations occur upgradient of well LS-106 and are near LS-100 and LS-105, all of which had reported SSIs. The duration of impacts to groundwater from construction activities is unknown, but eventually groundwater will reach equilibrium with the newly placed construction materials and groundwater parameter concentrations will become more stable.

### 3 CONCLUSIONS AND CERTIFICATION

This document has been prepared on behalf of WPSC by OBG to provide pertinent information for an ASD as allowed by 40 CFR §257.94(e)(2) for the Weston Disposal Site No. 3 Landfill located in the Town of Knowlton, Wisconsin.

Initial background groundwater monitoring consisting of a minimum of eight samples as required under 40 CFR §257.94(b) was initiated in February 2016 and completed prior to October 17, 2017. The first semi-annual detection monitoring sample was collected on October 12, 2017 for which analytical data was received on October 26, 2017. Statistical analysis of the first detection monitoring sample for SSIs of 40 CFR Part 257 Appendix III parameters over background concentrations was completed within 90 days of collection of the sample (January 15, 2018). The determination identified the following SSIs (concentrations greater than background prediction intervals) at downgradient monitoring wells:

- Boron at wells LS-100, LS-105, and LS-106
- Calcium at wells LS-100, LS-105, LS-106, and LS-107
- Chloride at well LS-107
- Sulfate at wells LS-100, LS-105, andLS-107
- Total dissolved solids at wells LS-105, LS-106, and LS-107

40 CFR §257.94(e)(2) allows the owner or operator 90 days from the date of determination to demonstrate that a source other than the CCR unit caused the SSI, or that the apparent SSI was from a source other than the CCR unit, or that the SSI resulted from errors in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. Pursuant to 40 CFR §257.94(e)(2), this document demonstrates that sources other than the WDS3 Landfill were the cause of the SSIs listed above. This ASD was completed within 90 days of determination of the SSIs (April 15, 2018) as required by 40 CFR §257.94(e)(2).

Pursuant to 40 CFR §257.94(e)(2), the following lines of evidence were presented in this report to demonstrate that the listed SSIs are due to alternate sources as follows:

- Existing groundwater concentrations
- Landfill design
- Variability of uppermost aquifer and geochemistry
- Changes in geochemical conditions from landfill construction

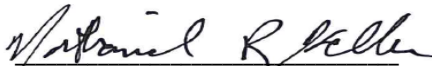
The preceding information serves as the ASD prepared in accordance with 40 CFR §257.94(e)(2) and supports the position that the SSIs observed during the first semi-annual detection monitoring event are not due to a release from the CCR unit but were from naturally occurring conditions and anthropogenic impacts in the area of WDS3 Landfill. Therefore, no further action (i.e. assessment monitoring) is warranted and the Weston Disposal Site No. 3 Landfill will remain in detection monitoring.

I, Glenn R. Luke, a qualified professional engineer in good standing in the State of Wisconsin, certify that enclosed information is accurate as of the date of my signature below. The content of this report is not to be used for other than its intended purpose and meaning, or for extrapolations beyond the interpretations contained herein.



Glenn R. Luke, PE  
Professional Engineer No. 42834-6  
State of Wisconsin  
O'Brien & Gere Engineers, Inc.  
Date: April 15, 2018

I, Nathaniel R. Keller, a qualified professional geologist, certify that the enclosed information is accurate as of the date of my signature below. The content of this report is not to be used for other than its intended purpose and meaning, or for extrapolations beyond the interpretations contained herein.



Nathaniel R. Keller, PG  
Professional Geologist No. XXXX  
State of Wisconsin  
O'Brien & Gere Engineers, Inc.  
Date: April 15, 2018

## REFERENCES

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AECOM, 2012. Feasibility Report, Proposed Weston Disposal Site No. 3 Expansion.

GEI, 2016. Memorandum to Tom Janssen and Dawn DeJardin. Weston Disposal Site No. 3 EPA CCR Groundwater Monitoring Plan. January 26, 2016

TRC, 2016. Phase 1 Closure Report. Included as Appendix C of the Construction Documentation Report.

Natural Resource Technology, an OBG Company, 2017a, Sampling and Analysis Plan, Weston Disposal Site No. 3 Wisconsin, October 2, 2017.

Natural Resource Technology, an OBG Company, 2017b, Statistical Analysis Plan, Weston Disposal Site No. 3, Rothschild, Wisconsin, October 17, 2017.



Tables

Table 1. CCR Rule Groundwater Monitoring Well Information  
 Weston Disposal Site No. 3  
 Wisconsin Public Service Corporation  
 Town of Knowlton, WI

Well Designation	Wisconsin Unique Well Number	Date Well Installed	Drilling Subcontractor	Drilling Method	Gradient Position	State Plane Northing	State Plane Easting	Latitude	Longitude	Ground Surface Elevation (ft NAVD88)	Top of Protective Cover Pipe Elevation (ft NAVD88)	Top of Well Riser Elevation (ft NAVD88)	Borehole Drilled Depth (ft bgs)	Borehole Bottom Elevation (ft NAVD88)	Depth to Top of Well Screen (ft bgs)	Depth to Well Bottom (ft bgs)	Top of Screen Elevation (ft NAVD88)	Well Bottom Elevation (ft NAVD88)	Top of Bedrock Elevation (ft NAVD88)
LS-100	VU955	8/23/2011	Badger State Drilling	Air Rotary and Hollow Stem Auger	Downgradient	325,223	2,063,529	44.72484	-89.63437	1196.9	1199.26	1199.04	14.5	1182.4	3.9	13.9	1193.0	1183.0	1186.6
LS-101	VU952	7/13/2011	Badger State Drilling	Air Rotary and Hollow Stem Auger	Upgradient	325,816	2,063,032	44.72648	-89.63627	1203.1	1205.58	1205.41	16.5	1186.6	5.0	15.0	1198.1	1188.1	1197.2
LS-105	VU953	7/14/2011	Badger State Drilling	Air Rotary and Hollow Stem Auger	Downgradient	324,533	2,063,527	44.72295	-89.63439	1187.9	1190.42	1190.28	9.3	1178.6	2.8	7.8	1185.1	1180.1	1181.7
LS-106	-	2/5/2016	Coleman Engineering Company	Hollow Stem Auger	Downgradient	324,253	2,063,283	44.72219	-89.63533	1190.5	1193.26	1193.24	15.5	1175.0	5.0	15.0	1185.5	1175.5	NE
LS-107	-	2/5/2016	Coleman Engineering Company	Air Rotary	Downgradient	325,749	2,062,448	44.72630	-89.63852	1191.5	1194.50	1194.40	15.5	1176.0	5.0	15.0	1186.5	1176.5	1181.0

**Notes:**

Ground surface, top of protective cover pipe and top of well riser elevations for wells obtained from well construction forms and tabulated summary provided by GEI Consultants. Elevation datum is referenced to North American Vertical Datum 1988 (NAVD88).

Horizontal Datum is referenced to Wisconsin State Plane Coordinate System, Central Zone, North America Datum (NAD 83/2007), US Survey Feet.

All wells constructed with 2-inch nominal size schedule 40 PVC with 5-foot to 10-foot long 10-slot screens.

bgs = below ground surface

ft = feet

"-" = information not available

NE = Not encountered.



**Weston Disposal Site #3**  
**Table 2. Weston Disposal Site No. 3 Landfill: Appendix III Analytical Results**

Date Range: 02/18/2016 to 10/11/2017

Well Id	Date Sampled	Lab Id	B, tot, mg/L	Ca, tot, mg/L	Cl, tot, mg/L	F, tot, mg/L	pH (field), STD	SO4, tot, mg/L
LS-100	02/18/2016	40128408001	0.0480	13.900	4.000	<0.200		12.500
	04/05/2016	40130257002	0.0120	27.300	4.300	<0.200	6.460	16.600
	06/15/2016	40133877003	0.0350	22.500	3.600	<0.200	6.530	13.100
	08/10/2016	40136543003	0.0410	28.200	4.900	<0.200	6.620	20.700
	10/05/2016	40139741002	0.1000	56.800	0.970	<0.100	6.620	4.500
	12/21/2016	40143755003	0.0980	75.200	21.000	<0.100	7.110	202.000
	03/10/2017	40146662002	0.0290	17.900	3.600	<0.100	8.390	30.000
	06/02/2017	40151013002	0.1100	13.100	1.600	<0.100	8.030	31.500
	10/11/2017	40158568002	0.0559	11.000	0.860	<0.100	6.270	15.700
LS-101	02/18/2016	40128408002	0.0086	5.200	2.900	<0.200		5.600
	04/05/2016	40130257003	0.0096	3.400	2.300	<0.200	6.230	5.600
	06/15/2016	40133877002	0.0097	4.700	2.600	<0.200	6.280	4.800
	08/10/2016	40136543002	0.0140	11.600	2.400	<0.200	6.400	4.100
	10/05/2016	40139741003	0.0120	6.800	2.000	<0.100	6.760	13.300
	12/21/2016	40143755002	0.0120	6.900	0.820	<0.100	6.990	4.300
	03/10/2017	40146662003	0.0092	3.300	<0.500	<0.100	7.470	4.400
	06/02/2017	40151013003	0.0430	2.500	0.720	<0.100	7.800	4.100
	10/11/2017	40158568003	0.0138	11.400	0.760	<0.100	5.750	5.900
LS-105	02/18/2016	40128408003	0.0140	17.300	4.200	<0.200		9.200
	04/05/2016	40130257004	0.0140	14.200	3.500	<0.200	6.500	10.000
	06/15/2016	40133877004	0.0130	14.300	3.500	<0.200	6.500	9.100
	08/10/2016	40136543004	0.0200	20.100	2.900	<0.200	6.740	4.800
	10/05/2016	40139741004	0.0300	31.400	12.400	<1.000	7.070	67.800
	12/21/2016	40143755005	0.0300	34.000	10.600	<0.500	7.450	58.600
	03/10/2017	40146662004	0.0260	32.300	7.200	<0.100	7.820	50.400
	06/02/2017	40151013004	0.0330	14.200	2.600	<0.100	7.900	26.500
	10/11/2017	40158568004	0.0452	18.800	3.600	<0.500	7.240	31.000
LS-106	02/18/2016	40128408004	0.0150	9.200	4.200	<0.200		6.700
	04/05/2016	40130257005	0.0890	7.700	3.200	<0.200	6.700	6.600
	06/15/2016	40133877005	0.0540	7.600	3.200	<0.200	6.520	5.500
	08/10/2016	40136543005	0.0630	10.100	<10.000	<1.000	6.640	<10.000
	10/05/2016	40139741005	0.3600	10.700	2.800	<0.500	7.020	<5.000
	12/21/2016	40143755006	0.1200	12.300	<2.500	<0.500	7.500	5.700
	03/10/2017	40146662005	0.4500	9.900	<2.500	<0.500	8.080	5.200
	06/02/2017	40151013005	0.0910	9.400	4.100	<0.500	7.950	11.800
	10/11/2017	40158568005	0.1060	15.500	3.600	<0.500	6.580	11.400



**Weston Disposal Site #3**  
**Table 1. Weston Disposal Site No. 3 Landfill: Appendix III Analytical Results**

**Date Range: 02/18/2016 to 10/11/2017**

			B, tot, mg/L	Ca, tot, mg/L	Cl, tot, mg/L	F, tot, mg/L	pH (field), STD	SO4, tot, mg/L
LS-107	02/18/2016	40128408005	0.0100	17.000	9.400	<0.200		9.000
	04/05/2016	40130257006	0.0097	18.200	7.400	<0.200	6.220	9.200
	06/15/2016	40133877001	0.0089	19.100	7.900	<0.200	6.520	10.800
	08/10/2016	40136543001	0.0120	21.000	6.900	<0.200	6.710	10.000
	10/05/2016	40139741006	0.0120	22.000	5.400	<0.100	6.830	10.000
	12/20/2016	40143755001	0.0140	25.900	4.700	<0.100	7.160	12.500
	03/10/2017	40146662006	0.0110	25.700	3.800	<0.100	7.420	15.200
	06/02/2017	40151013006	0.0310	21.900	5.400	<0.100	7.580	19.900
	10/11/2017	40158568006	0.0143	26.000	6.200	<0.100	6.130	25.500

**Weston Disposal Site #3**  
**Table 1. Weston Disposal Site No. 3 Landfill: Appendix III Analytical Results**

**Date Range: 02/18/2016 to 10/11/2017**

Well Id	Date Sampled	Lab Id	TDS, mg/L
LS-100	02/18/2016	40128408001	122.000
	04/05/2016	40130257002	150.000
	06/15/2016	40133877003	148.000
	08/10/2016	40136543003	182.000
	10/05/2016	40139741002	306.000
	12/21/2016	40143755003	360.000
	03/10/2017	40146662002	98.000
	06/02/2017	40151013002	94.000
	10/11/2017	40158568002	80.000
LS-101	02/18/2016	40128408002	50.000
	04/05/2016	40130257003	52.000
	06/15/2016	40133877002	44.000
	08/10/2016	40136543002	84.000
	10/05/2016	40139741003	70.000
	12/21/2016	40143755002	60.000
	03/10/2017	40146662003	28.000
	06/02/2017	40151013003	30.000
	10/11/2017	40158568003	62.000
LS-105	02/18/2016	40128408003	98.000
	04/05/2016	40130257004	94.000
	06/15/2016	40133877004	80.000
	08/10/2016	40136543004	148.000
	10/05/2016	40139741004	204.000
	12/21/2016	40143755005	196.000
	03/10/2017	40146662004	178.000
	06/02/2017	40151013004	96.000
	10/11/2017	40158568004	100.000
LS-106	02/18/2016	40128408004	70.000
	04/05/2016	40130257005	94.000
	06/15/2016	40133877005	110.000
	08/10/2016	40136543005	94.000
	10/05/2016	40139741005	228.000
	12/21/2016	40143755006	186.000
	03/10/2017	40146662005	544.000
	06/02/2017	40151013005	72.000
	10/11/2017	40158568005	108.000

**Weston Disposal Site #3**  
**Table 1. Weston Disposal Site No. 3 Landfill: Appendix III Analytical Results**

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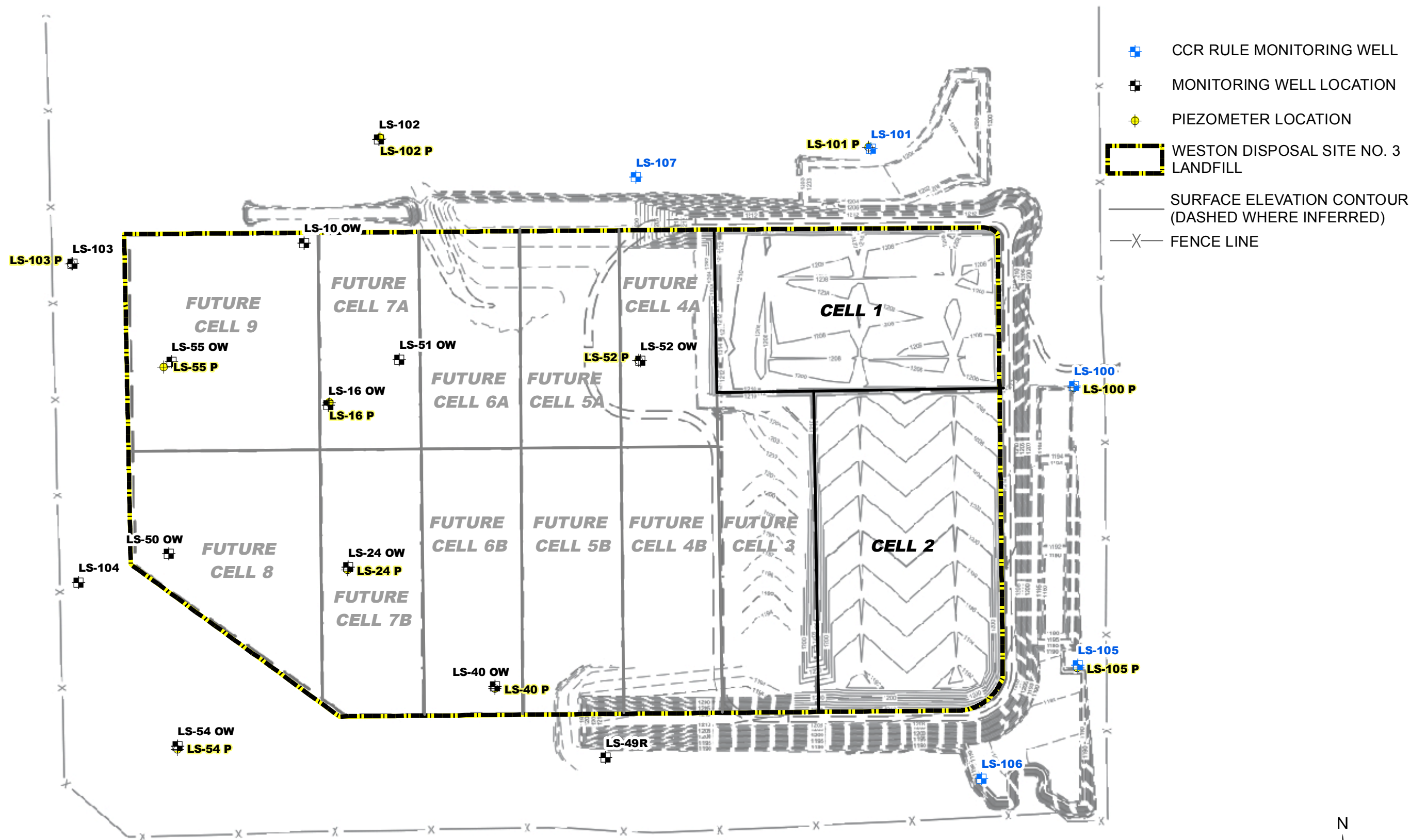
**Date Range: 02/18/2016 to 10/11/2017**

			<b>TDS, mg/L</b>
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	06/15/2016	40133877001	112.000
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	10/05/2016	40139741006	118.000
	12/20/2016	40143755001	72.000
	03/10/2017	40146662006	134.000
	06/02/2017	40151013006	110.000
	10/11/2017	40158568006	134.000



## Figures

Y:\GIS\Projects\161660\Weston\_Power\_Plant\MXD\ASD\Figure 1\_Well Locations.mxd Author: sbclzsd; Date/Time: 4/12/2018, 10:31:47 PM



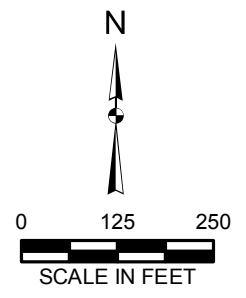
- CCR RULE MONITORING WELL
- MONITORING WELL LOCATION
- PIEZOMETER LOCATION
- WESTON DISPOSAL SITE NO. 3 LANDFILL
- SURFACE ELEVATION CONTOUR (DASHED WHERE INFERRED)
- FENCE LINE

DRAWN BY/DATE:  
SDS 4/11/18  
REVIEWED BY/DATE:  
JJW 4/11/18  
APPROVED BY DATE:  
NRK 4/12/18

**GROUNDWATER SAMPLING WELL LOCATION MAP**  
ALTERNATE SOURCE DEMONSTRATION  
WESTON DISPOSAL SITE NO. 3  
TOWN OF KNOWLTON, WISCONSIN

PROJECT NO: 67985

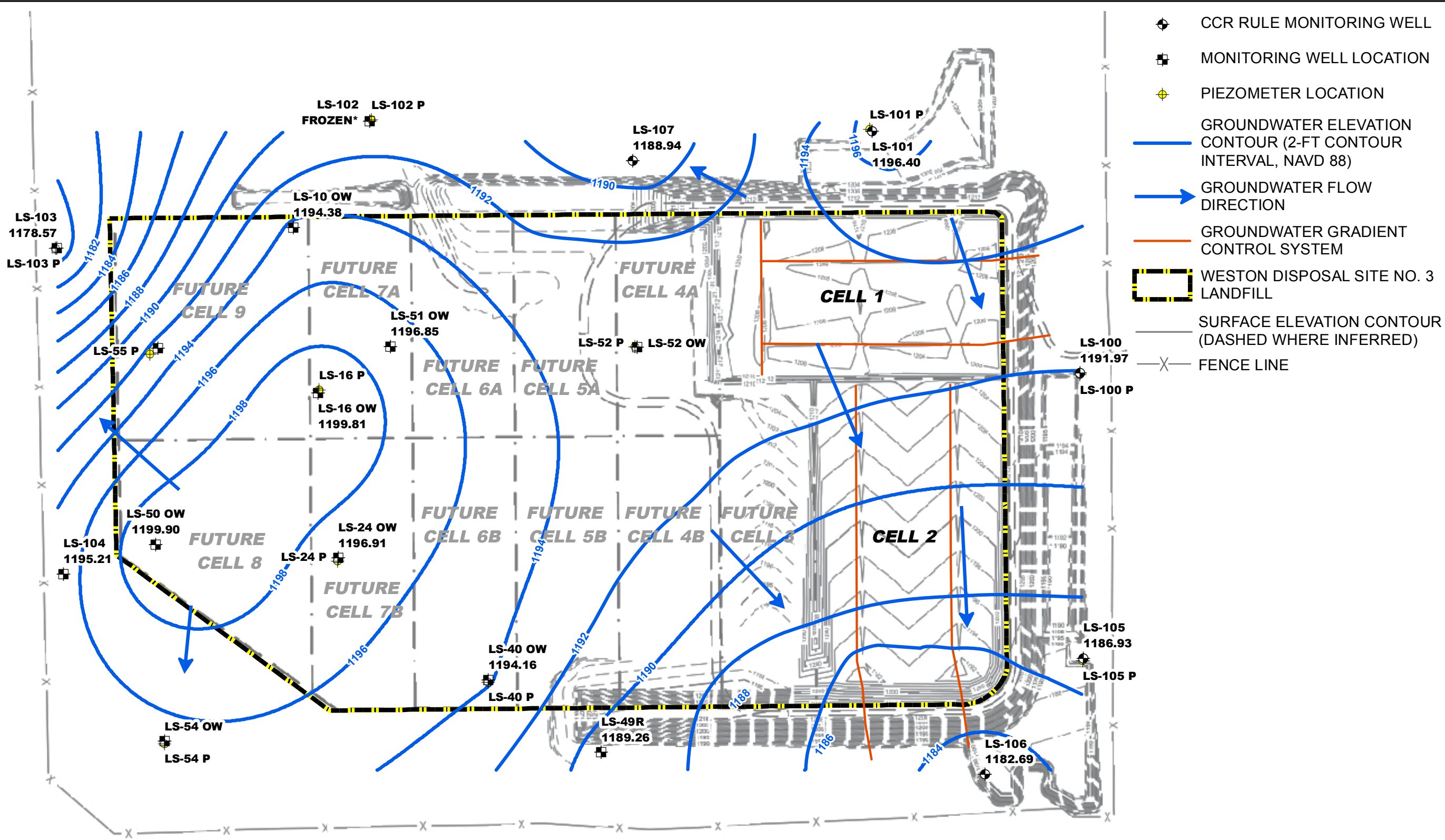
FIGURE NO: 1



- NOTES:
1. THE TOPOGRAPHIC BASE MAP HAS BEEN CREATED FROM AERIAL PHOTOGRAPHY AND LIDAR ACQUISITION BY AERO-METRIC, INC., SHEBOYGAN, WI. DATE FLOWN: NOVEMBER 5, 2010.
  2. HORIZONTAL DATUM IS REFERENCED TO WISCONSIN STATE PLANE COORDINATE SYSTEM, CENTRAL ZONE, NORTH AMERICAN DATUM (NAD 83/2007), US SURVEY FEET.
  3. VERTICAL DATUM IS NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88). CONTOUR INTERVAL IS 2 FEET.

LS-48R  
LS-48

Y:\GIS\Projects\161660\Weston\_Power\_Plant\MXD\ASD\Figure 2\_WDSS GWE Contours 201703.mxd Author: stolzsd Date/Time: 4/12/2018, 10:33:23 PM



- CCR RULE MONITORING WELL
- MONITORING WELL LOCATION
- PIEZOMETER LOCATION
- GROUNDWATER ELEVATION CONTOUR (2-FT CONTOUR INTERVAL, NAVD 88)
- GROUNDWATER FLOW DIRECTION
- GROUNDWATER GRADIENT CONTROL SYSTEM
- WESTON DISPOSAL SITE NO. 3 LANDFILL
- SURFACE ELEVATION CONTOUR (DASHED WHERE INFERRED)
- FENCE LINE

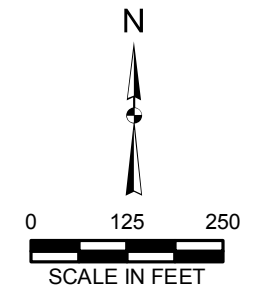
DRAWN BY/DATE:  
SDS 4/11/18  
REVIEWED BY/DATE:  
JJW 4/11/18  
APPROVED BY/DATE:  
NRK 4/12/18

**WESTON DISPOSAL SITE NO. 3  
UPPERMOST AQUIFER UNIT  
GROUNDWATER ELEVATION CONTOUR MAP  
MARCH 10, 2017**

ALTERNATE SOURCE DEMONSTRATION  
WESTON DISPOSAL SITE NO. 3  
TOWN OF KNOWLTON, WISCONSIN

- NOTES:**
1. THE TOPOGRAPHIC BASE MAP HAS BEEN CREATED FROM AERIAL PHOTOGRAPHY AND LIDAR ACQUISITION BY AERO-METRIC, INC., SHEBOYGAN, WI. DATE FLOWN: NOVEMBER 5, 2010.
  2. HORIZONTAL DATUM IS REFERENCED TO WISCONSIN STATE PLANE COORDINATE SYSTEM, CENTRAL ZONE, NORTH AMERICAN DATUM (NAD 83/2007), US SURVEY FEET.
  3. VERTICAL DATUM IS NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88).
  4. \* INDICATES GROUNDWATER IN WELL WAS FROZEN AT THE TIME OF MEASUREMENT, ELEVATION NOT USED FOR CONTOURING

**LS-48R  
FROZEN\***  
LS-48

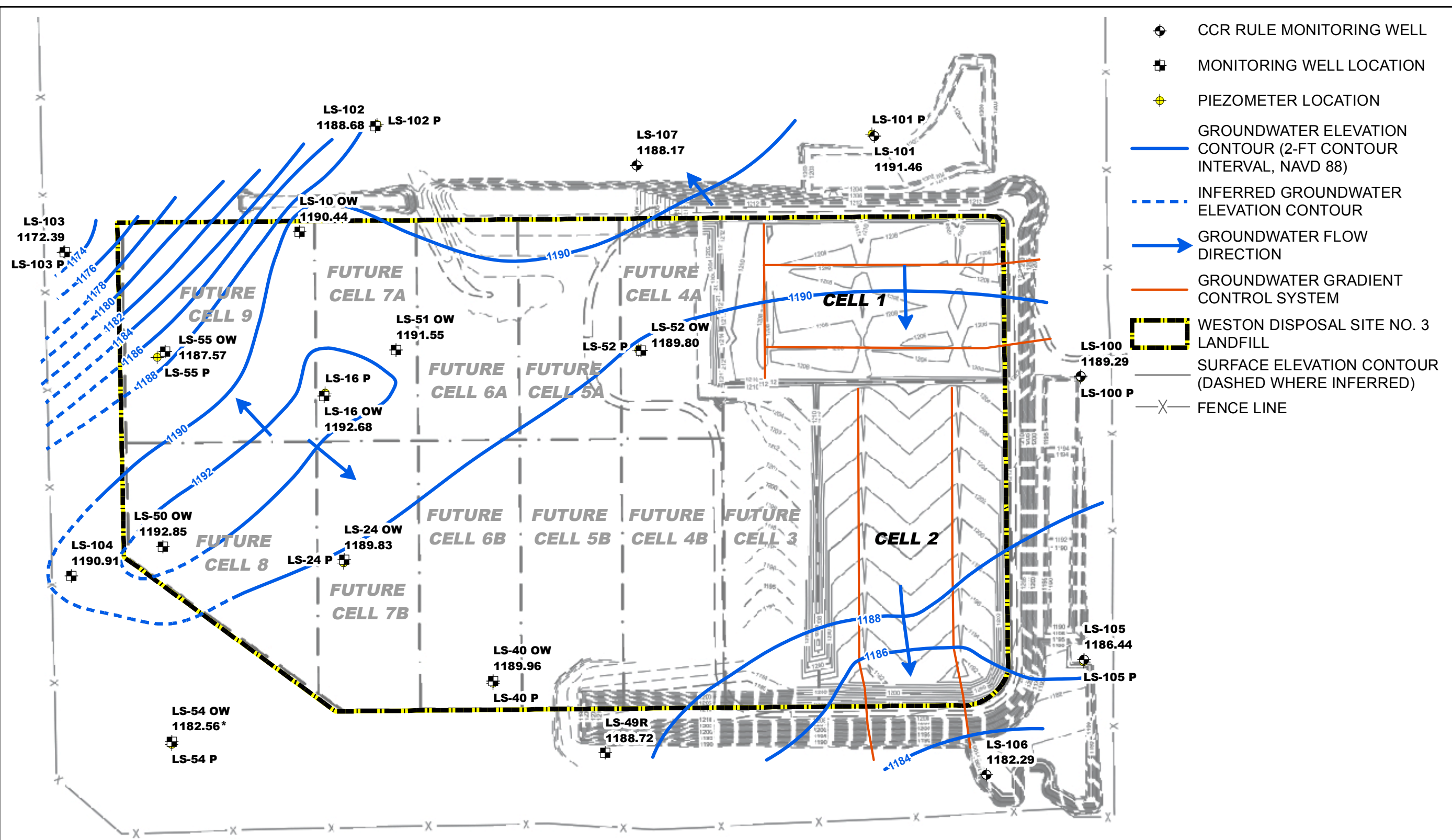


PROJECT NO: 67985  
FIGURE NO: 2





Y:\GIS\Projects\161660\Weston\_Power\_Plant\MXD\ASD\Figure 3\_WDSS GWE Contours 201710.mxd Author: stolzsd Date: 4/12/2018 10:38:52 PM



- ◆ CCR RULE MONITORING WELL
- MONITORING WELL LOCATION
- PIEZOMETER LOCATION
- GROUNDWATER ELEVATION CONTOUR (2-FT CONTOUR INTERVAL, NAVD 88)
- - - INFERRED GROUNDWATER ELEVATION CONTOUR
- GROUNDWATER FLOW DIRECTION
- GROUNDWATER GRADIENT CONTROL SYSTEM
- ▭ WESTON DISPOSAL SITE NO. 3 LANDFILL
- - - SURFACE ELEVATION CONTOUR (DASHED WHERE INFERRED)
- × FENCE LINE

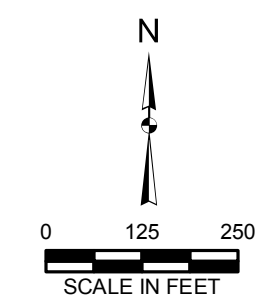
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JJW 4/11/18  
APPROVED BY/DATE:  
NRK 4/12/18

**WESTON DISPOSAL SITE NO. 3  
UPPERMOST AQUIFER UNIT  
GROUNDWATER ELEVATION CONTOUR MAP  
OCTOBER 11, 2017**

ALTERNATE SOURCE DEMONSTRATION  
WESTON DISPOSAL SITE NO. 3  
TOWN OF KNOWLTON, WISCONSIN

- NOTES:**
1. THE TOPOGRAPHIC BASE MAP HAS BEEN CREATED FROM AERIAL PHOTOGRAPHY AND LIDAR ACQUISITION BY AERO-METRIC, INC., SHEBOYGAN, WI. DATE FLOWN: NOVEMBER 5, 2010.
  2. HORIZONTAL DATUM IS REFERENCED TO WISCONSIN STATE PLANE COORDINATE SYSTEM, CENTRAL ZONE, NORTH AMERICAN DATUM (NAD 83/2007), US SURVEY FEET.
  3. VERTICAL DATUM IS NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88).
  4. \* ELEVATION NOT USED FOR CONTOURING

LS-48R  
1174.60  
LS-48



PROJECT NO: 67985  
FIGURE NO: 3





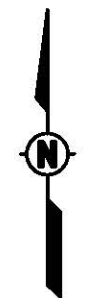
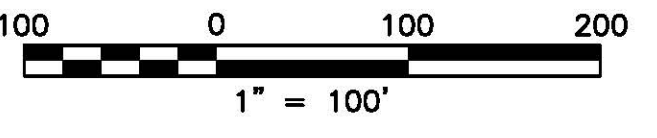
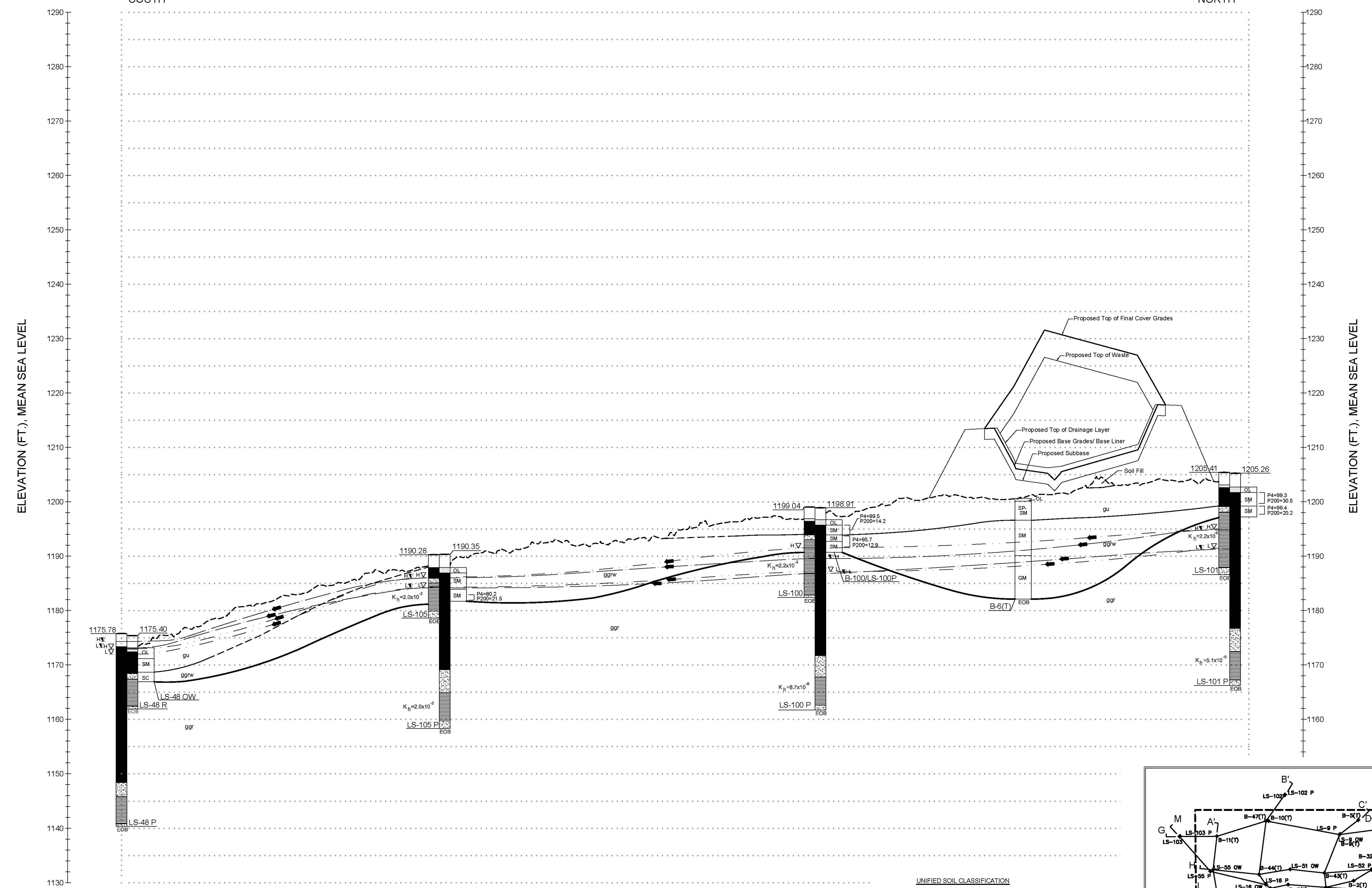
**Attachment A**  
**Select Cross-Sections and**  
**Drawings from Previous**  
**Reports**



