

# 2020 Annual Groundwater Monitoring and Corrective Action Report

Nelson Dewey Generating Station Slag Pond  
Cassville, Wisconsin

Prepared for:

Alliant Energy



**SCS ENGINEERS**

25220071.00 | January 29, 2021

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

## OVERVIEW OF CURRENT STATUS

### Nelson Dewey Generating Station, Slag Pond 2020 Annual Report

In accordance with §257.90(e)(6), this section at the beginning of the annual report provides an overview of the current status of groundwater monitoring and corrective action programs for the coal combustion residual (CCR) units. Supporting information is provided in the text of the annual report.

Category	Rule Requirement	Site Status
<b>Monitoring Status – Start of Year</b>	(i) At the start of the current annual reporting period, whether the CCR unit was operating under the detection monitoring program in §257.94 or the assessment monitoring program in §257.95;	Detection
<b>Monitoring Status – End of Year</b>	(ii) At the end of the current annual reporting period, whether the CCR unit was operating under the detection monitoring program in §257.94 or the assessment monitoring program in §257.95;	Detection
<b>Statistically Significant Increases (SSIs)</b>	(iii) If it was determined that there was a statistically significant increase over background for one or more constituents listed in appendix III to this part pursuant to §257.94(e):	
	(A) Identify those constituents listed in appendix III to this part and the names of the monitoring wells associated with such; and an increase	<p><u>April 2020</u>                      Boron: B-7R, B-11A, B-11B, B-11R, B-31A, B-31R                      Chloride: B-11A                      pH: B-11B                      Sulfate: B-11B, B-31R                      Total Dissolved Solids (TDS): B-11B</p> <p><u>October 2020</u>                      Boron: B-7R, B-11A, B-11B, B-11R, B-31A, B-31R                      Calcium: B-11R                      Field pH: B-11A, B-11B, B-31A                      Sulfate: B-11B, B-31R                      TDS: B-11B, B-11R</p>



Category	Rule Requirement	Site Status	
	(B) Provide the date when the assessment monitoring program was initiated for the CCR unit.	Alternative Source Demonstrations prepared for October 2019 and April 2020 events during 2020. Assessment monitoring not required. Alternative sources for October 2020 SSIs will be evaluated in 2021.	
<b>Statistically Significant Levels (SSL) Above Groundwater Protection Standard</b>	(iv) If it was determined that there was a statistically significant level above the groundwater protection standard for one or more constituents listed in appendix IV to this part pursuant to §257.95(g) include all of the following:	Not applicable  In detection monitoring. No Appendix IV sampling	
	(A) Identify those constituents listed in appendix IV to this part and the names of the monitoring wells associated with such an increase;		
	(B) Provide the date when the assessment of corrective measures was initiated for the CCR unit;		
	(C) Provide the date when the public meeting was held for the assessment of corrective measures for the CCR unit; and		
	(D) Provide the date when the assessment of corrective measures was completed for the CCR unit.		
<b>Selection of Remedy</b>	(v) Whether a remedy was selected pursuant to §257.97 during the current annual reporting period, and if so, the date of remedy selection; and	Not applicable  In detection monitoring	
<b>Corrective Action</b>	(vi) Whether remedial activities were initiated or are ongoing pursuant to §257.98 during the current annual reporting period.	Not applicable  In detection monitoring	

## Table of Contents

Section	Page
<b>Overview of Current Status.....</b>	<b>i</b>
<b>1.0 Introduction.....</b>	<b>1</b>
<b>2.0 Background.....</b>	<b>1</b>
2.1 Geologic and Hydrogeologic Setting.....	1
2.1.1 Regional Information.....	1
2.1.2 Site Information.....	2
2.2 CCR Monitoring System.....	2
<b>3.0 § 257.90(e) Annual Report Requirements.....</b>	<b>2</b>
3.1 §257.90(e)(1) Site Map.....	3
3.2 §257.90(e)(2) Monitoring System Changes.....	3
3.3 §257.90(e)(3) Summary of Sampling Events.....	3
3.4 § 257.90(e)(4) Monitoring Transition Narrative.....	4
3.5 § 257.90(e)(5) Other Requirements.....	4
3.5.1 § 257.90(e) General Requirements.....	4
3.5.2 § 257.94(d) Alternative Detection Monitoring Frequency.....	5
3.5.3 § 257.94(e)(2) Alternative Source Demonstration for Detection Monitoring.....	5
3.5.4 § 257.95(c) Alternative Assessment Monitoring Frequency.....	5
3.5.5 § 257.95(d)(3) Assessment Monitoring Results and Standards.....	6
3.5.6 § 257.95(g)(3)(ii) Alternative Source Demonstration for Assessment Monitoring.....	6
3.5.7 § 257.96(a) Extension of Time for Corrective Measures Assessment.....	6
3.6 257.90(e)(6) Overview.....	6

### Tables

Table 1.	CCR Rule Groundwater Samples Summary
Table 2.	Groundwater Samples Summary
Table 3.	Groundwater Elevation Summary
Table 4.	Groundwater Gradients and Average Linear Flow Velocities
Table 5A.	Groundwater Analytical Results Summary – January through September 2020
Table 5B.	Groundwater Analytical Results Summary – October 2020
Table 6.	2020 Groundwater Field Data Summary

### Figures

Figure 1.	Site Location Map
Figure 2.	Site Plan and Monitoring Well Locations
Figure 3.	April 2020 Water Table Map
Figure 4.	October 2020 Water Table Map

## Appendices

Appendix A	Summary of Geologic and Hydrogeologic Information
Appendix B	Boring logs, Well Construction, and Well Development Forms
Appendix C	Laboratory Reports
	C1    April 2020 Detection Monitoring
	C2    October 2020 Detection Monitoring
Appendix D	Historical Results
Appendix E	Statistical Update
Appendix F	Alternative Source Demonstration Reports
	F1    Alternative Source Demonstration, October 2019 Detection Monitoring
	F2    Alternative Source Demonstration, April 2020 Detection Monitoring

I:\25220071.00\Deliverables\2020 Fed CCR Annual Report\210129\_2020 Annual CCR GW Report\_NED.docx

## 1.0 INTRODUCTION

This 2020 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 2020 Annual Groundwater Monitoring and Corrective Action Report for the CCR Unit. The site location is shown on **Figure 1**.

This report covers the period of groundwater monitoring from January 1, 2020, through December 31, 2020.

The groundwater monitoring system for the Nelson Dewey Generating Station (NED) Slag Pond monitors a single CCR unit:

- NED Slag Pond (existing surface impoundment – closed January 2018)

The system is designed to detect monitored constituents at the waste boundary of the Slag Pond as required by 40 CFR 257.91(d). The groundwater monitoring system consists of one background well and six downgradient monitoring wells (**Table 1** and **Figure 2**).

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.

The closed CCR landfill adjacent to the slag pond is not subject to regulation under the CCR rule, and is regulated by the Wisconsin Department of Natural Resources. The CCR landfill was initially licensed in 1976 and received fly ash from NED until it was closed in phases between 1996 and 2001.

## 2.0 BACKGROUND

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

- Geologic and hydrogeologic setting
- CCR Rule monitoring system

### 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 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 A**.

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 A**. 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

Soil boring logs for monitoring wells installed at the site also generally indicate sand and gravel soils within the monitored depths. During drilling of CCR wells B-7R, the unconsolidated materials were identified as consisting primarily of poorly gradient, medium to coarse grained sand, and silty sand. The boring log for the previously-installed background monitoring well B-26 show silt, poorly graded sand as the primary unconsolidated materials at this location. The boring logs for NED CCR monitoring wells are provided in **Appendix B**. All CCR monitoring wells are screened within the unconsolidated glacial aquifer.

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.

Although historic site water level measurements have generally indicated that groundwater flow is toward the Mississippi River, groundwater flow in the slag pond area is influenced by variations in river water levels. During periods of high river water levels, the flow temporarily reverses and the river discharges to the shallow sand and gravel aquifer. The water table map for the April 2020 monitoring event (**Figure 3**), when river levels were high, shows localized groundwater flow to the northeast from the river converging with regional flow to the southwest in the area of the closed slag pond. From the slag pond area, groundwater flow is to the southeast. The water table map for the October 2020 monitoring event (**Figure 4**) shows flow to the south and southwest toward the river. The groundwater elevations for the CCR monitoring wells and additional wells in the state monitoring program for the closed CCR landfill are provided in **Table 3**. Calculated horizontal gradients and flow velocities for flow to the northeast in April 2020 and to the southeast in October 2020 are provided in **Table 4**.

## 2.2 CCR 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 (**Table 1** and **Figure 2**). 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.

## 3.0 § 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:

### **3.1 §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 site location is provided as **Figure 1**. 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 2**. The Slag Pond CCR unit is closed, and the map shows the post-closure conditions.

### **3.2 §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 2020.

### **3.3 §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;*

Two groundwater sampling events were completed in 2020 at the NED Slag Pond as part of ongoing detection monitoring.

Groundwater samples collected during the semiannual events, in April and October 2020, were analyzed for the Appendix III constituents. 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 2**.

The sampling results for Appendix III parameters in 2020 are summarized in **Table 5A** and **Table 5B**. Field parameter results for the 2020 sampling events are provided in **Table 6**. The analytical laboratory reports for 2020 are provided in **Appendix C**. Historical Results for each monitoring well are summarized in **Appendix D**.

### 3.4 § 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 was no monitoring program transition in 2020. The NED Slag Pond remained in the detection monitoring program.

In 2020, the monitoring results for the October 2019 and April 2020 monitoring events were evaluated for statistically significant increases (SSIs) in detection monitoring parameters relative to background. The interwell Upper Prediction Limits (UPLS) were updated in January 2021 to be based on additional background monitoring results from compliance wells (B-7R, B-11A, B-11B, B-11R, B-31A, and B-31R). The Unified Guidance for Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities (USEPA, 2009) recommends periodic updating of background. The UPL update calculations are included in **Appendix E**. The UPLs calculated in the January 2021 were applied to the October 2020 monitoring results (**Table 5B**).

For the April 2020 event, SSIs were identified for boron, chloride, field pH, sulfate, and TDS (**Table 5A**). For the October 2020 event SSIs were identified for boron, calcium, field pH, sulfate, and TDS (**Table 5B**).

Alternative source demonstrations were completed in 2020 for SSIs identified in the October 2019 and April 2020 events, demonstrating that sources other than the slag pond were the likely cause of the observed SSIs. The Alternative Source Demonstration (ASD) reports are provided in **Appendix F**. A similar evaluation of alternative sources is anticipated to be performed in 2021 for SSIs identified in the October 2020 monitoring results.

