2018 Annual Groundwater Monitoring and Corrective Action Report

Nelson Dewey Generating Station Slag Pond
Cassville, Wisconsin

Prepared for:

Alliant Energy

SCS ENGINEERS

25216071.18 | January 31, 2019

2830 Dairy Drive
Madison, WI 53718-6751
608-224-2830

Table of Contents

Section Page

Tables

Figures

Appendix A – Laboratory Reports

Appendix B – Alternative Source Demonstration Reports

I:\25216071.00\Deliverables\2018 NED Annual GW Mon. and CA Report\190131_2018 NED Annual CCR GW Report_NED_Final.docx

[This page left blank intentionally]

1.0 INTRODUCTION

This 2018 Annual Groundwater Monitoring and Corrective Action Report was prepared to support compliance with the groundwater monitoring requirements of the Coal Combustion Residuals (CCR) Rule [40 CFR 257.50-107]. Specifically, this report was prepared to fulfill the requirements of 40 CFR 257.90(e). The applicable sections of the Rule are provided below in *italics*, followed by applicable information relative to the 2017 Annual Groundwater Monitoring and Corrective Action Report for the CCR unit.

This report covers the period of groundwater monitoring from January 1, 2018, through December 31, 2018.

The system is designed to detect monitored constituents at the waste boundary of the Slag Pond (existing CCR surface impoundment) located at Nelson Dewey Generating Station (NED), as required by 40 CFR 257.91(d). The groundwater monitoring system consists of one upgradient and six downgradient monitoring wells.

During 2017 and early 2018, the Slag Pond CCR unit was closed by leaving the CCR in place and installing a final cover system, in accordance with §257.102(d). Closure certification was completed on January 31, 2018.

2.0 § 257.90(E) ANNUAL REPORT REQUIREMENTS

Annual groundwater monitoring and corrective action report. *For existing CCR landfills and existing CCR surface impoundments, no later than January 31, 2018, and annually thereafter, the owner or operator must prepare an annual groundwater monitoring and corrective action report. For new CCR landfills, new CCR surface impoundments, and all lateral expansions of CCR units, the owner or operator must prepare the initial annual groundwater monitoring and corrective action report no later than January 31 of the year following the calendar year a groundwater monitoring system has been established for such CCR unit as required by this subpart, and annually thereafter. For the preceding calendar year, the annual report must document the status of the groundwater monitoring and corrective action program for the CCR unit, summarize key actions completed, describe any problems encountered, discuss actions to resolve the problems, and project key activities for the upcoming year. For purposes of this section, the owner or operator has prepared the annual report when the report is placed in the facility's operating record as required by § 257.105(h)(1). At a minimum, the annual groundwater monitoring and corrective action report must contain the following information, to the extent available:*

2.1 §257.90(E)(1) SITE MAP

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;

A map showing the CCR unit and all background (or upgradient) and downgradient monitoring wells with identification numbers for the groundwater monitoring program is provided as **Figure 1**. The Slag Pond CCR unit is closed and the map shows the post-closure conditions.

2.2 §257.90(E)(2) MONITORING SYSTEM CHANGES

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;

No new monitoring wells were installed and no wells were decommissioned as part of the groundwater monitoring program for the CCR unit in 2018.

2.3 §257.90(E)(3) SUMMARY OF SAMPLING EVENTS

In addition to all the monitoring data obtained under §§ 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;

Three groundwater sampling events were completed in 2018 at the NED Slag Pond as part of ongoing detection monitoring.

Groundwater samples collected during the semiannual events, in April and October 2018, were analyzed for the Appendix III constituents. Selected constituents were analyzed during the resampling groundwater sampling event in November 2018, in accordance with the Sampling and Analysis Plan for the facility. 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 program is included in Table 1. The results of the analytical laboratory analyses are provided in the laboratory reports in Appendix A1 through Appendix A3.

2.4 § 257.90(E)(4) MONITORING TRANSITION NARRATIVE

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);

There were no transitions between monitoring programs in 2018. The NED Slag Pond remained in the detection monitoring program.

In 2018, the monitoring results for the October 2017 and April 2018 monitoring events were evaluated for statistically significant increases (SSIs) in detection monitoring parameters relative to background. For both events, SSIs for boron, calcium, fluoride, field pH, sulfate, and total dissolved solids (TDS) were identified; however, alternative source demonstrations (ASDs) were completed, demonstrating that a source other than the CCR unit was the likely cause of the observed concentrations. The ASD reports are provided in Appendix B.

2.5 § 257.90(E)(5) OTHER REQUIREMENTS

Other information required to be included in the annual report as specified in §§ 257.90 through 257.98.

Additional potentially applicable requirements for the annual report, and the location of the requirement within the Rule, are provided in the following sections. For each cited section of the Rule, the portion referencing the annual report requirement is provided below in italics, followed by

applicable information relative to the 2018 Annual Groundwater Monitoring and Corrective Action Report for the NED Slag Pond CCR unit.

2.5.1 § 257.90(e) General Requirements

For the preceding calendar year, the annual report must document the status of the groundwater monitoring and corrective action program for the CCR unit, summarize key actions completed, describe any problems encountered, discuss actions to resolve the problems, and project key activities for the upcoming year.

Status of Groundwater Monitoring and Corrective Action Program. The groundwater monitoring and corrective action program is currently in detection monitoring.

Summary of Key Actions Completed.

- Statistical evaluation and determination of SSIs for the October 2017 and April 2018 monitoring events.
- ASD reports for the SSIs identified from the October 2017 and April 2018 monitoring events.
- Two semiannual groundwater sampling and analysis events (April and October 2018), with a resampling event in November 2018.

Description of Any Problems Encountered. No problems were encountered in 2018.

Discussion of Actions to Resolve the Problems. Not applicable.

Projection of Key Activities for the Upcoming Year (2019):

- Statistical evaluation and determination of any SSIs for the October 2018 and April 2019 monitoring events.
- If an SSI is determined, then within 90 days either:
  - Complete alternative source demonstration (if applicable), or
  - Establish an assessment monitoring program.
- Two semi-annual groundwater sampling and analysis events (April and October 2019).

2.5.2 § 257.94(d) Alternative Detection Monitoring Frequency

The owner or operator must include the demonstration providing the basis for the alternative monitoring frequency and the certification by a qualified professional engineer in the annual groundwater monitoring and corrective action report required by § 257.90(e).

Not applicable. No alternative detection monitoring frequency has been proposed.

2.5.3 § 257.94(e)(2) Alternative Source Demonstration for Detection Monitoring

The owner or operator must also include the demonstration in the annual groundwater monitoring and corrective action report required by § 257.90(e), in addition to the certification by a qualified professional engineer.

The ASD reports prepared to address the SSIs observed for the October 2017 and April 2018 sampling events are provided in **Appendix B**. The ASD reports are certified by a qualified professional engineer.

2.5.4 § 257.95(c) Alternative Assessment Monitoring Frequency

The owner or operator must include the demonstration providing the basis for the alternative monitoring frequency and the certification by a qualified professional engineer in the annual groundwater monitoring and corrective action report required by § 257.90(e).

Not applicable. Assessment monitoring has not been initiated.

2.5.5 § 257.95(d)(3) Assessment Monitoring Results and Standards

Include the recorded concentrations required by paragraph (d)(1) of this section, identify the background concentrations established under § 257.94(b), and identify the groundwater protection standards established under paragraph (d)(2) of this section in the annual groundwater monitoring and corrective action report required by § 257.90(e).

Not applicable. Assessment monitoring has not been initiated.

2.5.6 § 257.95(g)(3)(ii) Alternative Source Demonstration for Assessment Monitoring

The owner or operator must also include the demonstration in the annual groundwater monitoring and corrective action report required by § 257.90(e), in addition to the certification by a qualified professional engineer.

Not applicable. Assessment monitoring has not been initiated.

2.5.7 § 257.96(a) Extension of Time for Corrective Measures Assessment

The assessment of corrective measures must be completed within 90 days, unless the owner or operator demonstrates the need for additional time to complete the assessment of corrective measure due to site-specific conditions or circumstances. The owner or operator must obtain a certification from a qualified professional engineer attesting that the demonstration is accurate. The 90-day deadline to complete the assessment of corrective measures may be extended for longer than 60 days. The owner or operator must also include the demonstration in the annual groundwater monitoring and corrective action report required by § 257.90(e), in addition to the certification by a qualified professional engineer.

Not applicable. Corrective measures assessment has not been initiated.

Table 1

CCR Rule Groundwater Samples Summary

Table 1. CCR Rule Groundwater Samples Summary
Nelson Dewey Generating Station Slag Pond /SCS Engineers Project #25216071

Sample Dates	Downgradient Wells						Background Well
	B-7R	B-11R	B-11A	B-11B	B-31R	B-31A	B-26
4/2-3/2018	D	D	D	D	D	D	D
10/8-9/2018	D	D	D	D	D	D	D
11/12/2018	--	--	--	D-R	D-R	--	--
Total Samples	2	2	2	3	3	2	2

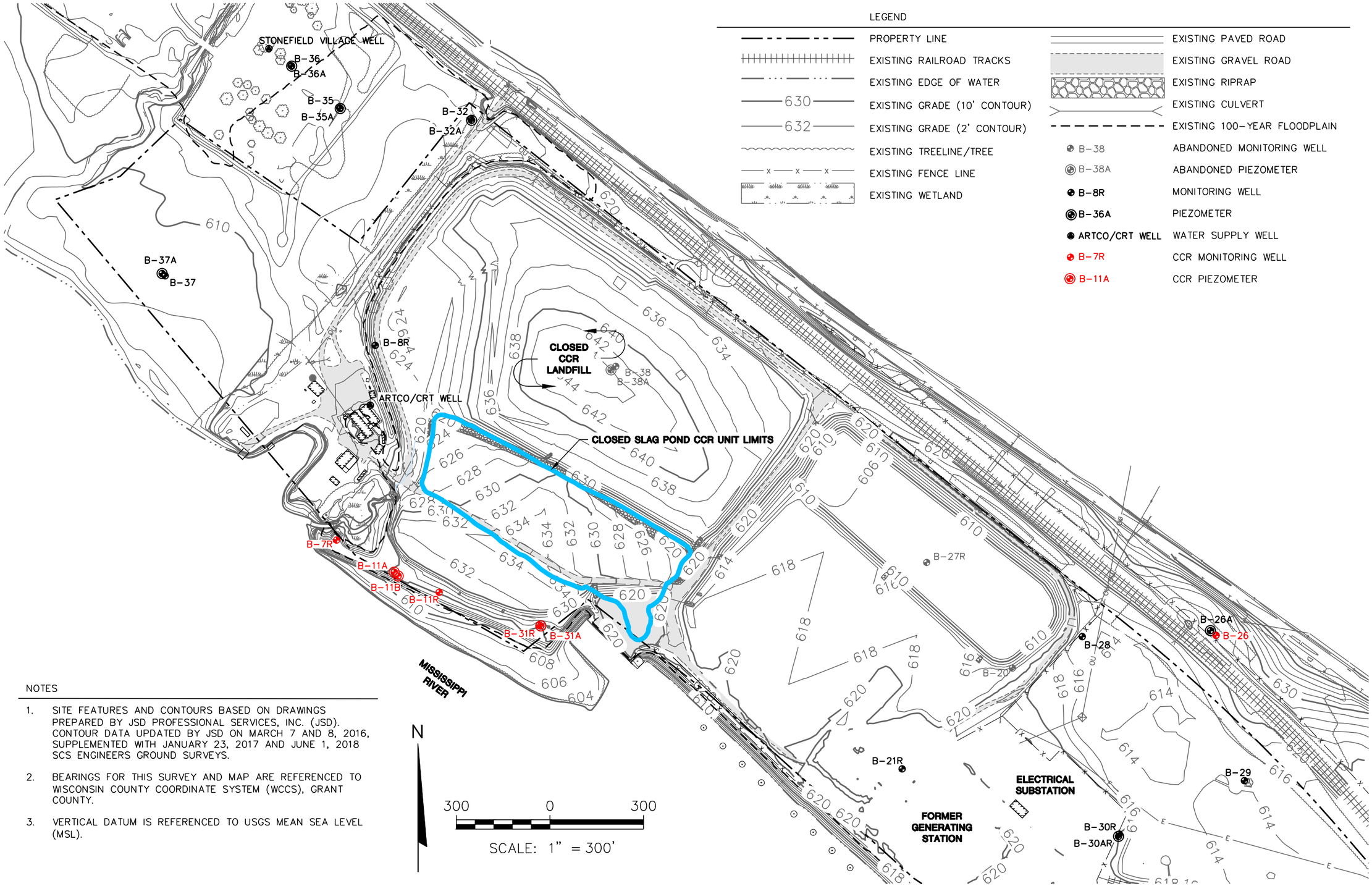
Abbreviations:
D = Required by Detection Monitoring Program
D-R = Detection Monitoring Resample for selected parameters only

Created by: NDK Date: 1/4/2019
Last revision by: NDK Date: 1/4/2019
Checked by: MDB Date: 1/4/2019

I:\25216071.00\Deliverables\2018 NED Annual GW Mon. and CA Report\Table\[GW_Samples_Summary_Table_ND.xlsx]GW Summary

Figure 1

Site Plan and Monitoring Well Locations



NOTES

1. SITE FEATURES AND CONTOURS BASED ON DRAWINGS PREPARED BY JSD PROFESSIONAL SERVICES, INC. (JSD). CONTOUR DATA UPDATED BY JSD ON MARCH 7 AND 8, 2016, SUPPLEMENTED WITH JANUARY 23, 2017 AND JUNE 1, 2018 SCS ENGINEERS GROUND SURVEYS.
2. BEARINGS FOR THIS SURVEY AND MAP ARE REFERENCED TO WISCONSIN COUNTY COORDINATE SYSTEM (WCCS), GRANT COUNTY.
3. VERTICAL DATUM IS REFERENCED TO USGS MEAN SEA LEVEL (MSL).

MONITORING WELL LOCATION MAP

FIGURE 1

SCS ENGINEERS
2830 DAIRY DRIVE MADISON, WI 53718-6751
PHONE: (608) 224-2830

ENGINEER

WISCONSIN POWER AND LIGHT
NELSON DEWEY GENERATING STATION
CASSVILLE, WISCONSIN

SITE

WISCONSIN POWER AND LIGHT CO.
NELSON DEWEY GENERATING STATION
11999 COUNTY HIGHWAY VV
CASSVILLE, WI 53806

CLIENT

PROJECT NO.	25216071.18
DRAWN:	01/10/19
REVISED:	01/10/19
DRAWN BY:	BSS
CHECKED BY:	SC
APPROVED BY:	

I:\25216071.00\Drawings\Site-2018 Annual Rpt.dwg, 1/10/2019 4:33:07 PM

Appendix A

Laboratory Reports

A1 April 2018 Detection Monitoring

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

July 06, 2018

Meghan Blodgett
SCS ENGINEERS
2830 Dairy Drive
Madison, WI 53718

RE: Project: 25216071.18 NELSON DEWEY-CCR
Pace Project No.: 40167002

Dear Meghan Blodgett:
Enclosed are the analytical results for sample(s) received by the laboratory on April 05, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Revised Report: Select analytes are reported at the request of the client.

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

Sincerely,

Dan Milewsky
dan.milewsky@pacelabs.com
(920)469-2436
Project Manager

Enclosures

cc: Tom Karwoski, SCS ENGINEERS
Nicole Kron, SCS ENGINEERS
Jeff Maxted, ALLIANT ENERGY
Marc Morandi, ALLIANT ENERGY

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

CERTIFICATIONS

Project: 25216071.18 NELSON DEWEY-CCR
Pace Project No.: 40167002

Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302
Florida/NELAP Certification #: E87948
Illinois Certification #: 200050
Kentucky UST Certification #: 82
Louisiana Certification #: 04168
Minnesota Certification #: 055-999-334
New York Certification #: 12064
North Dakota Certification #: R-150
Virginia VELAP ID: 460263
South Carolina Certification #: 83006001
Texas Certification #: T104704529-14-1
Wisconsin Certification #: 405132750
Wisconsin DATCP Certification #: 105-444
USDA Soil Permit #: P330-16-00157
Federal Fish & Wildlife Permit #: LE51774A-0

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE SUMMARY

Project: 25216071.18 NELSON DEWEY-CCR
Pace Project No.: 40167002

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40167002001	**B-7R**	Water	04/02/18 13:50	04/05/18 10:30
40167002002	**B-11B**	Water	04/02/18 14:25	04/05/18 10:30
40167002003	**B-11A**	Water	04/02/18 15:35	04/05/18 10:30
40167002004	**B-11R**	Water	04/02/18 16:30	04/05/18 10:30
40167002005	**B-31A**	Water	04/02/18 17:20	04/05/18 10:30
40167002006	**B-31R**	Water	04/02/18 17:40	04/05/18 10:30
40167002007	**B-39**	Water	04/03/18 11:00	04/05/18 10:30
40167002008	**B-26**	Water	04/03/18 13:00	04/05/18 10:30
40167002009	**FIELD BLANK**	Water	04/03/18 13:15	04/05/18 10:30

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE ANALYTE COUNT

Project: 25216071.18 NELSON DEWEY-CCR
Pace Project No.: 40167002

Lab ID	Sample ID	Method	Analysts	Analytes Reported
40167002001	**B-7R**	EPA 6020	DS1	2
			AXL	7
		SM 2540C	DEY	1
		EPA 9040	ALY	1
		EPA 300.0	HMB	3
40167002002	**B-11B**	EPA 6020	DS1	2
			AXL	7
		SM 2540C	DEY	1
		EPA 9040	ALY	1
		EPA 300.0	HMB	3
40167002003	**B-11A**	EPA 6020	DS1	2
			AXL	7
		SM 2540C	DEY	1
		EPA 9040	ALY	1
		EPA 300.0	HMB	3
40167002004	**B-11R**	EPA 6020	DS1	2
			AXL	7
		SM 2540C	DEY	1
		EPA 9040	ALY	1
		EPA 300.0	HMB	3
40167002005	**B-31A**	EPA 6020	DS1	2
			AXL	7
		SM 2540C	DEY	1
		EPA 9040	ALY	1
		EPA 300.0	HMB	3
40167002006	**B-31R**	EPA 6020	DS1	2
			AXL	7
		SM 2540C	DEY	1
		EPA 9040	ALY	1
		EPA 300.0	HMB	3
40167002007	**B-39**	EPA 6020	DS1	2
			AXL	7
		SM 2540C	TMK	1
		EPA 9040	ALY	1
		EPA 300.0	HMB	3
40167002008	**B-26**	EPA 6020	DS1	2
			AXL	7

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE ANALYTE COUNT

Project: 25216071.18 NELSON DEWEY-CCR
Pace Project No.: 40167002

Lab ID	Sample ID	Method	Analysts	Analytes Reported
		SM 2540C	TMK	1
		EPA 9040	ALY	1
		EPA 300.0	HMB	3
40167002009	**FIELD BLANK**	EPA 6020	DS1	2
		SM 2540C	TMK	1
		EPA 9040	ALY	1
		EPA 300.0	HMB	3

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25216071.18 NELSON DEWEY-CCR
Pace Project No.: 40167002

Sample: B-7R **Lab ID: 40167002001** Collected: 04/02/18 13:50 Received: 04/05/18 10:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Boron	**121**	ug/L	11.0	3.3	1	04/06/18 07:17	04/10/18 00:21	7440-42-8	
Calcium	**49200**	ug/L	2500	698	10	04/06/18 07:17	04/09/18 23:56	7440-70-2	
Field Data	Analytical Method:								
Field pH	**6.57**	Std. Units			1		04/02/18 13:50		
Field Specific Conductance	**342.5**	umhos/cm			1		04/02/18 13:50		
Oxygen, Dissolved	**0.30**	mg/L			1		04/02/18 13:50	7782-44-7	
REDOX	**-74.1**	mV			1		04/02/18 13:50		
Turbidity	**4.17**	NTU			1		04/02/18 13:50		
Static Water Level	**604.82**	feet			1		04/02/18 13:50		
Temperature, Water (C)	**9.2**	deg C			1		04/02/18 13:50		
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**220**	mg/L	20.0	8.7	1		04/09/18 15:15		
9040 pH	Analytical Method: EPA 9040								
pH at 25 Degrees C	**6.8**	Std. Units	0.10	0.010	1		04/09/18 09:58		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**10.1**	mg/L	10.0	2.5	5		04/11/18 22:38	16887-00-6	
Fluoride	**<0.50**	mg/L	1.5	0.50	5		04/11/18 22:38	16984-48-8	D3
Sulfate	**<5.0**	mg/L	15.0	5.0	5		04/11/18 22:38	14808-79-8	D3

Sample: B-11B **Lab ID: 40167002002** Collected: 04/02/18 14:25 Received: 04/05/18 10:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Boron	**2020**	ug/L	11.0	3.3	1	04/06/18 07:17	04/10/18 01:00	7440-42-8	
Calcium	**59000**	ug/L	250	69.8	1	04/06/18 07:17	04/10/18 01:00	7440-70-2	
Field Data	Analytical Method:								
Field pH	**8.42**	Std. Units			1		04/02/18 14:25		
Field Specific Conductance	**671**	umhos/cm			1		04/02/18 14:25		
Oxygen, Dissolved	**0.59**	mg/L			1		04/02/18 14:25	7782-44-7	
REDOX	**116.3**	mV			1		04/02/18 14:25		
Turbidity	**0.78**	NTU			1		04/02/18 14:25		
Static Water Level	**606.55**	feet			1		04/02/18 14:25		
Temperature, Water (C)	**13.5**	deg C			1		04/02/18 14:25		
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**550**	mg/L	20.0	8.7	1		04/09/18 15:16		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25216071.18 NELSON DEWEY-CCR
Pace Project No.: 40167002

Sample: B-11B **Lab ID: 40167002002** Collected: 04/02/18 14:25 Received: 04/05/18 10:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
9040 pH	Analytical Method: EPA 9040								
pH at 25 Degrees C	**8.1**	Std. Units	0.10	0.010	1		04/09/18 09:59		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**31.3**	mg/L	2.0	0.50	1		04/11/18 22:52	16887-00-6	
Fluoride	**0.65**	mg/L	0.30	0.10	1		04/11/18 22:52	16984-48-8	
Sulfate	**200**	mg/L	30.0	10.0	10		04/11/18 23:45	14808-79-8	

Sample: B-11A **Lab ID: 40167002003** Collected: 04/02/18 15:35 Received: 04/05/18 10:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Boron	**91.0**	ug/L	11.0	3.3	1	04/06/18 07:17	04/10/18 01:12	7440-42-8	
Calcium	**53300**	ug/L	250	69.8	1	04/06/18 07:17	04/10/18 01:12	7440-70-2	
Field Data	Analytical Method:								
Field pH	**8.04**	Std. Units			1		04/02/18 15:35		
Field Specific Conductance	**481.9**	umhos/cm			1		04/02/18 15:35		
Oxygen, Dissolved	**0.12**	mg/L			1		04/02/18 15:35	7782-44-7	
REDOX	**-42.1**	mV			1		04/02/18 15:35		
Turbidity	**0.50**	NTU			1		04/02/18 15:35		
Static Water Level	**606.63**	feet			1		04/02/18 15:35		
Temperature, Water (C)	**13.9**	deg C			1		04/02/18 15:35		
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**336**	mg/L	20.0	8.7	1		04/09/18 15:16		
9040 pH	Analytical Method: EPA 9040								
pH at 25 Degrees C	**7.8**	Std. Units	0.10	0.010	1		04/09/18 10:00		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**54.7**	mg/L	10.0	2.5	5		04/12/18 10:39	16887-00-6	M0
Fluoride	**0.24J**	mg/L	0.30	0.10	1		04/11/18 23:05	16984-48-8	M0
Sulfate	**12.3**	mg/L	3.0	1.0	1		04/11/18 23:05	14808-79-8	M0

Sample: B-11R **Lab ID: 40167002004** Collected: 04/02/18 16:30 Received: 04/05/18 10:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Boron	**3180**	ug/L	11.0	3.3	1	04/06/18 07:17	04/10/18 01:19	7440-42-8	
Calcium	**124000**	ug/L	250	69.8	1	04/06/18 07:17	04/10/18 01:19	7440-70-2	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25216071.18 NELSON DEWEY-CCR
Pace Project No.: 40167002

Sample: B-11R **Lab ID: 40167002004** Collected: 04/02/18 16:30 Received: 04/05/18 10:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:								
Field pH	**7.14**	Std. Units			1		04/02/18 16:30		
Field Specific Conductance	**839**	umhos/cm			1		04/02/18 16:30		
Oxygen, Dissolved	**0.09**	mg/L			1		04/02/18 16:30	7782-44-7	
REDOX	**-128.6**	mV			1		04/02/18 16:30		
Turbidity	**3.58**	NTU			1		04/02/18 16:30		
Static Water Level	**606.27**	feet			1		04/02/18 16:30		
Temperature, Water (C)	**11.1**	deg C			1		04/02/18 16:30		
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**638**	mg/L	20.0	8.7	1		04/09/18 15:16		
9040 pH	Analytical Method: EPA 9040								
pH at 25 Degrees C	**7.0**	Std. Units	0.10	0.010	1		04/09/18 10:01		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**36.8**	mg/L	10.0	2.5	5		04/12/18 11:46	16887-00-6	
Fluoride	**<0.50**	mg/L	1.5	0.50	5		04/12/18 11:46	16984-48-8	D3,M0
Sulfate	**88.1**	mg/L	15.0	5.0	5		04/12/18 11:46	14808-79-8	

Sample: B-31A **Lab ID: 40167002005** Collected: 04/02/18 17:20 Received: 04/05/18 10:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Boron	**74.8**	ug/L	11.0	3.3	1	04/06/18 07:17	04/10/18 01:25	7440-42-8	
Calcium	**49300**	ug/L	250	69.8	1	04/06/18 07:17	04/10/18 01:25	7440-70-2	
Field Data	Analytical Method:								
Field pH	**8.00**	Std. Units			1		04/02/18 17:20		
Field Specific Conductance	**398.9**	umhos/cm			1		04/02/18 17:20		
Oxygen, Dissolved	**0.14**	mg/L			1		04/02/18 17:20	7782-44-7	
REDOX	**-111.6**	mV			1		04/02/18 17:20		
Turbidity	**0.42**	NTU			1		04/02/18 17:20		
Static Water Level	**606.46**	feet			1		04/02/18 17:20		
Temperature, Water (C)	**14.4**	deg C			1		04/02/18 17:20		
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**282**	mg/L	20.0	8.7	1		04/09/18 15:17		
9040 pH	Analytical Method: EPA 9040								
pH at 25 Degrees C	**7.7**	Std. Units	0.10	0.010	1		04/09/18 10:10		H6

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25216071.18 NELSON DEWEY-CCR
Pace Project No.: 40167002

Sample: B-31A **Lab ID: 40167002005** Collected: 04/02/18 17:20 Received: 04/05/18 10:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**42.7**	mg/L	2.0	0.50	1		04/12/18 13:06	16887-00-6	
Fluoride	**0.13J**	mg/L	0.30	0.10	1		04/12/18 13:06	16984-48-8	
Sulfate	**27.4**	mg/L	3.0	1.0	1		04/12/18 13:06	14808-79-8	

Sample: B-31R **Lab ID: 40167002006** Collected: 04/02/18 17:40 Received: 04/05/18 10:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Boron	**540**	ug/L	11.0	3.3	1	04/06/18 07:17	04/10/18 01:31	7440-42-8	
Calcium	**72900**	ug/L	250	69.8	1	04/06/18 07:17	04/10/18 01:31	7440-70-2	
Field Data	Analytical Method:								
Field pH	**6.76**	Std. Units			1		04/02/18 17:40		
Field Specific Conductance	**476.8**	umhos/cm			1		04/02/18 17:40		
Oxygen, Dissolved	**0.45**	mg/L			1		04/02/18 17:40	7782-44-7	
REDOX	**28.0**	mV			1		04/02/18 17:40		
Turbidity	**1.29**	NTU			1		04/02/18 17:40		
Static Water Level	**604.44**	feet			1		04/02/18 17:40		
Temperature, Water (C)	**13.8**	deg C			1		04/02/18 17:40		
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**374**	mg/L	20.0	8.7	1		04/09/18 15:17		
9040 pH	Analytical Method: EPA 9040								
pH at 25 Degrees C	**6.8**	Std. Units	0.10	0.010	1		04/10/18 09:57		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**32.6**	mg/L	2.0	0.50	1		04/12/18 13:20	16887-00-6	
Fluoride	**<0.10**	mg/L	0.30	0.10	1		04/12/18 13:20	16984-48-8	
Sulfate	**22.0**	mg/L	3.0	1.0	1		04/12/18 13:20	14808-79-8	

Sample: B-39 **Lab ID: 40167002007** Collected: 04/03/18 11:00 Received: 04/05/18 10:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Boron	**235**	ug/L	11.0	3.3	1	04/06/18 07:17	04/10/18 01:38	7440-42-8	
Calcium	**62900**	ug/L	250	69.8	1	04/06/18 07:17	04/10/18 01:38	7440-70-2	
Field Data	Analytical Method:								
Field pH	**7.34**	Std. Units			1		04/03/18 11:00		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25216071.18 NELSON DEWEY-CCR
Pace Project No.: 40167002

Sample: B-39 **Lab ID: 40167002007** Collected: 04/03/18 11:00 Received: 04/05/18 10:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:								
Field Specific Conductance	**398.4**	umhos/cm			1		04/03/18 11:00		
Oxygen, Dissolved	**0.11**	mg/L			1		04/03/18 11:00	7782-44-7	
REDOX	**-57.1**	mV			1		04/03/18 11:00		
Turbidity	**2.75**	NTU			1		04/03/18 11:00		
Static Water Level	**606.19**	feet			1		04/03/18 11:00		
Temperature, Water (C)	**14.5**	deg C			1		04/03/18 11:00		
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**294**	mg/L	20.0	8.7	1		04/10/18 16:19		
9040 pH	Analytical Method: EPA 9040								
pH at 25 Degrees C	**7.2**	Std. Units	0.10	0.010	1		04/10/18 10:00		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**4.5**	mg/L	2.0	0.50	1		04/12/18 13:33	16887-00-6	
Fluoride	**0.21J**	mg/L	0.30	0.10	1		04/12/18 13:33	16984-48-8	
Sulfate	**33.6**	mg/L	3.0	1.0	1		04/12/18 13:33	14808-79-8	

Sample: B-26 **Lab ID: 40167002008** Collected: 04/03/18 13:00 Received: 04/05/18 10:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Boron	**48.0**	ug/L	11.0	3.3	1	04/06/18 07:17	04/10/18 01:44	7440-42-8	
Calcium	**88100**	ug/L	250	69.8	1	04/06/18 07:17	04/10/18 01:44	7440-70-2	
Field Data	Analytical Method:								
Field pH	**7.64**	Std. Units			1		04/03/18 13:00		
Field Specific Conductance	**655.2**	umhos/cm			1		04/03/18 13:00		
Oxygen, Dissolved	**2.68**	mg/L			1		04/03/18 13:00	7782-44-7	
REDOX	**69.7**	mV			1		04/03/18 13:00		
Turbidity	**0.99**	NTU			1		04/03/18 13:00		
Static Water Level	**606.49**	feet			1		04/03/18 13:00		
Temperature, Water (C)	**11.3**	deg C			1		04/03/18 13:00		
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**464**	mg/L	20.0	8.7	1		04/10/18 16:19		
9040 pH	Analytical Method: EPA 9040								
pH at 25 Degrees C	**7.3**	Std. Units	0.10	0.010	1		04/10/18 10:01		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**54.4**	mg/L	2.0	0.50	1		04/12/18 13:46	16887-00-6	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25216071.18 NELSON DEWEY-CCR
Pace Project No.: 40167002

Sample: B-26 **Lab ID: 40167002008** Collected: 04/03/18 13:00 Received: 04/05/18 10:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Fluoride	**<0.10**	mg/L	0.30	0.10	1		04/12/18 13:46	16984-48-8	
Sulfate	**19.1**	mg/L	3.0	1.0	1		04/12/18 13:46	14808-79-8	

Sample: FIELD BLANK **Lab ID: 40167002009** Collected: 04/03/18 13:15 Received: 04/05/18 10:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Boron	**4.4J**	ug/L	11.0	3.3	1	04/06/18 07:17	04/10/18 01:51	7440-42-8	
Calcium	**<69.8**	ug/L	250	69.8	1	04/06/18 07:17	04/10/18 01:51	7440-70-2	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**<8.7**	mg/L	20.0	8.7	1		04/10/18 16:19		
9040 pH	Analytical Method: EPA 9040								
pH at 25 Degrees C	**6.9**	Std. Units	0.10	0.010	1		04/10/18 10:02		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**<0.50**	mg/L	2.0	0.50	1		04/12/18 14:00	16887-00-6	
Fluoride	**<0.10**	mg/L	0.30	0.10	1		04/12/18 14:00	16984-48-8	
Sulfate	**<1.0**	mg/L	3.0	1.0	1		04/12/18 14:00	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25216071.18 NELSON DEWEY-CCR
Pace Project No.: 40167002

QC Batch: 285351 Analysis Method: EPA 6020
QC Batch Method: EPA 3010 Analysis Description: 6020 MET
Associated Lab Samples: 40167002001, 40167002002, 40167002003, 40167002004, 40167002005, 40167002006, 40167002007, 40167002008, 40167002009

METHOD BLANK: 1669867 Matrix: Water
Associated Lab Samples: 40167002001, 40167002002, 40167002003, 40167002004, 40167002005, 40167002006, 40167002007, 40167002008, 40167002009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Boron	ug/L	<3.3	11.0	04/09/18 23:43	
Calcium	ug/L	<69.8	250	04/09/18 23:43	

LABORATORY CONTROL SAMPLE: 1669868

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	500	471	94	80-120	
Calcium	ug/L	5000	4970	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1669869 1669870

Parameter	Units	40167002001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	121	500	500	564	561	89	88	75-125	0	20	
Calcium	ug/L	49200	5000	5000	53500	54200	85	100	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

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25216071.18 NELSON DEWEY-CCR
Pace Project No.: 40167002

QC Batch: 285548 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 40167002001, 40167002002, 40167002003, 40167002004, 40167002005, 40167002006

METHOD BLANK: 1670975 Matrix: Water
Associated Lab Samples: 40167002001, 40167002002, 40167002003, 40167002004, 40167002005, 40167002006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	04/09/18 15:12	

LABORATORY CONTROL SAMPLE: 1670976

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	610	592	97	80-120	

SAMPLE DUPLICATE: 1670977

Parameter	Units	40166944018 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	680	674	1	5	

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

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25216071.18 NELSON DEWEY-CCR
Pace Project No.: 40167002

QC Batch: 285653 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 40167002007, 40167002008, 40167002009

METHOD BLANK: 1671427 Matrix: Water
Associated Lab Samples: 40167002007, 40167002008, 40167002009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	04/10/18 16:16	

LABORATORY CONTROL SAMPLE: 1671428

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	610	582	95	80-120	

SAMPLE DUPLICATE: 1671429

Parameter	Units	40166946005 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	332	350	5	5	

SAMPLE DUPLICATE: 1671430

Parameter	Units	40166988002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	2400	2340	2	5	

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

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25216071.18 NELSON DEWEY-CCR
Pace Project No.: 40167002

QC Batch: 285482 Analysis Method: EPA 9040
QC Batch Method: EPA 9040 Analysis Description: 9040 pH
Associated Lab Samples: 40167002001, 40167002002, 40167002003, 40167002004, 40167002005

SAMPLE DUPLICATE: 1670757

Parameter	Units	40166819001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.4	7.8	5	20	H6,PI

SAMPLE DUPLICATE: 1670758

Parameter	Units	40166944015 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.8	7.8	1	20	H6

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

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25216071.18 NELSON DEWEY-CCR
Pace Project No.: 40167002

QC Batch: 285585 Analysis Method: EPA 9040
QC Batch Method: EPA 9040 Analysis Description: 9040 pH
Associated Lab Samples: 40167002006, 40167002007, 40167002008, 40167002009

SAMPLE DUPLICATE: 1671121

Parameter	Units	40167002006 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	6.8	6.9	0	20	H6

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

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25216071.18 NELSON DEWEY-CCR
Pace Project No.: 40167002

QC Batch: 285545 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 40167002001, 40167002002, 40167002003

METHOD BLANK: 1670947 Matrix: Water
Associated Lab Samples: 40167002001, 40167002002, 40167002003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.50	2.0	04/11/18 15:56	
Fluoride	mg/L	<0.10	0.30	04/11/18 15:56	
Sulfate	mg/L	<1.0	3.0	04/11/18 15:56	

LABORATORY CONTROL SAMPLE: 1670948

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	22.0	110	90-110	
Fluoride	mg/L	2	2.1	106	90-110	
Sulfate	mg/L	20	21.8	109	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1670949 1670950

Parameter	Units	40167117001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	558	400	400	941	901	96	86	90-110	4	15	M0
Fluoride	mg/L	<2.0	40	40	45.5	42.1	114	105	90-110	8	15	M0
Sulfate	mg/L	97.6	400	400	541	501	111	101	90-110	8	15	M0

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1670951 1670952

Parameter	Units	40167002003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	54.7	100	100	168	162	114	107	90-110	4	15	M0
Fluoride	mg/L	0.24J	2	2	2.7	2.7	122	122	90-110	0	15	M0
Sulfate	mg/L	12.3	20	20	36.0	35.8	118	118	90-110	0	15	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

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25216071.18 NELSON DEWEY-CCR
Pace Project No.: 40167002

QC Batch: 285643 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 40167002004, 40167002005, 40167002006, 40167002007, 40167002008, 40167002009

METHOD BLANK: 1671381 Matrix: Water
Associated Lab Samples: 40167002004, 40167002005, 40167002006, 40167002007, 40167002008, 40167002009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.50	2.0	04/12/18 11:19	
Fluoride	mg/L	<0.10	0.30	04/12/18 11:19	
Sulfate	mg/L	<1.0	3.0	04/12/18 11:19	

LABORATORY CONTROL SAMPLE: 1671382

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	21.9	109	90-110	
Fluoride	mg/L	2	2.2	110	90-110	
Sulfate	mg/L	20	21.7	109	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1671383 1671384

Parameter	Units	40167002004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	36.8	100	100	146	146	109	109	90-110	0	15	
Fluoride	mg/L	<0.50	10	10	11.4	11.5	114	115	90-110	0	15	M0
Sulfate	mg/L	88.1	100	100	193	193	105	105	90-110	0	15	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1671385 1671386

Parameter	Units	40167040004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	1.7J	20	20	24.6	24.9	114	116	90-110	1	15	M0
Fluoride	mg/L	0.50	2	2	2.8	2.8	113	115	90-110	1	15	M0
Sulfate	mg/L	15.2	20	20	37.4	37.7	111	113	90-110	1	15	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

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALIFIERS

Project: 25216071.18 NELSON DEWEY-CCR
Pace Project No.: 40167002

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.
H6	Analysis initiated outside of the 15 minute EPA required holding time.
M0	Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.
PI	The precision between the sample and the duplicate sample exceeded laboratory control limits.

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25216071.18 NELSON DEWEY-CCR
Pace Project No.: 40167002

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40167002001	**B-7R**	EPA 3010	285351	EPA 6020	285431
40167002002	**B-11B**	EPA 3010	285351	EPA 6020	285431
40167002003	**B-11A**	EPA 3010	285351	EPA 6020	285431
40167002004	**B-11R**	EPA 3010	285351	EPA 6020	285431
40167002005	**B-31A**	EPA 3010	285351	EPA 6020	285431
40167002006	**B-31R**	EPA 3010	285351	EPA 6020	285431
40167002007	**B-39**	EPA 3010	285351	EPA 6020	285431
40167002008	**B-26**	EPA 3010	285351	EPA 6020	285431
40167002009	**FIELD BLANK**	EPA 3010	285351	EPA 6020	285431
40167002001	**B-7R**				
40167002002	**B-11B**				
40167002003	**B-11A**				
40167002004	**B-11R**				
40167002005	**B-31A**				
40167002006	**B-31R**				
40167002007	**B-39**				
40167002008	**B-26**				
40167002001	**B-7R**	SM 2540C	285548		
40167002002	**B-11B**	SM 2540C	285548		
40167002003	**B-11A**	SM 2540C	285548		
40167002004	**B-11R**	SM 2540C	285548		
40167002005	**B-31A**	SM 2540C	285548		
40167002006	**B-31R**	SM 2540C	285548		
40167002007	**B-39**	SM 2540C	285653		
40167002008	**B-26**	SM 2540C	285653		
40167002009	**FIELD BLANK**	SM 2540C	285653		
40167002001	**B-7R**	EPA 9040	285482		
40167002002	**B-11B**	EPA 9040	285482		
40167002003	**B-11A**	EPA 9040	285482		
40167002004	**B-11R**	EPA 9040	285482		
40167002005	**B-31A**	EPA 9040	285482		
40167002006	**B-31R**	EPA 9040	285585		
40167002007	**B-39**	EPA 9040	285585		
40167002008	**B-26**	EPA 9040	285585		
40167002009	**FIELD BLANK**	EPA 9040	285585		
40167002001	**B-7R**	EPA 300.0	285545		
40167002002	**B-11B**	EPA 300.0	285545		
40167002003	**B-11A**	EPA 300.0	285545		
40167002004	**B-11R**	EPA 300.0	285643		
40167002005	**B-31A**	EPA 300.0	285643		
40167002006	**B-31R**	EPA 300.0	285643		
40167002007	**B-39**	EPA 300.0	285643		
40167002008	**B-26**	EPA 300.0	285643		
40167002009	**FIELD BLANK**	EPA 300.0	285643		

REPORT OF LABORATORY ANALYSIS

Pace Analytical®
www.pacelabs.com

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

SSM

4016702

CHAIN OF CUSTODY

*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

(Please Print Clearly)	
Company Name:	SCS Engineers
Branch/Location:	25-Madison
Project Contact:	Tom Kamwoski
Phone:	(608-216-7369
Project Number:	25216071.18
Project Name:	Nelson Dewey - Alliant
Project State:	WI
Sampled By (Print):	Matt Harms
Sampled By (Sign):	
PO #:	Regulatory Program:

Quote #:	
Mail To Contact:	Tom Kamwoski
Mail To Company:	SCS Engineers
Mail To Address:	2830 Dairy Drive Madison WI 53718
Invoice To Contact:	
Invoice To Company:	SAME
Invoice To Address:	
Invoice To Phone:	

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

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

Matrix Codes

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

FILTERED? (YES/NO)
PRESERVATION (CODE)*

PACE LAB #	CLIENT FIELD ID	COLLECTION DATE	COLLECTION TIME	MATRIX	Y/N	Pick Letter	Analyses Requested: Metals	pH	Cl, F, SO4	CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)	Profile #
					N	N	N					
					D	A	A					
001	B-7R	4-2-18	1350	GW	X	X	X					
002	B-11B		1425									
003	B-11A		1535									
004	B-11R		1630									
005	B-31A		1720									
006	B-31R		1748									
007	B-39	4-3-18	1100	GW								
008	B-26		1300	GW								
009	Field Blank		1315	W								

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:	

Samples on HOLD are subject to special pricing and release of liability

Relinquished By:	Date/Time:	Received By:	Date/Time:
Matt Harms	4/4/18 1030		
Fedex	4/5/18 1030	Vseng Pace	4/5/18 1030

PACE Project No.: 4016702
Receipt Temp = 1.0 °C
Sample Receipt pH: OK / Adjusted
Cooler Custody Seal: Present / Not Present
Intact / Not Intact

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

Sample Preservation Receipt Form

Client Name: SCS Project # 40167002

All containers needing preservation have been checked and noted below: ☑Yes ☐No ☐N/A

Lab Lot# of pH paper: 10us477 Lab Std #ID of preservation (if pH adjusted):

Initial when completed: BS Date/ Time:

Pace Lab #	Glass							Plastic							Vials						Jars			General			VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)
	AG1U	AG1H	AG4S	AG4U	AG5U	AG2S	BG3U	BP1U	BP2N	BP2Z	BP3U	BP3C	BP3N	BP3S	DG9A	DG9T	VG9U	VG9H	VG9M	VG9D	JGFU	WGFU	WPFU	SP5T	ZPLC	GN							
001											2		1																	✓		2.5 / 5 / 10
002											2		1																	✓		2.5 / 5 / 10
003											2		1																	✓		2.5 / 5 / 10
004											2		1																	✓		2.5 / 5 / 10
005											2		1																	✓		2.5 / 5 / 10
006											2		1																	✓		2.5 / 5 / 10
007											2		1																	✓		2.5 / 5 / 10
008											2		1																	✓		2.5 / 5 / 10
009											2		1																	✓		2.5 / 5 / 10
010																																2.5 / 5 / 10
011																																2.5 / 5 / 10
012																																2.5 / 5 / 10
013																																2.5 / 5 / 10
014																																2.5 / 5 / 10
015																																2.5 / 5 / 10
016																																2.5 / 5 / 10
017																																2.5 / 5 / 10
018																																2.5 / 5 / 10
019																																2.5 / 5 / 10
020																																2.5 / 5 / 10

Exceptions to preservation check: VOA, Coliform, TOC, TOX, TOH, O&G, WI DRO, Phenolics, Other: _____ Headspace in VOA Vials (>6mm) : ☐Yes ☐No ☐N/A ***If yes look in headspace column**

AG1U	1 liter amber glass	BP1U	1 liter plastic unpres	DG9A	40 mL amber ascorbic	JGFU	4 oz amber jar unpres
AG1H	1 liter amber glass HCL	BP2N	500 mL plastic HNO3	DG9T	40 mL amber Na Thio	WGFU	4 oz clear jar unpres
AG4S	125 mL amber glass H2SO4	BP2Z	500 mL plastic NaOH, Znact	VG9U	40 mL clear vial unpres	WPFU	4 oz plastic jar unpres
AG4U	120 mL amber glass unpres	BP3U	250 mL plastic unpres	VG9H	40 mL clear vial HCL		
AG5U	100 mL amber glass unpres	BP3C	250 mL plastic NaOH	VG9M	40 mL clear vial MeOH	SP5T	120 mL plastic Na Thiosulfate
AG2S	500 mL amber glass H2SO4	BP3N	250 mL plastic HNO3	VG9D	40 mL clear vial DI	ZPLC	ziploc bag
BG3U	250 mL clear glass unpres	BP3S	250 mL plastic H2SO4			GN:	

Pace Analytical™ 1241 Bellevue Street, Green Bay, WI 54302	Document Name: **Sample Condition Upon Receipt (SCUR)**	Document Revised: 31Jan2018
	Document No.: **F-GB-C-031-rev.06**	Issuing Authority: Pace Green Bay Quality Office

Sample Condition Upon Receipt Form (SCUR)

Client Name: SCS

Project #: UNG-7002

WO#: 40167002

40167002

Courier: ☐ CS Logistics ☑ Fed Ex ☐ Speedee ☐ UPS ☐ Waltco ☐ Client ☐ Pace Other:

Tracking #: 813023405326

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 SR - N/A **Type of Ice:** Wet Blue Dry None ☑ Samples on ice, cooling process has begun

Cooler Temperature Uncorr: RO1 /Corr:

Temp Blank Present: ☐ yes ☑ no **Biological Tissue is Frozen:** ☐ yes ☐ no

Temp should be above freezing to 6°C.
Biota Samples may be received at ≤ 0°C.

Person examining contents:
Date: 4/5/18
Initials: KS

Chain of Custody Present:	☑Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☑Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☑Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☑Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☑Yes ☐No ☐N/A	5.
- VOA Samples frozen upon receipt	☐Yes ☐No	Date/Time:
Short Hold Time Analysis (<72hr):	☑Yes ☐No ☐N/A	6.
Rush Turn Around Time Requested:	☐Yes ☑No ☐N/A	7.
Sufficient Volume: ☐Yes ☑No ☐N/A MS/MSD	☐Yes ☑No ☐N/A	8.
Correct Containers Used:	☑Yes ☐No ☐N/A	9.
-Pace Containers Used:	☑Yes ☐No ☐N/A	
-Pace IR Containers Used:	☐Yes ☐No ☑N/A	
Containers Intact:	☑Yes ☐No ☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☑N/A	11.
Sample Labels match COC:	☐Yes ☑No ☐N/A	12. 002-1-250ml poly nitric has no date/time on label PS 4/5/18
-Includes date/time/ID/Analysis Matrix: W		
Trip Blank Present:	☐Yes ☐No ☑N/A	13.
Trip Blank Custody Seals Present	☐Yes ☐No ☑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: for pm **Date:** 4/5/18

A2 October 2018 Detection Monitoring

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

October 25, 2018

Meghan Blodgett
SCS ENGINEERS
2830 Dairy Drive
Madison, WI 53718

RE: Project: 25216071.18 NELSON DEWEY
Pace Project No.: 40177434

Dear Meghan Blodgett:
Enclosed are the analytical results for sample(s) received by the laboratory on October 11, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC 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,

Dan Milewsky
dan.milewsky@pacelabs.com
(920)469-2436
Project Manager

Enclosures

cc: Tom Karwoski, SCS ENGINEERS
Nicole Kron, SCS ENGINEERS
Jeff Maxted, ALLIANT ENERGY
Marc Morandi, ALLIANT ENERGY

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

CERTIFICATIONS

Project: 25216071.18 NELSON DEWEY
Pace Project No.: 40177434

Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302
Florida/NELAP Certification #: E87948
Illinois Certification #: 200050
Kentucky UST Certification #: 82
Louisiana Certification #: 04168
Minnesota Certification #: 055-999-334
New York Certification #: 12064
North Dakota Certification #: R-150
Virginia VELAP ID: 460263
South Carolina Certification #: 83006001
Texas Certification #: T104704529-14-1
Wisconsin Certification #: 405132750
Wisconsin DATCP Certification #: 105-444
USDA Soil Permit #: P330-16-00157
Federal Fish & Wildlife Permit #: LE51774A-0

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE SUMMARY

Project: 25216071.18 NELSON DEWEY
Pace Project No.: 40177434

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40177434001	**B-26**	Water	10/08/18 16:20	10/11/18 09:20
40177434002	**B-7R**	Water	10/09/18 11:00	10/11/18 09:20
40177434003	**B-11B**	Water	10/09/18 12:10	10/11/18 09:20
40177434004	**B-11A**	Water	10/09/18 12:50	10/11/18 09:20
40177434005	**B-11R**	Water	10/09/18 14:15	10/11/18 09:20
40177434006	**B-31R**	Water	10/09/18 15:10	10/11/18 09:20
40177434007	**B-31A**	Water	10/09/18 15:50	10/11/18 09:20
40177434008	**B-39**	Water	10/09/18 16:50	10/11/18 09:20
40177434009	**FIELD BLANK**	Water	10/09/18 15:15	10/11/18 09:20

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE ANALYTE COUNT

Project: 25216071.18 NELSON DEWEY
Pace Project No.: 40177434

Lab ID	Sample ID	Method	Analysts	Analytes Reported
40177434001	**B-26**	EPA 6020	KXS	2
			RMW	7
		SM 2540C	TMK	1
		EPA 9040	ALY	1
		EPA 300.0	HMB	3
40177434002	**B-7R**	EPA 6020	KXS	2
			RMW	7
		SM 2540C	TMK	1
		EPA 9040	ALY	1
		EPA 300.0	HMB	3
40177434003	**B-11B**	EPA 6020	KXS	2
			RMW	7
		SM 2540C	TMK	1
		EPA 9040	ALY	1
		EPA 300.0	HMB	3
40177434004	**B-11A**	EPA 6020	KXS	2
			RMW	7
		SM 2540C	TMK	1
		EPA 9040	ALY	1
		EPA 300.0	HMB	3
40177434005	**B-11R**	EPA 6020	KXS	2
			RMW	7
		SM 2540C	TMK	1
		EPA 9040	ALY	1
		EPA 300.0	HMB	3
40177434006	**B-31R**	EPA 6020	KXS	2
			RMW	7
		SM 2540C	TMK	1
		EPA 9040	ALY	1
		EPA 300.0	HMB	3
40177434007	**B-31A**	EPA 6020	KXS	2
			RMW	7
		SM 2540C	TMK	1
		EPA 9040	ALY	1
		EPA 300.0	HMB	3
40177434008	**B-39**	EPA 6020	KXS	2
			RMW	7

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE ANALYTE COUNT

Project: 25216071.18 NELSON DEWEY
Pace Project No.: 40177434

Lab ID	Sample ID	Method	Analysts	Analytes Reported
		SM 2540C	TMK	1
		EPA 9040	ALY	1
		EPA 300.0	HMB	3
40177434009	**FIELD BLANK**	EPA 6020	KXS	2
		SM 2540C	TMK	1
		EPA 9040	ALY	1
		EPA 300.0	HMB	3

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25216071.18 NELSON DEWEY
Pace Project No.: 40177434

Sample: B-26 **Lab ID: 40177434001** Collected: 10/08/18 16:20 Received: 10/11/18 09:20 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Boron	**53.4**	ug/L	11.0	3.3	1	10/15/18 06:38	10/23/18 02:41	7440-42-8	
Calcium	**78700**	ug/L	250	69.8	1	10/15/18 06:38	10/18/18 18:47	7440-70-2	
Field Data	Analytical Method:								
Field pH	**7.2**	Std. Units			1		10/08/18 16:20		
Field Specific Conductance	**661.9**	umhos/cm			1		10/08/18 16:20		
Oxygen, Dissolved	**5.98**	mg/L			1		10/08/18 16:20	7782-44-7	
REDOX	**109.2**	mV			1		10/08/18 16:20		
Turbidity	**3.44**	NTU			1		10/08/18 16:20		
Static Water Level	**610.34**	feet			1		10/08/18 16:20		
Temperature, Water (C)	**12.0**	deg C			1		10/08/18 16:20		
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**450**	mg/L	20.0	8.7	1		10/15/18 16:19		
9040 pH	Analytical Method: EPA 9040								
pH at 25 Degrees C	**7.3**	Std. Units	0.10	0.010	1		10/12/18 09:01		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**33.2**	mg/L	2.0	0.50	1		10/18/18 16:06	16887-00-6	
Fluoride	**<0.10**	mg/L	0.30	0.10	1		10/18/18 16:06	16984-48-8	
Sulfate	**25.1**	mg/L	3.0	1.0	1		10/18/18 16:06	14808-79-8	

Sample: B-7R **Lab ID: 40177434002** Collected: 10/09/18 11:00 Received: 10/11/18 09:20 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Boron	**73.0**	ug/L	11.0	3.3	1	10/15/18 06:38	10/23/18 02:14	7440-42-8	
Calcium	**38500**	ug/L	250	69.8	1	10/15/18 06:38	10/18/18 18:20	7440-70-2	P6
Field Data	Analytical Method:								
Field pH	**6.23**	Std. Units			1		10/09/18 11:00		
Field Specific Conductance	**336.0**	umhos/cm			1		10/09/18 11:00		
Oxygen, Dissolved	**1.24**	mg/L			1		10/09/18 11:00	7782-44-7	
REDOX	**54.5**	mV			1		10/09/18 11:00		
Turbidity	**29.56**	NTU			1		10/09/18 11:00		
Static Water Level	**610.76**	feet			1		10/09/18 11:00		
Temperature, Water (C)	**16.3**	deg C			1		10/09/18 11:00		
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**186**	mg/L	20.0	8.7	1		10/15/18 16:21		R1

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25216071.18 NELSON DEWEY
Pace Project No.: 40177434

Sample: B-7R **Lab ID: 40177434002** Collected: 10/09/18 11:00 Received: 10/11/18 09:20 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
9040 pH	Analytical Method: EPA 9040								
pH at 25 Degrees C	**6.6**	Std. Units	0.10	0.010	1		10/12/18 09:04		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**1.9J**	mg/L	2.0	0.50	1		10/18/18 16:18	16887-00-6	
Fluoride	**<0.10**	mg/L	0.30	0.10	1		10/18/18 16:18	16984-48-8	
Sulfate	**3.2**	mg/L	3.0	1.0	1		10/18/18 16:18	14808-79-8	

Sample: B-11B **Lab ID: 40177434003** Collected: 10/09/18 12:10 Received: 10/11/18 09:20 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Boron	**3620**	ug/L	11.0	3.3	1	10/15/18 06:38	10/23/18 03:08	7440-42-8	
Calcium	**66300**	ug/L	250	69.8	1	10/15/18 06:38	10/18/18 19:14	7440-70-2	
Field Data	Analytical Method:								
Field pH	**7.74**	Std. Units			1		10/09/18 12:10		
Field Specific Conductance	**954**	umhos/cm			1		10/09/18 12:10		
Oxygen, Dissolved	**0.13**	mg/L			1		10/09/18 12:10	7782-44-7	
REDOX	**13.2**	mV			1		10/09/18 12:10		
Turbidity	**2.98**	NTU			1		10/09/18 12:10		
Static Water Level	**610.24**	feet			1		10/09/18 12:10		
Temperature, Water (C)	**14.8**	deg C			1		10/09/18 12:10		
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**602**	mg/L	20.0	8.7	1		10/15/18 16:22		
9040 pH	Analytical Method: EPA 9040								
pH at 25 Degrees C	**7.9**	Std. Units	0.10	0.010	1		10/12/18 09:05		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**21.9**	mg/L	2.0	0.50	1		10/18/18 16:30	16887-00-6	
Fluoride	**0.61**	mg/L	0.30	0.10	1		10/18/18 16:30	16984-48-8	
Sulfate	**197**	mg/L	30.0	10.0	10		10/18/18 20:59	14808-79-8	

Sample: B-11A **Lab ID: 40177434004** Collected: 10/09/18 12:50 Received: 10/11/18 09:20 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Boron	**94.2**	ug/L	11.0	3.3	1	10/15/18 06:38	10/23/18 03:15	7440-42-8	
Calcium	**48600**	ug/L	250	69.8	1	10/15/18 06:38	10/18/18 19:21	7440-70-2	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25216071.18 NELSON DEWEY
Pace Project No.: 40177434