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 Project Management Initials: Designer: SRK Checked: RW Approved: MUV ARCH D 24" x 36"

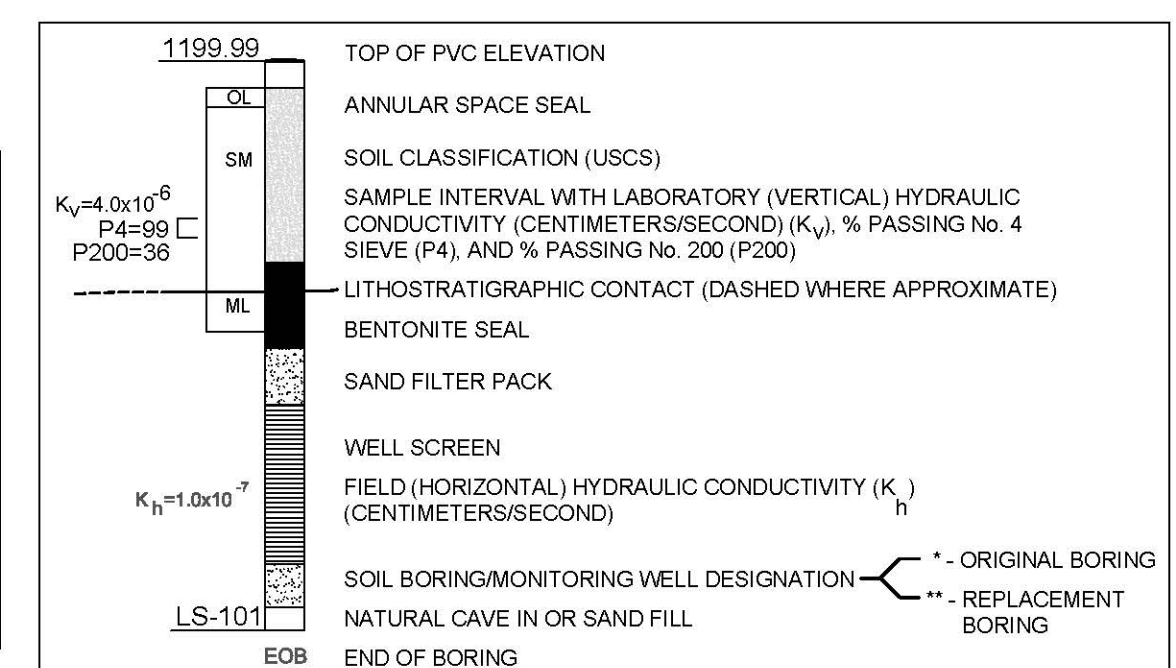
# AECOM

**PROJECT**  
 Feasibility Report  
 Weston Disposal Site  
 No. 3 Expansion  
 Legner Road  
 Town of Kewilton, Marathon County, WI  
**CLIENT**  
 Wisconsin Public  
 Service Corporation  
 700 North Adams St., P.O. Box 19001  
 Green Bay, WI 54307-9001  
 920-433-1780 tel  
 www.wisconsinpublicservice.com  
**CONSULTANT**  
 AECOM Technical Services, Inc.  
 1035 Kepler Drive  
 Green Bay, Wisconsin 54311  
 920-468-1978 tel 920-468-3312 fax  
 www.aecom.com



**LEGEND**

- EXISTING GROUND SURFACE
- - - LITHOSTRATIGRAPHIC UNIT (DASHED WHERE APPROXIMATE)
- - - COMPETENT BEDROCK SURFACE (DASHED WHERE APPROXIMATE)
- HIGH WATER TABLE - SHOWING FLOW DIRECTION
- LOW WATER TABLE (L) 10-21-11
- PIEZOMETRIC SURFACE - SHOWING FLOW DIRECTION
- HIGH PIEZOMETRIC SURFACE (H) 3-19-12
- LOW PIEZOMETRIC SURFACE (L) 10-21-11



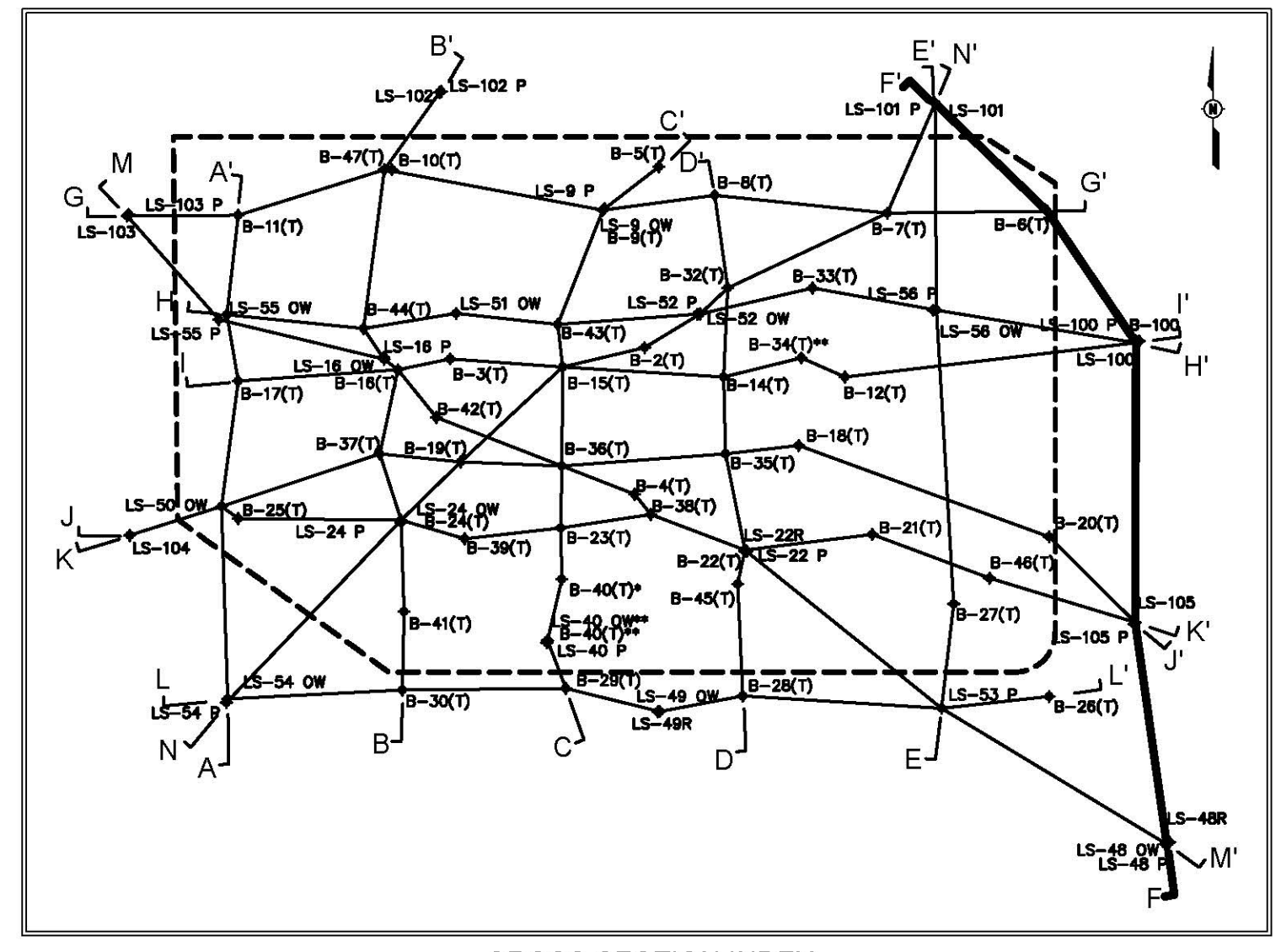
**GEOLOGIC CROSS-SECTION F-F'**  
 SCALE: 1"=100' HORIZ. & 1"=10' VERT.  
 10X VERTICAL EXAGGERATION

STRATIGRAPHIC UNIT	
PLEISTOCENE	gu - MARATHON FORMATION, UNDIFFERENTIATED (Atlg and Muldoon, 1989) BROWN TO DARK BROWN SAND TO SILTY SAND DERIVED FROM TILL, RESIDUUM, OR HILLSLOPE SEDIMENT
LOWER PROTEROZOIC	ggrw - WEATHERED BEDROCK YELLOWISH BROWN TO DARK BROWN SILTY SAND DERIVED FROM LOWER PROTEROZOIC BEDROCK (ggr)  ggr - GNEISSIC GRANITE (LaBerge and Myers, 1983) LIGHT GREY TO PINK QUARTZ DIORITE AND RED TO PINK GRANITE, WITH TRACE BLACK AMPHIBOLITE

**UNIFIED SOIL CLASSIFICATION**

GW	WELL GRADED GRAVELS & GRAVEL WITH SAND
GP	POORLY GRADED GRAVELS & GRAVEL WITH SAND
GM	SILTY GRAVELS, SILTY GRAVELS WITH SAND
GC	CLAYEY GRAVELS, CLAYEY GRAVEL WITH SAND
GW	WELL GRADED SANDS & SAND WITH GRAVEL
GP	POORLY GRADED SANDS & SANDS WITH GRAVEL
SP-SM	POORLY GRADED SAND WITH SILT, SAND WITH SILT & GRAVEL
SM	SILTY SANDS, SILTY SAND WITH GRAVEL
SC	CLAYEY SANDS, CLAYEY SANDS WITH GRAVEL
CF	HIGH PLASTICITY CLAY
CL-ML	SILTY CLAY TO CLAYEY SILT
CL	LOW PLASTICITY CLAY, GRAVELLY-SANDY CLAYS
ML	SILT, GRAVELLY-SANDY SILT
OL	ORGANIC CLAY, SANDY-GRAVELLY ORGANIC SOIL
OH	ORGANIC, HIGH PLASTICITY, SILTY CLAY
PT	PEAT, MUCK, ORGANIC SOILS

- NOTES**
- SOIL FILL - DISTURBED SOIL OR SOIL THAT HAS BEEN PLACED FOR CONSTRUCTION OF ROADS AND BERMS ASSOCIATED WITH THE EXISTING LANDFILL
  - FILL - COAL COMBUSTION RESIDUALS
  - WATER TABLE, PIEZOMETRIC, AND COMPETENT BEDROCK SURFACE LINES WERE DRAWN BETWEEN BORINGS IN THE CROSS SECTION AND WERE NOT PRODUCED FROM THE SURFACES PRESENTED IN FR-5 THROUGH FR-8 AND FR-25



**REGISTRATION**

**ISSUE/REVISION**

DATE	DESCRIPTION
AUGUST 2012	Issued for Regulatory Review

**KEY PLAN**

**PROJECT NUMBER**  
60186058

**SHEET TITLE**  
GEOLOGIC CROSS-SECTION F-F'

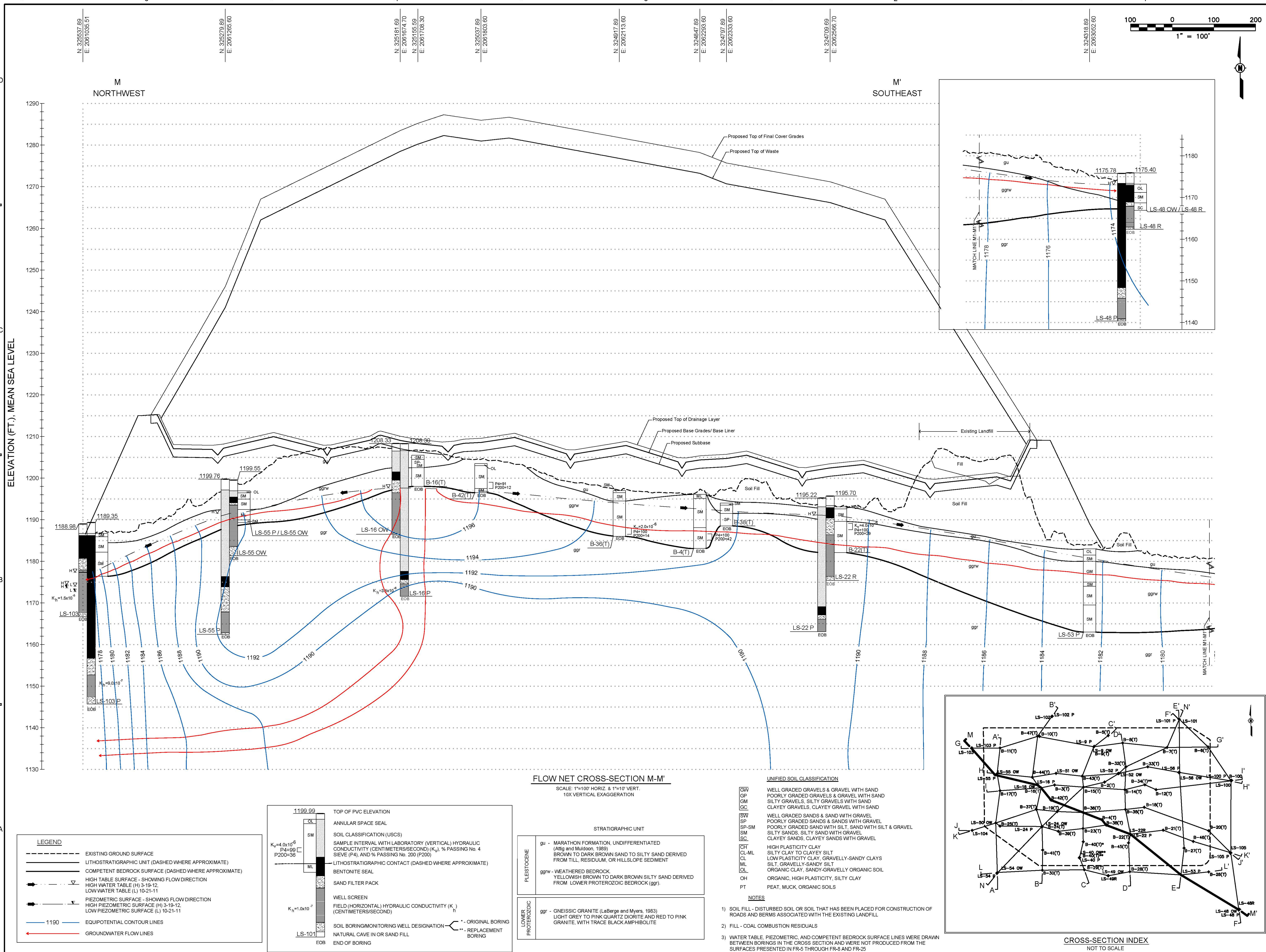
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FR-15





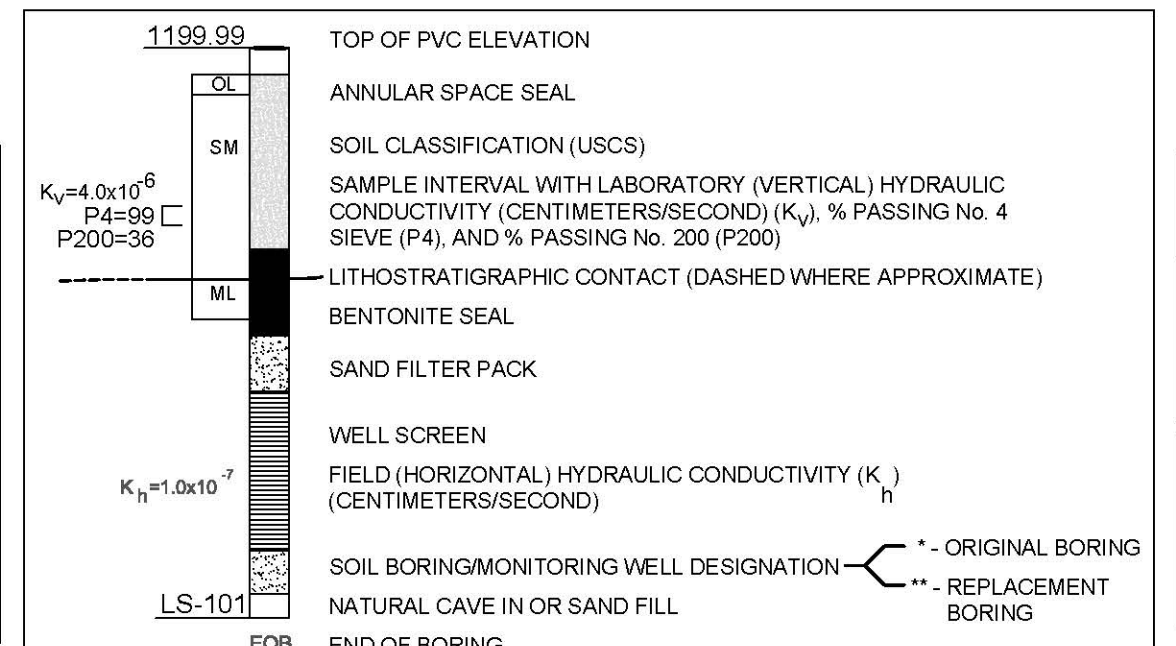


Project Management Initials: Designer: SRK Checked: RW Approved: MUV ARCH D 24' x 36'



**LEGEND**

- EXISTING GROUND SURFACE
- - - LITHOSTRATIGRAPHIC UNIT (DASHED WHERE APPROXIMATE)
- - - COMPETENT BEDROCK SURFACE (DASHED WHERE APPROXIMATE)
- HIGH WATER TABLE (H) 3-19-12
- LOW WATER TABLE (L) 10-21-11
- PIEZOMETRIC SURFACE - SHOWING FLOW DIRECTION
- HIGH PIEZOMETRIC SURFACE (H) 3-19-12
- LOW PIEZOMETRIC SURFACE (L) 10-21-11
- EQUIPOTENTIAL CONTOUR LINES
- GROUNDWATER FLOW LINES



**STRATIGRAPHIC UNIT**

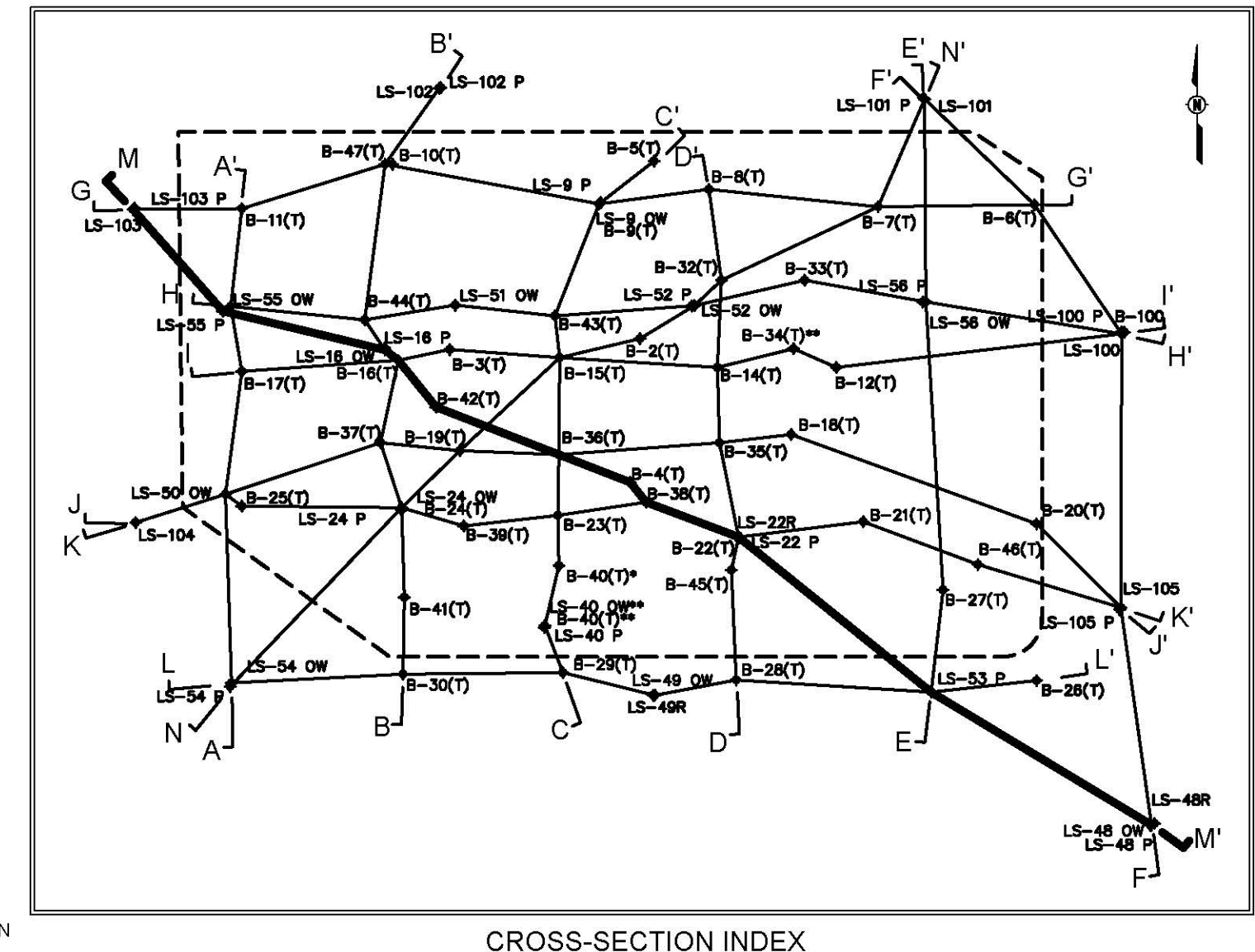
PLEISTOCENE	gu - MARATHON FORMATION, UNDIFFERENTIATED (Atlg and Muldoon, 1989) BROWN TO DARK BROWN SAND TO SILTY SAND DERIVED FROM TILL, RESIDUUM, OR HILLSLOPE SEDIMENT
LOWER PROTEROZOIC	ggf - WEATHERED BEDROCK *YELLOWISH BROWN TO DARK BROWN SILTY SAND DERIVED FROM LOWER PROTEROZOIC BEDROCK (ggf).  ggf - GNEISSIC GRANITE (LaBerge and Myers, 1983) LIGHT GREY TO PINK QUARTZ DIORITE AND RED TO PINK GRANITE, WITH TRACE BLACK AMPHIBOLITE

**UNIFIED SOIL CLASSIFICATION**

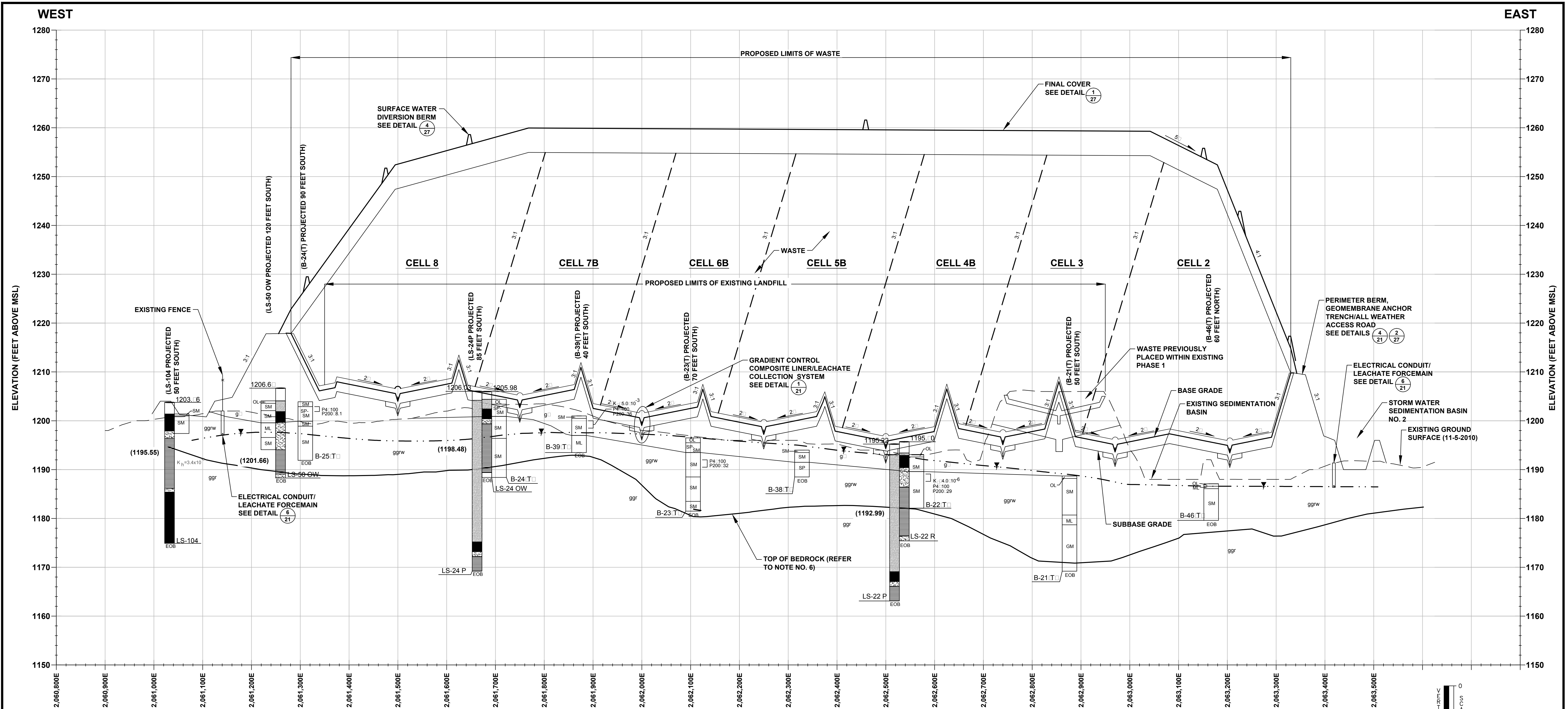
GW	WELL GRADED GRAVELS & GRAVEL WITH SAND
GP	POORLY GRADED GRAVELS & GRAVEL WITH SAND
GM	SILTY GRAVELS, SILTY GRAVELS WITH SAND
GC	CLAYEY GRAVELS, CLAYEY GRAVEL WITH SAND
SW	WELL GRADED SANDS & SAND WITH GRAVEL
SP	POORLY GRADED SANDS & SANDS WITH GRAVEL
SP-SM	POORLY GRADED SAND WITH SILT, SAND WITH SILT & GRAVEL
SM	SILTY SANDS, SILTY SAND WITH GRAVEL
SC	CLAYEY SANDS, CLAYEY SANDS WITH GRAVEL
CH	HIGH PLASTICITY CLAY
CL-ML	SILTY CLAY TO CLAYEY SILT
CL	LOW PLASTICITY CLAY, GRAVELLY-SANDY CLAYS
ML	SILT, GRAVELLY-SANDY SILT
OL	ORGANIC CLAY, SANDY-GRAVELLY ORGANIC SOIL
OH	ORGANIC, HIGH PLASTICITY, SILTY CLAY
PT	PEAT, MUCK, ORGANIC SOILS

**NOTES**

- SOIL FILL - DISTURBED SOIL OR SOIL THAT HAS BEEN PLACED FOR CONSTRUCTION OF ROADS AND BERMS ASSOCIATED WITH THE EXISTING LANDFILL
- FILL - COAL COMBUSTION RESIDUALS
- WATER TABLE, PIEZOMETRIC, AND COMPETENT BEDROCK SURFACE LINES WERE DRAWN BETWEEN BORINGS IN THE CROSS SECTION AND WERE NOT PRODUCED FROM THE SURFACES PRESENTED IN FR-3 THROUGH FR-8 AND FR-25

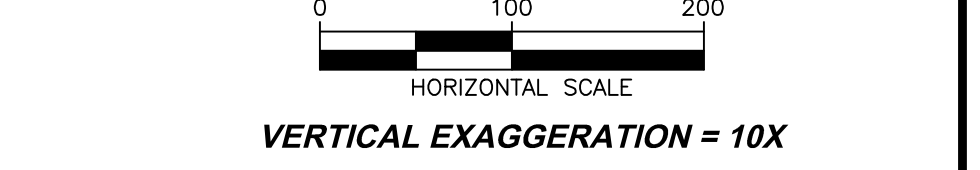
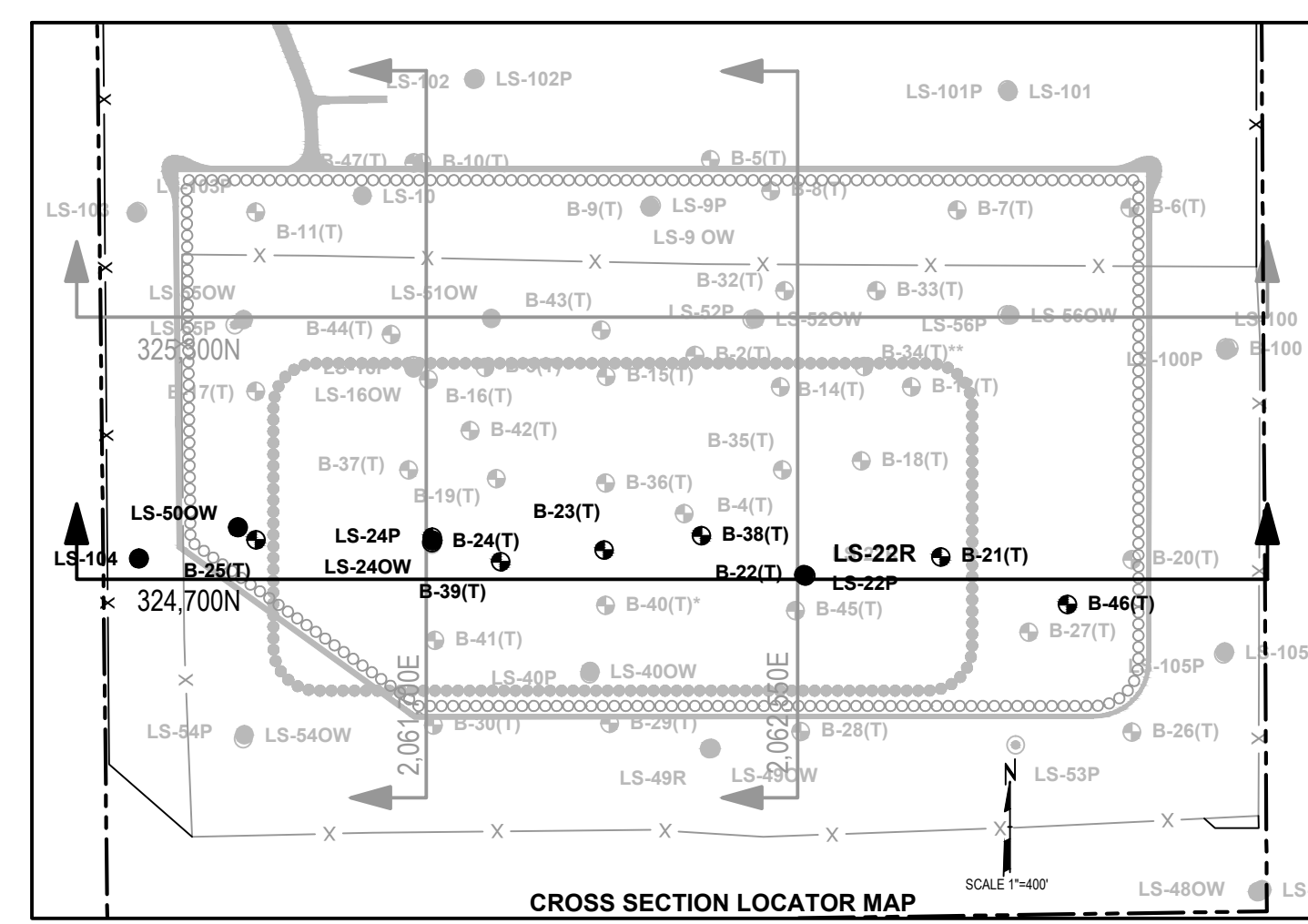






**CROSS SECTION 324,700N (LOOKING NORTH)**

- NOTES**
1. THE CORRELATION LINES ARE BASED ON INTERPOLATION BETWEEN BORINGS AND MAY NOT REPRESENT ACTUAL SUBSURFACE CONDITIONS.
  2. HORIZONTAL DISTANCES ARE MEASURED AND WATER TABLE DATA ARE PLOTTED WITH RESPECT TO THE CENTER OF EACH SOIL BORING LOCATION. WELL CONSTRUCTION SCHEMATICS ARE OFFSET FOR CLARITY.
  3. THE EXISTING GROUND SURFACE/SUBBASE GRADES BASEGRADES FINAL GRADES ARE BASED ON THE INFORMATION PRESENTED ON PLAN SHEETS 3, 4, 5, AND 15 RESPECTIVELY.
  4. ELEVATIONS ARE SHOWN IN REFERENCE TO USGS MEAN SEA LEVEL (MSL) DATUM.
  5. HIGH WATER TABLE BASED ON SURFACE PRESENTED ON HIGH WATER TABLE MAP FR-6 REV. 1 THAT WAS SUBMITTED WITHIN ADDENDUM NO. 2 OF THE FEASIBILITY REPORT, DATED JULY 18, 2013. THE WATER TABLE SURFACE IS BASED UPON DEPTH TO WATER MEASUREMENTS RECORDED ON APRIL 22, 2013. FOR EXISTING MONITORING WELLS INSTALLED PRIOR TO 2011 AND WATER DEPTH TO WATER MEASUREMENTS RECORDED ON MAY 13, 2013. FOR THE 100 - SERIES MONITORING WELLS.
  6. TOP OF BEDROCK SURFACE IS BASED ON A DIGITAL TERRAIN MODEL (DTM) PREPARED WITH THE TOP OF BEDROCK ELEVATIONS AT EACH SOIL BORING LOCATION.
  7. FOR DETAILED LITHOLOGICAL DESCRIPTIONS, REFER TO WELL CONSTRUCTION DETAILS AND THE SOILS LABORATORY TEST RESULTS IN THE FEASIBILITY REPORT.
  8. THE DEVELOPMENT PROGRESSION OF EACH CELL MAY VARY BASED UPON WASTE DISPOSAL SCHEDULE, BENEFICIAL REUSE PROJECT OPPORTUNITIES, AND THE NUMBER SIZE OF BULK-HAULING EVENTS FROM EACH OF THE POWER PLANTS.



NOTE: THESE PLANS ARE ACCOMPANIED BY A REPORT OF THE SAME TITLE. THESE DOCUMENTS ARE INTERRELATED AND INTENDED TO BE USED AND REVIEWED TOGETHER. THESE DOCUMENTS ARE INTENDED TO BE USED FOR REGULATORY PURPOSES ONLY.