### 3.5 § 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 2020 Annual Groundwater Monitoring and Corrective Action Report for the NED Slag Pond CCR unit.

#### 3.5.1 § 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 was in detection monitoring throughout 2020.



### Summary of Key Actions Completed.

- Two semiannual groundwater sampling and analysis events (April and October 2020).
- Statistical evaluation and determination of SSIs for the October 2019 and April 2020 monitoring events.
- ASD reports for the SSIs identified from the October 2019 and April 2020 monitoring events.

**Description of Any Problems Encountered.** No problems were encountered in 2020.

**Discussion of Actions to Resolve the Problems.** Not applicable.

### Projection of Key Activities for the Upcoming Year (2021):

- Statistical evaluation and determination of any SSIs for the October 2020 and April 2021 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 semiannual groundwater sampling and analysis events (April and October 2021).

### 3.5.2 § 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.

### 3.5.3 § 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 2019 and April 2020 sampling events are provided in **Appendix F**. The ASD reports are certified by a qualified professional engineer.

### 3.5.4 § 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.



### **3.5.5 § 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.

### **3.5.6 § 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.

### **3.5.7 § 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.

## **3.6 257.90(E)(6) OVERVIEW**

*A section at the beginning of the annual report that provides an overview of the current status of groundwater monitoring and corrective action programs for the CCR unit.*

The specific requirements for the overview under §257.90(e)(6) are listed and the information is provided at the beginning of this report, before the Table of Contents.

## Tables

- 1 Groundwater Monitoring Well Network
- 2 Groundwater Sample Summary
- 3 Groundwater Elevation Summary
- 4 Groundwater Gradients and Average Linear Flow Velocity
- 5A Groundwater Analytical Results Summary – January through September 2020
- 5B Groundwater Analytical Results Summary – October 2020
- 6 2020 Groundwater Field Data Summary

**Table 1. Groundwater Monitoring Well Network  
Nelson Dewey Generating Station Slag Pond  
SCS Engineers Project #25220071.00**

Monitoring Well	Location in Monitoring Network	Role in Monitoring Network
B-26	Upgradient/ sidegradient	Background
B-7R	Downgradient	Compliance
B-11R	Downgradient	Compliance
B-11A	Downgradient	Compliance
B-11B	Downgradient	Compliance
B-31R	Downgradient	Compliance
B-31A	Downgradient	Compliance

Created by: RM  
 Last revision by: RM  
 Checked by: NDK

Date: 12/14/2020  
 Date: 1/8/2021  
 Date: 1/8/2021

**Table 2. CCR Rule Groundwater Samples Summary  
Nelson Dewey Generating Station Slag Pond / SCS Engineers Project #25220071.00**

Sample Dates	Downgradient Wells						Upgradient Well
	B-7R	B-11R	B-11A	B-11B	B-31R	B-31A	B-26
4/13-14/2020	D	D	D	D	D	D	D
10/12-13/2020	D	D	D	D	D	D	D
Total Samples	2	2	2	2	2	2	2

Abbreviations:

D = Required by Detection Monitoring Program

Created by: ACW

Date: 11/12/2019

Last revision by: RM

Date: 1/8/2021

Checked by: NDK

Date: 1/8/2021

**Table 3. Groundwater Elevation Summary**  
**Nelson Dewey Closed Ash Disposal Facility / SCS Engineers Project #25220071.00**

Ground Water Elevation in feet above mean sea level (amsl)																									
Well Number	B-7R	B-8R	B-11R	B-11A	B-11B	B-21R	B-26	B-26A	B-28	B-30R	B-30AR	B-31R	B-31A	B-32	B-32A	B-35	B-35A	B-37	B-37A	B-39	MW-301	MW-302	MW-303	Barge Gauge (SG-12)	Pond Gauge (SG-13)
<b>Top of Casing Elevation (feet amsl)</b>	623.35	627.51	622.62	622.12	621.89	623.31	626.40	626.40	616.81	621.81	622.4	622.42	622.69	614.18	614.4	620.78	621.09	614.85	614.85	626.48	619.09	619.21	618.49	616.60	See notes
<b>Screen Length (ft)</b>	10	10	10	5	5	10	10	5	10	10	5	10	5	10	5	10	5	10	5	10	10	10	10		
<b>Total Depth (ft from top of casing)</b>	23.05	27.25	24.15	52.00	113.90	22.78	31.67	45.78	16.70	22.20	46.90	22.82	35.52	14.79	52.00	16.60	47.00	19.95	48.20	26.90	21.11	21.27	20.15		
<b>Top of Well Screen Elevation (ft)</b>	610.30	610.26	608.47	575.12	512.99	610.53	604.73	585.62	610.11	609.61	580.50	609.60	592.17	609.39	567.40	614.18	579.20	604.90	571.65	609.58	607.98	607.94	608.34		
<b>Measurement Date</b>																									
October 5-6, 2011	604.94	606.29	604.57	604.36	604.32	604.43	604.52	604.55	604.61	604.37	605.21	608.37	604.42	604.88	604.82	604.87	604.81	604.37	604.39		--	--	--	--	--
April 25-26, 2012	606.58	606.30	606.07	606.30	606.28	--	605.89	605.91	--	--	--	608.65	606.31	604.33	--	606.29	621.20	606.16	606.17	606.17	--	--	--	--	--
October 17, 2012	604.39	604.16	604.10	603.98	603.98	604.08	604.12	604.14	604.31	603.97	603.98	607.32	604.07	604.33	604.35	--	621.20	603.93	603.93	603.93	--	--	--	--	--
April 2, 2013	607.04	608.01	606.15	607.20	607.17	606.30	605.60	605.64	605.90	605.91	605.93	607.13	607.13	606.11	606.14	606.13	606.25	606.99	607.02		--	--	--	--	--
October 16-17, 2013	604.51	605.89	604.17	603.90	603.87	604.11	604.31	604.32	604.36	604.08	604.06	604.87	604.00	604.53	604.56	604.46	604.44	604.05	604.04		--	--	--	--	--
April 10, 2014	607.42	608.97	607.45	607.28	607.26	--	607.22	607.23	--	--	--	607.37	607.28	--	--	607.46	607.39	607.25	607.26		--	--	--	--	--
October 14-15, 2014	605.67	606.82	605.17	604.90	604.91	614.92	605.00	605.01	605.13	604.92	604.92	606.36	605.54	605.41	605.45	605.36	605.33	604.94	604.99		--	--	--	--	--
April 16, 2015	607.26	608.50	607.11	607.15	607.05	--	606.40	606.41	--	--	--	607.37	607.09	--	--	606.73	606.78	606.99	606.88		--	--	--	--	--
October 1-2, 2015	605.14	604.66	604.53	604.42	604.38	604.36	604.43	604.50	604.54	604.34	604.32	605.13	604.38	604.76	604.82	604.76	604.75	604.30	604.39		--	--	--	--	--
December 8, 2015	606.69	--	606.71	606.30	606.26	--	606.80	--	--	--	--	607.40	606.39	--	--	--	--	--	--	607.54	--	--	--	--	--
April 12, 2016	609.32	609.36	609.32	608.71	608.68	--	609.81	609.72	--	--	--	609.34	609.01	--	--	609.73	609.65	608.79	608.79	610.23	--	--	--	--	--
July 18-19, 2016	606.54	--	606.14	606.76	606.74	--	606.09	--	--	--	--	606.55	606.73	--	--	--	--	--	--	606.28	--	--	--	--	--
October 19-20, 2016	608.59	608.46	608.35	608.21	608.19	608.37	608.84	608.76	608.63	608.45	608.46	608.51	608.20	608.69	608.73	608.78	608.74	608.20	608.18	609.09	--	--	--	--	--
January 11-12, 2017	608.02		607.96	607.83	607.78		608.56					607.90	607.84							608.92	--	--	--	--	--
April 17, 2017	609.08	608.82	608.34	609.05	608.99	NM	608.59	608.54	609.94	608.57	608.64	607.20	608.98	608.96	608.98	609.00	609.02	609.02	609.02	610.23	--	--	--	--	--
June 8, 2017	610.74	--	610.42	609.81	610.08	--	611.25	--	--	--	--	609.63	610.50	--	--	--	--	--	--	611.53	--	--	--	--	--
August 1-2, 2017	607.02	--	606.73	605.57	605.50	--	607.39	--	--	--	--	606.84	605.69	--	--	--	--	--	--	608.71	--	--	--	--	--
October 9-10, 2017	606.93	606.51	606.25	607.01	606.94	--	606.22	606.13	606.33	606.44	606.45	606.68	606.93	606.57	606.61	606.65	606.71	--	--	--	--	--	--	--	--
October 19, 2017	609.60	--	609.42	609.58	609.65	--	608.84	--	--	--	--	609.47	609.43	--	--	--	--	609.40	609.40	608.55	--	--	--	--	--
November 17, 2017	--	--	--	--	--	606.35	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
December 19, 2017	--	--	--	--	--	604.81	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
February 7, 2018	605.37	--	605.33	604.96	604.92	--	--	--	616.81	--	--	605.31	605.01	--	--	--	--	--	--	606.19	605.08	605.05	605.00	--	--
March 16, 2018	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	604.64	604.6	604.56	--	--
April 203, 2018 **	604.82	606.61	606.27	606.63	606.55	606.52	606.49	606.37	606.39	606.46	606.43	604.44	606.46	606.58	606.66	606.68	606.70	606.77	606.83	606.19	--	--	--	--	--
May 23, 2018	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	610.68	610.78	610.61	--	--
October 8-10, 2018	610.76	610.68	610.67	610.28	610.24	610.02	610.34	610.28	610.83	610.09	610.05	610.39	610.27	611.05	610.94	610.72	610.54	--	--	611.44	--	--	--	--	--
November 11, 2018	--	--	--	--	609.14	--	--	--	--	--	--	609.11	--	--	--	--	--	--	--	--	--	--	--	608.40	--
April 22-23, 2019	615.28	615.66	615.28	615.29	615.28	614.98	615.49	615.31	615.40	615.36	615.35	615.01	615.33	--	--	615.87	615.98	--	--	615.40	--	--	--	615.17	<615.06
October 14-16, 2019	613.43	613.11	613.06	613.29	613.18	612.47	613.10	613.10	612.71	612.83	612.78	612.50	613.20	613.10	613.00	613.10	613.15	--	--	613.35	--	--	--	612.33	<615.06
April 13-14, 2020	614.12	613.76	614.39	613.88	613.86	613.22	613.76	613.73	613.68	613.60	613.56	613.80	613.79	--	--	614.04	614.00	--	--	613.71	--	--	--	612.89	613.10
October 12-13, 2020	605.09	604.88	604.57	604.54	604.44	604.28	604.92	604.83	604.86	604.72	604.72	604.66	604.54	605.07	605.06	605.00	605.08	--	--	605.06	--	--	--	603.89	DRY
<b>Bottom of Well Elevation (ft)</b>	600.30	600.26	598.47	570.12	507.99	600.53	594.73	580.62	600.11	599.61	575.50	599.60	587.17	599.39	562.40	604.18	574.20	594.90	566.65	599.58	597.98	597.94	598.34		

Notes:  
 NM = not measured  
 \*The PVC casing at B-35A was cut down on June 28, 2018 to allow the protective cover to close. Groundwater elevations prior to 6/28/18 are calculated using the old top of casing (TOC) elevation of 621.20 ft amsl. Groundwater elevations after 6/28/18 are calculated using the new TOC elevation (621.09 ft amsl).  
 \*\* The PVC casing at B-21R was extended in 2018 following well rehabilitation. The well was resurveyed on April 22, 2019. The old top of casing elevation was 621.03 ft. The new TOC elevation is 623.31 ft.  
 ^ One pond staff gauge was installed on April 22, 2019. The base of the gauge (0 reading) is at 615.056 ft amsl. Two additional gauges were installed on March 24, 2020. These gauge bases are at 609' and 612' amsl.