Sample: B-11A **Lab ID: 40177434004** Collected: 10/09/18 12:50 Received: 10/11/18 09:20 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:								
Field pH	**7.43**	Std. Units			1		10/09/18 12:50		
Field Specific Conductance	**654**	umhos/cm			1		10/09/18 12:50		
Oxygen, Dissolved	**0.08**	mg/L			1		10/09/18 12:50	7782-44-7	
REDOX	**-47.9**	mV			1		10/09/18 12:50		
Turbidity	**3.15**	NTU			1		10/09/18 12:50		
Static Water Level	**610.28**	feet			1		10/09/18 12:50		
Temperature, Water (C)	**15**	deg C			1		10/09/18 12:50		
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**332**	mg/L	20.0	8.7	1		10/15/18 16:22		
9040 pH	Analytical Method: EPA 9040								
pH at 25 Degrees C	**7.7**	Std. Units	0.10	0.010	1		10/12/18 09:07		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**57.8**	mg/L	2.0	0.50	1		10/18/18 16:43	16887-00-6	
Fluoride	**0.29J**	mg/L	0.30	0.10	1		10/18/18 16:43	16984-48-8	
Sulfate	**6.0**	mg/L	3.0	1.0	1		10/18/18 16:43	14808-79-8	

Sample: B-11R **Lab ID: 40177434005** Collected: 10/09/18 14:15 Received: 10/11/18 09:20 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Boron	**576**	ug/L	11.0	3.3	1	10/15/18 06:38	10/23/18 03:22	7440-42-8	
Calcium	**49900**	ug/L	250	69.8	1	10/15/18 06:38	10/18/18 19:28	7440-70-2	
Field Data	Analytical Method:								
Field pH	**6.55**	Std. Units			1		10/09/18 14:15		
Field Specific Conductance	**463.2**	umhos/cm			1		10/09/18 14:15		
Oxygen, Dissolved	**0.34**	mg/L			1		10/09/18 14:15	7782-44-7	
REDOX	**-49.5**	mV			1		10/09/18 14:15		
Turbidity	**10.05**	NTU			1		10/09/18 14:15		
Static Water Level	**610.67**	feet			1		10/09/18 14:15		
Temperature, Water (C)	**16.2**	deg C			1		10/09/18 14:15		
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**266**	mg/L	20.0	8.7	1		10/15/18 16:22		
9040 pH	Analytical Method: EPA 9040								
pH at 25 Degrees C	**6.9**	Std. Units	0.10	0.010	1		10/12/18 09:16		H6

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25216071.18 NELSON DEWEY
Pace Project No.: 40177434

Sample: B-11R **Lab ID: 40177434005** Collected: 10/09/18 14:15 Received: 10/11/18 09:20 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**5.9**	mg/L	2.0	0.50	1		10/18/18 16:55	16887-00-6	
Fluoride	**0.15J**	mg/L	0.30	0.10	1		10/18/18 16:55	16984-48-8	
Sulfate	**15.1**	mg/L	3.0	1.0	1		10/18/18 16:55	14808-79-8	

Sample: B-31R **Lab ID: 40177434006** Collected: 10/09/18 15:10 Received: 10/11/18 09:20 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Boron	**1430**	ug/L	11.0	3.3	1	10/15/18 06:38	10/23/18 03:29	7440-42-8	
Calcium	**125000**	ug/L	250	69.8	1	10/15/18 06:38	10/18/18 19:35	7440-70-2	
Field Data	Analytical Method:								
Field pH	**6.41**	Std. Units			1		10/09/18 15:10		
Field Specific Conductance	**1016**	umhos/cm			1		10/09/18 15:10		
Oxygen, Dissolved	**0.12**	mg/L			1		10/09/18 15:10	7782-44-7	
REDOX	**-0.5**	mV			1		10/09/18 15:10		
Turbidity	**3.94**	NTU			1		10/09/18 15:10		
Static Water Level	**610.39**	feet			1		10/09/18 15:10		
Temperature, Water (C)	**15.9**	deg C			1		10/09/18 15:10		
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**668**	mg/L	20.0	8.7	1		10/15/18 16:22		
9040 pH	Analytical Method: EPA 9040								
pH at 25 Degrees C	**6.8**	Std. Units	0.10	0.010	1		10/12/18 09:19		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**19.7**	mg/L	2.0	0.50	1		10/18/18 17:07	16887-00-6	
Fluoride	**<0.10**	mg/L	0.30	0.10	1		10/18/18 17:07	16984-48-8	
Sulfate	**186**	mg/L	30.0	10.0	10		10/19/18 11:14	14808-79-8	

Sample: B-31A **Lab ID: 40177434007** Collected: 10/09/18 15:50 Received: 10/11/18 09:20 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Boron	**71.8**	ug/L	11.0	3.3	1	10/15/18 06:38	10/23/18 03:35	7440-42-8	
Calcium	**46600**	ug/L	250	69.8	1	10/15/18 06:38	10/18/18 19:55	7440-70-2	
Field Data	Analytical Method:								
Field pH	**7.48**	Std. Units			1		10/09/18 15:50		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25216071.18 NELSON DEWEY
Pace Project No.: 40177434

Sample: B-31A **Lab ID: 40177434007** Collected: 10/09/18 15:50 Received: 10/11/18 09:20 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:								
Field Specific Conductance	**503.8**	umhos/cm			1		10/09/18 15:50		
Oxygen, Dissolved	**0.1**	mg/L			1		10/09/18 15:50	7782-44-7	
REDOX	**-75.8**	mV			1		10/09/18 15:50		
Turbidity	**2.83**	NTU			1		10/09/18 15:50		
Static Water Level	**610.27**	feet			1		10/09/18 15:50		
Temperature, Water (C)	**15**	deg C			1		10/09/18 15:50		
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**278**	mg/L	20.0	8.7	1		10/15/18 16:22		
9040 pH	Analytical Method: EPA 9040								
pH at 25 Degrees C	**7.7**	Std. Units	0.10	0.010	1		10/12/18 09:21		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**40.2**	mg/L	2.0	0.50	1		10/18/18 17:19	16887-00-6	
Fluoride	**0.17J**	mg/L	0.30	0.10	1		10/18/18 17:19	16984-48-8	
Sulfate	**24.8**	mg/L	3.0	1.0	1		10/18/18 17:19	14808-79-8	

Sample: B-39 **Lab ID: 40177434008** Collected: 10/09/18 16:50 Received: 10/11/18 09:20 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Boron	**613**	ug/L	11.0	3.3	1	10/15/18 06:38	10/23/18 03:42	7440-42-8	
Calcium	**54200**	ug/L	250	69.8	1	10/15/18 06:38	10/18/18 20:02	7440-70-2	
Field Data	Analytical Method:								
Field pH	**6.2**	Std. Units			1		10/09/18 16:50		
Field Specific Conductance	**412.2**	umhos/cm			1		10/09/18 16:50		
Oxygen, Dissolved	**0.27**	mg/L			1		10/09/18 16:50	7782-44-7	
REDOX	**101.1**	mV			1		10/09/18 16:50		
Turbidity	**59.74**	NTU			1		10/09/18 16:50		
Static Water Level	**611.44**	feet			1		10/09/18 16:50		
Temperature, Water (C)	**17**	deg C			1		10/09/18 16:50		
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**246**	mg/L	20.0	8.7	1		10/15/18 16:23		
9040 pH	Analytical Method: EPA 9040								
pH at 25 Degrees C	**6.6**	Std. Units	0.10	0.010	1		10/12/18 09:22		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**0.71J**	mg/L	2.0	0.50	1		10/18/18 18:08	16887-00-6	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25216071.18 NELSON DEWEY
Pace Project No.: 40177434

Sample: B-39 **Lab ID: 40177434008** Collected: 10/09/18 16:50 Received: 10/11/18 09:20 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Fluoride	**0.15J**	mg/L	0.30	0.10	1		10/18/18 18:08	16984-48-8	
Sulfate	**8.0**	mg/L	3.0	1.0	1		10/18/18 18:08	14808-79-8	

Sample: FIELD BLANK **Lab ID: 40177434009** Collected: 10/09/18 15:15 Received: 10/11/18 09:20 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Boron	**<3.3**	ug/L	11.0	3.3	1	10/15/18 06:38	10/23/18 01:53	7440-42-8	
Calcium	**<69.8**	ug/L	250	69.8	1	10/15/18 06:38	10/18/18 17:18	7440-70-2	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**<8.7**	mg/L	20.0	8.7	1		10/15/18 16:23		
9040 pH	Analytical Method: EPA 9040								
pH at 25 Degrees C	**6.0**	Std. Units	0.10	0.010	1		10/12/18 09:25		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**<0.50**	mg/L	2.0	0.50	1		10/18/18 18:20	16887-00-6	
Fluoride	**<0.10**	mg/L	0.30	0.10	1		10/18/18 18:20	16984-48-8	
Sulfate	**<1.0**	mg/L	3.0	1.0	1		10/18/18 18:20	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25216071.18 NELSON DEWEY
Pace Project No.: 40177434

QC Batch: 303129 Analysis Method: EPA 6020
QC Batch Method: EPA 3010 Analysis Description: 6020 MET
Associated Lab Samples: 40177434001, 40177434002, 40177434003, 40177434004, 40177434005, 40177434006, 40177434007, 40177434008, 40177434009

METHOD BLANK: 1770724 Matrix: Water
Associated Lab Samples: 40177434001, 40177434002, 40177434003, 40177434004, 40177434005, 40177434006, 40177434007, 40177434008, 40177434009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Boron	ug/L	<3.3	11.0	10/23/18 01:46	
Calcium	ug/L	<69.8	250	10/18/18 17:12	

LABORATORY CONTROL SAMPLE: 1770725

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	500	461	92	80-120	
Calcium	ug/L	5000	5090	102	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1770726 1770727

Parameter	Units	40177434002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	73.0	500	500	516	509	89	87	75-125	1	20	
Calcium	ug/L	38500	5000	5000	46300	46400	156	157	75-125	0	20	P6

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

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25216071.18 NELSON DEWEY
Pace Project No.: 40177434

QC Batch: 303222 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 40177434001, 40177434002, 40177434003, 40177434004, 40177434005, 40177434006, 40177434007, 40177434008, 40177434009

METHOD BLANK: 1771258 Matrix: Water
Associated Lab Samples: 40177434001, 40177434002, 40177434003, 40177434004, 40177434005, 40177434006, 40177434007, 40177434008, 40177434009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	10/15/18 16:19	

LABORATORY CONTROL SAMPLE: 1771259

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	615	596	97	80-120	

SAMPLE DUPLICATE: 1771260

Parameter	Units	40177361001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	7320	7790	6	5	R1

SAMPLE DUPLICATE: 1771261

Parameter	Units	40177434002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	186	172	8	5	R1

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

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25216071.18 NELSON DEWEY
Pace Project No.: 40177434

QC Batch: 302993 Analysis Method: EPA 9040
QC Batch Method: EPA 9040 Analysis Description: 9040 pH
Associated Lab Samples: 40177434001, 40177434002, 40177434003, 40177434004, 40177434005, 40177434006, 40177434007, 40177434008, 40177434009

SAMPLE DUPLICATE: 1769760

Parameter	Units	40177375018 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.5	7.6	0	20	H6

SAMPLE DUPLICATE: 1769761

Parameter	Units	40177434001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.3	7.3	0	20	H6

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

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25216071.18 NELSON DEWEY
Pace Project No.: 40177434

QC Batch: 303443 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 40177434001, 40177434002, 40177434003, 40177434004, 40177434005, 40177434006, 40177434007, 40177434008, 40177434009

METHOD BLANK: 1772352 Matrix: Water
Associated Lab Samples: 40177434001, 40177434002, 40177434003, 40177434004, 40177434005, 40177434006, 40177434007, 40177434008, 40177434009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.50	2.0	10/18/18 11:51	
Fluoride	mg/L	<0.10	0.30	10/18/18 11:51	
Sulfate	mg/L	<1.0	3.0	10/18/18 11:51	

LABORATORY CONTROL SAMPLE: 1772353

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	20.2	101	90-110	
Fluoride	mg/L	2	2.2	108	90-110	
Sulfate	mg/L	20	20.6	103	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1772354 1772355

Parameter	Units	40177742013 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	7.4	20	20	28.0	28.1	103	104	90-110	0	15	
Fluoride	mg/L	0.65	2	2	2.8	2.8	106	107	90-110	1	15	
Sulfate	mg/L	20.3	20	20	40.8	40.9	103	103	90-110	0	15	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1772356 1772357

Parameter	Units	40177453001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	501	400	400	882	919	95	104	90-110	4	15	
Fluoride	mg/L	<1000	20000	20000	18800	18800	94	94	90-110	0	15	
Sulfate	mg/L	50.3J	400	400	443	450	98	100	90-110	2	15	

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

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALIFIERS

Project: 25216071.18 NELSON DEWEY
Pace Project No.: 40177434

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

H6	Analysis initiated outside of the 15 minute EPA required holding time.
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.

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25216071.18 NELSON DEWEY
Pace Project No.: 40177434

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40177434001	**B-26**	EPA 3010	303129	EPA 6020	303240
40177434002	**B-7R**	EPA 3010	303129	EPA 6020	303240
40177434003	**B-11B**	EPA 3010	303129	EPA 6020	303240
40177434004	**B-11A**	EPA 3010	303129	EPA 6020	303240
40177434005	**B-11R**	EPA 3010	303129	EPA 6020	303240
40177434006	**B-31R**	EPA 3010	303129	EPA 6020	303240
40177434007	**B-31A**	EPA 3010	303129	EPA 6020	303240
40177434008	**B-39**	EPA 3010	303129	EPA 6020	303240
40177434009	**FIELD BLANK**	EPA 3010	303129	EPA 6020	303240
40177434001	**B-26**				
40177434002	**B-7R**				
40177434003	**B-11B**				
40177434004	**B-11A**				
40177434005	**B-11R**				
40177434006	**B-31R**				
40177434007	**B-31A**				
40177434008	**B-39**				
40177434001	**B-26**	SM 2540C	303222		
40177434002	**B-7R**	SM 2540C	303222		
40177434003	**B-11B**	SM 2540C	303222		
40177434004	**B-11A**	SM 2540C	303222		
40177434005	**B-11R**	SM 2540C	303222		
40177434006	**B-31R**	SM 2540C	303222		
40177434007	**B-31A**	SM 2540C	303222		
40177434008	**B-39**	SM 2540C	303222		
40177434009	**FIELD BLANK**	SM 2540C	303222		
40177434001	**B-26**	EPA 9040	302993		
40177434002	**B-7R**	EPA 9040	302993		
40177434003	**B-11B**	EPA 9040	302993		
40177434004	**B-11A**	EPA 9040	302993		
40177434005	**B-11R**	EPA 9040	302993		
40177434006	**B-31R**	EPA 9040	302993		
40177434007	**B-31A**	EPA 9040	302993		
40177434008	**B-39**	EPA 9040	302993		
40177434009	**FIELD BLANK**	EPA 9040	302993		
40177434001	**B-26**	EPA 300.0	303443		
40177434002	**B-7R**	EPA 300.0	303443		
40177434003	**B-11B**	EPA 300.0	303443		
40177434004	**B-11A**	EPA 300.0	303443		
40177434005	**B-11R**	EPA 300.0	303443		
40177434006	**B-31R**	EPA 300.0	303443		
40177434007	**B-31A**	EPA 300.0	303443		
40177434008	**B-39**	EPA 300.0	303443		
40177434009	**FIELD BLANK**	EPA 300.0	303443		

REPORT OF LABORATORY ANALYSIS

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

Pace Analytical®
www.pacelabs.com

CHAIN OF CUSTODY

4017743Y

(Please Print Clearly)	
Company Name:	SCS Engineers
Branch/Location:	25-Madison
Project Contact:	Tom Kanwoski
Phone:	608-216-7369
Project Number:	25216071.18
Project Name:	Nelson Dewey
Project State:	WI
Sampled By (Print):	Nate Adams
Sampled By (Sign):	
PO #:	Regulatory Program:

*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

Quote #:	
Mail To Contact:	Tom Kanwoski
Mail To Company:	SCS Engineers
Mail To Address:	2830 Dairy Drive Madison, WI 53718
Invoice To Contact:	
Invoice To Company:	
Invoice To Address:	
Invoice To Phone:	

Data Package Options (billable)
☐ 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

PACE LAB #	CLIENT FIELD ID	COLLECTION DATE	COLLECTION TIME	MATRIX	FILTERED? (YES/NO)	PRESERVATION (CODE)*	Analyses Requested: Metals	pH	TDS, Cl, F, SO4
					Y/N	Pick Letter			
001	B-26	10-8-18	1020	GW	N	D	X	X	X
002	B-7R	10-9-18	1110	GW	N	A	X	X	X
003	B-11B		1210	GW	N	A	X	X	X
004	B-11A		1250	GW	N	A	X	X	X
005	B-11R		1415	GW	N	A	X	X	X
006	B-31R		1510	GW	N	A	X	X	X
007	B-31A		1550	GW	N	A	X	X	X
008	B-39		1650	GW	N	A	X	X	X
009	Field Blank	↓	1515	W	N	A	X	X	X

CLIENT COMMENTS

LAB COMMENTS (Lab Use Only)

Profile #

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:

Samples on HOLD are subject to special pricing and release of liability

Relinquished By:	Date/Time:	Received By:	Date/Time:
	10/10/2018 1700		
Relinquished By: FedEx	Date/Time: 10/11/18 0920	Received By:	Date/Time: 10/11/18 0920
Relinquished By:	Date/Time:	Received By:	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:
Relinquished By:	Date/Time:	Received By:	Date/Time:

PACE Project No.: 4017743Y
Receipt Temp = 1.0 °C
Sample Receipt pH OK / Adjusted
Cooler Custody Seal Present / Not Present
Intact / Not Intact

Version 6.0 06/14/06

ORIGINAL

C019a(27Jun2006)

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

Sample Preservation Receipt Form

Client Name: SCS Project # 40177434

All containers needing preservation have been checked and noted below: X Yes ☐No ☐N/A Initial when completed: SKA Date/ Time:

Lab Lot# of pH paper: 10458781 Lab Std #ID of preservation (if pH adjusted):

Pace Lab #	Glass							Plastic							Vials						Jars			General			VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)
	AG1U	AG1H	AG4S	AG4U	AG5U	AG2S	BG3U	BP1U	BP2N	BP2Z	BP3U	BP3C	BP3N	BP3S	DG9A	DG9T	VG9U	VG9H	VG9M	VG9D	JGFU	WGFU	WPFU	SP5T	ZPLC	GN							
001											2		1																	X		2.5 / 5 / 10
002											2		1																	X		2.5 / 5 / 10
003											2		1																	X		2.5 / 5 / 10
004											2		1																	X		2.5 / 5 / 10
005											2		1																	X		2.5 / 5 / 10
006											2		1																	X		2.5 / 5 / 10
007											2		1																	X		2.5 / 5 / 10
008											2		1																	X		2.5 / 5 / 10
009											2		1																	X		2.5 / 5 / 10
010																																2.5 / 5 / 10
011																																2.5 / 5 / 10
012																																2.5 / 5 / 10
013																																2.5 / 5 / 10
014																																2.5 / 5 / 10
015																																2.5 / 5 / 10
016																																2.5 / 5 / 10
017																																2.5 / 5 / 10
018																																2.5 / 5 / 10
019																																2.5 / 5 / 10
020																																2.5 / 5 / 10

Exceptions to preservation check: VOA, Coliform, TOC, TOX, TOH, O&G, WI DRO, Phenolics, Other: Headspace in VOA Vials (>6mm) : ☐Yes ☐No ☐N/A ***If yes look in headspace column**

AG1U	1 liter amber glass	BP1U	1 liter plastic unpres	DG9A	40 mL amber ascorbic	JGFU	4 oz amber jar unpres
AG1H	1 liter amber glass HCL	BP2N	500 mL plastic HNO3	DG9T	40 mL amber Na Thio	WGFU	4 oz clear jar unpres
AG4S	125 mL amber glass H2SO4	BP2Z	500 mL plastic NaOH, Znact	VG9U	40 mL clear vial unpres	WPFU	4 oz plastic jar unpres
AG4U	120 mL amber glass unpres	BP3U	250 mL plastic unpres	VG9H	40 mL clear vial HCL		
AG5U	100 mL amber glass unpres	BP3C	250 mL plastic NaOH	VG9M	40 mL clear vial MeOH	SP5T	120 mL plastic Na Thiosulfate
AG2S	500 mL amber glass H2SO4	BP3N	250 mL plastic HNO3	VG9D	40 mL clear vial DI	ZPLC	ziploc bag
BG3U	250 mL clear glass unpres	BP3S	250 mL plastic H2SO4			GN:	

Pace Analytical 1241 Bellevue Street, Green Bay, WI 54302	Document Name: **Sample Condition Upon Receipt (SCUR)**	Document Revised: 25Apr2018
	Document No.: **F-GB-C-031-Rev.07**	Issuing Authority: Pace Green Bay Quality Office

Sample Condition Upon Receipt Form (SCUR)

Project #:

WO#: 40177434

40177434

Client Name: SCS

Courier: ☐ CS Logistics ☒ Fed Ex ☐ Speedee ☐ UPS ☐ Waltco
☐ Client ☐ Pace Other: _____

Tracking #: 8130 2340 5955

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 SR - NA **Type of Ice:** (Wet) Blue Dry None ☒ Samples on ice, cooling process has begun

Cooler Temperature Uncorr: ROI /Corr: _____

Temp Blank Present: ☐ yes ☒ no **Biological Tissue is Frozen:** ☐ yes ☐ no

Person examining contents:
Date: 10/11/18
Initials: SSK

Temp should be above freezing to 6°C.
Biota Samples may be received at ≤ 0°C.

Chain of Custody Present:	☒Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☐Yes ☒No ☐N/A	2. Page #, invoice info SSK 10/11/18
Chain of Custody Relinquished:	☒Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☒Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☒Yes ☐No	5.
- VOA Samples frozen upon receipt	☐Yes ☐No	Date/Time:
Short Hold Time Analysis (<72hr):	☒Yes ☐No	6.
Rush Turn Around Time Requested:	☐Yes ☒No	7.
Sufficient Volume: For Analysis: ☒Yes ☐No MS/MSD: ☐Yes ☒No ☐N/A		8.
Correct Containers Used:	☒Yes ☐No	9.
-Pace Containers Used:	☒Yes ☐No ☐N/A	
-Pace IR Containers Used:	☐Yes ☐No ☒N/A	
Containers Intact:	☒Yes ☐No	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☒N/A	11.
Sample Labels match COC: -Includes date/time/ID/Analysis Matrix: ✓	☒Yes ☐No ☐N/A	12.
Trip Blank Present:	☐Yes ☐No ☒N/A	13.
Trip Blank Custody Seals Present	☐Yes ☐No ☒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: _____

Project Manager Review: RMR for BM **Date:** 10/11/18

A3 November 2018 Resampling Event

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

November 27, 2018

Meghan Blodgett
SCS ENGINEERS
2830 Dairy Drive
Madison, WI 53718

RE: Project: 25216071.18 WPL-NELSON DEWEY
Pace Project No.: 40179516

Dear Meghan Blodgett:
Enclosed are the analytical results for sample(s) received by the laboratory on November 13, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC 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,

Dan Milewsky
dan.milewsky@pacelabs.com
(920)469-2436
Project Manager

Enclosures

cc: Tom Karwoski, SCS ENGINEERS
Nicole Kron, SCS ENGINEERS
Jeff Maxted, ALLIANT ENERGY
Marc Morandi, ALLIANT ENERGY

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

CERTIFICATIONS

Project: 25216071.18 WPL-NELSON DEWEY
Pace Project No.: 40179516

Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302
Florida/NELAP Certification #: E87948
Illinois Certification #: 200050
Kentucky UST Certification #: 82
Louisiana Certification #: 04168
Minnesota Certification #: 055-999-334
New York Certification #: 12064
North Dakota Certification #: R-150
Virginia VELAP ID: 460263
South Carolina Certification #: 83006001
Texas Certification #: T104704529-14-1
Wisconsin Certification #: 405132750
Wisconsin DATCP Certification #: 105-444
USDA Soil Permit #: P330-16-00157
Federal Fish & Wildlife Permit #: LE51774A-0

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE SUMMARY

Project: 25216071.18 WPL-NELSON DEWEY
Pace Project No.: 40179516

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40179516001	**FIELD BLANK**	Water	11/12/18 10:30	11/13/18 09:10
40179516002	**B-31R**	Water	11/12/18 10:41	11/13/18 09:10
40179516003	**B-11B**	Water	11/12/18 11:41	11/13/18 09:10

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE ANALYTE COUNT

Project: 25216071.18 WPL-NELSON DEWEY
Pace Project No.: 40179516

Lab ID	Sample ID	Method	Analysts	Analytes Reported
40179516001	**FIELD BLANK**	SM 2540C	TMK	1
		EPA 300.0	HMB	1
40179516002	**B-31R**		RMW	7
		SM 2540C	TMK	1
		EPA 300.0	HMB	1
40179516003	**B-11B**		RMW	7
		SM 2540C	TMK	1

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25216071.18 WPL-NELSON DEWEY
Pace Project No.: 40179516

Sample: FIELD BLANK **Lab ID: 40179516001** Collected: 11/12/18 10:30 Received: 11/13/18 09:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**16.0J**	mg/L	20.0	8.7	1		11/14/18 14:27		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Sulfate	**<1.0**	mg/L	3.0	1.0	1		11/22/18 01:32	14808-79-8	

Sample: B-31R **Lab ID: 40179516002** Collected: 11/12/18 10:41 Received: 11/13/18 09:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:								
Field pH	**6.59**	Std. Units			1		11/12/18 10:41		
Field Specific Conductance	**858**	umhos/cm			1		11/12/18 10:41		
Oxygen, Dissolved	**0.19**	mg/L			1		11/12/18 10:41	7782-44-7	
REDOX	**1.0**	mV			1		11/12/18 10:41		
Turbidity	**3.83**	NTU			1		11/12/18 10:41		
Static Water Level	**609.11**	feet			1		11/12/18 10:41		
Temperature, Water (C)	**15.0**	deg C			1		11/12/18 10:41		
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**596**	mg/L	20.0	8.7	1		11/14/18 17:49		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Sulfate	**162**	mg/L	15.0	5.0	5		11/22/18 01:46	14808-79-8	

Sample: B-11B **Lab ID: 40179516003** Collected: 11/12/18 11:41 Received: 11/13/18 09:10 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method:								
Field pH	**8.05**	Std. Units			1		11/12/18 11:41		
Field Specific Conductance	**863**	umhos/cm			1		11/12/18 11:41		
Oxygen, Dissolved	**0.16**	mg/L			1		11/12/18 11:41	7782-44-7	
REDOX	**45.8**	mV			1		11/12/18 11:41		
Turbidity	**2.65**	NTU			1		11/12/18 11:41		
Static Water Level	**609.14**	feet			1		11/12/18 11:41		
Temperature, Water (C)	**14.1**	deg C			1		11/12/18 11:41		
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**594**	mg/L	20.0	8.7	1		11/14/18 17:50		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25216071.18 WPL-NELSON DEWEY
Pace Project No.: 40179516

QC Batch: 306572 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 40179516001

METHOD BLANK: 1792886 Matrix: Water
Associated Lab Samples: 40179516001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	11/14/18 14:23	

LABORATORY CONTROL SAMPLE: 1792887

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	552	550	100	80-120	

SAMPLE DUPLICATE: 1792888

Parameter	Units	40179321007 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	478	488	2	5	

SAMPLE DUPLICATE: 1792889

Parameter	Units	40179321008 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1160	1170	1	5	

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

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25216071.18 WPL-NELSON DEWEY
Pace Project No.: 40179516

QC Batch: 306630 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 40179516002, 40179516003

METHOD BLANK: 1793318 Matrix: Water
Associated Lab Samples: 40179516002, 40179516003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	11/14/18 17:49	

LABORATORY CONTROL SAMPLE: 1793319

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	552	538	97	80-120	

SAMPLE DUPLICATE: 1793320

Parameter	Units	40179617002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	566	554	2	5	

SAMPLE DUPLICATE: 1793321

Parameter	Units	40179624001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	604	592	2	5	

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

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25216071.18 WPL-NELSON DEWEY
Pace Project No.: 40179516

QC Batch: 307239
QC Batch Method: EPA 300.0
Analysis Method: EPA 300.0
Analysis Description: 300.0 IC Anions
Associated Lab Samples: 40179516001, 40179516002

METHOD BLANK: 1796462 Matrix: Water
Associated Lab Samples: 40179516001, 40179516002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Sulfate	mg/L	<1.0	3.0	11/21/18 23:13	

LABORATORY CONTROL SAMPLE: 1796463

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Sulfate	mg/L	20	21.0	105	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1796464 1796465

Parameter	Units	40179533001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Sulfate	mg/L	7.6	20	20	29.8	29.9	111	111	90-110	0	15	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

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALIFIERS

Project: 25216071.18 WPL-NELSON DEWEY
Pace Project No.: 40179516

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, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

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

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

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25216071.18 WPL-NELSON DEWEY
Pace Project No.: 40179516

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40179516002	**B-31R**				
40179516003	**B-11B**				
40179516001	**FIELD BLANK**	SM 2540C	306572		
40179516002	**B-31R**	SM 2540C	306630		
40179516003	**B-11B**	SM 2540C	306630		
40179516001	**FIELD BLANK**	EPA 300.0	307239		
40179516002	**B-31R**	EPA 300.0	307239		

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

Pace Analytical®
www.pacelabs.com

CHAIN OF CUSTODY

401795 16

*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

(Please Print Clearly)	
Company Name:	SCS Engineers
Branch/Location:	Madison, WI
Project Contact:	Meg Blodgette
Phone:	608-224-2830
Project Number:	25216071.18
Project Name:	WPI - Nelson Dewey
Project State:	WI
Sampled By (Print):	Jackie Rennebohm
Sampled By (Sign):	
PO #:	Regulatory Program:

Quote #:	
Mail To Contact:	
Mail To Company:	SCS Engineers
Mail To Address:	2830 Dairy Dr Madison, WI 53718
Invoice To Contact:	
Invoice To Company:	
Invoice To Address:	
Invoice To Phone:	

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

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

Matrix Codes

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

PACE LAB #	CLIENT FIELD ID	COLLECTION DATE	COLLECTION TIME	MATRIX	FILTERED? (YES/NO) Y/N	PRESERVATION (CODE)* Pick Letter	Analyses Requested	CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)	Profile #
001	Field blank	11/12	1080		N	A	Sulfate TDS			
002	B-31R	11/12	1041	GW	N	A				
003	B-11B	11/12	1141	GW	N	A				

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:

Samples on HOLD are subject to special pricing and release of liability

Relinquished By:	Date/Time:	Received By:	Date/Time:
	11/12/18 1515		
CS Logistics	11/13/18 0910		11/13/18 0910

PACE Project No.
401795 16
Receipt Temp = ROL °C
Sample Receipt pH OK / Adjusted
Cooler Custody Seal Present / ~~Not Present~~ Intact / Not Intact

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

Sample Preservation Receipt Form

Client Name: SCS Project # 40179576

All containers needing preservation have been checked and noted below: ☐Yes ☐No ☒N/A

Lab Lot# of pH paper: Lab Std #ID of preservation (if pH adjusted): Initial when completed: Date/ Time:

Pace Lab #	Glass							Plastic							Vials						Jars			General			VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)
	AG1U	AG1H	AG4S	AG4U	AG5U	AG2S	BG3U	BP1U	BP2N	BP2Z	BP3U	BP3C	BP3N	BP3S	DG9A	DG9T	VG9U	VG9H	VG9M	VG9D	JGFU	WGFU	WPFU	SP5T	ZPLC	GN							
001											1																					2.5 / 5 / 10
002											1																					2.5 / 5 / 10
003											1																					2.5 / 5 / 10
004																																2.5 / 5 / 10
005																																2.5 / 5 / 10
006																																2.5 / 5 / 10
007																																2.5 / 5 / 10
008																																2.5 / 5 / 10
009																																2.5 / 5 / 10
010																																2.5 / 5 / 10
011																																2.5 / 5 / 10
012																																2.5 / 5 / 10
013																																2.5 / 5 / 10
014																																2.5 / 5 / 10
015																																2.5 / 5 / 10
016																																2.5 / 5 / 10
017																																2.5 / 5 / 10
018																																2.5 / 5 / 10
019																																2.5 / 5 / 10
020																																2.5 / 5 / 10

Exceptions to preservation check: VOA, Coliform, TOC, TOX, TOH, O&G, WI DRO, Phenolics, Other: Headspace in VOA Vials (>6mm) : ☐Yes ☐No ☒N/A ***If yes look in headspace column**

AG1U	1 liter amber glass	BP1U	1 liter plastic unpres	DG9A	40 mL amber ascorbic	JGFU	4 oz amber jar unpres
AG1H	1 liter amber glass HCL	BP2N	500 mL plastic HNO3	DG9T	40 mL amber Na Thio	WGFU	4 oz clear jar unpres
AG4S	125 mL amber glass H2SO4	BP2Z	500 mL plastic NaOH, Znact	VG9U	40 mL clear vial unpres	WPFU	4 oz plastic jar unpres
AG4U	120 mL amber glass unpres	BP3U	250 mL plastic unpres	VG9H	40 mL clear vial HCL		
AG5U	100 mL amber glass unpres	BP3C	250 mL plastic NaOH	VG9M	40 mL clear vial MeOH	SP5T	120 mL plastic Na Thiosulfate
AG2S	500 mL amber glass H2SO4	BP3N	250 mL plastic HNO3	VG9D	40 mL clear vial DI	ZPLC	ziploc bag
BG3U	250 mL clear glass unpres	BP3S	250 mL plastic H2SO4			GN:	

Pace Analytical™ 1241 Bellevue Street, Green Bay, WI 54302	Document Name: Sample Condition Upon Receipt (SCUR)	Document Revised: 25Apr2018
	Document No.: F-GB-C-031-Rev.07	Issuing Authority: Pace Green Bay Quality Office

Sample Condition Upon Receipt Form (SCUR)

Client Name: SCS

Project #: WO#: 40179516

Courier: ☑ CS Logistics ☐ Fed Ex ☐ Speedee ☐ UPS ☐ Waltco ☐ Client ☐ Pace Other: _____

Tracking #: _____

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 SR - N/A **Type of Ice:** Wet Blue Dry None ☑ Samples on ice, cooling process has begun

Cooler Temperature Uncorr: N/A /Corr: _____

Temp Blank Present: ☑ yes ☐ no **Biological Tissue is Frozen:** ☐ yes ☐ no

Temp should be above freezing to 6°C.
Biota Samples may be received at ≤ 0°C.

Person examining contents:
Date: 11/13/18
Initials: _____

Chain of Custody Present:	☑Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☐Yes ☑No ☐N/A	2. invoice 11/13/18
Chain of Custody Relinquished:	☑Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☑Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☑Yes ☐No	5.
- VOA Samples frozen upon receipt	☐Yes ☐No	Date/Time:
Short Hold Time Analysis (<72hr):	☐Yes ☑No	6.
Rush Turn Around Time Requested:	☐Yes ☑No	7.
Sufficient Volume: For Analysis: ☑Yes ☐No MS/MSD: ☐Yes ☑No ☐N/A		8.
Correct Containers Used:	☑Yes ☐No	9.
-Pace Containers Used:	☑Yes ☐No ☐N/A	
-Pace IR Containers Used:	☐Yes ☐No ☑N/A	
Containers Intact:	☑Yes ☐No	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☑N/A	11.
Sample Labels match COC:	☑Yes ☐No ☐N/A	12.
-Includes date/time/ID/Analysis Matrix: W		
Trip Blank Present:	☐Yes ☐No ☑N/A	13.
Trip Blank Custody Seals Present	☐Yes ☐No ☑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: AL for DM **Date:** 11/13/18

Appendix B

Alternative Source Demonstrations

B1 Alternative Source Demonstration, October 2017 Detection Monitoring

SCS ENGINEERS

Alternative Source Demonstration
October 2017 Detection Monitoring
Slag Pond
Nelson Dewey Generating Station
Cassville, Wisconsin

Prepared for:

Alliant Energy

Prepared by:

SCS ENGINEERS
2830 Dairy Drive
Madison, Wisconsin 53718-6751
(608) 224-2830

April 16, 2018
File No. 25216071.18

Offices Nationwide
www.scsengineers.com

Alternative Source Demonstration
October 2017 Detection Monitoring
Slag Pond
Nelson Dewey Generating Station
Cassville, Wisconsin

Prepared for:

Alliant Energy

Prepared by:

SCS ENGINEERS
2830 Dairy Drive
Madison, Wisconsin 53718-6751
(608) 224-2830

April 16, 2018
File No. 25216071.18

Table of Contents

Section **Page**

Tables

Contents (Continued)

Figures

Appendices

I:\25216071.00\Reports\2018 ASD Report\180416_ASD_ND_Final.docx

PE CERTIFICATION

I, Sherren Clark, hereby certify that that the information in this alternate source demonstration is accurate and meets the requirements of 40 CFR 257.94(e)(2). This certification is based on my review of the groundwater data and related site information available for the Nelson Dewey Generating Station Slag Pond facility. I am a duly licensed Professional Engineer under the laws of the State of Wisconsin.

4-16-18

(signature) (date)

Sherren Clark

(printed or typed name)

License number E-29863

My license renewal date is July 31, 2018.

Pages or sheets covered by this seal:

All: Nelson Dewey Generating Station, Slag Pond, Alternative Source Demonstration

[This page left blank intentionally]

1.0 INTRODUCTION

This Alternative Source Demonstration (ASD) was prepared to support compliance with the groundwater monitoring requirements of the "Coal Combustion Residuals (CCR) Final Rule" published by the U.S. Environmental Protection Agency (USEPA) in the *Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities; Final Rule*, dated April 17, 2015 (USEPA, 2015) and subsequent amendments. Specifically, this report was prepared to fulfill the requirements of 40 CFR 257.94(e)(2). The applicable sections of the Rule are provided below in *italics*.

1.1 §257.94(E)(2) ALTERNATIVE SOURCE DEMONSTRATION REQUIREMENTS

The owner and operator may demonstrate that a source other than the CCR Unit caused the statistically significant increase over background levels for a constituent or that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. The owner or operator must complete the written demonstration within 90 days of detecting a statistically significant increase over background levels.

An ASD is completed when there are exceedances of one or more benchmarks established within the groundwater monitoring program. The ASD is completed to determine if any other sources are likely causes of the identified exceedance(s) of established benchmark(s) at the site. This ASD was performed in response to results indicating a statistically significant increase (SSI) over background levels during detection monitoring under the CCR Rule.

The ASD report is evaluating the SSIs observed in the statistical evaluation of the October 2017 detection monitoring event at the Nelson Dewey Generating Station (NED).

1.2 SITE INFORMATION AND MAP

The NED site is located along the east bank of the Mississippi River, north of the City of Cassville, in Grant County, Wisconsin (**Figure 1**). The facility includes a decommissioned coal-fired generating plant, a CCR landfill that was closed in 2001, a closed slag pond, and a wastewater treatment pond that is currently completing closure. The layout of the site on an aerial photograph base is shown on **Figure 2**. The closed landfill at the NED facility was permitted under Wisconsin Department of Natural Resources (WDNR) License #02525.

The existing CCR unit evaluated for this ASD is:

- Slag Pond (existing CCR surface impoundment)

A map showing the CCR unit and all background (or upgradient) and downgradient monitoring wells with identification numbers for the CCR groundwater monitoring program and the state monitoring program is provided as **Figure 3**.

Operations at the facility began in the late 1950s, and a CCR impoundment that included what is now the Slag Pond was commissioned at that time. The CCR landfill was initially licensed in 1976 and received fly ash from NED until it was closed in phases between 1996 and 2001. The CCR landfill was initially operated as a fly ash sluice basin, then transitioned to dry ash placement prior to closure. The wastewater ponds, now closed, were constructed in 1976 for the purpose of settling CCR from the NED process wastewater streams and sediment from storm water runoff prior to discharge. Both NED generating units were retired on December 31, 2015, and have since been decommissioned. The generating station was demolished in 2017.

1.3 STATISTICALLY SIGNIFICANT INCREASES IDENTIFIED

SSIs were identified for boron, calcium, fluoride, field pH, and sulfate at one or more wells based on the October 2017 detection monitoring event. A summary of the October 2017 constituent concentrations and the established benchmark concentrations is provided in **Table 1**. The constituent concentrations with SSIs above the background concentrations are highlighted in the table. Concentration trends for the parameters with SSIs are shown in **Appendix A**.

1.4 OVERVIEW OF ASD APPROACH

This ASD report includes:

- Background information (**Section 2.0**)
- Evaluation of potential that SSIs are due to methodology or analysis (**Section 3.0**)
- Evaluation of potential that SSIs are due to natural sources or man-made sources other than the CCR Units (**Section 4.0**)
- ASD conclusions (**Section 5.0**)
- Monitoring recommendations (**Section 6.0**)

The CCR Rule constituent results from background and compliance sampling are provided in **Table 2**, and concentration trends are shown in **Appendix A**. Complete laboratory reports for the background monitoring events and the October 2017 detection monitoring event were included in the 2017 Annual Groundwater Monitoring and Corrective Action Report for the NED.

2.0 BACKGROUND

To provide context for the ASD evaluation, the following background information is provided in this section of the report, prior to the ASD evaluation sections:

- Geologic and hydrogeologic setting
- CCR Rule monitoring system
- Other monitoring wells

2.1 GEOLOGIC AND HYDROGEOLOGIC SETTING

2.1.1 Regional Information

The uppermost geologic formation beneath the NED plant that meets the definition of the "uppermost aquifer," as defined by section 257.53 of the CCR Rule, is the surficial alluvial aquifer. The alluvial aquifer consists of Mississippi River valley sand and sand and gravel deposits. This deposit is prevalent along the edges of the entire Mississippi River valley in southwestern Wisconsin. A map of the regional glacial geology in the area is included in **Appendix B**.

The alluvial aquifer is underlain by dolomitic bedrock of the Prairie du Chien Group. A bedrock geology map of the area is provided in **Appendix B**. The dolomite bedrock is also an aquifer and is likely hydraulically connected to the alluvial aquifer above.

Regionally, groundwater flow is generally to the southwest and discharges to the Mississippi River.

2.1.2 Site Information

The thickness of the alluvium in the immediate vicinity of the plant is over 125 feet as evidenced by local water supply well logs (**Appendix C**). These logs are also evidence that the alluvial aquifer yields useable quantities of groundwater for supply wells in the area. Soil boring logs for monitoring wells installed at the site also generally indicate sand and gravel soils within the monitored depths.

The groundwater flow direction in the vicinity of the plant is generally southwest toward the Mississippi River. Historically, infiltration at the former slag pond, former fly ash basin, and the former WPDES ponds caused groundwater mounding to be present around these features; however, these ponds have now all been closed and are no longer sources of infiltration.

Site water level measurements generally indicate that groundwater flow is to the southwest, discharging to the Mississippi River. However, during periods of high river water levels, the flow temporarily reverses and the river discharges to the shallow sand and gravel aquifer. The predominant groundwater flow direction, to the southwest, is shown on the water table map for April 2016 (**Figure 4**). An example of a period of high river levels, with groundwater flow away from the river, is shown on the water table map for October 2017 (**Figure 5**). The groundwater elevations are provided in **Table 3**.

2.2 CCR RULE MONITORING SYSTEM

The groundwater monitoring system established in accordance with the CCR Rule consists of one upgradient (background) monitoring well and six downgradient monitoring wells. The background well is B-26. The downgradient wells include B-7R, B-11A, B-11B, B-11R, B-31A, and B-31R. The CCR Rule wells are installed within the surficial alluvium aquifer. Well depths range from approximately 23 to 114 feet, measured from the top of the well casing.

2.3 OTHER MONITORING WELLS

There are 19 groundwater monitoring wells at the NED facility that are part of the monitoring system developed for the state monitoring program. All of the wells included in the CCR monitoring well network were already in use for the state monitoring program. The well locations are shown on **Figure 3**. These 19 monitoring wells and two private wells are used to monitor groundwater conditions at the site under WDNR License Number 2525, which includes the closed CCR landfill (former fly ash settling basin) and the closed Slag Pond.

Monitoring wells for the state monitoring program are installed in the surficial sand and gravel aquifer which is the uppermost aquifer as defined under 40 CFR 257.53. Recent analytical results from the state monitoring program for boron, fluoride, pH, and sulfate are provided in **Table 4**. The state program does not include monitoring for calcium.

3.0 METHODOLOGY AND ANALYSIS REVIEW

To evaluate the potential that an SSI is due to a source other than the regulated CCR unit, SCS Engineers (SCS) used a two-step evaluation process. First, the sample collection, field and laboratory analysis, and statistical evaluation were reviewed to identify any potential error or analysis that led to an exceedance of the benchmark. Second, potential alternative sources, including natural variation and man-made sources other than the CCR unit, were evaluated. This section of the report provides the findings of the methodology and analysis review. **Section 4.0** of the report addresses the potential alternative sources.

3.1 SAMPLING AND FIELD ANALYSIS REVIEW

Field notes and sampling results were reviewed to determine if any sampling error may have caused or contributed to the observed SSIs. Potential field sampling errors or issues could include mislabeling of samples, improper sample handling, missed holding times, cross contamination during sampling, or other field error. Field blank sample results were also reviewed for any indication of potential contamination from sampling equipment or containers. Based on the review of the field notes and results, SCS did not identify any indication that the SSIs were due to a sampling error.

SCS did not identify any issues with the field pH analysis based on review of the data and field notes. Because boron, calcium, fluoride, and sulfate are laboratory parameters, there is little potential for a field analysis error to contribute to an SSI.

3.2 LABORATORY ANALYSIS REVIEW

Laboratory reports for the background monitoring and the October 2017 detection monitoring were reviewed to determine if any laboratory analysis error or issue may have caused or contributed to the observed SSIs for boron. The laboratory report review included reviewing the laboratory quality control flags and narrative, verifying that correct methods were used and desired detection limits were achieved, and checking the field and laboratory blank sample

results. Laboratory reports were included in the 2017 Annual Groundwater Monitoring and Corrective Action Report for the facility.

Based on the review of the laboratory reports, SCS did not identify any indication that the constituents with SSI concentrations were due to a laboratory analysis error. There were no laboratory quality control flags or issues identified in the laboratory report that affect the usability of the data for detection monitoring.

During review of the laboratory reports for the ASD, one correction was made that does not affect the SSI determinations. In the 2017 Annual Groundwater Monitoring and Corrective Action Report, SCS noted that a revision to a lab report for the June 2017 background sampling event was made to switch sample results for B-31R and B-31A, which had been incorrectly identified during sampling; however, the lab report in the 2017 Annual Report did not include the full update. The final revised lab report is provided in **Appendix D**.

3.3 STATISTICAL EVALUATION REVIEW

The review of the statistical results and methods include a quality control check of the following:

- Input analytical data vs. laboratory analytical reports
- Review of statistical method and outlier concentration lists for each monitoring well/CCR unit

Based on the review of the statistical evaluation, SCS did not identify any other errors or issues in the statistical evaluation that caused or contributed to the determination of interwell SSIs for boron, calcium, fluoride, pH, and sulfate at the downgradient monitoring wells. A typographical error in the Upper Prediction Limit (UPL) for calcium in a previous version of the summary table of SSIs was identified and corrected; however, the UPL calculated in the statistical analysis was correct and was not changed.

The UPLs were calculated based on a 1-of-2 resampling approach in accordance with the USEPA's Unified Guidance (USEPA, 2009), which allows for resampling; however, Alliant Energy elected not to complete resampling for the parameters with SSIs because the results were generally consistent with results previously obtained during background monitoring.

3.4 SUMMARY OF METHODOLOGY AND ANALYSIS REVIEW FINDINGS

In summary, there were no changes to the SSI determinations for the October 2017 monitoring event based on the methodology and analysis review, and no errors or issues causing or contributing to the reported SSIs were identified.

4.0 ALTERNATIVE SOURCES

This section of the report discusses the potential alternative sources for the SSI constituents at the downgradient wells, identifies the most likely alternative source(s), and presents the lines of evidence indicating that an alternative source is the most likely cause of the observed SSIs concentrations at NED.

4.1 POTENTIAL CAUSES OF SSI

4.1.1 Natural Variation

The statistical analysis was completed using an interwell approach, comparing the October 2017 detection monitoring results to the UPLs calculated based on sampling of the background well (B-26). If concentrations of a constituent that is naturally present in the aquifer vary spatially, then the potential exists that the downgradient concentrations may be higher than upgradient concentrations due to natural variation.

Although natural variation is present in the shallow aquifer, it does not appear likely that natural variation is the primary source causing the boron, calcium, and sulfate SSIs. These parameters were detected at higher concentrations than would likely be present naturally.

Based on monitoring performed under the state monitoring program for the closed CCR landfill, natural variation may have contributed to the SSI for pH at B-11A and B-31A. The reported pH values are within the historic background range. Based on fluoride data for wells in the Grant County, natural variation may also have caused or contributed to the SSI for fluoride at B-11A and B-11B.

4.1.2 Man-made Alternative Sources

Man-made alternative sources that could potentially contribute to the boron, calcium, fluoride, pH, and sulfate SSIs could include the closed CCR landfill, the coal storage area, or other plant operations. Based the groundwater flow directions and on previous investigations at the site, the closed landfill appears to be the most likely cause of the SSIs for the downgradient wells B-7R, B-11A, B-11B, B-11R, B-31A, and B-31R.

4.2 LINES OF EVIDENCE

Lines of evidence indicating that natural variation may also have caused or contributed to the field pH and fluoride SSIs include:

1. The pH results that exceeded the UPL were within the range of pH values historically observed for background wells during monitoring for the state program.

2. Although fluoride was not detected in background well B-26, publicly available data from the WDNR's Groundwater Retrieval Network (GRN) database indicates it is commonly detected in Grant County.

The lines of evidence indicating that the SSIs for boron, calcium, fluoride, pH, and sulfate in one or more compliance wells relative to the background well are more likely due to the closed landfill and prior fly ash sluicing than to the slag pond include:

3. A previous Environmental Contamination Assessment completed for the ash disposal facility indicated that the fly ash sluicing and landfill were the primary source of the groundwater impacts in the area, based on multiple lines of evidence.

4. Sampling performed in preparation for the slag pond closure indicated that the slag and the slag pond sediment had little potential to cause the SSIs for boron, calcium, fluoride and sulfate.

5. Past and current groundwater monitoring performed under the state monitoring program shows that groundwater quality has improved since the 1990s in response to termination of fly ash sluicing and closure and capping of the ash landfill.

Each of these lines of evidence and the supporting data are discussed in more detail in the following sections.

4.2.1 Historic pH Monitoring Results

Natural variation may have contributed to the SSI for pH at B-11A and B-31A. The UPL was calculated based on pH results at background well B-26 for the eight CCR Rule background monitoring events and the October 19, 2017, detection monitoring event. Based on these results, the calculated UPL was 7.81. The reported pH at B-11A was 7.96 and at B-31A was 7.92. Although the results exceed the UPL, they are within the range historically observed for background well B-26 during monitoring for the state program. Additionally, state monitoring well B-26A, which is co-located with B-26 (**Figure 3**) and within the same unconsolidated unit, had an April 2017 pH reading of 7.96, which exceeds both the B-11A and B-31A October 2017 results and the calculated UPL (**Table 4**). The fact that the B-11A and B-31A pH measurements were within the range of recent and historical pH results for upgradient well B-26 suggests that the SSI for pH may be partially or completely due to natural variation.

4.2.2 Grant County Fluoride Data

Natural variation may also have caused or contributed to the SSI for fluoride at B-11A and B-11B. Although fluoride was not detected in background well B-26, publicly available data from the WDNR's Groundwater Retrieval Network (GRN) database indicates it is commonly detected in Grant County. Out of a total of 423 fluoride analysis results in GRN for water supply wells in Grant County, 88 percent had fluoride detected. The average concentration of fluoride in Grant County well samples with fluoride detections was 0.39 milligrams per liter (mg/L). The fluoride concentrations reported for B-11A and B-11B for October 2017, at 0.32 mg/L and 0.59 mg/L, are in the range of concentrations in the GRN database for Grant County. As discussed below, there is also a potential that fluoride in B-11A and B-11B are associated with impacts from the closed CCR landfill.

4.2.3 Previous CCR Pond and Landfill Study

A previous investigation titled *Environmental Contamination Assessment: Nelson Dewey Generating Station Ash Disposal Facility*, completed by RMT in 1994, found that groundwater impacts were associated with disposal of fly ash in the now-closed CCR landfill located immediately north of the slag pond (**Figure 3**). The purpose of the 1994 Environmental Contamination Assessment (ECA) was to investigate the impacts to groundwater at the NED landfill. The ECA was used to evaluate feasibility of possible remedial alternatives. The remedial alternative that was ultimately selected was to convert the plant to dry fly ash handling.

The primary lines of evidence from the 1994 report that support the current alternative source demonstration for boron, calcium, fluoride, pH, and sulfate include:

- Water leaching tests for ash and slag indicated that boron and sulfate concentrations in the slag leachate were orders of magnitude lower than in the ash leachate (**Appendix F, Table 5**).

- Surface water samples from the active ash sluice pond and the slag pond indicated that boron and sulfate concentrations in the slag pond were one or more orders of magnitude lower than in the ash sluice pond. Surface water boron and sulfate concentrations in the slag pond were higher than leach test results, which was attributed to infiltration of ash sluice pond water through the berm between the ponds into the slag pond (**Appendix F, Table 6**).

- Groundwater sampling at monitoring wells B-38 and B-38A (now abandoned), which were installed through and screened below the ash disposal area (now closed landfill), indicated that groundwater affected by ash sluicing was characterized by high pH and elevated concentrations of boron, fluoride, and sulfate (**Appendix F, Table 8**).

The results of the 1994 ECA were reported to WDNR on November 1994. The ECA investigation was then used for a feasibility study to determine appropriate ash disposal operation on site. Following the ECA, the plant converted to a dry ash handling system. Dry ash was placed in the CCR landfill through the 1990s, and the landfill was capped and closed in phases in 1996 through 2001. After that time, fly ash was not disposed of at the facility.

4.2.4 Slag Pond Closure Sampling Results

Results of leaching test analysis performed for slag, ash, soil and sediment were submitted as part of a Low Hazard Exemption Request to the WDNR in March 2017. The Exemption Request was submitted as part of the Closure Plan for the site and requested WDNR approval to consolidate materials from decommissioning activities in the Slag Pond and Slag Handling Area, which would then be capped with a composite final cover system. The sediment and soil samples were collected to characterize the materials that would remain on site under the Closure Plan. Leaching tests were performed using ASTM water leach test methods. The leaching test analytical results for parameters with SSIs that were included in the leaching test program (boron, calcium, fluoride, and sulfate) are summarized in **Appendix G**.

The sampling results in the Exemption Request indicated that the materials to be consolidated and capped were not likely to cause groundwater standard exceedances for boron, fluoride, or sulfate. The leach test results for slag, slag pond sediment, and soil in the slag handling area were below the state groundwater standards for these three parameters. The results were also below the concentrations of boron, fluoride, and sulfate in the downgradient CCR wells with SSIs, and well below the historic results for former well B-38, which was located within the CCR landfill area, upgradient from the slag pond.

The Low Hazard Exemption was granted by the WDNR based on the sampling results and other information presented.

4.2.5 State Program Groundwater Monitoring Results

Past and current groundwater monitoring performed under the state monitoring program shows that groundwater quality has improved substantially since the 1990s in response to termination of fly ash sluicing and closure and capping of the ash landfill. Long-term time series plots for boron and sulfate monitoring under the state program are provided in **Appendix H**. The long-term trends show that concentrations of boron and sulfate in groundwater have decreased since termination of fly ash sluicing and closure of the landfill, in some cases by an order of magnitude or more. These results suggest that current boron and sulfate concentrations are likely residual contamination from historic ash disposal in the CCR landfill area.

5.0 ASD CONCLUSIONS

The lines of evidence discussed above regarding the SSIs reported for boron, calcium, fluoride, field pH, and sulfate concentrations in downgradient monitoring wells demonstrate that the SSIs are likely primarily due to historic ash disposal in the closed landfill, which is not subject to the requirements of 40 CFR 257.50-107. The landfill is regulated by the WDNR under the solid waste program (License 02525). The SSIs for fluoride and field pH at B-11A, B-11B, B-11R, and B-31A may also be due to natural variability.

6.0 SITE GROUNDWATER MONITORING RECOMMENDATIONS

In accordance with section 257.94(e)(2) of the CCR Rule, the NED slag pond site may continue with detection monitoring based on this ASD. The ASD report will be included in the 2018 Annual Report due January 31, 2019.

7.0 REFERENCES

Carson, Eric C., 2012-2016, Preliminary Quaternary Geology of Grant County, Wisconsin Geological and Natural History Survey Open File Report, 2012-2016.

RMT, 1994, Environmental Contamination Assessment: Nelson Dewey Generating Station Ash Disposal Facility, 1994.

SCS Engineers (SCS), 2018, 2017 Annual Groundwater Monitoring and Corrective Action Report – Nelson Dewey Generating Station, 2018.

SCS, 2018, Biennial Groundwater Monitoring Report for 2016-2017, Wisconsin Power and Light Company – Nelson Dewey Ash Disposal Facility, 2018.

SCS, 2017, Low Hazard Exemption Request, Nelson Dewey Generating Station, Cassville, WI, 2017.

Schmidt, R.R. Groundwater Contamination Susceptibility Map and Evaluation: Wisconsin Department of Natural Resources, Wisconsin's Groundwater Management Plans Report 5, PUBL-WR-177-87, 27p, 1987.

U.S. Environmental Protection Agency (USEPA), 2015, Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities; Final Rule, April 2015.

USEPA, 2009, Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance, EPA 530-R-09-007, March 2009.