NOT FOR CONSTRUCTION

NO.	BY	DATE	REVISION	APPD.
3				
2				
1				

PROJECT: **WISCONSIN PUBLIC SERVICE CORPORATION  
WESTON DISPOSAL SITE NO. 3 EXPANSION  
PLAN OF OPERATION**

SHEET TITLE: **ENGINEERING CROSS SECTION 324,700N**

DRAWN BY: LSTORMER	SCALE:	PROJ. NO. 196089.0003
CHECKED BY: TDH	AS SHOWN	FILE NO. 196089.0003.SHT17-20.XS.dwg
APPROVED BY: CDM	DATE PRINTED:	<b>SHEET 19 OF 29</b>
DATE: MARCH 2014		

708 Heartland Trail  
Suite 3000  
Madison, WI 53717  
Phone: 608.826.3600

**LEGEND**

- EXISTING GROUND SURFACE
- LITHOSTRATIGRAPHIC UNIT (DASHED WHERE APPROXIMATE)
- COMPETENT BEDROCK SURFACE (DASHED WHERE APPROXIMATE)
- HIGH TABLE SURFACE - REFER TO NOTE NO. 5 BELOW

**SOIL CLASSIFICATION (USCS)**

- SM: SAMPLE INTERVAL WITH LABORATORY VERTICAL HYDRAULIC CONDUCTIVITY (CENTIMETERS SECOND)  $K_v$  PASSING N. 4 SIEVE (P4); AND PASSING N. 200 (P200)
- ML: LITHOSTRATIGRAPHIC CONTACT (DASHED WHERE APPROXIMATE)
- CL: BENTONITE SEAL
- OL: SAND FILTER PACK
- SP: WELL SCREEN
- SP-SM: FIELD HORIZONTAL HYDRAULIC CONDUCTIVITY (K) CENTIMETERS SECOND
- SC: SOIL BORING MONITORING WELL DESIGNATION
- OH: NATURAL CAVE IN OR SAND FILL
- PT: END OF BORING

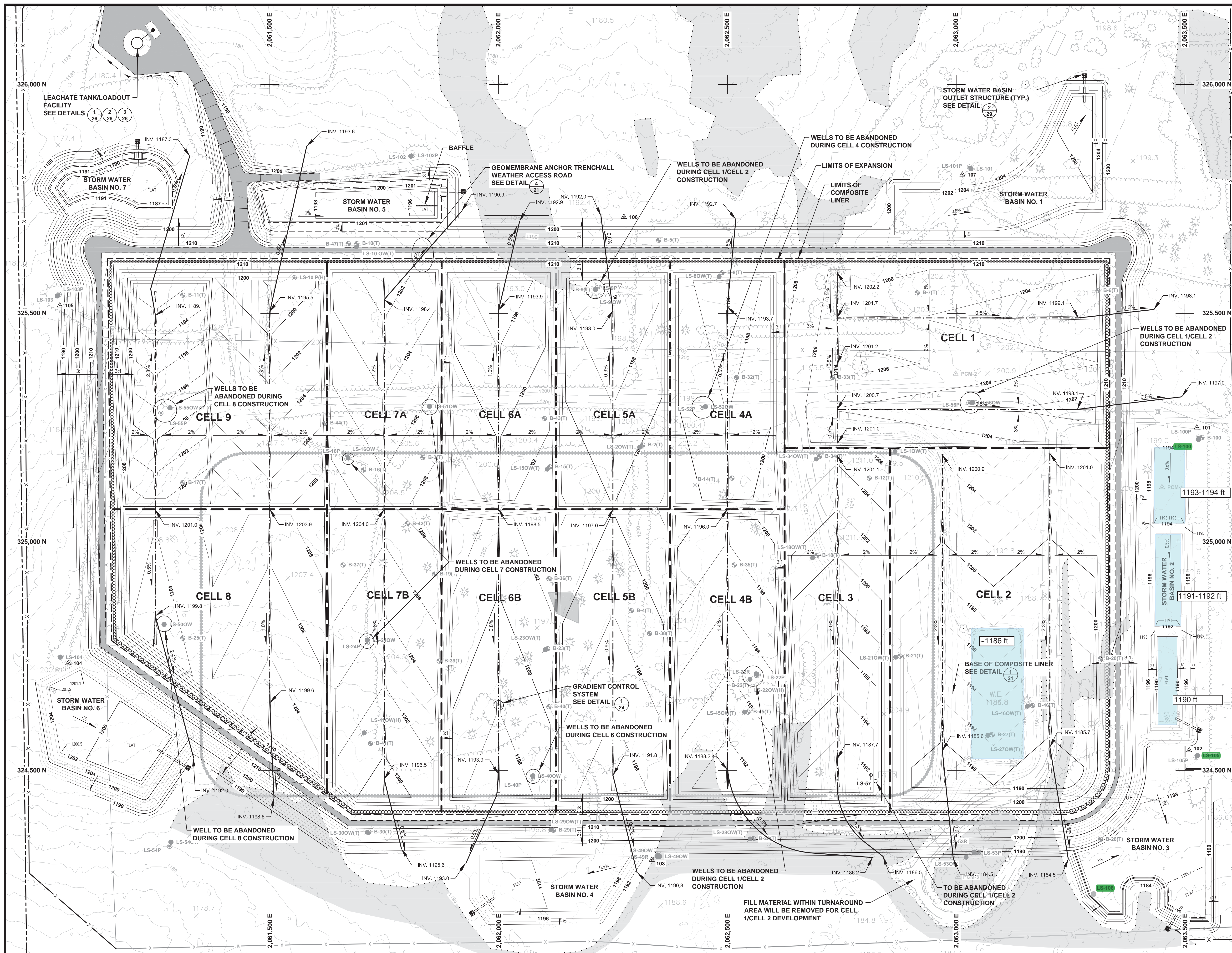
**UNIFIED SOIL CLASSIFICATION**

- GW: WELL GRADED GRAVELS - GRAVEL WITH SAND
- GP: POORLY GRADED GRAVELS - GRAVEL WITH SAND
- GM: SILTY GRAVELS, SILTY GRAVELS WITH SAND
- GC: CLAYEY GRAVELS, CLAYEY GRAVEL WITH SAND
- SW: WELL GRADED SANDS - SAND WITH GRAVEL
- SP: POORLY GRADED SANDS - SANDS WITH GRAVEL
- SP-SM: POORLY GRADED SAND WITH SILT, SAND WITH SILT
- SM: SILTY SANDS, SILTY SAND WITH GRAVEL
- SC: CLAYEY SANDS, CLAYEY SANDS WITH GRAVEL
- CH: HIGH PLASTICITY CLAY
- CL-ML: SILTY CLAY TO CLAYEY SILT
- CL: LOW PLASTICITY CLAY, GRAVELLY-SANDY CLAYS
- ML: SILTY, GRAVELLY-SANDY SILT
- OL: ORGANIC CLAY, SANDY-GRAVELLY ORGANIC SOIL
- OH: ORGANIC, HIGH PLASTICITY, SILTY CLAY
- PT: PEAT, MUCK, ORGANIC SOILS

**STRATIGRAPHIC UNIT**

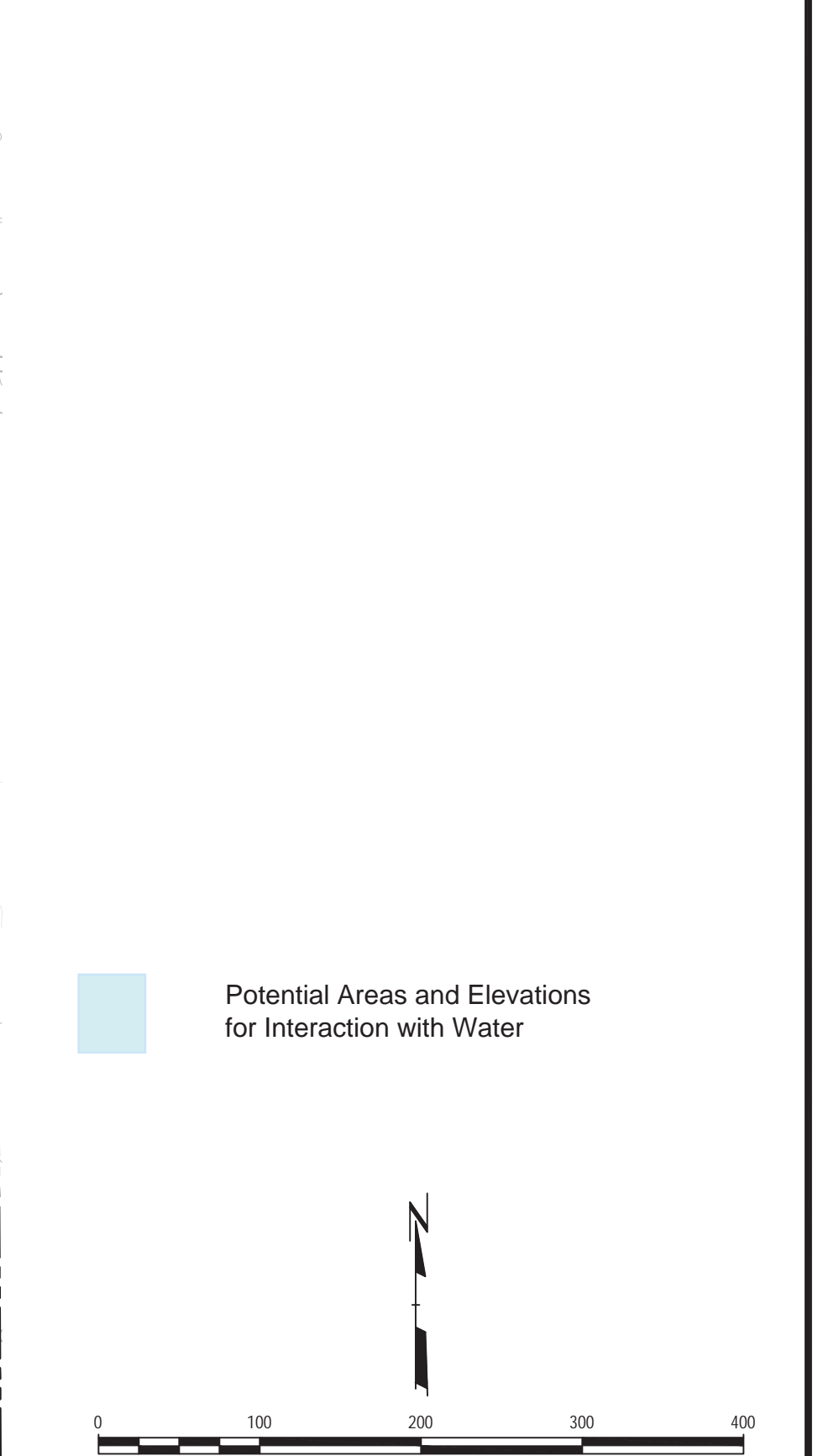
- PLEISTOCENE: g - MARATHON FORMATION, UNDIFFERENTIATED (A.G. & M. d. 11, 1989) BROWN TO DARK BROWN SAND TO SILTY SAND DERIVED FROM TILL, RESIDUUM, OR HILLSLOPE SEDIMENT
- PROTEROZOIC: ggw - WEATHERED BEDROCK YELLOWISH BROWN TO DARK BROWN SILTY SAND DERIVED FROM LOWER PROTEROZOIC BEDROCK (ggw)
- LOWER PROTEROZOIC: gg - GNEISSIC GRANITE (L.B. 79 & d. M. 11, 1983) LIGHT GREY TO PINK QUARTZ, DIORITE AND RED TO PINK GRANITE, WITH TRACE BLACK AMPHIBOLITE





- NOTES**
- REFER TO PLAN SHEET 2 OF THE PLAN SET FOR LEGEND AND BASE MAP NOTES.
  - CONTOURS PRESENTED ON THIS PLAN SHEET REPRESENT THE BASE OF THE CLAY LINER (WITHIN THE LIMITS OF THE COMPOSITE LINER) AND THE FINISHED GRADES BEYOND THE LIMITS OF COMPOSITE LINER (EXCEPT AS SHOWN ON DETAIL 4 OF 21).
  - STRAW BALE DITCH CHECKS, EROSION LOGS OR EROSION CONTROL FENCE MAY BE INSTALLED DURING CONSTRUCTION AND/OR OPERATIONS AS REQUIRED.
  - THE 12-INCH THICK GRADIENT CONTROL SYSTEM WILL BE INSTALLED ONE FOOT BELOW THE SUBBASE GRADES AS SHOWN ON DETAIL 1 ON PLAN SHEET 21. THE GRADIENT CONTROL SYSTEM WILL BE CONSTRUCTED WITHIN THE LIMITS OF THE TOE OF SLOPE OF THE EXTERIOR PERIMETER BERM AND WILL EXTEND OUT 25 FEET BEYOND THE LEACHATE COLLECTION PIPE IN EITHER DIRECTION.
  - BASIN OUTLET PIPES TO MAINTAIN MINIMUM 0.5% SLOPE.
  - A TEMPORARY JOB TRAILER ALONG WITH VISITOR PARKING AREA ON AN ALL-WEATHER ACCESS PAD WILL BE PROVIDED FOR EACH CONSTRUCTION EVENT. THE LOCATION MAY VARY FOR EACH CONSTRUCTION EVENT.

Figure revised by O'Brien and Gere Engineers, Inc. to indicate potential areas and elevations for interaction with water on April 12, 2018



NOTE: THESE PLANS ARE ACCOMPANIED BY A REPORT OF THE SAME TITLE. THESE DOCUMENTS ARE INTERRELATED AND INTENDED TO BE USED AND REVIEWED TOGETHER. THESE DOCUMENTS ARE INTENDED TO BE USED FOR REGULATORY PURPOSES ONLY.

NOT FOR CONSTRUCTION

NO.	BY	DATE	REVISION	APPD.
3				
2				
1				


PROJECT: **WISCONSIN PUBLIC SERVICE CORPORATION  
WESTON DISPOSAL SITE NO. 3 EXPANSION  
PLAN OF OPERATION**

SHEET TITLE: **SUBBASE GRADES**

DRAWN BY: LSTORMER	SCALE: 1"=100'	PROJ. NO: 196089.0003
CHECKED BY: TDH	FILE NO: 196089.0003.SHT04-SG.dwg	
APPROVED BY: CDM	DATE PRINTED:	<b>SHEET 4 OF 29</b>
DATE: MARCH 2014		







**Attachment B**  
**WDNR Construction**  
**Documentation Approval**  
**for Cell 1 & 2**



April 22, 2016

File Ref: FID # 737054120  
Marathon County  
SW / Approval File

Ms. Dawn DeJardin  
Wisconsin Public Service Corporation  
700 North Adams  
Green Bay, WI 54307-9001

Subject: Construction documentation approval for the Cell 1 & 2 liners at the Wisconsin Public Service Corporation (WPSC) Weston Disposal Site No. 3 located in the Town of Knowlton, Marathon County, Wisconsin (DNR License No. 3067)

Dear Ms. DeJardin:

We have reviewed and approved the construction documentation report for the Cell 1 & 2 liner at the WPSC landfill. Please include the attached approval in the written operating record for the landfill as specified in s. NR 506.17, Wisconsin Administrative Code.

The report documents construction activities pertaining to Cells 1 & 2 (approximately 15.2 acres). River View Construction began construction activities on May 12, 2015 and TRC oversaw quality assurance on all activities through December 23, 2015. The report outlined two deviations: ash from Phase I was hauled to Lincoln County landfill instead of being placed in Cell 1; and approximately 5% of the granular fill used in the leachate drainage blanket is greater than ¼-inch. These deviations are acceptable to the Department with no additional action being required.

The report includes monitoring well abandonment forms, including a form for a non-potable water supply well (CQ997) not previously identified in either the feasibility report or the plan of operation report for the landfill expansion. During Department site visits, the well was not brought to the attention of the inspector at the time. Pursuant to the locational criteria in ss. NR 504.04(3)(f), and NR512.05, Wis. Adm. Code, all water supply wells within 1,200 feet of the proposed limits of waste are to be identified. The well is located beneath the newly constructed Cell 2. Based on follow up discussions, the well was abandoned in accordance with the requirements of chapter NR 812, Wis. Adm. Code. However, if the well had been identified, as required, additional requirements for abandonment may have been conditioned. The Department has determined, as part of this review, that no additional actions that would require liner excavation are being required. In the future, please ensure all items required by code are identified for Department review.

The report did not include specific information on the abandonment of the leachate detection device (LS-57). The accompanying plan sheet No. 3 showed LS-57 having been adjacent to the underground leachate tank near the division berm for Cell 2 and 3 located in the southwest corner. Based on follow up discussions, LS-57 was removed in its entirety at the same time as the leachate tank. The Department has determined, as part of this review, that no additional actions are being required.

Cell 1 & 2 liner construction included installation of a gradient control system, sub-base construction (material was hauled into the site to build up the grade elevations), installation of the 2-foot clay layer, installation of the geosynthetic clay liner (GCL) and 60-mil Geomembrane, and placement of the leachate collection system. All components of the liner system were constructed in accordance with applicable chapter NR 504 and 516, Wis. Adm. Code requirements and applicable Department approvals.

Additional construction activities at the site included leachate system components and sedimentation basins. The leachate collection system includes the dual contained force main pipe, manholes, and a 104,600 gallon above ground leachate collection tank with load out facility. The entire system from the farthest manhole to the leachate collection tank was pressure tested with no leaks detected. Three storm water basins were constructed as infiltration basins that will naturally dewater. An emergency spillway was included for overflow conditions. A drop manhole was installed to reduce flow velocities.

Construction was completed and documented in compliance with the approved plan of operation, associated plan of operation modification approvals, and ch. NR 500 through 538, Wis. Adm. Code. You are reminded that approval by the Bureau of Waste & Materials Management does not relieve you of obligations to meet all other applicable federal, state, and local permits, zoning and regulatory requirements.

Sally Hronek is the waste management engineer assigned to this facility. Please feel free to contact her by telephone at 920-662-5493 or email: [Sally.Hronek@wi.gov](mailto:Sally.Hronek@wi.gov) if you have questions regarding this approval.

Sincerely,



Jill Schoen, CHMM  
Waste & Materials Management Program Supervisor  
West Central Region

cc: Nathan Coller – DNR Waste Management Hydrogeologist (email)  
Joe Lourigan – DNR Waste Management Hydrogeologist (email)  
Bob Grefe – DNR Waste Management Engineer (email)



**BEFORE THE  
STATE OF WISCONSIN  
DEPARTMENT OF NATURAL RESOURCES**

**CONSTRUCTION DOCUMENTATION APPROVAL  
FOR THE**

**CELL 1 & 2 LINER  
AT THE**

**WISCONSIN PUBLIC SERVICE CORPORATION WESTON 3 LANDFILL  
WDNR LICENSE NO. 3067**

**FINDINGS OF FACT**

The Department finds that:

1. Wisconsin Public Service Corporation (WPSC) owns and operates a non-hazardous industrial waste facility located in the E ½ of the NW ¼ and the W ½ of the NE ¼ of Section 23, Town 26 North, Range 7 East, in the Town of Knowlton, Marathon County, Wisconsin.
2. On October 20, 1986, the Department issued a conditional plan of operation approval for the WPSC Weston Disposal Site No. 3 Landfill also known as the WPSC Legner Landfill. The approval includes 35 acres for WPSC industrial material disposal. Only Phase 1 was built and partially filled before temporarily closing.
3. On December 11, 2014, the Department issued a conditional plan of operation approval for the expansion of Weston Disposal Site No. 3. The approval expands the landfill an additional 22.6 acres with updated cell designs and requires exhuming the 1986 approved Phase 1 landfill.
4. On August 27, 2015, the Department issued a plan of operation modification approval. The approval addresses a 26-foot relocation of the landfill footprint approved in the Department's August 25, 2015 feasibility modification determination.
5. On March 7, 2016, the Department received the construction documentation report and 24 plan sheets from TRC Environmental Corporation, on behalf of WPSC titled, 'Cell 1 and Cell 2 Liner Construction Documentation Report, Wisconsin Public Service Corporation, Weston Disposal Site No. 3, WDNR License No. 3067.' The report is dated March 2, 2016.
  - a. Between April 5, 2016 and April 11, 2016, the Department received additional information pertaining to the construction documentation report, which further detailed the abandonment of CQ997. The Department's review of this information is summarized in a memo to the file dated April 21, 2016 and titled "Well abandonment of non-potable private well located within landfill footprint of Cell 2 of Wisconsin Public Service Corporation (WPSC) landfill Site No. 3 (aka Legner Landfill), Lic. #3067."
  - b. Between April 13, 2016, and April 20, 2016, the Department received additional information pertaining to the construction documentation report, which further detailed the abandonment of LS-57. The Department's review of this information is summarized in a memo to the file dated April 21, 2016, and titled "Investigation and abandonment of

leachate monitoring device LS-57 located within the landfill footprint of Wisconsin Public Service Corporation (WPSC) landfill Site No. 3 (aka Legner Landfill), Lic. #3067.”

6. On March 28, 2016, the Department received the correct fee of \$6,050. The fee included the \$1,100 document review fee, \$550 pre-construction meeting fee, and \$4,400 fee for 8 construction inspections. The construction inspections were conducted by the Department in 2015 on July 21, August 17, 24, 26, September 21, October 14, November 16, and December 10.

#### **CONCLUSIONS OF LAW**

1. The Department has authority under s. 289.31(3), Stats., and ch. NR 516, Wis. Adm. Code, to require that the owner of a solid waste disposal facility demonstrate that the facility has been constructed in substantial compliance with the plan of operation approvals.
2. In accordance with the foregoing, the Department has authority under ch. 289, Stats., to issue the following construction documentation approval.

#### **CONSTRUCTION DOCUMENTATION APPROVAL**

The Department hereby approves the construction documentation report for the Cell 1 & 2 liner at the WPSC landfill, subject to chs. NR 500 through 538, Wis. Adm. Code.

This approval is based on the information available to the Department as of the date of approval. If additional information, project changes or other circumstances indicate a possible need to modify this approval, the Department may ask you to provide further information relating to this activity. Likewise, the Department accepts proposals to modify approvals, as provided for in state statutes and administrative codes.

### NOTICE OF APPEAL RIGHTS

If you believe that you have a right to challenge this decision, you should know that Wisconsin statutes and administrative rules establish time periods within which requests to review Department decisions must be filed.

For judicial review of a decision pursuant to sections 227.52 and 227.53, Stats., you have 30 days after the decision is mailed or otherwise served by the Department, to file your petition with the appropriate Circuit Court and serve the petition on the Department. Such a petition for judicial review shall name the Department of Natural Resources as the respondent.

Dated: April 22, 2016

#### DEPARTMENT OF NATURAL RESOURCES


For the Secretary



Jill Schoen, CHMM  
Waste & Materials Management Program Supervisor  
West Central Region



Sally Hronek  
Waste & Materials Management Engineer  
Northeast Region



**Attachment C**  
**Construction**  
**Documentation Report**  
**Appendix C – Phase I**  
**Closure Report**

# Appendix C

## Phase I Closure Report

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# Phase 1 Closure Report

**Weston Disposal Site No. 3  
Town of Knowlton, Wisconsin**

**March 2016**

*Prepared For  
Wisconsin Public Service Corporation*

A handwritten signature in blue ink that reads 'Todd W. Martin'.

---

Todd Martin  
Senior Project Manager

A handwritten signature in blue ink that reads 'Jonathan N. Hotstream'.

---

Jonathan N. Hotstream, P.E., P.G.  
Senior Geological Engineer

# Table of Contents

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1.	Project Description .....	1
1.1	Site Background.....	1
1.2	Plan Modification Requirements .....	1
1.3	Construction.....	2
1.4	Field Sampling.....	2
2.	Characterization Sample Analysis .....	3
3.	Confirmation Sample Analysis.....	4
4.	References.....	6

## List of Tables

Table 1	Characterization Sample Analysis Results and 95 percent Upper Confidence Limits for Each Parameter
Table 2	Confirmation Sample Analysis Results and Evaluation

## List of Appendices

Attachment 1	Photographs
Attachment 2	Tolerance Limit Evaluation
Attachment 3	Existing Phase 1 Landfill Confirmation Sample Locations Figure
Attachment 4	Analytical Laboratory Test Results

# Section 1

## Project Description

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### 1.1 Site Background

Wisconsin Public Service Corporation (WPS) is expanding their existing Weston Disposal Site No. 3 coal combustion residuals (CCR) landfill located in the Town of Knowlton, Marathon County, Wisconsin. Phase 1 of the existing landfill (Phase 1) has a footprint of approximately 4 acres. Phase 1 lies within the footprint of Cell 1, Cell 2, and Cell 3 of the permitted expansion. Refer to the figures and Plan Sheets in the Sampling and Analysis Plan prepared by TRC in June 2015 (TRC 2015). The existing Phase 1 liner system lies above the base grades of the approved expansion liner system; therefore, the clay liner of Phase 1 had to be excavated to construct Cells 1, 2, and 3 of the approved expansion. It is estimated that approximately 2 feet of CCR was placed in Phase 1, or approximately 6,800 CY of CCR, prior to installing a temporary cover. The temporary cover over the CCR in Phase 1 was composed of a geomembrane with approximately 6 inches of cover soil. Phase 1 was constructed with a 1-foot-thick leachate collection drainage layer and a 5-foot-thick compacted clay liner.

### 1.2 Plan Modification Requirements

On December 11, 2014, WPS received a conditional approval for the expansion of the Weston Disposal Site No. 3 facility from the Wisconsin Department of Natural Resources (WDNR). The planned expansion included constructing a new composite lined landfill and closure of existing Phase 1 by removal of the CCR.

Condition 13 of the WDNR conditional approval for the expansion required that a sampling plan be developed and submitted to the WDNR to document the removal of the CCR from the existing Phase 1 landfill. The sampling plan was to be submitted prior to development of the Phase 1 area to the new liner design elevations. A June 2015 Sampling and Analysis Plan (SAP) was developed and submitted to the WDNR to satisfy Condition 13. The SAP outlined the field, laboratory, and reporting methods that would be implemented to document removal of CCR from Phase 1. The SAP indicated that after sampling and testing was completed, a closure report would be submitted to the WDNR providing laboratory testing results and documentation of the closure of Phase 1. This Phase 1 Closure Report was developed to meet the requirement of the SAP (TRC 2015).



### 1.3 Construction

The Cell 1 and Cell 2 liners of the approved expansion were constructed in 2015. Cell 1 and Cell 2 of the expansion were constructed in stages, with Cell 1 being constructed prior to constructing Cell 2. Construction of Cell 1 and Cell 2 included excavation and off-site disposal of the Phase 1 temporary cover geomembrane, leachate drainage layer, CCR, and approximately one foot of the top of the existing clay liner. The cover soil above the geomembrane of the temporary cover was salvaged and used as general fill during Cell 1 and Cell 2 construction (refer to the photographs in Attachment 1). It was proposed in the approved Plan of Operation to stockpile the remainder of the excavated clay from the Phase 1 liner for construction of clay liner for the expansion (TRC, 2014). The Phase 1 temporary cover geomembrane, drainage layer, CCR, and top foot of the existing clay liner within the construction limits of Cell 1 was removed and disposed of off-site at the Lincoln County Landfill located in Merrill, Wisconsin. The underlying clay within the footprint of Cell 1 was stockpiled so that construction of Cell 1 could continue. Prior to the construction of Cell 2, the remainder of the Phase 1 temporary cover, CCR, and liner were removed as described above for Cell 1 Construction.

### 1.4 Field Sampling

The sampling was performed in two stages:

1. Initially samples of the existing clay liner and CCR were obtained for characterization of each material.
2. Confirmation sampling was performed after removal of the CCR and upper foot of the existing clay liner to document removal of the CCR.

Background characteristic sampling consisted of 10 representative samples of clay liner material and 10 samples of CCR. These grab samples were collected by a hand auger. Decontamination procedures outlined in the June 2015 SAP were followed to prevent cross contamination.

Confirmation sampling occurred after the CCR and top foot of the existing liner had been disposed of off-site as described in Subsection 1.3. Approximately 5 grab samples per acre (20 samples total) were collected and analyzed from the base of the excavation (estimated at 1 foot below top of existing clay liner grades) and compared to the results of background characterization. Sample collection methods and decontamination for confirmatory sampling was equivalent to those used during background characterization sampling.

Samples were containerized and kept on ice for shipment to a certified Wisconsin laboratory [Pace Analytical Services, Incorporated (Pace)]. Chain-of-custody and sampling procedures followed the procedures identified in the June 2015 SAP.

## Section 2

# Characterization Sample Analysis

---

In June 2015, TRC developed a Sampling and Analysis Plan (SAP) to document the removal of the coal combustion residuals (CCR) from the existing Phase 1 landfill at the Weston Disposal Site No. 3. The SAP outlined a two phase approach where background samples of the CCR and clay liner would be obtained for characterization analysis. Following the characterization analysis, a refined list of parameters would be selected for the confirmation sampling of the underlying clay liner material to document removal of the CCR.

Background sampling was performed on July 2, 2015 and analytical testing was performed by Pace in Green Bay, Wisconsin. The results of the 10 background samples of CCR and the 10 background samples of clay liner are provided in Table 1. Laboratory test results for the characterization samples are provided in Attachment 4. The background sampling data was evaluated using the United States Environmental Protection Agency's Pro-UCL software to determine the 95% upper confidence limit (UCL) for each parameter.

The characterization sample results were compared to determine statistically distinct concentrations between the CCR and clay liner materials. It was determined that the confirmation samples would be analyzed for calcium, lead, and zinc. These parameters were selected based on the ratio of the 95% UCL values between the CCR and clay liner calculated for the characterization data sets. These three constituents are less mobile and therefore provide better definition of CCR from clay liner material. A soil averaging approach using the confirmation samples compared to the 95% UCL of the clay was proposed to document removal of the CCR.

Because of the phasing of construction, the analysis procedures presented in the Sampling and Analysis Plan (SAP) dated June 2015 were revised. The SAP proposed comparing soil averaging from contiguous sample blocks to the 95% upper confidence limit (UCL) of the mean to evaluate the confirmation sampling results. Removal of the CCR in the existing Phase 1 landfill was performed in a phased approach (e.g., in the area of overlap between the existing Phase 1 and Cell 1 of the expansion was removed prior to other remaining portions of Phase 1 during Cell 2 construction). This phased construction approach required that the confirmation sampling results be compared on a sample by sample basis; therefore, a UCL approach for the mean of sample blocks was not appropriate. Instead a tolerance limit approach was used to allow individual point observations to be evaluated.

## Section 3

# Confirmation Sample Analysis

---

As determined in the characterization analysis, the confirmation samples were analyzed for calcium, lead, and zinc. Upper 95% tolerance limits for the three parameters were calculated for the background liner material using one-sided tolerance factors (refer to Table 2). The results of the confirmation samples were evaluated against 3 criteria to verify that the CCR had been removed. The 3 criteria were:

- Below the tolerance limit for lead (8.9 mg/kg) based on the characterization results on clay
- Below the tolerance limit for zinc (83.2 mg/kg) based on the characterization results on clay
- A zinc concentration to lead concentration ratio greater than 4.8

The parameters lead and zinc show the largest differences between the CCR and background clay datasets. The lead data provides clear separation between the two populations. The zinc data shows some overlap in the two data sets. The ratio of the zinc/lead concentrations in the characterization datasets provides a consistent separation between the two data sets where the CCR ratios range between 2.4 and 3.5 and the clay ratios range between 4.8 and 17.8. Refer to Attachment 2 containing the zinc to lead ratios and the tolerance limit calculations. This ratio data suggests a unique identifier between the two materials. Due to the overlap in the zinc data sets and the short spacing in the zinc to lead concentration ratios meeting two out of three acceptance criteria was considered appropriate.

The calcium concentration of the confirmation samples was evaluated on a qualitative standpoint, but not considered in the formal evaluation. The mean and standard deviation of the calcium concentration for the characterization dataset are 23,534 mg/kg and 30,438 mg/kg, respectively. This indicates that the calcium concentration of the CCR is extremely variable. The characterization data for calcium from the clay result in an average of 1,716 mg/kg with a standard deviation of 280 mg/kg. Calcium functions as a good marker for distinguishing clay from CCR when using soil averaging, but is ambiguous in evaluating individual samples.

Therefore, a confirmation sample that achieved two out of three of these criteria was considered sufficient to document removal of CCR in the vicinity of that sample.

Confirmation sampling was performed on July 30, August 26, August 27, and September 16, 2015. The 20 confirmation sample locations which were collected at an approximate frequency of 5 samples per acre are presented on Figure 1 in Attachment 3. Table 2 contains a summary of the confirmation sample analysis results, and laboratory analysis reports are provided in

Attachment 4. The confirmation sample results indicated that all the individual 20 confirmation samples met the 3 acceptance criteria listed above for the tolerance limit approach. This analysis demonstrates that the CCR in the existing Phase 1 landfill was removed as required per condition 13 of the WDNR expansion approval.

Due to the construction sequencing and time constraints, the clay liner material from the existing Phase 1 landfill was excavated and stockpiled on-site for future construction events. The stockpile was covered with a soil cover and seeded to control erosion. At this time, it is anticipated that this stockpiled material will be used as the compacted clay component below the geomembrane in future final cover construction.

## Section 4 References

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TRC. 2014. Weston Disposal Site No. 3 Expansion: Plan of Operation. March 2014.

TRC. 2015. Sampling and Analysis Plan for Weston Disposal Site No. 3, Phase 1 Closure, Town of Knowlton, Wisconsin. June 2015.

**Table 1**

Characterization Sample Analysis Results and 95 percent Upper Confidence Limits for Each Parameter  
Phase 1 Closure Report  
Wisconsin Public Service Corporation – Weston Disposal Site No. 3

SAMPLE NAME	ARSENIC (mg/kg)	BERYLLIUM (mg/kg)	BORON (mg/kg)	CALCIUM (mg/kg)	CHROMIUM (mg/kg)	COPPER (mg/kg)	LEAD (mg/kg)	MOLYBDENUM (mg/kg)	SULFUR (mg/kg)	ZINC (mg/kg)
<b>Analytical Testing on Coal Combustion Residuals (CCR)</b>										
FA-1	29.5	6.3	70	2,670	27.1	70.5	80.7	4.7	261	196
FA-2	35.2	10.6	99.7	2,080	36.7	88.4	113	2.4	33.6	273
FA-3	35.8	9.5	105	2,400	34.5	100	107	3.4	182	261
FA-4	14.3	3	151	73,400	26.5	71.1	24.4	2.8	783	84.5
FA-5	10.6 J	2.5	200	10,300	26.2	73.7	19.2	2.7	721	48
FA-6	27.4	6	154	32,900	30.8	74.3	66.3	2.7	724	193
FA-7	41.6	8.5	116	5,890	39.9	108	106	2.4 J	428	330
FA-8	6.1 J	2.1	215	11,700	25.5	70.6	10	2.5	749	25.6
FA-9	16.4	2.8	305	10,300	32.3	77.1	21.4	2.8	2,170	58.8
FA-10	19.6	3.7	199	83,700	32.3	77.8	38.5	2.7	907	97.5
<b>95% UCL</b>	<b>30.6</b>	<b>7.3</b>	<b>202.0</b>	<b>63,262</b>	<b>34.0</b>	<b>89.1</b>	<b>82.3</b>	<b>3.3</b>	<b>1,041</b>	<b>219.2</b>
<b>Analytical Testing on Clay Liner Material</b>										
CL-1	< 3.8	0.98	133	1,370	94.3	58.8	2.7 J	< .26	38.1	48.1
CL-2	< 3.9	0.63	176	1,650	85.5	22.4	3.0 J	< .26	21.3 J	30.3
CL-3	7 J	1.1	103	1,210	106	67.7	4.9 J	.49 J	27.7	83.2
CL-4	6.1 J	0.73	144	2,180	137	29.7	4.2 J	.42 J	47.5	27.3
CL-5	4.5 J	0.75	142	1,970	82.7	31.8	7.1	< .26	34.1	34.1
CL-6	5.6 J	0.66	128	1,910	84.2	29.3	5.9	< .23	28.1 J	36.3
CL-7	6.4 J	0.76	131	1,760	75.1	34.6	5.9	< .25	37.8	37.5
CL-8	7.7 J	0.69	150	1,660	56.7	31.3	4.9 J	< .27	16.5 J	34.4
CL-9	< 3.4	0.66	109	1,690	60	41.9	6	< .26	36.1	34.7
CL-10	6.4 J	0.76	106	1,760	81.1	46.7	3.5 J	< .25	16 J	36.8
<b>95% UCL</b>	<b>6.3</b>	<b>0.86</b>	<b>145.3</b>	<b>1,878</b>	<b>99.6</b>	<b>47.8</b>	<b>5.6</b>	<b>0.35</b>	<b>36.3</b>	<b>50.2</b>

Notes:

J = Estimated concentration at or above the LOD and below the LOQ.

Created by: M. Williams

Checked by: J. Hotstream

Table 2  
Confirmation Sample Analysis Results and Evaluation  
Phase I Closure Report  
Wisconsin Public Service Corporation – Weston Disposal Site No. 3

SAMPLE NAME	CALCIUM (mg/kg)	LEAD (mg/kg)	ZINC (mg/kg)	ZINC/LEAD	MEETS CCR REMOVAL CRITERIA
1	1,820	5.3 JB	33.4	6.3	Yes (3/3)
2	1,630	5.0	31.3	6.3	Yes (3/3)
3	1,430	6.3	41.9	6.7	Yes (3/3)
4	1,620	5.2	39.0	7.5	Yes (3/3)
5	2,140	<2.5 D3	36.7	14.7	Yes (3/3)
6	1,350	3.5 J,B,D3	40.1	11.5	Yes (3/3)
7	2,040	2.5 J,B,D3	40.4	16.2	Yes (3/3)
8	2,410	4.3	29.1	6.8	Yes (3/3)
9	1,950	6.9	47.3	6.9	Yes (3/3)
10	1,900	1.1 J	15.4	14	Yes (3/3)
11	1,570	3.0 J,B,D3	55.3	18.4	Yes (3/3)
12	2,490	4.6	62.0	13.5	Yes (3/3)
13	1,930	2.3 J,B,D3	64.6	28.1	Yes (3/3)
14	1,850	5.2	43.9	8.4	Yes (3/3)
15	1,430	5.6	38.0	6.8	Yes (3/3)
16	1,820	5.2	32.4	6.2	Yes (3/3)
17	2,600	4.1	36.2	8.8	Yes (3/3)
18	1,880	4.0	56.0	14	Yes (3/3)
19	1,470	3.7	29.1	7.9	Yes (3/3)
20	1,530	7.3	35.7	4.9	Yes (3/3)
Average Confirmation Values	1,843	4	40		Yes (3/3)
Upper 95% Tolerance Limit	2,531	8.9	83.2	--	--

Notes:

J = estimated concentration at or above the LOD and below the LOQ.