Created by: MDB      Date: 4/1/2013  
 Last revision by: RM      Date: 1/8/2021  
 Checked by: NDK      Date: 1/8/2021  
 Proj Mgr QA/QC: TK      Date: 1/18/2021

I:\25220071.00\Deliverables\2020 Fed CCR Annual Report\Tables\[Table 3 - Groundwater Elevation Summary.xls]levels

**Table 4. Horizontal Gradients and Flow Velocity  
Nelson Dewey Generating Station  
SCS Engineers Project #25220071.00  
January - December 2020**

<b>Northeast</b>					
<b>Sampling Dates</b>	<b>h1 (ft)</b>	<b>h2 (ft)</b>	<b>Δl (ft)</b>	<b>Δh/Δl (ft/ft)</b>	<b>V (ft/d)</b>
4/13-14/2020	614.12	613.75	364	0.001	0.04
4/13-14/2020	614.39	613.75	213	0.003	

<b>Southeast</b>					
<b>Sampling Dates</b>	<b>h1 (ft)</b>	<b>h2 (ft)</b>	<b>Δl (ft)</b>	<b>Δh/Δl (ft/ft)</b>	<b>V (ft/d)</b>
10/12-13/2020	605.00	604.57	307	0.001	0.02
10/12-13/2020	604.75	604.54	481	0.0004	

<b>Wells</b>	<b>K Values (cm/sec)</b>	<b>K Values (ft/d)</b>
Geometric Mean	2.9E-03	8.2

<b>Assumed Porosity, n</b>
0.40

*Note: K value derived from averaging previous slug tests*

Groundwater flow velocity equation:  $V = [K*(\Delta h/\Delta l)] / n$

ft = feet  
ft/d = feet per day  
K = hydraulic conductivity  
n = effective porosity  
V = groundwater flow velocity

h1, h2 = point interpreted groundwater elevation at locations 1 and 2  
Δl = distance between location 1 and 2  
Δh/Δl = hydraulic gradient

Created by: RM  
Last revision by: RM  
Checked by: SCC

Date: 12/29/2020  
Date: 1/18/2021  
Date: 1/18/2021

**Table 5A. 2020 Groundwater Analytical Results Summary  
Nelson Dewey Generating Station / SCS Engineers Project #25220071.00  
January - September 2020**

Parameter Name	UPL	Background Well	Compliance Wells					
		B-26	B-7R	B-11A	B-11B	B-11R	B-31A	B-31R
		4/14/2020	4/13/2020	4/13/2020	4/13/2020	4/13/2020	4/13/2020	4/13/2020
<b>Appendix III</b>								
Boron, ug/L	66.5	66.1	96.0	86.3	5,380	2,140	132	730
Calcium, ug/L	155,155	88,500	58700	57,500	115,000	117,000	50,900	93,800
Chloride, mg/L	65.4	54.9	14.3	93.7	30.9	22.5	51.0	29.9
Fluoride, mg/L	DQ	0.11 J	<0.48 D3	0.27 J	<0.95 D3	<0.48 D3	0.19 J	0.28 J
Field pH, Std. Units	7.81	7.27	6.60	7.75	7.89	6.80	7.71	6.79
Sulfate, mg/L	44.8	30.2	7.50 J, D3	1.4 J	378	41.9	16.6	89.4
Total Dissolved Solids, mg/L	594	464	306	394	872	570	298	464

**7.81** Blue shaded cell indicates the compliance well result exceeds the UPL (background) and the Limit of Quantitation (LOQ).

Abbreviations:

UPL = Upper Prediction Limit

SSI = Statistically Significant Increase

DQ = Double Quantification

LOQ = Limit of Quantitation

LOD = Limit of Detection

ug/L = micrograms per liter

mg/L = milligrams per liter

Lab Notes:

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

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

Notes:

1. An individual result above the UPL may not constitute an SSI above background. See the accompanying report text for identification of statistically significant results.
2. Interwell UPLs calculated based on results from background well B-26. UPLs are based on a 1-of-2 retesting approach.

Created by: ZTW  
 Last revision by: NDK  
 Checked by: TK  
 Proj Mgr QA/QC/Scientist: TK

Date: 6/4/2020  
 Date: 1/8/2021  
 Date: 1/18/2021  
 Date: 1/18/2021

**Table 5B. Groundwater Analytical Results Summary - October -December 2020  
Nelson Dewey Slag Pond, Cassville, WI / SCS Engineers Project #25220071.00**

Parameter Name	UPL	Background Well	Compliance Wells					
		B-26	B-7R	B-11A	B-11B	B-11R	B-31A	B-31R
		10/13/2020	10/13/2020	10/12/2020	10/12/2020	10/12/2020	10/12/2020	10/12/2020
<b>Appendix III</b>								
Boron, ug/L	72.3	63.6	145	99.3	3,350	2,870	127	702
Calcium, ug/L	108,000	76,500	41,900	55,600	91,200	120,000	47,700	95,700
Chloride, mg/L	77.6	35.3	6.7 J, D3	65.3	33.4	20.7	57.9	24.4
Fluoride, mg/L	0.2	<0.95 M0	<0.48 D3	0.28 J	<0.095	<0.48 D3	0.18 J	<0.48 D3, M0
Field pH, Std. Units	7.71	7.34	6.35	7.74	7.8	6.83	7.78	6.89
Sulfate, mg/L	44	37	<2.2 D3	1.00 J	388	22.8	16.8	49.4
Total Dissolved Solids, mg/L	553	448	208	364	906	600	300	462

**7.81** Blue shaded cell indicates the compliance well result exceeds the UPL (background) and the Limit of Quantitation (LOQ).

**Abbreviations:**

UPL = Upper Prediction Limit

SSI = Statistically Significant Increase

DQ = Double Quantification

LOQ = Limit of Quantitation

LOD = Limit of Detection

ug/L = micrograms per liter

mg/L = milligrams per liter

**Lab Notes:**

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

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

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

**Notes:**

1. An individual result above the UPL may not constitute an SSI above background. See the accompanying report text for identification of statistically significant results.
2. Interwell UPLs calculated based on results from background well B-26. UPLs are based on a 1-of-2 retesting approach.
3. Interwell UPLs were updated in January 2021 with background well results from December 2015 through October 2020.

Created by: ZTW  
 Last revision by: SCC  
 Checked by: NDK  
 Proj Mgr QA/QC/Scientist: TK

Date: 6/4/2020  
 Date: 1/14/2021  
 Date: 1/14/2021  
 Date: 1/18/2021



**Table 6. 2020 Groundwater Field Data Summary**  
**Nelson Dewey Generating Station / SCS Engineers Project #25220071.00**  
**January - December 2020**