TABLES

Table 1. Detection Monitoring Results Summary - October 2017
Nelson Dewey Slag Pond
Cassville, Wisconsin

Parameter Name	Units	Interwell Upper Prediction Limit (UPL)	Background Well	Compliance Wells					
			B-26	B-7R	B-11A	B-11B	B-11R	B-31A	B-31R
Boron	ug/L	66.5	47.4	**159**	**116**	**1500**	**3120**	63.9	**645**
Calcium	mg/L	115155	102000	56200	55000	52400	**117000**	49600	75700
Chloride	mg/L	65.4	79.3	12	49.9	36.1	38.8	40.8	29
Fluoride	mg/L	LOQ (varies by well)	<0.1 U	<0.5 U	**0.32**	**0.59**	<0.5 U	0.16 J	0.14 J
Field pH	Std. Units	7.81	7.5	6.88	**7.96**	7.77	7.22	**7.92**	7.19
Sulfate	mg/L	44.8	25.3	<5 U	5.1	**175**	**97.7**	26.1	19.2
Total Dissolved Solids	mg/L	594	542	242	322	510	586	290	358

149 Statistically significant increase at compliance well

Notes:
1. UPL based on parametric prediction limit based on 1-of-2 resampling methodology for all parameters except fluoride.
2. Nonparametric UPL for fluoride is equal to laboratory limit of quantitation. Double quantification rule applies for SSI.
3. UPLs calculated from background well results for December 2015 through October 2017.
4. Optional verification resampling consistent with the selected statistical methods was not performed.

I:\25216071.00\Reports\2018 ASD Report\Tables\[Tables-NED-ASD Report.xlsx]Table 1

Table 2. Analytical Results - Appendix III Constituents with SSIs
Nelson Dewey Generating Station
Cassville, Wisconsin

Well Group	Well	Collection Date	Boron (µg/L)	Calcium (µg/L)	Field pH (St. Units)	Fluoride (mg/L)	Sulfate (mg/L)
Background	B-26	12/9/2015	29.6	81300	7.35	<0.2 U	37.1
		4/12/2016	33.7	86200	7.43	<0.2 U	38
		7/19/2016	28.6	82400	7.14	<0.2 U	36.2
		10/20/2016	33	82700	7.19	0.13 J	35
		1/12/2017	35.2	89400	7.57	<0.1 U	35
		4/17/2017	50.1	89000	7.54	<0.1 U	32.4
		6/7/2017	45.8	105000	7.22	<0.1 U	31
		8/2/2017	54.6	98100	7.21	<0.1 U	28.5
		10/19/2017	47.4	102000	7.5	<0.1 U	25.3
Compliance	B-11A	12/9/2015	124	58800	7.7	0.3 J	3.2 J
		4/13/2016	116	60100	7.75	0.38 J	3.8 J
		7/19/2016	104	54000	7.42	0.35 J	2.7 J
		10/19/2016	112	54600	7.47	0.36	3 J
		1/12/2017	106	54500	7.89	0.43	2.3 J
		4/17/2017	100	54800	7.38	0.36	<1 U
		6/8/2017	102	57800	7.78	0.37	1.4 J
		8/1/2017	105	54500	7.67	0.37	2.4 J
		10/19/2017	116	55000	7.96	0.32	5.1
	B-11B	12/9/2015	1140	64100	8.06	0.44	134
		4/13/2016	1360	65400	8.14	0.49	148
		7/19/2016	1210	59000	7.77	0.45	165
		10/20/2016	1460	59100	7.91	0.53	178
		1/12/2017	1540	63900	8.18	0.52	182
		4/17/2017	1760	67400	7.83	0.58	181
		6/8/2017	1880	68200	8.07	0.59	191
		8/1/2017	1800	61400	7.77	0.6	179
		10/19/2017	1500	52400	7.77	0.59	175
	B-11R	12/9/2015	4170	126000	7.07	<1 U	75.4
		4/13/2016	3410	141000	6.78	<0.2 U	18.4
		7/19/2016	3530	130000	6.69	0.22 J	115
		10/20/2016	4120	128000	6.77	<0.5 U	118
		1/12/2017	3530	126000	6.98	<0.5 U	108
		4/17/2017	3520	123000	7.11	<0.5 U	108
		6/7/2017	3420	128000	6.8	<0.5 U	98.2
		8/1/2017	2040	139000	6.7	0.25 J	126
		10/19/2017	3120	117000	7.22	<0.5 U	97.7
	B-31A	12/9/2015	59	48400	7.65	<0.2 U	26.2
		4/13/2016	79.2	51900	7.63	0.22 J	22.6
		7/19/2016	67.2	48900	7.25	<0.2 U	24.2
		10/20/2016	63.7	45800	7.54	0.18 J	27.2
		1/12/2017	76.4	46600	7.82	0.22 J	29.8
		4/17/2017	69.9	46900	7.83	0.19 J	31
		6/8/2017	58.5	49400	7.74	0.18 J	31.2
		8/1/2017	56.3	46000	7.56	0.2 J	26.6
		10/19/2017	63.9	49600	7.92	0.16 J	26.1

Table 2. Analytical Results - Appendix III Constituents with SSIs
Nelson Dewey Generating Station
Cassville, Wisconsin

Well Group	Well	Collection Date	Boron (µg/L)	Calcium (µg/L)	Field pH (St. Units)	Fluoride (mg/L)	Sulfate (mg/L)
Compliance	B-31R	12/9/2015	851	77400	6.79	<0.2 U	28.8
		4/13/2016	838	84900	6.76	<0.2 U	34.1
		7/19/2016	641	76100	6.44	<0.2 U	38.5
		10/20/2016	1020	84200	6.53	0.17 J	49.7
		1/12/2017	749	73900	6.8	0.26 J	34.9
		4/17/2017	929	85600	6.8	0.12 J	43
		6/8/2017	895	90700	6.67	0.13 J	41.1
		8/1/2017	1550	93400	6.56	0.16 J	55.6
		10/19/2017	645	75700	7.19	0.14 J	19.2
	B-7R	12/9/2015	110	31700	6.74	<1 U	17 J
		4/13/2016	115	42300	6.8	<0.2 U	2.5 J
		7/18/2016	164	44400	6.29	<0.2 U	2.4 J
		10/19/2016	154	56600	6.55	<0.5 U	<5 U
		1/12/2017	159	56700	7.43	<0.5 U	<5 U
		4/17/2017	129	61400	6.6	<0.5 U	<5 U
		6/7/2017	110	51600	6.65	<0.5 U	<5 U
		8/1/2017	129	50400	6.28	<0.1 U	3.7
		10/19/2017	159	56200	6.88	<0.5 U	<5 U

Abbreviations:
µg/L = micrograms per liter or parts per billion (ppb)
-- = not analyzed

Created by:	NDK	Date:	3/8/2018
Last revision by:	NDK	Date:	3/8/2018
Checked by:	JD	Date:	3/27/2018

I:\25216071.00\Reports\2018 ASD Report\Tables\[Tables-NED-ASD Report.xlsx]2. Analytical Results

Table 3. Groundwater Elevations - State and CCR Monitoring Wells

Nelson Dewey Generating Station

Cassville, Wisconsin

	Ground Water Elevation in feet above mean sea level (amsl)											
Well Number	**B-7R**	**B-11R**	**B-11A**	**B-11B**	**B-26**	**B-26A**	**B-31R**	**B-31A**	**B-35**	**B-35A**	**B-37**	**B-37A**
Top of Casing Elevation (feet amsl)	623.35	622.62	622.12	621.89	626.40	626.40	622.42	622.69	620.78	621.2	614.85	614.85
Screen Length (ft)	10	10	5	5	10	5	10	5	10	5	10	5
Total Depth (ft from top of casing)	23.05	24.15	52.00	113.90	31.67	45.78	22.82	35.52	16.60	47.00	19.95	48.20
Top of Well Screen Elevation (ft)	610.30	608.47	575.12	512.99	604.73	585.62	609.60	592.17	614.18	579.20	604.90	571.65
Measurement Date												
December 8, 2015	606.69	606.71	606.30	606.26	606.80	--	607.40	606.39	--	--	--	--
April 12, 2016	609.32	609.32	608.71	608.68	609.81	609.72	609.34	609.01	609.73	609.65	608.79	608.79
July 18-19, 2016	606.54	606.14	606.76	606.74	606.09	--	606.55	606.73	--	--	--	--
October 19-20, 2016	608.59	608.35	608.21	608.19	608.84	608.76	608.51	608.20	608.78	608.74	608.20	608.18
January 11-12, 2017	608.02	607.96	607.83	607.78	608.56		607.90	607.84				
April 17, 2017	609.08	608.34	609.05	608.99	608.59	608.54	607.20	608.98	609.00	609.02	609.02	609.02
June 8, 2017	610.74	610.42	609.81	610.08	611.25	--	609.63	610.50	--	--	--	--
August 1-2, 2017	607.02	606.73	605.57	605.50	607.39	--	606.84	605.69	--	--	--	--
October 9-10, 2017	606.93	606.25	607.01	606.94	606.22	606.13	606.68	606.93	606.65	606.71	--	--
October 20, 2017	609.60	609.42	609.58	609.65	608.84	--	609.47	609.43	--	--	609.40	609.40
Bottom of Well Elevation (ft)	600.30	598.47	570.12	507.99	594.73	580.62	599.60	587.17	604.18	574.20	594.90	566.65

Notes:
NM = not measured

Created by: NDK Date: 3/9/2018
Last revision by: NDK Date: 3/9/2018
Checked by: JD Date: 3/27/2018

I:\25216071.00\Reports\2018 ASD Report\Tables\[Tables-NED-ASD Report.xlsx]3.GW Elevation

Table 4. Analytical Results - State Monitoring Program

Nelson Dewey Generating Station

Cassville, Wisconsin

WELL ID	SAMPLE MONTH	BORON, DISSOLVED (UG/L)	FLUORIDE, DISSOLVED (MG/L F)	SULFATE, DISSOLVED (MG/L SO4)	PH, FIELD (STANDARD UNITS)
B-7R	2016-Apr	110	<0.20	7.4	6.8
	2016-Oct	147	<2.0	<20.0	6.55
	2017-Apr	127	<0.50	<5.0	6.6
	2017-Oct	159	<0.50	<5.0	6.61
B-8R	2016-Apr	2,250	0.26 J	30	6.64
	2016-Oct	2,130	0.21 J	47	6.38
	2017-Apr	1,970	0.16 J	30.5	6.83
	2017-Oct	2,490	0.30 J	32.5	6.87
B-11A	2016-Apr	110	0.37 J	3.8 J	7.75
	2016-Oct	111	0.28 J	2.8 J	7.47
	2017-Apr	106	0.35	<1.0	7.38
	2017-Oct	97.7	0.34	8.3	7.91
B-11B	2016-Apr	1,240	0.53	153	8.14
	2016-Oct	1,410	0.54	181	7.91
	2017-Apr	1,720	0.56	186	7.83
	2017-Oct	1,900	0.65	169	7.8
B-11R	2016-Apr	3,290	<1.0	93.9	6.98
	2016-Oct	4,070	<0.50	115	6.77
	2017-Apr	3,710	<0.50	111	7.11
	2017-Oct	3,400	<0.50	94	6.75
B-21R	2016-Oct	--	--	--	6.74
	2017-Dec	--	--	--	6.77
B-26	2016-Apr	37	<0.20	40.1	7.43
	2016-Oct	48.7	0.12 J	34.4	7.19
	2017-Apr	37.3	<0.10	32.3	7.54
	2017-Oct	44.5	<0.10	25	7.35
B-26A	2016-Apr	33.1	<0.20	40.1	7.06
	2016-Oct	30.5	0.14 J	39.9	7.26
	2017-Apr	52.6	0.47	42.3	7.96
	2017-Oct	28.4	<0.10	38.4	7.44
B-28	2016-Oct	--	--	--	6.87
	2017-Oct	--	--	--	6.55
B-30AR	2016-Oct	--	--	--	7.61
	2017-Oct	--	--	--	7.04
	2016-Oct	--	--	--	7.5
	2017-Oct	--	--	--	6.98
B-31A	2016-Apr	69.4	0.22 J	22.8	7.63
	2016-Oct	81	0.18 J	27.9	7.54
	2017-Apr	80.3	0.19 J	30.8	7.83
	2017-Oct	61.5	0.21 J	26.2	7.6

Table 4. Analytical Results - State Monitoring Program

Nelson Dewey Generating Station

Cassville, Wisconsin

WELL ID	SAMPLE MONTH	BORON, DISSOLVED (UG/L)	FLUORIDE, DISSOLVED (MG/L F)	SULFATE, DISSOLVED (MG/L SO4)	PH, FIELD (STANDARD UNITS)
B-31R	2016-Apr	759	<0.20	34.3	6.76
	2016-Oct	956	0.16 J	48.5	6.53
	2017-Apr	910	0.12 J	42.9	6.8
	2017-Oct	618	0.20 J	23.2	6.78
B-32	2016-Oct	--	--	--	7.05
	2017-Oct	--	--	--	7.28
B-32A	2016-Oct	--	--	--	7.29
	2017-Oct	--	--	--	7.3
B-35	2016-Apr	38.7	<0.20	8.1	6.89
	2016-Oct	46.4	0.10 J	6.5	6.86
	2017-Apr	54.4	0.15 J	7.7	6.68
	2017-Oct	40.8	0.18 J	3.8	7.65
B-35A	2016-Apr	21.7	<0.20	26.2	6.96
	2016-Oct	23.4	0.16 J	27.4	7.17
	2017-Apr	29.9	<0.10	25.4	7.27
	2017-Oct	51.4	0.26 J	4	7.44
B-37	2016-Apr	121	<0.20	17.4	7.6
	2016-Oct	159	<0.10	45.4	7.59
	2017-Apr	252	<0.10	75.6	7.55
	2017-Oct	231	<0.10	59.7	8.61
B-37A	2016-Apr	326	<0.20	42.4	7.21
	2016-Oct	279	<0.10	38.6	7.39
	2017-Apr	269	<0.10	39.8	7.53
	2017-Oct	320	<0.10	39.5	8.28

Note:

J: Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

Created by: JSN Date: 12/29/2017

Last revision by: JSN Date: 12/29/2017

Checked by: AJR Date: 1/3/2017

FIGURES

N

CASSVILLE AND TURKEY RIVER QUADRANGLES
WISCONSIN–IOWA
7.5 MINUTE SERIES (TOPOGRAPHIC)
1978/1980
SCALE: 1" = 2,000'

CLIENT	WISCONSIN POWER AND LIGHT CO. NELSON DEWEY GENERATING STATION 11999 COUNTY HIGHWAY VV CASSVILLE WI, 53806	SITE	WISCONSIN POWER AND LIGHT NELSON DEWEY GENERATING STATION CASSVILLE, WISCONSIN

SITE LOCATION MAP

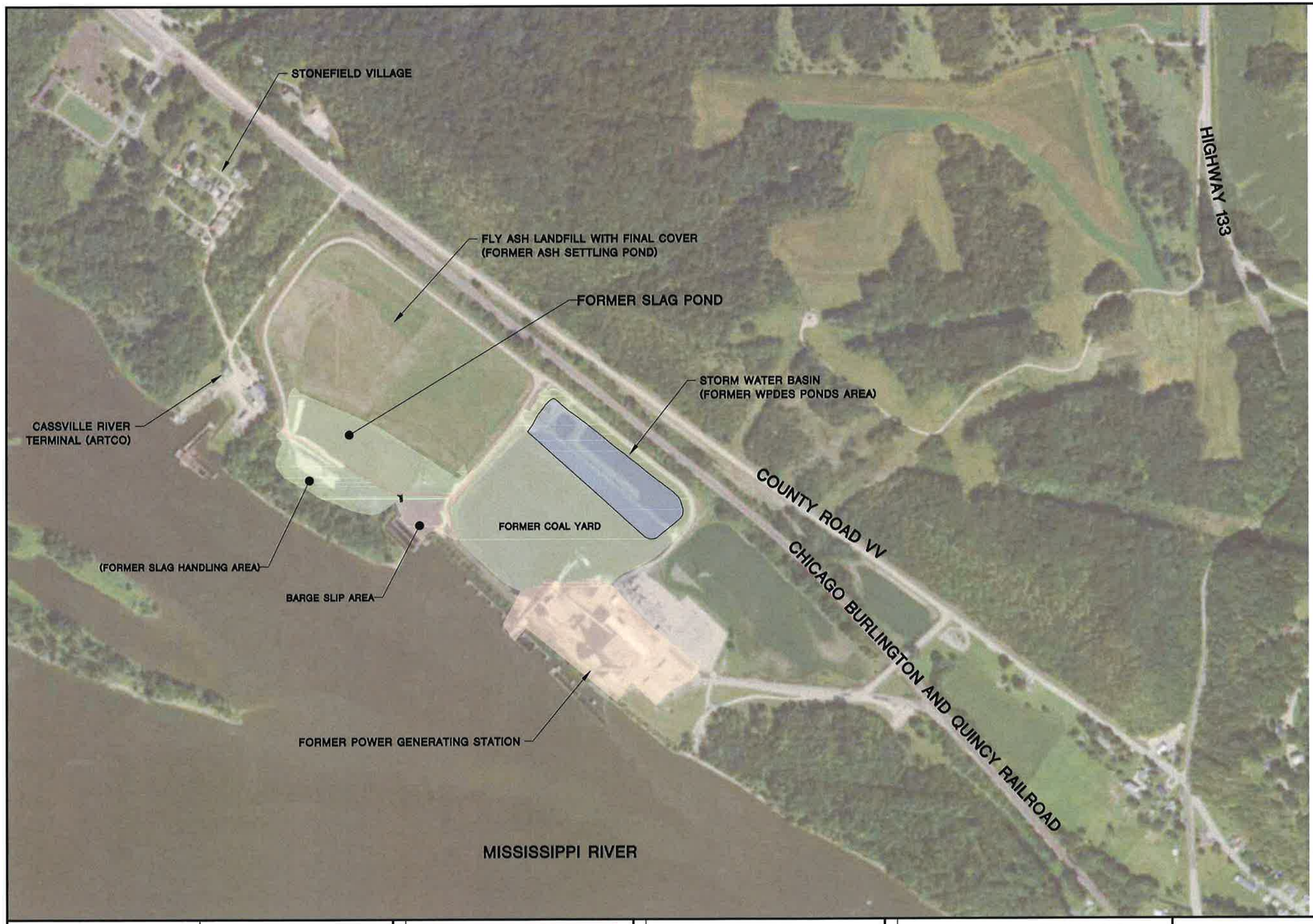
PROJECT NO.	25216071.17	DRAWN BY:	KP/BJM
DRAWN:	12/18/13	CHECKED BY:	KAK
REVISED:	01/02/18	APPROVED BY:	TK

ENGINEER

SCS ENGINEERS
2830 DAIRY DRIVE MADISON, WI 53718-6751
PHONE: (608) 224-2830

FIGURE
1

I:\25216071.00\Drawings\Site Location.dwg, 1/23/2018 12:15:55 PM



N

NOTES:

1. AERIAL PHOTOGRAPH FROM THE NATIONAL AGRICULTURE IMAGERY PROGRAM AND PUBLISHED BY THE USDA FSA AERIAL PHOTOGRAPHY FIELD OFFICE. DATE OF IMAGE IS AUGUST 24, 2015.

500 0 500

SCALE: 1" = 500'

PROJECT NO.	25216071.17	DRAWN BY:	BJM
DRAWN:	12/18/13	CHECKED BY:	KAK
REVISED:	01/03/18	APPROVED BY:	SCC 04/16/18

ENGINEER: SCS ENGINEERS
2830 DAIRY DRIVE MADISON, WI 53718-6751
PHONE: (608) 224-2830

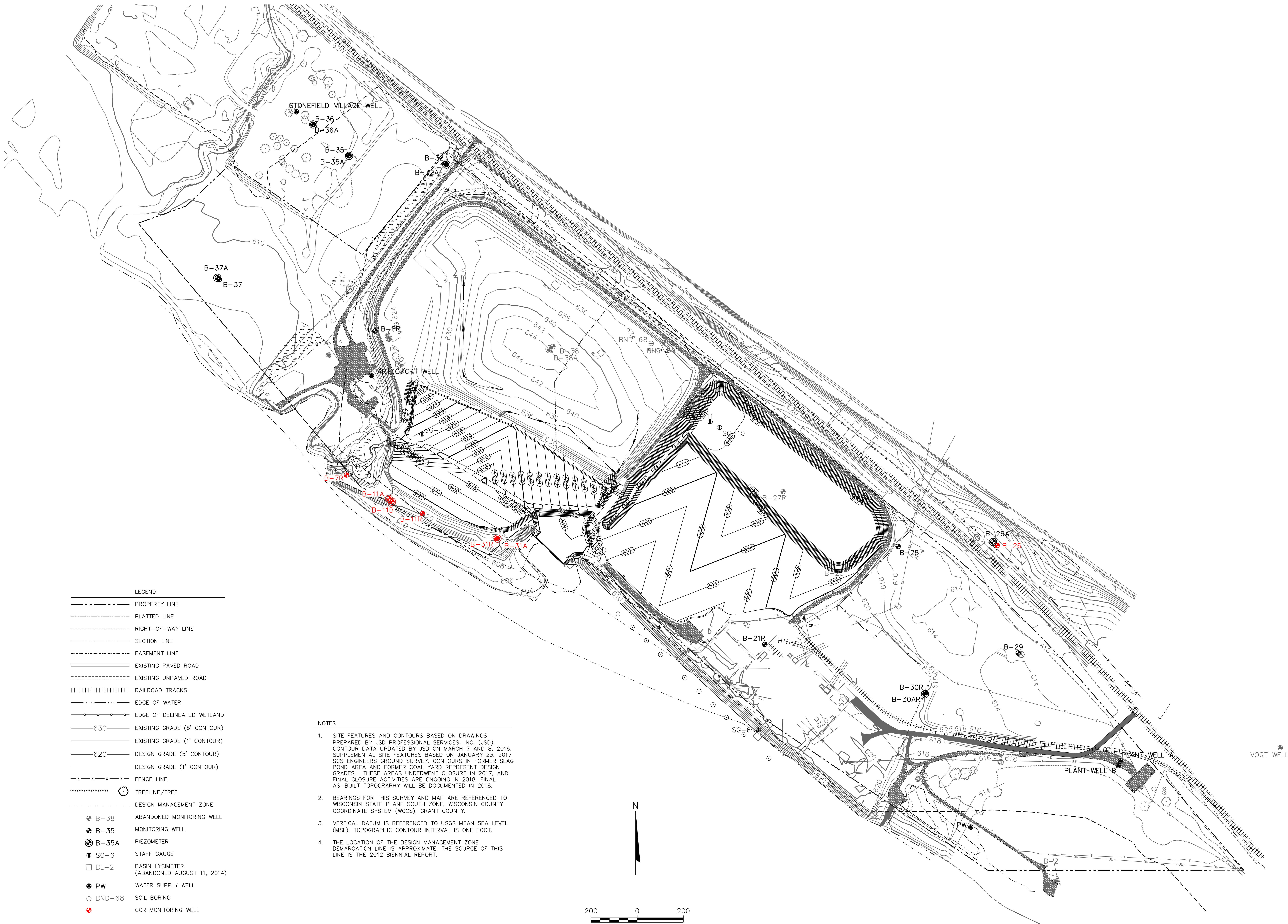
CLIENT: WISCONSIN POWER AND LIGHT CO.
NELSON DEWEY GENERATING STATION
11999 COUNTY HIGHWAY VV
CASSVILLE WI, 53806

SITE: WISCONSIN POWER AND LIGHT
NELSON DEWEY GENERATING STATION
CASSVILLE WISCONSIN

AERIAL VIEW

FIGURE 2

I:\25216071.00\Drawings\Nelson Dewey Alternative Source Demonstration Report\Site Aerial.dwg, 4/16/2018 3:58:28 PM



LEGEND

	PROPERTY LINE
	PLATTED LINE
	RIGHT-OF-WAY LINE
	SECTION LINE
	EASEMENT LINE
	EXISTING PAVED ROAD
	EXISTING UNPAVED ROAD
	RAILROAD TRACKS
	EDGE OF WATER
	EDGE OF DELINEATED WETLAND
630	EXISTING GRADE (5' CONTOUR)
	EXISTING GRADE (1' CONTOUR)
620	DESIGN GRADE (5' CONTOUR)
	DESIGN GRADE (1' CONTOUR)
	FENCE LINE
	TREELINE/TREE
	DESIGN MANAGEMENT ZONE
B-38	ABANDONED MONITORING WELL
B-35	MONITORING WELL
B-35A	PIEZOMETER
SG-6	STAFF GAUGE
BL-2	BASIN LYSIMETER (ABANDONED AUGUST 11, 2014)
PW	WATER SUPPLY WELL
BND-68	SOIL BORING
	CCR MONITORING WELL

NOTES

1. SITE FEATURES AND CONTOURS BASED ON DRAWINGS PREPARED BY JSD PROFESSIONAL SERVICES, INC. (JSD). CONTOUR DATA UPDATED BY JSD ON MARCH 7 AND 8, 2016. SUPPLEMENTAL SITE FEATURES BASED ON JANUARY 23, 2017 SCS ENGINEERS GROUND SURVEY. CONTOURS IN FORMER SLAG POND AREA AND FORMER COAL YARD REPRESENT DESIGN GRADES. THESE AREAS UNDERWENT CLOSURE IN 2017, AND FINAL CLOSURE ACTIVITIES ARE ONGOING IN 2018. FINAL AS-BUILT TOPOGRAPHY WILL BE DOCUMENTED IN 2018.
2. BEARINGS FOR THIS SURVEY AND MAP ARE REFERENCED TO WISCONSIN STATE PLANE SOUTH ZONE, WISCONSIN COUNTY COORDINATE SYSTEM (WCCS), GRANT COUNTY.
3. VERTICAL DATUM IS REFERENCED TO USGS MEAN SEA LEVEL (MSL). TOPOGRAPHIC CONTOUR INTERVAL IS ONE FOOT.
4. THE LOCATION OF THE DESIGN MANAGEMENT ZONE DEMARCATION LINE IS APPROXIMATE. THE SOURCE OF THIS LINE IS THE 2012 BIENNIAL REPORT.

PROJECT NO.	25216071.17	DRAWN BY:	KP/BJM
DRAWN:	01/13/14	CHECKED BY:	NK
REVISED:	03/14/18	APPROVED BY:	SCC 4/16/18

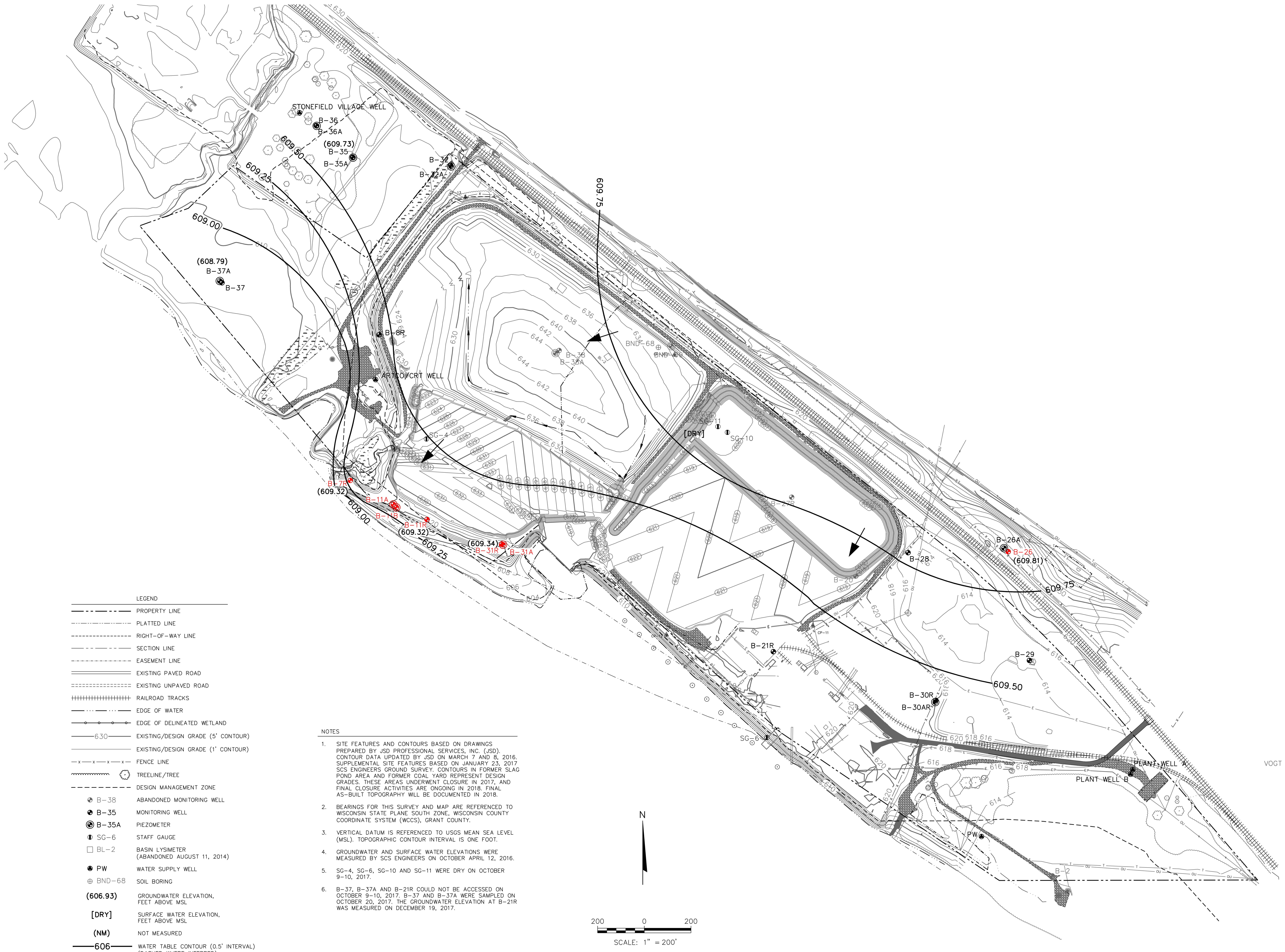
ENGINEER: SCS ENGINEERS, 2830 DAIRY DRIVE MADISON, WI 53718-6751, PHONE: (608) 224-2830

CLIENT: WISCONSIN POWER AND LIGHT CO., NELSON DEWEY GENERATING STATION, 11999 COUNTY HIGHWAY VV, CASSVILLE, WI 53806

SITE: WISCONSIN POWER AND LIGHT, NELSON DEWEY GENERATING STATION, CASSVILLE, WISCONSIN

MONITORING WELL LOCATION MAP

FIGURE 3



LEGEND

Symbol	Description
	PROPERTY LINE
	PLATTED LINE
	RIGHT-OF-WAY LINE
	SECTION LINE
	EASEMENT LINE
	EXISTING PAVED ROAD
	EXISTING UNPAVED ROAD
	RAILROAD TRACKS
	EDGE OF WATER
	EDGE OF DELINEATED WETLAND
630	EXISTING/DESIGN GRADE (5' CONTOUR)
	EXISTING/DESIGN GRADE (1' CONTOUR)
	FENCE LINE
	TREELINE/TREE
	DESIGN MANAGEMENT ZONE
B-38	ABANDONED MONITORING WELL
B-35	MONITORING WELL
B-35A	PIEZOMETER
SG-6	STAFF GAUGE
BL-2	BASIN LYSIMETER (ABANDONED AUGUST 11, 2014)
PW	WATER SUPPLY WELL
BND-68	SOIL BORING
(606.93)	GROUNDWATER ELEVATION, FEET ABOVE MSL
[DRY]	SURFACE WATER ELEVATION, FEET ABOVE MSL
(NM)	NOT MEASURED
606	WATER TABLE CONTOUR (0.5' INTERVAL) (DASHED WHERE INFERRED)
	GROUNDWATER FLOW DIRECTION

NOTES

1. SITE FEATURES AND CONTOURS BASED ON DRAWINGS PREPARED BY JSD PROFESSIONAL SERVICES, INC. (JSD). CONTOUR DATA UPDATED BY JSD ON MARCH 7 AND 8, 2016. SUPPLEMENTAL SITE FEATURES BASED ON JANUARY 23, 2017 SCS ENGINEERS GROUND SURVEY. CONTOURS IN FORMER SLAG POND AREA AND FORMER COAL YARD REPRESENT DESIGN GRADES. THESE AREAS UNDERWENT CLOSURE IN 2017, AND FINAL CLOSURE ACTIVITIES ARE ONGOING IN 2018. FINAL AS-BUILT TOPOGRAPHY WILL BE DOCUMENTED IN 2018.
2. BEARINGS FOR THIS SURVEY AND MAP ARE REFERENCED TO WISCONSIN STATE PLANE SOUTH ZONE, WISCONSIN COUNTY COORDINATE SYSTEM (WCCS), GRANT COUNTY.
3. VERTICAL DATUM IS REFERENCED TO USGS MEAN SEA LEVEL (MSL). TOPOGRAPHIC CONTOUR INTERVAL IS ONE FOOT.
4. GROUNDWATER AND SURFACE WATER ELEVATIONS WERE MEASURED BY SCS ENGINEERS ON OCTOBER APRIL 12, 2016.
5. SG-4, SG-6, SG-10 AND SG-11 WERE DRY ON OCTOBER 9-10, 2017.
6. B-37, B-37A AND B-21R COULD NOT BE ACCESSED ON OCTOBER 9-10, 2017. B-37 AND B-37A WERE SAMPLED ON OCTOBER 20, 2017. THE GROUNDWATER ELEVATION AT B-21R WAS MEASURED ON DECEMBER 19, 2017.

PROJECT NO.	25216071.17	DRAWN BY:	KP/BJM
DRAWN:	01/13/14	CHECKED BY:	NK
REVISED:	03/14/18	APPROVED BY:	SCC 04/16/18

ENGINEER

SCS ENGINEERS
2830 DAIRY DRIVE MADISON, WI 53718-6751
PHONE: (608) 224-2830

CLIENT

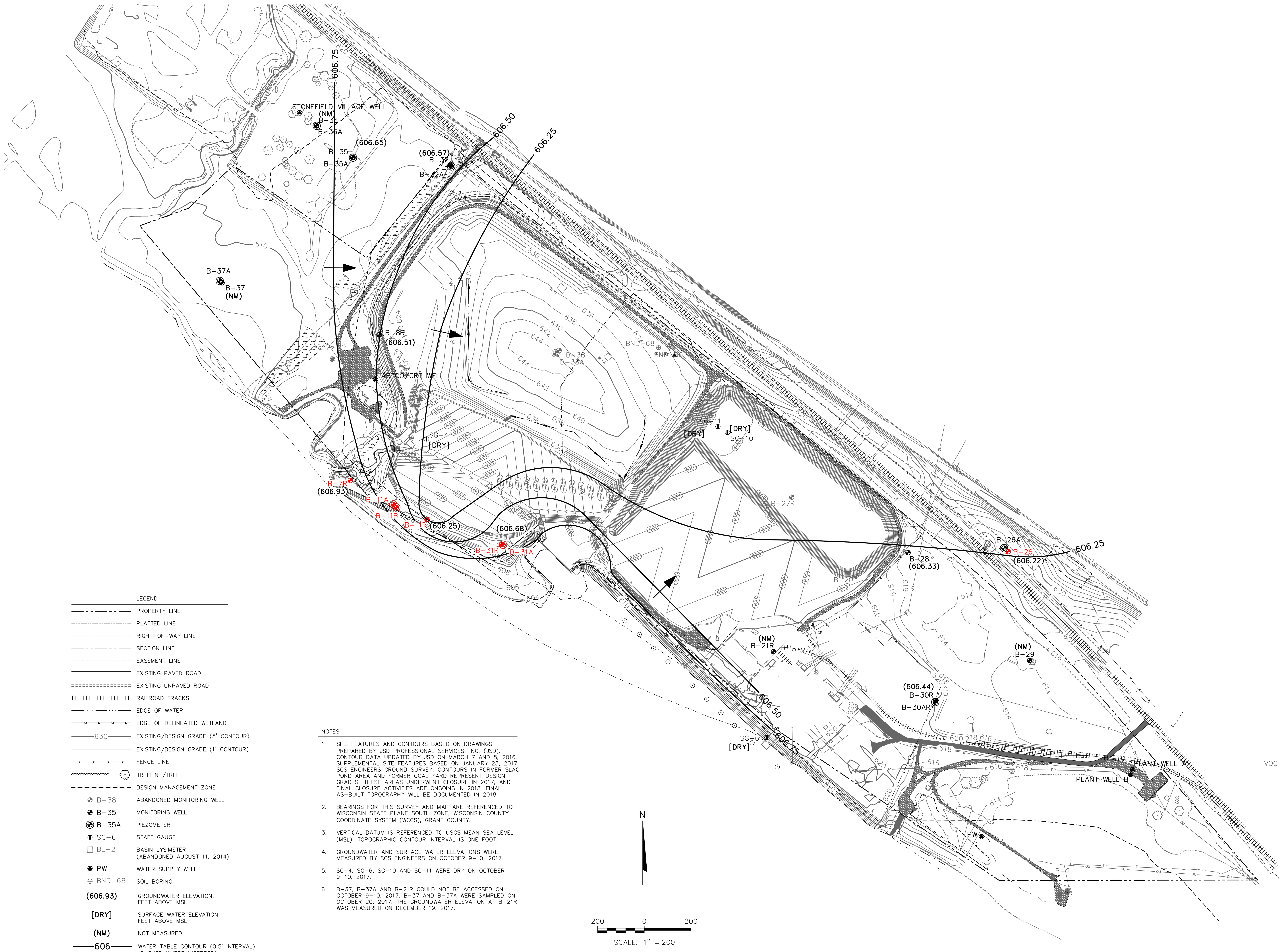
WISCONSIN POWER AND LIGHT CO.
NELSON DEWEY GENERATING STATION
11999 COUNTY HIGHWAY VV
CASSVILLE, WI 53806

SITE

WISCONSIN POWER AND LIGHT
NELSON DEWEY GENERATING STATION
CASSVILLE, WISCONSIN

WATER TABLE MAP
APRIL 12, 2016

FIGURE
4



LEGEND

—·—·—	PROPERTY LINE
—··—··—	PLATTED LINE
- - - - -	RIGHT-OF-WAY LINE
—·—·—	SECTION LINE
—·—·—	EASEMENT LINE
══════	EXISTING PAVED ROAD
======	EXISTING UNPAVED ROAD
++++++	RAILROAD TRACKS
—··—··—	EDGE OF WATER
—o—o—o—	EDGE OF DELINEATED WETLAND
——630——	EXISTING/DESIGN GRADE (5' CONTOUR)
————	EXISTING/DESIGN GRADE (1' CONTOUR)
—x—x—x—	FENCE LINE
⬡	TREELINE/TREE
- - - - -	DESIGN MANAGEMENT ZONE
B-38	ABANDONED MONITORING WELL
B-35	MONITORING WELL
B-35A	PIEZOMETER
SG-6	STAFF GAUGE
BL-2	BASIN LYSIMETER (ABANDONED AUGUST 11, 2014)
PW	WATER SUPPLY WELL
BND-68	SOIL BORING
(606.93)	GROUNDWATER ELEVATION, FEET ABOVE MSL
[DRY]	SURFACE WATER ELEVATION, FEET ABOVE MSL
(NM)	NOT MEASURED
——606——	WATER TABLE CONTOUR (0.5' INTERVAL) (DASHED WHERE INFERRED)
——▶	GROUNDWATER FLOW DIRECTION

NOTES

1. SITE FEATURES AND CONTOURS BASED ON DRAWINGS PREPARED BY JSD PROFESSIONAL SERVICES, INC. (JSD). CONTOUR DATA UPDATED BY JSD ON MARCH 7 AND 8, 2016. SUPPLEMENTAL SITE FEATURES BASED ON JANUARY 23, 2017 SCS ENGINEERS GROUND SURVEY. CONTOURS IN FORMER SLAG POND AREA AND FORMER COAL YARD REPRESENT DESIGN GRADES. THESE AREAS UNDERWENT CLOSURE IN 2017, AND FINAL CLOSURE ACTIVITIES ARE ONGOING IN 2018. FINAL AS-BUILT TOPOGRAPHY WILL BE DOCUMENTED IN 2018.
2. BEARINGS FOR THIS SURVEY AND MAP ARE REFERENCED TO WISCONSIN STATE PLANE SOUTH ZONE, WISCONSIN COUNTY COORDINATE SYSTEM (WCCS), GRANT COUNTY.
3. VERTICAL DATUM IS REFERENCED TO USGS MEAN SEA LEVEL (MSL). TOPOGRAPHIC CONTOUR INTERVAL IS ONE FOOT.
4. GROUNDWATER AND SURFACE WATER ELEVATIONS WERE MEASURED BY SCS ENGINEERS ON OCTOBER 9-10, 2017.
5. SG-4, SG-6, SG-10 AND SG-11 WERE DRY ON OCTOBER 9-10, 2017.
6. B-37, B-37A AND B-21R COULD NOT BE ACCESSED ON OCTOBER 9-10, 2017. B-37 AND B-37A WERE SAMPLED ON OCTOBER 20, 2017. THE GROUNDWATER ELEVATION AT B-21R WAS MEASURED ON DECEMBER 19, 2017.

PROJECT NO.	25216071.17	DRAWN BY:	KP/BJM
DRAWN:	01/13/14	CHECKED BY:	KAK
REVISED:	01/15/18	APPROVED BY:	SCC 04/16/18

ENGINEER
SCS ENGINEERS
2830 DAIRY DRIVE MADISON, WI 53718-6751
PHONE: (608) 224-2830

CLIENT
WISCONSIN POWER AND LIGHT CO.
NELSON DEWEY GENERATING STATION
11999 COUNTY HIGHWAY VV
CASSVILLE, WI 53806

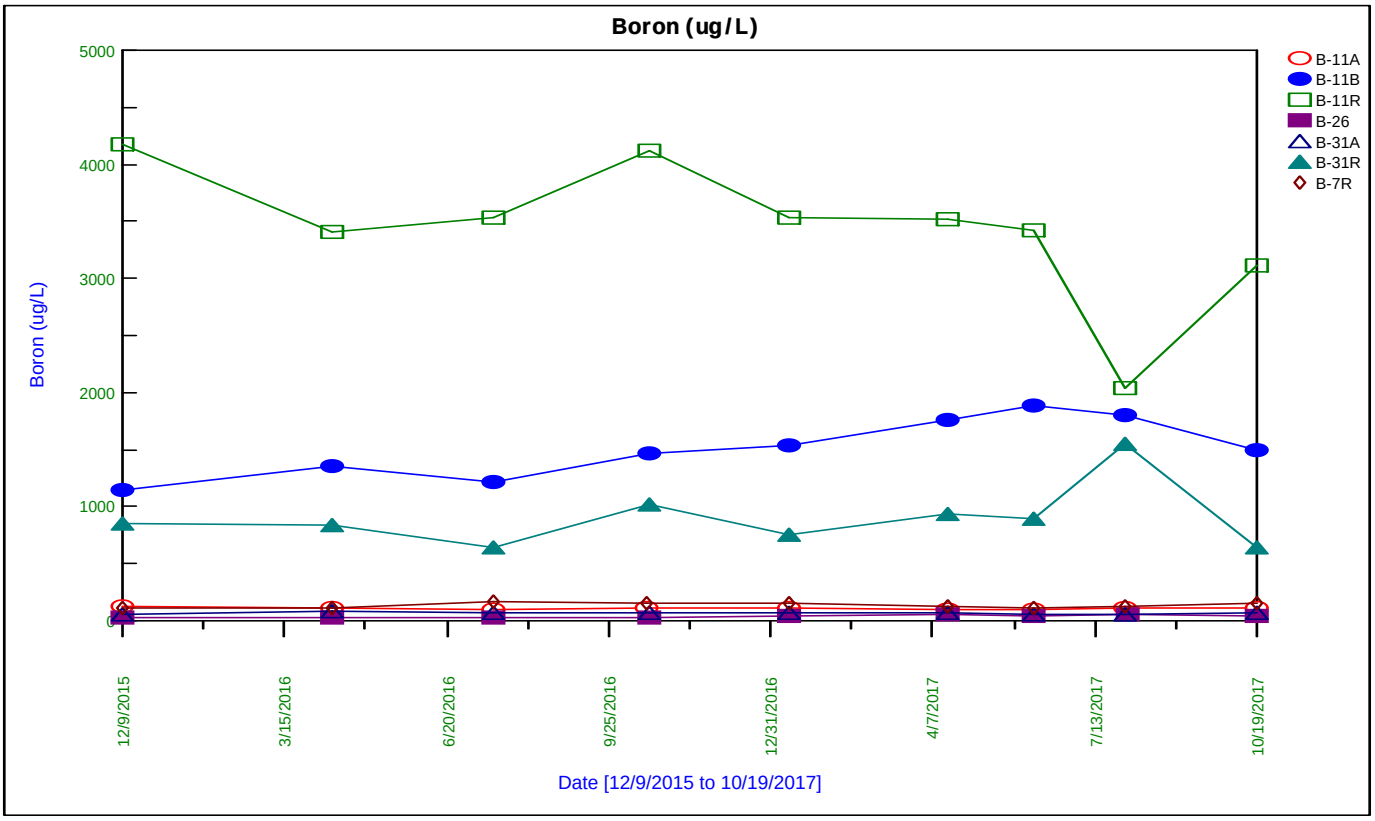
SITE
WISCONSIN POWER AND LIGHT
NELSON DEWEY GENERATING STATION
CASSVILLE, WISCONSIN

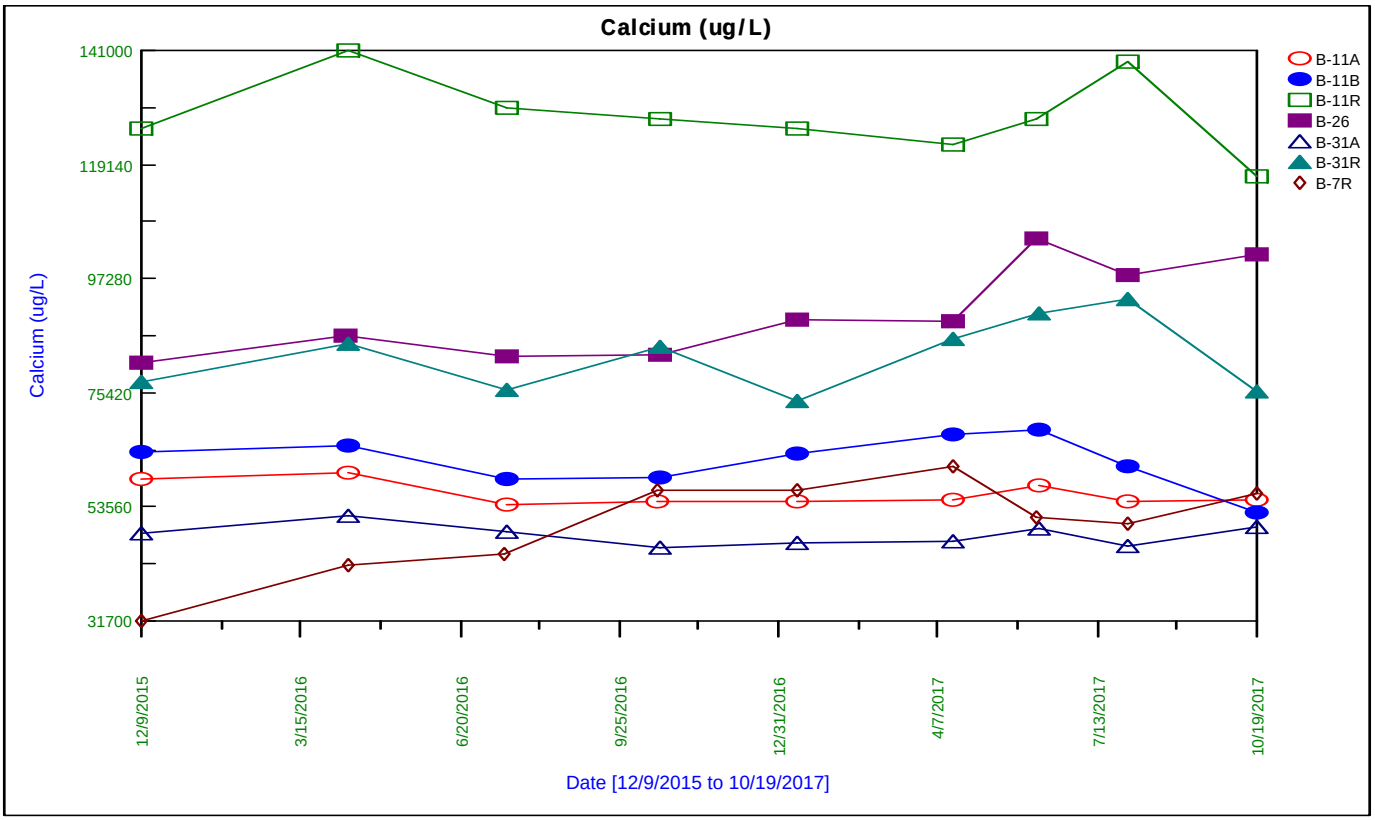
WATER TABLE MAP
OCTOBER 9-10, 2017

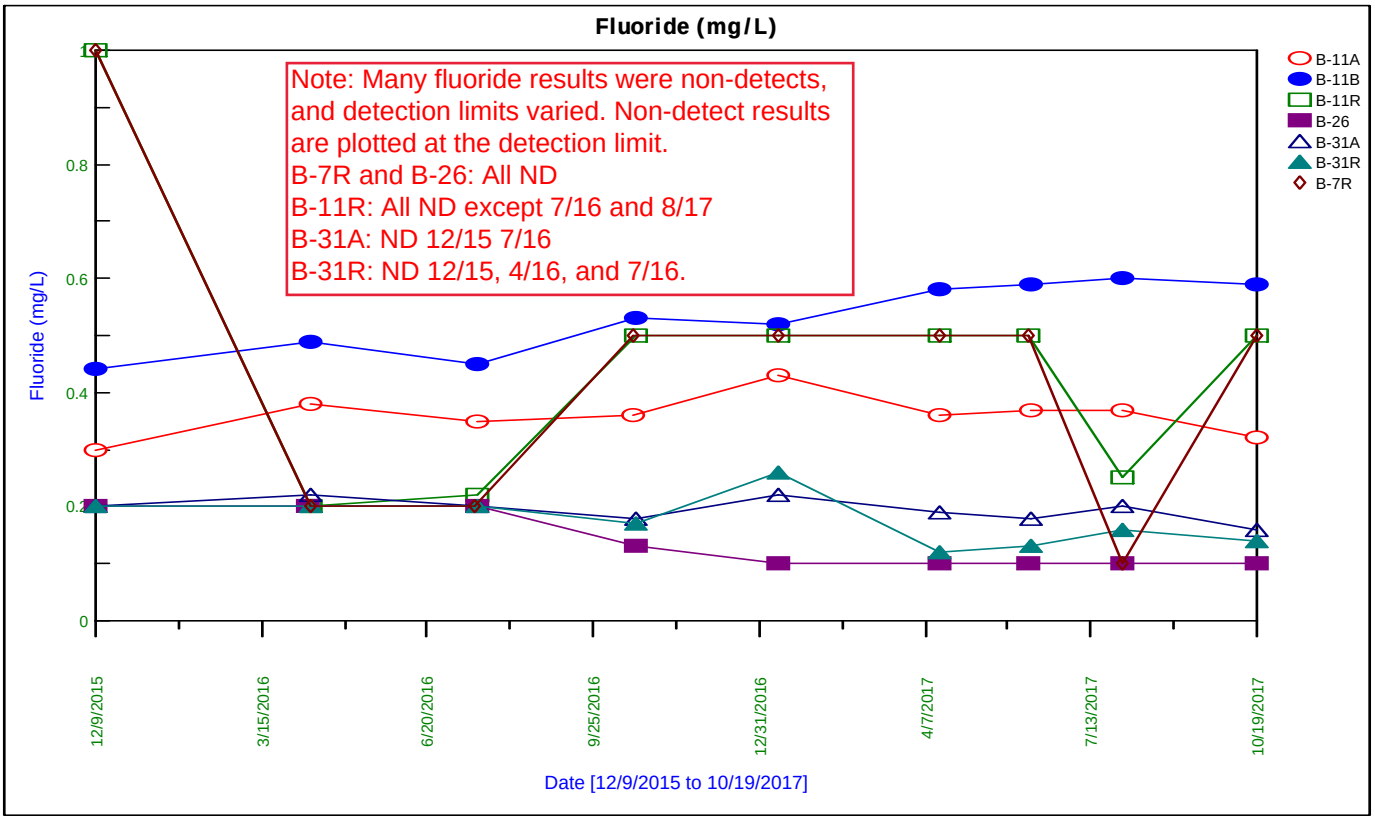
FIGURE
5

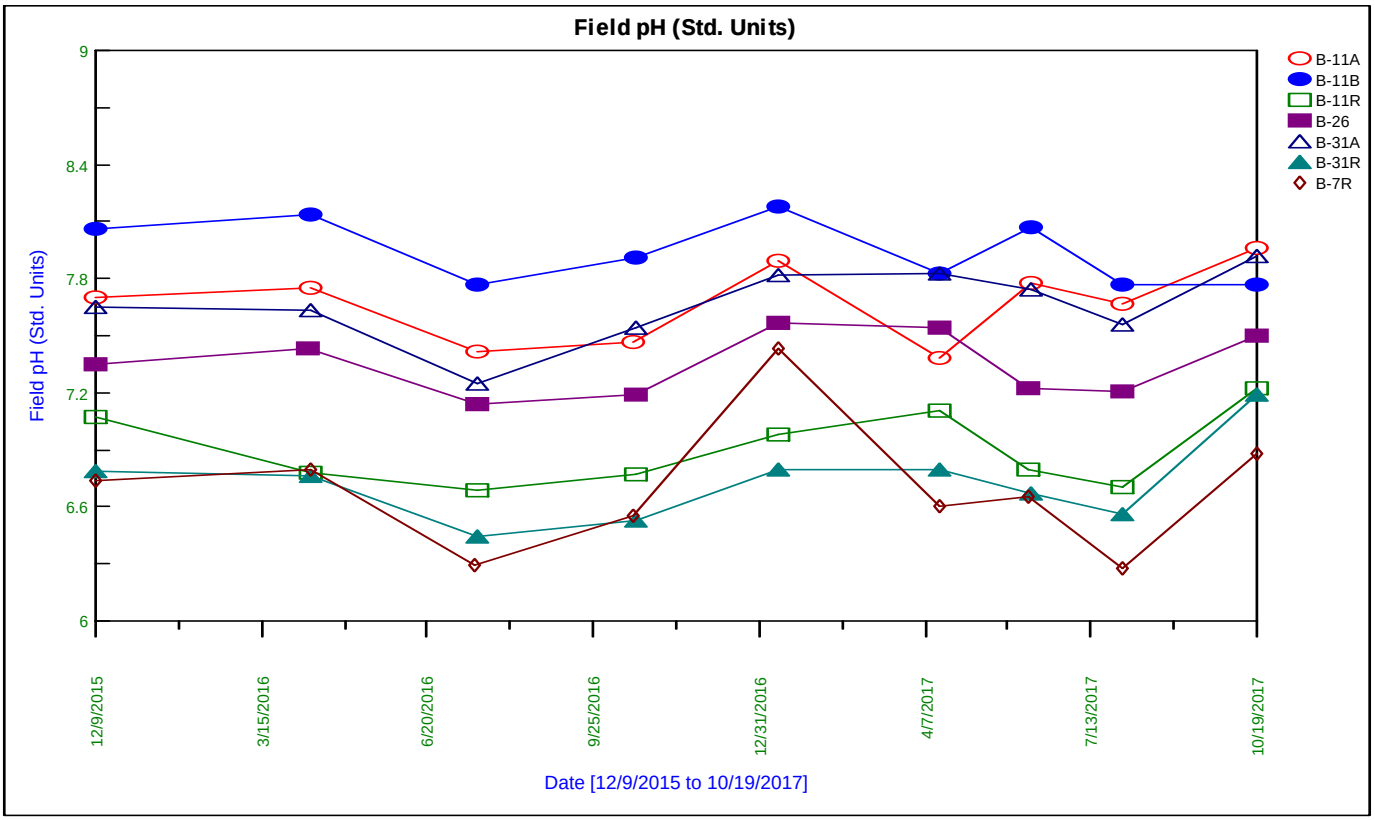
APPENDIX A

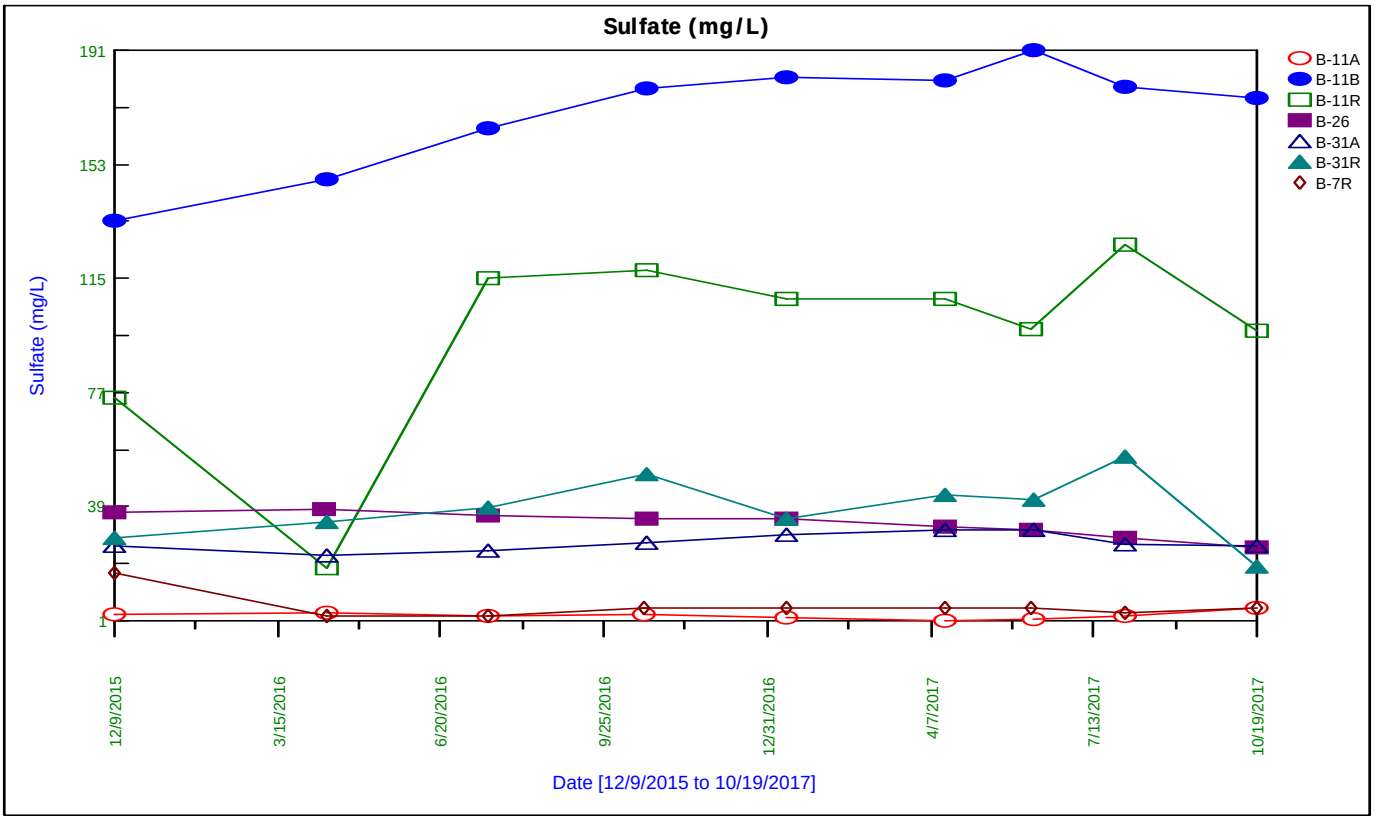
CCR Well Trend Plots


Boron (ug/L)
5000
4000
3000
2000
1000
0
Boron (ug/L)
B-11A
B-11B
B-11R
B-26
B-31A
B-31R
B-7R
12/9/2015
3/15/2016
6/20/2016
9/25/2016
12/31/2016
4/7/2017
7/13/2017
10/19/2017
Date [12/9/2015 to 10/19/2017]


Calcium (ug/L)
141000
119140
97280
75420
53560
31700
Calcium (ug/L)
B-11A
B-11B
B-11R
B-26
B-31A
B-31R
B-7R
12/9/2015
3/15/2016
6/20/2016
9/25/2016
12/31/2016
4/7/2017
7/13/2017
10/19/2017
Date [12/9/2015 to 10/19/2017]


Fluoride (mg/L)
Note: Many fluoride results were non-detects, and detection limits varied. Non-detect results are plotted at the detection limit.
B-7R and B-26: All ND
B-11R: All ND except 7/16 and 8/17
B-31A: ND 12/15 7/16
B-31R: ND 12/15, 4/16, and 7/16.
B-11A
B-11B
B-11R
B-26
B-31A
B-31R
B-7R
Fluoride (mg/L)
0.8
0.6
0.4
0.2
0
12/9/2015
3/15/2016
6/20/2016
9/25/2016
12/31/2016
4/7/2017
7/13/2017
10/19/2017
Date [12/9/2015 to 10/19/2017]


Field pH (Std. Units)
B-11A
B-11B
B-11R
B-26
B-31A
B-31R
B-7R
Field pH (Std. Units)
9
8.4
7.8
7.2
6.6
6
12/9/2015
3/15/2016
6/20/2016
9/25/2016
12/31/2016
4/7/2017
7/13/2017
10/19/2017
Date [12/9/2015 to 10/19/2017]



Note: B7R: 10/16 through 6/17 and 10/17 results for sulfate were non-detects. B-11A: 4/17 result for sulfate was non-detects. Non-detect results are plotted at the detection limit.