B = analyte was detected in the associated method blank.

D3 = sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

Created by: J. Hotstream

Checked by: K. Pawlisch

# Attachment 1 Photographs

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## Photographic Log

<b>Client Name:</b> Wisconsin Public Service Corporation		<b>Site Location:</b> Weston Disposal Site No. 3 Phase 1 Closure	<b>Project No.:</b> 218938.0000 Phase 6
<b>Photo No.</b> 1	<b>Date</b> August 27, 2015		
<b>Description</b> Removing and salvaging Phase 1 cover soil above the geomembrane of the temporary cover. Salvaged cover soil was used as general fill in Cell 1 and Cell 2 construction.			
<b>Photo No.</b> 2	<b>Date</b> August 27, 2015		
<b>Description</b> Removing Phase 1 temporary geomembrane, drainage layer, CCR and top 1-foot-thickness of clay liner for transport and disposal. These materials were disposed of at the Lincoln County Landfill in Merrill, Wisconsin			



## Photographic Log

Client Name:		Site Location:	Project No.:
Wisconsin Public Service Corporation		Weston Disposal Site No. 3 Phase 1 Closure	218938.0000 Phase 6
Photo No.	Date		
3	August 27, 2015		
Description	Photo looking south to leachate tank. CCR excavated with existing clay liner exposed.		
Photo No.	Date		
4	September 10, 2015		
Description	Exposed Clay Liner after CCR was removed.		

# Attachment 2 Tolerance Limit Evaluation

---



PROJECT / LOCATION: WPS Weston Disposal Site No. 3 Existing Phase 1 Landfill - Closure		PROJECT / PROPOSAL NO.
SUBJECT: Tolerance Limit Calculations		218938.0000 Phase 6
PREPARED BY: J. Hotstream	DATE: 8/7/2015	FINAL <input type="checkbox"/>
CHECKED BY: R. Wienkes	DATE: 8/10/2015	REVISION <input type="checkbox"/>

**Purpose:** Calculate tolerance limits for the characterization samples collected in the clay for comparison to the single point observations of the confirmation samples .

**Method:** the upper tolerance limits are calculated using the procedures outlined in "Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities: Unified Guidance" by the US EPA (2009).

$$TL = \bar{x} + k(n, \gamma, 1 - \alpha) \cdot s \quad \text{Eq. 17.16}$$

where  $\bar{x}$  = the mean

$s$  = standard deviation

$k(n, \gamma, 1 - \alpha)$  = one-sided normal tolerance factor, lookup parameter

$k(n, \gamma, 1 - \alpha)$  2.911 Table 17-3 in App. D

$$TL = \bar{x} + 2.911 \cdot s$$

Calcium (Characterization of Clay)

$\bar{x}$	1716	TL	2531	mg/kg
$s$	280			

Lead (Characterization of Clay)

$\bar{x}$	4.81	TL	8.9	mg/kg
$s$	1.4			

Zinc (Characterization of Clay)

$\bar{x}$	40.27	TL	86.9	mg/kg
$s$	16.0			

When zinc was analyzed using the ProUCL software by the EPA to estimate the 95% upper confidence limit, a non-parametric distribution was determined. The EPA guidance used for this tolerance limit analysis recommends that the tolerance limit for a non-parametric dataset be the maximum value observed in the dataset. Therefore a tolerance limit of 83.2 mg/kg will be used for zinc which represents a coverage of 0.741 based on Table 17-4 in Appendix D of the guidance document. Use the tolerance limits calculated for calcium and lead above.

Guidance Document:

U.S. Environmental Protection Agency. Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities: Unified Guidance. Office of Resource Conservation and Recovery Program Implementation and Information Division. EPA 530-R-09-007. March 2009.





PROJECT / LOCATION: WPS – Weston Disposal Site No. 3		PROJECT / PROPOSAL NO.
SUBJECT: Analytical Results Summary, Background Sampling at Existing Phase 1		218938.0000 Phase 6
PREPARED BY: M. Williams	DATE: 7/22/2015	FINAL <input type="checkbox"/>
CHECKED BY: J. Hotstream	DATE: 8/7/2015	REVISION <input type="checkbox"/>

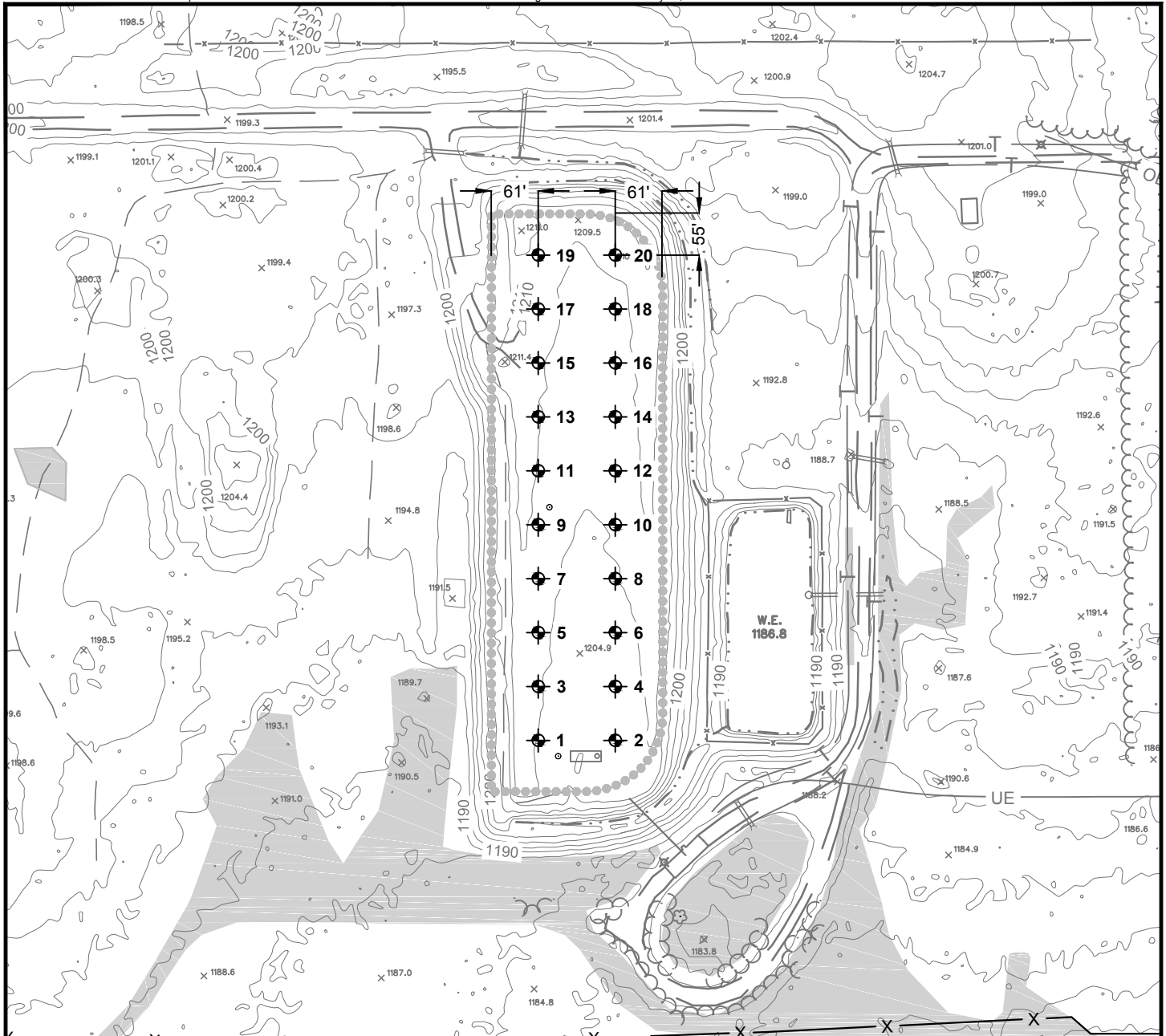
SAMPLE NAME	ARSENIC (mg/kg)	BERYLLIUM (mg/kg)	BORON (mg/kg)	CALCIUM (mg/kg)	CHROMIUM (mg/kg)	COPPER (mg/kg)	LEAD (mg/kg)	MOLYBDENUM (mg/kg)	SULFUR (mg/kg)	ZINC (mg/kg)	ZINC/LEAD
<b>Analytical Testing on Coal Combustion Residuals (CCR)</b>											
FA-1	29.5	6.3	70	2670	27.1	70.5	80.7	4.7	261	196	2.4
FA-2	35.2	10.6	99.7	2080	36.7	88.4	113	2.4	33.6	273	2.4
FA-3	35.8	9.5	105	2400	34.5	100	107	3.4	182	261	2.4
FA-4	14.3	3	151	73400	26.5	71.1	24.4	2.8	783	84.5	3.5
FA-5	10.6 J	2.5	200	10300	26.2	73.7	19.2	2.7	721	48	2.5
FA-6	27.4	6	154	32900	30.8	74.3	66.3	2.7	724	193	2.9
FA-7	41.6	8.5	116	5890	39.9	108	106	2.4 J	428	330	3.1
FA-8	6.1 J	2.1	215	11700	25.5	70.6	10	2.5	749	25.6	2.6
FA-9	16.4	2.8	305	10300	32.3	77.1	21.4	2.8	2170	58.8	2.7
FA-10	19.6	3.7	199	83700	32.3	77.8	38.5	2.7	907	97.5	2.5
<b>Average</b>	23.7	5.5	161.5	23534	31.2	81.2	58.7	2.9	695.9	156.7	2.7
<b>Maximum</b>	41.6	10.6	305.0	83700	39.9	108.0	113.0	4.7	2170.0	330.0	3.5
<b>Minimum</b>	6.1	2.1	70.0	2080	25.5	70.5	10.0	2.4	33.6	25.6	2.4
<b>Std. Dev.</b>	12.0	3.1	69.9	30437.8	4.9	13.3	40.8	0.7	595.6	107.8	0.4
<b>95% UCL</b>	30.6	7.3	202.0	63262	34.0	88.8	82.3	3.3	1041.0	219.2	--
<b>Analytical Testing on Clay Liner Material</b>											
CL-1	< 3.8	0.98	133	1370	94.3	58.8	2.7 J	< .26	38.1	48.1	17.8
CL-2	< 3.9	0.63	176	1650	85.5	22.4	3.0 J	< .26	21.3 J	30.3	10.1
CL-3	7 J	1.1	103	1210	106	67.7	4.9 J	.49 J	27.7	83.2	17.0
CL-4	6.1 J	0.73	144	2180	137	29.7	4.2 J	.42 J	47.5	27.3	6.5
CL-5	4.5 J	0.75	142	1970	82.7	31.8	7.1	< .26	34.1	34.1	4.8
CL-6	5.6 J	0.66	128	1910	84.2	29.3	5.9	< .23	28.1 J	36.3	6.2
CL-7	6.4 J	0.76	131	1760	75.1	34.6	5.9	< .25	37.8	37.5	6.4
CL-8	7.7 J	0.69	150	1660	56.7	31.3	4.9 J	< .27	16.5 J	34.4	7.0
CL-9	< 3.4	0.66	109	1690	60	41.9	6	< .26	36.1	34.7	5.8
CL-10	6.4 J	0.76	106	1760	81.1	46.7	3.5 J	< .25	16 J	36.8	10.5
<b>Average</b>	5.5	0.77	132	1716	86.3	39.4	4.8	0.30	30.3	40.3	9.2
<b>Maximum</b>	7.7	1.10	176	2180	137.0	67.7	7.1	0.49	47.5	83.2	17.8
<b>Minimum</b>	< 3.9	0.63	103	1210	56.7	22.4	2.7	< 0.27	16.0	27.3	4.8
<b>Std. Dev.</b>	1.5	0.2	22.5	279.9	23.0	14.4	1.4	0.1	10.3	16.0	4.7
<b>95% UCL</b>	6.3	0.9	145.3	1,878	99.6	47.8	5.6	0.4	36.3	50.2	--

Notes:

J = Estimated concentration at or above the LOD and below the LOQ.

# Attachment 3 Existing Phase 1 Landfill Confirmation Sample Locations Figure

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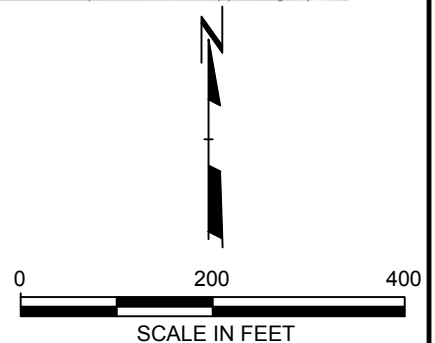


**LEGEND:**

- LIMITS OF CCR IN EXISTING PHASE 1
- ⊕ 1 APPROXIMATE LOCATION OF CLAY SAMPLE

**NOTE:**

1. TOPOGRAPHIC BASE MAP HAS BEEN CREATED FROM AERIAL PHOTOGRAPHY AND LIDAR ACQUISITION BY AERO-METRIC, INC., SHEBOYGAN, WI. DATE FLOWN: NOVEMBER 5, 2010.



708 Heartland Trail  
 Suite 3000  
 Madison, WI 53717  
 Phone: 608.826.3600

PROJECT:  
**WISCONSIN PUBLIC SERVICE CORPORATION  
 WESTON DISPOSAL SITE NO. 3**

TITLE:  
**EXISTING PHASE 1 LANDFILL  
 CONFIRMATION SAMPLE LOCATIONS**

DRAWN BY: L. STORMER  
 CHECKED BY: KP  
 APPROVED BY: JH  
 DATE: FEBRUARY 2016  
 PROJ. NO.: 218938.0000  
 FILE: 218938.0000.05.dwg

**FIGURE 1**

# Attachment 4 Analytical Laboratory Test Results

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July 22, 2015

Jonathan Hotstream  
TRC - Madison  
708 Heartland Trail  
Madison, WI 53717

RE: Project: 218938.0006 WESTON DISPOSAL  
Pace Project No.: 40117728

Dear Jonathan Hotstream:

Enclosed are the analytical results for sample(s) received by the laboratory on July 07, 2015. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Tod Noltemeyer  
tod.noltemeyer@pacelabs.com  
Project Manager

Enclosures



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: 218938.0006 WESTON DISPOSAL

Pace Project No.: 40117728

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### Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414

A2LA Certification #: 2926.01

Alaska Certification #: UST-078

Alaska Certification #MN00064

Alabama Certification #40770

Arizona Certification #: AZ-0014

Arkansas Certification #: 88-0680

California Certification #: 01155CA

Colorado Certification #Pace

Connecticut Certification #: PH-0256

EPA Region 8 Certification #: 8TMS-L

Florida/NELAP Certification #: E87605

Guam Certification #:14-008r

Georgia Certification #: 959

Georgia EPD #: Pace

Idaho Certification #: MN00064

Hawaii Certification #MN00064

Illinois Certification #: 200011

Indiana Certification#C-MN-01

Iowa Certification #: 368

Kansas Certification #: E-10167

Kentucky Dept of Envi. Protection - DW #90062

Kentucky Dept of Envi. Protection - WW #:90062

Louisiana DEQ Certification #: 3086

Louisiana DHH #: LA140001

Maine Certification #: 2013011

Maryland Certification #: 322

Michigan DEPH Certification #: 9909

Minnesota Certification #: 027-053-137

Mississippi Certification #: Pace

Montana Certification #: MT0092

Nevada Certification #: MN\_00064

Nebraska Certification #: Pace

New Jersey Certification #: MN-002

New York Certification #: 11647

North Carolina Certification #: 530

North Carolina State Public Health #: 27700

North Dakota Certification #: R-036

Ohio EPA #: 4150

Ohio VAP Certification #: CL101

Oklahoma Certification #: 9507

Oregon Certification #: MN200001

Oregon Certification #: MN300001

Pennsylvania Certification #: 68-00563

Puerto Rico Certification

Saipan (CNMI) #:MP0003

South Carolina #:74003001

Texas Certification #: T104704192

Tennessee Certification #: 02818

Utah Certification #: MN000642013-4

Virginia DGS Certification #: 251

Virginia/VELAP Certification #: Pace

Washington Certification #: C486

West Virginia Certification #: 382

West Virginia DHHR #:9952C

Wisconsin Certification #: 999407970

---

### Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302

Florida/NELAP Certification #: E87948

Illinois Certification #: 200050

Kentucky Certification #: 82

Louisiana Certification #: 04168

Minnesota Certification #: 055-999-334

North Dakota Certification #: R-150

South Carolina Certification #: 83006001

Texas Certification #: T104704529-14-1

US Dept of Agriculture #: S-76505

Wisconsin Certification #: 405132750

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: 218938.0006 WESTON DISPOSAL

Pace Project No.: 40117728

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40117728001	FA-1	Solid	07/02/15 08:00	07/07/15 09:50
40117728002	FA-2	Solid	07/02/15 08:10	07/07/15 09:50
40117728003	FA-3	Solid	07/02/15 08:20	07/07/15 09:50
40117728004	FA-4	Solid	07/02/15 08:30	07/07/15 09:50
40117728005	FA-5	Solid	07/02/15 08:40	07/07/15 09:50
40117728006	FA-6	Solid	07/02/15 08:50	07/07/15 09:50
40117728007	FA-7	Solid	07/02/15 09:00	07/07/15 09:50
40117728008	FA-8	Solid	07/02/15 09:10	07/07/15 09:50
40117728009	FA-9	Solid	07/02/15 09:20	07/07/15 09:50
40117728010	FA-10	Solid	07/02/15 09:30	07/07/15 09:50

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### SAMPLE ANALYTE COUNT

Project: 218938.0006 WESTON DISPOSAL

Pace Project No.: 40117728

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40117728001	FA-1	EPA 6010	DLB	9	PASI-G
		EPA 6010	DM	1	PASI-M
		ASTM D2974-87	SKW	1	PASI-G
40117728002	FA-2	EPA 6010	DLB	9	PASI-G
		EPA 6010	DM	1	PASI-M
		ASTM D2974-87	SKW	1	PASI-G
40117728003	FA-3	EPA 6010	DLB	9	PASI-G
		EPA 6010	DM	1	PASI-M
		ASTM D2974-87	SKW	1	PASI-G
40117728004	FA-4	EPA 6010	DLB	9	PASI-G
		EPA 6010	DM	1	PASI-M
		ASTM D2974-87	KEW	1	PASI-G
40117728005	FA-5	EPA 6010	DLB	9	PASI-G
		EPA 6010	DM	1	PASI-M
		ASTM D2974-87	KEW	1	PASI-G
40117728006	FA-6	EPA 6010	DLB	9	PASI-G
		EPA 6010	DM	1	PASI-M
		ASTM D2974-87	KEW	1	PASI-G
40117728007	FA-7	EPA 6010	DLB	9	PASI-G
		EPA 6010	DM	1	PASI-M
		ASTM D2974-87	KEW	1	PASI-G
40117728008	FA-8	EPA 6010	DLB	9	PASI-G
		EPA 6010	DM	1	PASI-M
		ASTM D2974-87	KEW	1	PASI-G
40117728009	FA-9	EPA 6010	DLB	9	PASI-G
		EPA 6010	DM	1	PASI-M
		ASTM D2974-87	KEW	1	PASI-G
40117728010	FA-10	EPA 6010	DLB	9	PASI-G
		EPA 6010	DM	1	PASI-M
		ASTM D2974-87	KEW	1	PASI-G

### REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: 218938.0006 WESTON DISPOSAL

Pace Project No.: 40117728

---

**Method:** EPA 6010

**Description:** 6010 MET ICP

**Client:** TRC - MADISON

**Date:** July 22, 2015

### General Information:

10 samples were analyzed for EPA 6010. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

### Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

### Sample Preparation:

The samples were prepared in accordance with EPA 3050 with any exceptions noted below.

The samples were prepared in accordance with EPA 3050 with any exceptions noted below.

### Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

### Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

### Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

### Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

### Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/55948

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 40117731001

R1: RPD value was outside control limits.

- MSD (Lab ID: 2018655)
- Sulfur

### Additional Comments:

Analyte Comments:

QC Batch: MPRP/12239

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- FA-5 (Lab ID: 40117728005)
  - Arsenic
- FA-8 (Lab ID: 40117728008)
  - Arsenic

This data package has been reviewed for quality and completeness and is approved for release.

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: 218938.0006 WESTON DISPOSAL

Pace Project No.: 40117728

**Sample: FA-1**      **Lab ID: 40117728001**      Collected: 07/02/15 08:00      Received: 07/07/15 09:50      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010 MET ICP</b>		Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	<b>29.5</b>	mg/kg	2.6	0.81	1	07/15/15 12:47	07/16/15 17:52	7440-38-2	
Sulfur	<b>261</b>	mg/kg	25.0	1.8	1	07/13/15 23:29	07/16/15 12:05		
Beryllium	<b>6.3</b>	mg/kg	0.51	0.048	1	07/15/15 12:47	07/16/15 17:52	7440-41-7	
Boron	<b>70.0</b>	mg/kg	12.8	0.40	1	07/15/15 12:47	07/16/15 17:52	7440-42-8	
Calcium	<b>2670</b>	mg/kg	128	3.5	1	07/15/15 12:47	07/16/15 17:52	7440-70-2	
Chromium	<b>27.1</b>	mg/kg	0.64	0.25	1	07/15/15 12:47	07/16/15 17:52	7440-47-3	
Copper	<b>70.5</b>	mg/kg	1.3	0.20	1	07/15/15 12:47	07/16/15 17:52	7440-50-8	
Lead	<b>80.7</b>	mg/kg	1.3	0.55	1	07/15/15 12:47	07/16/15 17:52	7439-92-1	
Molybdenum	<b>4.7</b>	mg/kg	2.6	0.27	1	07/15/15 12:47	07/16/15 17:52	7439-98-7	
Zinc	<b>196</b>	mg/kg	5.1	0.49	1	07/15/15 12:47	07/16/15 17:52	7440-66-6	
<b>Percent Moisture</b>		Analytical Method: ASTM D2974-87							
Percent Moisture	<b>21.8</b>	%	0.10	0.10	1		07/08/15 14:50		

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: 218938.0006 WESTON DISPOSAL

Pace Project No.: 40117728

**Sample: FA-2**      **Lab ID: 40117728002**      Collected: 07/02/15 08:10      Received: 07/07/15 09:50      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010 MET ICP</b>		Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Sulfur	<b>33.6</b>	mg/kg	25.7	1.8	1	07/13/15 23:29	07/16/15 12:08		
Arsenic	<b>35.2</b>	mg/kg	2.7	0.86	1	07/15/15 12:47	07/16/15 17:55	7440-38-2	
Beryllium	<b>10.6</b>	mg/kg	0.54	0.051	1	07/15/15 12:47	07/16/15 17:55	7440-41-7	
Boron	<b>99.7</b>	mg/kg	13.5	0.42	1	07/15/15 12:47	07/16/15 17:55	7440-42-8	
Calcium	<b>2080</b>	mg/kg	135	3.7	1	07/15/15 12:47	07/16/15 17:55	7440-70-2	
Chromium	<b>36.7</b>	mg/kg	0.67	0.26	1	07/15/15 12:47	07/16/15 17:55	7440-47-3	
Copper	<b>88.4</b>	mg/kg	1.3	0.21	1	07/15/15 12:47	07/16/15 17:55	7440-50-8	
Lead	<b>113</b>	mg/kg	1.3	0.58	1	07/15/15 12:47	07/16/15 17:55	7439-92-1	
Molybdenum	<b>2.4J</b>	mg/kg	2.7	0.29	1	07/15/15 12:47	07/16/15 17:55	7439-98-7	
Zinc	<b>273</b>	mg/kg	5.4	0.52	1	07/15/15 12:47	07/16/15 17:55	7440-66-6	
<b>Percent Moisture</b>		Analytical Method: ASTM D2974-87							
Percent Moisture	<b>28.0</b>	%	0.10	0.10	1		07/08/15 14:50		

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## ANALYTICAL RESULTS

Project: 218938.0006 WESTON DISPOSAL

Pace Project No.: 40117728

**Sample: FA-3**      **Lab ID: 40117728003**      Collected: 07/02/15 08:20      Received: 07/07/15 09:50      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010 MET ICP</b>		Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Sulfur	<b>182</b>	mg/kg	25.1	1.8	1	07/13/15 23:29	07/16/15 12:11		
Arsenic	<b>35.8</b>	mg/kg	2.6	0.83	1	07/15/15 12:47	07/16/15 17:57	7440-38-2	
Beryllium	<b>9.5</b>	mg/kg	0.52	0.049	1	07/15/15 12:47	07/16/15 17:57	7440-41-7	
Boron	<b>105</b>	mg/kg	13.0	0.41	1	07/15/15 12:47	07/16/15 17:57	7440-42-8	
Calcium	<b>2400</b>	mg/kg	130	3.6	1	07/15/15 12:47	07/16/15 17:57	7440-70-2	
Chromium	<b>34.5</b>	mg/kg	0.65	0.25	1	07/15/15 12:47	07/16/15 17:57	7440-47-3	
Copper	<b>100</b>	mg/kg	1.3	0.20	1	07/15/15 12:47	07/16/15 17:57	7440-50-8	
Lead	<b>107</b>	mg/kg	1.3	0.56	1	07/15/15 12:47	07/16/15 17:57	7439-92-1	
Molybdenum	<b>3.4</b>	mg/kg	2.6	0.28	1	07/15/15 12:47	07/16/15 17:57	7439-98-7	
Zinc	<b>261</b>	mg/kg	5.2	0.50	1	07/15/15 12:47	07/16/15 17:57	7440-66-6	
<b>Percent Moisture</b>		Analytical Method: ASTM D2974-87							
Percent Moisture	<b>28.5</b>	%	0.10	0.10	1		07/08/15 14:50		

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: 218938.0006 WESTON DISPOSAL

Pace Project No.: 40117728

**Sample: FA-4**      **Lab ID: 40117728004**      Collected: 07/02/15 08:30      Received: 07/07/15 09:50      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010 MET ICP</b>		Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Sulfur	<b>783</b>	mg/kg	28.1	2.0	1	07/13/15 23:29	07/16/15 12:14		
Arsenic	<b>14.3</b>	mg/kg	4.6	1.5	2	07/15/15 12:47	07/17/15 10:41	7440-38-2	
Beryllium	<b>3.0</b>	mg/kg	0.46	0.043	1	07/15/15 12:47	07/16/15 17:39	7440-41-7	
Boron	<b>151</b>	mg/kg	11.5	0.36	1	07/15/15 12:47	07/16/15 17:39	7440-42-8	
Calcium	<b>73400</b>	mg/kg	231	6.3	2	07/15/15 12:47	07/17/15 10:41	7440-70-2	P6
Chromium	<b>26.5</b>	mg/kg	1.2	0.45	2	07/15/15 12:47	07/17/15 10:41	7440-47-3	
Copper	<b>71.1</b>	mg/kg	1.2	0.18	1	07/15/15 12:47	07/16/15 17:39	7440-50-8	
Lead	<b>24.4</b>	mg/kg	2.3	0.99	2	07/15/15 12:47	07/17/15 10:41	7439-92-1	
Molybdenum	<b>2.8</b>	mg/kg	2.3	0.25	1	07/15/15 12:47	07/16/15 17:39	7439-98-7	
Zinc	<b>84.5</b>	mg/kg	4.6	0.44	1	07/15/15 12:47	07/16/15 17:39	7440-66-6	
<b>Percent Moisture</b>		Analytical Method: ASTM D2974-87							
Percent Moisture	<b>13.5</b>	%	0.10	0.10	1		07/10/15 10:51		

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: 218938.0006 WESTON DISPOSAL

Pace Project No.: 40117728

**Sample: FA-5**      **Lab ID: 40117728005**      Collected: 07/02/15 08:40      Received: 07/07/15 09:50      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010 MET ICP</b>		Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Sulfur	<b>721</b>	mg/kg	23.3	1.7	1	07/13/15 23:29	07/16/15 12:29		
Arsenic	<b>10.6J</b>	mg/kg	10.7	3.4	5	07/15/15 12:47	07/17/15 10:47	7440-38-2	D3
Beryllium	<b>2.5</b>	mg/kg	0.43	0.040	1	07/15/15 12:47	07/16/15 17:59	7440-41-7	
Boron	<b>200</b>	mg/kg	10.7	0.34	1	07/15/15 12:47	07/16/15 17:59	7440-42-8	
Calcium	<b>103000</b>	mg/kg	537	14.7	5	07/15/15 12:47	07/17/15 10:47	7440-70-2	
Chromium	<b>26.2</b>	mg/kg	2.7	1.0	5	07/15/15 12:47	07/17/15 10:47	7440-47-3	
Copper	<b>73.7</b>	mg/kg	1.1	0.17	1	07/15/15 12:47	07/16/15 17:59	7440-50-8	
Lead	<b>19.2</b>	mg/kg	5.4	2.3	5	07/15/15 12:47	07/17/15 10:47	7439-92-1	
Molybdenum	<b>2.7</b>	mg/kg	2.1	0.23	1	07/15/15 12:47	07/16/15 17:59	7439-98-7	
Zinc	<b>48.0</b>	mg/kg	4.3	0.41	1	07/15/15 12:47	07/16/15 17:59	7440-66-6	
<b>Percent Moisture</b>		Analytical Method: ASTM D2974-87							
Percent Moisture	<b>8.9</b>	%	0.10	0.10	1		07/10/15 10:52		

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: 218938.0006 WESTON DISPOSAL

Pace Project No.: 40117728

**Sample: FA-6**      **Lab ID: 40117728006**      Collected: 07/02/15 08:50      Received: 07/07/15 09:50      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010 MET ICP</b>		Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Sulfur	<b>724</b>	mg/kg	33.0	2.4	1	07/13/15 23:29	07/16/15 12:32		
Arsenic	<b>27.4</b>	mg/kg	2.5	0.78	1	07/15/15 12:47	07/16/15 18:02	7440-38-2	
Beryllium	<b>6.0</b>	mg/kg	0.49	0.046	1	07/15/15 12:47	07/16/15 18:02	7440-41-7	
Boron	<b>154</b>	mg/kg	12.3	0.38	1	07/15/15 12:47	07/16/15 18:02	7440-42-8	
Calcium	<b>32900</b>	mg/kg	123	3.4	1	07/15/15 12:47	07/16/15 18:02	7440-70-2	
Chromium	<b>30.8</b>	mg/kg	0.61	0.24	1	07/15/15 12:47	07/16/15 18:02	7440-47-3	
Copper	<b>74.3</b>	mg/kg	1.2	0.19	1	07/15/15 12:47	07/16/15 18:02	7440-50-8	
Lead	<b>66.3</b>	mg/kg	1.2	0.53	1	07/15/15 12:47	07/16/15 18:02	7439-92-1	
Molybdenum	<b>2.7</b>	mg/kg	2.5	0.26	1	07/15/15 12:47	07/16/15 18:02	7439-98-7	
Zinc	<b>193</b>	mg/kg	4.9	0.47	1	07/15/15 12:47	07/16/15 18:02	7440-66-6	
<b>Percent Moisture</b>		Analytical Method: ASTM D2974-87							
Percent Moisture	<b>25.7</b>	%	0.10	0.10	1		07/10/15 10:52		

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## ANALYTICAL RESULTS

Project: 218938.0006 WESTON DISPOSAL

Pace Project No.: 40117728

**Sample: FA-7**      **Lab ID: 40117728007**      Collected: 07/02/15 09:00      Received: 07/07/15 09:50      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010 MET ICP</b>		Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Sulfur	<b>428</b>	mg/kg	23.2	1.7	1	07/13/15 23:29	07/16/15 12:35		
Arsenic	<b>41.6</b>	mg/kg	2.5	0.80	1	07/15/15 12:47	07/16/15 18:04	7440-38-2	
Beryllium	<b>8.5</b>	mg/kg	0.51	0.047	1	07/15/15 12:47	07/16/15 18:04	7440-41-7	
Boron	<b>116</b>	mg/kg	12.6	0.39	1	07/15/15 12:47	07/16/15 18:04	7440-42-8	
Calcium	<b>5890</b>	mg/kg	126	3.5	1	07/15/15 12:47	07/16/15 18:04	7440-70-2	
Chromium	<b>39.9</b>	mg/kg	0.63	0.24	1	07/15/15 12:47	07/16/15 18:04	7440-47-3	
Copper	<b>108</b>	mg/kg	1.3	0.20	1	07/15/15 12:47	07/16/15 18:04	7440-50-8	
Lead	<b>106</b>	mg/kg	1.3	0.54	1	07/15/15 12:47	07/16/15 18:04	7439-92-1	
Molybdenum	<b>2.4J</b>	mg/kg	2.5	0.27	1	07/15/15 12:47	07/16/15 18:04	7439-98-7	
Zinc	<b>330</b>	mg/kg	5.1	0.49	1	07/15/15 12:47	07/16/15 18:04	7440-66-6	
<b>Percent Moisture</b>		Analytical Method: ASTM D2974-87							
Percent Moisture	<b>28.0</b>	%	0.10	0.10	1		07/10/15 10:52		

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## ANALYTICAL RESULTS

Project: 218938.0006 WESTON DISPOSAL

Pace Project No.: 40117728

**Sample: FA-8**      **Lab ID: 40117728008**      Collected: 07/02/15 09:10      Received: 07/07/15 09:50      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010 MET ICP</b>		Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Sulfur	<b>749</b>	mg/kg	24.6	1.8	1	07/13/15 23:29	07/16/15 12:38		
Arsenic	<b>6.1J</b>	mg/kg	10.1	3.2	5	07/15/15 12:47	07/17/15 10:50	7440-38-2	D3
Beryllium	<b>2.1</b>	mg/kg	0.40	0.038	1	07/15/15 12:47	07/16/15 18:06	7440-41-7	
Boron	<b>215</b>	mg/kg	10.1	0.31	1	07/15/15 12:47	07/16/15 18:06	7440-42-8	
Calcium	<b>117000</b>	mg/kg	503	13.8	5	07/15/15 12:47	07/17/15 10:50	7440-70-2	
Chromium	<b>25.5</b>	mg/kg	2.5	0.98	5	07/15/15 12:47	07/17/15 10:50	7440-47-3	
Copper	<b>70.6</b>	mg/kg	1.0	0.16	1	07/15/15 12:47	07/16/15 18:06	7440-50-8	
Lead	<b>10</b>	mg/kg	5.0	2.2	5	07/15/15 12:47	07/17/15 10:50	7439-92-1	
Molybdenum	<b>2.5</b>	mg/kg	2.0	0.21	1	07/15/15 12:47	07/16/15 18:06	7439-98-7	
Zinc	<b>25.6</b>	mg/kg	4.0	0.39	1	07/15/15 12:47	07/16/15 18:06	7440-66-6	
<b>Percent Moisture</b>		Analytical Method: ASTM D2974-87							
Percent Moisture	<b>8.6</b>	%	0.10	0.10	1		07/10/15 10:52		

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## ANALYTICAL RESULTS

Project: 218938.0006 WESTON DISPOSAL

Pace Project No.: 40117728

**Sample: FA-9**      **Lab ID: 40117728009**      Collected: 07/02/15 09:20      Received: 07/07/15 09:50      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010 MET ICP</b>		Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Sulfur	<b>2170</b>	mg/kg	23.7	1.7	1	07/13/15 23:29	07/16/15 12:42		
Arsenic	<b>16.4</b>	mg/kg	11.1	3.5	5	07/15/15 12:47	07/17/15 10:52	7440-38-2	
Beryllium	<b>2.8</b>	mg/kg	0.44	0.042	1	07/15/15 12:47	07/16/15 18:09	7440-41-7	
Boron	<b>305</b>	mg/kg	11.1	0.35	1	07/15/15 12:47	07/16/15 18:09	7440-42-8	
Calcium	<b>103000</b>	mg/kg	553	15.1	5	07/15/15 12:47	07/17/15 10:52	7440-70-2	
Chromium	<b>32.3</b>	mg/kg	2.8	1.1	5	07/15/15 12:47	07/17/15 10:52	7440-47-3	
Copper	<b>77.1</b>	mg/kg	1.1	0.17	1	07/15/15 12:47	07/16/15 18:09	7440-50-8	
Lead	<b>21.4</b>	mg/kg	5.5	2.4	5	07/15/15 12:47	07/17/15 10:52	7439-92-1	
Molybdenum	<b>2.8</b>	mg/kg	2.2	0.24	1	07/15/15 12:47	07/16/15 18:09	7439-98-7	
Zinc	<b>58.8</b>	mg/kg	4.4	0.43	1	07/15/15 12:47	07/16/15 18:09	7440-66-6	
<b>Percent Moisture</b>		Analytical Method: ASTM D2974-87							
Percent Moisture	<b>17.1</b>	%	0.10	0.10	1		07/10/15 10:52		