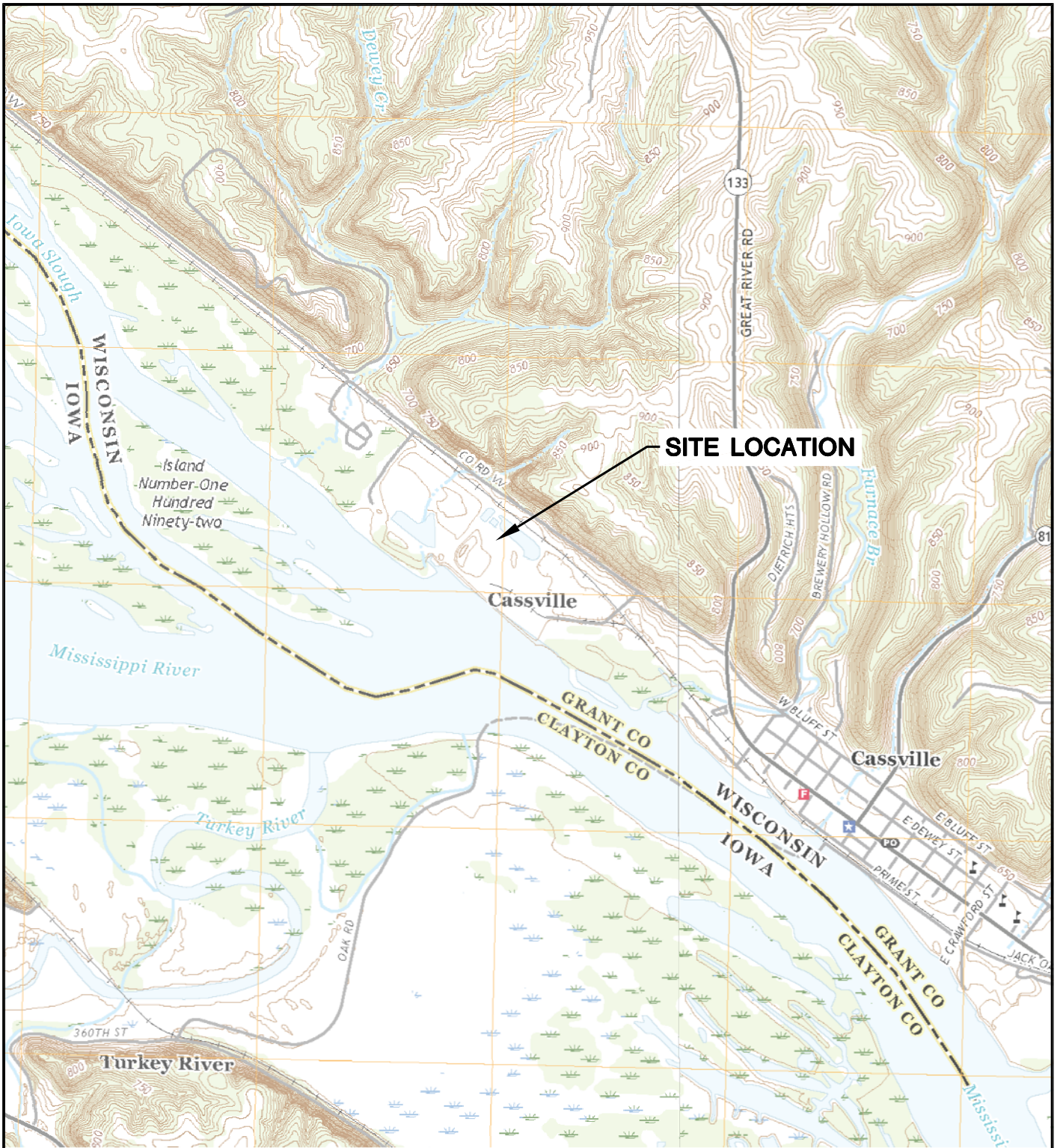
Well	Sample Date	Groundwater Elevation (feet)	Field Temperature (deg C)	Field pH (Std. Units)	Oxygen, Dissolved (mg/L)	Field Specific Conductance (umhos/cm)	Field Oxidation Potential (mV)	Turbidity (NTU)
B-7R	4/13/2020	614.12	8.2	6.60	2.18	624	-124.0	8.2
	10/13/2020	605.09	13.7	6.35	1.68	414	142.1	54.8
B-11A	4/13/2020	613.88	13.4	7.75	0.19	720	-31.0	0.0
	10/12/2020	604.54	14.2	7.74	0.09	674	55.1	0.0
B-11B	4/13/2020	613.86	13.5	7.89	0.24	1280	-57.9	0.0
	10/12/2020	604.44	14.3	7.80	0.22	1348	225.0	0.0
B-11R	4/13/2020	614.39	10.1	6.80	0.22	993	-75.8	9.0
	10/12/2020	604.57	14.3	6.83	0.14	1125	-139.8	6.6
B-26	4/14/2020	613.76	11.3	7.27	8.43	852	160.4	0.0
	10/13/2020	604.92	11.9	7.34	7.20	782	242.6	0.0
B-31A	4/13/2020	613.79	13.6	7.71	0.24	556	-68.2	0.8
	10/12/2020	604.54	13.9	7.78	0.19	557	-55.9	1.1
B-31R	4/13/2020	613.80	12.0	6.79	0.14	763	7.3	0.0
	10/12/2020	604.66	14.0	6.89	0.22	826	-60.7	0.0

Created by: RM  
 Last revision by: RM  
 Checked by: NDK

Date: 12/22/2020  
 Date: 1/8/2021  
 Date: 1/8/2021

## Figures

- 1 Site Location Map
- 2 Site Plan and Monitoring Well Locations
- 3 April 2020 Water Table Map
- 4 October 2020 Water Table Map



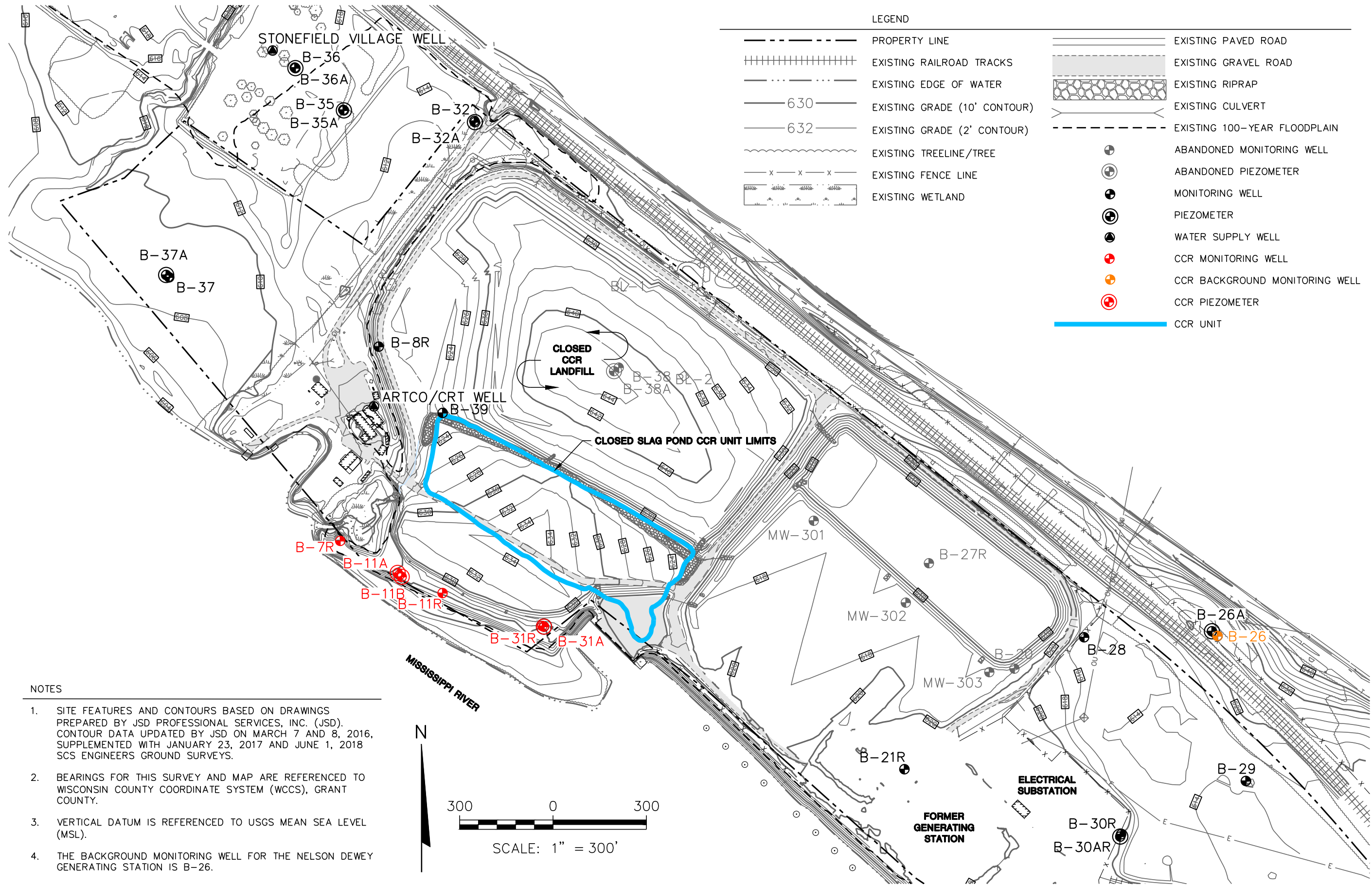
CASSVILLE AND TURKEY RIVER QUADRANGLES  
 WISCONSIN-IOWA  
 7.5 MINUTE SERIES (TOPOGRAPHIC)  
 2018  
 SCALE: 1" = 2,000'



CLIENT	ALLIANT ENERGY 4902 N. BILTMORE LANE, #1000 MADISON, WI 53718		SITE	ALLIANT ENERGY NELSON DEWEY GENERATING STATION CASSVILLE, WISCONSIN		ENGINEER	SITE LOCATION MAP	
	PROJECT NO.	25220071.00		DRAWN BY:	BSS		SCS ENGINEERS 2830 DAIRY DRIVE MADISON, WI 53718-6751 PHONE: (608) 224-2830	FIGURE
DRAWN:	11/27/2019	CHECKED BY:	MDB	APPROVED BY:	TK 04/10/2020			
REVISED:	01/14/2020							

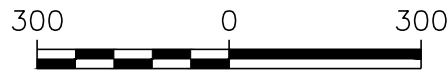


I:\2520071\_00\Drawings\ASD\Site Plan and Monitoring Well Locations.dwg, 1/28/2021 9:26:56 AM



**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).
4. THE BACKGROUND MONITORING WELL FOR THE NELSON DEWEY GENERATING STATION IS B-26.



SCALE: 1" = 300'