APPENDIX B

Regional Geologic and Hydrogeologic Background Information

Regional Glacial Geology

Alluvial

al — **Alluvium.** Primarily sand or slightly gravelly sand on modern valley bottoms; most deposited during the last part of the Holocene; overlain by thin peat and thin silty overbank sediment in many places.

ate — **Alluvial sediment of the Elderon-phase terrace.** Sand or gravelly sand, at least a few meters thick up to 15 m thick, deposited by streams carrying meltwater from the margins of the Laurentide Ice Sheet during the Elderon phase of the late Wisconsin glaciation. Occurs as terraces formed during subsequent down-cutting during the latest Wisconsin and Holocene.

ats — **Alluvial sediment of the Savanna terrace.** Sand or gravelly sand, at least a few meters thick up to a15 m thick, deposited by streams carrying meltwater from the margins of the Laurentide Ice Sheet during the late Wisconsin glaciation. Occurs as the Savanna terrace formed during subsequent down-cutting during the latest Wisconsin and Holocene.

atb — **Alluvial sediment of the Bridgeport terrace.** Sand or gravelly sand, at least a few meters thick up to 15 m thick, deposited by streams carrying meltwater from the margins of the Laurentide Ice Sheet during the late Wisconsin glaciation. Occurs as remnants of the Bridgeport terrace; the terrace surface is likely largely underlain by a bedrock strath.

af — **Alluvial fan.** Moderately to well-sorted cobbles, gravel, pebbles, and fine sediment forming fan-shaped deposits on valley floors. Typically forms at the base of steep slopes and particularly at the mouths of steep tributaries.

Colluvial

cc — **Coarse-grained colluvium.** Unsorted slope sediment, derived from erosion of Paleozoic bedrock and windblown silt from upland surfaces moving downslope due to gravity. Typically associated with bedrock incision by major streams, and occurring on relatively steep slopes adjacent to major stream systems and deposits.

ls — **Landslide.** Poorly sorted gravel, boulder, and blocky debris. Forms chaotic, hummocky lobes on valley floors and at bases of slopes; may have associated scarps on adjacent upslope surfaces.

Windblown

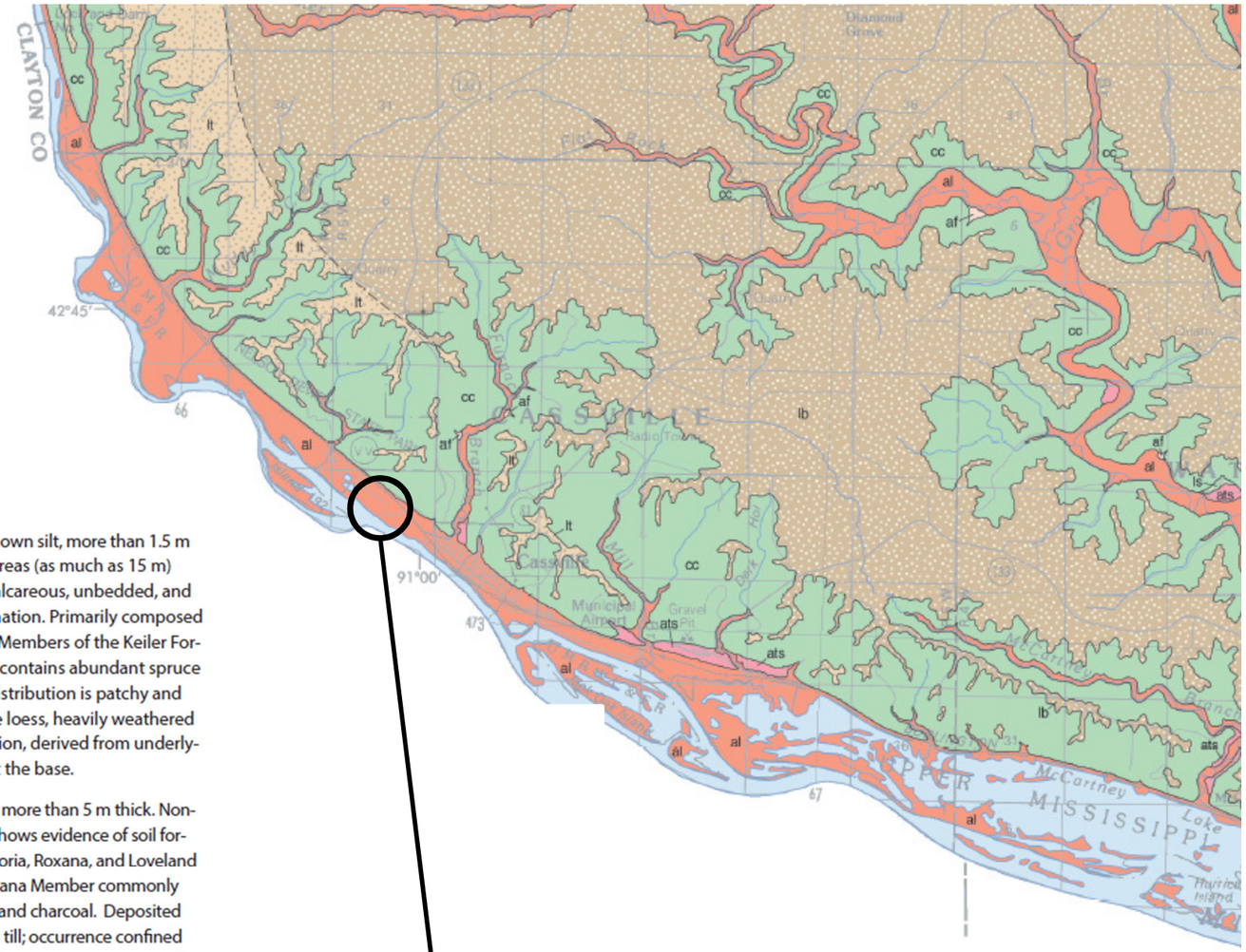
lb — **Loess on Paleozoic bedrock.** Windblown silt, more than 1.5 m thick; generally thickest in western areas (as much as 15 m) and thinning toward the east. Noncalcareous, unbedded, and massive; shows evidence of soil formation. Primarily composed of the Peoria, Roxana, and Loveland Members of the Keiler Formation. Roxana Member commonly contains abundant spruce fragments and charcoal. Although distribution is patchy and uncertain due to the thickness of the loess, heavily weathered residual clay of the Rountree Formation, derived from underlying Paleozoic bedrock, is common at the base.

lt — **Loess on till.** Windblown silt, typically more than 5 m thick. Noncalcareous, unbedded, and massive, shows evidence of soil formation. Primarily composed of the Peoria, Roxana, and Loveland Members of the Keiler Formation. Roxana Member commonly contains abundant spruce fragments and charcoal. Deposited on patchy, discontinuous pre-Illinoian till; occurrence confined to western Grant County, which was the easternmost extent of pre-Illinoian ice flowing from Minnesota and Iowa.

ws — **Windblown sand.** More than about 1.5 m thick; dunes generally no more than a few meters high.

Symbols

Geologic contact. Position shown on map is judged to be generally within 0.2 km of actual position. Dashed where approximate.

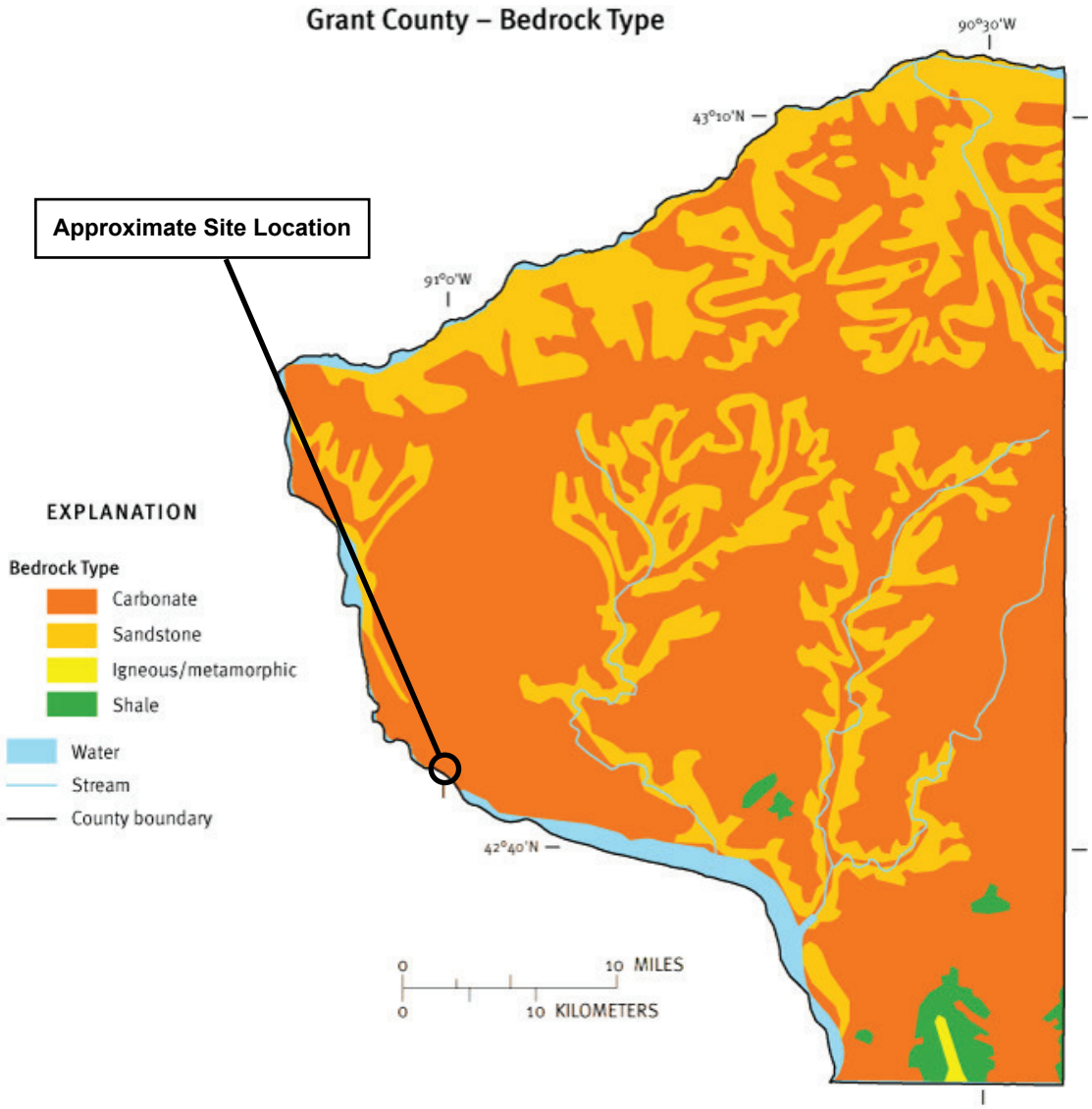


SCALE 1:100,000

1 0 1 2 3 4 5
MILES

1 0 1 2 3 4 5 6 7 8
KILOMETERS

Source: Carson, Eric C., Preliminary Quaternary Geology of Grant County, Wisconsin, Wisconsin Geological and Natural History Survey Open File Report 2012-06.

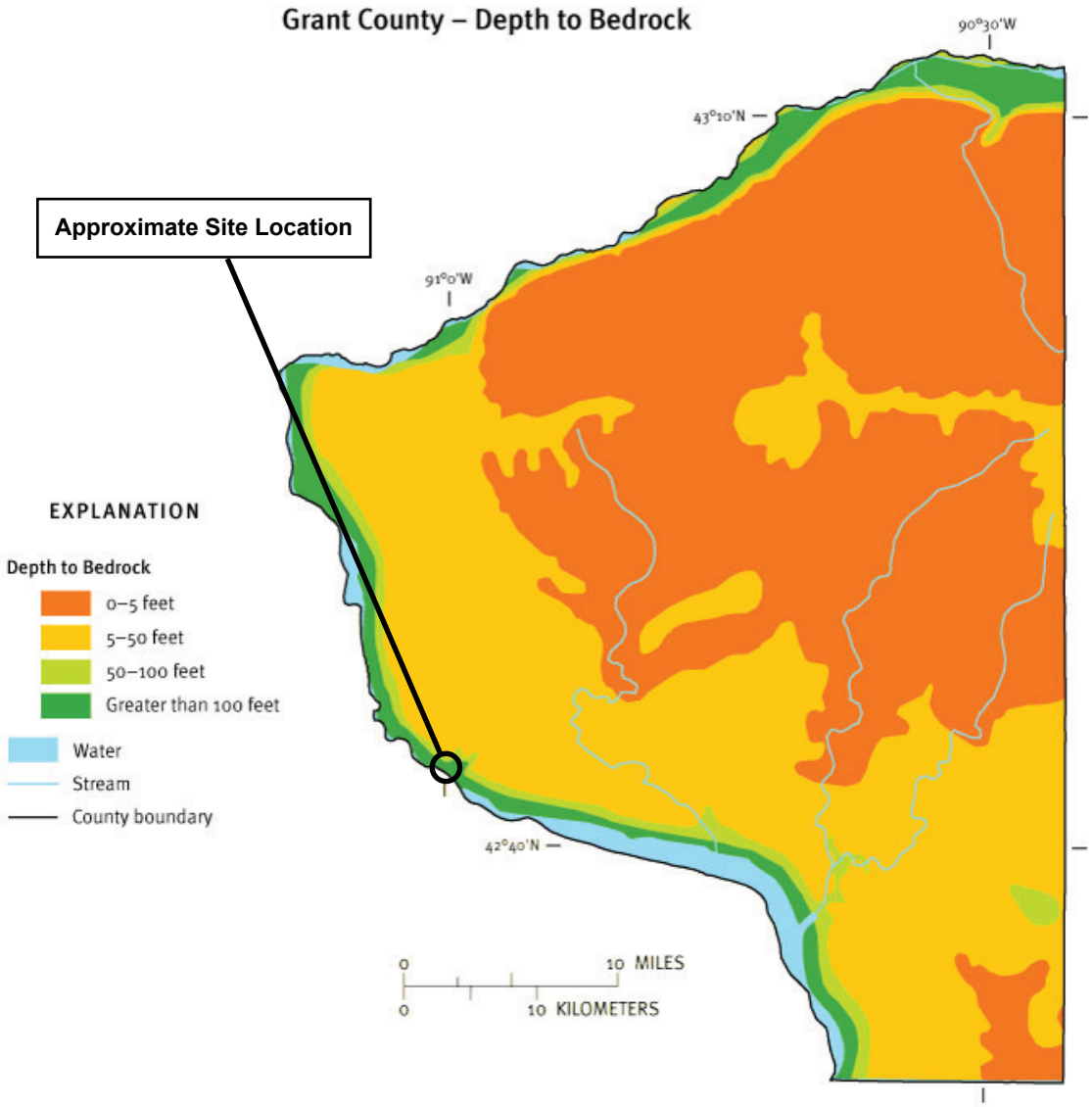


This resource characteristic map was derived from generalized statewide information at small scales, and cannot be used for any site-specific purposes.

Map source: Schmidt, R.R., 1987, Groundwater contamination susceptibility map and evaluation: Wisconsin Department of Natural Resources, Wisconsin's Groundwater Management Plan Report 5, PUBL-WR-177-87, 27 p.

Figure created for the "Protecting Wisconsin's Groundwater Through Comprehensive Planning" web site, 2007, *http://wi.water.usgs.gov/gwcomp/*

When bedrock is less than 50 feet from the land surface and the water table occurs in the bedrock, the type of bedrock is important in determining how easily a contaminant can reach the groundwater. Bedrock types that allow water to pass quickly through them will offer less protection from contaminants. In Wisconsin, these types of bedrock are typically limestone and dolomite which are highly fractured. Igneous and metamorphic rocks (e.g. granite) and sandstone are less fractured and offer some protection from infiltrating water which may contain contaminants. On the other hand, shale bedrock is almost impermeable, and doesn't allow water and accompanying contaminants to pass through it as easily. The bedrock categories used for this project are carbonates, sandstone, igneous/metamorphic/volcanic, and shale.



This resource characteristic map was derived from generalized statewide information at small scales, and cannot be used for any site-specific purposes.

Map source: Schmidt, R.R., 1987, Groundwater contamination susceptibility map and evaluation: Wisconsin Department of Natural Resources, Wisconsin's Groundwater Management Plan Report 5, PUBL-WR-177-87, 27 p.

Figure created for the "Protecting Wisconsin's Groundwater Through Comprehensive Planning" web site, 2007, *http://wi.water.usgs.gov/gwcomp/*

The depth to bedrock indicates the amount of soil and surficial deposits that exist in an area and, therefore how important the type of bedrock is in evaluating pollution potential. Information on the depth to bedrock map is used to determine the relative weight given to the other resource characteristic maps. For example, where the bedrock surface is deep and the water table occurs above the bedrock, the type of bedrock is not considered in determining groundwater contamination susceptibility. Where the depth to bedrock is shallow (less than 50 feet below the land surface), the water table is likely to occur in the bedrock. In that case, the type of bedrock is considered because it could influence a contaminant's ability to reach the groundwater. This map identifies areas where the depth to bedrock is 0-5 feet (in at least 35% of the area), 5-50 feet, 50-100 feet and greater than 100 feet.

APPENDIX C

Local Water Supply Well Logs

WISCONSIN UNIQUE WELL NUMBER **FD165**

Source: SWAP PROJECT KEYED

State of Wi-Private Water Systems-DG/2
Department Of Natural Resources, Box 7921
Madison, WI 53707

Form 3300-77A
(Rev 02/02)bw

Depth **104** FT

Property Owner: **WISCONSIN POWER & LIGHT**	Telephone Number: - -	
Mailing Address: 11999 COUNTY ROAD VV		
City: CASSVILLE	State: WI	Zip Code: 53806
County of Well Location: 22 GRANT SC	Co Well Permit No W	Well Completion Date: April 21, 1986

1. Well Location

T=Town C=City V=Village: **T** of CASSVILLE

Fire#: 11999

Street Address or Road Name and Number: 11999 COUNTY ROAD VV

Subdivision Name | Lot# | Block #

Gov't Lot or **SW** 1/4 of **NE** 1/4 of

Section **19** T **3** N R **5** **W**

Well Constructor: C T W CORP	License #: 364	Facility ID (Public): 122014530
Address: 21500 W GOOD HOPE RD		Public Well Plan Approval#: 22-3-0002
City: LANNON	State: WI Zip Code: 53046	Date Of Approval
Hicap Permanent Well #: 47200	Common Well #	Specific Capacity: 26.7 gpm/ft

2. Well Type **1** (See item 12 below)

1=New 2=Replacement 3=Reconstruction

of previous unique well # _____ constructed in _____

Reason for replaced or reconstructed Well?

3. Well Serves **N** # of homes and or (eg: barn, restaurant, church, school, industry, etc.)

M=Munic O=OTM N=NonCom P=Private Z=Other X=NonPot A=Anode L=Loop H=Drillhole

High Capacity: Well? Y Property? Y

1 1=Drilled 2=Driven Point 3=Jetted 4=Other

4. Is the well located upslope or sideslope and not downslope from any contamination sources, including those on neighboring properties? **N**

Well located in floodplain? **N**

Distance in feet from well to nearest: (including proposed)

1. Landfill
2. Building Overhang
3. 1=Septic 2= Holding Tank
4. Sewage Absorption Unit
5. Nonconforming Pit
6. Buried Home Heating Oil Tank
7. Buried Petroleum Tank
8. 1=Shoreline 2= Swimming Pool
9. Downspout/ Yard Hydrant
10. Privy
11. Foundation Drain to Clearwater
12. Foundation Drain to Sewer
13. Building Drain 1=Cast Iron or Plastic 2=Other
14. Building Sewer 1=Gravity 2=Pressure 1=Cast Iron or Plastic 2=Other
15. Collector Sewer: ___ units ___ in . diam.
16. Clearwater Sump
17. Wastewater Sump
18. Paved Animal Barn Pen
19. Animal Yard or Shelter
20. Silo
21. Barn Gutter
22. Manure Pipe 1=Gravity 2=Pressure 1=Cast iron or Plastic 2=Other
23. Other manure Storage
24. Ditch
25. Other NR 812 Waste Source

5. Drillhole Dimensions and Construction Method

Dia.(in.)	From (ft)	To (ft)
12.0	surface	63
8.0	63	104

Upper Enlarged Drillhole
-- 1. Rotary - Mud Circulation ----------
-- 2. Rotary - Air ----------
-- 3. Rotary - Air and Foam ----------
-- 4. Drill-Through Casing Hammer
-- 5. Reverse Rotary
-- 6. Cable-tool Bit _ n. dia ----------
-- 7. Temp. Outer Casing _ in. dia. _____ depth ft. Removed ?
Other

Lower Open Bedrock

6. Casing Liner Screen Material, Weight, Specification Manufacturer & Method of Assembly

Dia. (in.)		From (ft.)	To (ft.)
12.0	STEEL - WELDED	surface	63
8.0	STEEL - WELDED, A-53, 0.322 WALL	0	90

Dia.(in.)	Screen type, material & slot size	From	To
8.0	TEL. SCREEN, SS K PACKER	90	104

7. Grout or Other Sealing Material

Method / Kind of Sealing Material	From (ft.)	To (ft.)	# Sacks Cement
NEAT CEMENT	surface	63.0	

8. Geology

Geology Codes	Type, Caving/Noncaving, Color, Hardness, etc	From (ft.)	To (ft.)
__F_	FILL	0	3
__I_	TOPSOIL	3	4
__S_	SAND	4	104

9. Static Water Level

25.0 feet **B** ground surface
A=Above B=Below

10. Pump Test

Pumping level **34.0** ft. below surface

Pumping at **240.0** GP **12.0** Hrs

11. Well Is: 13 in. A Grade
A=Above B=Below

Developed? N
Disinfected? Y
Capped? Y

12. Did you notify the owner of the need to permanently abandon and fill all unused wells on this property? **N**

If no, explain

13. Initials of Well Constructor or Supervisory Driller Date Signed

Initials of Drill Rig Operator (Mandatory unless same as above) Date Signed

Additonal Comments?
Owner Sent Label? Y

Variance Issued?
More Geology?

Batch 777777777

WISCONSIN UNIQUE WELL NUMBER
Source: SWAP PROJECT KEYED **FD166**

State of Wi-Private Water Systems-DG/2
Department Of Natural Resources, Box 7921
Madison, WI 53707

Form 3300-77A
(Rev 02/02)bw

Depth **111** FT

Property Owner	**WISCONSIN POWER & LIGHT**	Telephone Number	- -
Mailing Address	11999 COUNTY ROAD VV		
City	CASSVILLE	State WI	Zip Code 53806
County of Well Location	22 GRANT SC	Co Well Permit No W	Well Completion Date June 15, 1987

1. Well Location

T=Town C=City V=Village: **T** of CASSVILLE

Fire# 11999

Street Address or Road Name and Number: 11999 COUNTY ROAD VV

Subdivision Name | Lot# | Block #

Gov't Lot or **SW** 1/4 of **NE** 1/4 of

Section **19** T **3** N R **5** **W**

Well Constructor	C T W CORP	License # 364	Facility ID (Public) 122014530
Address	21500 W GOOD HOPE RD		Public Well Plan Approval# 22-3-0003
City	LANNON	State WI Zip Code 53046	Date Of Approval 04/27/1987
Hicap Permanent Well #	47211	Common Well #	Specific Capacity 35.4 gpm/ft

2. Well Type **1** (See item 12 below)

1=New 2=Replacement 3=Reconstruction

of previous unique well # _____ constructed in _____

Reason for replaced or reconstructed Well?

Power Plant Operation

3. Well Serves **N** # of homes and or (eg: barn, restaurant, church, school, industry, etc.)

M=Munic O=OTM N=NonCom P=Private Z=Other X=NonPot A=Anode L=Loop H=Drillhole

High Capacity: Well? Y Property? Y

1 1=Drilled 2=Driven Point 3=Jetted 4=Other

4. Is the well located upslope or sideslope and not downslope from any contamination sources, including those on neighboring properties? **N**

Well located in floodplain? **N**

Distance in feet from well to nearest: (including proposed)

1. Landfill
2. Building Overhang
3. 1=Septic 2= Holding Tank
4. Sewage Absorption Unit
5. Nonconforming Pit
6. Buried Home Heating Oil Tank
7. Buried Petroleum Tank
8. 1=Shoreline 2= Swimming Pool
9. Downspout/ Yard Hydrant
10. Privy
11. Foundation Drain to Clearwater
12. Foundation Drain to Sewer
13. Building Drain 1=Cast Iron or Plastic 2=Other
14. Building Sewer 1=Gravity 2=Pressure 1=Cast Iron or Plastic 2=Other
15. Collector Sewer: ___ units ___ in . diam.
16. Clearwater Sump
17. Wastewater Sump
18. Paved Animal Barn Pen
19. Animal Yard or Shelter
20. Silo
21. Barn Gutter
22. Manure Pipe 1=Gravity 2=Pressure 1=Cast iron or Plastic 2=Other
23. Other manure Storage
24. Ditch
25. Other NR 812 Waste Source

5. Drillhole Dimensions and Construction Method

Dia.(in.)	From (ft)	To (ft)
13.0	surface	60
8.0	60	111

Upper Enlarged Drillhole
-- 1. Rotary - Mud Circulation
-- 2. Rotary - Air
-- 3. Rotary - Air and Foam
-- 4. Drill-Through Casing Hammer
-- 5. Reverse Rotary
X -- 6. Cable-tool Bit _ n. dia
-- 7. Temp. Outer Casing _ in. dia. _____ depth ft. Removed ?
Other

Lower Open Bedrock

6. Casing Liner Screen

Dia. (in.)	Material, Weight, Specification Manufacturer & Method of Assembly	From (ft.)	To (ft.)
12.5	STEEL	surface	60
8.0	STEEL A53-B, SUMITOMA, 0.322 WALL, WELDED CONNECTION	0	95

Dia.(in.)	Screen type, material & slot size	From	To
8.0	TELESCOPE SIZE STAINLESS SCREEN - K PACKER	96	111

7. Grout or Other Sealing Material

Method / Kind of Sealing Material	From (ft.)	To (ft.)	# Sacks Cement
NEAT CEMENT	surface	61.0	

8. Geology

Geology Codes	Type, Caving/Noncaving, Color, Hardness, etc	From (ft.)	To (ft.)
__Y_	SAND & GRAVEL	0	111

9. Static Water Level
17.0 feet **B** ground surface
A=Above B=Below

10. Pump Test
Pumping level **24.0** ft. below surface
Pumping at **248.0** GP **12.0** Hrs

11. Well Is: 24 in. A Grade (A=Above B=Below)
Developed? N
Disinfected? Y
Capped? Y

12. Did you notify the owner of the need to permanently abandon and fill all unused wells on this property? **N**
If no, explain

13. Initials of Well Constructor or Supervisory Driller — Date Signed

Initials of Drill Rig Operator (Mandatory unless same as above) — Date Signed

Additonal Comments?
Owner Sent Label? Y
Variance Issued?
More Geology?

Batch 777777777

Well Construction Report
WISCONSIN UNIQUE WELL NUMBER WJ902

State of Wisconsin — Private Water Systems-DG/2 Form 3300-77A
Department of Natural Resources, Box 7921 (R 12/2000)
Madison, WI 53707

Property Owner: WI POWER & LIGHT	Telephone Number: (608) 725-2235
Mailing Address: 11999 COUNTY HWY VV	
City: CASSVILLE	State: WI Zip Code: 53806-
County of Well Location: GRANT	Co. Well Permit No. W
Well Completion Date (mm/dd/yyyy): 02 / 06 / 2008	
Well Constructor (Business Name): Layne Northwest	License #: 582
Address: W229 N5005 DuPlainville Road	
City: Pewaukee State: WI Zip Code: 53072-	
Hicap Permanent Well #	Common Well #: TW
Facility ID Number (Public Wells): 0	
Public Well Plan Approval # W-	
Date of Approval (mm/dd/yyyy): 01 / 08 / 2008	
Specific Capacity: gpm/ft	

1. Well Location
[X] Town [ ] City [ ] Village of Cassville
Fire # (If avail.)
Grid or Street Address or Road Name and Number: WP&L Nelson Dewey Power Statio
Subdivision Name | Lot # | Block #
Gov't Lot # ____ or SW 1/4 of SE 1/4 of
Section 18, T 2 N; R 5 [ ] E [X] W
Latitude Deg. ____ Min. ____ Sec. ____
Longitude Deg. ____ Min. ____ Sec. ____
Lat/Long Method

2. Well Type
[X] New [ ] Replacement [ ] Reconstruction (see item 12 below)
of previous unique well # ____ constructed in ____
Reason for replaced or reconstructed well?
[X] Drilled [ ] Driven Point [ ] Jetted [ ] Other

3. Well serves ____ # of homes and or Industry
(Eg: barn, restaurant, church, school, industry, etc.)
High Capacity: Well? [X] Yes [ ] No Property? [X] Yes [ ] No

4. Is the well located upslope or sideslope and not downslope from any contamination sources, including those on neighboring properties? [X] Yes [ ] No If no, explain on back side.
Well located in floodplain? [X] Yes [ ] No
Distance in Feet From Well To Nearest: (include proposed)

____ 1. Landfill	____ 9. Downspout/Yard Hydrant	____ 17. Wastewater Sump
____ 2. Building Overhang	____ 10. Privy	____ 18. Paved Animal Barn Pen
____ 3. Septic [ ] Holding Tank [ ]	____ 11. Foundation Drain to Clearwater	____ 19. Animal Yard or Shelter
____ 4. Sewage Absorption Unit	____ 12. Foundation Drain to Sewer	____ 20. Silo
____ 5. Nonconforming Pit	____ 13. Building Drain [ ] Cast Iron or Plastic [ ] Other	____ 21. Barn Gutter
____ 6. Buried Home Heating Oil Tank	____ 14. Building Sewer [ ] Gravity [ ] Pressure [ ] Cast Iron or Plastic [ ] Other	____ 22. Manure Pipe [ ] Gravity [ ] Pressure [ ] Cast Iron or Plastic [ ] Other
____ 7. Buried Petroleum Tank	____ 15. Collector Sewer: ___units ____in. diameter	____ 23. Other Manure Storage ____
____ 8. Shoreline [ ] Swimming Pool [ ]	____ 16. Clearwater Sump	____ 24. Ditch
		____ 25. Other NR 812 Waste Source

5. Drillhole Dimensions and Construction Method

Dia. (in.)	From (ft.)	To (ft.)
12	surface	110

Upper Enlarged Drillhole / Lower Open Bedrock
[ ] 1. Rotary - Mud Circulation
[X] 2. Rotary - Air
[ ] 3. Rotary - Air and Foam
[ ] 4. Drill-Through Casing Hammer
[ ] 5. Reverse Rotary
[ ] 6. Cable-tool Bit ____ in. dia.
[X] 7. Temp. Outer Casing 12 in. dia. Removed? 110 depth ft.
[ ] Yes [X] No - If no, explain on back side.

6. Casing, Liner, Screen

Dia. (in.)	Material, Weight, Specification, Manufacturer & Method of Assembly	From (ft.)	To (ft.)
12	ASTM A53 Grade B 49.56 lbs/ft S	surface	90
	hanghai Alison Steel Pipe Co.		

Dia. (in.)	screen type, material & slot size	From	To
12	US Filter PB x Fig K Packer TS	90	110

7. Grout or Other Sealing Material
Method mounded bentonite

Kind of Sealing Material	From (ft.)	To (ft.)	# Sacks Cement
Granular Bentonite	surface	20	2
(Gravel pack if applicable)			

8. Geology Codes

	Geology: Type, Caving/Noncaving, Color, Hardness, Etc.	From (ft.)	To (ft.)
- N S -	Fine, Sand	0	53
- N S M	Fine, Sand, Silty	53	56
- M S -	Medium, Sand	56	85
- A S -	Coarse, Sand	85	110

9. Static Water Level
____ ft. above ground surface
9.6 ft. below ground surface

10. Pump Test
Pumping Level 36 ft. below surface
Pumping at 1026 GPM for 72 hours

11. Well Is:
24 in. [X] Above [ ] Below Grade
Developed? [X] Yes [ ] No
Disinfected? [X] Yes [ ] No
Capped? [X] Yes [ ] No

12. Did you notify the owner of the need to permanently abandon and fill all unused wells on this property?
[X] Yes [ ] No If no, explain ____

13. Signature of Well Constructor or Supervisory Driller: KLM — Date Signed: 02/06/2008
Signature of Drill Rig Operator (Mandatory unless same as above) — Date Signed

Make additional comments on reverse side about geology, additional screens, water quality, etc. Well Notification Number
Comments on reverse side X (CHECK √, IF YES) Variance Issued [ ] Yes [ ] No

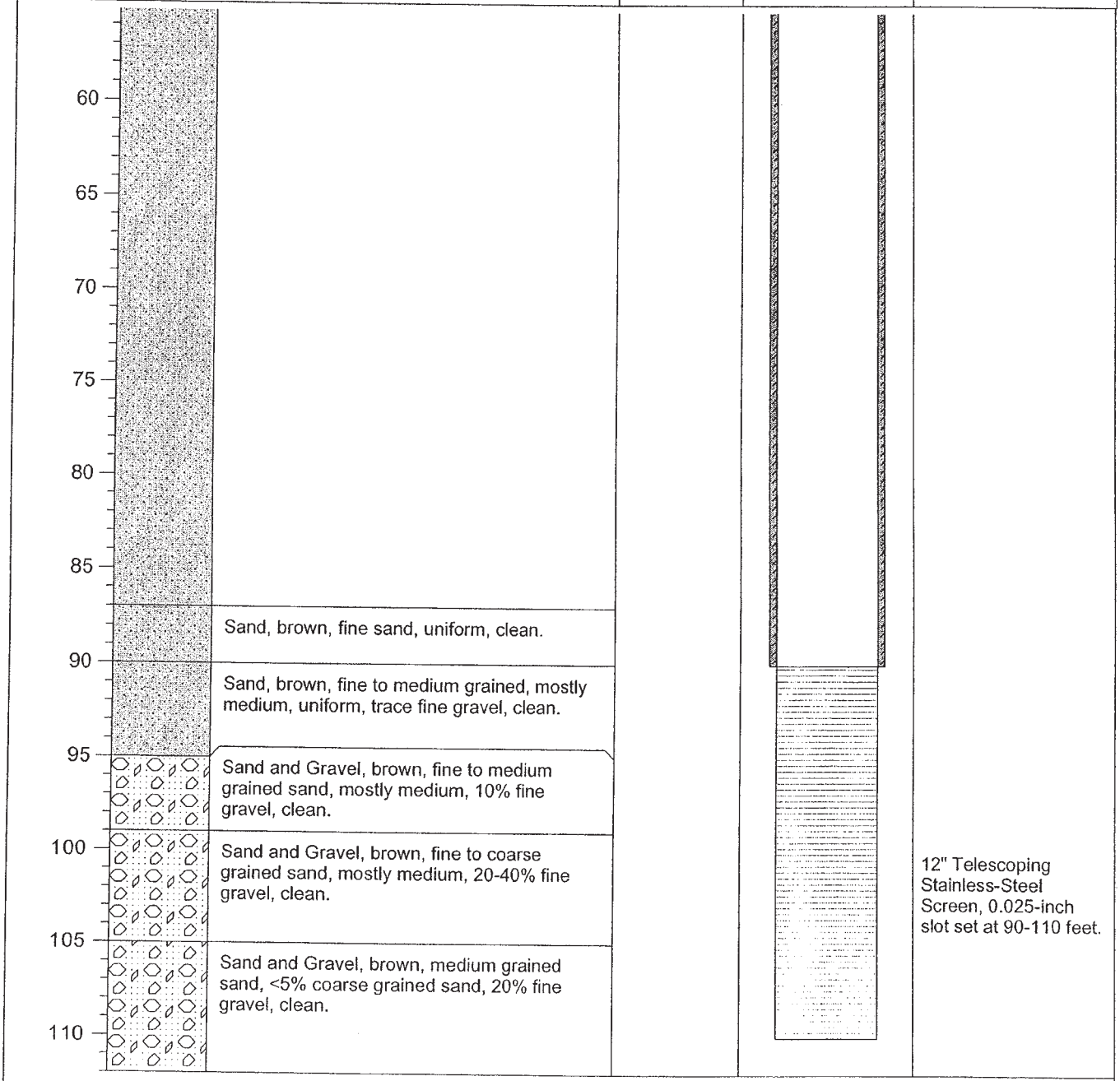
DNR

REYNOLDS INC.
6360 HUNTLEY ROAD
COLUMBUS, OHIO 43229
614-888-6263

FIELD BOREHOLE LOG

BOREHOLE NO.: **PW**

TOTAL DEPTH: **112 feet**



APPENDIX D

Revised June 2017 Laboratory Report

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

January 31, 2018

Meghan Blodgett
SCS ENGINEERS
2830 Dairy Drive
Madison, WI 53718

RE: Project: 25216071.17 ALLIANT-ND
Pace Project No.: 40151353

Dear Meghan Blodgett:
Enclosed are the analytical results for sample(s) received by the laboratory on June 09, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Revised Report: Sample ID's for 40151353008-009 have been changed at the request of the client.

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

Sincerely,

Dan Milewsky
dan.milewsky@pacelabs.com
(920)469-2436
Project Manager

Enclosures

cc: Tom Karwoski, SCS ENGINEERS
Kyle Kramer, SCS ENGINEERS
Jeff Maxted, ALLIANT ENERGY
Marc Morandi, ALLIANT ENERGY

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

CERTIFICATIONS

Project: 25216071.17 ALLIANT-ND
Pace Project No.: 40151353

Green Bay Certification IDs

1241 Bellevue Street, Green Bay, WI 54302
Florida/NELAP Certification #: E87948
Illinois Certification #: 200050
Kentucky UST Certification #: 82
Louisiana Certification #: 04168
Minnesota Certification #: 055-999-334
New York Certification #: 12064
North Dakota Certification #: R-150
Virginia VELAP ID: 460263
South Carolina Certification #: 83006001
Texas Certification #: T104704529-14-1
Wisconsin Certification #: 405132750
Wisconsin DATCP Certification #: 105-444
USDA Soil Permit #: P330-16-00157
Federal Fish & Wildlife Permit #: LE51774A-0

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE SUMMARY

Project: 25216071.17 ALLIANT-ND
Pace Project No.: 40151353

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40151353001	**B-39**	Water	06/07/17 13:55	06/09/17 10:25
40151353002	**B-7R**	Water	06/07/17 15:50	06/09/17 10:25
40151353003	**B-11R**	Water	06/07/17 17:15	06/09/17 10:25
40151353004	**B-26**	Water	06/07/17 18:05	06/09/17 10:25
40151353005	**B-11B**	Water	06/08/17 10:15	06/09/17 10:25
40151353006	**FIELD BLANK**	Water	06/08/17 11:00	06/09/17 10:25
40151353007	**B-11A**	Water	06/08/17 11:15	06/09/17 10:25
40151353008	**B-31A**	Water	06/08/17 12:10	06/09/17 10:25
40151353009	**B-31R**	Water	06/08/17 13:00	06/09/17 10:25

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE ANALYTE COUNT

Project: 25216071.17 ALLIANT-ND
Pace Project No.: 40151353

Lab ID	Sample ID	Method	Analysts	Analytes Reported
40151353001	**B-39**	EPA 6020	DS1, SDW	14
		EPA 7470	AJT	1
			RMW	7
		SM 2540C	TMK	1
		EPA 9040	ALY	1
		EPA 300.0	HMB	3
40151353002	**B-7R**	EPA 6020	DS1, SDW	14
		EPA 7470	AJT	1
			RMW	7
		SM 2540C	TMK	1
		EPA 9040	ALY	1
		EPA 300.0	HMB	3
40151353003	**B-11R**	EPA 6020	DS1, SDW	14
		EPA 7470	AJT	1
			RMW	7
		SM 2540C	TMK	1
		EPA 9040	ALY	1
		EPA 300.0	HMB	3
40151353004	**B-26**	EPA 6020	DS1, SDW	14
		EPA 7470	AJT	1
			RMW	7
		SM 2540C	TMK	1
		EPA 9040	ALY	1
		EPA 300.0	HMB	3
40151353005	**B-11B**	EPA 6020	DS1, SDW	14
		EPA 7470	AJT	1
			RMW	7
		SM 2540C	TMK	1
		EPA 9040	ALY	1
		EPA 300.0	HMB	3
40151353006	**FIELD BLANK**	EPA 6020	DS1, SDW	14
		EPA 7470	AJT	1
		SM 2540C	TMK	1
		EPA 9040	ALY	1
		EPA 300.0	HMB	3
40151353007	**B-11A**	EPA 6020	DS1, SDW	14
		EPA 7470	AJT	1

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE ANALYTE COUNT

Project: 25216071.17 ALLIANT-ND
Pace Project No.: 40151353

Lab ID	Sample ID	Method	Analysts	Analytes Reported
			RMW	7
		SM 2540C	TMK	1
		EPA 9040	ALY	1
		EPA 300.0	HMB	3
40151353008	**B-31A**	EPA 6020	DS1, SDW	14
		EPA 7470	AJT	1
			RMW	7
		SM 2540C	TMK	1
		EPA 300.0	HMB	3
40151353009	**B-31R**	EPA 6020	DS1, SDW	14
		EPA 7470	AJT	1
			RMW	7
		SM 2540C	TMK	1
		EPA 300.0	HMB	3

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25216071.17 ALLIANT-ND
Pace Project No.: 40151353

Sample: B-39 **Lab ID: 40151353001** Collected: 06/07/17 13:55 Received: 06/09/17 10:25 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**<0.15**	ug/L	1.0	0.15	1	06/12/17 10:10	06/13/17 20:06	7440-36-0	
Arsenic	**7.2**	ug/L	1.0	0.28	1	06/12/17 10:10	06/13/17 20:06	7440-38-2	
Barium	**81.7**	ug/L	1.1	0.34	1	06/12/17 10:10	06/13/17 20:06	7440-39-3	
Beryllium	**<0.18**	ug/L	1.0	0.18	1	06/12/17 10:10	06/13/17 20:06	7440-41-7	
Boron	**142**	ug/L	11.0	3.3	1	06/12/17 10:10	06/14/17 23:44	7440-42-8	
Cadmium	**<0.081**	ug/L	1.0	0.081	1	06/12/17 10:10	06/13/17 20:06	7440-43-9	
Calcium	**57600**	ug/L	250	69.8	1	06/12/17 10:10	06/14/17 23:44	7440-70-2	
Chromium	**<1.0**	ug/L	3.4	1.0	1	06/12/17 10:10	06/13/17 20:06	7440-47-3	
Cobalt	**1.3**	ug/L	1.0	0.085	1	06/12/17 10:10	06/13/17 20:06	7440-48-4	
Lead	**<0.20**	ug/L	1.0	0.20	1	06/12/17 10:10	06/13/17 20:06	7439-92-1	
Lithium	**4.4**	ug/L	1.0	0.14	1	06/12/17 10:10	06/13/17 20:06	7439-93-2	
Molybdenum	**14.0**	ug/L	1.5	0.44	1	06/12/17 10:10	06/13/17 20:06	7439-98-7	
Selenium	**0.54J**	ug/L	1.1	0.32	1	06/12/17 10:10	06/13/17 20:06	7782-49-2	
Thallium	**0.27J**	ug/L	1.0	0.14	1	06/12/17 10:10	06/13/17 20:06	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.13**	ug/L	0.42	0.13	1	06/20/17 13:05	06/21/17 10:41	7439-97-6	
Field Data	Analytical Method:								
Field pH	**7.05**	Std. Units			1		06/07/17 13:55		
Field Specific Conductance	**372**	umhos/cm			1		06/07/17 13:55		
Oxygen, Dissolved	**0.16**	mg/L			1		06/07/17 13:55	7782-44-7	
REDOX	**83.6**	mV			1		06/07/17 13:55		
Turbidity	**3.81**	NTU			1		06/07/17 13:55		
Static Water Level	**611.53**	feet			1		06/07/17 13:55		
Temperature, Water (C)	**14.1**	deg C			1		06/07/17 13:55		
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**308**	mg/L	20.0	8.7	1		06/13/17 15:50		
9040 pH	Analytical Method: EPA 9040								
pH	**7.5**	Std. Units	0.10	0.010	1		06/13/17 10:40		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**37.7**	mg/L	2.0	0.50	1		06/21/17 23:16	16887-00-6	
Fluoride	**0.27J**	mg/L	0.30	0.10	1		06/21/17 23:16	16984-48-8	
Sulfate	**26.6**	mg/L	3.0	1.0	1		06/21/17 23:16	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25216071.17 ALLIANT-ND
Pace Project No.: 40151353

Sample: B-7R **Lab ID: 40151353002** Collected: 06/07/17 15:50 Received: 06/09/17 10:25 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**<0.15**	ug/L	1.0	0.15	1	06/12/17 10:10	06/13/17 20:13	7440-36-0	
Arsenic	**2.6**	ug/L	1.0	0.28	1	06/12/17 10:10	06/13/17 20:13	7440-38-2	
Barium	**65.8**	ug/L	1.1	0.34	1	06/12/17 10:10	06/13/17 20:13	7440-39-3	
Beryllium	**<0.18**	ug/L	1.0	0.18	1	06/12/17 10:10	06/13/17 20:13	7440-41-7	
Boron	**110**	ug/L	11.0	3.3	1	06/12/17 10:10	06/15/17 00:05	7440-42-8	
Cadmium	**<0.081**	ug/L	1.0	0.081	1	06/12/17 10:10	06/13/17 20:13	7440-43-9	
Calcium	**51600**	ug/L	250	69.8	1	06/12/17 10:10	06/15/17 00:05	7440-70-2	
Chromium	**<1.0**	ug/L	3.4	1.0	1	06/12/17 10:10	06/13/17 20:13	7440-47-3	
Cobalt	**1.1**	ug/L	1.0	0.085	1	06/12/17 10:10	06/13/17 20:13	7440-48-4	
Lead	**<0.20**	ug/L	1.0	0.20	1	06/12/17 10:10	06/13/17 20:13	7439-92-1	
Lithium	**<0.14**	ug/L	1.0	0.14	1	06/12/17 10:10	06/13/17 20:13	7439-93-2	
Molybdenum	**2.8**	ug/L	1.5	0.44	1	06/12/17 10:10	06/13/17 20:13	7439-98-7	
Selenium	**<0.32**	ug/L	1.1	0.32	1	06/12/17 10:10	06/13/17 20:13	7782-49-2	
Thallium	**<0.14**	ug/L	1.0	0.14	1	06/12/17 10:10	06/13/17 20:13	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.13**	ug/L	0.42	0.13	1	06/20/17 13:05	06/21/17 10:43	7439-97-6	
Field Data	Analytical Method:								
Field pH	**6.65**	Std. Units			1		06/07/17 15:50		
Field Specific Conductance	**303.0**	umhos/cm			1		06/07/17 15:50		
Oxygen, Dissolved	**0.22**	mg/L			1		06/07/17 15:50	7782-44-7	
REDOX	**-12.6**	mV			1		06/07/17 15:50		
Turbidity	**3.28**	NTU			1		06/07/17 15:50		
Static Water Level	**610.74**	feet			1		06/07/17 15:50		
Temperature, Water (C)	**13.5**	deg C			1		06/07/17 15:50		
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**240**	mg/L	20.0	8.7	1		06/13/17 15:51		
9040 pH	Analytical Method: EPA 9040								
pH	**7.7**	Std. Units	0.10	0.010	1		06/13/17 10:40		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**12.8**	mg/L	10.0	2.5	5		06/21/17 23:27	16887-00-6	
Fluoride	**<0.50**	mg/L	1.5	0.50	5		06/21/17 23:27	16984-48-8	D3
Sulfate	**<5.0**	mg/L	15.0	5.0	5		06/21/17 23:27	14808-79-8	D3

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25216071.17 ALLIANT-ND
Pace Project No.: 40151353

Sample: B-11R **Lab ID: 40151353003** Collected: 06/07/17 17:15 Received: 06/09/17 10:25 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**<0.15**	ug/L	1.0	0.15	1	06/12/17 10:10	06/13/17 20:19	7440-36-0	
Arsenic	**6.1**	ug/L	1.0	0.28	1	06/12/17 10:10	06/13/17 20:19	7440-38-2	
Barium	**152**	ug/L	1.1	0.34	1	06/12/17 10:10	06/13/17 20:19	7440-39-3	
Beryllium	**<0.18**	ug/L	1.0	0.18	1	06/12/17 10:10	06/13/17 20:19	7440-41-7	
Boron	**3420**	ug/L	110	33.0	10	06/12/17 10:10	06/15/17 00:11	7440-42-8	
Cadmium	**<0.081**	ug/L	1.0	0.081	1	06/12/17 10:10	06/13/17 20:19	7440-43-9	
Calcium	**128000**	ug/L	2500	698	10	06/12/17 10:10	06/15/17 00:11	7440-70-2	
Chromium	**<1.0**	ug/L	3.4	1.0	1	06/12/17 10:10	06/13/17 20:19	7440-47-3	
Cobalt	**1.5**	ug/L	1.0	0.085	1	06/12/17 10:10	06/13/17 20:19	7440-48-4	
Lead	**<0.20**	ug/L	1.0	0.20	1	06/12/17 10:10	06/13/17 20:19	7439-92-1	
Lithium	**1.3**	ug/L	1.0	0.14	1	06/12/17 10:10	06/13/17 20:19	7439-93-2	
Molybdenum	**53.8**	ug/L	1.5	0.44	1	06/12/17 10:10	06/13/17 20:19	7439-98-7	
Selenium	**<0.32**	ug/L	1.1	0.32	1	06/12/17 10:10	06/13/17 20:19	7782-49-2	
Thallium	**<0.14**	ug/L	1.0	0.14	1	06/12/17 10:10	06/13/17 20:19	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.13**	ug/L	0.42	0.13	1	06/20/17 13:05	06/21/17 10:46	7439-97-6	
Field Data	Analytical Method:								
Field pH	**6.80**	Std. Units			1		06/07/17 17:15		
Field Specific Conductance	**721**	umhos/cm			1		06/07/17 17:15		
Oxygen, Dissolved	**0.21**	mg/L			1		06/07/17 17:15	7782-44-7	
REDOX	**-26.8**	mV			1		06/07/17 17:15		
Turbidity	**1.72**	NTU			1		06/07/17 17:15		
Static Water Level	**610.42**	feet			1		06/07/17 17:15		
Temperature, Water (C)	**11.9**	deg C			1		06/07/17 17:15		
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**630**	mg/L	20.0	8.7	1		06/13/17 15:51		
9040 pH	Analytical Method: EPA 9040								
pH	**7.1**	Std. Units	0.10	0.010	1		06/13/17 10:40		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**42.0**	mg/L	10.0	2.5	5		06/21/17 23:38	16887-00-6	
Fluoride	**<0.50**	mg/L	1.5	0.50	5		06/21/17 23:38	16984-48-8	D3
Sulfate	**98.2**	mg/L	15.0	5.0	5		06/21/17 23:38	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25216071.17 ALLIANT-ND
Pace Project No.: 40151353

Sample: B-26 **Lab ID: 40151353004** Collected: 06/07/17 18:05 Received: 06/09/17 10:25 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**<0.15**	ug/L	1.0	0.15	1	06/12/17 10:10	06/13/17 20:26	7440-36-0	
Arsenic	**0.39J**	ug/L	1.0	0.28	1	06/12/17 10:10	06/13/17 20:26	7440-38-2	
Barium	**107**	ug/L	1.1	0.34	1	06/12/17 10:10	06/13/17 20:26	7440-39-3	
Beryllium	**<0.18**	ug/L	1.0	0.18	1	06/12/17 10:10	06/13/17 20:26	7440-41-7	
Boron	**45.8**	ug/L	11.0	3.3	1	06/12/17 10:10	06/15/17 00:18	7440-42-8	
Cadmium	**<0.081**	ug/L	1.0	0.081	1	06/12/17 10:10	06/13/17 20:26	7440-43-9	
Calcium	**105000**	ug/L	250	69.8	1	06/12/17 10:10	06/15/17 00:18	7440-70-2	
Chromium	**<1.0**	ug/L	3.4	1.0	1	06/12/17 10:10	06/13/17 20:26	7440-47-3	
Cobalt	**<0.085**	ug/L	1.0	0.085	1	06/12/17 10:10	06/13/17 20:26	7440-48-4	
Lead	**<0.20**	ug/L	1.0	0.20	1	06/12/17 10:10	06/13/17 20:26	7439-92-1	
Lithium	**2.2**	ug/L	1.0	0.14	1	06/12/17 10:10	06/13/17 20:26	7439-93-2	
Molybdenum	**<0.44**	ug/L	1.5	0.44	1	06/12/17 10:10	06/13/17 20:26	7439-98-7	
Selenium	**1.5**	ug/L	1.1	0.32	1	06/12/17 10:10	06/13/17 20:26	7782-49-2	
Thallium	**<0.14**	ug/L	1.0	0.14	1	06/12/17 10:10	06/13/17 20:26	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.13**	ug/L	0.42	0.13	1	06/20/17 13:05	06/21/17 10:48	7439-97-6	
Field Data	Analytical Method:								
Field pH	**7.22**	Std. Units			1		06/07/17 18:05		
Field Specific Conductance	**575.9**	umhos/cm			1		06/07/17 18:05		
Oxygen, Dissolved	**2.92**	mg/L			1		06/07/17 18:05	7782-44-7	
REDOX	**53.4**	mV			1		06/07/17 18:05		
Turbidity	**0.44**	NTU			1		06/07/17 18:05		
Static Water Level	**611.25**	feet			1		06/07/17 18:05		
Temperature, Water (C)	**10.9**	deg C			1		06/07/17 18:05		
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**538**	mg/L	20.0	8.7	1		06/13/17 15:52		
9040 pH	Analytical Method: EPA 9040								
pH	**7.5**	Std. Units	0.10	0.010	1		06/13/17 10:40		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**59.6**	mg/L	10.0	2.5	5		06/22/17 17:23	16887-00-6	M0
Fluoride	**<0.10**	mg/L	0.30	0.10	1		06/21/17 23:49	16984-48-8	
Sulfate	**31.0**	mg/L	3.0	1.0	1		06/21/17 23:49	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25216071.17 ALLIANT-ND
Pace Project No.: 40151353