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## ANALYTICAL RESULTS

Project: 218938.0006 WESTON DISPOSAL

Pace Project No.: 40117728

**Sample: FA-10**      **Lab ID: 40117728010**      Collected: 07/02/15 09:30      Received: 07/07/15 09:50      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010 MET ICP</b>		Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Sulfur	<b>907</b>	mg/kg	22.1	1.6	1	07/13/15 23:29	07/16/15 12:45		
Arsenic	<b>19.6</b>	mg/kg	10.9	3.5	5	07/15/15 12:47	07/17/15 10:54	7440-38-2	
Beryllium	<b>3.7</b>	mg/kg	0.43	0.041	1	07/15/15 12:47	07/16/15 18:17	7440-41-7	
Boron	<b>199</b>	mg/kg	10.9	0.34	1	07/15/15 12:47	07/16/15 18:17	7440-42-8	
Calcium	<b>83700</b>	mg/kg	543	14.9	5	07/15/15 12:47	07/17/15 10:54	7440-70-2	
Chromium	<b>32.3</b>	mg/kg	2.7	1.1	5	07/15/15 12:47	07/17/15 10:54	7440-47-3	
Copper	<b>77.8</b>	mg/kg	1.1	0.17	1	07/15/15 12:47	07/16/15 18:17	7440-50-8	
Lead	<b>38.5</b>	mg/kg	5.4	2.3	5	07/15/15 12:47	07/17/15 10:54	7439-92-1	
Molybdenum	<b>2.7</b>	mg/kg	2.2	0.23	1	07/15/15 12:47	07/16/15 18:17	7439-98-7	
Zinc	<b>97.5</b>	mg/kg	4.3	0.42	1	07/15/15 12:47	07/16/15 18:17	7440-66-6	
<b>Percent Moisture</b>		Analytical Method: ASTM D2974-87							
Percent Moisture	<b>18.2</b>	%	0.10	0.10	1		07/10/15 10:52		

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: 218938.0006 WESTON DISPOSAL  
Pace Project No.: 40117728

QC Batch: MPRP/12239 Analysis Method: EPA 6010  
QC Batch Method: EPA 3050 Analysis Description: 6010 MET  
Associated Lab Samples: 40117728001, 40117728002, 40117728003, 40117728004, 40117728005, 40117728006, 40117728007, 40117728008, 40117728009, 40117728010

METHOD BLANK: 1192800 Matrix: Solid  
Associated Lab Samples: 40117728001, 40117728002, 40117728003, 40117728004, 40117728005, 40117728006, 40117728007, 40117728008, 40117728009, 40117728010

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/kg	<0.64	2.0	07/16/15 17:35	
Beryllium	mg/kg	<0.038	0.40	07/16/15 17:35	
Boron	mg/kg	<0.31	10.0	07/16/15 17:35	
Calcium	mg/kg	<2.7	100	07/16/15 17:35	
Chromium	mg/kg	<0.19	0.50	07/16/15 17:35	
Copper	mg/kg	<0.16	1.0	07/16/15 17:35	
Lead	mg/kg	<0.43	1.0	07/16/15 17:35	
Molybdenum	mg/kg	<0.21	2.0	07/16/15 17:35	
Zinc	mg/kg	<0.39	4.0	07/16/15 17:35	

LABORATORY CONTROL SAMPLE: 1192801

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/kg	50	48.2	96	80-120	
Beryllium	mg/kg	50	48.3	97	80-120	
Boron	mg/kg	50	47.7	95	80-120	
Calcium	mg/kg	500	490	98	80-120	
Chromium	mg/kg	50	49.4	99	80-120	
Copper	mg/kg	50	49.2	98	80-120	
Lead	mg/kg	50	48.7	97	80-120	
Molybdenum	mg/kg	50	53.2	106	80-120	
Zinc	mg/kg	50	50.1	100	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1192802 1192803

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		40117728004 Result	Spike Conc.	Spike Conc.	MS Result							MSD Result
Arsenic	mg/kg	14.3	57.7	57.6	65.4	66.8	89	91	75-125	2	20	
Beryllium	mg/kg	3.0	57.7	57.6	51.0	51.0	83	83	75-125	0	20	
Boron	mg/kg	151	57.7	57.6	221	205	121	93	75-125	8	20	
Calcium	mg/kg	73400	577	576	83300	75700	1720	411	75-125	10	20	P6
Chromium	mg/kg	26.5	57.7	57.6	82.8	84.9	98	101	75-125	2	20	
Copper	mg/kg	71.1	57.7	57.6	134	125	109	93	75-125	7	20	
Lead	mg/kg	24.4	57.7	57.6	80.6	80.1	97	97	75-125	1	20	
Molybdenum	mg/kg	2.8	57.7	57.6	51.9	52.4	85	86	75-125	1	20	
Zinc	mg/kg	84.5	57.7	57.6	140	145	96	105	75-125	4	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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## QUALIFIERS

Project: 218938.0006 WESTON DISPOSAL

Pace Project No.: 40117728

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### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor and percent moisture.

LOQ - Limit of Quantitation adjusted for dilution factor and percent moisture.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected at or above the adjusted LOD.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

### LABORATORIES

PASI-G Pace Analytical Services - Green Bay

PASI-M Pace Analytical Services - Minneapolis

### ANALYTE QUALIFIERS

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

P6 Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level.

R1 RPD value was outside control limits.

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 218938.0006 WESTON DISPOSAL  
Pace Project No.: 40117728

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40117728001	FA-1	EPA 3050	MPRP/12239	EPA 6010	ICP/10884
40117728001	FA-1	EPA 3050	MPRP/55948	EPA 6010	ICP/24578
40117728002	FA-2	EPA 3050	MPRP/12239	EPA 6010	ICP/10884
40117728002	FA-2	EPA 3050	MPRP/55948	EPA 6010	ICP/24578
40117728003	FA-3	EPA 3050	MPRP/12239	EPA 6010	ICP/10884
40117728003	FA-3	EPA 3050	MPRP/55948	EPA 6010	ICP/24578
40117728004	FA-4	EPA 3050	MPRP/12239	EPA 6010	ICP/10884
40117728004	FA-4	EPA 3050	MPRP/55948	EPA 6010	ICP/24578
40117728005	FA-5	EPA 3050	MPRP/12239	EPA 6010	ICP/10884
40117728005	FA-5	EPA 3050	MPRP/55948	EPA 6010	ICP/24578
40117728006	FA-6	EPA 3050	MPRP/12239	EPA 6010	ICP/10884
40117728006	FA-6	EPA 3050	MPRP/55948	EPA 6010	ICP/24578
40117728007	FA-7	EPA 3050	MPRP/12239	EPA 6010	ICP/10884
40117728007	FA-7	EPA 3050	MPRP/55948	EPA 6010	ICP/24578
40117728008	FA-8	EPA 3050	MPRP/12239	EPA 6010	ICP/10884
40117728008	FA-8	EPA 3050	MPRP/55948	EPA 6010	ICP/24578
40117728009	FA-9	EPA 3050	MPRP/12239	EPA 6010	ICP/10884
40117728009	FA-9	EPA 3050	MPRP/55948	EPA 6010	ICP/24578
40117728010	FA-10	EPA 3050	MPRP/12239	EPA 6010	ICP/10884
40117728010	FA-10	EPA 3050	MPRP/55948	EPA 6010	ICP/24578
40117728001	FA-1	ASTM D2974-87	PMST/11454		
40117728002	FA-2	ASTM D2974-87	PMST/11454		
40117728003	FA-3	ASTM D2974-87	PMST/11454		
40117728004	FA-4	ASTM D2974-87	PMST/11466		
40117728005	FA-5	ASTM D2974-87	PMST/11466		
40117728006	FA-6	ASTM D2974-87	PMST/11466		
40117728007	FA-7	ASTM D2974-87	PMST/11466		
40117728008	FA-8	ASTM D2974-87	PMST/11466		
40117728009	FA-9	ASTM D2974-87	PMST/11466		
40117728010	FA-10	ASTM D2974-87	PMST/11466		

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(Please Print Clearly)

Company Name: **TRC Companies**  
 Branch/Location: **Madison**  
 Project Contact: **Jonathan Hotstream**  
 Phone: **608-826-3623**  
 Project Number: **Z18938, 0006**  
 Project Name: **Weston Diposa**  
 Project State: **WI**  
 Sampled By (Print): **George Shoreza**  
 Sampled By (Sign): *[Signature]*  
 PO #: **82802**

**Data Package Options**  
 EPA Level III  
 EPA Level IV

**MS/MSD**  
 On your sample (billable)  
 NOT needed on your sample

**Matrix Codes**  
 A = Air, B = Biot, C = Charcoal, O = Oil, S = Soil, SI = Sludge, W = Water, DW = Drinking Water, GW = Ground Water, SW = Surface Water, WP = Waste Water, WP = Wipe

**Regulatory Program:**



# CHAIN OF CUSTODY

**Filtered? (YES/NO)**  
**Preservation (CODE)**  
 A=None, B=HCL, C=H2SO4, D=HNO3, E=DI Water, F=Methanol, G=NaOH, H=Sodium Bisulfate Solution, I=Sodium Thiosulfate, J=Other

PAGE LAB #	CLIENT FIELD ID	DATE	TIME	MATRIX	Analyses Requested		V/I/N	Pick Label
					Metals (SEE ATTACHED LIST)	SULFUR		
001	FA-1	7/21/15	800	S	X	X		
002	FA-2		810					
003	FA-3		820					
004	FA-4							
005	FA-5		840					
006	FA-6		850					
007	FA-7		900					
008	FA-8		910					
069	FA-9		920					
010	FA-10		930					

**Rush Turnaround Time Requested - Prelims**  
 (Rush TAT subject to approval/surcharge)  
 Date Needed:

Transmit Prelim Rush Results by (complete what you want):

Relinquished By: *[Signature]* Date/Time: 7/21/15 5:24  
 Relinquished By: *[Signature]* Date/Time: 7/21/15 3:45pm  
 Relinquished By: *[Signature]* Date/Time: 7/21/15 0950  
 Relinquished By: *[Signature]* Date/Time: 7/21/15 0950

Received By: *[Signature]* Date/Time: 7/21/15 5:35pm  
 Received By: *[Signature]* Date/Time: 7/21/15 0950

Special pricing and release of liability

Specials on HOLD are subject to

UPPER MIDWEST REGION  
 MN: 612-607-1700 WI: 920-469-2436

Page 1 of 1  
 4017728  
 Page 22 of 24

Clean Closure Sampling - Weston Disposal Site No. 3

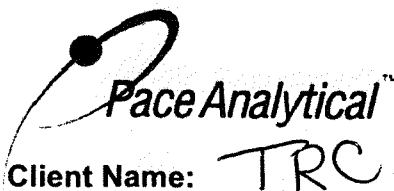
40117728

Project Name: Clean Closure Sampling - Weston Disposal Site No. 3	Quick Turn? No, standard
Project #: 218938.0000	Special Detects? WDNr reporting LOD/LOQ
Report To: J. Hotstream	Price Quote? Y
PM: Todd Martin	Specific QC? Y-QC summary
	Data DL? N

Sample Id	Matrix	Parameters									
		Arsenic	Beryllium	Boron	Calcium	Chromium (total)	Copper	Lead	Molybdenum	Sulfur	Zinc
FA-1	Waste	X	X	X	X	X	X	X	X	X	X
FA-2	Waste	X	X	X	X	X	X	X	X	X	X
FA-3	Waste	X	X	X	X	X	X	X	X	X	X
FA-4	Waste	X	X	X	X	X	X	X	X	X	X
FA-5	Waste	X	X	X	X	X	X	X	X	X	X
FA-6	Waste	X	X	X	X	X	X	X	X	X	X
FA-7	Waste	X	X	X	X	X	X	X	X	X	X
FA-8	Waste	X	X	X	X	X	X	X	X	X	X
FA-9	Waste	X	X	X	X	X	X	X	X	X	X
FA-10	Waste	X	X	X	X	X	X	X	X	X	X
CL-1	Soil	X	X	X	X	X	X	X	X	X	X
CL-2	Soil	X	X	X	X	X	X	X	X	X	X
CL-3	Soil	X	X	X	X	X	X	X	X	X	X
CL-4	Soil	X	X	X	X	X	X	X	X	X	X
CL-5	Soil	X	X	X	X	X	X	X	X	X	X
CL-6	Soil	X	X	X	X	X	X	X	X	X	X
CL-7	Soil	X	X	X	X	X	X	X	X	X	X
CL-8	Soil	X	X	X	X	X	X	X	X	X	X
CL-9	Soil	X	X	X	X	X	X	X	X	X	X
CL-10	Soil	X	X	X	X	X	X	X	X	X	X

Sample Condition Upon Receipt

Pace Analytical Services, Inc.  
1241 Bellevue Street, Suite 9  
Green Bay, WI 54302



Project #: **WO#: 40117728**

Client Name: TRC



Courier:  Fed Ex  UPS  Client  Pace Other

Tracking #: 7739 8959 5876

Custody Seal on Cooler/Box Present:  yes  no Seals intact:  yes  no

Custody Seal on Samples Present:  yes  no Seals intact:  yes  no

Packing Material:  Bubble Wrap  Bubble Bags  None  Other

Thermometer Used N/A Type of Ice:  Wet  Blue  Dry  None  Samples on ice, cooling process has begun

Cooler Temperature Uncorr: RO1 / Corr: \_\_\_\_\_ Biological Tissue is Frozen:  yes  no

Temp Blank Present:  yes  no  no

Temp should be above freezing to 6°C for all sample except Biota.  
Frozen Biota Samples should be received ≤ 0°C.

Person examining contents:  
Date: 7-7-15  
Initials: KEW

Comments:

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2. <u>004 no collect time Kw 7-7-15</u>
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
- VOA Samples frozen upon receipt	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Date/Time:
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
-Pace IR Containers Used:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12. <u>004 time @ 0830 Kw 7-7-15</u>
-Includes date/time/ID/Analysis Matrix:		
All containers needing preservation have been checked. (Non-Compliance noted in 13.)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13. <input checked="" type="checkbox"/> HNO3 <input checked="" type="checkbox"/> H2SO4 <input type="checkbox"/> NaOH <input type="checkbox"/> NaOH + ZnAct
All containers needing preservation are found to be in compliance with EPA recommendation. (HNO3, H2SO4 ≤2; NaOH+ZnAct ≥9, NaOH ≥12)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
exceptions: VOA, coliform, TOC, TOX, TOH, O&G, WIDROW, Phenolics, OTHER:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed
		Lab Std #ID of preservative
		Date/Time:
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution: \_\_\_\_\_ If checked, see attached form for additional comments   
 Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_  
 Comments/ Resolution: \_\_\_\_\_

Project Manager Review: [Signature] Date: 7-7-15



July 22, 2015

Jonathan Hotstream  
TRC - Madison  
708 Heartland Trail  
Madison, WI 53717

RE: Project: 218938 PH. 6 WESTON DISPOSAL  
Pace Project No.: 40117731

Dear Jonathan Hotstream:

Enclosed are the analytical results for sample(s) received by the laboratory on July 07, 2015. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Tod Noltemeyer  
tod.noltemeyer@pacelabs.com  
Project Manager

Enclosures



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: 218938 PH. 6 WESTON DISPOSAL

Pace Project No.: 40117731

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### Minnesota Certification IDs

1700 Elm Street SE Suite 200, Minneapolis, MN 55414

A2LA Certification #: 2926.01

Alaska Certification #: UST-078

Alaska Certification #MN00064

Alabama Certification #40770

Arizona Certification #: AZ-0014

Arkansas Certification #: 88-0680

California Certification #: 01155CA

Colorado Certification #Pace

Connecticut Certification #: PH-0256

EPA Region 8 Certification #: 8TMS-L

Florida/NELAP Certification #: E87605

Guam Certification #:14-008r

Georgia Certification #: 959

Georgia EPD #: Pace

Idaho Certification #: MN00064

Hawaii Certification #MN00064

Illinois Certification #: 200011

Indiana Certification#C-MN-01

Iowa Certification #: 368

Kansas Certification #: E-10167

Kentucky Dept of Envi. Protection - DW #90062

Kentucky Dept of Envi. Protection - WW #:90062

Louisiana DEQ Certification #: 3086

Louisiana DHH #: LA140001

Maine Certification #: 2013011

Maryland Certification #: 322

Michigan DEPH Certification #: 9909

Minnesota Certification #: 027-053-137

Mississippi Certification #: Pace

Montana Certification #: MT0092

Nevada Certification #: MN\_00064

Nebraska Certification #: Pace

New Jersey Certification #: MN-002

New York Certification #: 11647

North Carolina Certification #: 530

North Carolina State Public Health #: 27700

North Dakota Certification #: R-036

Ohio EPA #: 4150

Ohio VAP Certification #: CL101

Oklahoma Certification #: 9507

Oregon Certification #: MN200001

Oregon Certification #: MN300001

Pennsylvania Certification #: 68-00563

Puerto Rico Certification

Saipan (CNMI) #:MP0003

South Carolina #:74003001

Texas Certification #: T104704192

Tennessee Certification #: 02818

Utah Certification #: MN000642013-4

Virginia DGS Certification #: 251

Virginia/VELAP Certification #: Pace

Washington Certification #: C486

West Virginia Certification #: 382

West Virginia DHHR #:9952C

Wisconsin Certification #: 999407970

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### Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302

Florida/NELAP Certification #: E87948

Illinois Certification #: 200050

Kentucky Certification #: 82

Louisiana Certification #: 04168

Minnesota Certification #: 055-999-334

North Dakota Certification #: R-150

South Carolina Certification #: 83006001

Texas Certification #: T104704529-14-1

US Dept of Agriculture #: S-76505

Wisconsin Certification #: 405132750

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: 218938 PH. 6 WESTON DISPOSAL

Pace Project No.: 40117731

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40117731001	CL-1	Solid	07/02/15 10:00	07/07/15 09:50
40117731002	CL-2	Solid	07/02/15 10:10	07/07/15 09:50
40117731003	CL-3	Solid	07/02/15 10:20	07/07/15 09:50
40117731004	CL-4	Solid	07/02/15 10:30	07/07/15 09:50
40117731005	CL-5	Solid	07/02/15 10:40	07/07/15 09:50
40117731006	CL-6	Solid	07/02/15 10:50	07/07/15 09:50
40117731007	CL-7	Solid	07/02/15 11:00	07/07/15 09:50
40117731008	CL-8	Solid	07/02/15 11:10	07/07/15 09:50
40117731009	CL-9	Solid	07/02/15 11:20	07/07/15 09:50
40117731010	CL-10	Solid	07/02/15 11:30	07/07/15 09:50

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### SAMPLE ANALYTE COUNT

Project: 218938 PH. 6 WESTON DISPOSAL  
Pace Project No.: 40117731

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40117731001	CL-1	EPA 6010	DLB	9	PASI-G
		EPA 6010	DM	1	PASI-M
		ASTM D2974-87	MAM	1	PASI-G
40117731002	CL-2	EPA 6010	DLB	9	PASI-G
		EPA 6010	DM	1	PASI-M
		ASTM D2974-87	MAM	1	PASI-G
40117731003	CL-3	EPA 6010	DLB	9	PASI-G
		EPA 6010	DM	1	PASI-M
		ASTM D2974-87	MAM	1	PASI-G
40117731004	CL-4	EPA 6010	DLB	9	PASI-G
		EPA 6010	DM	1	PASI-M
		ASTM D2974-87	MAM	1	PASI-G
40117731005	CL-5	EPA 6010	DLB	9	PASI-G
		EPA 6010	DM	1	PASI-M
		ASTM D2974-87	MAM	1	PASI-G
40117731006	CL-6	EPA 6010	DLB	9	PASI-G
		EPA 6010	DM	1	PASI-M
		ASTM D2974-87	MAM	1	PASI-G
40117731007	CL-7	EPA 6010	DLB	9	PASI-G
		EPA 6010	DM	1	PASI-M
		ASTM D2974-87	MAM	1	PASI-G
40117731008	CL-8	EPA 6010	DLB	9	PASI-G
		EPA 6010	DM	1	PASI-M
		ASTM D2974-87	MAM	1	PASI-G
40117731009	CL-9	EPA 6010	DLB	9	PASI-G
		EPA 6010	DM	1	PASI-M
		ASTM D2974-87	MAM	1	PASI-G
40117731010	CL-10	EPA 6010	DLB	9	PASI-G
		EPA 6010	DM	1	PASI-M
		ASTM D2974-87	MAM	1	PASI-G

### REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: 218938 PH. 6 WESTON DISPOSAL

Pace Project No.: 40117731

---

**Method:** EPA 6010

**Description:** 6010 MET ICP

**Client:** TRC - MADISON

**Date:** July 22, 2015

### General Information:

10 samples were analyzed for EPA 6010. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

### Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

### Sample Preparation:

The samples were prepared in accordance with EPA 3050 with any exceptions noted below.

The samples were prepared in accordance with EPA 3050 with any exceptions noted below.

### Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

### Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

### Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

QC Batch: MPRP/55948

B: Analyte was detected in the associated method blank.

- BLANK for HBN 365598 [MPRP/559 (Lab ID: 2018652)

- Sulfur

### Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

### Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/12240

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 40117731003

M0: Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

- MS (Lab ID: 1192962)

- Boron

- Chromium

- MSD (Lab ID: 1192963)

- Boron

- Zinc

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: 218938 PH. 6 WESTON DISPOSAL  
Pace Project No.: 40117731

---

**Method:** EPA 6010  
**Description:** 6010 MET ICP  
**Client:** TRC - MADISON  
**Date:** July 22, 2015

QC Batch: MPRP/55948

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 40117731001

R1: RPD value was outside control limits.

- MSD (Lab ID: 2018655)
- Sulfur

### Additional Comments:

Analyte Comments:

QC Batch: MPRP/12239

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- CL-1 (Lab ID: 40117731001)
  - Arsenic
  - Lead
- CL-2 (Lab ID: 40117731002)
  - Arsenic
  - Lead

QC Batch: MPRP/12240

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- CL-10 (Lab ID: 40117731010)
  - Arsenic
  - Lead
- CL-3 (Lab ID: 40117731003)
  - Arsenic
  - Lead
- CL-4 (Lab ID: 40117731004)
  - Arsenic
  - Lead
- CL-5 (Lab ID: 40117731005)
  - Arsenic
- CL-6 (Lab ID: 40117731006)
  - Arsenic
- CL-7 (Lab ID: 40117731007)
  - Arsenic
- CL-8 (Lab ID: 40117731008)
  - Arsenic
  - Lead
- CL-9 (Lab ID: 40117731009)
  - Arsenic

This data package has been reviewed for quality and completeness and is approved for release.

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: 218938 PH. 6 WESTON DISPOSAL

Pace Project No.: 40117731

**Sample:** CL-1      **Lab ID:** 40117731001      Collected: 07/02/15 10:00      Received: 07/07/15 09:50      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010 MET ICP</b>		Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Sulfur	<b>38.1</b>	mg/kg	28.9	2.1	1	07/13/15 23:29	07/16/15 11:11		R1
Arsenic	<b>&lt;3.8</b>	mg/kg	12.0	3.8	5	07/15/15 12:47	07/17/15 10:57	7440-38-2	D3
Beryllium	<b>0.98</b>	mg/kg	0.48	0.045	1	07/15/15 12:47	07/16/15 18:19	7440-41-7	
Boron	<b>133</b>	mg/kg	12.0	0.38	1	07/15/15 12:47	07/16/15 18:19	7440-42-8	
Calcium	<b>1370</b>	mg/kg	120	3.3	1	07/15/15 12:47	07/16/15 18:19	7440-70-2	
Chromium	<b>94.3</b>	mg/kg	3.0	1.2	5	07/15/15 12:47	07/17/15 10:57	7440-47-3	
Copper	<b>58.8</b>	mg/kg	6.0	0.94	5	07/15/15 12:47	07/17/15 10:57	7440-50-8	
Lead	<b>2.7J</b>	mg/kg	6.0	2.6	5	07/15/15 12:47	07/17/15 10:57	7439-92-1	D3
Molybdenum	<b>&lt;0.26</b>	mg/kg	2.4	0.26	1	07/15/15 12:47	07/16/15 18:19	7439-98-7	
Zinc	<b>48.1</b>	mg/kg	4.8	0.46	1	07/15/15 12:47	07/16/15 18:19	7440-66-6	
<b>Percent Moisture</b>		Analytical Method: ASTM D2974-87							
Percent Moisture	<b>16.9</b>	%	0.10	0.10	1		07/15/15 09:27		

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: 218938 PH. 6 WESTON DISPOSAL

Pace Project No.: 40117731

**Sample: CL-2**      **Lab ID: 40117731002**      Collected: 07/02/15 10:10      Received: 07/07/15 09:50      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010 MET ICP</b>		Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Sulfur	<b>21.3J</b>	mg/kg	27.4	2.0	1	07/13/15 23:29	07/16/15 11:27		B
Arsenic	<b>&lt;3.9</b>	mg/kg	12.1	3.9	5	07/15/15 12:47	07/17/15 10:59	7440-38-2	D3
Beryllium	<b>0.63</b>	mg/kg	0.48	0.046	1	07/15/15 12:47	07/16/15 18:22	7440-41-7	
Boron	<b>176</b>	mg/kg	12.1	0.38	1	07/15/15 12:47	07/16/15 18:22	7440-42-8	
Calcium	<b>1650</b>	mg/kg	121	3.3	1	07/15/15 12:47	07/16/15 18:22	7440-70-2	
Chromium	<b>85.5</b>	mg/kg	3.0	1.2	5	07/15/15 12:47	07/17/15 10:59	7440-47-3	
Copper	<b>22.4</b>	mg/kg	6.1	0.94	5	07/15/15 12:47	07/17/15 10:59	7440-50-8	
Lead	<b>3.0J</b>	mg/kg	6.1	2.6	5	07/15/15 12:47	07/17/15 10:59	7439-92-1	D3
Molybdenum	<b>&lt;0.26</b>	mg/kg	2.4	0.26	1	07/15/15 12:47	07/16/15 18:22	7439-98-7	
Zinc	<b>30.3</b>	mg/kg	4.8	0.47	1	07/15/15 12:47	07/16/15 18:22	7440-66-6	
<b>Percent Moisture</b>		Analytical Method: ASTM D2974-87							
Percent Moisture	<b>28.3</b>	%	0.10	0.10	1		07/15/15 09:28		

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: 218938 PH. 6 WESTON DISPOSAL

Pace Project No.: 40117731

**Sample: CL-3**      **Lab ID: 40117731003**      Collected: 07/02/15 10:20      Received: 07/07/15 09:50      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010 MET ICP</b>		Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Sulfur	<b>27.7</b>	mg/kg	24.0	1.7	1	07/13/15 23:29	07/16/15 11:30		B
Arsenic	<b>7.0J</b>	mg/kg	12.9	4.1	5	07/15/15 13:40	07/17/15 12:32	7440-38-2	D3
Beryllium	<b>1.1</b>	mg/kg	0.51	0.048	1	07/15/15 13:40	07/16/15 18:52	7440-41-7	
Boron	<b>103</b>	mg/kg	12.9	0.40	1	07/15/15 13:40	07/16/15 18:52	7440-42-8	M0
Calcium	<b>1210</b>	mg/kg	129	3.5	1	07/15/15 13:40	07/16/15 18:52	7440-70-2	
Chromium	<b>106</b>	mg/kg	3.2	1.2	5	07/15/15 13:40	07/17/15 12:32	7440-47-3	M0
Copper	<b>67.7</b>	mg/kg	6.4	1.0	5	07/15/15 13:40	07/17/15 12:32	7440-50-8	
Lead	<b>4.9J</b>	mg/kg	6.4	2.8	5	07/15/15 13:40	07/17/15 12:32	7439-92-1	D3
Molybdenum	<b>0.49J</b>	mg/kg	2.6	0.27	1	07/15/15 13:40	07/16/15 18:52	7439-98-7	
Zinc	<b>83.2</b>	mg/kg	5.1	0.50	1	07/15/15 13:40	07/16/15 18:52	7440-66-6	M0
<b>Percent Moisture</b>		Analytical Method: ASTM D2974-87							
Percent Moisture	<b>22.3</b>	%	0.10	0.10	1		07/15/15 09:28		

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## ANALYTICAL RESULTS

Project: 218938 PH. 6 WESTON DISPOSAL

Pace Project No.: 40117731

**Sample: CL-4**      **Lab ID: 40117731004**      Collected: 07/02/15 10:30      Received: 07/07/15 09:50      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010 MET ICP</b>		Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Sulfur	<b>47.5</b>	mg/kg	30.7	2.2	1	07/13/15 23:29	07/16/15 11:33		
Arsenic	<b>6.1J</b>	mg/kg	10.7	3.4	5	07/15/15 13:40	07/17/15 12:39	7440-38-2	D3
Beryllium	<b>0.73</b>	mg/kg	0.43	0.040	1	07/15/15 13:40	07/16/15 18:59	7440-41-7	
Boron	<b>144</b>	mg/kg	10.7	0.33	1	07/15/15 13:40	07/16/15 18:59	7440-42-8	
Calcium	<b>2180</b>	mg/kg	107	2.9	1	07/15/15 13:40	07/16/15 18:59	7440-70-2	
Chromium	<b>137</b>	mg/kg	2.7	1.0	5	07/15/15 13:40	07/17/15 12:39	7440-47-3	
Copper	<b>29.7</b>	mg/kg	5.4	0.84	5	07/15/15 13:40	07/17/15 12:39	7440-50-8	
Lead	<b>4.2J</b>	mg/kg	5.4	2.3	5	07/15/15 13:40	07/17/15 12:39	7439-92-1	D3
Molybdenum	<b>0.42J</b>	mg/kg	2.1	0.23	1	07/15/15 13:40	07/16/15 18:59	7439-98-7	
Zinc	<b>27.3</b>	mg/kg	4.3	0.41	1	07/15/15 13:40	07/16/15 18:59	7440-66-6	
<b>Percent Moisture</b>		Analytical Method: ASTM D2974-87							
Percent Moisture	<b>18.6</b>	%	0.10	0.10	1		07/14/15 14:32		

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## ANALYTICAL RESULTS

Project: 218938 PH. 6 WESTON DISPOSAL

Pace Project No.: 40117731

**Sample:** CL-5      **Lab ID:** 40117731005      Collected: 07/02/15 10:40      Received: 07/07/15 09:50      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010 MET ICP</b>		Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Sulfur	<b>34.1</b>	mg/kg	22.7	1.6	1	07/13/15 23:29	07/16/15 11:46		
Arsenic	<b>4.5J</b>	mg/kg	12.0	3.8	5	07/15/15 13:40	07/17/15 12:46	7440-38-2	D3
Beryllium	<b>0.75</b>	mg/kg	0.48	0.045	1	07/15/15 13:40	07/16/15 19:01	7440-41-7	
Boron	<b>142</b>	mg/kg	12.0	0.38	1	07/15/15 13:40	07/16/15 19:01	7440-42-8	
Calcium	<b>1970</b>	mg/kg	120	3.3	1	07/15/15 13:40	07/16/15 19:01	7440-70-2	
Chromium	<b>82.7</b>	mg/kg	3.0	1.2	5	07/15/15 13:40	07/17/15 12:46	7440-47-3	
Copper	<b>31.8</b>	mg/kg	6.0	0.94	5	07/15/15 13:40	07/17/15 12:46	7440-50-8	
Lead	<b>7.1</b>	mg/kg	6.0	2.6	5	07/15/15 13:40	07/17/15 12:46	7439-92-1	
Molybdenum	<b>&lt;0.26</b>	mg/kg	2.4	0.26	1	07/15/15 13:40	07/16/15 19:01	7439-98-7	
Zinc	<b>34.1</b>	mg/kg	4.8	0.46	1	07/15/15 13:40	07/16/15 19:01	7440-66-6	
<b>Percent Moisture</b>		Analytical Method: ASTM D2974-87							
Percent Moisture	<b>21.4</b>	%	0.10	0.10	1		07/14/15 14:32		

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## ANALYTICAL RESULTS

Project: 218938 PH. 6 WESTON DISPOSAL

Pace Project No.: 40117731

**Sample: CL-6**      **Lab ID: 40117731006**      Collected: 07/02/15 10:50      Received: 07/07/15 09:50      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010 MET ICP</b>		Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Sulfur	<b>28.1J</b>	mg/kg	28.6	2.0	1	07/13/15 23:29	07/16/15 11:49		B
Arsenic	<b>5.6J</b>	mg/kg	11.0	3.5	5	07/15/15 13:40	07/17/15 12:49	7440-38-2	D3
Beryllium	<b>0.66</b>	mg/kg	0.44	0.041	1	07/15/15 13:40	07/16/15 19:03	7440-41-7	
Boron	<b>128</b>	mg/kg	11.0	0.34	1	07/15/15 13:40	07/16/15 19:03	7440-42-8	
Calcium	<b>1910</b>	mg/kg	110	3.0	1	07/15/15 13:40	07/16/15 19:03	7440-70-2	
Chromium	<b>84.2</b>	mg/kg	2.7	1.1	5	07/15/15 13:40	07/17/15 12:49	7440-47-3	
Copper	<b>29.3</b>	mg/kg	5.5	0.86	5	07/15/15 13:40	07/17/15 12:49	7440-50-8	
Lead	<b>5.9</b>	mg/kg	5.5	2.4	5	07/15/15 13:40	07/17/15 12:49	7439-92-1	
Molybdenum	<b>&lt;0.23</b>	mg/kg	2.2	0.23	1	07/15/15 13:40	07/16/15 19:03	7439-98-7	
Zinc	<b>36.3</b>	mg/kg	4.4	0.42	1	07/15/15 13:40	07/16/15 19:03	7440-66-6	
<b>Percent Moisture</b>		Analytical Method: ASTM D2974-87							
Percent Moisture	<b>22.5</b>	%	0.10	0.10	1		07/14/15 14:32		

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## ANALYTICAL RESULTS

Project: 218938 PH. 6 WESTON DISPOSAL

Pace Project No.: 40117731

**Sample: CL-7**      **Lab ID: 40117731007**      Collected: 07/02/15 11:00      Received: 07/07/15 09:50      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010 MET ICP</b>		Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	<b>6.4J</b>	mg/kg	11.8	3.7	5	07/15/15 13:40	07/17/15 12:51	7440-38-2	D3
Sulfur	<b>37.8</b>	mg/kg	30.4	2.2	1	07/13/15 23:29	07/16/15 11:52		
Beryllium	<b>0.76</b>	mg/kg	0.47	0.044	1	07/15/15 13:40	07/16/15 19:06	7440-41-7	
Boron	<b>131</b>	mg/kg	11.8	0.37	1	07/15/15 13:40	07/16/15 19:06	7440-42-8	
Calcium	<b>1760</b>	mg/kg	118	3.2	1	07/15/15 13:40	07/16/15 19:06	7440-70-2	
Chromium	<b>75.1</b>	mg/kg	2.9	1.1	5	07/15/15 13:40	07/17/15 12:51	7440-47-3	
Copper	<b>34.6</b>	mg/kg	5.9	0.92	5	07/15/15 13:40	07/17/15 12:51	7440-50-8	
Lead	<b>5.9</b>	mg/kg	5.9	2.5	5	07/15/15 13:40	07/17/15 12:51	7439-92-1	
Molybdenum	<b>&lt;0.25</b>	mg/kg	2.4	0.25	1	07/15/15 13:40	07/16/15 19:06	7439-98-7	
Zinc	<b>37.5</b>	mg/kg	4.7	0.45	1	07/15/15 13:40	07/16/15 19:06	7440-66-6	
<b>Percent Moisture</b>		Analytical Method: ASTM D2974-87							
Percent Moisture	<b>20.1</b>	%	0.10	0.10	1		07/14/15 14:32		