**LEGEND**

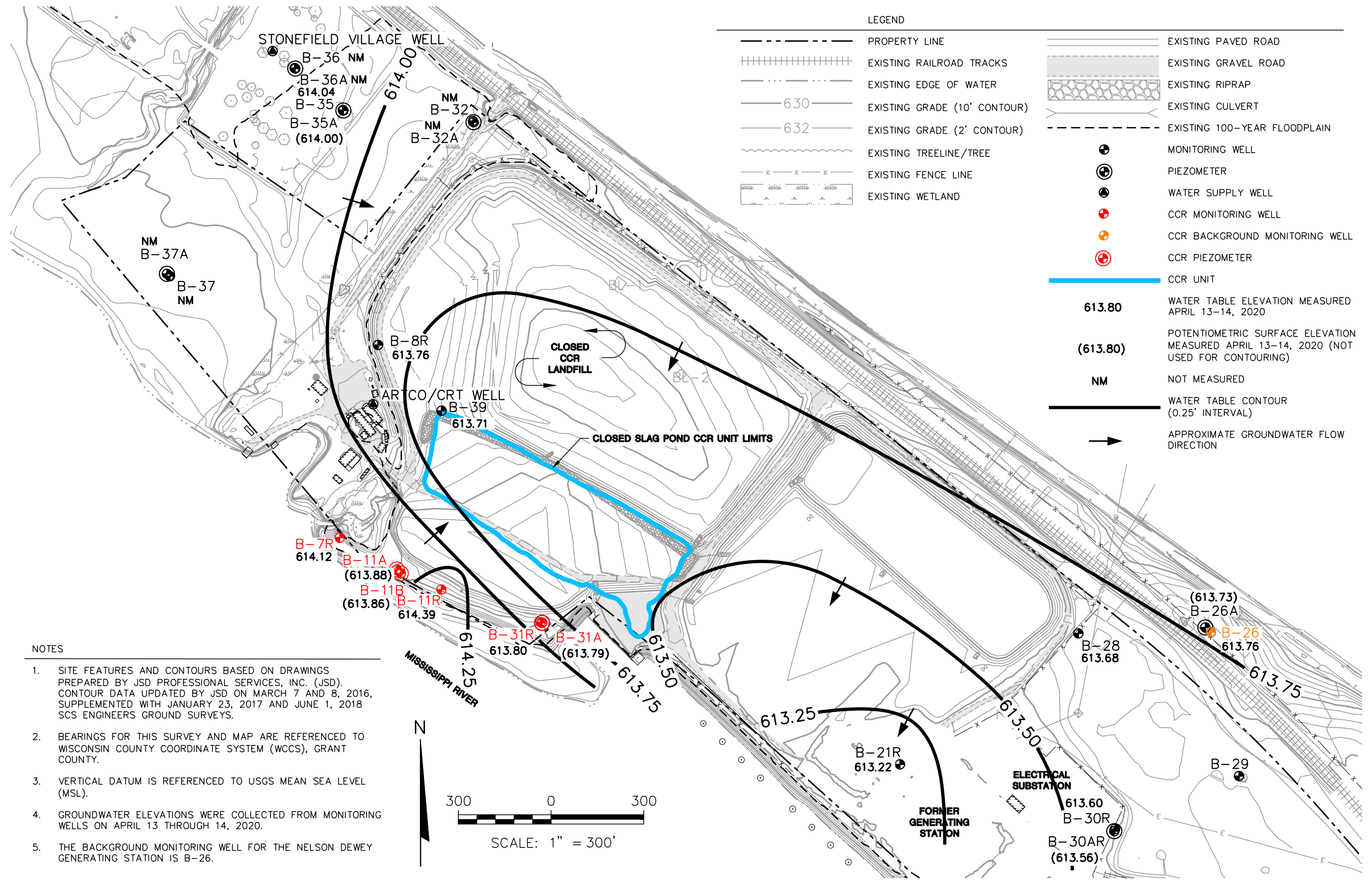
- |             |                              |       |                                |
|-------------|------------------------------|-------|--------------------------------|
| ---         | PROPERTY LINE                | ===== | EXISTING PAVED ROAD            |
|             | EXISTING RAILROAD TRACKS     | ----- | EXISTING GRAVEL ROAD           |
| - . - . -   | EXISTING EDGE OF WATER       | ----- | EXISTING RIPRAP                |
| — 630 —     | EXISTING GRADE (10' CONTOUR) | ----- | EXISTING CULVERT               |
| — 632 —     | EXISTING GRADE (2' CONTOUR)  | ----- | EXISTING 100-YEAR FLOODPLAIN   |
| ~~~~~       | EXISTING TREELINE/TREE       | ⊕     | ABANDONED MONITORING WELL      |
| - x - x - x | EXISTING FENCE LINE          | ⊕     | ABANDONED PIEZOMETER           |
| -----       | EXISTING WETLAND             | ⊕     | MONITORING WELL                |
|             |                              | ⊕     | PIEZOMETER                     |
|             |                              | ⊕     | WATER SUPPLY WELL              |
|             |                              | ⊕     | CCR MONITORING WELL            |
|             |                              | ⊕     | CCR BACKGROUND MONITORING WELL |
|             |                              | ⊕     | CCR PIEZOMETER                 |
|             |                              | —     | CCR UNIT                       |

CLIENT	ALLIANT ENERGY 4902 N. BALTIMORE LANE, #1000 MADISON, WI 53718		
	PROJECT NO.	25220071.00	ENGINEER
SITE	ALLIANT ENERGY NELSON DEWEY GENERATING STATION CASSVILLE, WISCONSIN		
	DRAWN BY:	BSS	ENGINEER
DRAWN:	11/27/2019	MDB	ENGINEER
	01/14/2020	TK	01/28/2021
REVISED:			
FIGURE	2		

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



I:\2520071\_00\Drawings\ASD\APRIL 2020\WTBL.dwg, 1/28/2021 9:20:11 AM

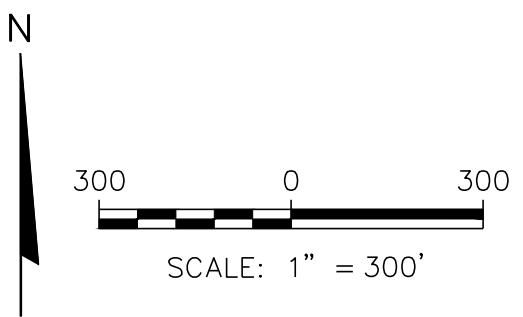


LEGEND

	PROPERTY LINE		EXISTING PAVED ROAD
	EXISTING RAILROAD TRACKS		EXISTING GRAVEL ROAD
	EXISTING EDGE OF WATER		EXISTING RIPRAP
	EXISTING GRADE (10' CONTOUR)		EXISTING CULVERT
	EXISTING GRADE (2' CONTOUR)		EXISTING 100-YEAR FLOODPLAIN
	EXISTING TREELINE/TREE		MONITORING WELL
	EXISTING FENCE LINE		PIEZOMETER
	EXISTING WETLAND		WATER SUPPLY WELL
			CCR MONITORING WELL
			CCR BACKGROUND MONITORING WELL
			CCR PIEZOMETER
			CCR UNIT

	613.80	WATER TABLE ELEVATION MEASURED APRIL 13-14, 2020
	(613.80)	POTENTIOMETRIC SURFACE ELEVATION MEASURED APRIL 13-14, 2020 (NOT USED FOR CONTOURING)
	NM	NOT MEASURED
		WATER TABLE CONTOUR (0.25' INTERVAL)
		APPROXIMATE GROUNDWATER FLOW DIRECTION

- NOTES
- 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.
  - BEARINGS FOR THIS SURVEY AND MAP ARE REFERENCED TO WISCONSIN COUNTY COORDINATE SYSTEM (WCCS), GRANT COUNTY.
  - VERTICAL DATUM IS REFERENCED TO USGS MEAN SEA LEVEL (MSL).
  - GROUNDWATER ELEVATIONS WERE COLLECTED FROM MONITORING WELLS ON APRIL 13 THROUGH 14, 2020.
  - THE BACKGROUND MONITORING WELL FOR THE NELSON DEWEY GENERATING STATION IS B-26.

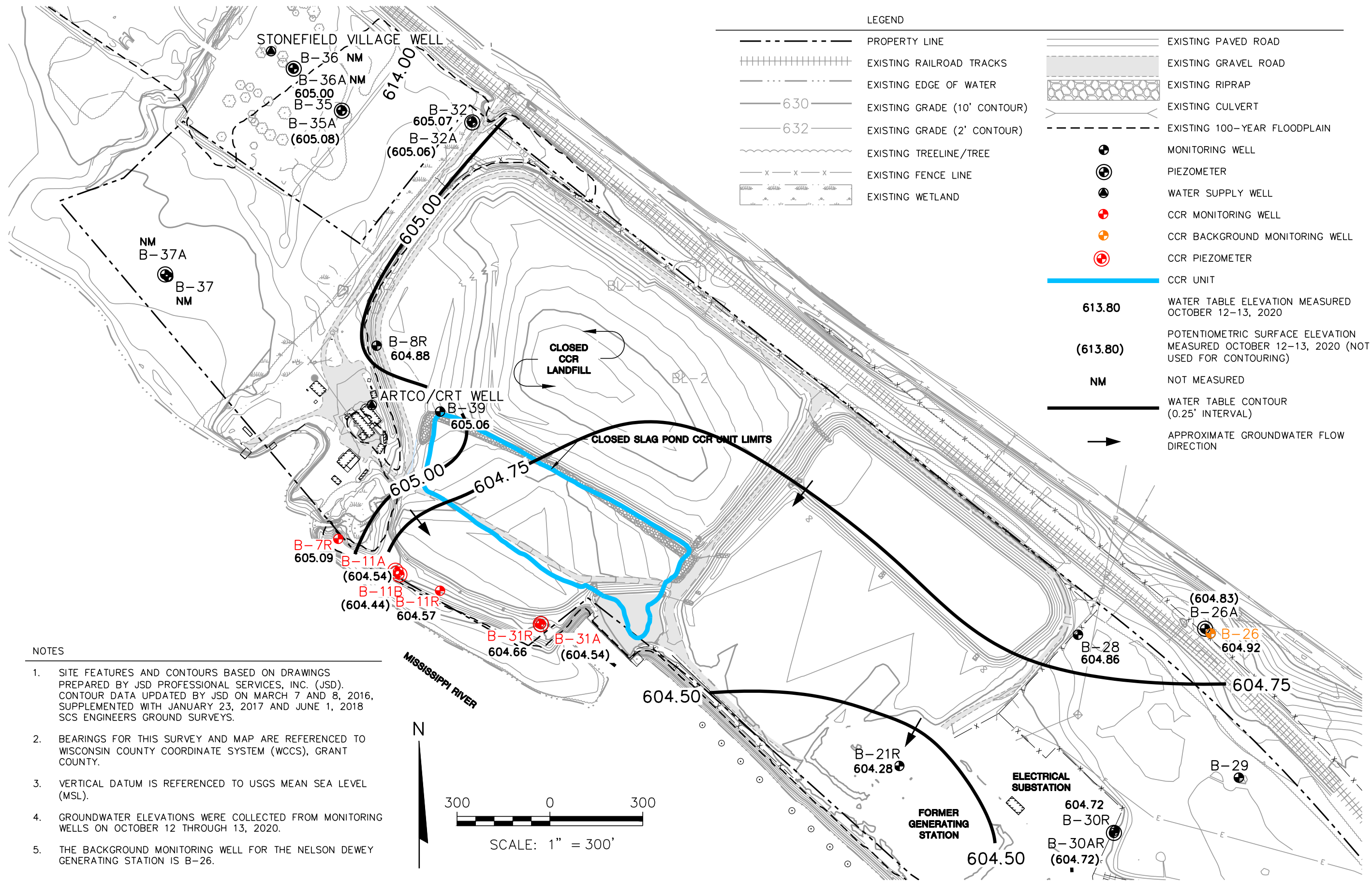


CLIENT	ALLIANT ENERGY 4902 N. BALTIMORE LANE, #1000 MADISON, WI 53718		PROJECT NO. 25220071.00	DRAWN BY: 11/27/2019	CHECKED BY: 09/23/2020	APPROVED BY:	ENGINEER	WATER TABLE FLOW MAP APRIL 2020	FIGURE 3
	SITE ALLIANT ENERGY NELSON DEWEY GENERATING STATION CASSVILLE, WISCONSIN								

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



I:\2520071\_00\Drawings\ASD\OCTOBER 2020\WTBL.dwg, 1/28/2021 9:23:34 AM



LEGEND

- PROPERTY LINE
EXISTING RAILROAD TRACKS
EXISTING EDGE OF WATER
EXISTING GRADE (10' CONTOUR)
EXISTING GRADE (2' CONTOUR)
EXISTING TREELINE/TREE
EXISTING FENCE LINE
EXISTING WETLAND
EXISTING PAVED ROAD
EXISTING GRAVEL ROAD
EXISTING RIPRAP
EXISTING CULVERT
EXISTING 100-YEAR FLOODPLAIN
MONITORING WELL
PIEZOMETER
WATER SUPPLY WELL
CCR MONITORING WELL
CCR BACKGROUND MONITORING WELL
CCR PIEZOMETER
CCR UNIT
WATER TABLE ELEVATION MEASURED
POTENTIOMETRIC SURFACE ELEVATION
NOT MEASURED
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, 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).
4. GROUNDWATER ELEVATIONS WERE COLLECTED FROM MONITORING WELLS ON OCTOBER 12 THROUGH 13, 2020.
5. THE BACKGROUND MONITORING WELL FOR THE NELSON DEWEY GENERATING STATION IS B-26.