Sample: B-11B **Lab ID: 40151353005** Collected: 06/08/17 10:15 Received: 06/09/17 10:25 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**<0.15**	ug/L	1.0	0.15	1	06/12/17 10:10	06/13/17 20:33	7440-36-0	
Arsenic	**<0.28**	ug/L	1.0	0.28	1	06/12/17 10:10	06/13/17 20:33	7440-38-2	
Barium	**151**	ug/L	1.1	0.34	1	06/12/17 10:10	06/13/17 20:33	7440-39-3	
Beryllium	**<0.18**	ug/L	1.0	0.18	1	06/12/17 10:10	06/13/17 20:33	7440-41-7	
Boron	**1880**	ug/L	55.0	16.5	5	06/12/17 10:10	06/15/17 00:25	7440-42-8	
Cadmium	**<0.081**	ug/L	1.0	0.081	1	06/12/17 10:10	06/13/17 20:33	7440-43-9	
Calcium	**68200**	ug/L	1250	349	5	06/12/17 10:10	06/15/17 00:25	7440-70-2	
Chromium	**<1.0**	ug/L	3.4	1.0	1	06/12/17 10:10	06/13/17 20:33	7440-47-3	
Cobalt	**0.26J**	ug/L	1.0	0.085	1	06/12/17 10:10	06/13/17 20:33	7440-48-4	
Lead	**<0.20**	ug/L	1.0	0.20	1	06/12/17 10:10	06/13/17 20:33	7439-92-1	
Lithium	**19.4**	ug/L	1.0	0.14	1	06/12/17 10:10	06/13/17 20:33	7439-93-2	
Molybdenum	**55.1**	ug/L	1.5	0.44	1	06/12/17 10:10	06/13/17 20:33	7439-98-7	
Selenium	**<0.32**	ug/L	1.1	0.32	1	06/12/17 10:10	06/13/17 20:33	7782-49-2	
Thallium	**0.16J**	ug/L	1.0	0.14	1	06/12/17 10:10	06/13/17 20:33	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.13**	ug/L	0.42	0.13	1	06/20/17 13:05	06/21/17 10:50	7439-97-6	
Field Data	Analytical Method:								
Field pH	**8.07**	Std. Units			1		06/08/17 10:15		
Field Specific Conductance	**534.3**	umhos/cm			1		06/08/17 10:15		
Oxygen, Dissolved	**0.28**	mg/L			1		06/08/17 10:15	7782-44-7	
REDOX	**36.2**	mV			1		06/08/17 10:15		
Turbidity	**0.7**	NTU			1		06/08/17 10:15		
Static Water Level	**610.08**	feet			1		06/08/17 10:15		
Temperature, Water (C)	**14.1**	deg C			1		06/08/17 10:15		
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**516**	mg/L	20.0	8.7	1		06/15/17 16:18		
9040 pH	Analytical Method: EPA 9040								
pH	**8.1**	Std. Units	0.10	0.010	1		06/13/17 10:40		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**33.9**	mg/L	2.0	0.50	1		06/21/17 17:53	16887-00-6	
Fluoride	**0.59**	mg/L	0.30	0.10	1		06/21/17 17:53	16984-48-8	
Sulfate	**191**	mg/L	30.0	10.0	10		06/21/17 23:18	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25216071.17 ALLIANT-ND
Pace Project No.: 40151353

Sample: FIELD BLANK **Lab ID: 40151353006** Collected: 06/08/17 11:00 Received: 06/09/17 10:25 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**<0.15**	ug/L	1.0	0.15	1	06/12/17 10:10	06/13/17 17:31	7440-36-0	
Arsenic	**<0.28**	ug/L	1.0	0.28	1	06/12/17 10:10	06/13/17 17:31	7440-38-2	
Barium	**<0.34**	ug/L	1.1	0.34	1	06/12/17 10:10	06/13/17 17:31	7440-39-3	
Beryllium	**<0.18**	ug/L	1.0	0.18	1	06/12/17 10:10	06/13/17 17:31	7440-41-7	
Boron	**<3.3**	ug/L	11.0	3.3	1	06/12/17 10:10	06/14/17 21:48	7440-42-8	
Cadmium	**<0.081**	ug/L	1.0	0.081	1	06/12/17 10:10	06/13/17 17:31	7440-43-9	
Calcium	**<69.8**	ug/L	250	69.8	1	06/12/17 10:10	06/14/17 21:48	7440-70-2	
Chromium	**<1.0**	ug/L	3.4	1.0	1	06/12/17 10:10	06/13/17 17:31	7440-47-3	
Cobalt	**<0.085**	ug/L	1.0	0.085	1	06/12/17 10:10	06/13/17 17:31	7440-48-4	
Lead	**<0.20**	ug/L	1.0	0.20	1	06/12/17 10:10	06/13/17 17:31	7439-92-1	
Lithium	**<0.14**	ug/L	1.0	0.14	1	06/12/17 10:10	06/13/17 17:31	7439-93-2	
Molybdenum	**<0.44**	ug/L	1.5	0.44	1	06/12/17 10:10	06/13/17 17:31	7439-98-7	
Selenium	**<0.32**	ug/L	1.1	0.32	1	06/12/17 10:10	06/13/17 17:31	7782-49-2	
Thallium	**<0.14**	ug/L	1.0	0.14	1	06/12/17 10:10	06/13/17 17:31	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.13**	ug/L	0.42	0.13	1	06/20/17 13:05	06/21/17 10:57	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**<8.7**	mg/L	20.0	8.7	1		06/15/17 16:18		
9040 pH	Analytical Method: EPA 9040								
pH	**6.6**	Std. Units	0.10	0.010	1		06/13/17 10:40		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**<0.50**	mg/L	2.0	0.50	1		06/21/17 18:25	16887-00-6	
Fluoride	**<0.10**	mg/L	0.30	0.10	1		06/21/17 18:25	16984-48-8	
Sulfate	**<1.0**	mg/L	3.0	1.0	1		06/21/17 18:25	14808-79-8	

Sample: B-11A **Lab ID: 40151353007** Collected: 06/08/17 11:15 Received: 06/09/17 10:25 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**<0.15**	ug/L	1.0	0.15	1	06/12/17 10:10	06/13/17 20:40	7440-36-0	
Arsenic	**<0.28**	ug/L	1.0	0.28	1	06/12/17 10:10	06/13/17 20:40	7440-38-2	
Barium	**194**	ug/L	1.1	0.34	1	06/12/17 10:10	06/13/17 20:40	7440-39-3	
Beryllium	**<0.18**	ug/L	1.0	0.18	1	06/12/17 10:10	06/13/17 20:40	7440-41-7	
Boron	**102**	ug/L	11.0	3.3	1	06/12/17 10:10	06/15/17 00:32	7440-42-8	
Cadmium	**<0.081**	ug/L	1.0	0.081	1	06/12/17 10:10	06/13/17 20:40	7440-43-9	
Calcium	**57800**	ug/L	250	69.8	1	06/12/17 10:10	06/15/17 00:32	7440-70-2	
Chromium	**<1.0**	ug/L	3.4	1.0	1	06/12/17 10:10	06/13/17 20:40	7440-47-3	
Cobalt	**1.1**	ug/L	1.0	0.085	1	06/12/17 10:10	06/13/17 20:40	7440-48-4	
Lead	**<0.20**	ug/L	1.0	0.20	1	06/12/17 10:10	06/13/17 20:40	7439-92-1	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25216071.17 ALLIANT-ND
Pace Project No.: 40151353

Sample: B-11A **Lab ID: 40151353007** Collected: 06/08/17 11:15 Received: 06/09/17 10:25 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Lithium	**6.1**	ug/L	1.0	0.14	1	06/12/17 10:10	06/13/17 20:40	7439-93-2	
Molybdenum	**22.2**	ug/L	1.5	0.44	1	06/12/17 10:10	06/13/17 20:40	7439-98-7	
Selenium	**<0.32**	ug/L	1.1	0.32	1	06/12/17 10:10	06/13/17 20:40	7782-49-2	
Thallium	**<0.14**	ug/L	1.0	0.14	1	06/12/17 10:10	06/13/17 20:40	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.13**	ug/L	0.42	0.13	1	06/20/17 13:05	06/21/17 10:59	7439-97-6	
Field Data	Analytical Method:								
Field pH	**7.78**	Std. Units			1		06/08/17 11:15		
Field Specific Conductance	**407.9**	umhos/cm			1		06/08/17 11:15		
Oxygen, Dissolved	**0.23**	mg/L			1		06/08/17 11:15	7782-44-7	
REDOX	**31.4**	mV			1		06/08/17 11:15		
Turbidity	**0.39**	NTU			1		06/08/17 11:15		
Static Water Level	**609.81**	feet			1		06/08/17 11:15		
Temperature, Water (C)	**14.3**	deg C			1		06/08/17 11:15		
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**338**	mg/L	20.0	8.7	1		06/15/17 16:18		
9040 pH	Analytical Method: EPA 9040								
pH	**7.7**	Std. Units	0.10	0.010	1		06/13/17 10:40		H6
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**46.9**	mg/L	2.0	0.50	1		06/21/17 18:36	16887-00-6	
Fluoride	**0.37**	mg/L	0.30	0.10	1		06/21/17 18:36	16984-48-8	
Sulfate	**1.4J**	mg/L	3.0	1.0	1		06/21/17 18:36	14808-79-8	

Sample: B-31A **Lab ID: 40151353008** Collected: 06/08/17 12:10 Received: 06/09/17 10:25 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**<0.15**	ug/L	1.0	0.15	1	06/12/17 10:10	06/13/17 20:46	7440-36-0	
Arsenic	**1.3**	ug/L	1.0	0.28	1	06/12/17 10:10	06/13/17 20:46	7440-38-2	
Barium	**150**	ug/L	1.1	0.34	1	06/12/17 10:10	06/13/17 20:46	7440-39-3	
Beryllium	**<0.18**	ug/L	1.0	0.18	1	06/12/17 10:10	06/13/17 20:46	7440-41-7	
Boron	**58.5**	ug/L	11.0	3.3	1	06/12/17 10:10	06/15/17 00:39	7440-42-8	
Cadmium	**<0.081**	ug/L	1.0	0.081	1	06/12/17 10:10	06/13/17 20:46	7440-43-9	
Calcium	**49400**	ug/L	250	69.8	1	06/12/17 10:10	06/15/17 00:39	7440-70-2	
Chromium	**9.4**	ug/L	3.4	1.0	1	06/12/17 10:10	06/13/17 20:46	7440-47-3	
Cobalt	**2.2**	ug/L	1.0	0.085	1	06/12/17 10:10	06/13/17 20:46	7440-48-4	
Lead	**<0.20**	ug/L	1.0	0.20	1	06/12/17 10:10	06/13/17 20:46	7439-92-1	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25216071.17 ALLIANT-ND
Pace Project No.: 40151353

Sample: B-31A **Lab ID: 40151353008** Collected: 06/08/17 12:10 Received: 06/09/17 10:25 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Lithium	**0.94J**	ug/L	1.0	0.14	1	06/12/17 10:10	06/13/17 20:46	7439-93-2	
Molybdenum	**22.9**	ug/L	1.5	0.44	1	06/12/17 10:10	06/13/17 20:46	7439-98-7	
Selenium	**<0.32**	ug/L	1.1	0.32	1	06/12/17 10:10	06/13/17 20:46	7782-49-2	
Thallium	**<0.14**	ug/L	1.0	0.14	1	06/12/17 10:10	06/13/17 20:46	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.13**	ug/L	0.42	0.13	1	06/20/17 13:05	06/21/17 11:02	7439-97-6	
Field Data	Analytical Method:								
Field pH	**7.74**	Std. Units			1		06/08/17 12:10		
Field Specific Conductance	**334.2**	umhos/cm			1		06/08/17 12:10		
Oxygen, Dissolved	**0.25**	mg/L			1		06/08/17 12:10	7782-44-7	
REDOX	**-19.8**	mV			1		06/08/17 12:10		
Turbidity	**0.66**	NTU			1		06/08/17 12:10		
Static Water Level	**609.63**	feet			1		06/08/17 12:10		
Temperature, Water (C)	**14.7**	deg C			1		06/08/17 12:10		
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**296**	mg/L	20.0	8.7	1		06/15/17 16:18		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**40.9**	mg/L	2.0	0.50	1		06/21/17 18:47	16887-00-6	
Fluoride	**0.18J**	mg/L	0.30	0.10	1		06/21/17 18:47	16984-48-8	
Sulfate	**31.2**	mg/L	3.0	1.0	1		06/21/17 18:47	14808-79-8	

Sample: B-31R **Lab ID: 40151353009** Collected: 06/08/17 13:00 Received: 06/09/17 10:25 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020 MET ICPMS	Analytical Method: EPA 6020 Preparation Method: EPA 3010								
Antimony	**<0.15**	ug/L	1.0	0.15	1	06/12/17 10:10	06/13/17 20:53	7440-36-0	
Arsenic	**<0.28**	ug/L	1.0	0.28	1	06/12/17 10:10	06/13/17 20:53	7440-38-2	
Barium	**93.9**	ug/L	1.1	0.34	1	06/12/17 10:10	06/13/17 20:53	7440-39-3	
Beryllium	**<0.18**	ug/L	1.0	0.18	1	06/12/17 10:10	06/13/17 20:53	7440-41-7	
Boron	**895**	ug/L	22.0	6.6	2	06/12/17 10:10	06/15/17 00:45	7440-42-8	
Cadmium	**2.9**	ug/L	1.0	0.081	1	06/12/17 10:10	06/13/17 20:53	7440-43-9	
Calcium	**90700**	ug/L	500	140	2	06/12/17 10:10	06/15/17 00:45	7440-70-2	
Chromium	**<1.0**	ug/L	3.4	1.0	1	06/12/17 10:10	06/13/17 20:53	7440-47-3	
Cobalt	**2.3**	ug/L	1.0	0.085	1	06/12/17 10:10	06/13/17 20:53	7440-48-4	
Lead	**<0.20**	ug/L	1.0	0.20	1	06/12/17 10:10	06/13/17 20:53	7439-92-1	
Lithium	**21.4**	ug/L	1.0	0.14	1	06/12/17 10:10	06/13/17 20:53	7439-93-2	
Molybdenum	**25.4**	ug/L	1.5	0.44	1	06/12/17 10:10	06/13/17 20:53	7439-98-7	
Selenium	**<0.32**	ug/L	1.1	0.32	1	06/12/17 10:10	06/13/17 20:53	7782-49-2	
Thallium	**2.2**	ug/L	1.0	0.14	1	06/12/17 10:10	06/13/17 20:53	7440-28-0	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25216071.17 ALLIANT-ND
Pace Project No.: 40151353

Sample: B-31R **Lab ID: 40151353009** Collected: 06/08/17 13:00 Received: 06/09/17 10:25 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	**<0.13**	ug/L	0.42	0.13	1	06/20/17 13:05	06/21/17 11:04	7439-97-6	
Field Data	Analytical Method:								
Field pH	**6.67**	Std. Units			1		06/08/17 13:00		
Field Specific Conductance	**465.4**	umhos/cm			1		06/08/17 13:00		
Oxygen, Dissolved	**0.21**	mg/L			1		06/08/17 13:00	7782-44-7	
REDOX	**64.7**	mV			1		06/08/17 13:00		
Turbidity	**0.92**	NTU			1		06/08/17 13:00		
Static Water Level	**610.50**	feet			1		06/08/17 13:00		
Temperature, Water (C)	**13.6**	deg C			1		06/08/17 13:00		
2540C Total Dissolved Solids	Analytical Method: SM 2540C								
Total Dissolved Solids	**426**	mg/L	20.0	8.7	1		06/15/17 16:19		
300.0 IC Anions 28 Days	Analytical Method: EPA 300.0								
Chloride	**20.7**	mg/L	2.0	0.50	1		06/21/17 18:58	16887-00-6	
Fluoride	**0.13J**	mg/L	0.30	0.10	1		06/21/17 18:58	16984-48-8	
Sulfate	**41.1**	mg/L	3.0	1.0	1		06/21/17 18:58	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25216071.17 ALLIANT-ND
Pace Project No.: 40151353

QC Batch: 259095 Analysis Method: EPA 7470
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury
Associated Lab Samples: 40151353001, 40151353002, 40151353003, 40151353004, 40151353005, 40151353006, 40151353007, 40151353008, 40151353009

METHOD BLANK: 1526396 Matrix: Water
Associated Lab Samples: 40151353001, 40151353002, 40151353003, 40151353004, 40151353005, 40151353006, 40151353007, 40151353008, 40151353009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	<0.13	0.42	06/21/17 10:02	

LABORATORY CONTROL SAMPLE: 1526397

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.6	92	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1526398 1526399

Parameter	Units	40151359013 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	<0.13	5	5	4.5	4.6	91	91	85-115	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

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25216071.17 ALLIANT-ND
Pace Project No.: 40151353

QC Batch: 258263 Analysis Method: EPA 6020
QC Batch Method: EPA 3010 Analysis Description: 6020 MET
Associated Lab Samples: 40151353001, 40151353002, 40151353003, 40151353004, 40151353005, 40151353006, 40151353007, 40151353008, 40151353009

METHOD BLANK: 1521787 Matrix: Water
Associated Lab Samples: 40151353001, 40151353002, 40151353003, 40151353004, 40151353005, 40151353006, 40151353007, 40151353008, 40151353009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	<0.15	1.0	06/13/17 17:11	
Arsenic	ug/L	<0.28	1.0	06/13/17 17:11	
Barium	ug/L	<0.34	1.1	06/13/17 17:11	
Beryllium	ug/L	<0.18	1.0	06/13/17 17:11	
Boron	ug/L	<3.3	11.0	06/14/17 21:28	
Cadmium	ug/L	<0.081	1.0	06/13/17 17:11	
Calcium	ug/L	<69.8	250	06/14/17 21:28	
Chromium	ug/L	<1.0	3.4	06/13/17 17:11	
Cobalt	ug/L	<0.085	1.0	06/13/17 17:11	
Lead	ug/L	<0.20	1.0	06/13/17 17:11	
Lithium	ug/L	<0.14	1.0	06/13/17 17:11	
Molybdenum	ug/L	<0.44	1.5	06/13/17 17:11	
Selenium	ug/L	<0.32	1.1	06/13/17 17:11	
Thallium	ug/L	<0.14	1.0	06/13/17 17:11	

LABORATORY CONTROL SAMPLE: 1521788

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	500	520	104	80-120	
Arsenic	ug/L	500	510	102	80-120	
Barium	ug/L	500	526	105	80-120	
Beryllium	ug/L	500	515	103	80-120	
Boron	ug/L	500	499	100	80-120	
Cadmium	ug/L	500	525	105	80-120	
Calcium	ug/L	5000	5150	103	80-120	
Chromium	ug/L	500	514	103	80-120	
Cobalt	ug/L	500	515	103	80-120	
Lead	ug/L	500	535	107	80-120	
Lithium	ug/L	500	521	104	80-120	
Molybdenum	ug/L	500	525	105	80-120	
Selenium	ug/L	500	551	110	80-120	
Thallium	ug/L	500	572	114	80-120	

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

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25216071.17 ALLIANT-ND
Pace Project No.: 40151353

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1521789 1521790

Parameter	Units	40151280001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L	0.32J	500	500	518	505	103	101	75-125	2	20	
Arsenic	ug/L	25.2	500	500	551	545	105	104	75-125	1	20	
Barium	ug/L	143	500	500	673	666	106	105	75-125	1	20	
Beryllium	ug/L	0.33J	500	500	495	478	99	95	75-125	3	20	
Boron	ug/L	4570	500	500	5110	5090	107	103	75-125	0	20	
Cadmium	ug/L	0.17J	500	500	518	508	104	102	75-125	2	20	
Calcium	ug/L	154000	5000	5000	156000	158000	56	84	75-125	1	20	P6
Chromium	ug/L	2.1J	500	500	523	514	104	102	75-125	2	20	
Cobalt	ug/L	3.4	500	500	521	519	104	103	75-125	0	20	
Lead	ug/L	0.56J	500	500	536	525	107	105	75-125	2	20	
Lithium	ug/L	9.3	500	500	522	505	103	99	75-125	3	20	
Molybdenum	ug/L	4.5	500	500	541	531	107	105	75-125	2	20	
Selenium	ug/L	0.50J	500	500	571	561	114	112	75-125	2	20	
Thallium	ug/L	0.36J	500	500	578	561	115	112	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

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25216071.17 ALLIANT-ND
Pace Project No.: 40151353

QC Batch: 258474 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 40151353001, 40151353002, 40151353003, 40151353004

METHOD BLANK: 1522612 Matrix: Water
Associated Lab Samples: 40151353001, 40151353002, 40151353003, 40151353004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	06/13/17 15:48	

LABORATORY CONTROL SAMPLE: 1522613

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	585	592	101	80-120	

SAMPLE DUPLICATE: 1522614

Parameter	Units	40151258001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	698	702	1	5	

SAMPLE DUPLICATE: 1522615

Parameter	Units	40151353001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	308	316	3	5	

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

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25216071.17 ALLIANT-ND
Pace Project No.: 40151353

QC Batch: 258758 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Associated Lab Samples: 40151353005, 40151353006, 40151353007, 40151353008, 40151353009

METHOD BLANK: 1524510 Matrix: Water
Associated Lab Samples: 40151353005, 40151353006, 40151353007, 40151353008, 40151353009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	06/15/17 16:16	

LABORATORY CONTROL SAMPLE: 1524511

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	585	598	102	80-120	

SAMPLE DUPLICATE: 1524512

Parameter	Units	40151344001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	908	876	4	5	

SAMPLE DUPLICATE: 1524513

Parameter	Units	40151554002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	496	494	0	5	

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

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25216071.17 ALLIANT-ND
Pace Project No.: 40151353

QC Batch: 259136 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 40151353001, 40151353002, 40151353003, 40151353004

METHOD BLANK: 1526509 Matrix: Water
Associated Lab Samples: 40151353001, 40151353002, 40151353003, 40151353004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.50	2.0	06/21/17 18:35	
Fluoride	mg/L	<0.10	0.30	06/21/17 18:35	
Sulfate	mg/L	<1.0	3.0	06/21/17 18:35	

LABORATORY CONTROL SAMPLE: 1526510

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	21.2	106	90-110	
Fluoride	mg/L	2	2.1	105	90-110	
Sulfate	mg/L	20	21.0	105	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1526511 1526512

Parameter	Units	40151015001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	84.6	100	100	180	190	95	105	90-110	5	15	
Fluoride	mg/L	0.38	2	2	2.5	2.5	105	107	90-110	1	15	
Sulfate	mg/L	138	100	100	228	240	89	102	90-110	5	15	M0

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1526513 1526514

Parameter	Units	40151353004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	59.6	100	100	169	172	110	112	90-110	1	15	M0
Fluoride	mg/L	<0.10	2	2	2.2	2.2	106	108	90-110	2	15	
Sulfate	mg/L	31.0	20	20	51.9	52.3	105	106	90-110	1	15	

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

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25216071.17 ALLIANT-ND
Pace Project No.: 40151353

QC Batch: 259138 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Associated Lab Samples: 40151353005, 40151353006, 40151353007, 40151353008, 40151353009

METHOD BLANK: 1526521 Matrix: Water
Associated Lab Samples: 40151353005, 40151353006, 40151353007, 40151353008, 40151353009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.50	2.0	06/21/17 17:31	
Fluoride	mg/L	<0.10	0.30	06/21/17 17:31	
Sulfate	mg/L	<1.0	3.0	06/21/17 17:31	

LABORATORY CONTROL SAMPLE: 1526522

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	20.5	103	90-110	
Fluoride	mg/L	2	2.0	102	90-110	
Sulfate	mg/L	20	20.4	102	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1526523 1526524

Parameter	Units	40151353005 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	33.9	20	20	54.1	54.1	101	101	90-110	0	15	
Fluoride	mg/L	0.59	2	2	2.8	2.8	108	108	90-110	0	15	
Sulfate	mg/L	191	200	200	404	403	107	106	90-110	0	15	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1526525 1526526

Parameter	Units	40151438007 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	<0.50	20	20	22.4	22.6	112	113	90-110	1	15	M0
Fluoride	mg/L	<0.10	2	2	2.2	2.3	112	114	90-110	2	15	M0
Sulfate	mg/L	<1.0	20	20	22.2	22.3	111	112	90-110	1	15	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

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALIFIERS

Project: 25216071.17 ALLIANT-ND
Pace Project No.: 40151353

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.
H6	Analysis initiated outside of the 15 minute EPA required holding time.
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.

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25216071.17 ALLIANT-ND
Pace Project No.: 40151353

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40151353001	**B-39**	EPA 3010	258263	EPA 6020	258358
40151353002	**B-7R**	EPA 3010	258263	EPA 6020	258358
40151353003	**B-11R**	EPA 3010	258263	EPA 6020	258358
40151353004	**B-26**	EPA 3010	258263	EPA 6020	258358
40151353005	**B-11B**	EPA 3010	258263	EPA 6020	258358
40151353006	**FIELD BLANK**	EPA 3010	258263	EPA 6020	258358
40151353007	**B-11A**	EPA 3010	258263	EPA 6020	258358
40151353008	**B-31A**	EPA 3010	258263	EPA 6020	258358
40151353009	**B-31R**	EPA 3010	258263	EPA 6020	258358
40151353001	**B-39**	EPA 7470	259095	EPA 7470	259180
40151353002	**B-7R**	EPA 7470	259095	EPA 7470	259180
40151353003	**B-11R**	EPA 7470	259095	EPA 7470	259180
40151353004	**B-26**	EPA 7470	259095	EPA 7470	259180
40151353005	**B-11B**	EPA 7470	259095	EPA 7470	259180
40151353006	**FIELD BLANK**	EPA 7470	259095	EPA 7470	259180
40151353007	**B-11A**	EPA 7470	259095	EPA 7470	259180
40151353008	**B-31A**	EPA 7470	259095	EPA 7470	259180
40151353009	**B-31R**	EPA 7470	259095	EPA 7470	259180
40151353001	**B-39**				
40151353002	**B-7R**				
40151353003	**B-11R**				
40151353004	**B-26**				
40151353005	**B-11B**				
40151353007	**B-11A**				
40151353008	**B-31A**				
40151353009	**B-31R**				
40151353001	**B-39**	SM 2540C	258474		
40151353002	**B-7R**	SM 2540C	258474		
40151353003	**B-11R**	SM 2540C	258474		
40151353004	**B-26**	SM 2540C	258474		
40151353005	**B-11B**	SM 2540C	258758		
40151353006	**FIELD BLANK**	SM 2540C	258758		
40151353007	**B-11A**	SM 2540C	258758		
40151353008	**B-31A**	SM 2540C	258758		
40151353009	**B-31R**	SM 2540C	258758		
40151353001	**B-39**	EPA 9040	258441		
40151353002	**B-7R**	EPA 9040	258441		
40151353003	**B-11R**	EPA 9040	258441		
40151353004	**B-26**	EPA 9040	258441		
40151353005	**B-11B**	EPA 9040	258441		
40151353006	**FIELD BLANK**	EPA 9040	258441		
40151353007	**B-11A**	EPA 9040	258441		
40151353008	**B-31A**	EPA 9040	258441		
40151353009	**B-31R**	EPA 9040	258441		
40151353001	**B-39**	EPA 300.0	259136		
40151353002	**B-7R**	EPA 300.0	259136		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25216071.17 ALLIANT-ND
Pace Project No.: 40151353

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40151353003	**B-11R**	EPA 300.0	259136		
40151353004	**B-26**	EPA 300.0	259136		
40151353005	**B-11B**	EPA 300.0	259138		
40151353006	**FIELD BLANK**	EPA 300.0	259138		
40151353007	**B-11A**	EPA 300.0	259138		
40151353008	**B-31A**	EPA 300.0	259138		
40151353009	**B-31R**	EPA 300.0	259138		

Pace Analytical®
www.pacelabs.com

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

4015353

KR

CHAIN OF CUSTODY

(Please Print Clearly)

Company Name:	SCS Engineers
Branch/Location:	25-Madison
Project Contact:	Tom Karwoski
Phone:	608-224-2830
Project Number:	25216071.17
Project Name:	Alliant-WD
Project State:	WI
Sampled By (Print):	Nate Harms
Sampled By (Sign):	[signature]
PO #:	
Regulatory Program:	

Quote #:	
Mail To Contact:	Tom Karwoski
Mail To Company:	SCS Engineers
Mail To Address:	2830 Dairy Drive Madison, WI 53718
Invoice To Contact:	Same
Invoice To Company:	Same
Invoice To Address:	
Invoice To Phone:	

*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

Data Package Options (billable)
☐ 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, Sl = Sludge
W = Water, DW = Drinking Water, GW = Ground Water, SW = Surface Water, WW = Waste Water, WP = Wipe

					pH	TDS, Cl, F, SO4	Metals							
FILTERED? (YES/NO)				Y/N	N									
PRESERVATION (CODE)*				Pick Letter	A	A	D							
PACE LAB #	CLIENT FIELD ID	COLLECTION DATE	COLLECTION TIME	MATRIX								CLIENT COMMENTS	LAB COMMENTS (Lab Use Only)	Profile #
001	B-39	6-7-17	1355	GW	X	X	X						3-250mLp AAD	
002	B-7R		1550											
003	B-11R		1715											
004	B-26		1805											
005	B-11B	6-8-17	1015											
006	Field Blank		1100											
007	B-11A		1115											
008	B-31R		1210											
009	B-31A		1300											

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:	

Samples on HOLD are subject to special pricing and release of liability

Relinquished By:	Date/Time:	Received By:	Date/Time:
Nate Harms	6-8-17 1500		
Fed Ex	06/9/17 1025	Rachel [illegible] Pace	6/9/17 1025

PACE Project No. 4015353

Receipt Temp = ROI °C

Sample Receipt pH
OK / Adjusted

Cooler Custody Seal
Present / Not Present
Intact / Not Intact

Version 6.0 06/14/06

C019a(27Jun2006)

ORIGINAL

Sample Condition Upon Receipt

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

Project #: WO#: 40151353

Client Name: SB Engineers

Courier: ☑ Fed Ex ☐ UPS ☐ Client ☐ Pace Other: _____

Tracking #: 3102 8966 0656

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: 20.1 /Corr: **Biological Tissue is Frozen:** ☐ yes ☐ no

Temp Blank Present: ☐ yes ☑ no

Temp should be above freezing to 6°C.
Biota Samples may be received at ≤ 0°C.

Person examining contents:
Date: 6/9/17
Initials: RMN

				Comments:
Chain of Custody Present:	☑Yes	☐No	☐N/A	1.
Chain of Custody Filled Out:	☑Yes	☐No	☐N/A	2.
Chain of Custody Relinquished:	☑Yes	☐No	☐N/A	3.
Sampler Name & Signature on COC:	☑Yes	☐No	☐N/A	4.
Samples Arrived within Hold Time:	☑Yes	☐No	☐N/A	5.
- VOA Samples frozen upon receipt	☐Yes	☐No		Date/Time:
Short Hold Time Analysis (<72hr):	☐Yes	☑No	☐N/A	6.
Rush Turn Around Time Requested:	☐Yes	☑No	☐N/A	7.
Sufficient Volume:	☑Yes	☐No	☐N/A	8.
Correct Containers Used:	☑Yes	☐No	☐N/A	9.
-Pace Containers Used:	☑Yes	☐No	☐N/A	
-Pace IR Containers Used:	☐Yes	☐No	☑N/A	
Containers Intact:	☑Yes	☐No	☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes	☑No	☐N/A	11.
Sample Labels match COC:	☑Yes	☐No	☐N/A	12.
-Includes date/time/ID/Analysis Matrix: W				
All containers needing preservation have been checked. (Non-Compliance noted in 13.)	☑Yes	☐No	☐N/A	13. ☑ HNO3 ☐ H2SO4 ☐ NaOH ☐ NaOH +ZnAct
All containers needing preservation are found to be in compliance with EPA recommendation. (HNO3, H2SO4 ≤2; NaOH+ZnAct ≥9, NaOH ≥12)	☑Yes	☐No	☐N/A	
exceptions: VOA, coliform, TOC, TOX, TOH, O&G, WIDROW, Phenolics, OTHER:	☐Yes	☑No		Initial when completed RMN / Lab Std #ID of preservative / Date/ Time:
Headspace in VOA Vials (>6mm):	☐Yes	☐No	☑N/A	14.
Trip Blank Present:	☐Yes	☐No	☑N/A	15.
Trip Blank Custody Seals Present	☐Yes	☐No	☑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: Review for DM **Date:** 6/9/17

APPENDIX E

Regional Water Quality

Fluoride Data in WDNR's Groundwater Retrieval Network (GRN) Database for Water Supply Wells
Grant County, Wisconsin
Summary of Fluoride Detections

Row Labels	Count of Result amount
FLUORIDE TOTAL	**423**
DETECT BETWEEN LOD & LOQ	94
NON-DETECT	51
NORMAL QUANTIFIED RESULT	278
Grand Total	**423**

Fluoride Data in WDNR's Groundwater Retrieval Network (GRN) Database for Water Supply Wells
Grant County, Wisconsin
Average Detected Concentration of Fluoride

Result qualifier description	(Multiple Items)

Unique Well ID	Count of Result amount	Average of Result amount
AA984	8	0.13
AK037	3	0.26
AQ147	1	0.18
AU060	6	0.26
AX751	9	0.37
BE506	8	0.13
BF848	8	0.14
BF849	6	0.12
BF850	8	0.27
BF851	4	0.52
BF852	7	1.94
BF853	9	2.63
BF854	2	0.26
BF857	5	0.51
BF858	5	0.36
BF859	5	0.37
BF860	1	0.99
BF862	7	0.13
BF864	2	0.08
BF865	6	0.27
BF867	1	2.50
BF868	7	0.29
BF870	7	0.13
BF872	5	0.22
BF873	8	0.09
BF875	3	0.07
BF876	4	0.09
BF877	9	0.15
BF878	6	0.98
BF879	8	0.84
BF880	12	2.18
BF881	1	0.14
BF882	9	0.51
BF884	10	0.22
BF886	10	0.10
BF887	8	0.14
BN864	1	0.11
BN865	3	0.18
BN867	4	0.11
BN869	3	0.18

Fluoride Data in WDNR's Groundwater Retrieval Network (GRN) Database for Water Supply Wells
Grant County, Wisconsin
Average Detected Concentration of Fluoride

Result qualifier description	(Multiple Items)

Unique Well ID	Count of Result amount	Average of Result amount
BN870	2	0.13
BN872	2	0.28
BN873	2	0.17
BN874	2	0.53
BN890	8	0.14
BN901	8	0.18
BN908	4	0.18
CG483	8	0.40
CX863	1	0.09
DR430	3	0.09
EG571	3	0.17
EG575	3	0.08
FQ608	1	0.15
FQ612	1	0.13
FS460	1	0.17
GC413	1	0.13
HB056	1	0.13
HB164	1	0.07
HB215	1	0.08
HD743	1	0.13
HI076	1	0.15
HK787	1	0.22
HQ513	1	0.18
JD260	3	0.12
KA154	1	0.04
KA547	1	0.10
KA785	1	0.16
KW598	8	0.17
LB136	1	0.16
LE524	1	0.08
LE533	1	0.08
LM589	1	0.18
LU673	1	0.15
MK761	2	0.22
NS475	1	0.13
NS770	1	0.22
NZ649	7	0.27
OE466	6	0.09
OJ139	2	0.11
OJ232	2	0.13

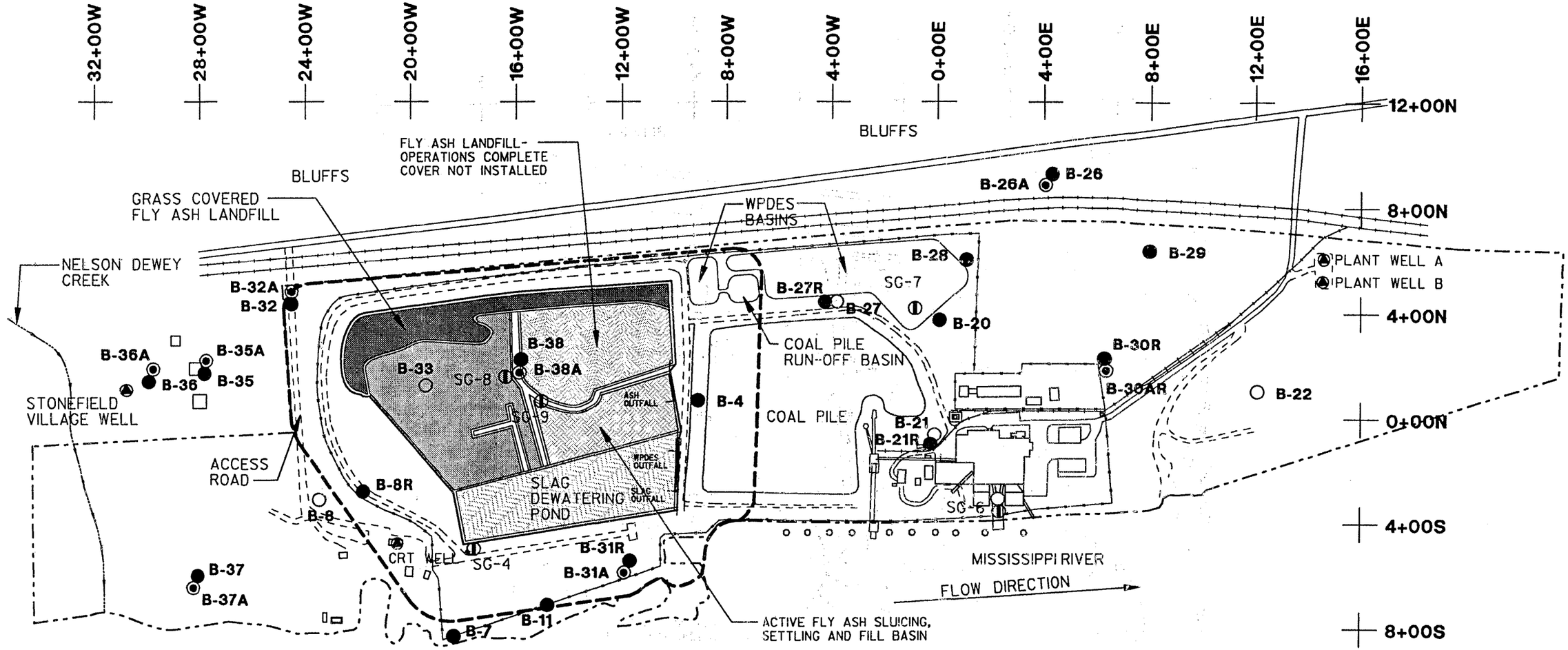
Fluoride Data in WDNR's Groundwater Retrieval Network (GRN) Database for Water Supply Wells
Grant County, Wisconsin
Average Detected Concentration of Fluoride

Result qualifier description	(Multiple Items)

Unique Well ID	Count of Result amount	Average of Result amount
OJ246	1	0.19
OK550	1	0.19
OK579	1	0.13
QL936	1	0.27
QL937	1	0.27
QX202	2	0.08
QX207	1	0.18
RP170	5	0.13
RQ362	1	0.12
RX881	2	0.09
SB757	3	0.11
SJ588	1	0.91
SJ604	1	0.09
SY844	4	0.13
TG838	1	0.25
TN825	1	0.14
TO277	1	0.09
TY797	1	0.07
UD453	1	0.08
UE663	1	0.04
UR678	1	0.13
UX756	1	0.17
VJ219	1	0.13
WQ163	2	0.14
XV599	5	0.23
YE608	4	0.11
YN518	1	0.15
Grand Total	**372**	**0.39**

APPENDIX F

RMT 1994 Environmental Contamination Assessment Site Figure



LEGEND

● B-28	WATER TABLE OBSERVATION WELL
◉ B-28A	PIEZOMETER
○ B-33	ABANDONED WELL
▲ CRT WELL	WATER SUPPLY WELL
◐ SG-4	STAFF GAUGE
———	APPROXIMATE LIMITS OF LICENSED LANDFILL
——+——+——	RAILROAD TRACK
====	ROAD
— - — - —	PROPERTY LINE
— — — —	DESIGN MANAGEMENT ZONE
+ 0+00S	LOCAL GRID
□	BUILDINGS
o	PILINGS

NOTES

1. BASE MAP WELLHEAD LOCATIONS SURVEYED BY SCHMITT ENGINEERING IN OCTOBER 1993.
2. OTHER SITE INFORMATION PROVIDED BY WP&L.

TRUE

0 400 800

SCALE: 1"=400'

WISCONSIN POWER & LIGHT
NELSON DEWEY GENERATING STATION
EXISTING CONDITIONS
OCTOBER 1993

RMT, INC.

Dwn.By:	CDH
Approved By:	ELM
Date:	OCTOBER 1994
Proj.#:	2767.03
File #:	2767030LDGN

Plot File = P:\MSPC\2767030\DGN\2767030LDGN
Plot Date = Fri Oct 21 08:28:28 1994
Pen Table =DEFAULT.TBL

OCT 31 1994

FIGURE 4

TABLE 5

SUMMARY OF LEACHING TEST RESULTS

	Fly Ash		Slag
Year	1983	1990 to 1992	1987 to 1992
Coal Type	Eastern (and Western)	Western (and Eastern)	Western (and Eastern) [1]
Water:Solid Ratio	2:1	4:1	4:1
Extraction Time	24 hours	48 hours	48 hours
Number of Samples	1	3	6
Arsenic (mg/L)	< 0.001	0.05 to 2.02	< 0.002 to 0.081
Selenium (mg/L)	NA	0.42 to 160	< 0.002 to 0.045
Boron (mg/L)	420	4.63 to 37.34	< 0.010 to 1.05
Iron (mg/L)	NA	NA	< 0.02 to 0.98
Sulfate (mg/L)	13,070	2,000 to 16,700	2.0 to < 5.0
pH (SU)	6.6	10.3 to 12.5	5.6 to 9.9

NOTES:

1. 1983 fly ash leaching data from RMT (1984); remaining leaching data provided by WP&L.
2. NA = Not Analyzed.

PROJECT NUMBER: 1831.28
BEGINNING DATE: 01-JUN-93
ENDING DATE: 07-SEP-93

TABLE 6
SLAG AND ASH BASIN CHEMISTRY

PARAMETER	UNITS	FLY ASH BASIN 07-SEP-93 3302-011		SLAG BASIN 07-SEP-93 3302-010	
COLOR, FIELD		CLEAR		CLEAR	
CONDUCTANCE, SPECIFIC	UMHOS/CM	5190		400	
ODOR, FIELD		NONE		NONE	
PH, FIELD	SU	8.1		7.4	
TEMPERATURE	DEG C	17		18	
TURBIDITY, FIELD		SLIGHT		SLIGHT	
ALKALINITY AS CACO3	MG/L	230		160	
HARDNESS AS CACO3	MG/L	930		200	
SOLIDS, TOTAL DISSOLVED	MG/L	410		300	
SULFATE	MG/L	3300		50	
ARSENIC, TOTAL	UG/L	60		8.0	
BARIUM, TOTAL	UG/L	270		150	
BORON, TOTAL	UG/L	2300		210	
CADMIUM, TOTAL	UG/L	5.4		< 0.30	
CHROMIUM, TOTAL	UG/L	11		< 10	
IRON, TOTAL	UG/L	1600		2000	
LEAD, TOTAL	UG/L	< 3.0		< 3.0	
MERCURY, TOTAL	UG/L	< 0.20		< 0.20	
SELENIUM, TOTAL	UG/L	36	I	2.1	L
SILVER, TOTAL	UG/L	< 1.0		< 1.0	

18-OCT-94

wpvalid:SWI.BJC

PROJECT NUMBER: 1831.28
BEGINNING DATE: 01-JUN-93
ENDING DATE: 29-OCT-93

TABLE 8
GROUNDWATER CHEMISTRY

PARAMETER	UNITS	B-04 01-JUN-93 1670-015	B-04 07-SEP-93 3293-010	B-07 ND 01-JUN-93 1670-020	B-07 ND 07-SEP-93 3302-004	B-08 01-JUN-93 1670-001	B-08R 07-SEP-93 3293-009
COLOR, FIELD		CLEAR	CLEAR	CLEAR	CLEAR	CLEAR	CLEAR
CONDUCTANCE, SPECIFIC	UMHOS/CM	1160	1240	460	550	670	1160
DEPTH TO WATER	FEET	9.90	12.75	12.83	16.12	5.68	20.13
ODOR, FIELD		NONE	NONE	NONE	NONE	NONE	NONE
PH, FIELD	SU	7.3	7.5	7.0	6.9	7.1	6.8
TEMPERATURE	DEG C	15	10	14	12	15	7
TURBIDITY, FIELD		NONE	SLIGHT	NONE	SLIGHT	NONE	MODERATE
WATER ELEVATION	FEET	610.68	607.83	610.97	607.68	610.51	
ALKALINITY AS CACO3	MG/L	72	92	160	190	220	440
CHLORIDE	MG/L	18	23	17	15	9.4	2.8
COD	MG/L						
FLUORIDE	MG/L	0.58	5.5	0.26	0.32	< 0.10	0.12
HARDNESS AS CACO3	MG/L	220	120	210	250	370	620
NITROGEN, NITRATE + NITRITE	MG/L	0.15	0.33	< 0.050	< 0.050	< 0.050	4.2
SOLIDS, TOTAL DISSOLVED	MG/L	900	940	300	360	460	770
SULFATE	MG/L	500	560	74	100	180	180
ARSENIC, DISSOLVED	UG/L	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
BARIUM, DISSOLVED	UG/L	68	< 50	61	73	63	50
BORON, DISSOLVED	UG/L	1900	4200	230	< 200	2200	9400
CADMIUM, DISSOLVED	UG/L	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	0.38
CHROMIUM, DISSOLVED	UG/L	< 10	< 10	< 10	< 10	< 10	< 10
COPPER, DISSOLVED	UG/L	< 20	< 20	< 20	< 20	< 20	< 20
IRON, DISSOLVED	UG/L	720	890	2800	4100	< 100	< 100
LEAD, DISSOLVED	UG/L	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
MANGANESE, DISSOLVED	UG/L	1200	720	970	1500	17	3400
MERCURY, DISSOLVED	UG/L	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
SELENIUM, DISSOLVED	UG/L	6.9	3.2	< 1.0 L	< 1.0 L	< 1.0 L	34
SILVER, DISSOLVED	UG/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
ZINC, DISSOLVED	UG/L	1000	100	22	< 20	220	< 20

PROJECT NUMBER: 1831.28
BEGINNING DATE: 01-JUN-93
ENDING DATE: 29-OCT-93

TABLE 8
GROUNDWATER CHEMISTRY

PARAMETER	UNITS	B-11 07-SEP-93 X0001	B-11 29-OCT-93 3485-001	B-20 07-SEP-93 X0002	B-26 01-JUN-93 1670-022	B-26 07-SEP-93 3302-005	B-26A 01-JUN-93 1670-023
COLOR, FIELD					CLEAR	CLEAR	CLEAR
CONDUCTANCE, SPECIFIC	UMHOS/CM	1500		310	610	670	660
DEPTH TO WATER	FEET	15.91		10.81	16.22	18.85	16.20
ODOR, FIELD					NONE	NONE	NONE
PH, FIELD	SU				7.1	7.2	7.0
TEMPERATURE	DEG C	13	13	14	14	11	15
TURBIDITY, FIELD					NONE	SLIGHT	NONE
WATER ELEVATION	FEET				610.18	607.55	610.19
ALKALINITY AS CACO3	MG/L		470		320	300	340
CHLORIDE	MG/L				21	43	33
COD	MG/L						
FLUORIDE	MG/L				< 0.10	0.15	< 0.10
HARDNESS AS CACO3	MG/L		810		390	410	400
NITROGEN, NITRATE + NITRITE	MG/L				2.6	4.9	2.0
SOLIDS, TOTAL DISSOLVED	MG/L		520		440	450	450
SULFATE	MG/L		360		34	34	33
ARSENIC, DISSOLVED	UG/L		8.4		< 3.0	< 3.0	< 3.0
BARIUM, DISSOLVED	UG/L		100		62	68	96
BORON, DISSOLVED	UG/L		5100		< 200	< 200	< 200
CADMIUM, DISSOLVED	UG/L		< 0.30		< 0.30	< 0.30	< 0.30
CHROMIUM, DISSOLVED	UG/L		< 10		< 10	< 10	< 10
COPPER, DISSOLVED	UG/L				< 20	< 20	< 20
IRON, DISSOLVED	UG/L		55000		< 100	< 100	< 100
LEAD, DISSOLVED	UG/L		< 3.0		< 3.0	< 3.0	< 3.0
MANGANESE, DISSOLVED	UG/L				< 5.0	< 5.0	< 5.0
MERCURY, DISSOLVED	UG/L		< 0.20		< 0.20	< 0.20	< 0.20
SELENIUM, DISSOLVED	UG/L		< 1.0 LNP		< 1.0 L	< 1.0 L	< 1.0 L
SILVER, DISSOLVED	UG/L		< 10		< 1.0	< 1.0	< 1.0
ZINC, DISSOLVED	UG/L				< 20	< 20	< 20

PROJECT NUMBER: 1831.28
BEGINNING DATE: 01-JUN-93
ENDING DATE: 29-OCT-93

TABLE 8
GROUNDWATER CHEMISTRY

PARAMETER	UNITS	B-26A 07-SEP-93 3302-006	B-27R 07-SEP-93 X0003	B-28 01-JUN-93 1670-014	B-28 07-SEP-93 3302-003	B-29 07-SEP-93 X0004	B-30AR 01-JUN-93 1670-013
COLOR, FIELD		CLEAR		CLEAR	CLEAR		CLEAR
CONDUCTANCE, SPECIFIC	UMHOS/CM	440	370	190	230	360	220
DEPTH TO WATER	FEET	18.84	14.67	6.40	9.08	9.57	12.33
ODOR, FIELD		NONE		NONE	NONE		NONE
PH, FIELD	SU	7.2		6.1	6.0		7.2
TEMPERATURE	DEG C	11	14	17	15	15	17
TURBIDITY, FIELD		NONE		SLIGHT	MODERATE		NONE
WATER ELEVATION	FEET	607.55		610.46	607.74	607.26	610.11
ALKALINITY AS CACO3	MG/L	340		26	54		200
CHLORIDE	MG/L	25		4.6	11		13
COD	MG/L						7.3
FLUORIDE	MG/L	0.15		< 0.10	< 0.10		0.10
HARDNESS AS CACO3	MG/L	410		82	110		220
NITROGEN, NITRATE + NITRITE	MG/L	1.8		2.7	0.60		< 0.050
SOLIDS, TOTAL DISSOLVED	MG/L	440		140	160		280
SULFATE	MG/L	38		45	42		27
ARSENIC, DISSOLVED	UG/L	< 3.0		< 3.0	< 3.0		< 3.0
BARIUM, DISSOLVED	UG/L	86		< 50	52		< 50
BORON, DISSOLVED	UG/L	< 200		< 200	< 200		< 200
CADMIUM, DISSOLVED	UG/L	< 0.30		< 0.30	< 0.30		< 0.30
CHROMIUM, DISSOLVED	UG/L	< 10		< 10	< 10		< 10
COPPER, DISSOLVED	UG/L	< 20		< 20	< 20		< 20
IRON, DISSOLVED	UG/L	< 100		210	< 100		< 100
LEAD, DISSOLVED	UG/L	< 3.0		< 3.0	< 3.0		< 3.0
MANGANESE, DISSOLVED	UG/L	< 5.0		8.6	< 5.0		< 5.0
MERCURY, DISSOLVED	UG/L	< 0.20		< 0.20	< 0.20		< 0.20
SELENIUM, DISSOLVED	UG/L	< 1.0 LN		< 1.0 L	< 1.0 L		< 1.0 L
SILVER, DISSOLVED	UG/L	< 1.0		< 1.0	< 1.0		< 1.0
ZINC, DISSOLVED	UG/L	< 20		< 20	< 20		< 20

PROJECT NUMBER: 1831.28
BEGINNING DATE: 01-JUN-93
ENDING DATE: 29-OCT-93

TABLE 8
GROUNDWATER CHEMISTRY

PARAMETER	UNITS	B-30AR 07-SEP-93 3302-002	B-30R 01-JUN-93 1670-012	B-30R 07-SEP-93 3302-001	B-31A 01-JUN-93 1670-019	B-31A 07-SEP-93 3293-011	B-31R 01-JUN-93 1670-018
COLOR, FIELD		CLEAR	CLEAR	CLEAR	CLEAR	CLEAR	CLEAR
CONDUCTANCE, SPECIFIC	UMHOS/CM	410	420	360	700	800	640
DEPTH TO WATER	FEET	15.37	12.25	15.17	12.21	15.93	11.56
ODOR, FIELD		NONE	NONE	NONE	NONE	NONE	NONE
PH, FIELD	SU	7.3	7.0	6.8	6.9	7.3	6.8
TEMPERATURE	DEG C	12	16	14	17	14	17
TURBIDITY, FIELD		NONE	MODERATE	MODERATE	NONE	SLIGHT	SLIGHT
WATER ELEVATION	FEET	607.07	610.10	607.18	610.46	606.74	610.85
ALKALINITY AS CACO3	MG/L	190	160	140	170	160	240
CHLORIDE	MG/L	14	13	6.6	16	17	11
COD	MG/L		9.7				
FLUORIDE	MG/L	0.16	< 0.10	< 0.10	0.39	0.43	< 0.10
HARDNESS AS CACO3	MG/L	230	210	210	120	160	330
NITROGEN, NITRATE + NITRITE	MG/L	< 0.050	8.5	8.8	< 0.050	< 0.050	< 0.050
SOLIDS, TOTAL DISSOLVED	MG/L	280	280	230	510	570	510
SULFATE	MG/L	25	25	26	250	250	150
ARSENIC, DISSOLVED	UG/L	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
BARIUM, DISSOLVED	UG/L	< 50	< 50	< 50	54	66	110
BORON, DISSOLVED	UG/L	< 200	< 200	< 200	2900	2100	2900
CADMIUM, DISSOLVED	UG/L	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	2.7
CHROMIUM, DISSOLVED	UG/L	< 10	< 10	< 10	< 10	< 10	< 10
COPPER, DISSOLVED	UG/L	< 20	< 20	< 20	< 20	< 20	110
IRON, DISSOLVED	UG/L	< 100	< 100	< 100	210	300	450
LEAD, DISSOLVED	UG/L	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
MANGANESE, DISSOLVED	UG/L	< 5.0	< 5.0	< 5.0	4600	6000	440
MERCURY, DISSOLVED	UG/L	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
SELENIUM, DISSOLVED	UG/L	< 1.0 L	1.3 L	3.2	< 1.0 L	< 1.0 L	1.2 L
SILVER, DISSOLVED	UG/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
ZINC, DISSOLVED	UG/L	< 20	< 20	< 20	< 20	< 20	27

PROJECT NUMBER: 1831.28
BEGINNING DATE: 01-JUN-93
ENDING DATE: 29-OCT-93

TABLE 8
GROUNDWATER CHEMISTRY

PARAMETER	UNITS	B-31R 07-SEP-93 3293-012	B-32 01-JUN-93 1670-002	B-32 07-SEP-93 3293-016	B-32A 01-JUN-93 1670-003	B-32A 07-SEP-93 3293-017	B-35 01-JUN-93 1670-004
COLOR, FIELD		CLEAR	CLEAR	CLEAR	CLEAR	CLEAR	L YLW/BN
CONDUCTANCE, SPECIFIC	UMHOS/CM	480	300	330	610	1320	1070
DEPTH TO WATER	FEET	14.44	3.37	6.22	3.59	6.46	10.10
ODOR, FIELD		NONE	NONE	NONE	NONE	NONE	NONE
PH, FIELD	SU	7.0	6.3	5.6	7.0	6.8	6.3
TEMPERATURE	DEG C	15	13	14	13	14	12
TURBIDITY, FIELD		MODERATE	SLIGHT	MODERATE	NONE	SLIGHT	SLIGHT
WATER ELEVATION	FEET	607.97	610.80	607.95	610.81	607.94	610.66
ALKALINITY AS CACO3	MG/L	190	140	140	330	320	190
CHLORIDE	MG/L	11	6.7	6.9	7.0	7.6	110
COD	MG/L						
FLUORIDE	MG/L	0.18	< 0.10	0.12	0.12	0.19	< 0.10
HARDNESS AS CACO3	MG/L	240	160	180	350	390	260
NITROGEN, NITRATE + NITRITE	MG/L	< 0.050	0.68	1.2	1.1	1.3	36
SOLIDS, TOTAL DISSOLVED	MG/L	340	200	240	380	420	800
SULFATE	MG/L	71	11	16	29	30	35
ARSENIC, DISSOLVED	UG/L	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	7.4
BARIUM, DISSOLVED	UG/L	81	100	120	98	91	100
BORON, DISSOLVED	UG/L	1100	< 200	< 200	< 200	< 200	210
CADMIUM, DISSOLVED	UG/L	1.1	< 0.30	0.38	< 0.30	0.35	< 0.30
CHROMIUM, DISSOLVED	UG/L	< 10	< 10	< 10	< 10	< 10	< 10
COPPER, DISSOLVED	UG/L	< 20	< 20	< 20	< 20	< 20	21
IRON, DISSOLVED	UG/L	210	< 100	< 100	< 100	< 100	< 100
LEAD, DISSOLVED	UG/L	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
MANGANESE, DISSOLVED	UG/L	360	< 5.0	280	6.9	33	< 5.0
MERCURY, DISSOLVED	UG/L	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
SELENIUM, DISSOLVED	UG/L	< 1.0 L	< 1.0 L	< 1.0 L	< 1.0 L	< 1.0 L	< 1.0 L
SILVER, DISSOLVED	UG/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
ZINC, DISSOLVED	UG/L	< 20	< 20	< 20	< 20	< 20	< 20