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## ANALYTICAL RESULTS

Project: 218938 PH. 6 WESTON DISPOSAL

Pace Project No.: 40117731

**Sample: CL-8**      **Lab ID: 40117731008**      Collected: 07/02/15 11:10      Received: 07/07/15 09:50      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010 MET ICP</b>		Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	<b>7.7J</b>	mg/kg	12.8	4.1	5	07/15/15 13:40	07/17/15 12:54	7440-38-2	D3
Sulfur	<b>16.5J</b>	mg/kg	24.1	1.7	1	07/13/15 23:29	07/16/15 11:55		B
Beryllium	<b>0.69</b>	mg/kg	0.51	0.048	1	07/15/15 13:40	07/16/15 19:13	7440-41-7	
Boron	<b>150</b>	mg/kg	12.8	0.40	1	07/15/15 13:40	07/16/15 19:13	7440-42-8	
Calcium	<b>1660</b>	mg/kg	128	3.5	1	07/15/15 13:40	07/16/15 19:13	7440-70-2	
Chromium	<b>56.7</b>	mg/kg	3.2	1.2	5	07/15/15 13:40	07/17/15 12:54	7440-47-3	
Copper	<b>31.3</b>	mg/kg	6.4	1.0	5	07/15/15 13:40	07/17/15 12:54	7440-50-8	
Lead	<b>4.9J</b>	mg/kg	6.4	2.8	5	07/15/15 13:40	07/17/15 12:54	7439-92-1	D3
Molybdenum	<b>&lt;0.27</b>	mg/kg	2.6	0.27	1	07/15/15 13:40	07/16/15 19:13	7439-98-7	
Zinc	<b>34.4</b>	mg/kg	5.1	0.49	1	07/15/15 13:40	07/16/15 19:13	7440-66-6	
<b>Percent Moisture</b>		Analytical Method: ASTM D2974-87							
Percent Moisture	<b>22.0</b>	%	0.10	0.10	1		07/14/15 14:32		

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## ANALYTICAL RESULTS

Project: 218938 PH. 6 WESTON DISPOSAL

Pace Project No.: 40117731

**Sample: CL-9**      **Lab ID: 40117731009**      Collected: 07/02/15 11:20      Received: 07/07/15 09:50      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010 MET ICP</b>		Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Sulfur	<b>36.1</b>	mg/kg	23.6	1.7	1	07/13/15 23:29	07/16/15 11:59		
Arsenic	<b>&lt;3.4</b>	mg/kg	10.8	3.4	5	07/15/15 13:40	07/17/15 12:56	7440-38-2	D3
Beryllium	<b>0.66</b>	mg/kg	0.43	0.041	1	07/15/15 13:40	07/16/15 19:15	7440-41-7	
Boron	<b>109</b>	mg/kg	10.8	0.34	1	07/15/15 13:40	07/16/15 19:15	7440-42-8	
Calcium	<b>1690</b>	mg/kg	108	3.0	1	07/15/15 13:40	07/16/15 19:15	7440-70-2	
Chromium	<b>60.0</b>	mg/kg	0.54	0.21	1	07/15/15 13:40	07/16/15 19:15	7440-47-3	
Copper	<b>41.9</b>	mg/kg	5.4	0.84	5	07/15/15 13:40	07/17/15 12:56	7440-50-8	
Lead	<b>6.0</b>	mg/kg	5.4	2.3	5	07/15/15 13:40	07/17/15 12:56	7439-92-1	
Molybdenum	<b>&lt;0.23</b>	mg/kg	2.2	0.23	1	07/15/15 13:40	07/16/15 19:15	7439-98-7	
Zinc	<b>34.7</b>	mg/kg	4.3	0.42	1	07/15/15 13:40	07/16/15 19:15	7440-66-6	
<b>Percent Moisture</b>		Analytical Method: ASTM D2974-87							
Percent Moisture	<b>20.9</b>	%	0.10	0.10	1		07/14/15 14:32		

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## ANALYTICAL RESULTS

Project: 218938 PH. 6 WESTON DISPOSAL

Pace Project No.: 40117731

**Sample: CL-10**      **Lab ID: 40117731010**      Collected: 07/02/15 11:30      Received: 07/07/15 09:50      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010 MET ICP</b>		Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	<b>6.4J</b>	mg/kg	11.7	3.7	5	07/15/15 13:40	07/17/15 12:58	7440-38-2	D3
Sulfur	<b>16.0J</b>	mg/kg	29.0	2.1	1	07/13/15 23:29	07/16/15 12:02		B
Beryllium	<b>0.76</b>	mg/kg	0.47	0.044	1	07/15/15 13:40	07/16/15 19:17	7440-41-7	
Boron	<b>106</b>	mg/kg	11.7	0.37	1	07/15/15 13:40	07/16/15 19:17	7440-42-8	
Calcium	<b>1760</b>	mg/kg	117	3.2	1	07/15/15 13:40	07/16/15 19:17	7440-70-2	
Chromium	<b>81.1</b>	mg/kg	0.59	0.23	1	07/15/15 13:40	07/16/15 19:17	7440-47-3	
Copper	<b>46.7</b>	mg/kg	5.9	0.91	5	07/15/15 13:40	07/17/15 12:58	7440-50-8	
Lead	<b>3.5J</b>	mg/kg	5.9	2.5	5	07/15/15 13:40	07/17/15 12:58	7439-92-1	D3
Molybdenum	<b>&lt;0.25</b>	mg/kg	2.3	0.25	1	07/15/15 13:40	07/16/15 19:17	7439-98-7	
Zinc	<b>36.8</b>	mg/kg	4.7	0.45	1	07/15/15 13:40	07/16/15 19:17	7440-66-6	
<b>Percent Moisture</b>		Analytical Method: ASTM D2974-87							
Percent Moisture	<b>21.6</b>	%	0.10	0.10	1		07/14/15 14:32		

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### QUALITY CONTROL DATA

Project: 218938 PH. 6 WESTON DISPOSAL  
Pace Project No.: 40117731

QC Batch: MPRP/12239 Analysis Method: EPA 6010  
QC Batch Method: EPA 3050 Analysis Description: 6010 MET  
Associated Lab Samples: 40117731001, 40117731002

METHOD BLANK: 1192800 Matrix: Solid  
Associated Lab Samples: 40117731001, 40117731002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/kg	<0.64	2.0	07/16/15 17:35	
Beryllium	mg/kg	<0.038	0.40	07/16/15 17:35	
Boron	mg/kg	<0.31	10.0	07/16/15 17:35	
Calcium	mg/kg	<2.7	100	07/16/15 17:35	
Chromium	mg/kg	<0.19	0.50	07/16/15 17:35	
Copper	mg/kg	<0.16	1.0	07/16/15 17:35	
Lead	mg/kg	<0.43	1.0	07/16/15 17:35	
Molybdenum	mg/kg	<0.21	2.0	07/16/15 17:35	
Zinc	mg/kg	<0.39	4.0	07/16/15 17:35	

LABORATORY CONTROL SAMPLE: 1192801

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/kg	50	48.2	96	80-120	
Beryllium	mg/kg	50	48.3	97	80-120	
Boron	mg/kg	50	47.7	95	80-120	
Calcium	mg/kg	500	490	98	80-120	
Chromium	mg/kg	50	49.4	99	80-120	
Copper	mg/kg	50	49.2	98	80-120	
Lead	mg/kg	50	48.7	97	80-120	
Molybdenum	mg/kg	50	53.2	106	80-120	
Zinc	mg/kg	50	50.1	100	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1192802 1192803

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		40117728004 Result	Spike Conc.	Spike Conc.	MS Result							MSD Result
Arsenic	mg/kg	14.3	57.7	57.6	65.4	66.8	89	91	75-125	2	20	
Beryllium	mg/kg	3.0	57.7	57.6	51.0	51.0	83	83	75-125	0	20	
Boron	mg/kg	151	57.7	57.6	221	205	121	93	75-125	8	20	
Calcium	mg/kg	73400	577	576	83300	75700	1720	411	75-125	10	20	P6
Chromium	mg/kg	26.5	57.7	57.6	82.8	84.9	98	101	75-125	2	20	
Copper	mg/kg	71.1	57.7	57.6	134	125	109	93	75-125	7	20	
Lead	mg/kg	24.4	57.7	57.6	80.6	80.1	97	97	75-125	1	20	
Molybdenum	mg/kg	2.8	57.7	57.6	51.9	52.4	85	86	75-125	1	20	
Zinc	mg/kg	84.5	57.7	57.6	140	145	96	105	75-125	4	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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### QUALITY CONTROL DATA

Project: 218938 PH. 6 WESTON DISPOSAL  
Pace Project No.: 40117731

QC Batch: MPRP/12240 Analysis Method: EPA 6010  
QC Batch Method: EPA 3050 Analysis Description: 6010 MET  
Associated Lab Samples: 40117731003, 40117731004, 40117731005, 40117731006, 40117731007, 40117731008, 40117731009, 40117731010

METHOD BLANK: 1192960 Matrix: Solid  
Associated Lab Samples: 40117731003, 40117731004, 40117731005, 40117731006, 40117731007, 40117731008, 40117731009, 40117731010

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/kg	<0.64	2.0	07/16/15 18:48	
Beryllium	mg/kg	<0.038	0.40	07/16/15 18:48	
Boron	mg/kg	0.61J	10.0	07/16/15 18:48	
Calcium	mg/kg	5.2J	100	07/16/15 18:48	
Chromium	mg/kg	<0.19	0.50	07/16/15 18:48	
Copper	mg/kg	<0.16	1.0	07/16/15 18:48	
Lead	mg/kg	<0.43	1.0	07/16/15 18:48	
Molybdenum	mg/kg	<0.21	2.0	07/16/15 18:48	
Zinc	mg/kg	<0.39	4.0	07/16/15 18:48	

LABORATORY CONTROL SAMPLE: 1192961

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/kg	50	48.1	96	80-120	
Beryllium	mg/kg	50	48.7	97	80-120	
Boron	mg/kg	50	48.1	96	80-120	
Calcium	mg/kg	500	495	99	80-120	
Chromium	mg/kg	50	49.6	99	80-120	
Copper	mg/kg	50	49.1	98	80-120	
Lead	mg/kg	50	48.5	97	80-120	
Molybdenum	mg/kg	50	53.5	107	80-120	
Zinc	mg/kg	50	50.4	101	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1192962 1192963

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		40117731003 Result	Spike Conc.	Spike Conc.	MS Result							MSD Result
Arsenic	mg/kg	7.0J	64.3	64.3	60.3	64.9	83	90	75-125	7	20	
Beryllium	mg/kg	1.1	64.3	64.3	61.9	61.1	95	93	75-125	1	20	
Boron	mg/kg	103	64.3	64.3	252	224	231	189	75-125	12	20 M0	
Calcium	mg/kg	1210	643	643	1870	1820	102	95	75-125	2	20	
Chromium	mg/kg	106	64.3	64.3	152	159	72	82	75-125	4	20 M0	
Copper	mg/kg	67.7	64.3	64.3	129	125	96	89	75-125	3	20	
Lead	mg/kg	4.9J	64.3	64.3	70.2	67.2	102	97	75-125	4	20	
Molybdenum	mg/kg	0.49J	64.3	64.3	61.1	60.0	94	93	75-125	2	20	
Zinc	mg/kg	83.2	64.3	64.3	132	121	76	59	75-125	8	20 M0	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

### REPORT OF LABORATORY ANALYSIS

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## QUALIFIERS

Project: 218938 PH. 6 WESTON DISPOSAL

Pace Project No.: 40117731

---

### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor and percent moisture.

LOQ - Limit of Quantitation adjusted for dilution factor and percent moisture.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected at or above the adjusted LOD.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

### LABORATORIES

PASI-G Pace Analytical Services - Green Bay

PASI-M Pace Analytical Services - Minneapolis

### ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

M0 Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

P6 Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level.

R1 RPD value was outside control limits.

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 218938 PH. 6 WESTON DISPOSAL

Pace Project No.: 40117731

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40117731001	CL-1	EPA 3050	MPRP/12239	EPA 6010	ICP/10884
40117731001	CL-1	EPA 3050	MPRP/55948	EPA 6010	ICP/24578
40117731002	CL-2	EPA 3050	MPRP/12239	EPA 6010	ICP/10884
40117731002	CL-2	EPA 3050	MPRP/55948	EPA 6010	ICP/24578
40117731003	CL-3	EPA 3050	MPRP/12240	EPA 6010	ICP/10885
40117731003	CL-3	EPA 3050	MPRP/55948	EPA 6010	ICP/24578
40117731004	CL-4	EPA 3050	MPRP/12240	EPA 6010	ICP/10885
40117731004	CL-4	EPA 3050	MPRP/55948	EPA 6010	ICP/24578
40117731005	CL-5	EPA 3050	MPRP/12240	EPA 6010	ICP/10885
40117731005	CL-5	EPA 3050	MPRP/55948	EPA 6010	ICP/24578
40117731006	CL-6	EPA 3050	MPRP/12240	EPA 6010	ICP/10885
40117731006	CL-6	EPA 3050	MPRP/55948	EPA 6010	ICP/24578
40117731007	CL-7	EPA 3050	MPRP/12240	EPA 6010	ICP/10885
40117731007	CL-7	EPA 3050	MPRP/55948	EPA 6010	ICP/24578
40117731008	CL-8	EPA 3050	MPRP/12240	EPA 6010	ICP/10885
40117731008	CL-8	EPA 3050	MPRP/55948	EPA 6010	ICP/24578
40117731009	CL-9	EPA 3050	MPRP/12240	EPA 6010	ICP/10885
40117731009	CL-9	EPA 3050	MPRP/55948	EPA 6010	ICP/24578
40117731010	CL-10	EPA 3050	MPRP/12240	EPA 6010	ICP/10885
40117731010	CL-10	EPA 3050	MPRP/55948	EPA 6010	ICP/24578
40117731001	CL-1	ASTM D2974-87	PMST/11489		
40117731002	CL-2	ASTM D2974-87	PMST/11489		
40117731003	CL-3	ASTM D2974-87	PMST/11489		
40117731004	CL-4	ASTM D2974-87	PMST/11484		
40117731005	CL-5	ASTM D2974-87	PMST/11484		
40117731006	CL-6	ASTM D2974-87	PMST/11484		
40117731007	CL-7	ASTM D2974-87	PMST/11484		
40117731008	CL-8	ASTM D2974-87	PMST/11484		
40117731009	CL-9	ASTM D2974-87	PMST/11484		
40117731010	CL-10	ASTM D2974-87	PMST/11484		

### REPORT OF LABORATORY ANALYSIS

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(Please Print Clearly)

Company Name: **TFC Companies**  
 Branch/Location: **Madison**  
 Project Contact: **Jonathan Hotschman**  
 Phone: **608-826-3623**  
 Project Number: **218938 Ph. 6**  
 Project Name: **Western Disposal**  
 Project State: **WI**  
 Sampled By (Print): **George Speredo**  
 Sampled By (Sign): *[Signature]*  
 PO #: **828602**

Data Package Options (billable):  
 EPA Level III  
 EPA Level IV

MS/MSD (billable):  
 On your sample  
 NOT needed on your sample

Matrix Codes:  
 A = Air, B = Biota, C = Charcoal, O = Oil, S = Soil, SI = Sludge, W = Water, DW = Drinking Water, GW = Ground Water, SW = Surface Water, WW = Waste Water, WP = Wipe

Regulatory Program: \_\_\_\_\_



# CHAIN OF CUSTODY

Preservation Codes:  
 A=None, B=HCL, C=H2SO4, D=HNO3, E=D1 Water, F=Methanol, G=NaOH  
 H=Sodium Bisulfate Solution, I=Sodium Thiosulfate, J=Other

PAGE LAB #	CLIENT FIELD ID	DATE	TIME	MATRIX	ANALYSES REQUESTED	Y/N	Pick Letter
001	CL-1	7/21/15	1000	S	Metals (see list)	X	A
002	CL-2		1210				
003	CL-3		1020				
004	CL-4		1030				
005	CL-5		1040				
006	CL-6		1050				
007	CL-7		1100				
008	CL-8		1110				
009	CL-9		1120				
010	CL-10		1130				

Upper Midwest Region  
 MN: 612-607-1700 WI: 920-469-2436

Quote #: \_\_\_\_\_  
 Mail To Contact: \_\_\_\_\_  
 Mail To Company: \_\_\_\_\_  
 Mail To Address: \_\_\_\_\_  
 Invoice To Contact: \_\_\_\_\_  
 Invoice To Company: \_\_\_\_\_  
 Invoice To Address: \_\_\_\_\_  
 Invoice To Phone: \_\_\_\_\_

CLIENT COMMENTS: \_\_\_\_\_  
 LAB COMMENTS (Lab Use Only): **1-402P A**

Profile # \_\_\_\_\_

Relinquished By: *[Signature]* Date/Time: **7/21/15 5:35**  
 Relinquished By: *[Signature]* Date/Time: **7/15/15 09:50**  
 Relinquished By: *[Signature]* Date/Time: **7/15/15 09:50**

Received By: *[Signature]* Date/Time: **7/21/15 5:35pm**  
 Received By: *[Signature]* Date/Time: **7/15/15 09:50**  
 Received By: *[Signature]* Date/Time: **7/15/15 09:50**

Special pricing and release of liability

Receipt Temp = **20.1** °C  
 Sample Receipt pH **OK / Adjusted**  
 Cooler Custody Seal **Present / Not Present**  
 Intact / Not Intact

FACE Project No. **40117731**



40117731

Clean Closure Sampling - Weston Disposal Site No. 3

Project Name: Clean Closure Sampling - Weston Disposal Site No. 3	Quick Turn? No. standard
Project #: 218938.0000	Special Detects? WDNr reporting LOD/LOQ
Report To: J. Hotstream	Price Quote? Y
PM: Todd Martin	Specific QC? Y-QC summary
	Data DL? N

Sample Id	Matrix	Parameters										
		Arsenic	Beryllium	Boron	Calcium	Chromium (total)	Copper	Lead	Molybdenum	Sulfur	Zinc	
FA-1	Waste	X	X	X	X	X	X	X	X	X	X	
FA-2	Waste	X	X	X	X	X	X	X	X	X	X	
FA-3	Waste	X	X	X	X	X	X	X	X	X	X	
FA-4	Waste	X	X	X	X	X	X	X	X	X	X	
FA-5	Waste	X	X	X	X	X	X	X	X	X	X	
FA-6	Waste	X	X	X	X	X	X	X	X	X	X	
FA-7	Waste	X	X	X	X	X	X	X	X	X	X	
FA-8	Waste	X	X	X	X	X	X	X	X	X	X	
FA-9	Waste	X	X	X	X	X	X	X	X	X	X	
FA-10	Waste	X	X	X	X	X	X	X	X	X	X	
CL-1	Soil	X	X	X	X	X	X	X	X	X	X	
CL-2	Soil	X	X	X	X	X	X	X	X	X	X	
CL-3	Soil	X	X	X	X	X	X	X	X	X	X	
CL-4	Soil	X	X	X	X	X	X	X	X	X	X	
CL-5	Soil	X	X	X	X	X	X	X	X	X	X	
CL-6	Soil	X	X	X	X	X	X	X	X	X	X	
CL-7	Soil	X	X	X	X	X	X	X	X	X	X	
CL-8	Soil	X	X	X	X	X	X	X	X	X	X	
CL-9	Soil	X	X	X	X	X	X	X	X	X	X	
CL-10	Soil	X	X	X	X	X	X	X	X	X	X	

# Sample Condition Upon Receipt

Pace Analytical Services, Inc.  
1241 Bellevue Street, Suite 9  
Green Bay, WI 54302

**Pace Analytical™**

Client Name: TRC

Project #: **WO#: 40117731**

Courier:  Fed Ex  UPS  Client  Pace Other: \_\_\_\_\_

Tracking #: 7739 8959 5876



Custody Seal on Cooler/Box Present:  yes  no Seals intact:  yes  no

Custody Seal on Samples Present:  yes  no Seals intact:  yes  no

Packing Material:  Bubble Wrap  Bubble Bags  None  Other

Thermometer Used: NIA Type of Ice:  Wet  Blue  Dry  None  Samples on ice, cooling process has begun

Cooler Temperature: Uncorr: ROI /Corr: \_\_\_\_\_ Biological Tissue is Frozen:  yes  no

Temp Blank Present:  yes  no  no

Person examining contents:  
Date: 7-7-15  
Initials: KEW

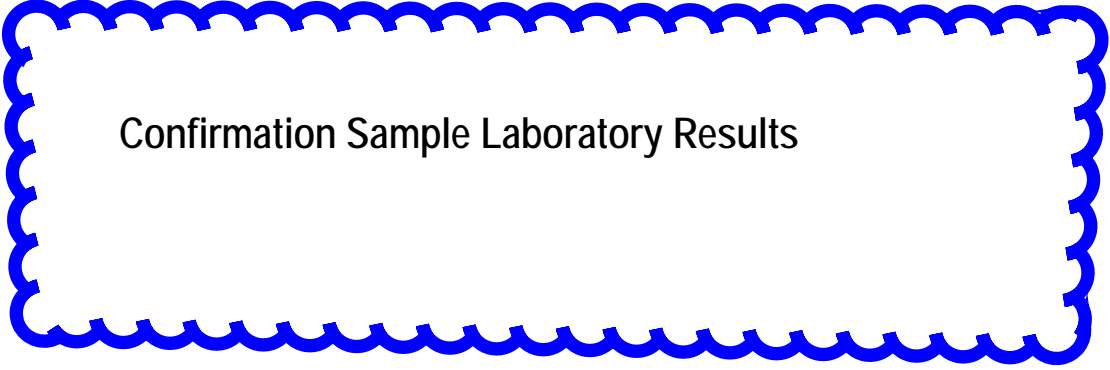
Temp should be above freezing to 6°C for all sample except Biota.  
Frozen Biota Samples should be received ≤ 0°C.

**Comments:**

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
- VOA Samples frozen upon receipt	<input type="checkbox"/> Yes <input type="checkbox"/> No	Date/Time:
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
-Pace IR Containers Used:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix:	<u>AS</u>	
All containers needing preservation have been checked. (Non-Compliance noted in 13.)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation. (HNO3, H2SO4 ≤2; NaOH+ZnAct ≥9, NaOH ≥12)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
exceptions: VOA, coliform, TOC, TOX, TOH, O&G, WIDROW, Phenolics, OTHER:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed
		Lab Std #/ID of preservative
		Date/Time:
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

**Client Notification/ Resolution:** \_\_\_\_\_ If checked, see attached form for additional comments   
 Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_  
 Comments/ Resolution: \_\_\_\_\_

**Project Manager Review:** AMH Br LN Date: 7/7/15



Confirmation Sample Laboratory Results

August 06, 2015

Jonathan Hotstream  
TRC - Madison  
708 Heartland Trail  
Madison, WI 53717

RE: Project: 218938 WPS PHASE I ASH  
Pace Project No.: 40118960

Dear Jonathan Hotstream:

Enclosed are the analytical results for sample(s) received by the laboratory on July 31, 2015. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Tod Noltemeyer  
tod.noltemeyer@pacelabs.com  
Project Manager

Enclosures



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: 218938 WPS PHASE I ASH

Pace Project No.: 40118960

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### Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302

Florida/NELAP Certification #: E87948

Illinois Certification #: 200050

Kentucky Certification #: 82

Louisiana Certification #: 04168

Minnesota Certification #: 055-999-334

North Dakota Certification #: R-150

South Carolina Certification #: 83006001

Texas Certification #: T104704529-14-1

US Dept of Agriculture #: S-76505

Wisconsin Certification #: 405132750

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: 218938 WPS PHASE I ASH

Pace Project No.: 40118960

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40118960001	SAMPLE 19	Solid	07/30/15 13:00	07/31/15 07:20
40118960002	SAMPLE 20	Solid	07/30/15 13:05	07/31/15 07:20
40118960003	SAMPLE 19, 6-INCH DEEP	Solid	07/30/15 15:00	07/31/15 07:20
40118960004	SAMPLE 20, 6-INCH DEEP	Solid	07/30/15 15:05	07/31/15 07:20

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: 218938 WPS PHASE I ASH

Pace Project No.: 40118960

Lab ID	Sample ID	Method	Analysts	Analytes Reported
40118960001	SAMPLE 19	EPA 6010	DLB	3
		ASTM D2974-87	MAM	1
40118960002	SAMPLE 20	EPA 6010	DLB	3
		ASTM D2974-87	MAM	1
40118960003	SAMPLE 19, 6-INCH DEEP	EPA 6010	DLB	3
		ASTM D2974-87	MAM	1
40118960004	SAMPLE 20, 6-INCH DEEP	EPA 6010	DLB	3
		ASTM D2974-87	MAM	1

### REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: 218938 WPS PHASE I ASH

Pace Project No.: 40118960

---

**Method:** EPA 6010

**Description:** 6010 MET ICP

**Client:** TRC - MADISON

**Date:** August 06, 2015

**General Information:**

4 samples were analyzed for EPA 6010. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

**Hold Time:**

The samples were analyzed within the method required hold times with any exceptions noted below.

**Sample Preparation:**

The samples were prepared in accordance with EPA 3050 with any exceptions noted below.

**Initial Calibrations (including MS Tune as applicable):**

All criteria were within method requirements with any exceptions noted below.

**Continuing Calibration:**

All criteria were within method requirements with any exceptions noted below.

**Method Blank:**

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

**Laboratory Control Spike:**

All laboratory control spike compounds were within QC limits with any exceptions noted below.

**Matrix Spikes:**

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

**Additional Comments:**

Analyte Comments:

QC Batch: MPRP/12362

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- SAMPLE 19, 6-INCH DEEP (Lab ID: 40118960003)
  - Lead
- SAMPLE 20, 6-INCH DEEP (Lab ID: 40118960004)
  - Lead

This data package has been reviewed for quality and completeness and is approved for release.

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## ANALYTICAL RESULTS

Project: 218938 WPS PHASE I ASH

Pace Project No.: 40118960

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**Sample: SAMPLE 19**      **Lab ID: 40118960001**      Collected: 07/30/15 13:00      Received: 07/31/15 07:20      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010 MET ICP</b>		Analytical Method: EPA 6010    Preparation Method: EPA 3050							
Calcium	<b>1470</b>	mg/kg	131	3.6	1	08/04/15 13:47	08/05/15 12:50	7440-70-2	
Lead	<b>3.7</b>	mg/kg	1.3	0.56	1	08/04/15 13:47	08/05/15 12:50	7439-92-1	
Zinc	<b>29.1</b>	mg/kg	5.2	0.50	1	08/04/15 13:47	08/05/15 12:50	7440-66-6	
<b>Percent Moisture</b>		Analytical Method: ASTM D2974-87							
Percent Moisture	<b>26.9</b>	%	0.10	0.10	1		07/31/15 16:27		

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: 218938 WPS PHASE I ASH

Pace Project No.: 40118960

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**Sample: SAMPLE 20**      **Lab ID: 40118960002**    Collected: 07/30/15 13:05    Received: 07/31/15 07:20    Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010 MET ICP</b>		Analytical Method: EPA 6010    Preparation Method: EPA 3050							
Calcium	<b>1530</b>	mg/kg	115	3.1	1	08/04/15 13:47	08/05/15 12:52	7440-70-2	
Lead	<b>7.3</b>	mg/kg	2.3	0.99	2	08/04/15 13:47	08/05/15 15:07	7439-92-1	
Zinc	<b>35.7</b>	mg/kg	4.6	0.44	1	08/04/15 13:47	08/05/15 12:52	7440-66-6	
<b>Percent Moisture</b>		Analytical Method: ASTM D2974-87							
Percent Moisture	<b>26.4</b>	%	0.10	0.10	1		07/31/15 16:28		

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## ANALYTICAL RESULTS

Project: 218938 WPS PHASE I ASH

Pace Project No.: 40118960

**Sample: SAMPLE 19, 6-INCH DEEP Lab ID: 40118960003** Collected: 07/30/15 15:00 Received: 07/31/15 07:20 Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010 MET ICP</b>	Analytical Method: EPA 6010 Preparation Method: EPA 3050								
Calcium	<b>1870</b>	mg/kg	125	3.4	1	08/04/15 13:47	08/05/15 12:55	7440-70-2	
Lead	<b>&lt;2.7</b>	mg/kg	6.3	2.7	5	08/04/15 13:47	08/05/15 15:09	7439-92-1	D3
Zinc	<b>29.7</b>	mg/kg	5.0	0.48	1	08/04/15 13:47	08/05/15 12:55	7440-66-6	
<b>Percent Moisture</b>	Analytical Method: ASTM D2974-87								
Percent Moisture	<b>27.1</b>	%	0.10	0.10	1		07/31/15 16:28		

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: 218938 WPS PHASE I ASH

Pace Project No.: 40118960

**Sample: SAMPLE 20, 6-INCH DEEP Lab ID: 40118960004** Collected: 07/30/15 15:05 Received: 07/31/15 07:20 Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010 MET ICP</b>		Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Calcium	<b>2570</b>	mg/kg	118	3.2	1	08/04/15 13:47	08/05/15 12:57	7440-70-2	
Lead	<b>2.1J</b>	mg/kg	2.4	1.0	2	08/04/15 13:47	08/05/15 15:12	7439-92-1	D3
Zinc	<b>39.0</b>	mg/kg	4.7	0.46	1	08/04/15 13:47	08/05/15 12:57	7440-66-6	
<b>Percent Moisture</b>		Analytical Method: ASTM D2974-87							
Percent Moisture	<b>21.9</b>	%	0.10	0.10	1		07/31/15 16:28		

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: 218938 WPS PHASE I ASH

Pace Project No.: 40118960

QC Batch: MPRP/12362 Analysis Method: EPA 6010  
 QC Batch Method: EPA 3050 Analysis Description: 6010 MET  
 Associated Lab Samples: 40118960001, 40118960002, 40118960003, 40118960004

METHOD BLANK: 1202248 Matrix: Solid  
 Associated Lab Samples: 40118960001, 40118960002, 40118960003, 40118960004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium	mg/kg	<2.7	100	08/05/15 12:35	
Lead	mg/kg	<0.43	1.0	08/05/15 12:35	
Zinc	mg/kg	<0.39	4.0	08/05/15 12:35	

LABORATORY CONTROL SAMPLE: 1202249

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium	mg/kg	500	500	100	80-120	
Lead	mg/kg	50	49.3	99	80-120	
Zinc	mg/kg	50	51.3	103	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1202250 1202251

Parameter	Units	MS		MSD		MS		MSD		% Rec Limits	RPD	Max RPD	Qual
		40118922007 Result	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec					
Calcium	mg/kg	101000	591	591	99000	103000	-378	336	75-125	4	20	P6	
Lead	mg/kg	6.7	59.1	59.1	59.6	58.5	90	88	75-125	2	20		
Zinc	mg/kg	45.0	59.1	59.1	97.8	100	89	93	75-125	2	20		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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## QUALIFIERS

Project: 218938 WPS PHASE I ASH

Pace Project No.: 40118960

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### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor and percent moisture.

LOQ - Limit of Quantitation adjusted for dilution factor and percent moisture.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected at or above the adjusted LOD.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

### ANALYTE QUALIFIERS

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

P6 Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level.

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 218938 WPS PHASE I ASH

Pace Project No.: 40118960

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40118960001	SAMPLE 19	EPA 3050	MPRP/12362	EPA 6010	ICP/10967
40118960002	SAMPLE 20	EPA 3050	MPRP/12362	EPA 6010	ICP/10967
40118960003	SAMPLE 19, 6-INCH DEEP	EPA 3050	MPRP/12362	EPA 6010	ICP/10967
40118960004	SAMPLE 20, 6-INCH DEEP	EPA 3050	MPRP/12362	EPA 6010	ICP/10967
40118960001	SAMPLE 19	ASTM D2974-87	PMST/11569		
40118960002	SAMPLE 20	ASTM D2974-87	PMST/11569		
40118960003	SAMPLE 19, 6-INCH DEEP	ASTM D2974-87	PMST/11569		
40118960004	SAMPLE 20, 6-INCH DEEP	ASTM D2974-87	PMST/11569		

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(Please Print Clearly)

Company Name: TEL  
 Branch/Location: Madison  
 Project Contact: John Holstrom  
 Phone: 608-852-7044  
 Project Number: 218938  
 Project Name: WRS Phase 1 ash  
 Project State: WI  
 Sampled By (Print): George Snereda  
 Sampled By (Sign): [Signature]  
 PO #: 82862  
 Regulatory Program: 82862



# CHAIN OF CUSTODY

Retention Codes  
 A=None B=HCL C=H2SO4 D=HNO3 E=D Water F=Methanol G=NaOH  
 H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

FILTERED?  
 (YES/NO)  
 PRESERVATION  
 (CODE)

V/I/N	Pick Letter	Retention Code	Matrix Code
N	-	-	-
N	-	-	-
N	-	-	-
N	-	-	-

Analyses Requested	Calcium	Zinc	Lead
	X	X	X
	X	X	X
	X	X	X
	X	X	X

PAGE LAB #	CLIENT FIELD ID	DATE	COLLECTION TIME	MATRIX
001	Sample 19	7/30	1300	S
002	Sample 20	7/30	1305	S
003	Sample 19, 6-inch deep	7/30	1300	S
004	Sample 20, 6-inch deep	7/30	1505	S

Relinquished By:	Date/Time:	Received By:	Date/Time:
George Snereda	7/30 1500	[Signature]	7/30 1520
[Signature]	7/31/15 0730	[Signature]	7/31/15 0720

Quote #: \_\_\_\_\_  
 Mail To Contact: \_\_\_\_\_  
 Mail To Company: \_\_\_\_\_  
 Mail To Address: \_\_\_\_\_  
 Invoice To Contact: \_\_\_\_\_  
 Invoice To Company: \_\_\_\_\_  
 Invoice To Address: \_\_\_\_\_  
 Invoice To Phone: \_\_\_\_\_  
 CLIENT COMMENTS: Rush  
 LAB COMMENTS (Lab Use Only): L-402ppA  
 Profile #: \_\_\_\_\_  
 PACE Project No.: 40118900  
 Receipt Temp = 20.1°C  
 Sample Receipt pH: \_\_\_\_\_  
 Cooler Custody Seal Present (NOT Present) Intact / Not Intact

UPPER MIDWEST REGION  
 MN: 612-607-1700 WI: 920-469-2436

40118900

Sample Condition Upon Receipt

Pace Analytical Services, Inc.  
1241 Bellevue Street, Suite 9  
Green Bay, WI 54302

**Pace Analytical™**

Project #:

**WO# : 40118960**

Client Name: TRC

Courier:  Fed Ex  UPS  Client  Pace Other: \_\_\_\_\_

Tracking #: 781070825830



Custody Seal on Cooler/Box Present:  yes  no    Seals intact:  yes  no

Custody Seal on Samples Present:  yes  no    Seals intact:  yes  no

Packing Material:  Bubble Wrap  Bubble Bags  None  Other

Thermometer Used N/A    Type of Ice:  Wet  Blue  Dry  None     Samples on ice, cooling process has begun

Cooler Temperature    Uncorr: 10F / Corr: \_\_\_\_\_    Biological Tissue is Frozen:  yes

Temp Blank Present:  yes  no     no

Person examining contents:  
Date: 7-31-15  
Initials: SKW

Temp should be above freezing to 6°C for all sample except Biota.  
Frozen Biota Samples should be received ≤ 0°C.