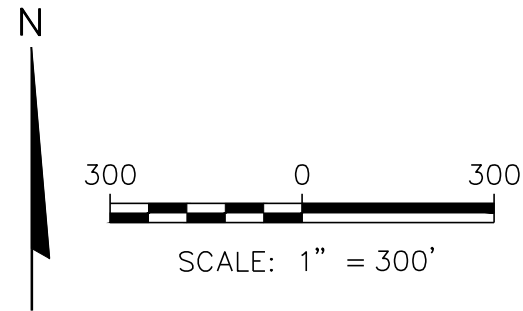


Table with project details including Client (Alliant Energy), Project No. (25220071.00), Date (12/08/2020), and Engineer (TK).

WATER TABLE FLOW MAP
OCTOBER 2020

ALLIANT ENERGY
NELSON DEWEY GENERATING STATION
CASSVILLE, WISCONSIN

SITE

CLIENT
ALLIANT ENERGY
4902 N. BILTMORE LANE, #1000
MADISON, WI 53718


PROJECT NO. 25220071.00
DRAWN: 11/27/2019
REVISED: 12/08/2020

DRAWN BY: BSS/ZTW
CHECKED BY: TK
APPROVED BY: TK 01/28/2021

ENGINEER

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

FIGURE 4



## Appendix A

### Summary of Regional Geologic and Hydrogeologic 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 a 15 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

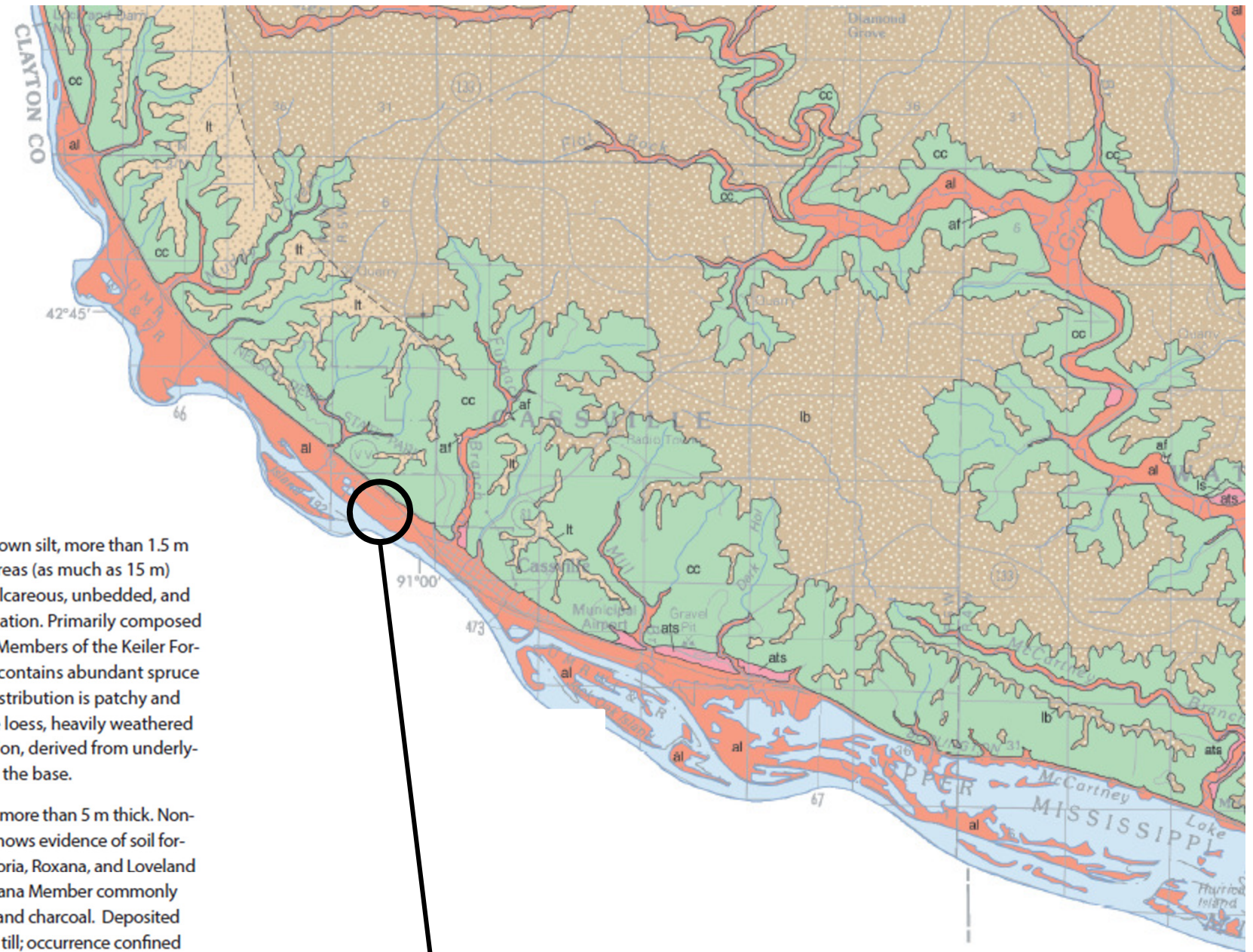
- cc** Coarse-grained colluvium. Unsorted slope sediment, derived from erosion of Paleozoic bedrock and windblown silt from upland surfaces moving downslope due to gravity. Typically associated with bedrock incision by major streams, and occurring on relatively steep slopes adjacent to major stream systems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

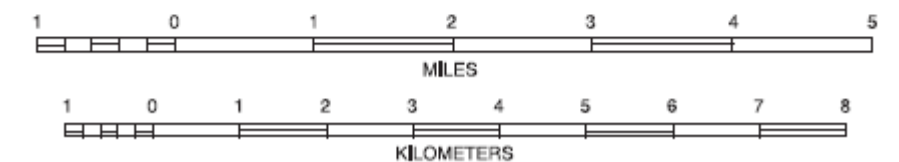
- Geologic contact. Position shown on map is judged to be generally within 0.2 km of actual position. Dashed where approximate.