PROJECT NUMBER: 1831.28
BEGINNING DATE: 01-JUN-93
ENDING DATE: 29-OCT-93

TABLE 8
GROUNDWATER CHEMISTRY

PARAMETER	UNITS	B-35 07-SEP-93 3293-002	B-35A 01-JUN-93 1670-005	B-35A 07-SEP-93 3293-003	B-36 01-JUN-93 1670-007	B-36 07-SEP-93 3293-004	B-36A 01-JUN-93 1670-006
COLOR, FIELD		YELLOW	CLEAR	CLEAR	CLEAR	CLEAR	CLEAR
CONDUCTANCE, SPECIFIC	UMHOS/CM	1050	620	680	430	500	620
DEPTH TO WATER	FEET	13.13	10.55	13.57	10.86	13.97	11.11
ODOR, FIELD		NONE	NONE	NONE	NONE	NONE	NONE
PH, FIELD	SU	6.8	7.0	7.1	6.3	7.0	7.1
TEMPERATURE	DEG C	14	13	12	12	13	13
TURBIDITY, FIELD		SLIGHT	NONE	NONE	SLIGHT	MODERATE	NONE
WATER ELEVATION	FEET	607.63	610.63	607.61	610.60	607.49	610.35
ALKALINITY AS CACO3	MG/L	210	330	320	230	210	330
CHLORIDE	MG/L	80	26	24	4.4	25	12
COD	MG/L						
FLUORIDE	MG/L	0.19	< 0.10	0.13	< 0.10	0.14	< 0.10
HARDNESS AS CACO3	MG/L	290	380	400	240	280	350
NITROGEN, NITRATE + NITRITE	MG/L	39	1.7	2.0	< 0.050	1.4	0.83
SOLIDS, TOTAL DISSOLVED	MG/L	770	480	460	280	350	400
SULFATE	MG/L	43	33	37	15	18	36
ARSENIC, DISSOLVED	UG/L	3.6	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
BARIUM, DISSOLVED	UG/L	120	< 50	54	110	120	68
BORON, DISSOLVED	UG/L	220	< 200	< 200	< 200	< 200	< 200
CADMIUM, DISSOLVED	UG/L	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30
CHROMIUM, DISSOLVED	UG/L	< 10	< 10	< 10	< 10	< 10	< 10
COPPER, DISSOLVED	UG/L	24	< 20	< 20	< 20	< 20	< 20
IRON, DISSOLVED	UG/L	< 100	< 100	< 100	< 100	< 100	< 100
LEAD, DISSOLVED	UG/L	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
MANGANESE, DISSOLVED	UG/L	< 5.0	< 5.0	< 5.0	< 5.0	55	< 5.0
MERCURY, DISSOLVED	UG/L	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
SELENIUM, DISSOLVED	UG/L	< 1.0 L	< 1.0 L	< 1.0 L	1.0 L	2.6 L	< 1.0 L
SILVER, DISSOLVED	UG/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
ZINC, DISSOLVED	UG/L	< 20	< 20	< 20	< 20	< 20	< 20

PROJECT NUMBER: 1831.28
BEGINNING DATE: 01-JUN-93
ENDING DATE: 29-OCT-93

TABLE 8
GROUNDWATER CHEMISTRY

PARAMETER	UNITS	B-36A 07-SEP-93 3293-005	B-37 07-SEP-93 3302-007	B-37A 07-SEP-93 3302-008	B-38 01-JUN-93 1670-016	B-38 07-SEP-93 3293-006	B-38A 01-JUN-93 1670-017
COLOR, FIELD		CLEAR	CLEAR	CLEAR	CLEAR	CLEAR	CLEAR
CONDUCTANCE, SPECIFIC	UMHOS/CM	620	510	770	3630	2830	2760
DEPTH TO WATER	FEET	14.18	8.13	8.14	18.53	20.19	24.87
ODOR, FIELD		NONE	NONE	NONE	NONE	NONE	NONE
PH, FIELD	SU	7.1	7.3	7.3	8.3	9.9	7.7
TEMPERATURE	DEG C	11	13	11	20	20	15
TURBIDITY, FIELD		NONE	SLIGHT	NONE	NONE	SLIGHT	NONE
WATER ELEVATION	FEET	607.51	606.69	606.69	617.29	615.63	610.96
ALKALINITY AS CACO3	MG/L	330	200	190	100	420	80
CHLORIDE	MG/L	13	6.8	11	26	24	23
COD	MG/L						
FLUORIDE	MG/L	0.14	< 0.10	< 0.10	1.8	2.6	1.1
HARDNESS AS CACO3	MG/L	390	290	410	620	21	500
NITROGEN, NITRATE + NITRITE	MG/L	0.85	1.2	< 0.050	1.7	0.29	1.6
SOLIDS, TOTAL DISSOLVED	MG/L	420	380	590	3000	2200	2300
SULFATE	MG/L	36	100	240	2600	1200	2000
ARSENIC, DISSOLVED	UG/L	< 3.0	< 3.0	< 3.0	180	90	38
BARIUM, DISSOLVED	UG/L	68	< 50	< 50	110	< 50	58
BORON, DISSOLVED	UG/L	< 200	3100	7400	2500	2600	2200
CADMIUM, DISSOLVED	UG/L	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30
CHROMIUM, DISSOLVED	UG/L	< 10	< 10	< 10	68	< 10	52
COPPER, DISSOLVED	UG/L	< 20	< 20	< 20	< 20	< 20	< 20
IRON, DISSOLVED	UG/L	< 100	< 100	< 100	< 100	< 100	< 100
LEAD, DISSOLVED	UG/L	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
MANGANESE, DISSOLVED	UG/L	< 5.0	< 5.0	55	< 5.0	< 5.0	< 5.0
MERCURY, DISSOLVED	UG/L	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
SELENIUM, DISSOLVED	UG/L	< 1.0 L	< 1.0 L	< 1.0 L	57	320	22
SILVER, DISSOLVED	UG/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
ZINC, DISSOLVED	UG/L	< 20	< 20	< 20	< 20	< 20	< 20

PROJECT NUMBER: 1831.28
BEGINNING DATE: 01-JUN-93
ENDING DATE: 29-OCT-93

TABLE 8
GROUNDWATER CHEMISTRY

PARAMETER	UNITS		B-38A 07-SEP-93 3293-007
COLOR, FIELD			CLEAR
CONDUCTANCE, SPECIFIC	UMHOS/CM		3280
DEPTH TO WATER	FEET		27.59
ODOR, FIELD			NONE
PH, FIELD	SU		9.0
TEMPERATURE	DEG C		16
TURBIDITY, FIELD			NONE
WATER ELEVATION	FEET		608.24
ALKALINITY AS CACO3	MG/L		90
CHLORIDE	MG/L		21
COD	MG/L		
FLUORIDE	MG/L		3.4
HARDNESS AS CACO3	MG/L		390
NITROGEN, NITRATE + NITRITE	MG/L		0.59
SOLIDS, TOTAL DISSOLVED	MG/L		2600
SULFATE	MG/L		1800
ARSENIC, DISSOLVED	UG/L		51
BARIUM, DISSOLVED	UG/L		54
BORON, DISSOLVED	UG/L		3300
CADMIUM, DISSOLVED	UG/L	<	0.30
CHROMIUM, DISSOLVED	UG/L		11
COPPER, DISSOLVED	UG/L	<	20
IRON, DISSOLVED	UG/L	<	100
LEAD, DISSOLVED	UG/L	<	3.0
MANGANESE, DISSOLVED	UG/L	<	5.0
MERCURY, DISSOLVED	UG/L	<	0.20
SELENIUM, DISSOLVED	UG/L		57
SILVER, DISSOLVED	UG/L	<	1.0
ZINC, DISSOLVED	UG/L	<	20

APPENDIX G

2016 Low-Hazard Waste Exemption Leaching Test Results – Slag and Ash

Sediment and Soil Analytical Results - Water Leach Test Results
WPL Nelson Dewey

Sample	Date	Depth (feet)	Material Type	Lab Notes	Boron (ug/L)	Calcium (ug/L)	Fluoride (mg/L)	Sulfate (mg/L)
WPDES POND								
SED-1	8/3/2016	0-1.3	Fly Ash	--	240	6,100	<1.0	4.4
SED-2	8/3/2016	0-1.0	Fly Ash	--	200	5,900	<1.0	11.5
QC-3 (SED-2)	8/3/2016	0-1	Fly Ash	--	240	5,900 J	<1.0	6.1
SED-3	7/20/2016	0-4.5	Slag	--	130	2,200	<1.0	5
	7/20/2016	4.5-5.5	SP	--	<50	<500	<0.20	<2.0
SED-4	7/19/2016	0-4.8	ML	--	510	4,100	<10.0	11.9 J
	7/19/2016	4.8-5.5		--	74 J	NA	NA	NA
GP-19	8/4/2016	8-12	SM	--	62 J	<500	<1.0	2 J
SLAG POND								
SED-5	7/20/2016	0-1.6	ML-OL	--	54 J	18,200	<1.0	33.3
SED-6	7/20/2016	0-1.0	ML	--	60 J	17,500	0.36 J	59.1
SED-7	8/4/2016	0-3.0	Fly Ash	--	88 J	11,300	<1.0	10.5
SED-8	8/4/2016	1.0-1.5	Fly Ash	--	82 J	11,400	<1.0	12.1
COAL YARD								
TP-CY-1	7/19/2016	0-0.5	Coal	--	140	<500	<2.0	<20.0
	7/19/2016	3.0-3.5	SM	--	100 J	<500	<1.0	<2.0
TP-CY-3	7/20/2016	1.9-2.1	GM	--	<50	7,600	<0.20	2.8 J
	7/20/2016	4.8-5.5	SM	--	NA	NA	NA	NA
TP-CY-4	7/19/2016	0-2.8	Coal	--	190	<500	<2.0	<20.0
	7/19/2016	2.8-3.2	GP & SM	--	<50	4,500	<1.0	<10.0
	7/19/2016	3.6-4.8	Slag	--	<50	<500	<2.0	<20.0
	7/19/2016	4.8-5.0		--	NA	NA	NA	NA
TP-CY-6	7/19/2016	0-0.5	Coal	--	190	<500	<2.0	<20.0
	7/19/2016	0.7-1.0	SP	--	<50	2,600	<0.20	2.3 J
TP-CY-10	7/19/2016	0-0.5	Coal	--	120	<25	<1.0	11.6
	7/19/2016	1.0-2.0	SM	--	<50	2,000	<1.0	2.3 J
	7/19/2016	6.5-7.0	SP	--	NA	NA	NA	NA
TP-CY-12	7/20/2016	0-0.3	Coal	--	160	<500	<2.0	<20.0
	7/20/2016	0.3-2.0	SP	--	<50	2,600	<0.20	2.2 J
	7/20/2016	2.0-2.7	SP	--	<50	700 J	<0.20	27.5
QC-1 (TP-CY-12)	7/20/2016	0.3-2.0	SP	--	<50	11,000	<0.20	2.5 J
SLAG HANDLING AREA								
GP-5	8/3/2016	12.5-15	Fly Ash	--	100	3,000	<1.0	3.0 J
	8/3/2016	18-24	ML & SM	--	99 J	2,300	<1.0	<2.0
GP-7	8/3/2016	7.5-18	Slag	--	<50	720 J	<1.0	<2.0
QC-2 (GP-7)	8/3/2016	7.5-18	Slag	--	<50	710 J	<1.0	<2.0
GP-14	8/4/2016	12.5-15	Fly Ash	--	120	25,200	<1.0	13.4

Sediment and Soil Analytical Results - Water Leach Test Results
WPL Nelson Dewey

Sample	Date	Depth (feet)	Material Type	Lab Notes	Boron (ug/L)	Calcium (ug/L)	Fluoride (mg/L)	Sulfate (mg/L)
SLAG SAMPLES[1]								
Slag 01 [2]	6/3/2013	--	Slag	--	NA	NA	NA	NA
Slag 01	12/23/2013	--	Slag	--	12.5 A B	1,240	NA	0.218
NED Slag Composite 2014	7/1/2014	--	Slag	--	11.7 AB*^	879 A	NA	0.457 B
Slag Sample	4/14/2015	--	Slag	--	< 1020 A	1,140 A	NA	0.427
FLY ASH SAMPLES[1]								
NED Flyash Composite [2]	2/14/2014	--	Fly Ash	--	NA	NA	NA	6,530 B
Week of 062815 [2]	7/3/2015	--	Fly Ash	--	NA	NA	NA	6,260
Week of 010916	1/4/2016	--	Fly Ash	--	NA	NA	NA	NA
NR 140 Preventive Action Limits (PALs)					200	NE	0.8	125
NR 140 Enforcement Standards (ESs)					1,000	NE	4	250
40 CFR Part 141.62 Maximum Contaminant Levels (MCL)					NE	NE	4	NE
NR 538 Table 1A Standards					190	NE	0.8	125
NR 538 Table 2A Standards					1,900	NE	8	1,250

Abbreviations:
ug/L = micrograms per liter
mg/L = milligrams per liter
NE = No Standard Established
ML-CL = Silty Clay
SM = Silty Sand
ML = Silt

Notes:
1. Slag and Fly Ash samples were collected by the plant as part of permit requirements.
2. Sample was analyzed using the SPLP Leach Method rather than the ASTM Water Leach Method for tested parameters except for Sulfate.
NR 140 ESs - Wisconsin Administrative Code (WAC), Chapter NR 140.10 Table 1 - Public Health Groundwater Quality Standards from July 2015 and WAC, Chapter NR 140.12 Table 2 - Public Welfare Groundwater Quality Standards from July 2015.
NR 140 PALs - WAC, Chapter NR 140.10 Table 1 - Public Health Groundwater Quality Standards from July 2015 and WAC, Chapter NR 140.12 Table 2 - Public Welfare Groundwater Quality Standards from July 2015.

Laboratory Notes/Qualifiers:
J = Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.
A = Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
B = Compound was found in the blank and sample.
F1 = MS and/or MSD Recovery is outside acceptance limits.
H = Sample was prepped or analyzed beyond the specified holding time.
^ = ICV, CCV, ICB, CCB, ISA, ISB, CRI, CRA, DLCK or MRL standard: Instrument related QC is outside acceptance limits.
* = LCS or LCSD is outside acceptance limits.

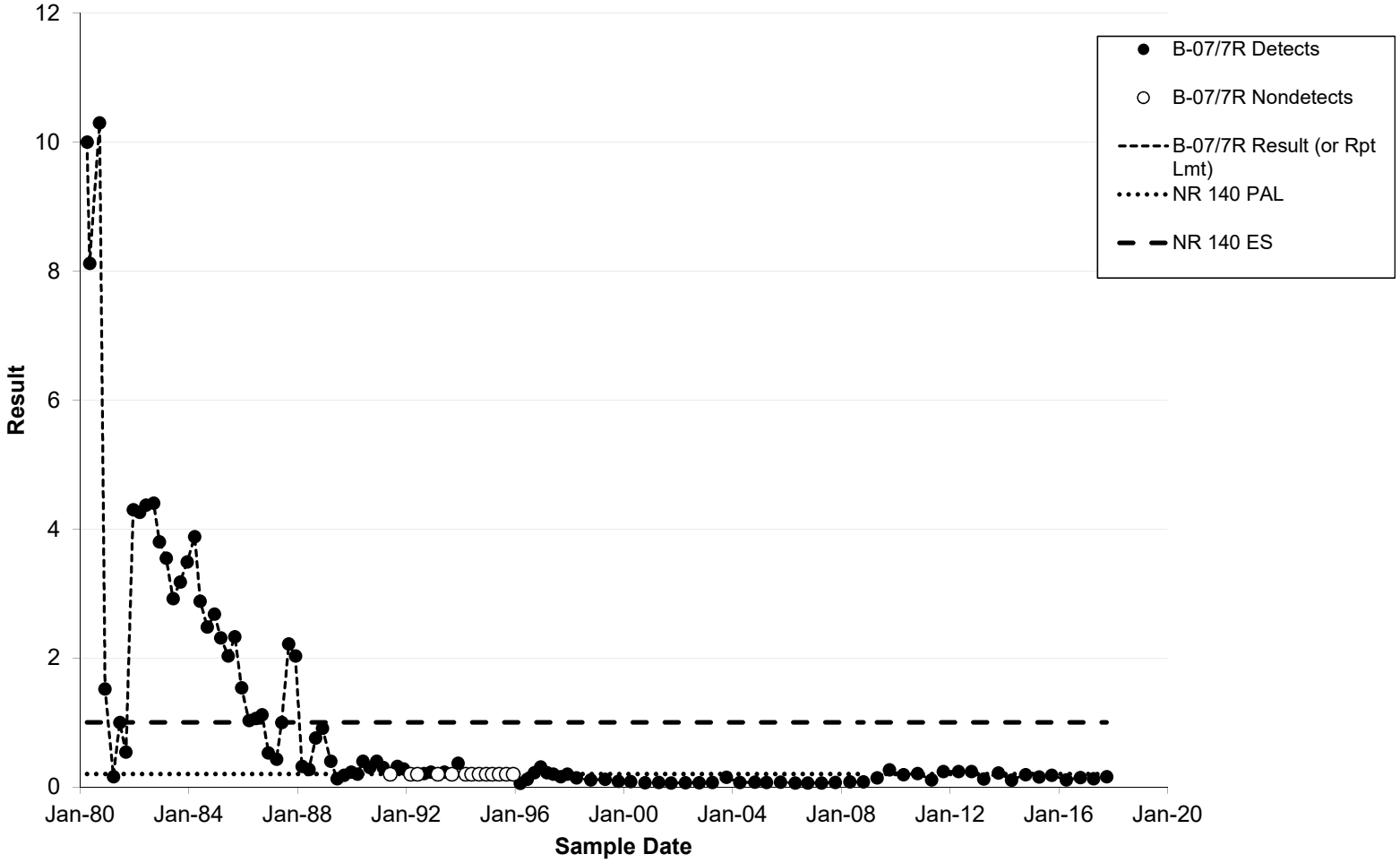
Created by: RJG Date: 3/14/2016
Last revision by: RJG Date: 10/24/2016
Checked by: BSS Date: 10/24/2016
Original table prepared for Slag Pond Closure Low Hazard Waste Exemption Request (SCS Project #25216054.00).
Reformatted for the Alternative Source Demonstration to include only the parameters with SSIs that were included in the leach testing by SCC, 4/13/18.

I:\25216071.00\Reports\2018 ASD Report\Appendix G - 2017 leachate results slag and ash\[Table 4. Sediment_Soil_Water Leach Results_SSIParameters.xlsx]Leach Test - SSI Parameters

APPENDIX H

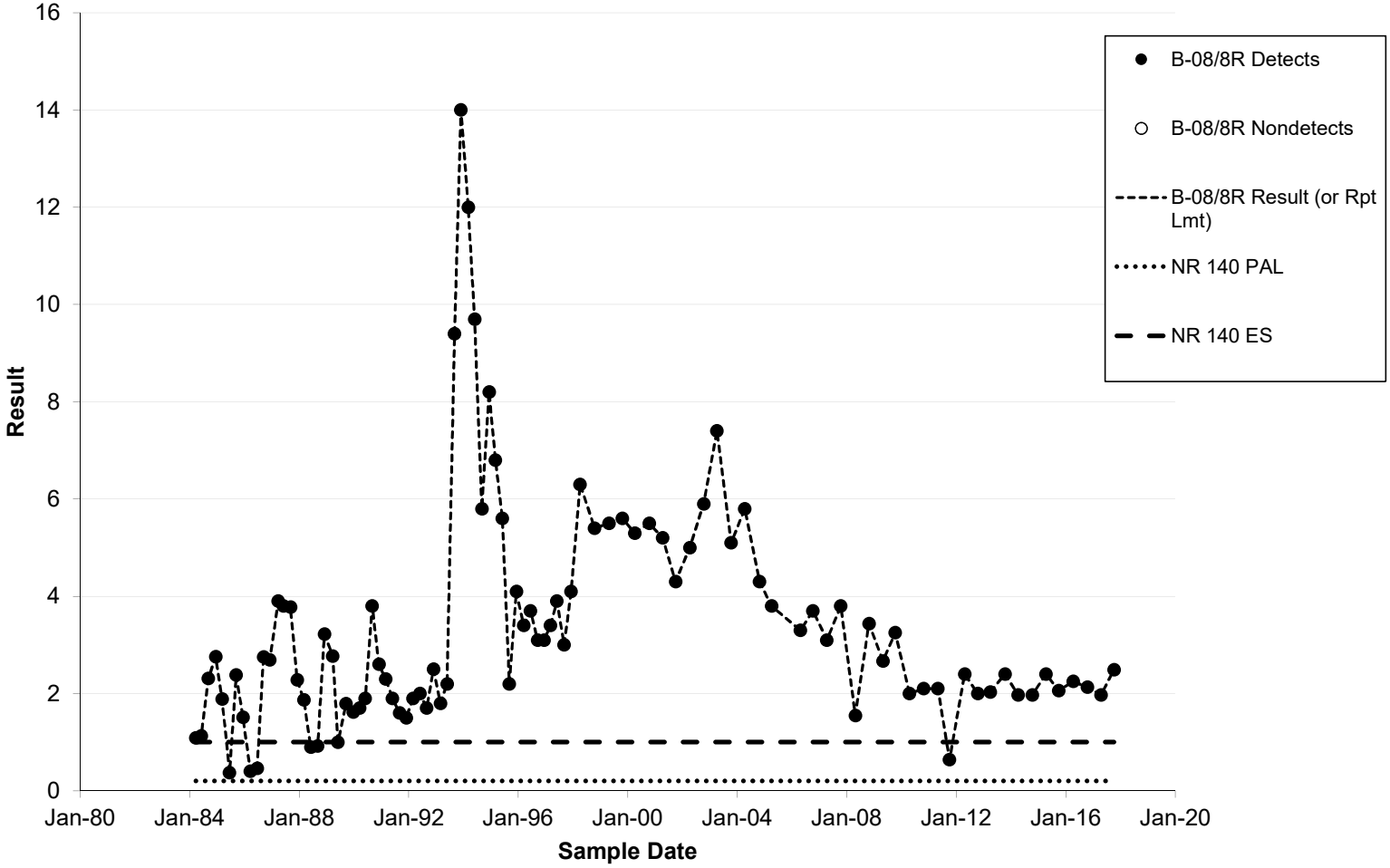
Long Term Concentration Graphs

Wisconsin Power & Light Company
Nelson Dewey Ash Disposal Facility
Boron, Dissolved (mg/l)



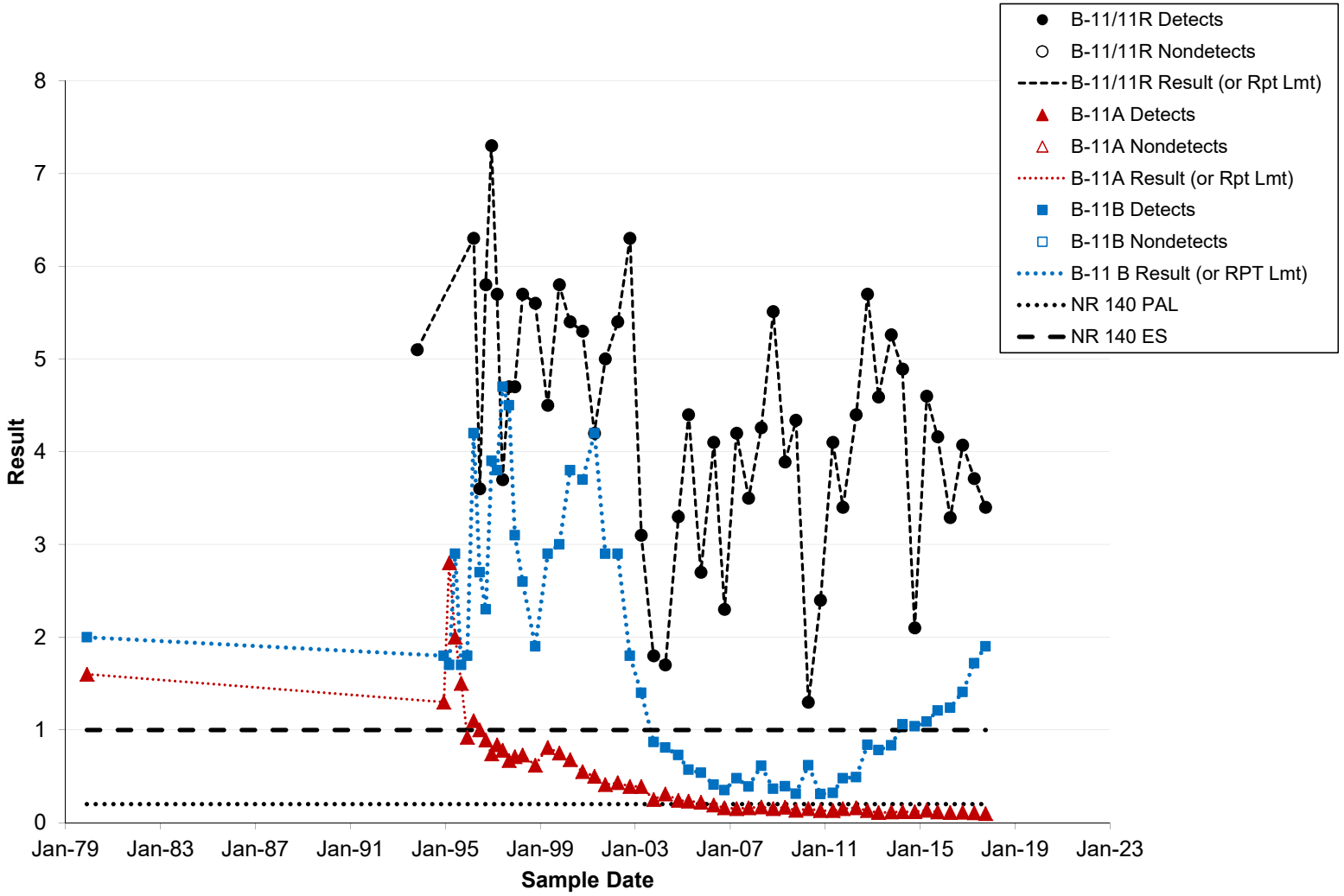
Note: B-07R replaced B-07 beginning with the April 2009 sampling event.

Wisconsin Power & Light Company
Nelson Dewey Ash Disposal Facility
Boron, Dissolved (mg/l)



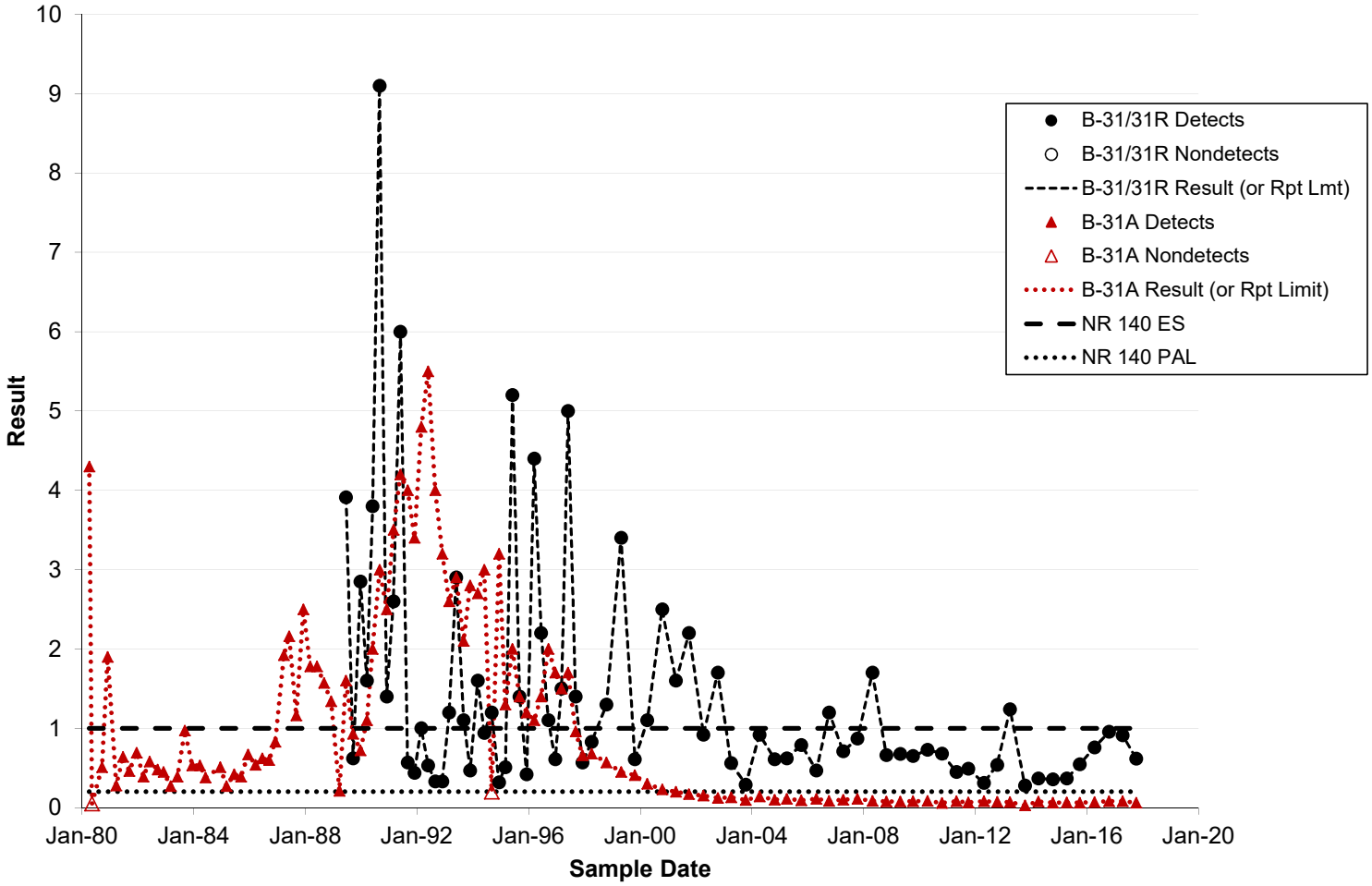
Note: B-08R replaced B-08 beginning with the September 1993 sampling event (break in dashed line above).

Wisconsin Power & Light Company
Nelson Dewey Ash Disposal Facility
Boron, Dissolved (mg/l)



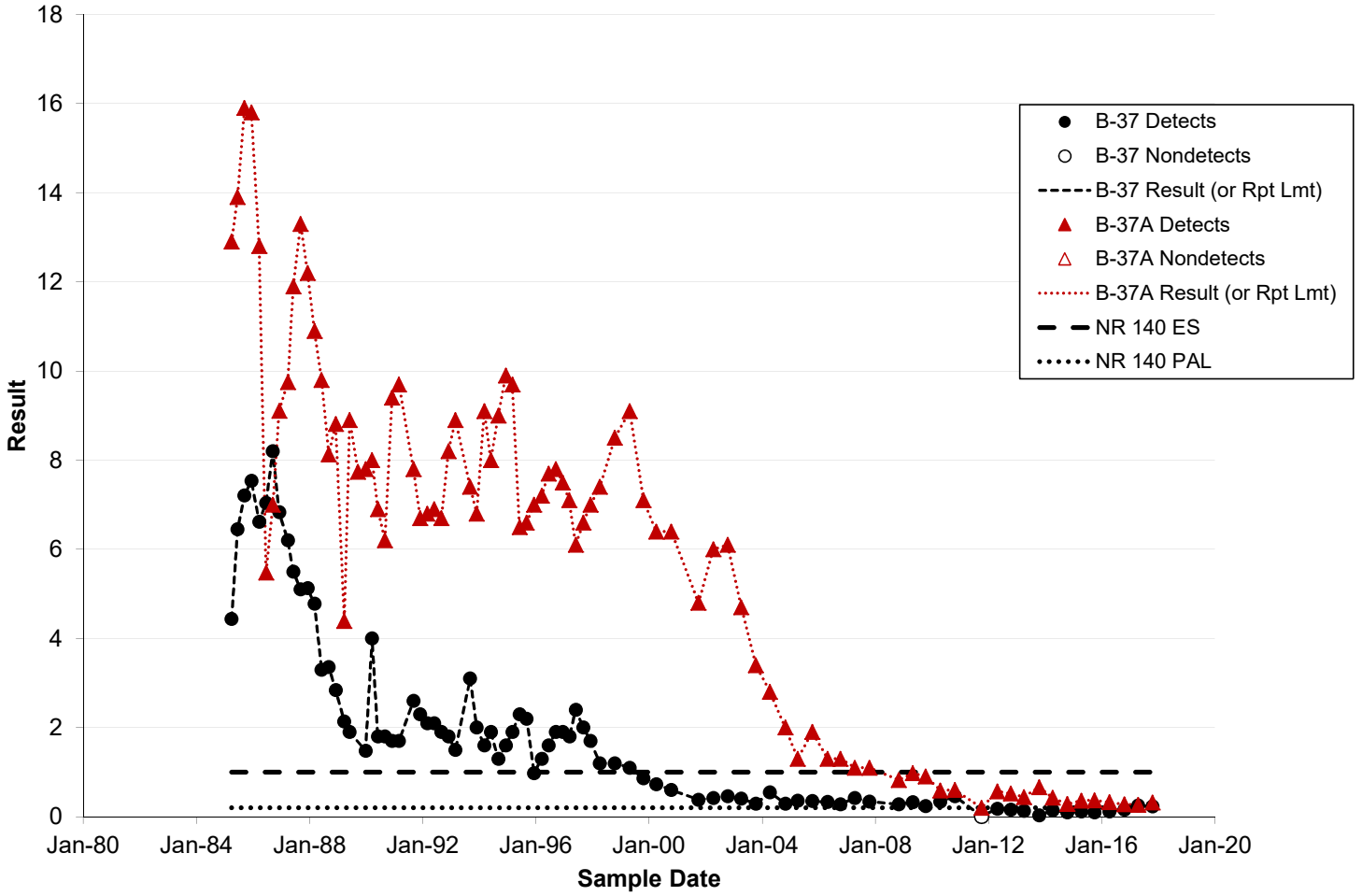
Note: B-11R replaced B-11 beginning with the December 1997 sampling event.

Wisconsin Power & Light Company
Nelson Dewey Ash Disposal Facility
Boron, Dissolved (mg/l)



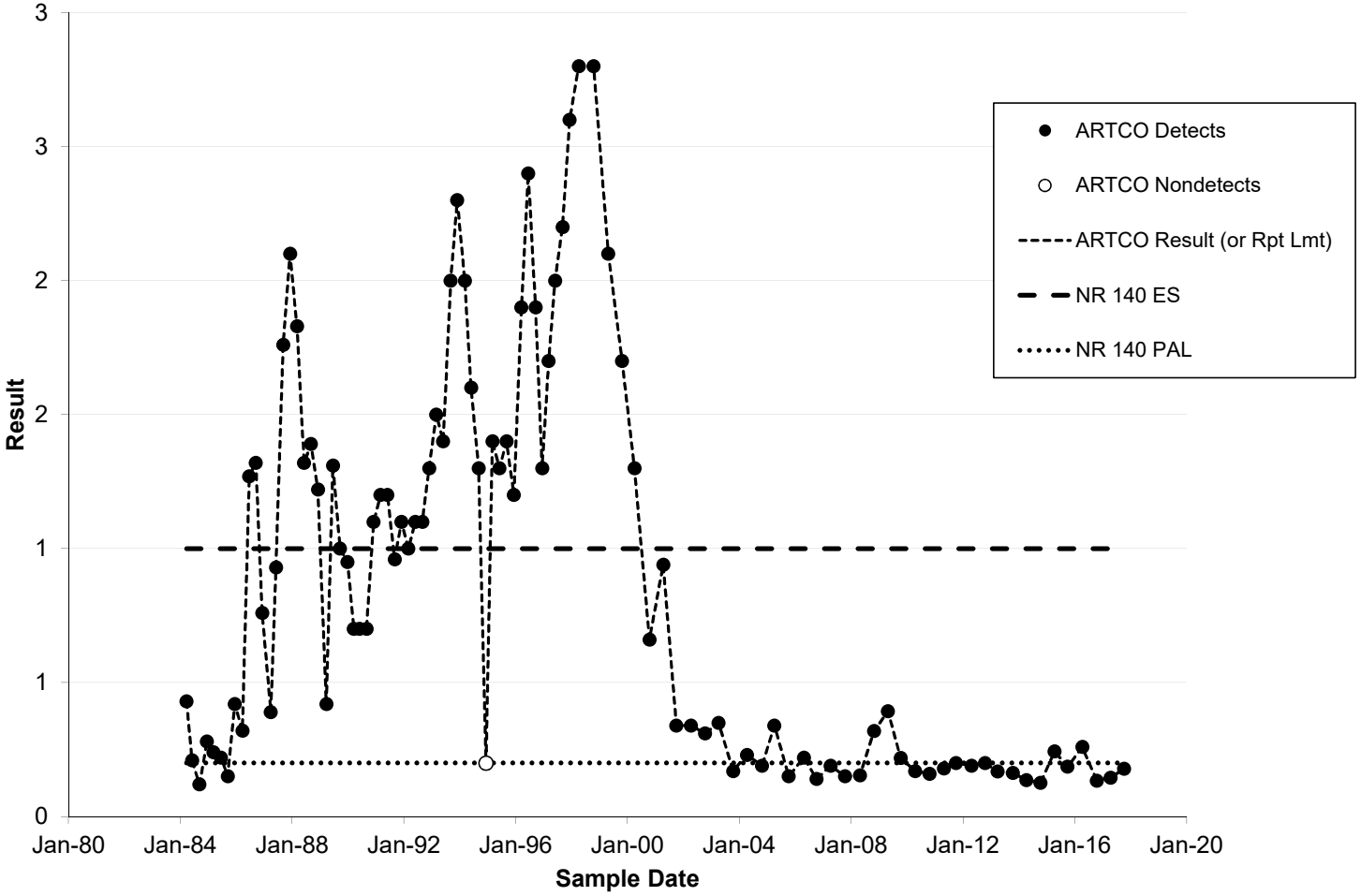
Note: B-31R replaced B-31 beginning with the June 1989 sampling event.

Wisconsin Power & Light Company
Nelson Dewey Ash Disposal Facility
Boron, Dissolved (mg/l)

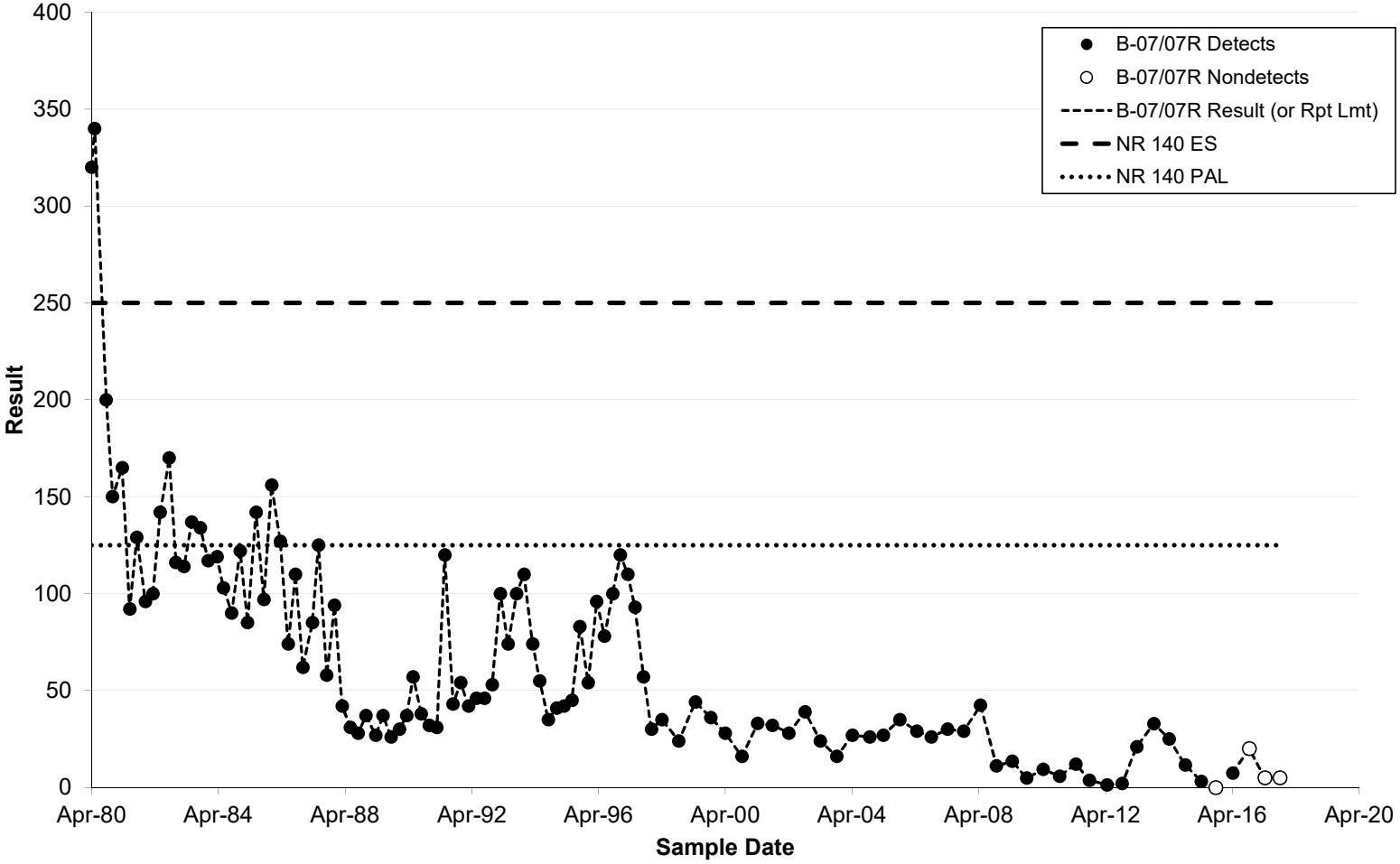


I:\25216071.00\Reports\2018 ASD Report\Appendix H - Biennial Report Graphs\Bo_NDB-37 4/9/2018

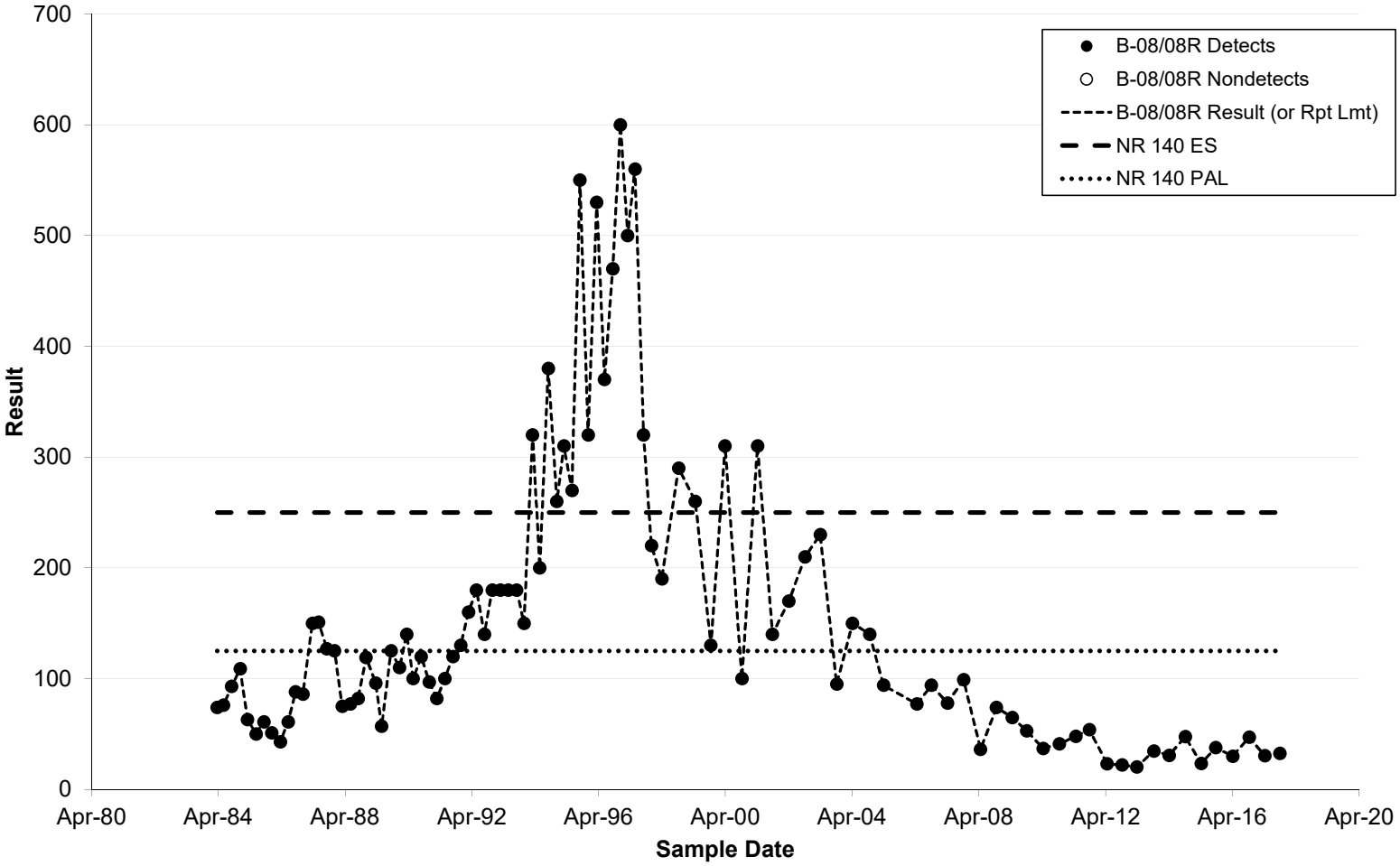
Wisconsin Power & Light Company
Nelson Dewey Ash Disposal Facility
Boron, Total (mg/l)



Wisconsin Power & Light Company
Nelson Dewey Ash Disposal Facility
Sulfate, Dissolved (mg/l)

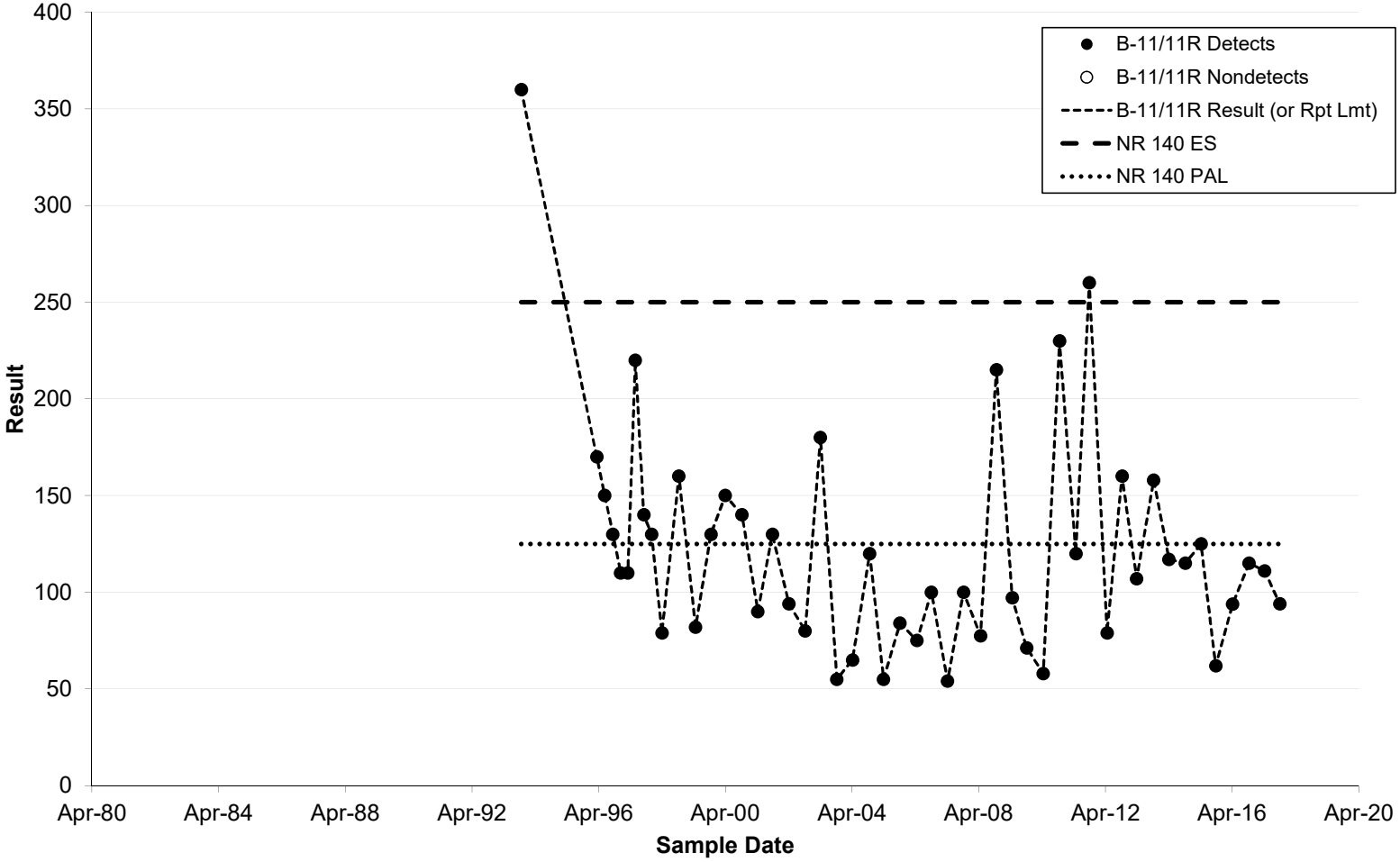


Wisconsin Power & Light Company
Nelson Dewey Ash Disposal Facility
Sulfate, Dissolved (mg/l)



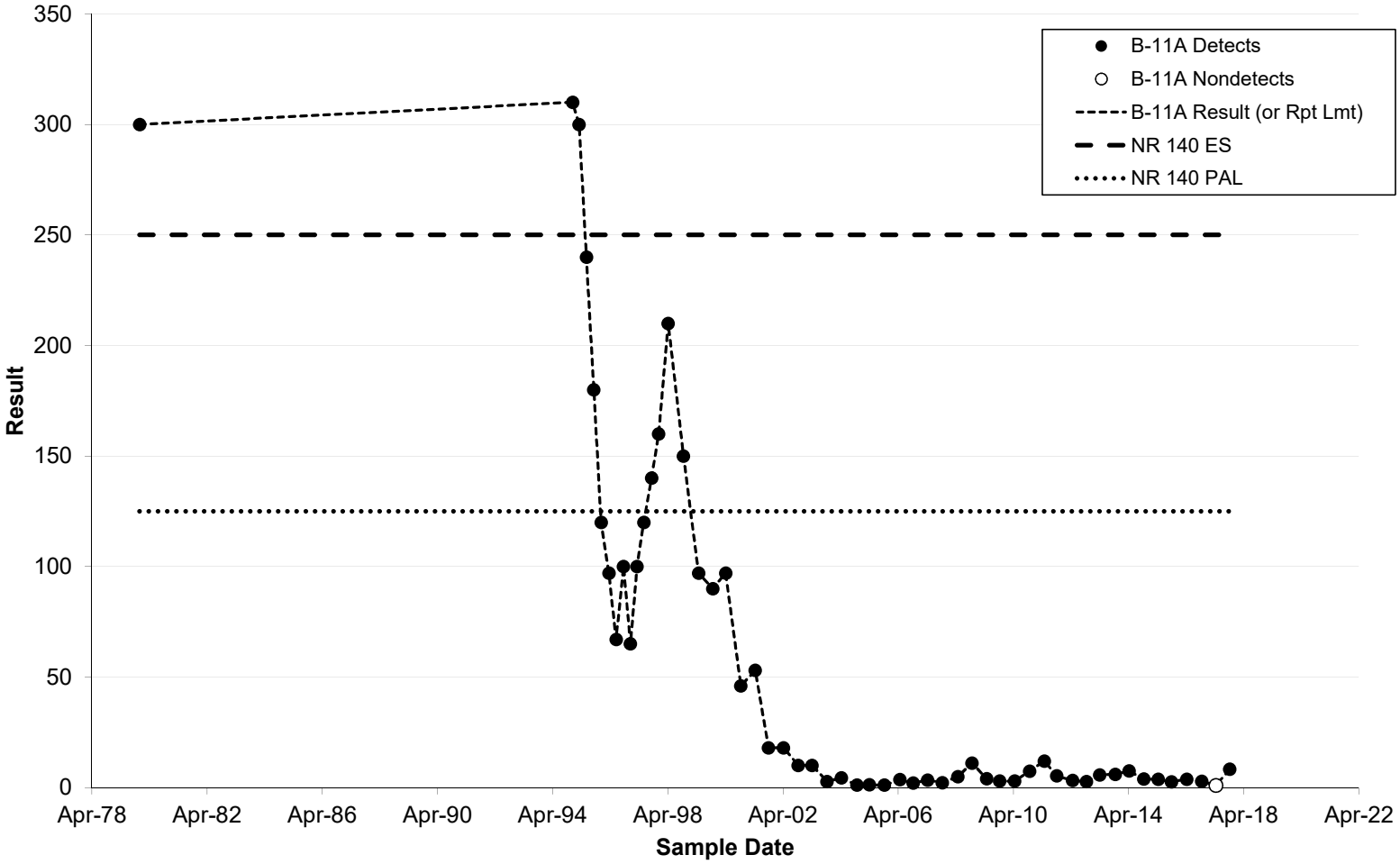
Note: B-8R replaced B-8 beginning with the September 1993 sampling event.

Wisconsin Power & Light Company
Nelson Dewey Ash Disposal Facility
Sulfate, Dissolved (mg/l)

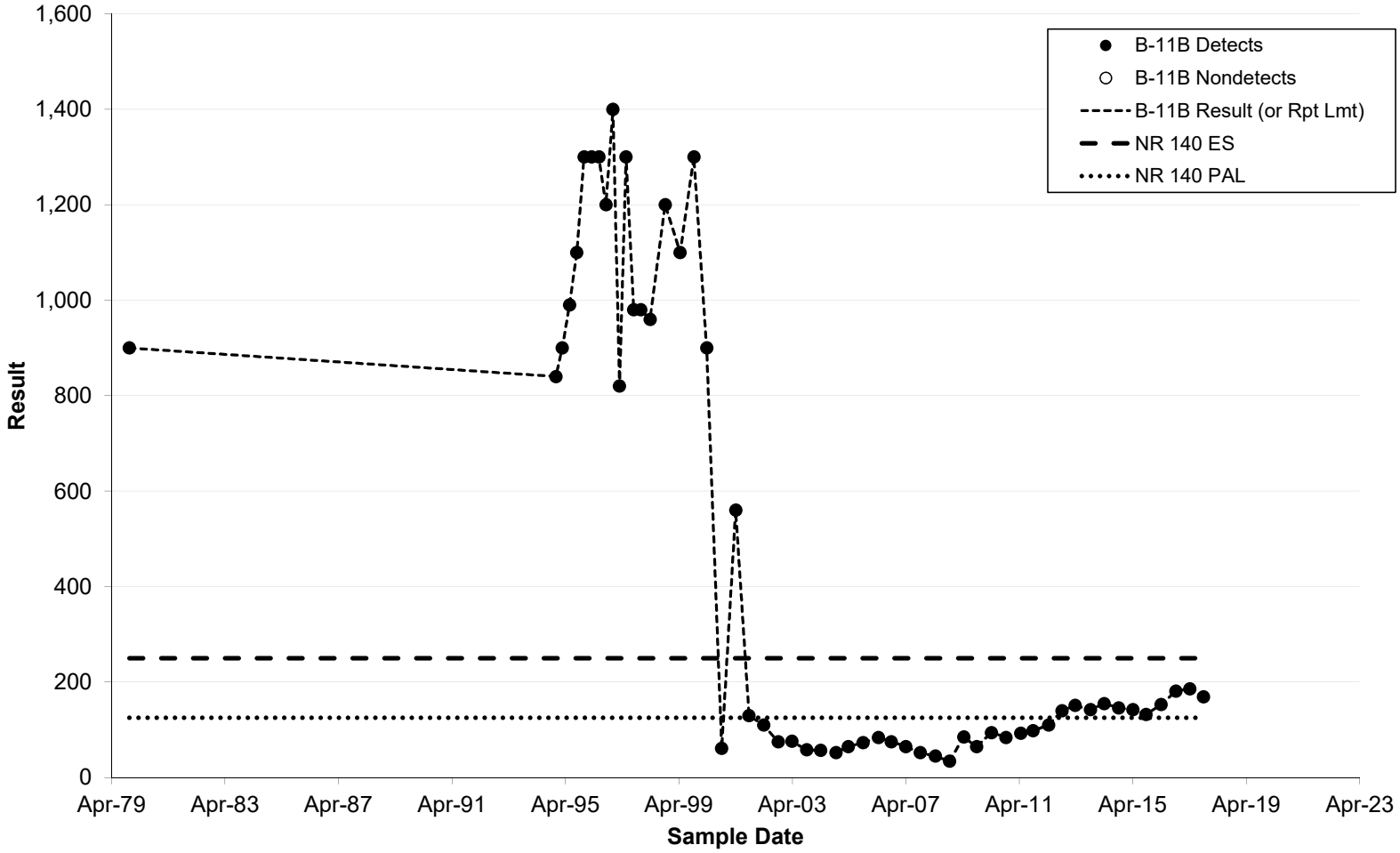


Note: B-11R replaced B-11 beginning with the December 1997 sampling event.