Comments:

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
- VOA Samples frozen upon receipt	<input type="checkbox"/> Yes <input type="checkbox"/> No	Date/Time:
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	7. <u>RUSH</u> <span style="float: right;"><u>7-31-15 SKW</u></span>
Sufficient Volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
-Pace IR Containers Used:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix: <u>S</u>		
All containers needing preservation have been checked. (Non-Compliance noted in 13.)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13. <input type="checkbox"/> HNO3 <input type="checkbox"/> H2SO4 <input type="checkbox"/> NaOH <input type="checkbox"/> NaOH + ZnAct
All containers needing preservation are found to be in compliance with EPA recommendation. (HNO3, H2SO4 ≤2; NaOH+ZnAct ≥9; NaOH ≥12)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
exceptions: VOA, coliform, TOC, TOX, TOH, O&G, WIDROW, Phenolics, OTHER:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed    Lab Std #ID of preservative    Date/Time:
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution:

If checked, see attached form for additional comments

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Comments/ Resolution: Original and copy of COC in shipment 7-31-15  
SKW

Project Manager Review: \_\_\_\_\_

Date: 7-31-15

August 31, 2015

Jonathan Hotstream  
TRC - Madison  
708 Heartland Trail  
Madison, WI 53717

RE: Project: 218938.0000 PH6 WPS CLAY & SED  
Pace Project No.: 40120201

Dear Jonathan Hotstream:

Enclosed are the analytical results for sample(s) received by the laboratory on August 27, 2015. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Tod Noltemeyer  
tod.noltemeyer@pacelabs.com  
Project Manager

Enclosures



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: 218938.0000 PH6 WPS CLAY & SED

Pace Project No.: 40120201

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### Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302

Florida/NELAP Certification #: E87948

Illinois Certification #: 200050

Kentucky Certification #: 82

Louisiana Certification #: 04168

Minnesota Certification #: 055-999-334

North Dakota Certification #: R-150

South Carolina Certification #: 83006001

Texas Certification #: T104704529-14-1

US Dept of Agriculture #: S-76505

Wisconsin Certification #: 405132750

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: 218938.0000 PH6 WPS CLAY & SED

Pace Project No.: 40120201

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Lab ID	Sample ID	Matrix	Date Collected	Date Received
40120201001	CL-9	Solid	08/26/15 00:00	08/27/15 10:45
40120201002	CL-12	Solid	08/26/15 00:00	08/27/15 10:45
40120201003	CL-17	Solid	08/26/15 00:00	08/27/15 10:45
40120201004	CL-4	Solid	08/26/15 00:00	08/27/15 10:45

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### SAMPLE ANALYTE COUNT

Project: 218938.0000 PH6 WPS CLAY & SED

Pace Project No.: 40120201

Lab ID	Sample ID	Method	Analysts	Analytes Reported
40120201001	CL-9	EPA 6010	JBR	6
		ASTM D2974-87	MAM	1
40120201002	CL-12	EPA 6010	JBR	6
		ASTM D2974-87	MAM	1
40120201003	CL-17	EPA 6010	JBR	6
		ASTM D2974-87	MAM	1
40120201004	CL-4	EPA 6010	JBR	6
		ASTM D2974-87	MAM	1

### REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: 218938.0000 PH6 WPS CLAY & SED  
Pace Project No.: 40120201

---

**Method:** EPA 6010  
**Description:** 6010 MET ICP  
**Client:** TRC - MADISON  
**Date:** August 31, 2015

### General Information:

4 samples were analyzed for EPA 6010. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

### Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

### Sample Preparation:

The samples were prepared in accordance with EPA 3050 with any exceptions noted below.

### Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

### Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

### Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

### Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

### Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/12497

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 40120201001

M0: Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

- MS (Lab ID: 1212270)
  - Boron
- MSD (Lab ID: 1212271)
  - Boron

### Additional Comments:

Analyte Comments:

QC Batch: MPRP/12497

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- CL-12 (Lab ID: 40120201002)
  - Arsenic
- CL-17 (Lab ID: 40120201003)
  - Arsenic
- CL-4 (Lab ID: 40120201004)
  - Arsenic

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: 218938.0000 PH6 WPS CLAY & SED

Pace Project No.: 40120201

---

**Method:** EPA 6010

**Description:** 6010 MET ICP

**Client:** TRC - MADISON

**Date:** August 31, 2015

Analyte Comments:

QC Batch: MPRP/12497

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- CL-9 (Lab ID: 40120201001)
- Arsenic

This data package has been reviewed for quality and completeness and is approved for release.

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: 218938.0000 PH6 WPS CLAY & SED

Pace Project No.: 40120201

**Sample: CL-9**      **Lab ID: 40120201001**      Collected: 08/26/15 00:00      Received: 08/27/15 10:45      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010 MET ICP</b>		Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	<b>4.4J</b>	mg/kg	5.1	1.6	2	08/27/15 15:02	08/28/15 16:23	7440-38-2	D3
Boron	<b>237</b>	mg/kg	12.8	0.40	1	08/27/15 15:02	08/28/15 15:23	7440-42-8	M0
Calcium	<b>1950</b>	mg/kg	128	3.5	1	08/27/15 15:02	08/28/15 15:23	7440-70-2	
Lead	<b>6.9</b>	mg/kg	2.6	1.1	2	08/27/15 15:02	08/28/15 16:23	7439-92-1	
Selenium	<b>1.6J</b>	mg/kg	2.6	0.99	1	08/27/15 15:02	08/28/15 15:23	7782-49-2	
Zinc	<b>47.3</b>	mg/kg	5.1	0.49	1	08/27/15 15:02	08/28/15 15:23	7440-66-6	
<b>Percent Moisture</b>		Analytical Method: ASTM D2974-87							
Percent Moisture	<b>22.0</b>	%	0.10	0.10	1		08/27/15 16:12		

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: 218938.0000 PH6 WPS CLAY & SED

Pace Project No.: 40120201

**Sample: CL-12**      **Lab ID: 40120201002**      Collected: 08/26/15 00:00      Received: 08/27/15 10:45      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010 MET ICP</b>		Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	<1.6	mg/kg	4.9	1.6	2	08/27/15 15:02	08/28/15 16:35	7440-38-2	D3
Boron	238	mg/kg	12.2	0.38	1	08/27/15 15:02	08/28/15 15:30	7440-42-8	
Calcium	2490	mg/kg	122	3.3	1	08/27/15 15:02	08/28/15 15:30	7440-70-2	
Lead	4.6	mg/kg	2.4	1.1	2	08/27/15 15:02	08/28/15 16:35	7439-92-1	
Selenium	<0.94	mg/kg	2.4	0.94	1	08/27/15 15:02	08/28/15 15:30	7782-49-2	
Zinc	62.0	mg/kg	4.9	0.47	1	08/27/15 15:02	08/28/15 15:30	7440-66-6	
<b>Percent Moisture</b>		Analytical Method: ASTM D2974-87							
Percent Moisture	26.6	%	0.10	0.10	1		08/27/15 16:13		

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: 218938.0000 PH6 WPS CLAY & SED

Pace Project No.: 40120201

**Sample: CL-17**      **Lab ID: 40120201003**      Collected: 08/26/15 00:00      Received: 08/27/15 10:45      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010 MET ICP</b>		Analytical Method: EPA 6010    Preparation Method: EPA 3050							
Arsenic	<1.5	mg/kg	4.8	1.5	2	08/27/15 15:02	08/28/15 16:37	7440-38-2	D3
Boron	194	mg/kg	12.0	0.37	1	08/27/15 15:02	08/28/15 15:32	7440-42-8	
Calcium	2600	mg/kg	120	3.3	1	08/27/15 15:02	08/28/15 15:32	7440-70-2	
Lead	4.1	mg/kg	2.4	1.0	2	08/27/15 15:02	08/28/15 16:37	7439-92-1	
Selenium	<0.92	mg/kg	2.4	0.92	1	08/27/15 15:02	08/28/15 15:32	7782-49-2	
Zinc	36.2	mg/kg	4.8	0.46	1	08/27/15 15:02	08/28/15 15:32	7440-66-6	
<b>Percent Moisture</b>		Analytical Method: ASTM D2974-87							
Percent Moisture	21.2	%	0.10	0.10	1		08/27/15 16:13		

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: 218938.0000 PH6 WPS CLAY & SED

Pace Project No.: 40120201

**Sample: CL-4**      **Lab ID: 40120201004**      Collected: 08/26/15 00:00      Received: 08/27/15 10:45      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010 MET ICP</b>		Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	<1.4	mg/kg	4.4	1.4	2	08/27/15 15:02	08/28/15 16:40	7440-38-2	D3
Boron	162	mg/kg	11.0	0.34	1	08/27/15 15:02	08/28/15 15:39	7440-42-8	
Calcium	1620	mg/kg	110	3.0	1	08/27/15 15:02	08/28/15 15:39	7440-70-2	
Lead	5.2	mg/kg	2.2	0.95	2	08/27/15 15:02	08/28/15 16:40	7439-92-1	
Selenium	<0.85	mg/kg	2.2	0.85	1	08/27/15 15:02	08/28/15 15:39	7782-49-2	
Zinc	39.0	mg/kg	4.4	0.42	1	08/27/15 15:02	08/28/15 15:39	7440-66-6	
<b>Percent Moisture</b>		Analytical Method: ASTM D2974-87							
Percent Moisture	19.7	%	0.10	0.10	1		08/27/15 16:13		

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: 218938.0000 PH6 WPS CLAY & SED  
Pace Project No.: 40120201

QC Batch: MPRP/12497 Analysis Method: EPA 6010  
QC Batch Method: EPA 3050 Analysis Description: 6010 MET  
Associated Lab Samples: 40120201001, 40120201002, 40120201003, 40120201004

METHOD BLANK: 1212268 Matrix: Solid  
Associated Lab Samples: 40120201001, 40120201002, 40120201003, 40120201004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/kg	<0.64	2.0	08/28/15 15:19	
Boron	mg/kg	0.43J	10.0	08/28/15 15:19	
Calcium	mg/kg	2.9J	100	08/28/15 15:19	
Lead	mg/kg	<0.43	1.0	08/28/15 15:19	
Selenium	mg/kg	<0.77	2.0	08/28/15 15:19	
Zinc	mg/kg	<0.39	4.0	08/28/15 15:19	

LABORATORY CONTROL SAMPLE: 1212269

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/kg	50	50.5	101	80-120	
Boron	mg/kg	50	49.7	99	80-120	
Calcium	mg/kg	500	525	105	80-120	
Lead	mg/kg	50	51.1	102	80-120	
Selenium	mg/kg	50	51.2	102	80-120	
Zinc	mg/kg	50	53.6	107	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1212270 1212271

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual	
		40120201001 Result	Spike Conc.	Spike Conc.	Result						
Arsenic	mg/kg	4.4J	64.1	64.1	65.0	63.8	95	93	75-125	2	20
Boron	mg/kg	237	64.1	64.1	354	349	183	175	75-125	1	20 M0
Calcium	mg/kg	1950	641	641	2570	2550	95	94	75-125	0	20
Lead	mg/kg	6.9	64.1	64.1	69.3	68.4	97	96	75-125	1	20
Selenium	mg/kg	1.6J	64.1	64.1	62.3	60.6	95	92	75-125	3	20
Zinc	mg/kg	47.3	64.1	64.1	110	108	98	95	75-125	1	20

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

### REPORT OF LABORATORY ANALYSIS

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## QUALIFIERS

Project: 218938.0000 PH6 WPS CLAY & SED

Pace Project No.: 40120201

---

### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor and percent moisture.

LOQ - Limit of Quantitation adjusted for dilution factor and percent moisture.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected at or above the adjusted LOD.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

### ANALYTE QUALIFIERS

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

M0 Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 218938.0000 PH6 WPS CLAY & SED

Pace Project No.: 40120201

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40120201001	CL-9	EPA 3050	MPRP/12497	EPA 6010	ICP/11077
40120201002	CL-12	EPA 3050	MPRP/12497	EPA 6010	ICP/11077
40120201003	CL-17	EPA 3050	MPRP/12497	EPA 6010	ICP/11077
40120201004	CL-4	EPA 3050	MPRP/12497	EPA 6010	ICP/11077
40120201001	CL-9	ASTM D2974-87	PMST/11692		
40120201002	CL-12	ASTM D2974-87	PMST/11692		
40120201003	CL-17	ASTM D2974-87	PMST/11692		
40120201004	CL-4	ASTM D2974-87	PMST/11692		

### REPORT OF LABORATORY ANALYSIS

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(Please Print Clearly)

Company Name: **TRC**

Branch/Location: **MADISON, WI**

Project Contact: **SONJIA HOBSTEDER**

Phone: **608-824-8023**

Project Number: **210938.0000 PH4**

Project Name: **WFS CLAY & SED ROCK**

Project State: **WISCONSIN**

Sampled By (Print): **MET ALLEN**

Sampled By (Sign): *[Signature]*

PO #: \_\_\_\_\_

Date Package Options (Select):  
 EPA Level III  
 EPA Level IV

MS/MSD (Delish)  
 On your sample  
 NOT needed on your sample

Matrix Codes:  
A = Air  
B = Soil  
C = Chemical  
O = Oil  
S = Sed  
W = Water  
M = Misc

Page Lab #  
001  
002  
003  
004

Client Field ID  
CL-9  
CL-12  
CL-17  
CL-18

DATE TIME MATR

COLLECTOR

DATE TIME MATR

DATE TIME MATR

DATE TIME MATR

DATE TIME MATR

DATE TIME MATR

DATE TIME MATR

DATE TIME MATR



www.paceanalytical.com

# CHAIN OF CUSTODY

Analysis Station: **D-101, C-1200A**  
In-Situ Station: **D-1100, E-1100**  
In-Situ Station: **E-1100, J-1100**  
In-Situ Station: **F-1100, G-1100**

ALTERED? (Y/N/A)  
PRESERVATION (COOL)

Metals - BORO, CALCIUM, LEAD, ZINC  
Arsenic, Selenium

Quote #:

Mail To Contact:

Mail To Company:

Mail To Address:

Invoice To Contact:

Invoice To Company:

Invoice To Address:

Invoice To Phone:

CLIENT COMMENTS

LAB COMMENTS (Lab Use Only)

1-202pp ft



UPPER MIDWEST REGION  
MN: 612-907-1700 WI: 920-499-2436

40120201

Rush Turnaround Time Requested - Prelims  
(Rush TAT subject to approval/charge)  
Date Needed: **8/13**

Therapeutic Protein Rush Results by (complete when you want):  
Email #1:  
Email #2:  
Telephones:  
Fax:

Requisitioned By: **Walt Wilkins**  
Date/Time: **8/26/15 5:50p**

Requisitioned By: **Fedex**  
Date/Time: **8/27/15 10:45**

Requisitioned By: \_\_\_\_\_  
Date/Time: \_\_\_\_\_

Received By: \_\_\_\_\_  
Date/Time: \_\_\_\_\_

Received By: **John Schlemmer**  
Date/Time: **8/27/15 10:45**

Received By: \_\_\_\_\_  
Date/Time: \_\_\_\_\_

Received By: \_\_\_\_\_  
Date/Time: \_\_\_\_\_

Received By: \_\_\_\_\_  
Date/Time: \_\_\_\_\_

PACE Project No.  
**40120201**

Sample Receipt pH  
OK / Adjusted

Seal Custody Seal  
Present / Not Present  
Intact / Not Intact

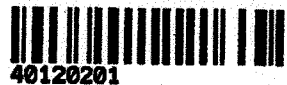


Sample Condition Upon Receipt

Pace Analytical Services, Inc.
1241 Bellevue Street, Suite 9
Green Bay, WI 54302

Project #: WO#: 40120201

Client Name: TRC



Courier: [X] Fed Ex [ ] UPS [ ] Client [ ] Pace Other: \_\_\_\_\_

Tracking #: 7812 2608 0120

Custody Seal on Cooler/Box Present: [X] yes [ ] no Seals intact: [X] yes [ ] no

Custody Seal on Samples Present: [ ] yes [X] no Seals intact: [ ] yes [ ] no

Packing Material: [ ] Bubble Wrap [ ] Bubble Bags [X] None [ ] Other

Thermometer Used: NA Type of Ice: [X] Wet [ ] Blue [ ] Dry [ ] None [X] Samples on ice, cooling process has begun

Cooler Temperature: Uncorr: /Corr: ROI Biological Tissue is Frozen: [ ] yes [ ] no

Temp Blank Present: [ ] yes [X] no

Person examining contents:
Date: 8/27/15
Initials: [Signature]

Temp should be above freezing to 6°C for all sample except Biota.

Frozen Biota Samples should be received ≤ 0°C.

Comments:

Table with 15 rows of inspection criteria and checkboxes. Includes items like 'Chain of Custody Present', 'Short Hold Time Analysis', 'Rush Turn Around Time Requested', etc.

Client Notification/ Resolution: \_\_\_\_\_ Date/Time: \_\_\_\_\_ If checked, see attached form for additional comments [ ]

Project Manager Review: [Signature] Date: 8/27/15

(Please Print Clearly)

Company Name: TPA  
Branch/Location: Madison, WI  
Project Contact: SONSTADT HORTSTEADT  
Phone: 608-8240-2423  
Project Number: 718938-0000 PHL  
Project Name: WPS CLAY & SED BANK  
Project State: WISCONSIN  
Sampled By (Print): MET WILLIAMS  
Sampled By (Sign): [Signature]  
PO #: [Blank]  
Regulatory Program: [Blank]



# CHAIN OF CUSTODY

UPPER MIDWEST REGION  
MN: 612-607-1700 WI: 920-469-2436

Page 1 of 1

40120201

Preservation Codes: A=None B=HCl C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH  
H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

Filtered? (YES/NO)  
Preservation (CODE)

V/I/N	Pick Label
D	A

Analyses Requested  
METALS - BORON, CALCIUM, LEAD, ZINC  
Arsenic, Selenium

Quote #: [Blank]  
 Mail To Contact: [Blank]  
 Mail To Company: [Blank]  
 Mail To Address: [Blank]  
 Invoice To Contact: [Blank]  
 Invoice To Company: [Blank]  
 Invoice To Address: [Blank]  
 Invoice To Phone: [Blank]

CLIENT COMMENTS  
LAB COMMENTS (Lab Use Only)  
1-203P A

PAGE LAB #	CLIENT FIELD ID	COLLECTION		MATRIX	DATE	TIME	RELINQUISHED BY	DATE/TIME	RECEIVED BY	DATE/TIME	PAGE PROJECT NO.
		DATE	TIME								
001	CL-9						Walt Wilkins	8/26/15 5:50p			40120201
002	CL-12						Fedex	8/27/15 10:15	Sasha Schumann	8/27/15 10:45	
003	CL-17										
004	CL-17										

Rush Turnaround Time Requested - Prelims (Rush TAT subject to approval/surcharge)  
 Date Needed: 8/31  
 Transmit Prelim Rush Results by (complete what you want):  
 Email #1:  
 Email #2:  
 Telephone:  
 Fax:  
 Samples on HOLD are subject to special pricing and release of liability  
 Relinquished By:  
 Date/Time:  
 Received By:  
 Date/Time:  
 Receipt Temp = 201 °C  
 Sample Receipt pH  
 OK / Adjusted  
 Color Custody Seal Present / Not Present Intact / Not Intact  
 Version 6/14/2015



Sample Condition Upon Receipt

Pace Analytical Services, Inc.
1241 Bellevue Street, Suite 9
Green Bay, WI 54302

Project #: WO#: 40120201

Client Name: TRC



Courier: [X] Fed Ex [ ] UPS [ ] Client [ ] Pace Other:
Tracking #: 7812 2608 0120

Custody Seal on Cooler/Box Present: [X] yes [ ] no Seals intact: [X] yes [ ] no

Custody Seal on Samples Present: [ ] yes [X] no Seals intact: [ ] yes [ ] no

Packing Material: [ ] Bubble Wrap [ ] Bubble Bags [X] None [ ] Other

Thermometer Used: NA Type of Ice: [X] Wet [ ] Blue [ ] Dry [ ] None [X] Samples on ice, cooling process has begun

Cooler Temperature: Uncorr: /Corr: ROI Biological Tissue is Frozen: [ ] yes [ ] no

Temp Blank Present: [ ] yes [X] no [ ] no

Person examining contents:
Date: 8/27/15
Initials: KJ

Temp should be above freezing to 6°C for all sample except Biota.
Frozen Biota Samples should be received ≤ 0°C.

Comments:

Table with 15 rows of inspection criteria and checkboxes. Includes items like Chain of Custody Present, Short Hold Time Analysis, and Containers Intact. Handwritten notes include 'no times/dates, matrix' and 'KJ 8/27/15'.

Client Notification/ Resolution:
Person Contacted: Date/Time:
Comments/ Resolution:

Project Manager Review: [Signature] Date: 8/27/15

September 01, 2015

Jonathan Hotstream  
TRC - Madison  
708 Heartland Trail  
Madison, WI 53717

RE: Project: 218938.0000 PH6 WPS CLAY & SED  
Pace Project No.: 40120281

Dear Jonathan Hotstream:

Enclosed are the analytical results for sample(s) received by the laboratory on August 28, 2015. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Tod Noltemeyer  
tod.noltemeyer@pacelabs.com  
Project Manager

Enclosures



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: 218938.0000 PH6 WPS CLAY & SED

Pace Project No.: 40120281

---

### Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302

Florida/NELAP Certification #: E87948

Illinois Certification #: 200050

Kentucky Certification #: 82

Louisiana Certification #: 04168

Minnesota Certification #: 055-999-334

North Dakota Certification #: R-150

South Carolina Certification #: 83006001

Texas Certification #: T104704529-14-1

US Dept of Agriculture #: S-76505

Wisconsin Certification #: 405132750

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## REPORT OF LABORATORY ANALYSIS

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## SAMPLE SUMMARY

Project: 218938.0000 PH6 WPS CLAY & SED

Pace Project No.: 40120281

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40120281001	CL-14-4	Solid	08/27/15 00:00	08/28/15 10:10
40120281002	CL-14-5	Solid	08/27/15 00:00	08/28/15 10:10
40120281003	CL-14-2	Solid	08/27/15 00:00	08/28/15 10:10
40120281004	CL-16-4	Solid	08/27/15 00:00	08/28/15 10:10
40120281005	CL-16-5	Solid	08/27/15 00:00	08/28/15 10:10
40120281006	CL-25-5	Solid	08/27/15 00:00	08/28/15 10:10
40120281007	CL-24-2	Solid	08/27/15 00:00	08/28/15 10:10
40120281008	CL-24-5	Solid	08/27/15 00:00	08/28/15 10:10
40120281009	CL-25-4	Solid	08/27/15 00:00	08/28/15 10:10
40120281010	CL-25-2	Solid	08/27/15 00:00	08/28/15 10:10
40120281011	CL-25-1	Solid	08/27/15 00:00	08/28/15 10:10
40120281012	CL-24-4	Solid	08/27/15 00:00	08/28/15 10:10
40120281013	CL-2-2	Solid	08/27/15 00:00	08/28/15 10:10
40120281014	CL-8-2	Solid	08/27/15 00:00	08/28/15 10:10
40120281015	CL-2-4	Solid	08/27/15 00:00	08/28/15 10:10
40120281016	CL-8-4	Solid	08/27/15 00:00	08/28/15 10:10
40120281017	CL-8-5	Solid	08/27/15 00:00	08/28/15 10:10
40120281018	CL-2-5	Solid	08/27/15 00:00	08/28/15 10:10
40120281019	CL-18-4	Solid	08/27/15 00:00	08/28/15 10:10
40120281020	CL-18-5	Solid	08/27/15 00:00	08/28/15 10:10
40120281021	CL-10-5	Solid	08/27/15 00:00	08/28/15 10:10
40120281022	CL-10-2	Solid	08/27/15 00:00	08/28/15 10:10
40120281023	CL-18-2	Solid	08/27/15 00:00	08/28/15 10:10
40120281024	CL-16-2	Solid	08/27/15 00:00	08/28/15 10:10
40120281025	CL-10-4	Solid	08/27/15 00:00	08/28/15 10:10
40120281026	CL-25	Solid	08/27/15 00:00	08/28/15 10:10
40120281027	CL-2	Solid	08/27/15 00:00	08/28/15 10:10
40120281028	CL-8	Solid	08/27/15 00:00	08/28/15 10:10
40120281029	CL-24	Solid	08/27/15 00:00	08/28/15 10:10
40120281030	CL-10	Solid	08/27/15 00:00	08/28/15 10:10
40120281031	CL-18	Solid	08/27/15 00:00	08/28/15 10:10
40120281032	CL-16	Solid	08/27/15 00:00	08/28/15 10:10
40120281033	CL-14	Solid	08/27/15 00:00	08/28/15 10:10

## REPORT OF LABORATORY ANALYSIS

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### SAMPLE ANALYTE COUNT

Project: 218938.0000 PH6 WPS CLAY & SED  
Pace Project No.: 40120281

Lab ID	Sample ID	Method	Analysts	Analytes Reported
		ASTM D2974-87	AH	1
40120281020	CL-18-5	EPA 6010	JBR	4
		ASTM D2974-87	AH	1
40120281021	CL-10-5	EPA 6010	JBR	4
		ASTM D2974-87	AH	1
40120281022	CL-10-2	EPA 6010	JBR	4
		ASTM D2974-87	AH	1
40120281023	CL-18-2	EPA 6010	JBR	4
		ASTM D2974-87	AH	1
40120281024	CL-16-2	EPA 6010	JBR	4
		ASTM D2974-87	AH	1
40120281025	CL-10-4	EPA 6010	JBR	4
		ASTM D2974-87	AH	1
40120281026	CL-25	EPA 6010	JBR	6
		ASTM D2974-87	AH	1
40120281027	CL-2	EPA 6010	JBR	6
		ASTM D2974-87	AH	1
40120281028	CL-8	EPA 6010	JBR	6
		ASTM D2974-87	AH	1
40120281029	CL-24	EPA 6010	JBR	6
		ASTM D2974-87	AH	1
40120281030	CL-10	EPA 6010	JBR	6
		ASTM D2974-87	AH	1
40120281031	CL-18	EPA 6010	JBR	6
		ASTM D2974-87	AH	1
40120281032	CL-16	EPA 6010	JBR	6
		ASTM D2974-87	AH	1
40120281033	CL-14	EPA 6010	JBR	6
		ASTM D2974-87	CMP	1

### REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: 218938.0000 PH6 WPS CLAY & SED  
Pace Project No.: 40120281

---

**Method:** EPA 6010  
**Description:** 6010 MET ICP  
**Client:** TRC - MADISON  
**Date:** September 01, 2015

### General Information:

33 samples were analyzed for EPA 6010. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

### Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

### Sample Preparation:

The samples were prepared in accordance with EPA 3050 with any exceptions noted below.

### Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

### Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

### Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

### Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

### Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/12502

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 40120280021

M0: Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

- MS (Lab ID: 1212811)
  - Boron
- MSD (Lab ID: 1212812)
  - Boron

QC Batch: MPRP/12504

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 40120281017

M0: Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

- MS (Lab ID: 1212854)
  - Calcium
- MSD (Lab ID: 1212855)
  - Calcium

R1: RPD value was outside control limits.

- MS (Lab ID: 1212854)
  - Calcium
- MSD (Lab ID: 1212855)

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: 218938.0000 PH6 WPS CLAY & SED  
Pace Project No.: 40120281

---

**Method:** EPA 6010  
**Description:** 6010 MET ICP  
**Client:** TRC - MADISON  
**Date:** September 01, 2015

QC Batch: MPRP/12504

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 40120281017

R1: RPD value was outside control limits.

- Calcium

### Additional Comments:

Analyte Comments:

QC Batch: MPRP/12502

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- CL-14-2 (Lab ID: 40120281003)
  - Arsenic
- CL-14-4 (Lab ID: 40120281001)
  - Arsenic
  - Lead
- CL-16-4 (Lab ID: 40120281004)
  - Arsenic
- CL-2-2 (Lab ID: 40120281013)
  - Arsenic
- CL-24-2 (Lab ID: 40120281007)
  - Arsenic
- CL-24-4 (Lab ID: 40120281012)
  - Arsenic
  - Lead
- CL-24-5 (Lab ID: 40120281008)
  - Arsenic
  - Lead
- CL-25-1 (Lab ID: 40120281011)
  - Arsenic
- CL-25-2 (Lab ID: 40120281010)
  - Arsenic
  - Lead
- CL-25-4 (Lab ID: 40120281009)
  - Arsenic
  - Lead
- CL-8-2 (Lab ID: 40120281014)
  - Arsenic
- CL-8-4 (Lab ID: 40120281016)
  - Arsenic
  - Lead

QC Batch: MPRP/12504

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- CL-10 (Lab ID: 40120281030)
  - Arsenic
  - Lead

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: 218938.0000 PH6 WPS CLAY & SED  
Pace Project No.: 40120281

---

**Method:** EPA 6010  
**Description:** 6010 MET ICP  
**Client:** TRC - MADISON  
**Date:** September 01, 2015

Analyte Comments:

QC Batch: MPRP/12504

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- CL-10-2 (Lab ID: 40120281022)
  - Arsenic
- CL-10-4 (Lab ID: 40120281025)
  - Arsenic
- CL-14 (Lab ID: 40120281033)
  - Arsenic
- CL-16 (Lab ID: 40120281032)
  - Arsenic
- CL-18 (Lab ID: 40120281031)
  - Arsenic
- CL-18-2 (Lab ID: 40120281023)
  - Arsenic
- CL-18-4 (Lab ID: 40120281019)
  - Arsenic
  - Lead
- CL-18-5 (Lab ID: 40120281020)
  - Arsenic
- CL-2 (Lab ID: 40120281027)
  - Arsenic
- CL-2-5 (Lab ID: 40120281018)
  - Arsenic
- CL-24 (Lab ID: 40120281029)
  - Arsenic
  - Lead
- CL-25 (Lab ID: 40120281026)
  - Arsenic
- CL-8 (Lab ID: 40120281028)
  - Arsenic

This data package has been reviewed for quality and completeness and is approved for release.

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: 218938.0000 PH6 WPS CLAY & SED

Pace Project No.: 40120281

**Sample: CL-25**      **Lab ID: 40120281026**      Collected: 08/27/15 00:00      Received: 08/28/15 10:10      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010 MET ICP</b>		Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	<1.5	mg/kg	4.7	1.5	2	08/28/15 14:09	08/31/15 18:45	7440-38-2	D3
Boron	135	mg/kg	11.8	0.37	1	08/28/15 14:09	08/31/15 21:16	7440-42-8	
Calcium	2030	mg/kg	118	3.2	1	08/28/15 14:09	08/31/15 21:16	7440-70-2	
Lead	3.1	mg/kg	2.4	1.0	2	08/28/15 14:09	08/31/15 18:45	7439-92-1	
Selenium	<0.91	mg/kg	2.4	0.91	1	08/28/15 14:09	08/31/15 21:16	7782-49-2	
Zinc	26.8	mg/kg	4.7	0.45	1	08/28/15 14:09	08/31/15 21:16	7440-66-6	
<b>Percent Moisture</b>		Analytical Method: ASTM D2974-87							
Percent Moisture	19.9	%	0.10	0.10	1		08/31/15 08:32		

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: 218938.0000 PH6 WPS CLAY & SED

Pace Project No.: 40120281

**Sample: CL-2**      **Lab ID: 40120281027**      Collected: 08/27/15 00:00      Received: 08/28/15 10:10      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010 MET ICP</b>		Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	<b>2.7J</b>	mg/kg	4.7	1.5	2	08/28/15 14:09	08/31/15 18:47	7440-38-2	D3
Boron	<b>116</b>	mg/kg	11.8	0.37	1	08/28/15 14:09	08/31/15 21:19	7440-42-8	
Calcium	<b>1630</b>	mg/kg	118	3.2	1	08/28/15 14:09	08/31/15 21:19	7440-70-2	
Lead	<b>5.0</b>	mg/kg	2.4	1.0	2	08/28/15 14:09	08/31/15 18:47	7439-92-1	
Selenium	<b>&lt;0.91</b>	mg/kg	2.4	0.91	1	08/28/15 14:09	08/31/15 21:19	7782-49-2	
Zinc	<b>31.3</b>	mg/kg	4.7	0.45	1	08/28/15 14:09	08/31/15 21:19	7440-66-6	
<b>Percent Moisture</b>		Analytical Method: ASTM D2974-87							
Percent Moisture	<b>22.5</b>	%	0.10	0.10	1		08/31/15 08:32		

## REPORT OF LABORATORY ANALYSIS

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## ANALYTICAL RESULTS

Project: 218938.0000 PH6 WPS CLAY & SED

Pace Project No.: 40120281

**Sample: CL-8**      **Lab ID: 40120281028**      Collected: 08/27/15 00:00      Received: 08/28/15 10:10      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010 MET ICP</b>		Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	<b>2.6J</b>	mg/kg	4.6	1.5	2	08/28/15 14:09	08/31/15 18:50	7440-38-2	D3
Boron	<b>163</b>	mg/kg	11.5	0.36	1	08/28/15 14:09	08/31/15 21:21	7440-42-8	
Calcium	<b>2410</b>	mg/kg	115	3.1	1	08/28/15 14:09	08/31/15 21:21	7440-70-2	
Lead	<b>4.3</b>	mg/kg	2.3	0.99	2	08/28/15 14:09	08/31/15 18:50	7439-92-1	
Selenium	<b>&lt;0.88</b>	mg/kg	2.3	0.88	1	08/28/15 14:09	08/31/15 21:21	7782-49-2	
Zinc	<b>29.1</b>	mg/kg	4.6	0.44	1	08/28/15 14:09	08/31/15 21:21	7440-66-6	
<b>Percent Moisture</b>		Analytical Method: ASTM D2974-87							
Percent Moisture	<b>21.2</b>	%	0.10	0.10	1		08/31/15 08:32		

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## ANALYTICAL RESULTS

Project: 218938.0000 PH6 WPS CLAY & SED

Pace Project No.: 40120281

**Sample: CL-24**      **Lab ID: 40120281029**      Collected: 08/27/15 00:00      Received: 08/28/15 10:10      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010 MET ICP</b>		Analytical Method: EPA 6010    Preparation Method: EPA 3050							
Arsenic	<1.4	mg/kg	4.4	1.4	2	08/28/15 14:09	08/31/15 18:52	7440-38-2	D3
Boron	123	mg/kg	11.1	0.35	1	08/28/15 14:09	08/31/15 21:23	7440-42-8	
Calcium	1400	mg/kg	111	3.0	1	08/28/15 14:09	08/31/15 21:23	7440-70-2	
Lead	<0.96	mg/kg	2.2	0.96	2	08/28/15 14:09	08/31/15 18:52	7439-92-1	D3
Selenium	<0.86	mg/kg	2.2	0.86	1	08/28/15 14:09	08/31/15 21:23	7782-49-2	
Zinc	45.1	mg/kg	4.4	0.43	1	08/28/15 14:09	08/31/15 21:23	7440-66-6	
<b>Percent Moisture</b>		Analytical Method: ASTM D2974-87							
Percent Moisture	20.2	%	0.10	0.10	1		08/31/15 08:32		

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## ANALYTICAL RESULTS

Project: 218938.0000 PH6 WPS CLAY & SED

Pace Project No.: 40120281

**Sample: CL-10**      **Lab ID: 40120281030**      Collected: 08/27/15 00:00      Received: 08/28/15 10:10      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010 MET ICP</b>		Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	<b>1.9J</b>	mg/kg	5.2	1.6	2	08/28/15 14:09	08/31/15 18:54	7440-38-2	D3
Boron	<b>120</b>	mg/kg	12.9	0.40	1	08/28/15 14:09	08/31/15 21:25	7440-42-8	
Calcium	<b>1900</b>	mg/kg	129	3.5	1	08/28/15 14:09	08/31/15 21:25	7440-70-2	
Lead	<b>1.1J</b>	mg/kg	2.6	1.1	2	08/28/15 14:09	08/31/15 18:54	7439-92-1	D3
Selenium	<b>&lt;1.0</b>	mg/kg	2.6	1.0	1	08/28/15 14:09	08/31/15 21:25	7782-49-2	
Zinc	<b>15.4</b>	mg/kg	5.2	0.50	1	08/28/15 14:09	08/31/15 21:25	7440-66-6	
<b>Percent Moisture</b>		Analytical Method: ASTM D2974-87							
Percent Moisture	<b>24.1</b>	%	0.10	0.10	1		08/31/15 08:32		

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## ANALYTICAL RESULTS

Project: 218938.0000 PH6 WPS CLAY & SED

Pace Project No.: 40120281

**Sample: CL-18**      **Lab ID: 40120281031**      Collected: 08/27/15 00:00      Received: 08/28/15 10:10      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010 MET ICP</b>		Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	<b>3.1J</b>	mg/kg	4.9	1.5	2	08/28/15 14:09	08/31/15 18:56	7440-38-2	D3
Boron	<b>129</b>	mg/kg	12.2	0.38	1	08/28/15 14:09	08/31/15 21:27	7440-42-8	
Calcium	<b>1880</b>	mg/kg	122	3.3	1	08/28/15 14:09	08/31/15 21:27	7440-70-2	
Lead	<b>4.0</b>	mg/kg	2.4	1.0	2	08/28/15 14:09	08/31/15 18:56	7439-92-1	
Selenium	<b>&lt;0.94</b>	mg/kg	2.4	0.94	1	08/28/15 14:09	08/31/15 21:27	7782-49-2	
Zinc	<b>56.0</b>	mg/kg	4.9	0.47	1	08/28/15 14:09	08/31/15 21:27	7440-66-6	
<b>Percent Moisture</b>		Analytical Method: ASTM D2974-87							
Percent Moisture	<b>21.6</b>	%	0.10	0.10	1		08/31/15 08:32		