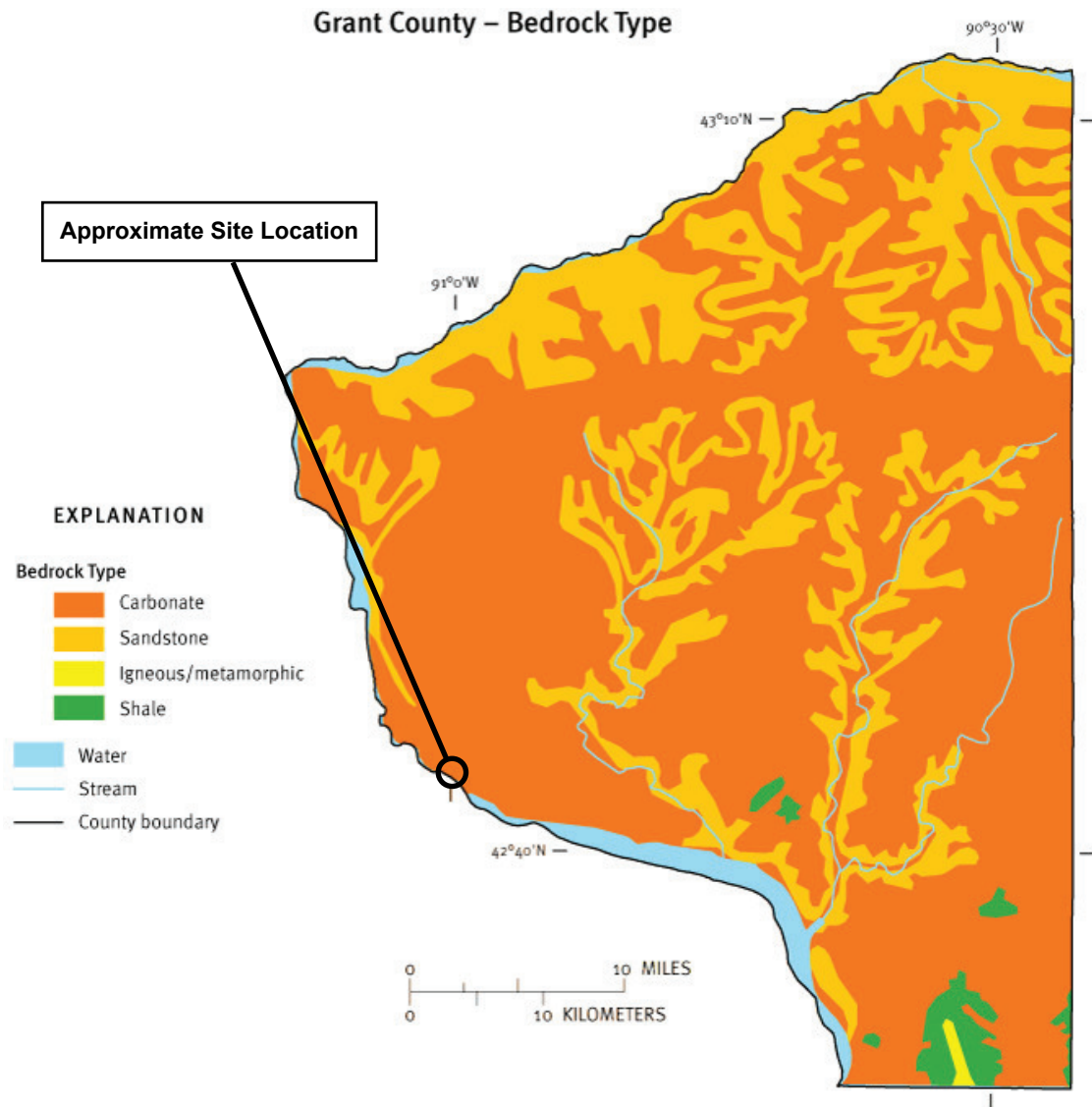
Approximate Site Location



SCALE 1:100,000





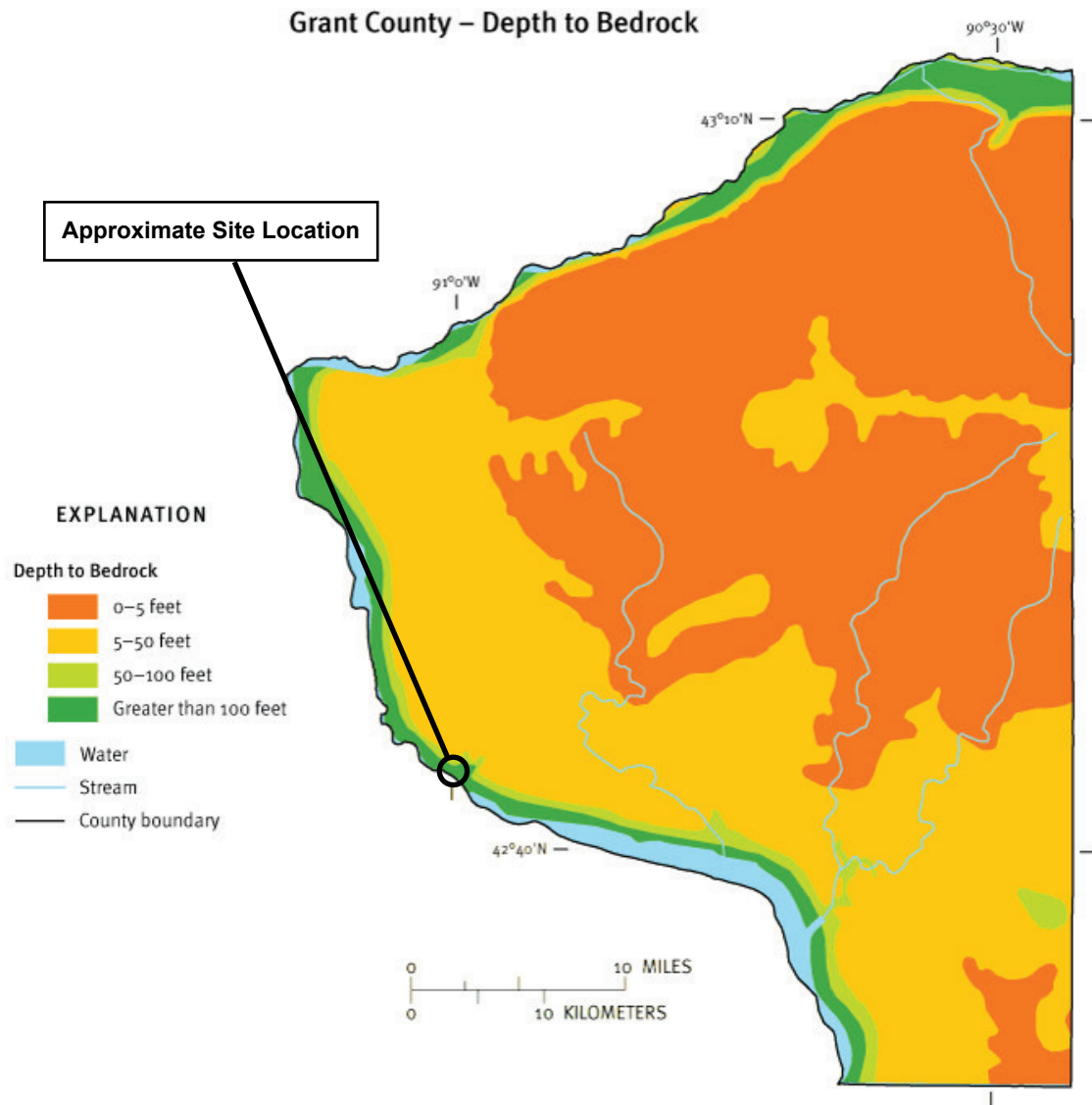


This resource characteristic map was derived from generalized statewide information at small scales, and cannot be used for any site-specific purposes.

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 B

Boring logs, Well Construction, and Well Development forms

State of Wisconsin  
Department of Natural Resources

Route to:  Watershed/Wastewater  Waste Management   
 Remediation/Redevelopment  Other

MONITORING WELL CONSTRUCTION  
Form 4400-113A Rev. 7-98

Facility/Project Name WPL- Nelson Dewey Generating St.	Local Grid Location of Well 479422.6 ft. <input checked="" type="checkbox"/> N. <input type="checkbox"/> S. 737324.8 ft. <input checked="" type="checkbox"/> E. <input type="checkbox"/> W.	Well Name B-39
Facility License, Permit or Monitoring No.	Local Grid Origin (estimated: ) or Well Location Lat. " Long. " or St. Plane ft. N, ft. E. S/C/N	Wis. Unique Well No. DNR Well ID No.
Facility ID	Section Location of Waste/Source SE 1/4 of NW 1/4 of Sec. 19, T. 3 N, R. 5 <input checked="" type="checkbox"/> E <input type="checkbox"/> W	Date Well Installed 10 / 20 / 2015 m m d d y y v v y
Type of Well Well Code 11 / MW	Location of Well Relative to Waste/Source <input type="checkbox"/> Upgradient <input type="checkbox"/> Sidegradient <input type="checkbox"/> Downgradient <input type="checkbox"/> Not Known	Well Installed By: Name (first, last) and Firm Dave Cruise- Badger State Drilling
Distance from Waste/Source ft. Apply <input type="checkbox"/>	Gov. Lot Number	Kyle Kramer- SCS Engineers

- A. Protective pipe, top elevation --- 626.65 ft. MSL
- B. Well casing, top elevation --- 626.48 ft. MSL
- C. Land surface elevation --- 623.58 ft. MSL
- D. Surface seal, bottom --- 623.08 ft. MSL or --- 0.5 ft.

12. USCS classification of soil near screen:

GP  GM  GC  GW  SW  SP   
 SM  SC  ML  MH  CL  CH   
 Bedrock

13. Sieve analysis performed?  Yes  No

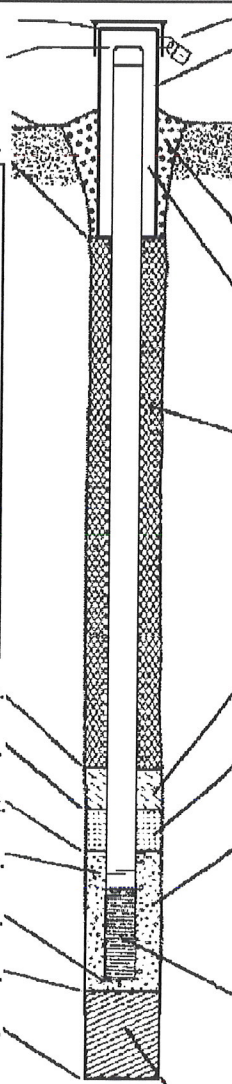
14. Drilling method used: Rotary  5 0  
 Hollow Stem Auger  4 1  
 Other

15. Drilling fluid used: Water  0 2 Air  0 1  
 Drilling Mud  0 3 None  9 9

16. Drilling additives used?  Yes  No

Describe \_\_\_\_\_

17. Source of water (attach analysis, if required): \_\_\_\_\_



- 1. Cap and lock?  Yes  No
- 2. Protective cover pipe:
  - a. Inside diameter: --- 6 in.
  - b. Length: --- 4 ft.
  - c. Material: Steel  0 4  
Other
  - d. Additional protection?  Yes  No  
If yes, describe: Bollards
- 3. Surface seal: Bentonite  3 0  
Concrete  0 1  
Other
- 4. Material between well casing and protective pipe: Bentonite  3 0  
#5 Filter Sand - Ohio
- 5. Annular space seal:
  - a. Granular/Chipped Bentonite  3 3
  - b. \_\_\_ Lbs/gal mud weight . . . Bentonite-sand slurry  3 5
  - c. \_\_\_ Lbs/gal mud weight . . . . . Bentonite slurry  3 1
  - d. \_\_\_ % Bentonite . . . . . Bentonite-cement grout  5 0
  - e. \_\_\_ Ft<sup>3</sup> volume added for any of the above
  - f. How installed: Tremie  0 1  
Tremie pumped  0 2  
Gravity  0 8
- 6. Bentonite seal:
  - a. Bentonite granules  3 3
  - b.  1/4 in.  3/8 in.  1/2 in. Bentonite chips  3 2
  - c. Other
- 7. Fine sand material: Manufacturer, product name & mesh size  
a. #7 Fine Sand - Ohio
- b. Volume added \_\_\_ ft<sup>3</sup>
- 8. Filter pack material: Manufacturer, product name & mesh size  
a. #5 Filter Sand - Ohio
- b. Volume added \_\_\_ ft<sup>3</sup>
- 9. Well casing: Flush threaded PVC schedule 40  2 3  
Flush threaded PVC schedule 80  2 4  
Other
- 10. Screen material: 40 PVC  
a. Screen type: Factory cut  1 1  
Continuous slot  0 1  
Other
- b. Manufacturer Monoflex
- c. Slot size: 0.10 in.
- d. Slotted length: 10 ft.
- 11. Backfill material (below filter pack): None  1 4  
#5 Coarse - Ohio

- E. Bentonite seal, top --- 623.08 ft. MSL or --- 0.5 ft.
- F. Fine sand, top --- 613.58 ft. MSL or --- 10 ft.
- G. Filter pack, top --- 611.58 ft. MSL or --- 12 ft.
- H. Screen joint, top --- 609.58 ft. MSL or --- 14 ft.
- I. Well bottom --- 599.58 ft. MSL or --- 24 ft.
- J. Filter pack, bottom --- 596.58 ft. MSL or --- 27 ft.
- K. Borehole, bottom --- 596.58 ft. MSL or --- 27 ft.
- L. Borehole, diameter --- 8.5 in.
- M. O.D. well casing --- 2.4 in.
- N. I.D. well casing --- 2.04 in.

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature *[Signature]* Firm SCS ENGINEERS, 2830 Dairy Drive, Madison, WI 53718-6751

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between \$10 and \$25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.