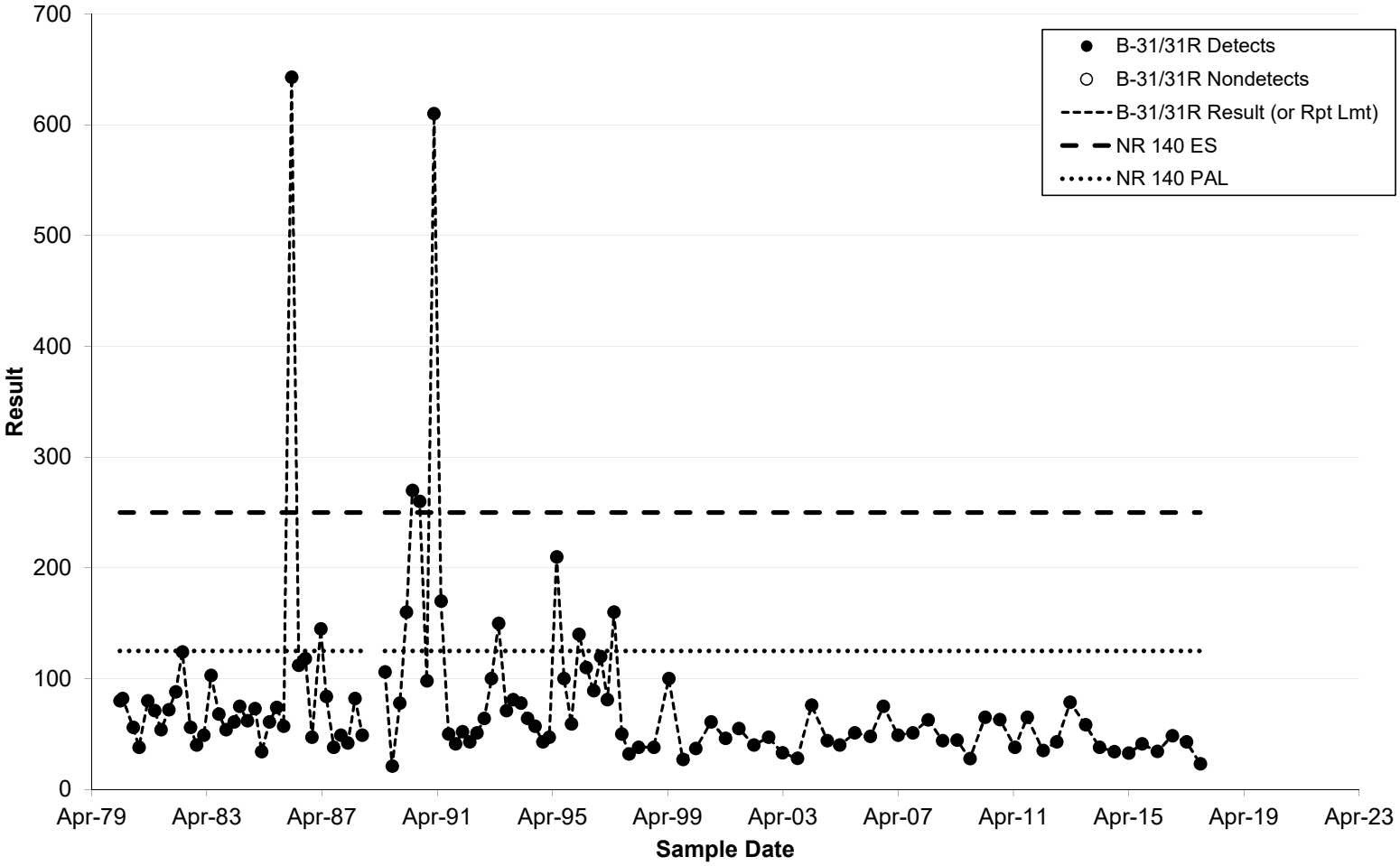
Wisconsin Power & Light Company
Nelson Dewey Ash Disposal Facility
Sulfate, Dissolved (mg/l)



Wisconsin Power & Light Company
Nelson Dewey Ash Disposal Facility
Sulfate, Dissolved (mg/l)

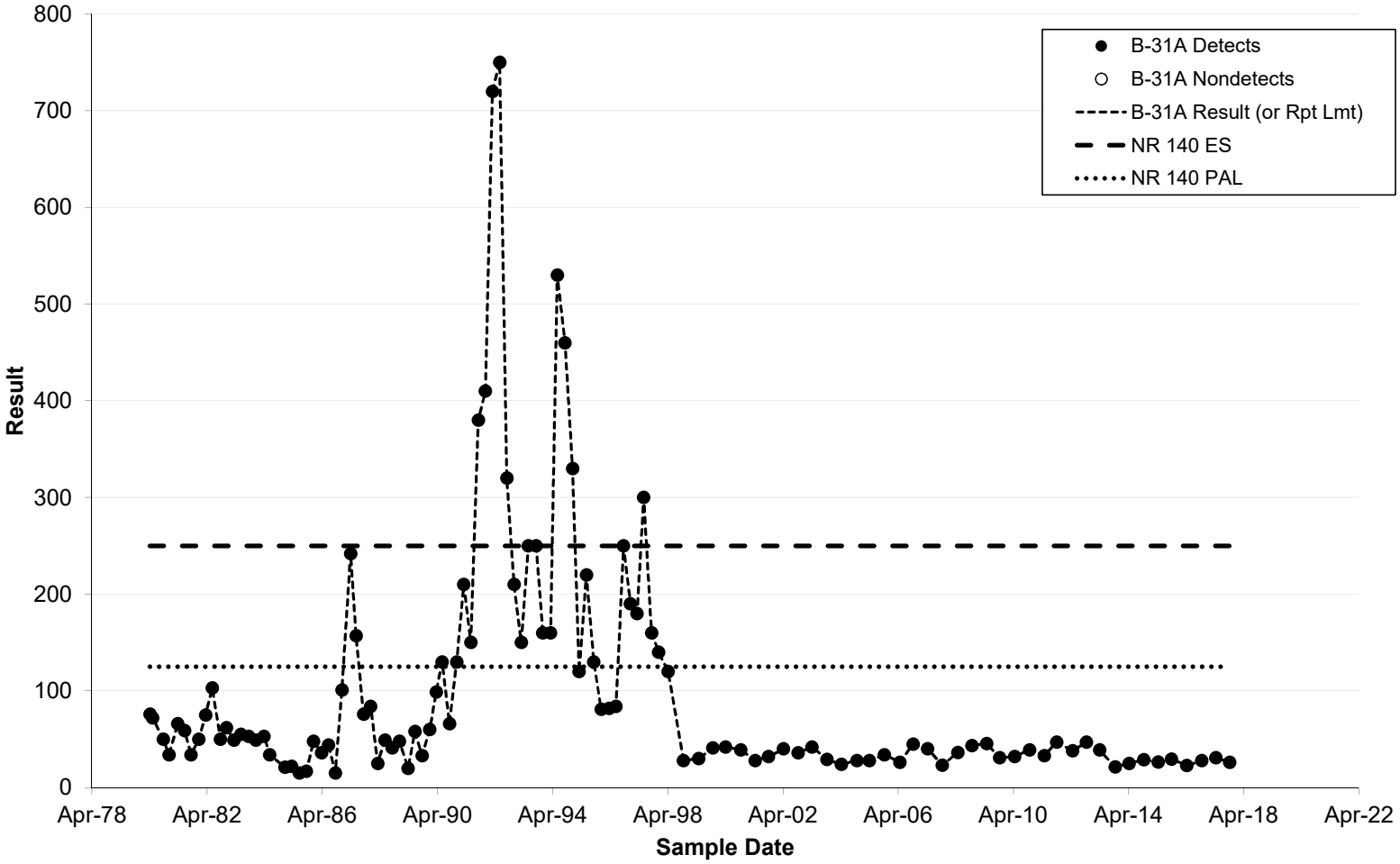


Wisconsin Power & Light Company
Nelson Dewey Ash Disposal Facility
Sulfate, Dissolved (mg/l)



Note: B-31R replaced B-31 beginning with the June 1989 sampling event.

Wisconsin Power & Light Company
Nelson Dewey Ash Disposal Facility
Sulfate, Dissolved (mg/l)



B2 Alternative Source Demonstration, April 2018 Detection Monitoring

Alternative Source Demonstration
April 2018 Detection Monitoring

Nelson Dewey Generating Station
Slag Pond
Cassville, Wisconsin

Prepared for:

Alliant Energy

SCS ENGINEERS

25216071.18 | October 30, 2018

2830 Dairy Drive
Madison, WI 53718-6751
608-224-2830

Table of Contents

Section Page

Tables

Figures

Appendices

I:\25216071.00\Reports\2018 ASD Report - No. 2\181030_ASD_NED.docx

PE CERTIFICATION

I, Sherren Clark, hereby certify that that the information in this alternate source demonstration is accurate and meets the requirements of 40 CFR 257.94(e)(2). This certification is based on my review of the groundwater data and related site information available for the Nelson Dewey Generating Station Slag Pond facility. I am a duly licensed Professional Engineer under the laws of the State of Wisconsin.

SC Clark 10-30-18

(signature) (date)

Sherren Clark

(printed or typed name)

License number E-29863

My license renewal date is July 31, 2020.

Pages or sheets covered by this seal:

Alternative Source Demonstration
April 2018 Detection Monitoring
Nelson Dewey, Slag Pond

[This page left blank intentionally]

1.0 INTRODUCTION

This Alternative Source Demonstration (ASD) was prepared to support compliance with the groundwater monitoring requirements of the "Coal Combustion Residuals (CCR) Final Rule" published by the U.S. Environmental Protection Agency (USEPA) in the *Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities; Final Rule*, dated April 17, 2015 (USEPA, 2015), and subsequent amendments. Specifically, this report was prepared to fulfill the requirements of 40 CFR 257.94(e)(2). The applicable sections of the Rule are provided below in *italics*.

1.1 §257.94(E)(2) ALTERNATIVE SOURCE DEMONSTRATION REQUIREMENTS

The owner and operator may demonstrate that a source other than the CCR Unit caused the statistically significant increase over background levels for a constituent or that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. The owner or operator must complete the written demonstration within 90 days of detecting a statistically significant increase over background levels.

An ASD is completed when there are exceedances of one or more benchmarks established within the groundwater monitoring program. The ASD is completed to determine if any other sources are likely causes of the identified exceedance(s) of established benchmark(s) at the site. This ASD was performed in response to results indicating a statistically significant increase (SSI) over background levels during detection monitoring under the CCR Rule.

This ASD report is evaluating the SSIs observed in the statistical evaluation of the April 2018 detection monitoring event at the Nelson Dewey Generating Station (NED). An ASD was previously prepared for this facility evaluating the SSIs observed in the statistical evaluation of the October 2017 detection monitoring event (SCS, 2018b). The October 2017 ASD (dated April 2018) concluded that several lines of evidence demonstrated that SSIs reported for boron, calcium, fluoride, field pH, and sulfate concentrations in the downgradient monitoring wells were likely due to man-made sources and/or naturally occurring constituents in the alluvial aquifer.

As discussed in more detail in **Section 4.2** of this ASD, the findings for the April 2018 monitoring event were generally consistent with those for the previous event.

1.2 SITE INFORMATION AND MAP

The NED site is located along the east bank of the Mississippi River, north of the City of Cassville, in Grant County, Wisconsin (**Figure 1**). The facility includes a decommissioned coal fired generating plant, a CCR landfill that was closed in 2001, a closed slag pond, and a closed wastewater treatment pond. The layout of the site on an aerial photograph base is shown on **Figure 2**. The closed landfill at the NED facility was permitted under Wisconsin Department of Natural Resources (WDNR) License #02525.

The existing CCR unit evaluated for this ASD is:

- Slag Pond (former existing CCR surface impoundment)

A map showing the CCR unit and all background (or upgradient) and downgradient monitoring wells with identification numbers for the CCR groundwater monitoring program and the state monitoring program is provided as **Figure 3**.

Operations at the facility began in the late 1950s, and a CCR impoundment that included what is now the Slag Pond was commissioned at that time. The CCR landfill was initially licensed in 1976 and received fly ash from NED until it was closed in phases between 1996 and 2001. The CCR landfill was initially operated as a fly ash sluice basin, then transitioned to dry ash placement prior to closure. The wastewater ponds, now closed, were constructed in 1976 for the purpose of settling CCR from the NED process wastewater streams and sediment from storm water runoff prior to discharge. Both NED generating units were retired on December 31, 2015, and have since been decommissioned. The generating station was demolished in 2017.

1.3 STATISTICALLY SIGNIFICANT INCREASES IDENTIFIED

SSIs were identified for boron, calcium, fluoride, field pH, sulfate, and total dissolved solids (TDS) at one or more wells in the April 2018 monitoring event. A summary of the April 2018 constituent concentrations and the established benchmark concentrations is provided in **Table 1**. The October 2017 results are also included for comparison. The constituent concentrations with SSIs above the background concentrations are highlighted in the table.

The SSIs for the April 2018 event were generally consistent with the October 2017 SSIs, with a few changes. New SSIs were identified for boron at B-31A, field pH at B-11B, and total dissolved solids at B-11R. The October 2017 SSI for fluoride at B-11A was not confirmed in the April 2018 event.

1.4 OVERVIEW OF ASD APPROACH

This ASD report includes:

- Background information (**Section 2.0**)
- Evaluation of potential that SSIs are due to methodology or analysis (**Section 3.0**)
- Evaluation of potential that SSIs are due to natural sources or man-made sources other than the CCR Units (**Section 4.0**)
- ASD conclusions (**Section 5.0**)
- Monitoring recommendations (**Section 6.0**)

The CCR Rule constituent results from background and compliance sampling are provided in **Table 2**. Complete laboratory reports for the background monitoring events and the October 2017 detection monitoring event were included in the 2017 Annual Groundwater Monitoring and Corrective Action Report for the NED Slag Pond (SCS, 2018a). The laboratory report for the April 2018 event was previously transmitted to Wisconsin Power and Light (WPL) and will be included in the 2018 annual report.

2.0 BACKGROUND

To provide context for the ASD evaluation, the following background information is provided in this section of the report, prior to the ASD evaluation sections:

- Geologic and hydrogeologic setting
- CCR Rule monitoring system
- Other monitoring wells

A more detailed discussion of the background information for the site is provided in the ASD for the October 2017 event (SCS, 2018b).

2.1 GEOLOGIC AND HYDROGEOLOGIC SETTING

2.1.1 Regional Information

The uppermost geologic formation beneath the NED plant is the surficial alluvial aquifer. The alluvial aquifer consists of Mississippi River valley sand and gravel deposits, and is the uppermost aquifer as defined in section 257.53 of the CCR Rule. This deposit is prevalent along the edges of the entire Mississippi River valley in southwestern Wisconsin.

The alluvial aquifer is underlain by dolomitic bedrock of the Prairie du Chien Group. The dolomite bedrock is also an aquifer and is likely hydraulically connected to the alluvial aquifer above.

Regionally, groundwater flow is generally to the southwest and discharges to the Mississippi River.

Additional details on the regional geology were provided in the October 2017 ASD (SCS, 2018b).

2.1.2 Site Information

The thickness of the alluvium in the immediate vicinity of the plant is over 125 feet as evidenced by local water supply well logs (SCS, 2018b). These logs are also evidence that the alluvial aquifer yields useable quantities of groundwater for supply wells in the area. Soil boring logs for monitoring wells installed at the site also generally indicate sand and gravel soils within the monitored depths.

The groundwater flow direction in the vicinity of the plant is generally southwest toward the Mississippi River. Historically, infiltration at the former slag pond, former fly ash basin, and the former Wisconsin Pollutant Discharge Elimination System (WPDES) ponds caused groundwater mounding to be present around these features; however, these ponds have now all been closed and are no longer sources of infiltration.

Site water level measurements generally indicate that groundwater flow is to the southwest, discharging to the Mississippi River. However, during periods of high river water levels, the flow temporarily reverses and the river discharges to the shallow sand and gravel aquifer. The groundwater flow direction during the April 2018 detection monitoring event was toward the Mississippi River with flow moving south to southwest (Figure 4). The groundwater elevations are provided in Table 3.

2.2 CCR RULE MONITORING SYSTEM

The groundwater monitoring system established in accordance with the CCR Rule consists of one upgradient (background) monitoring well and six downgradient monitoring wells. The background well is B-26. The downgradient wells include B-7R, B-11A, B-11B, B-11R, B-31A, and B-31R. The CCR Rule wells are installed within the surficial alluvium aquifer. Well depths range from approximately 23 to 114 feet, measured from the top of the well casing.

2.3 OTHER MONITORING WELLS

There are 19 groundwater monitoring wells at the NED facility that are part of the monitoring system developed for the state monitoring program. All of the wells included in the CCR monitoring well network were already in use for the state monitoring program. The well locations are shown on

Figure 3. These 19 monitoring wells and two private wells are used to monitor groundwater conditions at the site under WDNR License Number 2525, which includes the closed CCR landfill (former fly ash settling basin) and the closed Slag Pond. Monitoring wells for the state monitoring program are installed in the surficial sand and gravel aquifer which is the uppermost aquifer as defined under 40 CFR 257.53.

3.0 METHODOLOGY AND ANALYSIS REVIEW

To evaluate the potential that an SSI is due to a source other than the regulated CCR unit, SCS Engineers (SCS) used a two-step evaluation process. First, the sample collection, field and laboratory analysis, and statistical evaluation were reviewed to identify any potential error or analysis that led to an exceedance of the benchmark. Second, potential alternative sources, including natural variation and man-made sources other than the CCR unit, were evaluated. This section of the report provides the findings of the methodology and analysis review. Section 4.0 of the report addresses the potential alternative sources.

3.1 SAMPLING AND FIELD ANALYSIS REVIEW

Field notes and sampling results were reviewed to determine if any sampling error may have caused or contributed to the observed SSIs. Potential field sampling errors or issues could include mislabeling of samples, improper sample handling, missed holding times, cross contamination during sampling, or other field error. Field blank sample results were also reviewed for any indication of potential contamination from sampling equipment or containers. Based on the review of the field notes and results, SCS did not identify any indication that the SSIs were due to a sampling error.

SCS did not identify any issues with the field pH analysis based on review of the data and field notes. Because boron, calcium, fluoride, TDS, and sulfate are laboratory parameters, there is little potential for a field analysis error to contribute to an SSI.

3.2 LABORATORY ANALYSIS REVIEW

The laboratory report for the April 2018 detection monitoring event was reviewed to determine if any laboratory analysis error or issue may have caused or contributed to the observed SSIs. The laboratory report review included reviewing the laboratory quality control flags and narrative, verifying that correct methods were used and desired detection limits were achieved, and checking the field and laboratory blank sample results. Laboratory reports for the background monitoring and the October 2017 detection monitoring event were included in the 2017 Annual Groundwater Monitoring and Corrective Action Report for the facility and were reviewed as part of the ASD preparation for the October 2017 detection monitoring event.

Based on the review of the laboratory reports, SCS did not identify any indication that the constituents with SSI concentrations were due to a laboratory analysis error. There were no laboratory quality control flags or issues identified in the laboratory report that affect the usability of the data for detection monitoring.

Time series plots of the SSI constituent analytical data were also reviewed for any anomalous results that might indicate a possible sampling or laboratory error (e.g., dilution error or incorrect sample labeling). The time series plots are provided in Appendix A. The April 2018 results for the downgradient wells are generally consistent with the historical data.

3.3 STATISTICAL EVALUATION REVIEW

The review of the statistical results and methods included a quality control check of the following:

- Input analytical data vs. laboratory analytical reports
- Review of statistical method and outlier concentration lists for each monitoring well/CCR unit

Based on the review of the statistical evaluation, SCS did not identify any errors or issues in the statistical evaluation that caused or contributed to the determination of interwell SSIs for boron, calcium, fluoride, pH, sulfate, and TDS at the downgradient monitoring wells.

3.4 SUMMARY OF METHODOLOGY AND ANALYSIS REVIEW FINDINGS

In summary, there were no changes to the SSI determinations for the April 2018 detection monitoring event based on the methodology and analysis review, and no errors or issues causing or contributing to the reported SSIs were identified.

4.0 ALTERNATIVE SOURCES

This section of the report discusses the potential alternative sources for the SSI constituents at the downgradient wells, identifies the most likely alternative source(s), and presents the lines of evidence indicating that an alternative source is the most likely cause of the observed SSIs.

4.1 POTENTIAL CAUSES OF SSI

4.1.1 Natural Variation

The statistical analysis was completed using an interwell approach, comparing the April 2018 detection monitoring results to the UPLs calculated based on sampling of the background well (B-26). If concentrations of a constituent that is naturally present in the aquifer vary spatially, then the potential exists that the downgradient concentrations may be higher than upgradient concentrations due to natural variation.

Although natural variation is present in the shallow aquifer, it does not appear likely that natural variation is the primary source causing the boron, calcium, and sulfate SSIs. These parameters were detected at higher concentrations than would likely be present naturally.

Based on monitoring performed under the state monitoring program for the closed CCR landfill, natural variation may have contributed to the SSIs for pH at B-11A, B-11B, and B-31A. The reported pH values for background well B-26 and adjacent piezometer B-26A have been variable and the October 2017 pH results were within the historic background range. The slightly higher pH results at the three compliance wells with SSIs for the April 2018 monitoring event suggest that man-made sources also contribute to the pH SSIs at these wells.

Based on fluoride data for wells in the Grant County, natural variation may also have caused or contributed to the SSI for fluoride at B-11A and B 11B.

4.1.2 Man-Made Alternative Sources

Man-made alternative sources that could potentially contribute to the boron, calcium, fluoride, pH, sulfate, and TDS SSIs could include the closed CCR landfill, the coal storage area, or other plant operations. Based the groundwater flow directions and on previous investigations at the site, the closed landfill appears to be the most likely cause of the SSIs for the downgradient wells B-7R, B-11A, B-11B, B-11R, B-31A, and B-31R.

4.2 LINES OF EVIDENCE

Lines of evidence indicating that natural variation may also have caused or contributed to the fluoride SSIs include:

1. Although fluoride was not detected in background well B-26, publicly available data from the WDNR's Groundwater Retrieval Network (GRN) database indicates it is commonly detected in Grant County.

The lines of evidence indicating that the SSIs for boron, calcium, fluoride, pH, sulfate, and TDS in one or more compliance wells relative to the background well are more likely due to the closed landfill and prior fly ash sluicing than to the slag pond include:

2. A previous Environmental Contamination Assessment completed for the ash disposal facility indicated that the fly ash sluicing and landfill were the primary source of the groundwater impacts in the area, based on multiple lines of evidence.

3. Sampling performed in preparation for the slag pond closure indicated that the slag and the slag pond sediment had little potential to cause the SSIs for boron, calcium, fluoride, and sulfate.

4. Past and current groundwater monitoring performed under the state monitoring program shows that groundwater quality has improved since the 1990s in response to termination of fly ash sluicing and closure, and capping of the ash landfill.

Each of these lines of evidence and the supporting data were discussed in detail in the ASD for the October 2017 detection monitoring event (SCS, 2018b), with the exception of the TDS SSI concentrations. The lines of evidence are discussed briefly below, focusing on any updated information collected since the previous ASD, with references to the previous ASD for additional details.

4.2.1 Grant County Fluoride Data

Natural variation may have caused or contributed to the SSI for fluoride at B 11B. Although fluoride was not detected in background well B-26, publicly available data from the WDNR's GRN database indicates it is commonly detected in Grant County. Out of a total of 423 fluoride analysis results in the GRN database for water supply wells in Grant County, 88 percent had fluoride detected. The average concentration of fluoride in Grant County well samples with fluoride detections was 0.39 milligrams per liter (mg/L). The fluoride concentration reported for B-11B for April 2018, 0.65 mg/L, is in the range of concentrations in the GRN database for Grant County. As discussed below, there is also a potential that fluoride concentrations in B 11B are associated with impacts from the closed CCR landfill.

4.2.2 Previous CCR Pond and Landfill Study

A previous investigation titled *Environmental Contamination Assessment: Nelson Dewey Generating Station Ash Disposal Facility*, completed by RMT in 1994, found that groundwater impacts were associated with disposal of fly ash in the now-closed CCR landfill located immediately north of the slag pond (**Figure 3**). The purpose of the 1994 Environmental Contamination Assessment (ECA) was to investigate the impacts to groundwater at the NED landfill. The ECA was used to evaluate feasibility of possible remedial alternatives. The remedial alternative that was ultimately selected was to convert the plant to dry fly ash handling.

The primary lines of evidence from the 1994 report that support the current alternative source demonstration for boron, calcium, fluoride, pH, sulfate, and TDS include:

- Water leaching tests for ash and slag indicated that boron and sulfate concentrations in the slag leachate were orders of magnitude lower than in the ash leachate (**Appendix B**, **Table 5**).

- Surface water samples from the active ash sluice pond and the slag pond indicated that boron and sulfate concentrations in the slag pond were one or more orders of magnitude lower than in the ash sluice pond. Surface water boron and sulfate concentrations in the slag pond were higher than leach test results, which was attributed to infiltration of ash sluice pond water through the berm between the ponds into the slag pond (**Appendix B**, **Table 6**).

- Groundwater sampling at monitoring wells B-38 and B-38A (now abandoned), which were installed through and screened below the ash disposal area (now closed landfill), indicated that groundwater affected by ash sluicing was characterized by high pH and elevated concentrations of boron, fluoride, sulfate, and TDS (**Appendix B**, **Table 8**).

The results of the 1994 ECA were reported to WDNR on November 1994. The ECA investigation was then used for a feasibility study to determine appropriate ash disposal operation on site. Following the ECA, the plant converted to a dry ash handling system. Dry ash was placed in the CCR landfill through the 1990s, and the landfill was capped and closed in phases in 1996 through 2001. After that time, fly ash was not disposed of at the facility.

4.2.3 Slag Pond Closure Sampling Results

Results of leaching test analysis performed for slag, ash, soil, and sediment were submitted as part of a Low Hazard Exemption Request to the WDNR in March 2017 (SCS, 2017). The Exemption Request was submitted as part of the Closure Plan for the site and requested WDNR approval to consolidate materials from decommissioning activities in the Slag Pond and Slag Handling Area, which would then be capped with a composite final cover system. The sediment and soil samples were collected to characterize the materials that would remain on site under the Closure Plan. Leaching tests were performed using ASTM water leach test methods. The leaching test analytical results for parameters with SSIs that were included in the leaching test program (boron, calcium, fluoride, and sulfate) are summarized in **Appendix C**.

The sampling results in the Exemption Request indicated that the materials to be consolidated and capped were not likely to cause groundwater standard exceedances for boron, fluoride, or sulfate. The leach test results for slag, slag pond sediment, and soil in the slag handling area were below the state groundwater standards for these three parameters. The results were also below the concentrations of boron, fluoride, and sulfate in the downgradient CCR wells with SSIs, and well

below the historic results for former well B-38, which was located within the CCR landfill area, upgradient from the slag pond.

The Low Hazard Exemption was granted by the WDNR based on the sampling results and other information presented.

4.2.4 State Program Groundwater Monitoring Results

Past and current groundwater monitoring performed under the state monitoring program shows that groundwater quality has improved substantially since the 1990s in response to termination of fly ash sluicing, and closure and capping of the ash landfill (SCS, 2018b). The long-term trends show that concentrations of boron and sulfate in groundwater have decreased since termination of fly ash sluicing and closure of the landfill, in some cases by an order of magnitude or more. The results suggest that current boron and sulfate concentrations are likely residual contamination from historic ash disposal in the CCR landfill area.

5.0 ASD CONCLUSIONS

The lines of evidence discussed above regarding the SSIs reported for boron, calcium, fluoride, field pH, sulfate, and TDS concentrations in downgradient monitoring wells demonstrate that the SSIs are likely primarily due to historic ash disposal in the closed landfill, which is not subject to the requirements of 40 CFR 257.50-107. The landfill is regulated by the WDNR under the solid waste program (License 02525). The SSIs for fluoride and field pH at B-11A, B-11B, B-11R, and B-31A may also be at least partially due to natural variability.

6.0 SITE GROUNDWATER MONITORING RECOMMENDATIONS

In accordance with section 257.94(e)(2) of the CCR Rule, the NED slag pond site may continue with detection monitoring based on this ASD. The ASD report will be included in the 2018 Annual Report due January 31, 2019.

7.0 REFERENCES

RMT, 1994, Environmental Contamination Assessment: Nelson Dewey Generating Station Ash Disposal Facility, November 1994.

SCS Engineers, 2018a, 2017 Annual Groundwater Monitoring and Corrective Action Report – Nelson Dewey Generating Station, January 2018.

SCS Engineers, 2018b, 2017 Alternative Source Demonstration, October 2017 Monitoring Event, Nelson Dewey Generating Station, April 2018.

SCS Engineers, 2017, Low Hazard Exemption Request, Nelson Dewey Generating Station, Cassville, WI, March 2017.

USEPA, 2009, Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance, EPA 530-R-09-007, March 2009.

Tables

Table 1. Detection Monitoring Results Summary - October 2017 & April 2018
Nelson Dewey Slag Pond
Cassville, Wisconsin

Parameter Name	Units	Interwell Upper Prediction Limit (UPL)	Background Well		Compliance Wells											
			B-26		B-7R		B-11A		B-11B		B-11R		B-31A		B-31R	
			10/19/2017	4/2/2018	10/19/2017	4/2/2018	10/19/2017	4/2/2018	10/19/2017	4/2/2018	10/19/2017	4/2/2018	10/19/2017	4/2/2018	10/19/2017	4/2/2018
Boron	ug/L	66.5	47.4	48	**159**	**121**	**116**	**91**	**1500**	**2,020**	**3120**	**3,180**	63.9	**74.8**	**645**	**540**
Calcium	mg/L	115,155	102000	88,100	56200	49,200	55000	53,300	52400	59,000	**117000**	**124,000**	49600	49,300	75700	72,900
Chloride	mg/L	65.4	79.3	54.4	12	10.1	49.9	54.7	36.1	31.3	38.8	36.8	40.8	42.7	29	32.6
Fluoride	mg/L	LOQ (varies by well)	<0.1 U	<0.10	<0.5 U	<0.50	**0.32**	0.24 J	**0.59**	**0.65**	<0.5 U	<0.50	0.16 J	0.13	0.14 J	<0.10
Field pH	Std. Units	7.81	7.5	7.64	6.88	6.57	**7.96**	**8.04**	7.77	**8.42**	7.22	7.14	**7.92**	**8**	7.19	6.76
Sulfate	mg/L	44.8	25.3	19.1	<5 U	<5.0	5.1	12.3	**175**	**200**	**97.7**	**88.1**	26.1	27.4	19.2	22
Total Dissolved Solids	mg/L	594	542	464	242	220	322	336	510	550	586	**638**	290	282	358	374

149 Statistically significant increase at compliance well

Notes:
1. UPL based on parametric prediction limit based on 1-of-2 resampling methodology for all parameters except fluoride.
2. Nonparametric UPL for fluoride is equal to laboratory limit of quantitation. Double quantification rule applies for SSI.
3. UPLs calculated from background well results for December 2015 through October 2017.
4. Optional verification resampling consistent with the selected statistical methods was not performed.

I:\25216071.00\Reports\2018 ASD Report - No. 2\Tables\[Tables-NED-1,2, and 3.xlsx]Table 1

Table 2. Analytical Results - Appendix III Constituents with SSIs
Nelson Dewey Generating Station
Cassville, Wisconsin

Well Group	Well	Collection Date	Boron (µg/L)	Field pH (St. Units)	Fluoride (mg/L)	Sulfate (mg/L)	Total Dissolved Solids (mg/L)	Calcium (µg/L)
Background	B-26	12/9/2015	29.6	7.35	<0.2 U	37.1	424	81300
		4/12/2016	33.7	7.43	<0.2 U	38	456	86200
		7/19/2016	28.6	7.14	<0.2 U	36.2	504	82400
		10/20/2016	33	7.19	0.13 J	35	466	82700
		1/12/2017	35.2	7.57	<0.1 U	35	446	89400
		4/17/2017	50.1	7.54	<0.1 U	32.4	468	89000
		6/7/2017	45.8	7.22	<0.1 U	31	538	105000
		8/2/2017	54.6	7.21	<0.1 U	28.5	496	98100
		10/19/2017	47.4	7.5	<0.1 U	25.3	542	102000
		4/2/2018	48.0	7.64	<0.1 U	19.1	464	88100
Compliance	B-11A	12/9/2015	124	7.7	0.3 J	3.2 J	338	58800
		4/13/2016	116	7.75	0.38 J	3.8 J	362	60100
		7/19/2016	104	7.42	0.35 J	2.7 J	336	54000
		10/19/2016	112	7.47	0.36	3 J	340	54600
		1/12/2017	106	7.89	0.43	2.3 J	322	54500
		4/17/2017	100	7.38	0.36	<1 U	326	54800
		6/8/2017	102	7.78	0.37	1.4 J	338	57800
		8/1/2017	105	7.67	0.37	2.4 J	326	54500
		10/19/2017	116	7.96	0.32	5.1	322	55000
		4/2/2018	91	8.04	0.24 J	12.3	336	53300
	B-11B	12/9/2015	1140	8.06	0.44	134	494	64100
		4/13/2016	1360	8.14	0.49	148	512	65400
		7/19/2016	1210	7.77	0.45	165	520	59000
		10/20/2016	1460	7.91	0.53	178	496	59100
		1/12/2017	1540	8.18	0.52	182	488	63900
		4/17/2017	1760	7.83	0.58	181	502	67400
		6/8/2017	1880	8.07	0.59	191	516	68200
		8/1/2017	1800	7.77	0.6	179	498	61400
		10/19/2017	1500	7.77	0.59	175	510	52400
		4/2/2018	2020	8.42	0.65	200	550	59000
	B-11R	12/9/2015	4170	7.07	<1 U	75.4	616	126000
		4/13/2016	3410	6.78	<0.2 U	18.4	682	141000
		7/19/2016	3530	6.69	0.22 J	115	698	130000
		10/20/2016	4120	6.77	<0.5 U	118	660	128000
		1/12/2017	3530	6.98	<0.5 U	108	616	126000
		4/17/2017	3520	7.11	<0.5 U	108	620	123000
		6/7/2017	3420	6.8	<0.5 U	98.2	630	128000
		8/1/2017	2040	6.7	0.25 J	126	738	139000
		10/19/2017	3120	7.22	<0.5 U	97.7	586	117000
		4/2/2018	3180	7.14	<0.5 U	88.1	638	124000

Table 2. Analytical Results - Appendix III Constituents with SSIs
Nelson Dewey Generating Station
Cassville, Wisconsin

Well Group	Well	Collection Date	Boron (µg/L)	Field pH (St. Units)	Fluoride (mg/L)	Sulfate (mg/L)	Total Dissolved Solids (mg/L)	Calcium (µg/L)
Compliance	B-31A	12/9/2015	59	7.65	<0.2 U	26.2	274	48400
		4/13/2016	79.2	7.63	0.22 J	22.6	302	51900
		7/19/2016	67.2	7.25	<0.2 U	24.2	280	48900
		10/20/2016	63.7	7.54	0.18 J	27.2	292	45800
		1/12/2017	76.4	7.82	0.22 J	29.8	284	46600
		4/17/2017	69.9	7.83	0.19 J	31	318	46900
		6/8/2017	58.5	7.74	0.18 J	31.2	296	49400
		8/1/2017	56.3	7.56	0.2 J	26.6	284	46000
		10/19/2017	63.9	7.92	0.16 J	26.1	290	49600
		4/2/2018	74.8	8.0	0.13 J	27.4	282	49300
	B-31R	12/9/2015	851	6.79	<0.2 U	28.8	374	77400
		4/13/2016	838	6.76	<0.2 U	34.1	404	84900
		7/19/2016	641	6.44	<0.2 U	38.5	406	76100
		10/20/2016	1020	6.53	0.17 J	49.7	452	84200
		1/12/2017	749	6.8	0.26 J	34.9	380	73900
		4/17/2017	929	6.8	0.12 J	43	416	85600
		6/8/2017	895	6.67	0.13 J	41.1	426	90700
		8/1/2017	1550	6.56	0.16 J	55.6	432	93400
		10/19/2017	645	7.19	0.14 J	19.2	358	75700
		4/2/2018	540	6.76	<0.1U	22	374	72900
	B-7R	12/9/2015	110	6.74	<1 U	17 J	198	31700
		4/13/2016	115	6.8	<0.2 U	2.5 J	218	42300
		7/18/2016	164	6.29	<0.2 U	2.4 J	220	44400
		10/19/2016	154	6.55	<0.5 U	<5 U	288	56600
		1/12/2017	159	7.43	<0.5 U	<5 U	240	56700
		4/17/2017	129	6.6	<0.5 U	<5 U	278	61400
		6/7/2017	110	6.65	<0.5 U	<5 U	240	51600
		8/1/2017	129	6.28	<0.1 U	3.7	220	50400
		10/19/2017	159	6.88	<0.5 U	<5 U	242	56200
		4/2/2018	121	6.57	<0.5 U	<5 U	220	49200

Abbreviations:
µg/L = micrograms per liter or parts per billion (ppb)
mg/L = milligrams per liter or parts per million (ppm)
Flags:
U = Not detected.
J = Estimated concentration at or above the LOD and below the LOQ.

Created by:	NDK	Date:	3/8/2018
Last revision by:	NDK	Date:	10/2/2018
Checked by:	AJR	Date:	10/3/2018

I:\25216071.00\Reports\2018 ASD Report - No. 2\Tables\[Tables-NED-1,2, and 3.xlsx]2. Analytical Results

Table 3. Groundwater Elevations - State and CCR Monitoring Wells

Nelson Dewey Generating Station

Cassville, Wisconsin

	Ground Water Elevation in feet above mean sea level (amsl)											
Well Number	**B-7R**	**B-11R**	**B-11A**	**B-11B**	**B-26**	**B-26A**	**B-31R**	**B-31A**	**B-35**	**B-35A**	**B-37**	**B-37A**
Top of Casing Elevation (feet amsl)	623.35	622.62	622.12	621.89	626.40	626.40	622.42	622.69	620.78	621.2	614.85	614.85
Screen Length (ft)	10	10	5	5	10	5	10	5	10	5	10	5
Total Depth (ft from top of casing)	23.05	24.15	52.00	113.90	31.67	45.78	22.82	35.52	16.60	47.00	19.95	48.20
Top of Well Screen Elevation (ft)	610.30	608.47	575.12	512.99	604.73	585.62	609.60	592.17	614.18	579.20	604.90	571.65
Measurement Date												
December 8, 2015	606.69	606.71	606.30	606.26	606.80	--	607.40	606.39	--	--	--	--
April 12, 2016	609.32	609.32	608.71	608.68	609.81	609.72	609.34	609.01	609.73	609.65	608.79	608.79
October 9-10, 2017	606.93	606.25	607.01	606.94	606.22	606.13	606.68	606.93	606.65	606.71	--	--
October 20, 2017	609.60	609.42	609.58	609.65	608.84	--	609.47	609.43	--	--	609.40	609.40
April 2, 2018	604.82	606.27	606.63	606.55	606.49	606.37	604.44	606.46	606.68	606.70	606.77	606.83
Bottom of Well Elevation (ft)	600.30	598.47	570.12	507.99	594.73	580.62	599.60	587.17	604.18	574.20	594.90	566.65

Notes:
NM = not measured

Created by: NDK Date: 3/9/2018
Last revision by: NDK Date: 9/17/2018
Checked by: AJR Date: 9/19/2018

I:\25216071.00\Reports\2018 ASD Report - No. 2\Tables\[Tables-NED-1,2, and 3.xlsx]3.GW Elevation

Figures

N

CASSVILLE AND TURKEY RIVER QUADRANGLES
WISCONSIN–IOWA
7.5 MINUTE SERIES (TOPOGRAPHIC)
1978/1980
SCALE: 1" = 2,000'

CLIENT	WISCONSIN POWER AND LIGHT CO. NELSON DEWEY GENERATING STATION 11999 COUNTY HIGHWAY VV CASSVILLE WI, 53806	SITE	WISCONSIN POWER AND LIGHT NELSON DEWEY GENERATING STATION CASSVILLE, WISCONSIN

SITE LOCATION MAP

PROJECT NO.	25216071.17	DRAWN BY:	KP/BJM
DRAWN:	12/18/13	CHECKED BY:	KAK
REVISED:	01/02/18	APPROVED BY:	TK

ENGINEER

SCS ENGINEERS
2830 DAIRY DRIVE MADISON, WI 53718-6751
PHONE: (608) 224-2830

FIGURE
1

I:\25216071.00\Drawings\Site Location.dwg, 1/23/2018 12:15:55 PM

N

NOTES:

1. AERIAL PHOTOGRAPH FROM THE NATIONAL AGRICULTURE IMAGERY PROGRAM AND PUBLISHED BY THE USDA FSA AERIAL PHOTOGRAPHY FIELD OFFICE. DATE OF IMAGE IS AUGUST 24, 2015.

500 0 500

SCALE: 1" = 500'

PROJECT NO.	25216071.17	DRAWN BY:	BJM
DRAWN:	12/18/13	CHECKED BY:	KAK
REVISED:	01/03/18	APPROVED BY:	SCC 04/16/18

ENGINEER: SCS ENGINEERS
2830 DAIRY DRIVE MADISON, WI 53718-6751
PHONE: (608) 224-2830

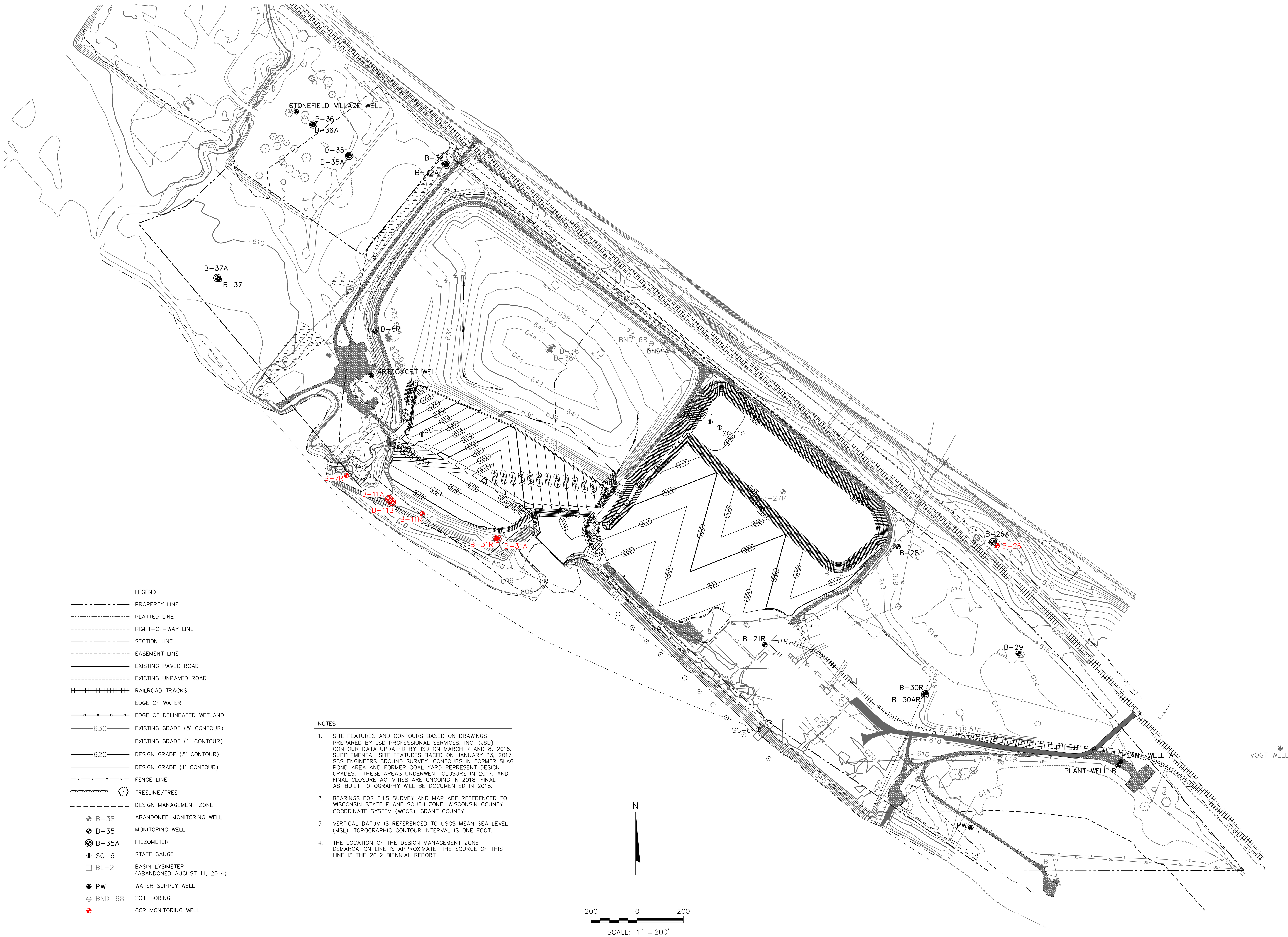
CLIENT: WISCONSIN POWER AND LIGHT CO.
NELSON DEWEY GENERATING STATION
11999 COUNTY HIGHWAY VV
CASSVILLE WI, 53806

SITE: WISCONSIN POWER AND LIGHT
NELSON DEWEY GENERATING STATION
CASSVILLE WISCONSIN

AERIAL VIEW

FIGURE 2

I:\25216071.00\Drawings\Nelson Dewey Alternative Source Demonstration Report\Site Aerial.dwg, 4/16/2018 3:58:28 PM



LEGEND

- PROPERTY LINE
- PLATTED LINE
- RIGHT-OF-WAY LINE
- SECTION LINE
- EASEMENT LINE
- EXISTING PAVED ROAD
- EXISTING UNPAVED ROAD
- RAILROAD TRACKS
- EDGE OF WATER
- EDGE OF DELINEATED WETLAND
- 630 EXISTING GRADE (5' CONTOUR)
- EXISTING GRADE (1' CONTOUR)
- 620 DESIGN GRADE (5' CONTOUR)
- DESIGN GRADE (1' CONTOUR)
- FENCE LINE
- TREELINE/TREE
- DESIGN MANAGEMENT ZONE
- B-38 ABANDONED MONITORING WELL
- B-35 MONITORING WELL
- B-35A PIEZOMETER
- SG-6 STAFF GAUGE
- BL-2 BASIN LYSIMETER (ABANDONED AUGUST 11, 2014)
- PW WATER SUPPLY WELL
- BND-68 SOIL BORING
- CCR MONITORING WELL

NOTES

1. SITE FEATURES AND CONTOURS BASED ON DRAWINGS PREPARED BY JSD PROFESSIONAL SERVICES, INC. (JSD). CONTOUR DATA UPDATED BY JSD ON MARCH 7 AND 8, 2016. SUPPLEMENTAL SITE FEATURES BASED ON JANUARY 23, 2017 SCS ENGINEERS GROUND SURVEY. CONTOURS IN FORMER SLAG POND AREA AND FORMER COAL YARD REPRESENT DESIGN GRADES. THESE AREAS UNDERWENT CLOSURE IN 2017, AND FINAL CLOSURE ACTIVITIES ARE ONGOING IN 2018. FINAL AS-BUILT TOPOGRAPHY WILL BE DOCUMENTED IN 2018.
2. BEARINGS FOR THIS SURVEY AND MAP ARE REFERENCED TO WISCONSIN STATE PLANE SOUTH ZONE, WISCONSIN COUNTY COORDINATE SYSTEM (WCCS), GRANT COUNTY.
3. VERTICAL DATUM IS REFERENCED TO USGS MEAN SEA LEVEL (MSL). TOPOGRAPHIC CONTOUR INTERVAL IS ONE FOOT.
4. THE LOCATION OF THE DESIGN MANAGEMENT ZONE DEMARCATION LINE IS APPROXIMATE. THE SOURCE OF THIS LINE IS THE 2012 BIENNIAL REPORT.

PROJECT NO.	25216071.17	DRAWN BY:	KP/BJM
DRAWN:	01/13/14	CHECKED BY:	NK
REVISED:	03/14/18	APPROVED BY:	SCC 4/16/18

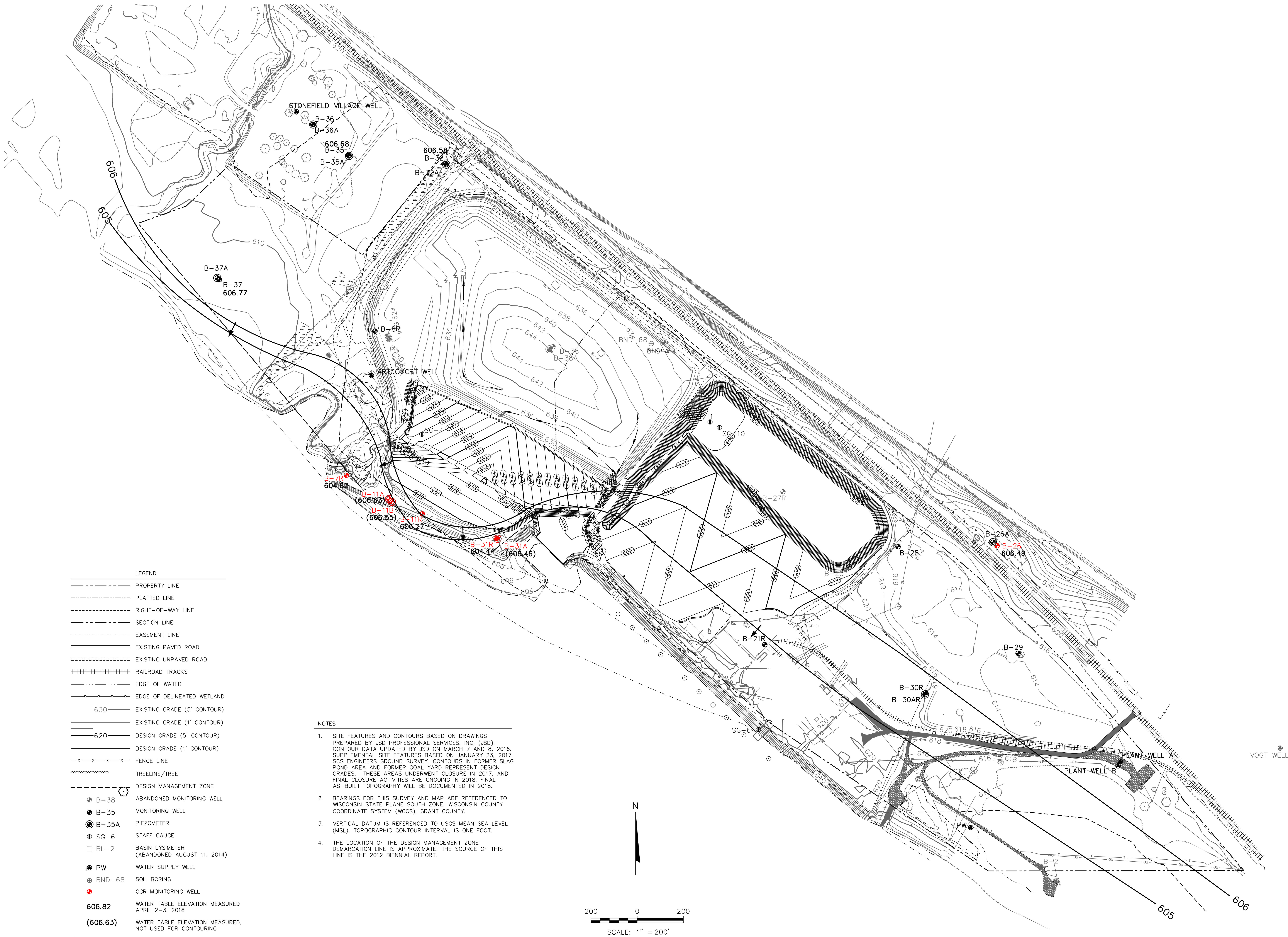
ENGINEER: SCS ENGINEERS
2830 DAIRY DRIVE MADISON, WI 53718-6751
PHONE: (608) 224-2830

CLIENT: WISCONSIN POWER AND LIGHT CO.
NELSON DEWEY GENERATING STATION
11999 COUNTY HIGHWAY VV
CASSVILLE, WI 53806

SITE: WISCONSIN POWER AND LIGHT
NELSON DEWEY GENERATING STATION
CASSVILLE, WISCONSIN

MONITORING WELL LOCATION MAP

FIGURE 3



LEGEND

- PROPERTY LINE
- PLATTED LINE
- RIGHT-OF-WAY LINE
- SECTION LINE
- EASEMENT LINE
- EXISTING PAVED ROAD
- EXISTING UNPAVED ROAD
- RAILROAD TRACKS
- EDGE OF WATER
- EDGE OF DELINEATED WETLAND
- 630 — EXISTING GRADE (5' CONTOUR)
- EXISTING GRADE (1' CONTOUR)
- 620 — DESIGN GRADE (5' CONTOUR)
- DESIGN GRADE (1' CONTOUR)
- FENCE LINE
- TREELINE/TREE
- DESIGN MANAGEMENT ZONE
- B-38 ABANDONED MONITORING WELL
- B-35 MONITORING WELL
- B-35A PIEZOMETER
- SG-6 STAFF GAUGE
- BL-2 BASIN LYSIMETER (ABANDONED AUGUST 11, 2014)
- PW WATER SUPPLY WELL
- BND-68 SOIL BORING
- CCR MONITORING WELL
- 606.82 WATER TABLE ELEVATION MEASURED APRIL 2-3, 2018
- (606.63) WATER TABLE ELEVATION MEASURED, NOT USED FOR CONTOURING
- 606 — WATER TABLE CONTOUR
- APPROXIMATE GROUNDWATER FLOW DIRECTION

NOTES

1. SITE FEATURES AND CONTOURS BASED ON DRAWINGS PREPARED BY JSD PROFESSIONAL SERVICES, INC. (JSD). CONTOUR DATA UPDATED BY JSD ON MARCH 7 AND 8, 2016. SUPPLEMENTAL SITE FEATURES BASED ON JANUARY 23, 2017 SCS ENGINEERS GROUND SURVEY. CONTOURS IN FORMER SLAG POND AREA AND FORMER COAL YARD REPRESENT DESIGN GRADES. THESE AREAS UNDERWENT CLOSURE IN 2017, AND FINAL CLOSURE ACTIVITIES ARE ONGOING IN 2018. FINAL AS-BUILT TOPOGRAPHY WILL BE DOCUMENTED IN 2018.
2. BEARINGS FOR THIS SURVEY AND MAP ARE REFERENCED TO WISCONSIN STATE PLANE SOUTH ZONE, WISCONSIN COUNTY COORDINATE SYSTEM (WCCS), GRANT COUNTY.
3. VERTICAL DATUM IS REFERENCED TO USGS MEAN SEA LEVEL (MSL). TOPOGRAPHIC CONTOUR INTERVAL IS ONE FOOT.
4. THE LOCATION OF THE DESIGN MANAGEMENT ZONE DEMARCATION LINE IS APPROXIMATE. THE SOURCE OF THIS LINE IS THE 2012 BIENNIAL REPORT.