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## ANALYTICAL RESULTS

Project: 218938.0000 PH6 WPS CLAY & SED

Pace Project No.: 40120281

**Sample: CL-16**      **Lab ID: 40120281032**      Collected: 08/27/15 00:00      Received: 08/28/15 10:10      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010 MET ICP</b>		Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	<b>3.1J</b>	mg/kg	4.9	1.6	2	08/28/15 14:09	08/31/15 18:58	7440-38-2	D3
Boron	<b>104</b>	mg/kg	12.3	0.39	1	08/28/15 14:09	08/31/15 21:29	7440-42-8	
Calcium	<b>1820</b>	mg/kg	123	3.4	1	08/28/15 14:09	08/31/15 21:29	7440-70-2	
Lead	<b>5.2</b>	mg/kg	2.5	1.1	2	08/28/15 14:09	08/31/15 18:58	7439-92-1	
Selenium	<b>&lt;0.95</b>	mg/kg	2.5	0.95	1	08/28/15 14:09	08/31/15 21:29	7782-49-2	
Zinc	<b>32.4</b>	mg/kg	4.9	0.48	1	08/28/15 14:09	08/31/15 21:29	7440-66-6	
<b>Percent Moisture</b>		Analytical Method: ASTM D2974-87							
Percent Moisture	<b>20.8</b>	%	0.10	0.10	1		08/31/15 08:33		

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### ANALYTICAL RESULTS

Project: 218938.0000 PH6 WPS CLAY & SED

Pace Project No.: 40120281

**Sample: CL-14**      **Lab ID: 40120281033**      Collected: 08/27/15 00:00      Received: 08/28/15 10:10      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010 MET ICP</b>		Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	<b>3.0J</b>	mg/kg	4.8	1.5	2	08/28/15 14:09	08/31/15 19:05	7440-38-2	D3
Boron	<b>153</b>	mg/kg	12.1	0.38	1	08/28/15 14:09	08/31/15 21:32	7440-42-8	
Calcium	<b>1850</b>	mg/kg	121	3.3	1	08/28/15 14:09	08/31/15 21:32	7440-70-2	
Lead	<b>5.2</b>	mg/kg	2.4	1.0	2	08/28/15 14:09	08/31/15 19:05	7439-92-1	
Selenium	<b>&lt;0.93</b>	mg/kg	2.4	0.93	1	08/28/15 14:09	08/31/15 21:32	7782-49-2	
Zinc	<b>43.9</b>	mg/kg	4.8	0.47	1	08/28/15 14:09	08/31/15 21:32	7440-66-6	
<b>Percent Moisture</b>		Analytical Method: ASTM D2974-87							
Percent Moisture	<b>24.1</b>	%	0.10	0.10	1		08/28/15 17:23		

### REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: 218938.0000 PH6 WPS CLAY & SED

Pace Project No.: 40120281

QC Batch:	MPRP/12502	Analysis Method:	EPA 6010
QC Batch Method:	EPA 3050	Analysis Description:	6010 MET
Associated Lab Samples:	40120281001, 40120281002, 40120281003, 40120281004, 40120281005, 40120281006, 40120281007, 40120281008, 40120281009, 40120281010, 40120281011, 40120281012, 40120281013, 40120281014, 40120281015, 40120281016		

METHOD BLANK:	1212809	Matrix:	Solid
Associated Lab Samples:	40120281001, 40120281002, 40120281003, 40120281004, 40120281005, 40120281006, 40120281007, 40120281008, 40120281009, 40120281010, 40120281011, 40120281012, 40120281013, 40120281014, 40120281015, 40120281016		

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/kg	<0.64	2.0	08/31/15 12:02	
Boron	mg/kg	<0.31	10.0	08/31/15 12:02	
Lead	mg/kg	<0.43	1.0	08/31/15 12:02	
Selenium	mg/kg	<0.77	2.0	08/31/15 12:02	

LABORATORY CONTROL SAMPLE: 1212810						
Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/kg	50	50.4	101	80-120	
Boron	mg/kg	50	48.3	97	80-120	
Lead	mg/kg	50	50.6	101	80-120	
Selenium	mg/kg	50	50.8	102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1212811												1212812	
Parameter	Units	40120280021 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
													Arsenic
Boron	mg/kg	123	65.6	65.9	243	234	182	168	75-125	4	20	M0	
Lead	mg/kg	4.3	65.6	65.9	67.5	67.6	96	96	75-125	0	20		
Selenium	mg/kg	<1.0	65.6	65.9	58.0	60.2	87	90	75-125	4	20		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

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### QUALITY CONTROL DATA

Project: 218938.0000 PH6 WPS CLAY & SED  
 QC Project No.: 40120281

QC Batch: MPRP/12504 Analysis Method: EPA 6010  
 QC Batch Method: EPA 3050 Analysis Description: 6010 MET  
 Associated Lab Samples: 40120281017, 40120281018, 40120281019, 40120281020, 40120281021, 40120281022, 40120281023,  
 40120281024, 40120281025, 40120281026, 40120281027, 40120281028, 40120281029, 40120281030,  
 40120281031, 40120281032, 40120281033

METHOD BLANK: 1212852 Matrix: Solid  
 Associated Lab Samples: 40120281017, 40120281018, 40120281019, 40120281020, 40120281021, 40120281022, 40120281023,  
 40120281024, 40120281025, 40120281026, 40120281027, 40120281028, 40120281029, 40120281030,  
 40120281031, 40120281032, 40120281033

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/kg	<0.64	2.0	08/31/15 18:12	
Boron	mg/kg	<0.31	10.0	08/31/15 18:12	
Calcium	mg/kg	<2.7	100	08/31/15 18:12	
Lead	mg/kg	<0.43	1.0	08/31/15 18:12	
Selenium	mg/kg	<0.77	2.0	08/31/15 18:12	
Zinc	mg/kg	<0.39	4.0	08/31/15 18:12	

LABORATORY CONTROL SAMPLE: 1212853

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/kg	50	49.5	99	80-120	
Boron	mg/kg	50	47.3	95	80-120	
Calcium	mg/kg	500	509	102	80-120	
Lead	mg/kg	50	49.9	100	80-120	
Selenium	mg/kg	50	50.4	101	80-120	
Zinc	mg/kg	50	52.1	104	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1212854 1212855

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		40120281017 Result	Spike Conc.	Spike Conc.	MS Result							MSD Result
Arsenic	mg/kg	1.7J	51.2	51.4	50.3	49.1	95	92	75-125	2	20	
Boron	mg/kg	3.4J	51.2	51.4	53.1	51.5	97	94	75-125	3	20	
Calcium	mg/kg	1770	512	514	2570	1890	156	24	75-125	30	20	M0, R1
Lead	mg/kg	2.7	51.2	51.4	51.2	50.0	95	92	75-125	2	20	
Selenium	mg/kg	<0.79	51.2	51.4	48.3	48.8	93	94	75-125	1	20	
Zinc	mg/kg	19.5	51.2	51.4	69.3	68.0	97	94	75-125	2	20	

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### QUALITY CONTROL DATA

Project: 218938.0000 PH6 WPS CLAY & SED

Pace Project No.: 40120281

QC Batch: PMST/11698

Analysis Method: ASTM D2974-87

QC Batch Method: ASTM D2974-87

Analysis Description: Dry Weight/Percent Moisture

Associated Lab Samples: 40120281001, 40120281002, 40120281003, 40120281004, 40120281005, 40120281006, 40120281007

SAMPLE DUPLICATE: 1213080

Parameter	Units	40120280023 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	22.9	23.2	1	10	

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### QUALITY CONTROL DATA

Project: 218938.0000 PH6 WPS CLAY & SED

Pace Project No.: 40120281

QC Batch: PMST/11701

Analysis Method: ASTM D2974-87

QC Batch Method: ASTM D2974-87

Analysis Description: Dry Weight/Percent Moisture

Associated Lab Samples: 40120281033

SAMPLE DUPLICATE: 1213131

Parameter	Units	40120281033 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	24.1	23.9	1	10	

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## QUALIFIERS

Project: 218938.0000 PH6 WPS CLAY & SED

Pace Project No.: 40120281

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### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor and percent moisture.

LOQ - Limit of Quantitation adjusted for dilution factor and percent moisture.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected at or above the adjusted LOD.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

### ANALYTE QUALIFIERS

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

M0 Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

R1 RPD value was outside control limits.

## REPORT OF LABORATORY ANALYSIS

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(Please Print Clearly)



UPPER MIDWEST REGION  
MN: 612-607-1700 WI: 920-469-2436

# CHAIN OF CUSTODY

A=None B=HCl C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH  
 H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

Company Name: **TRC**  
 Branch/Location: **MADISON FSD**  
 Project Contact: **SOUTHMAN FORESTREAM**  
 Phone: **608-826-3423**  
 Project Number: **2189381000 Pkt 0**  
 Project Name: **WPS CLAY & SED BAIN**  
 Project State: **WI**  
 Sampled By (Print): **Matt Williams**  
 Sampled By (Sign): *[Signature]*  
 PO #: \_\_\_\_\_  
 Regulatory Program: \_\_\_\_\_

**Data Package Options**  
 (billable)  
 EPA Level III  
 EPA Level IV  
 On your sample (billable)  
 NOT needed on your sample

PAGE LAB #	CLIENT FIELD ID	DATE	COLLECTION TIME	MATRIX	Analyses Requested		V/I/N	Pick Letter
					Y	N		
026	CL-25	8/24		S	X	METALS - BORDN, ARSENIC, LEAD, SELENIUM		
027	CL-2							
028	CL-8							
029	CL-24							
030	CL-10							
031	CL-18							
032	CL-16							
033	CL-14							

**Matrix Codes**  
 W = Water  
 DW = Drinking Water  
 GW = Ground Water  
 SW = Surface Water  
 WW = Waste Water  
 WP = Wipes  
 SI = Sludge

**Filtered?** (YES/NO)  
**Preservation (CODE)**

**Quote #:** \_\_\_\_\_  
**Mail To Contact:** \_\_\_\_\_  
**Mail To Company:** \_\_\_\_\_  
**Mail To Address:** \_\_\_\_\_  
**Invoice To Contact:** \_\_\_\_\_  
**Invoice To Company:** \_\_\_\_\_  
**Invoice To Address:** \_\_\_\_\_  
**Invoice To Phone:** \_\_\_\_\_  
**CLIENT COMMENTS** \_\_\_\_\_  
**LAB COMMENTS (Lab Use Only)** *1 stop A*  
**Profile #** \_\_\_\_\_

**Rush Turnaround Time Requested - Prelims**  
 (Rush TAT subject to approval/surcharge)  
 Date Needed: **Wed 9/1/13**  
 Transmit Prelim Rush Results by (complete what you want): \_\_\_\_\_  
 Email #1: \_\_\_\_\_  
 Email #2: \_\_\_\_\_  
 Telephone: \_\_\_\_\_  
 Fax: \_\_\_\_\_

**Relinquished By:** *Matt Williams* **Date/Time:** *8/27/13 5:40p*  
**Received By:** *Alexander Tylus* **Date/Time:** *8/28/13 10:00*  
**Relinquished By:** *Ted Sy* **Date/Time:** \_\_\_\_\_  
**Received By:** \_\_\_\_\_ **Date/Time:** \_\_\_\_\_

**Relinquished By:** \_\_\_\_\_ **Date/Time:** \_\_\_\_\_  
**Received By:** \_\_\_\_\_ **Date/Time:** \_\_\_\_\_

**Relinquished By:** \_\_\_\_\_ **Date/Time:** \_\_\_\_\_  
**Received By:** \_\_\_\_\_ **Date/Time:** \_\_\_\_\_

Sample Condition Upon Receipt

Pace Analytical Services, Inc.  
1241 Bellevue Street, Suite 9  
Green Bay, WI 54302



Project #

WO#: 40120281



Client Name: TRC

Courier:  Fed Ex  UPS  Client  Pace Other: \_\_\_\_\_

Tracking #: 781233239197

Custody Seal on Cooler/Box Present:  yes  no Seals intact:  yes  no

Custody Seal on Samples Present:  yes  no Seals intact:  yes  no

Packing Material:  Bubble Wrap  Bubble Bags  None  Other \_\_\_\_\_

Thermometer Used N/A Type of Ice:  Wet  Blue  Dry  None  Samples on ice, cooling process has begun

Cooler Temperature Uncorr: ROT / Corr: \_\_\_\_\_ Biological Tissue is Frozen:  yes  no

Temp Blank Present:  yes  no  no

Person examining contents:  
Date: 8/28/15  
Initials: SPW

Temp should be above freezing to 6°C for all sample except Biota.  
Frozen Biota Samples should be received ≤ 0°C.

Comments:

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2. No collect time 8/28/15 SPW
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
- VOA Samples frozen upon receipt	<input type="checkbox"/> Yes <input type="checkbox"/> No	Date/Time:
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	7. 9/1/15 JAT 8/28/15 SPW
Sufficient Volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
-Pace IR Containers Used:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	12. No collect date on all samples 8/28/15 SPW
-Includes date/time/ID/Analysis Matrix:	<u>S</u>	
All containers needing preservation have been checked. (Non-Compliance noted in 13.)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13. <input type="checkbox"/> HNO3 <input type="checkbox"/> H2SO4 <input type="checkbox"/> NaOH <input type="checkbox"/> NaOH + ZnAct
All containers needing preservation are found to be in compliance with EPA recommendation. (HNO3, H2SO4 ≤2; NaOH+ZnAct ≥9, NaOH ≥12)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
exceptions: VOA, coliform, TOC, TOX, TOH, O&G, WIDROW, Phenolics, OTHER:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed
		Lab Std #ID of preservative
		Date/Time:
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution:

If checked, see attached form for additional comments

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Comments/ Resolution: \_\_\_\_\_

Project Manager Review:

AMH for TN

Date: 8/28/15



October 01, 2015

Jonathan Hotstream  
TRC - Madison  
708 Heartland Trail  
Madison, WI 53717

RE: Project: 218938 WPS-WESTON 3  
Pace Project No.: 40121216

Dear Jonathan Hotstream:

Enclosed are the analytical results for sample(s) received by the laboratory on September 17, 2015. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Tod Noltemeyer  
tod.noltemeyer@pacelabs.com  
Project Manager

Enclosures



## REPORT OF LABORATORY ANALYSIS

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## CERTIFICATIONS

Project: 218938 WPS-WESTON 3

Pace Project No.: 40121216

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### Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302

Florida/NELAP Certification #: E87948

Illinois Certification #: 200050

Kentucky Certification #: 82

Louisiana Certification #: 04168

Minnesota Certification #: 055-999-334

Virginia VELAP ID: 460263

North Dakota Certification #: R-150

South Carolina Certification #: 83006001

Texas Certification #: T104704529-14-1

US Dept of Agriculture #: S-76505

Virginia VELAP ID: 460263

Virginia VELAP Certification ID: 460263

Wisconsin Certification #: 405132750

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## SAMPLE SUMMARY

Project: 218938 WPS-WESTON 3

Pace Project No.: 40121216

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40121216001	CL-1	Solid	09/16/15 14:30	09/17/15 08:10
40121216002	CL-3	Solid	09/16/15 14:30	09/17/15 08:10
40121216003	CL-5	Solid	09/16/15 14:30	09/17/15 08:10
40121216004	CL-6	Solid	09/16/15 14:30	09/17/15 08:10
40121216005	CL-7	Solid	09/16/15 14:30	09/17/15 08:10
40121216006	CL-11	Solid	09/16/15 14:30	09/17/15 08:10
40121216007	CL-13	Solid	09/16/15 14:30	09/17/15 08:10
40121216008	CL-15	Solid	09/16/15 14:30	09/17/15 08:10

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### SAMPLE ANALYTE COUNT

Project: 218938 WPS-WESTON 3

Pace Project No.: 40121216

Lab ID	Sample ID	Method	Analysts	Analytes Reported
40121216001	CL-1	EPA 6010	DLB	5
		ASTM D2974-87	SKW	1
40121216002	CL-3	EPA 6010	DLB	5
		ASTM D2974-87	SKW	1
40121216003	CL-5	EPA 6010	DLB	5
		ASTM D2974-87	SKW	1
40121216004	CL-6	EPA 6010	DLB	5
		ASTM D2974-87	SKW	1
40121216005	CL-7	EPA 6010	DLB	5
		ASTM D2974-87	SKW	1
40121216006	CL-11	EPA 6010	DLB	5
		ASTM D2974-87	SKW	1
40121216007	CL-13	EPA 6010	DLB	5
		ASTM D2974-87	SKW	1
40121216008	CL-15	EPA 6010	DLB	5
		ASTM D2974-87	SKW	1

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## PROJECT NARRATIVE

Project: 218938 WPS-WESTON 3  
Pace Project No.: 40121216

---

**Method:** EPA 6010  
**Description:** 6010 MET ICP  
**Client:** TRC - MADISON  
**Date:** October 01, 2015

### General Information:

8 samples were analyzed for EPA 6010. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

### Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

### Sample Preparation:

The samples were prepared in accordance with EPA 3050 with any exceptions noted below.

### Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

### Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

### Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

QC Batch: MPRP/12655

B: Analyte was detected in the associated method blank.

- BLANK for HBN 205264 [MPRP/126 (Lab ID: 1228464)
- Lead

### Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

### Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MPRP/12655

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 40121216001

M0: Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

- MS (Lab ID: 1228466)
  - Boron
- MSD (Lab ID: 1228467)
  - Boron

### Additional Comments:

## REPORT OF LABORATORY ANALYSIS

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## PROJECT NARRATIVE

Project: 218938 WPS-WESTON 3

Pace Project No.: 40121216

---

**Method:** EPA 6010

**Description:** 6010 MET ICP

**Client:** TRC - MADISON

**Date:** October 01, 2015

Analyte Comments:

QC Batch: MPRP/12655

D3: Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

- CL-1 (Lab ID: 40121216001)
  - Arsenic
- CL-11 (Lab ID: 40121216006)
  - Arsenic
  - Lead
- CL-13 (Lab ID: 40121216007)
  - Arsenic
  - Lead
- CL-15 (Lab ID: 40121216008)
  - Arsenic
- CL-3 (Lab ID: 40121216002)
  - Arsenic
- CL-5 (Lab ID: 40121216003)
  - Arsenic
  - Lead
- CL-6 (Lab ID: 40121216004)
  - Arsenic
  - Lead
- CL-7 (Lab ID: 40121216005)
  - Arsenic
  - Lead

This data package has been reviewed for quality and completeness and is approved for release.

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## ANALYTICAL RESULTS

Project: 218938 WPS-WESTON 3

Pace Project No.: 40121216

**Sample:** CL-1      **Lab ID:** 40121216001      Collected: 09/16/15 14:30      Received: 09/17/15 08:10      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010 MET ICP</b>		Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	<4.2	mg/kg	13.1	4.2	5	09/28/15 13:21	09/30/15 14:14	7440-38-2	D3
Boron	202	mg/kg	13.1	0.41	1	09/28/15 13:21	09/29/15 20:36	7440-42-8	M0
Calcium	1820	mg/kg	131	3.6	1	09/28/15 13:21	09/29/15 20:36	7440-70-2	
Lead	5.3J	mg/kg	6.6	2.8	5	09/28/15 13:21	09/30/15 14:14	7439-92-1	B
Zinc	33.4	mg/kg	5.2	0.50	1	09/28/15 13:21	09/29/15 20:36	7440-66-6	
<b>Percent Moisture</b>		Analytical Method: ASTM D2974-87							
Percent Moisture	24.3	%	0.10	0.10	1		09/18/15 15:50		

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## ANALYTICAL RESULTS

Project: 218938 WPS-WESTON 3

Pace Project No.: 40121216

**Sample: CL-3**      **Lab ID: 40121216002**      Collected: 09/16/15 14:30      Received: 09/17/15 08:10      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010 MET ICP</b>		Analytical Method: EPA 6010    Preparation Method: EPA 3050							
Arsenic	<b>&lt;3.4</b>	mg/kg	10.6	3.4	5	09/28/15 13:21	09/30/15 14:21	7440-38-2	D3
Boron	<b>99.4</b>	mg/kg	10.6	0.33	1	09/28/15 13:21	09/29/15 20:43	7440-42-8	
Calcium	<b>1430</b>	mg/kg	106	2.9	1	09/28/15 13:21	09/29/15 20:43	7440-70-2	
Lead	<b>6.3</b>	mg/kg	5.3	2.3	5	09/28/15 13:21	09/30/15 14:21	7439-92-1	
Zinc	<b>41.9</b>	mg/kg	4.2	0.41	1	09/28/15 13:21	09/29/15 20:43	7440-66-6	
<b>Percent Moisture</b>		Analytical Method: ASTM D2974-87							
Percent Moisture	<b>14.9</b>	%	0.10	0.10	1		09/18/15 15:50		

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## ANALYTICAL RESULTS

Project: 218938 WPS-WESTON 3

Pace Project No.: 40121216

**Sample:** CL-5      **Lab ID:** 40121216003      Collected: 09/16/15 14:30      Received: 09/17/15 08:10      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010 MET ICP</b>		Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	<b>&lt;3.8</b>	mg/kg	11.8	3.8	5	09/28/15 13:21	09/30/15 14:24	7440-38-2	D3
Boron	<b>85.2</b>	mg/kg	11.8	0.37	1	09/28/15 13:21	09/29/15 20:50	7440-42-8	
Calcium	<b>2140</b>	mg/kg	118	3.2	1	09/28/15 13:21	09/29/15 20:50	7440-70-2	
Lead	<b>&lt;2.5</b>	mg/kg	5.9	2.5	5	09/28/15 13:21	09/30/15 14:24	7439-92-1	D3
Zinc	<b>36.7</b>	mg/kg	4.7	0.45	1	09/28/15 13:21	09/29/15 20:50	7440-66-6	
<b>Percent Moisture</b>		Analytical Method: ASTM D2974-87							
Percent Moisture	<b>20.9</b>	%	0.10	0.10	1		09/18/15 15:50		

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## ANALYTICAL RESULTS

Project: 218938 WPS-WESTON 3

Pace Project No.: 40121216

**Sample: CL-6**      **Lab ID: 40121216004**      Collected: 09/16/15 14:30      Received: 09/17/15 08:10      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010 MET ICP</b>		Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	<3.7	mg/kg	11.5	3.7	5	09/28/15 13:21	09/30/15 14:26	7440-38-2	D3
Boron	113	mg/kg	11.5	0.36	1	09/28/15 13:21	09/29/15 20:52	7440-42-8	
Calcium	1350	mg/kg	115	3.1	1	09/28/15 13:21	09/29/15 20:52	7440-70-2	
Lead	3.5J	mg/kg	5.7	2.5	5	09/28/15 13:21	09/30/15 14:26	7439-92-1	B,D3
Zinc	40.1	mg/kg	4.6	0.44	1	09/28/15 13:21	09/29/15 20:52	7440-66-6	
<b>Percent Moisture</b>		Analytical Method: ASTM D2974-87							
Percent Moisture	22.2	%	0.10	0.10	1		09/18/15 15:51		

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## ANALYTICAL RESULTS

Project: 218938 WPS-WESTON 3

Pace Project No.: 40121216

**Sample: CL-7**      **Lab ID: 40121216005**      Collected: 09/16/15 14:30      Received: 09/17/15 08:10      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010 MET ICP</b>		Analytical Method: EPA 6010    Preparation Method: EPA 3050							
Arsenic	<3.5	mg/kg	11.1	3.5	5	09/28/15 13:21	09/30/15 14:29	7440-38-2	D3
Boron	159	mg/kg	11.1	0.35	1	09/28/15 13:21	09/29/15 20:55	7440-42-8	
Calcium	2040	mg/kg	111	3.0	1	09/28/15 13:21	09/29/15 20:55	7440-70-2	
Lead	2.5J	mg/kg	5.6	2.4	5	09/28/15 13:21	09/30/15 14:29	7439-92-1	B,D3
Zinc	40.4	mg/kg	4.4	0.43	1	09/28/15 13:21	09/29/15 20:55	7440-66-6	
<b>Percent Moisture</b>		Analytical Method: ASTM D2974-87							
Percent Moisture	15.2	%	0.10	0.10	1		09/18/15 15:51		

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## ANALYTICAL RESULTS

Project: 218938 WPS-WESTON 3

Pace Project No.: 40121216

**Sample: CL-11**      **Lab ID: 40121216006**      Collected: 09/16/15 14:30      Received: 09/17/15 08:10      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010 MET ICP</b>		Analytical Method: EPA 6010    Preparation Method: EPA 3050							
Arsenic	<b>&lt;3.9</b>	mg/kg	12.3	3.9	5	09/28/15 13:21	09/30/15 14:31	7440-38-2	D3
Boron	<b>154</b>	mg/kg	12.3	0.38	1	09/28/15 13:21	09/29/15 20:57	7440-42-8	
Calcium	<b>1570</b>	mg/kg	123	3.4	1	09/28/15 13:21	09/29/15 20:57	7440-70-2	
Lead	<b>3.0J</b>	mg/kg	6.1	2.6	5	09/28/15 13:21	09/30/15 14:31	7439-92-1	B,D3
Zinc	<b>55.3</b>	mg/kg	4.9	0.47	1	09/28/15 13:21	09/29/15 20:57	7440-66-6	
<b>Percent Moisture</b>		Analytical Method: ASTM D2974-87							
Percent Moisture	<b>18.9</b>	%	0.10	0.10	1		09/18/15 15:51		

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## ANALYTICAL RESULTS

Project: 218938 WPS-WESTON 3

Pace Project No.: 40121216

**Sample: CL-13**      **Lab ID: 40121216007**      Collected: 09/16/15 14:30      Received: 09/17/15 08:10      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010 MET ICP</b>		Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	<b>&lt;3.0</b>	mg/kg	9.6	3.0	5	09/28/15 13:21	09/30/15 14:33	7440-38-2	D3
Boron	<b>203</b>	mg/kg	9.6	0.30	1	09/28/15 13:21	09/29/15 20:59	7440-42-8	
Calcium	<b>1930</b>	mg/kg	95.6	2.6	1	09/28/15 13:21	09/29/15 20:59	7440-70-2	
Lead	<b>2.3J</b>	mg/kg	4.8	2.1	5	09/28/15 13:21	09/30/15 14:33	7439-92-1	B,D3
Zinc	<b>64.6</b>	mg/kg	3.8	0.37	1	09/28/15 13:21	09/29/15 20:59	7440-66-6	
<b>Percent Moisture</b>		Analytical Method: ASTM D2974-87							
Percent Moisture	<b>11.2</b>	%	0.10	0.10	1		09/18/15 15:51		

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## ANALYTICAL RESULTS

Project: 218938 WPS-WESTON 3

Pace Project No.: 40121216

**Sample: CL-15**      **Lab ID: 40121216008**      Collected: 09/16/15 14:30      Received: 09/17/15 08:10      Matrix: Solid

*Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.*

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6010 MET ICP</b>		Analytical Method: EPA 6010 Preparation Method: EPA 3050							
Arsenic	<b>&lt;3.5</b>	mg/kg	11.0	3.5	5	09/28/15 13:21	09/30/15 14:36	7440-38-2	D3
Boron	<b>111</b>	mg/kg	11.0	0.34	1	09/28/15 13:21	09/29/15 21:02	7440-42-8	
Calcium	<b>1430</b>	mg/kg	110	3.0	1	09/28/15 13:21	09/29/15 21:02	7440-70-2	
Lead	<b>5.6</b>	mg/kg	5.5	2.4	5	09/28/15 13:21	09/30/15 14:36	7439-92-1	
Zinc	<b>38.0</b>	mg/kg	4.4	0.42	1	09/28/15 13:21	09/29/15 21:02	7440-66-6	
<b>Percent Moisture</b>		Analytical Method: ASTM D2974-87							
Percent Moisture	<b>23.4</b>	%	0.10	0.10	1		09/18/15 15:51		

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA

Project: 218938 WPS-WESTON 3  
Pace Project No.: 40121216

QC Batch: MPRP/12655 Analysis Method: EPA 6010  
QC Batch Method: EPA 3050 Analysis Description: 6010 MET  
Associated Lab Samples: 40121216001, 40121216002, 40121216003, 40121216004, 40121216005, 40121216006, 40121216007, 40121216008

METHOD BLANK: 1228464 Matrix: Solid  
Associated Lab Samples: 40121216001, 40121216002, 40121216003, 40121216004, 40121216005, 40121216006, 40121216007, 40121216008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	mg/kg	<0.64	2.0	09/29/15 20:32	
Boron	mg/kg	0.57J	10.0	09/29/15 20:32	
Calcium	mg/kg	9.5J	100	09/29/15 20:32	
Lead	mg/kg	0.44J	1.0	09/29/15 20:32	
Zinc	mg/kg	<0.39	4.0	09/29/15 20:32	

LABORATORY CONTROL SAMPLE: 1228465

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	mg/kg	50	48.0	96	80-120	
Boron	mg/kg	50	48.4	97	80-120	
Calcium	mg/kg	500	497	99	80-120	
Lead	mg/kg	50	49.6	99	80-120	
Zinc	mg/kg	50	50.0	100	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1228466 1228467

Parameter	Units	40121216001		MSD		MSD		% Rec	% Rec	% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	Spike Conc.	MS Result	MSD Result	MS % Rec						
Arsenic	mg/kg	<4.2	65.8	65.7	67.2	63.3	102	96	75-125	6	20		
Boron	mg/kg	202	65.8	65.7	370	365	256	249	75-125	1	20	M0	
Calcium	mg/kg	1820	658	657	2520	2480	107	102	75-125	2	20		
Lead	mg/kg	5.3J	65.8	65.7	68.6	68.6	96	96	75-125	0	20		
Zinc	mg/kg	33.4	65.8	65.7	97.7	100	98	102	75-125	3	20		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

### REPORT OF LABORATORY ANALYSIS

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## QUALIFIERS

Project: 218938 WPS-WESTON 3

Pace Project No.: 40121216

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### DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor and percent moisture.

LOQ - Limit of Quantitation adjusted for dilution factor and percent moisture.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected at or above the adjusted LOD.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

### ANALYTE QUALIFIERS

B Analyte was detected in the associated method blank.

D3 Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

M0 Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

## REPORT OF LABORATORY ANALYSIS

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### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 218938 WPS-WESTON 3

Pace Project No.: 40121216

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40121216001	CL-1	EPA 3050	MPRP/12655	EPA 6010	ICP/11224
40121216002	CL-3	EPA 3050	MPRP/12655	EPA 6010	ICP/11224
40121216003	CL-5	EPA 3050	MPRP/12655	EPA 6010	ICP/11224
40121216004	CL-6	EPA 3050	MPRP/12655	EPA 6010	ICP/11224
40121216005	CL-7	EPA 3050	MPRP/12655	EPA 6010	ICP/11224
40121216006	CL-11	EPA 3050	MPRP/12655	EPA 6010	ICP/11224
40121216007	CL-13	EPA 3050	MPRP/12655	EPA 6010	ICP/11224
40121216008	CL-15	EPA 3050	MPRP/12655	EPA 6010	ICP/11224
40121216001	CL-1	ASTM D2974-87	PMST/11800		
40121216002	CL-3	ASTM D2974-87	PMST/11800		
40121216003	CL-5	ASTM D2974-87	PMST/11800		
40121216004	CL-6	ASTM D2974-87	PMST/11800		
40121216005	CL-7	ASTM D2974-87	PMST/11800		
40121216006	CL-11	ASTM D2974-87	PMST/11800		
40121216007	CL-13	ASTM D2974-87	PMST/11800		
40121216008	CL-15	ASTM D2974-87	PMST/11800		

### REPORT OF LABORATORY ANALYSIS

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(Please Print Clearly)



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# CHAIN OF CUSTODY

A=None B=HCL C=H2SO4 D=HNO3 E=DI Water F=Methanol G=NaOH  
 H=Sodium Bisulfate Solution I=Sodium Thiosulfate J=Other

UPPER MIDWEST REGION  
 MN: 612-607-1700 WI: 920-469-2436

Page 1 of 1  
 40121216  
 Page 19 of 20

Company Name: TRC  
 Branch/Location: Madison  
 Project Contact: Fin Hofstmann  
 Phone: \_\_\_\_\_  
 Project Number: 218938  
 Project Name: WPS-Weston 3  
 Project State: WI  
 Sampled By (Print): George Sheppa  
 Sampled By (Sign): [Signature]  
 PO #: \_\_\_\_\_

**Data Package Options**  
 EPA Level III  
 EPA Level IV  
**MS/MSD**  
 On your sample (billable)  
 NOT needed on your sample

**Matrix Codes**  
 A = Air  
 B = Biota  
 C = Charcoal  
 O = Oil  
 S = Soil  
 SI = Sludge  
 W = Water  
 DW = Drinking Water  
 GW = Ground Water  
 SW = Surface Water  
 WW = Waste Water  
 WP = Wipe

FACE LAB #	CLIENT FIELD ID	DATE	COLLECTION TIME	MATRIX
001	CL-1	9/16	1430	S
002	CL-3			
003	CL-5			
004	CL-6			
005	CL-7			
006	CL-11			
007	CL-13			
008	CL-15			

FILTERED? (YES/NO)  
 PRESERVATION (CODE)

Y/N	Pick Label	Analyses Requested
		Arenic Baron Calcium Lead Zinc

Rush Turnaround Time Requested - Prelims  
 (Rush TAT subject to approval/surcharge)  
 Date Needed: \_\_\_\_\_  
 Transmit Prelim Rush Results by (complete what you want):  
 Email #1: \_\_\_\_\_  
 Email #2: \_\_\_\_\_  
 Telephone: \_\_\_\_\_  
 Fax: \_\_\_\_\_

Relinquished By: \_\_\_\_\_ Date/Time: \_\_\_\_\_  
 Relinquished By: [Signature] Date/Time: 9-17-15 0810  
 Relinquished By: \_\_\_\_\_ Date/Time: \_\_\_\_\_  
 Relinquished By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Received By: \_\_\_\_\_ Date/Time: \_\_\_\_\_  
 Received By: [Signature] Date/Time: 9-17-15 0810  
 Received By: \_\_\_\_\_ Date/Time: \_\_\_\_\_  
 Received By: \_\_\_\_\_ Date/Time: \_\_\_\_\_

PACE Project No. 40121216  
 Receipt Temp = 20.7°C  
 Sample Receipt Int  
 Cooler Custody Seal Present / ~~Not Present~~  
 Intact / Not Intact

Sample Condition Upon Receipt

Pace Analytical Services, Inc.  
1241 Bellevue Street, Suite 9  
Green Bay, WI 54302



Client Name: TRC

Project # **WO# : 40121216**



Courier:  Fed Ex  UPS  Client  Pace Other: \_\_\_\_\_

Tracking #: 781344995715

Custody Seal on Cooler/Box Present:  yes  no Seals intact:  yes  no

Custody Seal on Samples Present:  yes  no Seals intact:  yes  no

Packing Material:  Bubble Wrap  Bubble Bags  None  Other \_\_\_\_\_

Thermometer Used SR32 Type of Ice:  Wet  Blue  Dry  None  Samples on ice, cooling process has begun

Cooler Temperature Uncorr: 5 / Corr: 5 Biological Tissue is Frozen:  yes  no

Temp Blank Present:  yes  no

Person examining contents:  
Date: 9-17-15  
Initials: SV

Temp should be above freezing to 6°C for all sample except Biota.  
Frozen Biota Samples should be received ≤ 0°C.

		Comments:
Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
- VOA Samples frozen upon receipt	<input type="checkbox"/> Yes <input type="checkbox"/> No	Date/Time:
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
-Pace IR Containers Used:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	12. <i>no collect date or time on all samples.</i>
-Includes date/time/ID/Analysis Matrix: <u>5</u>		<i>9-17-15 SV</i>
All containers needing preservation have been checked. (Non-Compliance noted in 13.)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13. <input type="checkbox"/> HNO3 <input type="checkbox"/> H2SO4 <input type="checkbox"/> NaOH <input type="checkbox"/> NaOH + ZnAct
All containers needing preservation are found to be in compliance with EPA recommendation. (HNO3, H2SO4 ≤2; NaOH+ZnAct ≥9, NaOH ≥12)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
exceptions: VOA, coliform, TOC, TOX, TOH, O&G, WIDROW, Phenolics, OTHER:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Initial when completed
		Lab Std #ID of preservative
		Date/Time:
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

If checked, see attached form for additional comments

Client Notification/ Resolution:

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Comments/ Resolution: Original and copy of COC w shipment. *9-17-15 SV*

Project Manager Review: [Signature]

Date: 9-17-15

**OBG**

THERE'S A WAY