PROJECT NO.	25216071.18	DRAWN BY:	RJG
DRAWN:	09/25/18	CHECKED BY:	NK/SC
REVISED:	10/02/18	APPROVED BY:	TK

ENGINEER

SCS ENGINEERS
2830 DAIRY DRIVE MADISON, WI 53718-6751
PHONE: (608) 224-2830

CLIENT

WISCONSIN POWER AND LIGHT CO.
NELSON DEWEY GENERATING STATION
11999 COUNTY HIGHWAY VV
CASSVILLE, WI 53806

SITE

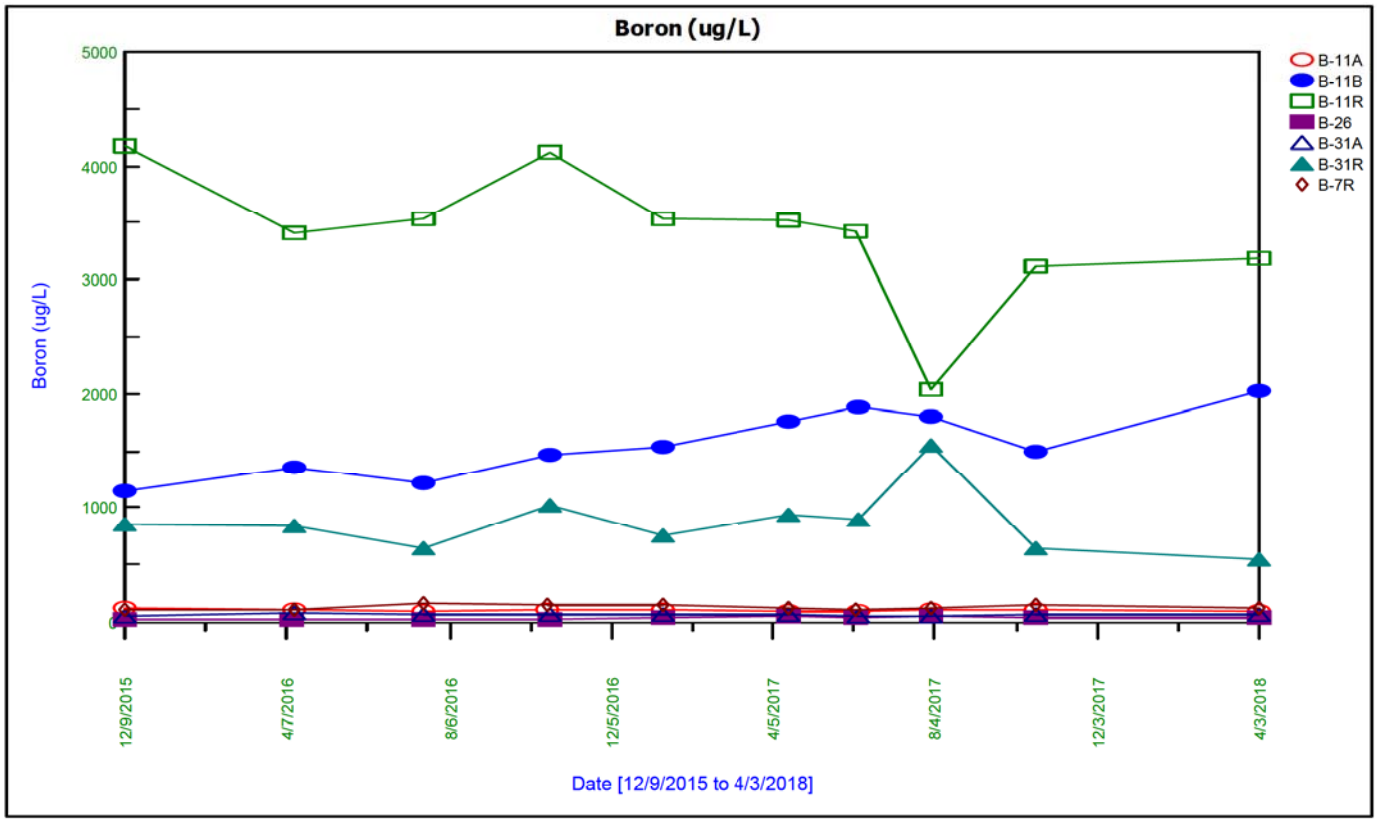
WISCONSIN POWER AND LIGHT
NELSON DEWEY GENERATING STATION
CASSVILLE, WISCONSIN

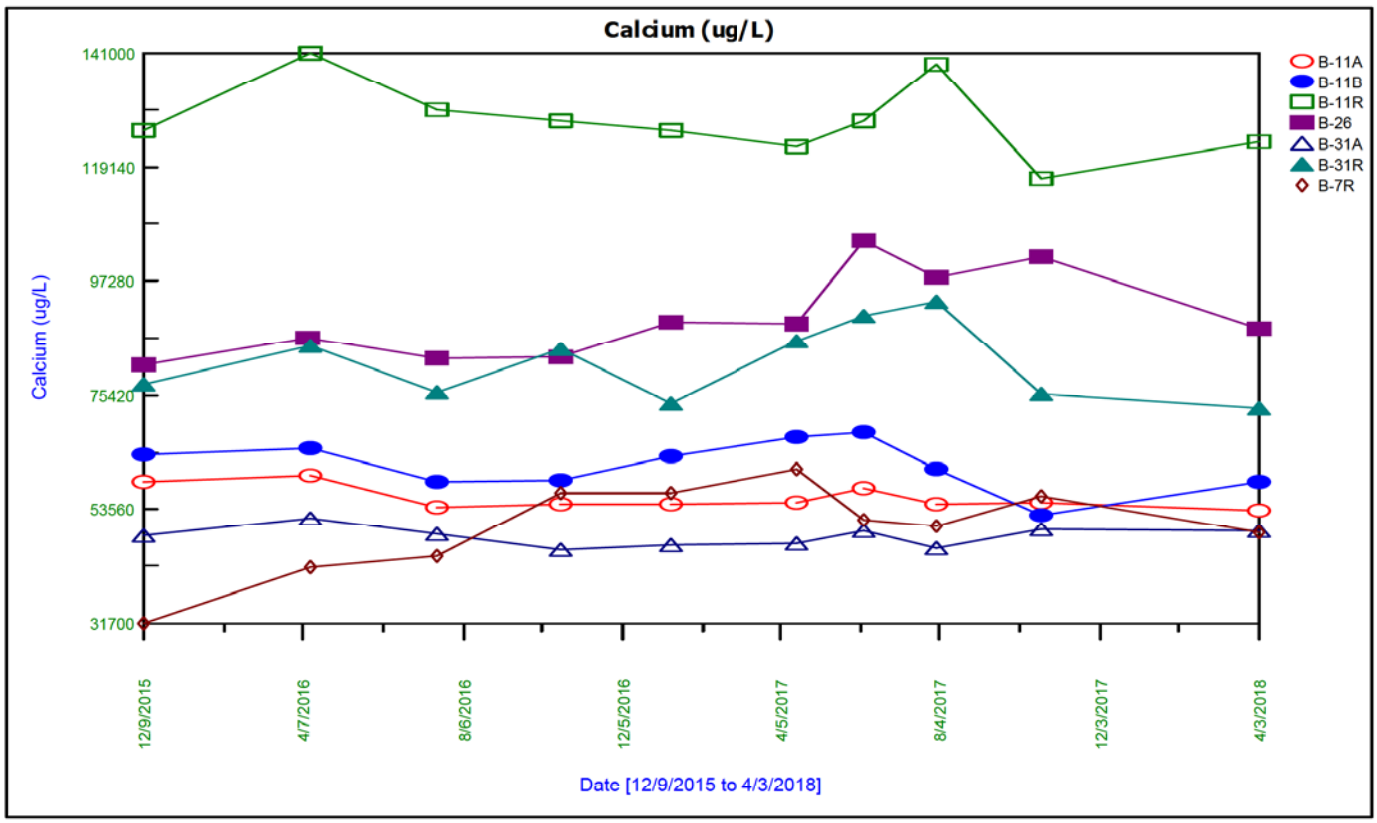
WATER TABLE FLOW MAP
APRIL 2018

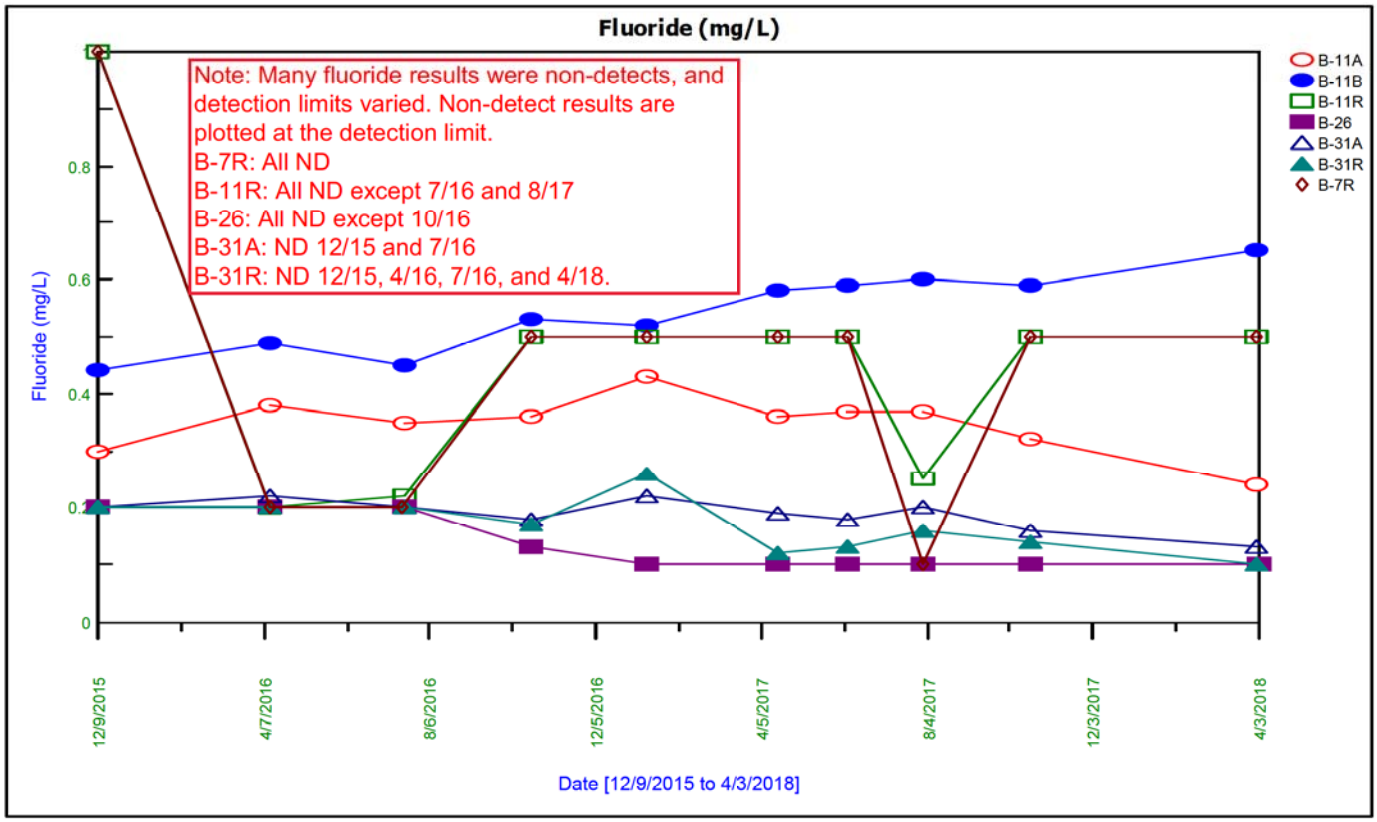
FIGURE
4

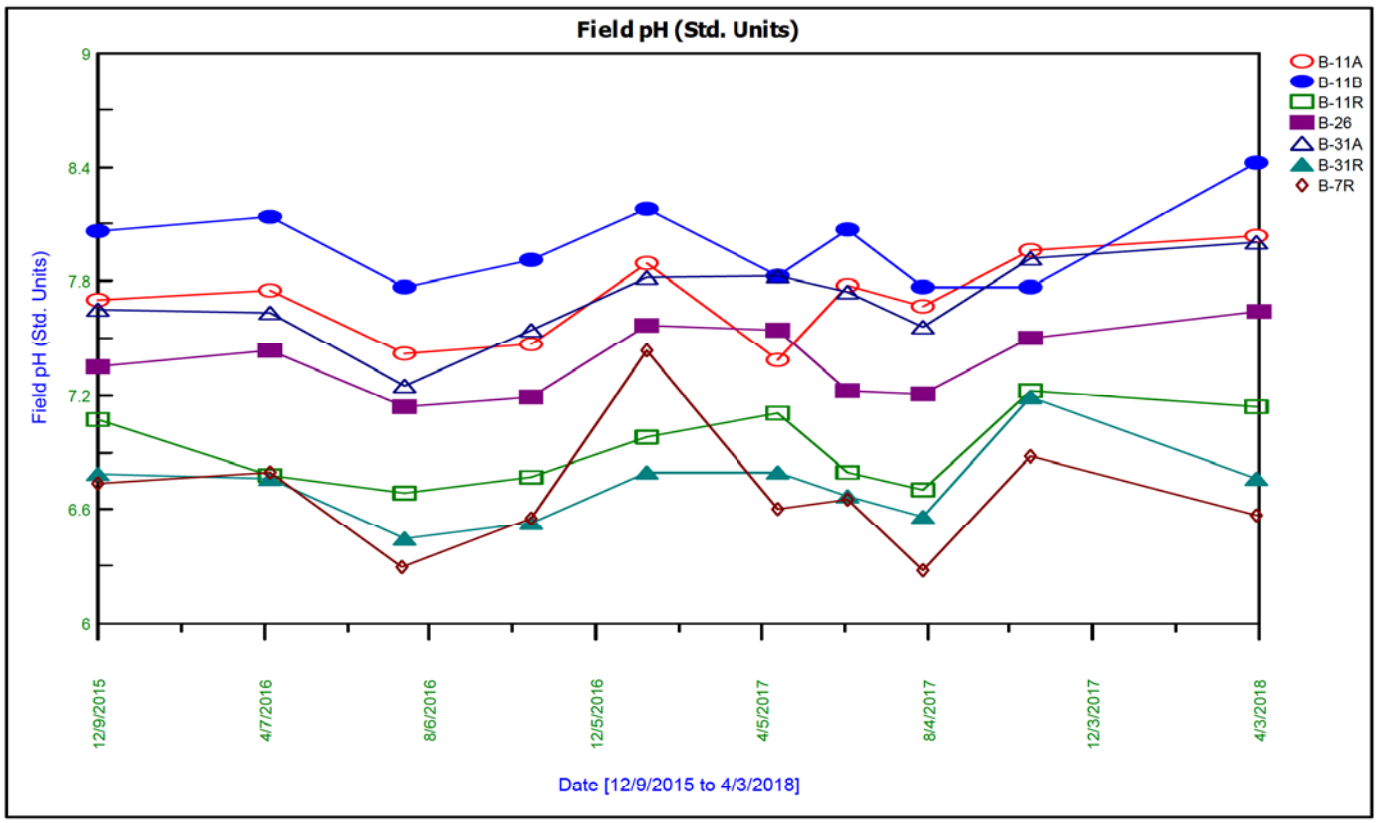
Appendix A

CCR Well Trend Plots

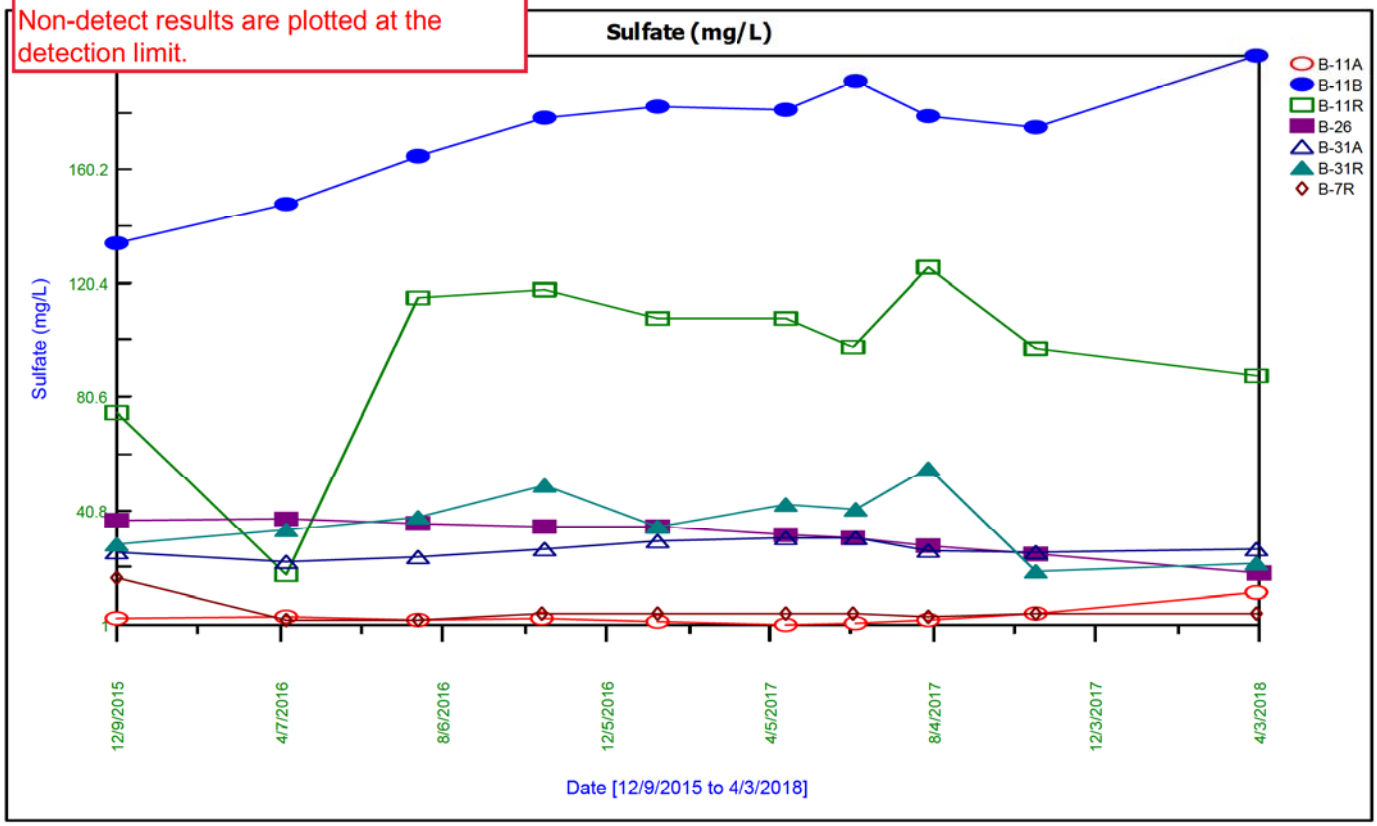

Boron (ug/L)
5000
4000
3000
2000
1000
Boron (ug/L)
B-11A
B-11B
B-11R
B-26
B-31A
B-31R
B-7R
12/9/2015
4/7/2016
8/6/2016
12/5/2016
4/5/2017
8/4/2017
12/3/2017
4/3/2018
Date [12/9/2015 to 4/3/2018]

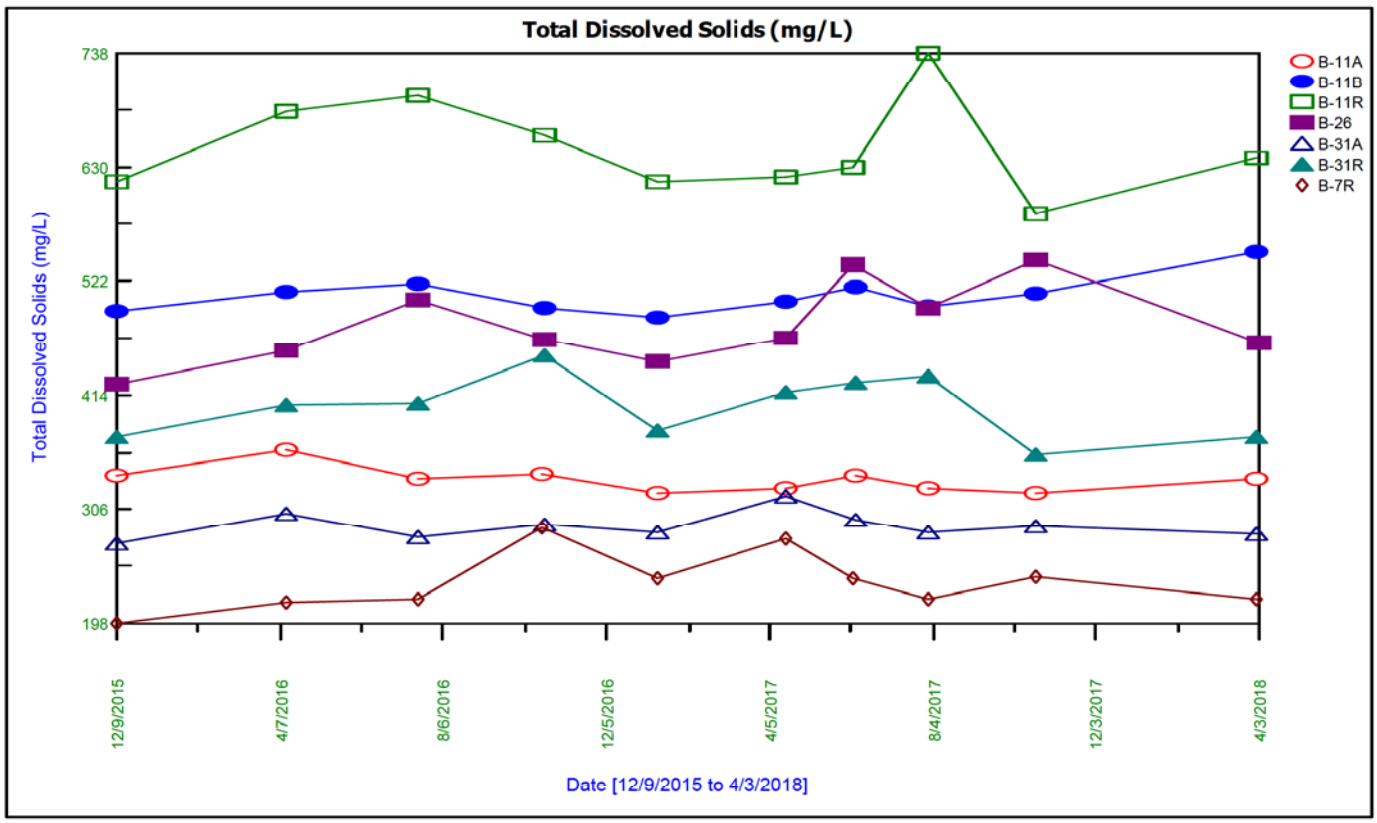

Calcium (ug/L)
141000
119140
97280
75420
53560
31700
Calcium (ug/L)
B-11A
B-11B
B-11R
B-26
B-31A
B-31R
B-7R
12/9/2015
4/7/2016
8/6/2016
12/5/2016
4/5/2017
8/4/2017
12/3/2017
4/3/2018
Date [12/9/2015 to 4/3/2018]


Fluoride (mg/L)
Note: Many fluoride results were non-detects, and detection limits varied. Non-detect results are plotted at the detection limit.
B-7R: All ND
B-11R: All ND except 7/16 and 8/17
B-26: All ND except 10/16
B-31A: ND 12/15 and 7/16
B-31R: ND 12/15, 4/16, 7/16, and 4/18.
B-11A
B-11B
B-11R
B-26
B-31A
B-31R
B-7R
Fluoride (mg/L)
0
0.2
0.4
0.6
0.8
12/9/2015
4/7/2016
8/6/2016
12/5/2016
4/5/2017
8/4/2017
12/3/2017
4/3/2018
Date [12/9/2015 to 4/3/2018]


Field pH (Std. Units)
B-11A
B-11B
B-11R
B-26
B-31A
B-31R
B-7R
Field pH (Std. Units)
6
6.6
7.2
7.8
8.4
9
12/9/2015
4/7/2016
8/6/2016
12/5/2016
4/5/2017
8/4/2017
12/3/2017
4/3/2018
Date [12/9/2015 to 4/3/2018]

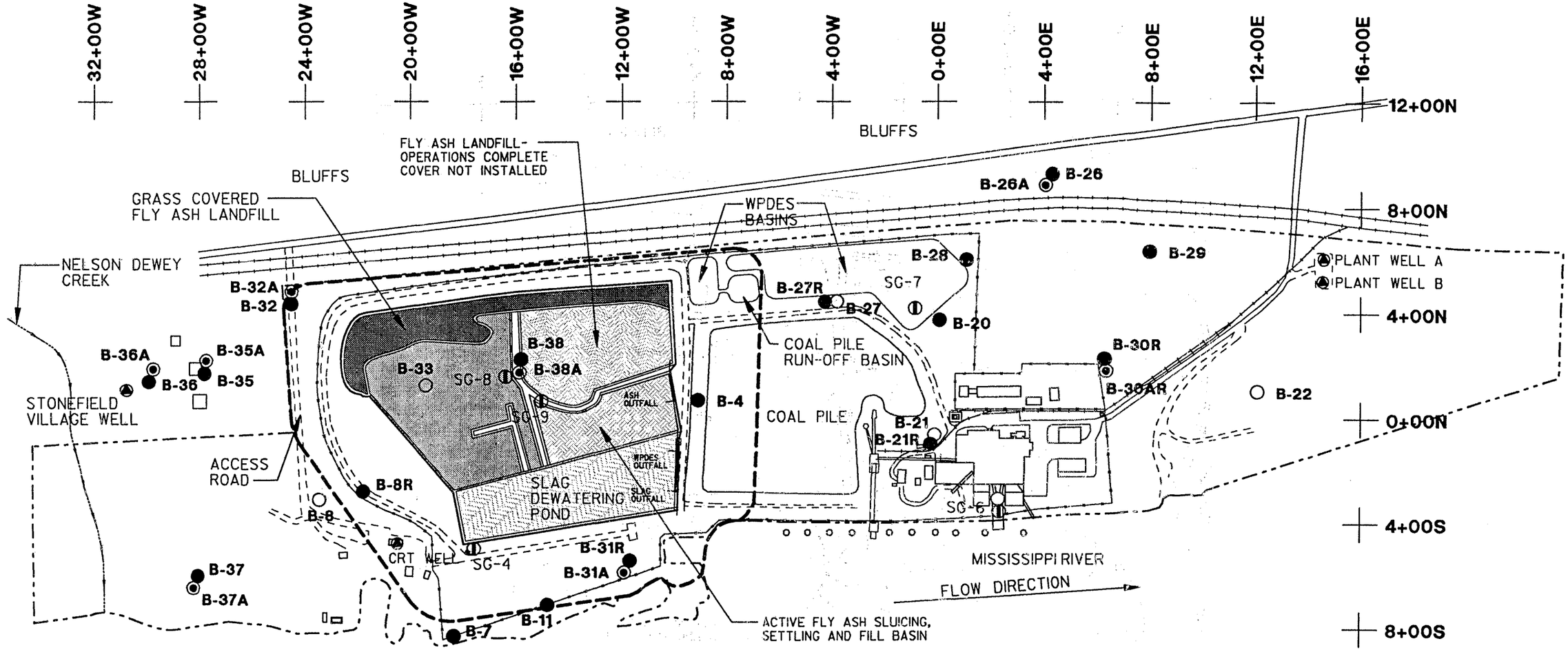
Note: B7R: 10/16 through 4/18 results for sulfate were non-detects with the exception of 8/17.
B-11A: 4/17 result for sulfate was non-detects.
Non-detect results are plotted at the detection limit.





Appendix B

1994 RMT Environmental Contamination Assessment Information



LEGEND

● B-28	WATER TABLE OBSERVATION WELL
◉ B-28A	PIEZOMETER
○ B-33	ABANDONED WELL
▲ CRT WELL	WATER SUPPLY WELL
◐ SG-4	STAFF GAUGE
———	APPROXIMATE LIMITS OF LICENSED LANDFILL
——+——+——	RAILROAD TRACK
====	ROAD
— - — - —	PROPERTY LINE
— — — —	DESIGN MANAGEMENT ZONE
+ 0+00S	LOCAL GRID
□	BUILDINGS
o	PILINGS

NOTES

1. BASE MAP WELLHEAD LOCATIONS SURVEYED BY SCHMITT ENGINEERING IN OCTOBER 1993.
2. OTHER SITE INFORMATION PROVIDED BY WP&L.

TRUE

0 400 800

SCALE: 1"=400'

WISCONSIN POWER & LIGHT
NELSON DEWEY GENERATING STATION
EXISTING CONDITIONS
OCTOBER 1993

RMT, INC.

Dwn.By:	CDH
Approved By:	ELM
Date:	OCTOBER 1994
Proj.#:	2767.03
File #:	2767030LDGN

Plot File = P:\MSPC\2767030\DGN\2767030LDGN
Plot Date = Fri Oct 21 08:28:28 1994
Pen Table =DEFAULT.TBL

OCT 31 1994

FIGURE 4

TABLE 5

SUMMARY OF LEACHING TEST RESULTS

	Fly Ash		Slag
Year	1983	1990 to 1992	1987 to 1992
Coal Type	Eastern (and Western)	Western (and Eastern)	Western (and Eastern) [1]
Water:Solid Ratio	2:1	4:1	4:1
Extraction Time	24 hours	48 hours	48 hours
Number of Samples	1	3	6
Arsenic (mg/L)	< 0.001	0.05 to 2.02	< 0.002 to 0.081
Selenium (mg/L)	NA	0.42 to 160	< 0.002 to 0.045
Boron (mg/L)	420	4.63 to 37.34	< 0.010 to 1.05
Iron (mg/L)	NA	NA	< 0.02 to 0.98
Sulfate (mg/L)	13,070	2,000 to 16,700	2.0 to < 5.0
pH (SU)	6.6	10.3 to 12.5	5.6 to 9.9

NOTES:

1. 1983 fly ash leaching data from RMT (1984); remaining leaching data provided by WP&L.
2. NA = Not Analyzed.

PROJECT NUMBER: 1831.28
BEGINNING DATE: 01-JUN-93
ENDING DATE: 07-SEP-93

TABLE 6
SLAG AND ASH BASIN CHEMISTRY

PARAMETER	UNITS	FLY ASH BASIN 07-SEP-93 3302-011		SLAG BASIN 07-SEP-93 3302-010	
COLOR, FIELD		CLEAR		CLEAR	
CONDUCTANCE, SPECIFIC	UMHOS/CM	5190		400	
ODOR, FIELD		NONE		NONE	
PH, FIELD	SU	8.1		7.4	
TEMPERATURE	DEG C	17		18	
TURBIDITY, FIELD		SLIGHT		SLIGHT	
ALKALINITY AS CACO3	MG/L	230		160	
HARDNESS AS CACO3	MG/L	930		200	
SOLIDS, TOTAL DISSOLVED	MG/L	410		300	
SULFATE	MG/L	3300		50	
ARSENIC, TOTAL	UG/L	60		8.0	
BARIUM, TOTAL	UG/L	270		150	
BORON, TOTAL	UG/L	2300		210	
CADMIUM, TOTAL	UG/L	5.4		< 0.30	
CHROMIUM, TOTAL	UG/L	11		< 10	
IRON, TOTAL	UG/L	1600		2000	
LEAD, TOTAL	UG/L	< 3.0		< 3.0	
MERCURY, TOTAL	UG/L	< 0.20		< 0.20	
SELENIUM, TOTAL	UG/L	36	I	2.1	L
SILVER, TOTAL	UG/L	< 1.0		< 1.0	

18-OCT-94

wpvalid:SWI.BJC

PROJECT NUMBER: 1831.28
BEGINNING DATE: 01-JUN-93
ENDING DATE: 29-OCT-93

TABLE 8
GROUNDWATER CHEMISTRY

PARAMETER	UNITS	B-04 01-JUN-93 1670-015	B-04 07-SEP-93 3293-010	B-07 ND 01-JUN-93 1670-020	B-07 ND 07-SEP-93 3302-004	B-08 01-JUN-93 1670-001	B-08R 07-SEP-93 3293-009
COLOR, FIELD		CLEAR	CLEAR	CLEAR	CLEAR	CLEAR	CLEAR
CONDUCTANCE, SPECIFIC	UMHOS/CM	1160	1240	460	550	670	1160
DEPTH TO WATER	FEET	9.90	12.75	12.83	16.12	5.68	20.13
ODOR, FIELD		NONE	NONE	NONE	NONE	NONE	NONE
PH, FIELD	SU	7.3	7.5	7.0	6.9	7.1	6.8
TEMPERATURE	DEG C	15	10	14	12	15	7
TURBIDITY, FIELD		NONE	SLIGHT	NONE	SLIGHT	NONE	MODERATE
WATER ELEVATION	FEET	610.68	607.83	610.97	607.68	610.51	
ALKALINITY AS CACO3	MG/L	72	92	160	190	220	440
CHLORIDE	MG/L	18	23	17	15	9.4	2.8
COD	MG/L						
FLUORIDE	MG/L	0.58	5.5	0.26	0.32	< 0.10	0.12
HARDNESS AS CACO3	MG/L	220	120	210	250	370	620
NITROGEN, NITRATE + NITRITE	MG/L	0.15	0.33	< 0.050	< 0.050	< 0.050	4.2
SOLIDS, TOTAL DISSOLVED	MG/L	900	940	300	360	460	770
SULFATE	MG/L	500	560	74	100	180	180
ARSENIC, DISSOLVED	UG/L	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
BARIUM, DISSOLVED	UG/L	68	< 50	61	73	63	50
BORON, DISSOLVED	UG/L	1900	4200	230	< 200	2200	9400
CADMIUM, DISSOLVED	UG/L	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	0.38
CHROMIUM, DISSOLVED	UG/L	< 10	< 10	< 10	< 10	< 10	< 10
COPPER, DISSOLVED	UG/L	< 20	< 20	< 20	< 20	< 20	< 20
IRON, DISSOLVED	UG/L	720	890	2800	4100	< 100	< 100
LEAD, DISSOLVED	UG/L	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
MANGANESE, DISSOLVED	UG/L	1200	720	970	1500	17	3400
MERCURY, DISSOLVED	UG/L	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
SELENIUM, DISSOLVED	UG/L	6.9	3.2	< 1.0 L	< 1.0 L	< 1.0 L	34
SILVER, DISSOLVED	UG/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
ZINC, DISSOLVED	UG/L	1000	100	22	< 20	220	< 20

PROJECT NUMBER: 1831.28
BEGINNING DATE: 01-JUN-93
ENDING DATE: 29-OCT-93

TABLE 8
GROUNDWATER CHEMISTRY

PARAMETER	UNITS	B-11 07-SEP-93 X0001	B-11 29-OCT-93 3485-001	B-20 07-SEP-93 X0002	B-26 01-JUN-93 1670-022	B-26 07-SEP-93 3302-005	B-26A 01-JUN-93 1670-023
COLOR, FIELD					CLEAR	CLEAR	CLEAR
CONDUCTANCE, SPECIFIC	UMHOS/CM	1500		310	610	670	660
DEPTH TO WATER	FEET	15.91		10.81	16.22	18.85	16.20
ODOR, FIELD					NONE	NONE	NONE
PH, FIELD	SU				7.1	7.2	7.0
TEMPERATURE	DEG C	13	13	14	14	11	15
TURBIDITY, FIELD					NONE	SLIGHT	NONE
WATER ELEVATION	FEET				610.18	607.55	610.19
ALKALINITY AS CACO3	MG/L		470		320	300	340
CHLORIDE	MG/L				21	43	33
COD	MG/L						
FLUORIDE	MG/L				< 0.10	0.15	< 0.10
HARDNESS AS CACO3	MG/L		810		390	410	400
NITROGEN, NITRATE + NITRITE	MG/L				2.6	4.9	2.0
SOLIDS, TOTAL DISSOLVED	MG/L		520		440	450	450
SULFATE	MG/L		360		34	34	33
ARSENIC, DISSOLVED	UG/L		8.4		< 3.0	< 3.0	< 3.0
BARIUM, DISSOLVED	UG/L		100		62	68	96
BORON, DISSOLVED	UG/L		5100		< 200	< 200	< 200
CADMIUM, DISSOLVED	UG/L		< 0.30		< 0.30	< 0.30	< 0.30
CHROMIUM, DISSOLVED	UG/L		< 10		< 10	< 10	< 10
COPPER, DISSOLVED	UG/L				< 20	< 20	< 20
IRON, DISSOLVED	UG/L		55000		< 100	< 100	< 100
LEAD, DISSOLVED	UG/L		< 3.0		< 3.0	< 3.0	< 3.0
MANGANESE, DISSOLVED	UG/L				< 5.0	< 5.0	< 5.0
MERCURY, DISSOLVED	UG/L		< 0.20		< 0.20	< 0.20	< 0.20
SELENIUM, DISSOLVED	UG/L		< 1.0 LNP		< 1.0 L	< 1.0 L	< 1.0 L
SILVER, DISSOLVED	UG/L		< 10		< 1.0	< 1.0	< 1.0
ZINC, DISSOLVED	UG/L				< 20	< 20	< 20

PROJECT NUMBER: 1831.28
BEGINNING DATE: 01-JUN-93
ENDING DATE: 29-OCT-93

TABLE 8
GROUNDWATER CHEMISTRY

PARAMETER	UNITS	B-26A 07-SEP-93 3302-006	B-27R 07-SEP-93 X0003	B-28 01-JUN-93 1670-014	B-28 07-SEP-93 3302-003	B-29 07-SEP-93 X0004	B-30AR 01-JUN-93 1670-013
COLOR, FIELD		CLEAR		CLEAR	CLEAR		CLEAR
CONDUCTANCE, SPECIFIC	UMHOS/CM	440	370	190	230	360	220
DEPTH TO WATER	FEET	18.84	14.67	6.40	9.08	9.57	12.33
ODOR, FIELD		NONE		NONE	NONE		NONE
PH, FIELD	SU	7.2		6.1	6.0		7.2
TEMPERATURE	DEG C	11	14	17	15	15	17
TURBIDITY, FIELD		NONE		SLIGHT	MODERATE		NONE
WATER ELEVATION	FEET	607.55		610.46	607.74	607.26	610.11
ALKALINITY AS CACO3	MG/L	340		26	54		200
CHLORIDE	MG/L	25		4.6	11		13
COD	MG/L						7.3
FLUORIDE	MG/L	0.15		< 0.10	< 0.10		0.10
HARDNESS AS CACO3	MG/L	410		82	110		220
NITROGEN, NITRATE + NITRITE	MG/L	1.8		2.7	0.60		< 0.050
SOLIDS, TOTAL DISSOLVED	MG/L	440		140	160		280
SULFATE	MG/L	38		45	42		27
ARSENIC, DISSOLVED	UG/L	< 3.0		< 3.0	< 3.0		< 3.0
BARIUM, DISSOLVED	UG/L	86		< 50	52		< 50
BORON, DISSOLVED	UG/L	< 200		< 200	< 200		< 200
CADMIUM, DISSOLVED	UG/L	< 0.30		< 0.30	< 0.30		< 0.30
CHROMIUM, DISSOLVED	UG/L	< 10		< 10	< 10		< 10
COPPER, DISSOLVED	UG/L	< 20		< 20	< 20		< 20
IRON, DISSOLVED	UG/L	< 100		210	< 100		< 100
LEAD, DISSOLVED	UG/L	< 3.0		< 3.0	< 3.0		< 3.0
MANGANESE, DISSOLVED	UG/L	< 5.0		8.6	< 5.0		< 5.0
MERCURY, DISSOLVED	UG/L	< 0.20		< 0.20	< 0.20		< 0.20
SELENIUM, DISSOLVED	UG/L	< 1.0 LN		< 1.0 L	< 1.0 L		< 1.0 L
SILVER, DISSOLVED	UG/L	< 1.0		< 1.0	< 1.0		< 1.0
ZINC, DISSOLVED	UG/L	< 20		< 20	< 20		< 20

PROJECT NUMBER: 1831.28
BEGINNING DATE: 01-JUN-93
ENDING DATE: 29-OCT-93

TABLE 8
GROUNDWATER CHEMISTRY

PARAMETER	UNITS	B-30AR 07-SEP-93 3302-002	B-30R 01-JUN-93 1670-012	B-30R 07-SEP-93 3302-001	B-31A 01-JUN-93 1670-019	B-31A 07-SEP-93 3293-011	B-31R 01-JUN-93 1670-018
COLOR, FIELD		CLEAR	CLEAR	CLEAR	CLEAR	CLEAR	CLEAR
CONDUCTANCE, SPECIFIC	UMHOS/CM	410	420	360	700	800	640
DEPTH TO WATER	FEET	15.37	12.25	15.17	12.21	15.93	11.56
ODOR, FIELD		NONE	NONE	NONE	NONE	NONE	NONE
PH, FIELD	SU	7.3	7.0	6.8	6.9	7.3	6.8
TEMPERATURE	DEG C	12	16	14	17	14	17
TURBIDITY, FIELD		NONE	MODERATE	MODERATE	NONE	SLIGHT	SLIGHT
WATER ELEVATION	FEET	607.07	610.10	607.18	610.46	606.74	610.85
ALKALINITY AS CACO3	MG/L	190	160	140	170	160	240
CHLORIDE	MG/L	14	13	6.6	16	17	11
COD	MG/L		9.7				
FLUORIDE	MG/L	0.16	< 0.10	< 0.10	0.39	0.43	< 0.10
HARDNESS AS CACO3	MG/L	230	210	210	120	160	330
NITROGEN, NITRATE + NITRITE	MG/L	< 0.050	8.5	8.8	< 0.050	< 0.050	< 0.050
SOLIDS, TOTAL DISSOLVED	MG/L	280	280	230	510	570	510
SULFATE	MG/L	25	25	26	250	250	150
ARSENIC, DISSOLVED	UG/L	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
BARIUM, DISSOLVED	UG/L	< 50	< 50	< 50	54	66	110
BORON, DISSOLVED	UG/L	< 200	< 200	< 200	2900	2100	2900
CADMIUM, DISSOLVED	UG/L	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	2.7
CHROMIUM, DISSOLVED	UG/L	< 10	< 10	< 10	< 10	< 10	< 10
COPPER, DISSOLVED	UG/L	< 20	< 20	< 20	< 20	< 20	110
IRON, DISSOLVED	UG/L	< 100	< 100	< 100	210	300	450
LEAD, DISSOLVED	UG/L	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
MANGANESE, DISSOLVED	UG/L	< 5.0	< 5.0	< 5.0	4600	6000	440
MERCURY, DISSOLVED	UG/L	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
SELENIUM, DISSOLVED	UG/L	< 1.0 L	1.3 L	3.2	< 1.0 L	< 1.0 L	1.2 L
SILVER, DISSOLVED	UG/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
ZINC, DISSOLVED	UG/L	< 20	< 20	< 20	< 20	< 20	27

PROJECT NUMBER: 1831.28
BEGINNING DATE: 01-JUN-93
ENDING DATE: 29-OCT-93

TABLE 8
GROUNDWATER CHEMISTRY

PARAMETER	UNITS	B-31R 07-SEP-93 3293-012	B-32 01-JUN-93 1670-002	B-32 07-SEP-93 3293-016	B-32A 01-JUN-93 1670-003	B-32A 07-SEP-93 3293-017	B-35 01-JUN-93 1670-004
COLOR, FIELD		CLEAR	CLEAR	CLEAR	CLEAR	CLEAR	L YLW/BN
CONDUCTANCE, SPECIFIC	UMHOS/CM	480	300	330	610	1320	1070
DEPTH TO WATER	FEET	14.44	3.37	6.22	3.59	6.46	10.10
ODOR, FIELD		NONE	NONE	NONE	NONE	NONE	NONE
PH, FIELD	SU	7.0	6.3	5.6	7.0	6.8	6.3
TEMPERATURE	DEG C	15	13	14	13	14	12
TURBIDITY, FIELD		MODERATE	SLIGHT	MODERATE	NONE	SLIGHT	SLIGHT
WATER ELEVATION	FEET	607.97	610.80	607.95	610.81	607.94	610.66
ALKALINITY AS CACO3	MG/L	190	140	140	330	320	190
CHLORIDE	MG/L	11	6.7	6.9	7.0	7.6	110
COD	MG/L						
FLUORIDE	MG/L	0.18	< 0.10	0.12	0.12	0.19	< 0.10
HARDNESS AS CACO3	MG/L	240	160	180	350	390	260
NITROGEN, NITRATE + NITRITE	MG/L	< 0.050	0.68	1.2	1.1	1.3	36
SOLIDS, TOTAL DISSOLVED	MG/L	340	200	240	380	420	800
SULFATE	MG/L	71	11	16	29	30	35
ARSENIC, DISSOLVED	UG/L	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	7.4
BARIUM, DISSOLVED	UG/L	81	100	120	98	91	100
BORON, DISSOLVED	UG/L	1100	< 200	< 200	< 200	< 200	210
CADMIUM, DISSOLVED	UG/L	1.1	< 0.30	0.38	< 0.30	0.35	< 0.30
CHROMIUM, DISSOLVED	UG/L	< 10	< 10	< 10	< 10	< 10	< 10
COPPER, DISSOLVED	UG/L	< 20	< 20	< 20	< 20	< 20	21
IRON, DISSOLVED	UG/L	210	< 100	< 100	< 100	< 100	< 100
LEAD, DISSOLVED	UG/L	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
MANGANESE, DISSOLVED	UG/L	360	< 5.0	280	6.9	33	< 5.0
MERCURY, DISSOLVED	UG/L	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
SELENIUM, DISSOLVED	UG/L	< 1.0 L	< 1.0 L	< 1.0 L	< 1.0 L	< 1.0 L	< 1.0 L
SILVER, DISSOLVED	UG/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
ZINC, DISSOLVED	UG/L	< 20	< 20	< 20	< 20	< 20	< 20

PROJECT NUMBER: 1831.28
BEGINNING DATE: 01-JUN-93
ENDING DATE: 29-OCT-93

TABLE 8
GROUNDWATER CHEMISTRY

PARAMETER	UNITS	B-35 07-SEP-93 3293-002	B-35A 01-JUN-93 1670-005	B-35A 07-SEP-93 3293-003	B-36 01-JUN-93 1670-007	B-36 07-SEP-93 3293-004	B-36A 01-JUN-93 1670-006
COLOR, FIELD		YELLOW	CLEAR	CLEAR	CLEAR	CLEAR	CLEAR
CONDUCTANCE, SPECIFIC	UMHOS/CM	1050	620	680	430	500	620
DEPTH TO WATER	FEET	13.13	10.55	13.57	10.86	13.97	11.11
ODOR, FIELD		NONE	NONE	NONE	NONE	NONE	NONE
PH, FIELD	SU	6.8	7.0	7.1	6.3	7.0	7.1
TEMPERATURE	DEG C	14	13	12	12	13	13
TURBIDITY, FIELD		SLIGHT	NONE	NONE	SLIGHT	MODERATE	NONE
WATER ELEVATION	FEET	607.63	610.63	607.61	610.60	607.49	610.35
ALKALINITY AS CACO3	MG/L	210	330	320	230	210	330
CHLORIDE	MG/L	80	26	24	4.4	25	12
COD	MG/L						
FLUORIDE	MG/L	0.19	< 0.10	0.13	< 0.10	0.14	< 0.10
HARDNESS AS CACO3	MG/L	290	380	400	240	280	350
NITROGEN, NITRATE + NITRITE	MG/L	39	1.7	2.0	< 0.050	1.4	0.83
SOLIDS, TOTAL DISSOLVED	MG/L	770	480	460	280	350	400
SULFATE	MG/L	43	33	37	15	18	36
ARSENIC, DISSOLVED	UG/L	3.6	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
BARIUM, DISSOLVED	UG/L	120	< 50	54	110	120	68
BORON, DISSOLVED	UG/L	220	< 200	< 200	< 200	< 200	< 200
CADMIUM, DISSOLVED	UG/L	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30
CHROMIUM, DISSOLVED	UG/L	< 10	< 10	< 10	< 10	< 10	< 10
COPPER, DISSOLVED	UG/L	24	< 20	< 20	< 20	< 20	< 20
IRON, DISSOLVED	UG/L	< 100	< 100	< 100	< 100	< 100	< 100
LEAD, DISSOLVED	UG/L	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
MANGANESE, DISSOLVED	UG/L	< 5.0	< 5.0	< 5.0	< 5.0	55	< 5.0
MERCURY, DISSOLVED	UG/L	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
SELENIUM, DISSOLVED	UG/L	< 1.0 L	< 1.0 L	< 1.0 L	1.0 L	2.6 L	< 1.0 L
SILVER, DISSOLVED	UG/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
ZINC, DISSOLVED	UG/L	< 20	< 20	< 20	< 20	< 20	< 20

PROJECT NUMBER: 1831.28
BEGINNING DATE: 01-JUN-93
ENDING DATE: 29-OCT-93

TABLE 8
GROUNDWATER CHEMISTRY

PARAMETER	UNITS	B-36A 07-SEP-93 3293-005	B-37 07-SEP-93 3302-007	B-37A 07-SEP-93 3302-008	B-38 01-JUN-93 1670-016	B-38 07-SEP-93 3293-006	B-38A 01-JUN-93 1670-017
COLOR, FIELD		CLEAR	CLEAR	CLEAR	CLEAR	CLEAR	CLEAR
CONDUCTANCE, SPECIFIC	UMHOS/CM	620	510	770	3630	2830	2760
DEPTH TO WATER	FEET	14.18	8.13	8.14	18.53	20.19	24.87
ODOR, FIELD		NONE	NONE	NONE	NONE	NONE	NONE
PH, FIELD	SU	7.1	7.3	7.3	8.3	9.9	7.7
TEMPERATURE	DEG C	11	13	11	20	20	15
TURBIDITY, FIELD		NONE	SLIGHT	NONE	NONE	SLIGHT	NONE
WATER ELEVATION	FEET	607.51	606.69	606.69	617.29	615.63	610.96
ALKALINITY AS CACO3	MG/L	330	200	190	100	420	80
CHLORIDE	MG/L	13	6.8	11	26	24	23
COD	MG/L						
FLUORIDE	MG/L	0.14	< 0.10	< 0.10	1.8	2.6	1.1
HARDNESS AS CACO3	MG/L	390	290	410	620	21	500
NITROGEN, NITRATE + NITRITE	MG/L	0.85	1.2	< 0.050	1.7	0.29	1.6
SOLIDS, TOTAL DISSOLVED	MG/L	420	380	590	3000	2200	2300
SULFATE	MG/L	36	100	240	2600	1200	2000
ARSENIC, DISSOLVED	UG/L	< 3.0	< 3.0	< 3.0	180	90	38
BARIUM, DISSOLVED	UG/L	68	< 50	< 50	110	< 50	58
BORON, DISSOLVED	UG/L	< 200	3100	7400	2500	2600	2200
CADMIUM, DISSOLVED	UG/L	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30	< 0.30
CHROMIUM, DISSOLVED	UG/L	< 10	< 10	< 10	68	< 10	52
COPPER, DISSOLVED	UG/L	< 20	< 20	< 20	< 20	< 20	< 20
IRON, DISSOLVED	UG/L	< 100	< 100	< 100	< 100	< 100	< 100
LEAD, DISSOLVED	UG/L	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0	< 3.0
MANGANESE, DISSOLVED	UG/L	< 5.0	< 5.0	55	< 5.0	< 5.0	< 5.0
MERCURY, DISSOLVED	UG/L	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20	< 0.20
SELENIUM, DISSOLVED	UG/L	< 1.0 L	< 1.0 L	< 1.0 L	57	320	22
SILVER, DISSOLVED	UG/L	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
ZINC, DISSOLVED	UG/L	< 20	< 20	< 20	< 20	< 20	< 20

PROJECT NUMBER: 1831.28
BEGINNING DATE: 01-JUN-93
ENDING DATE: 29-OCT-93

TABLE 8
GROUNDWATER CHEMISTRY

PARAMETER	UNITS		B-38A 07-SEP-93 3293-007
COLOR, FIELD			CLEAR
CONDUCTANCE, SPECIFIC	UMHOS/CM		3280
DEPTH TO WATER	FEET		27.59
ODOR, FIELD			NONE
PH, FIELD	SU		9.0
TEMPERATURE	DEG C		16
TURBIDITY, FIELD			NONE
WATER ELEVATION	FEET		608.24
ALKALINITY AS CACO3	MG/L		90
CHLORIDE	MG/L		21
COD	MG/L		
FLUORIDE	MG/L		3.4
HARDNESS AS CACO3	MG/L		390
NITROGEN, NITRATE + NITRITE	MG/L		0.59
SOLIDS, TOTAL DISSOLVED	MG/L		2600
SULFATE	MG/L		1800
ARSENIC, DISSOLVED	UG/L		51
BARIUM, DISSOLVED	UG/L		54
BORON, DISSOLVED	UG/L		3300
CADMIUM, DISSOLVED	UG/L	<	0.30
CHROMIUM, DISSOLVED	UG/L		11
COPPER, DISSOLVED	UG/L	<	20
IRON, DISSOLVED	UG/L	<	100
LEAD, DISSOLVED	UG/L	<	3.0
MANGANESE, DISSOLVED	UG/L	<	5.0
MERCURY, DISSOLVED	UG/L	<	0.20
SELENIUM, DISSOLVED	UG/L		57
SILVER, DISSOLVED	UG/L	<	1.0
ZINC, DISSOLVED	UG/L	<	20

Appendix C

2016 Low-Hazard Waste Exemption Leaching Test Results – Slag and Ash

Sediment and Soil Analytical Results - Water Leach Test Results
WPL Nelson Dewey

Sample	Date	Depth (feet)	Material Type	Lab Notes	Boron (ug/L)	Calcium (ug/L)	Fluoride (mg/L)	Sulfate (mg/L)
WPDES POND								
SED-1	8/3/2016	0-1.3	Fly Ash	--	240	6,100	<1.0	4.4
SED-2	8/3/2016	0-1.0	Fly Ash	--	200	5,900	<1.0	11.5
QC-3 (SED-2)	8/3/2016	0-1	Fly Ash	--	240	5,900 J	<1.0	6.1
SED-3	7/20/2016	0-4.5	Slag	--	130	2,200	<1.0	5
	7/20/2016	4.5-5.5	SP	--	<50	<500	<0.20	<2.0
SED-4	7/19/2016	0-4.8	ML	--	510	4,100	<10.0	11.9 J
	7/19/2016	4.8-5.5		--	74 J	NA	NA	NA
GP-19	8/4/2016	8-12	SM	--	62 J	<500	<1.0	2 J
SLAG POND								
SED-5	7/20/2016	0-1.6	ML-OL	--	54 J	18,200	<1.0	33.3
SED-6	7/20/2016	0-1.0	ML	--	60 J	17,500	0.36 J	59.1
SED-7	8/4/2016	0-3.0	Fly Ash	--	88 J	11,300	<1.0	10.5
SED-8	8/4/2016	1.0-1.5	Fly Ash	--	82 J	11,400	<1.0	12.1
COAL YARD								
TP-CY-1	7/19/2016	0-0.5	Coal	--	140	<500	<2.0	<20.0
	7/19/2016	3.0-3.5	SM	--	100 J	<500	<1.0	<2.0
TP-CY-3	7/20/2016	1.9-2.1	GM	--	<50	7,600	<0.20	2.8 J
	7/20/2016	4.8-5.5	SM	--	NA	NA	NA	NA
TP-CY-4	7/19/2016	0-2.8	Coal	--	190	<500	<2.0	<20.0
	7/19/2016	2.8-3.2	GP & SM	--	<50	4,500	<1.0	<10.0
	7/19/2016	3.6-4.8	Slag	--	<50	<500	<2.0	<20.0
	7/19/2016	4.8-5.0		--	NA	NA	NA	NA
TP-CY-6	7/19/2016	0-0.5	Coal	--	190	<500	<2.0	<20.0
	7/19/2016	0.7-1.0	SP	--	<50	2,600	<0.20	2.3 J
TP-CY-10	7/19/2016	0-0.5	Coal	--	120	<25	<1.0	11.6
	7/19/2016	1.0-2.0	SM	--	<50	2,000	<1.0	2.3 J
	7/19/2016	6.5-7.0	SP	--	NA	NA	NA	NA
TP-CY-12	7/20/2016	0-0.3	Coal	--	160	<500	<2.0	<20.0
	7/20/2016	0.3-2.0	SP	--	<50	2,600	<0.20	2.2 J
	7/20/2016	2.0-2.7	SP	--	<50	700 J	<0.20	27.5
QC-1 (TP-CY-12)	7/20/2016	0.3-2.0	SP	--	<50	11,000	<0.20	2.5 J
SLAG HANDLING AREA								
GP-5	8/3/2016	12.5-15	Fly Ash	--	100	3,000	<1.0	3.0 J
	8/3/2016	18-24	ML & SM	--	99 J	2,300	<1.0	<2.0
GP-7	8/3/2016	7.5-18	Slag	--	<50	720 J	<1.0	<2.0
QC-2 (GP-7)	8/3/2016	7.5-18	Slag	--	<50	710 J	<1.0	<2.0
GP-14	8/4/2016	12.5-15	Fly Ash	--	120	25,200	<1.0	13.4

Sediment and Soil Analytical Results - Water Leach Test Results
WPL Nelson Dewey

Sample	Date	Depth (feet)	Material Type	Lab Notes	Boron (ug/L)	Calcium (ug/L)	Fluoride (mg/L)	Sulfate (mg/L)
SLAG SAMPLES[1]								
Slag 01 [2]	6/3/2013	--	Slag	--	NA	NA	NA	NA
Slag 01	12/23/2013	--	Slag	--	12.5 A B	1,240	NA	0.218
NED Slag Composite 2014	7/1/2014	--	Slag	--	11.7 AB*^	879 A	NA	0.457 B
Slag Sample	4/14/2015	--	Slag	--	< 1020 A	1,140 A	NA	0.427
FLY ASH SAMPLES[1]								
NED Flyash Composite [2]	2/14/2014	--	Fly Ash	--	NA	NA	NA	6,530 B
Week of 062815 [2]	7/3/2015	--	Fly Ash	--	NA	NA	NA	6,260
Week of 010916	1/4/2016	--	Fly Ash	--	NA	NA	NA	NA
NR 140 Preventive Action Limits (PALs)					200	NE	0.8	125
NR 140 Enforcement Standards (ESs)					1,000	NE	4	250
40 CFR Part 141.62 Maximum Contaminant Levels (MCL)					NE	NE	4	NE
NR 538 Table 1A Standards					190	NE	0.8	125
NR 538 Table 2A Standards					1,900	NE	8	1,250

Abbreviations:
ug/L = micrograms per liter
mg/L = milligrams per liter
NE = No Standard Established
ML-CL = Silty Clay
SM = Silty Sand
ML = Silt

Notes:
1. Slag and Fly Ash samples were collected by the plant as part of permit requirements.
2. Sample was analyzed using the SPLP Leach Method rather than the ASTM Water Leach Method for tested parameters except for Sulfate.
NR 140 ESs - Wisconsin Administrative Code (WAC), Chapter NR 140.10 Table 1 - Public Health Groundwater Quality Standards from July 2015 and WAC, Chapter NR 140.12 Table 2 - Public Welfare Groundwater Quality Standards from July 2015.
NR 140 PALs - WAC, Chapter NR 140.10 Table 1 - Public Health Groundwater Quality Standards from July 2015 and WAC, Chapter NR 140.12 Table 2 - Public Welfare Groundwater Quality Standards from July 2015.

Laboratory Notes/Qualifiers:
J = Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.
A = Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
B = Compound was found in the blank and sample.
F1 = MS and/or MSD Recovery is outside acceptance limits.
H = Sample was prepped or analyzed beyond the specified holding time.
^ = ICV, CCV, ICB, CCB, ISA, ISB, CRI, CRA, DLCK or MRL standard: Instrument related QC is outside acceptance limits.
* = LCS or LCSD is outside acceptance limits.

Created by: RJG Date: 3/14/2016
Last revision by: RJG Date: 10/24/2016
Checked by: BSS Date: 10/24/2016
Original table prepared for Slag Pond Closure Low Hazard Waste Exemption Request (SCS Project #25216054.00).
Reformatted for the Alternative Source Demonstration to include only the parameters with SSIs that were included in the leach testing by SCC, 4/13/18.

I:\25216071.00\Reports\2018 ASD Report\Appendix G - 2017 leachate results slag and ash\[Table 4. Sediment_Soil_Water Leach Results_SSIParameters.xlsx]Leach Test - SSI Parameters