Route To: Watershed/Wastewater  Waste Management   
Remediation/Redevelopment  Other

Facility/Project Name <b>WPL- Nelson Dewey Generating Station SCS#: 25215135.30</b>		License/Permit/Monitoring Number		Boring Number <b>B-39</b>	
Boring Drilled By: Name of crew chief (first, last) and Firm <b>Dave Cruise Badger State Drilling</b>		Date Drilling Started <b>10/20/2015</b>		Date Drilling Completed <b>10/20/2015</b>	
Drilling Method <b>hollow stem auger</b>		WI Unique Well No.		DNR Well ID No.	
Common Well Name		Final Static Water Level <b>Feet</b>		Surface Elevation <b>623.58 Feet</b>	
Borehole Diameter <b>8.5 in.</b>		Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/> ) or Boring Location <input type="checkbox"/>		Local Grid Location	
State Plane <b>479,423 N, 737,325 E S/C/N</b>		Lat <input type="checkbox"/> ° <input type="checkbox"/> ' <input type="checkbox"/> "		<input type="checkbox"/> N <input type="checkbox"/> E	
NW 1/4 of NW 1/4 of Section 19, T 3 N, R 5 W		Long <input type="checkbox"/> ° <input type="checkbox"/> ' <input type="checkbox"/> "		<input type="checkbox"/> S <input type="checkbox"/> W	

Facility ID	County <b>Grant</b>	County Code <b>22</b>	Civil Town/City/ or Village <b>Cassville</b>
-------------	------------------------	--------------------------	-------------------------------------------------

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
									Pocket Penetration (tsf)	Moisture Content	Liquid Limit	Plasticity Index	P 200	
S1	20	20 25 29 33	1-2	TOPSOIL, with medium grained sand, light brown.	TOPSOIL									
				POORLY GRADED SLAG, coarse grained, very dark brown (10YR 2/2), fly ash.										
S2	21	14 32 44 31	3-6		FILL									
S3	10	12 10 15 8	7-10											
				POORLY GRADED SAND, fine grained, dark gray (10YR4/1).										
S4	18	3 4 4 4	11-13		SP									

I hereby certify that the information on this form is true and correct to the best of my knowledge.





Signature 	Firm <b>SCS Engineers</b> 2830 Dairy Drive Madison, WI 53711	Tel: (608) 224-2830 Fax:
---------------	--------------------------------------------------------------------	-----------------------------

This form is authorized by Chapters 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats. Completion of this form is mandatory. Failure to file this form may result in forfeiture of between \$10 and \$25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

Boring Number **B-39**

Use only as an attachment to Form 4400-122.

Page **2** of **2**

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Pocket Penetration (tsf)	Moisture Content	Liquid Limit	Plasticity Index	P 200	
S5	15	4 3 5 6	15	POORLY GRADED SAND, fine grained, dark gray (10YR 4/1).	SP					M				
S6	16	3 4 4 6	16-17											
S7	22	4 6 8 11	19-20	POORLY GRADED GRAVEL WITH SAND, pebble size gravel, dark gray (10YR 4/1).	GP					S				
S8	14	7 4 4 5	22-23	POORLY GRADED SAND, coarse grained, dark gray (10YR 4/1).	SP					S				
S9	6	4 7 8 10	24-25											
S10	14	4 3 4 21	26-27	Trace pebbles						S				
			27	EOB @ 27' bgs.										

Saturation @  
16.5ft bgs

Route To: Watershed/Wastewater  Waste Management   
Remediation/Redevelopment  Other

Facility/Project Name WPL - Nelson Dewey Generating Station		License/Permit/Monitoring Number 02525		Boring Number B-07R	
Boring Drilled By: Name of crew chief (first, last) and Firm Wes Imhoff Layne Christensen, Co.		Date Drilling Started 4/28/2009	Date Drilling Completed 4/28/2009	Drilling Method Rotasonic	
WI Unique Well No. VU600	DNR Well ID No. 156	Common Well Name B-07R	Final Static Water Level Feet MSL	Surface Elevation 620.5 Feet MSL	Borehole Diameter 6.0 inches
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/> ) or Boring Location <input checked="" type="checkbox"/>		State Plane 265,999 N, 1,695,529 E S/C/N		Local Grid Location	
NW 1/4 of NW 1/4 of Section 19, T 3 N, R 5 W		Lat _____"	Long _____"	Feet <input type="checkbox"/> N <input type="checkbox"/> S	Feet <input type="checkbox"/> E <input type="checkbox"/> W
Facility ID 122014530	County Grant	County Code 22	Civil Town/City/ or Village Cassville		

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
									Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200	
1 CS	60 42		1	<b>WELL GRADED SAND WITH SILT (SW-SM), non-plastic, 5YR 4/4 reddish brown, no odor, moist, some siltier layers at 4.5 feet.</b>										
2 CS	60 48		5	Same as above.	SW-SM									
3 CS	60 60		9	Silty organic sand layer from 9 to 9.5 feet.										
			10	Same as above, color change to 7.5YR 4/1 dark gray, moist to wet above clay.										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature <i>Nate Keller</i>	Firm RMT, Inc. 744 Heartland Trail Madison, WI 53717	Tel: 608-831-4444 Fax: 608-831-3334
---------------------------------	------------------------------------------------------------	----------------------------------------

WDNR\_SBL\_98 03026W.GPJ WI\_DNR98B.GDT 8/27/09

This form is authorized by Chapters 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats. Completion of this form is mandatory. Failure to file this form may result in forfeiture of between \$10 and \$25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

Boring Number **B-07R**

Use only as an attachment to Form 4400-122.

Page **2** of **2**

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments	
Number and Type	Length Att. & Recovered (in)								Compressive Strength	Moisture Content	Liquid Limit	Plasticity Index	P 200		
4 CS	60 60		13		SW-SM										
			14	<b>LEAN CLAY WITH SAND (CL)</b> , fine sand, plastic, 7.5YR 3/1 very dark gray, no odor, wet.	CL										
			15	<b>WELL GRADED SAND WITH SILT AND CLAY (SW-SM)</b> , trace gravel, very low plasticity, 5YR 4/3 reddish brown, no odor, wet.											
			16												
			17		SW-SM										
			18												
			19												
			20	<b>End of boring at 20.0 feet.</b>											



Route To: Watershed/Wastewater  Remediation/Redevelopment  Waste Management  Other

**MONITORING WELL CONSTRUCTION**  
Form 4400-113A Rev. 7-98

Facility/Project Name WPL - Nelson Dewey Generating Station		Local Grid Location of Well ft. <input type="checkbox"/> N. <input type="checkbox"/> E. <input type="checkbox"/> S. <input type="checkbox"/> W.		Well Name B-07R	
Facility License, Permit or Monitoring No. 02525		Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/> ) or Well Location <input checked="" type="checkbox"/>		Wis. Unique Well No.   DNR Well Number VU600   156	
Facility ID 122014530		Lat. _____ Long. _____ or St. Plane 265,999 ft. N, 1,695,529 ft. E. S/C/N		Date Well Installed 04/28/2009	
Type of Well Well Code 11/mw		Section Location of Waste/Source NW 1/4 of NW 1/4 of Sec. 19, T. 3 N, R. 5 <input checked="" type="checkbox"/> E <input type="checkbox"/> W		Well Installed By: (Person's Name and Firm) Wes Imhoff	
Distance from Waste/Source 350 ft.		Location of Well Relative to Waste/Source u <input type="checkbox"/> Upgradient s <input type="checkbox"/> Sidegradient d <input checked="" type="checkbox"/> Downgradient n <input type="checkbox"/> Not Known		Gov. Lot Number	
Enf. Stds. Apply <input checked="" type="checkbox"/>				Layne Christensen, Co.	

- A. Protective pipe, top elevation 623.50 ft. MSL
- B. Well casing, top elevation 623.35 ft. MSL
- C. Land surface elevation 620.5 ft. MSL
- D. Surface seal, bottom 618.5 ft. MSL or 2.0 ft.

12. USCS classification of soil near screen:  
 GP  GM  GC  GW  SW  SP   
 SM  SC  ML  MH  CL  CH   
 Bedrock

13. Sieve analysis attached?  Yes  No

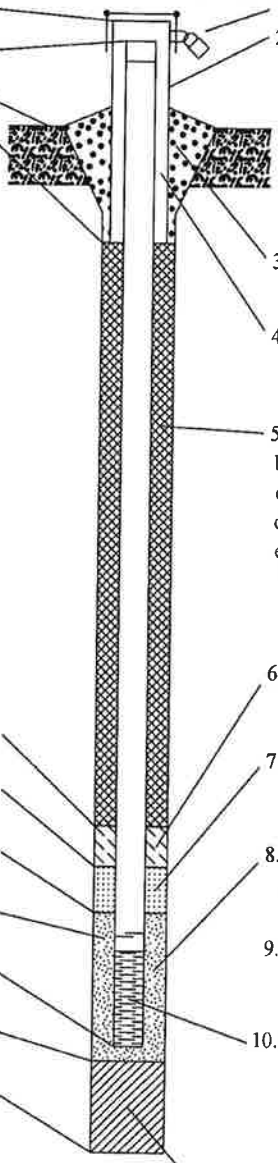
14. Drilling method used: Rotary  5 0  
 Hollow Stem Auger  4 1  
 Rotosonic  Other

15. Drilling fluid used: Water  0 2 Air  0 1  
 Drilling Mud  0 3 None  9 9

16. Drilling additives used?  Yes  No

Describe \_\_\_\_\_

17. Source of water (attach analysis, if required):  
 on-site hydrant



- 1. Cap and lock?  Yes  No
- 2. Protective cover pipe:
  - a. Inside diameter: 4.0 in.
  - b. Length: 5.0 ft.
  - c. Material: Steel  0 4  
Other
  - d. Additional protection?  Yes  No  
If yes, describe: \_\_\_\_\_
- 3. Surface seal: Bentonite  3 0  
Concrete  0 1  
Other
- 4. Material between well casing and protective pipe:
  - Bentonite  3 0
  - Upper Filter Sand/Lower Bentonite Other
- 5. Annular space seal:
  - a. Granular/Chipped Bentonite  3 3
  - b. \_\_\_\_\_ Lbs/gal mud weight ... Bentonite-sand slurry  3 5
  - c. \_\_\_\_\_ Lbs/gal mud weight ... Bentonite slurry  3 1
  - d. \_\_\_\_\_ % Bentonite ... Bentonite-cement grout  5 0
  - e. 1.5 Ft<sup>3</sup> volume added for any of the above
  - f. How installed: Tremie  0 1  
Tremie pumped  0 2  
Gravity  0 8
- 6. Bentonite seal:
  - a. Bentonite granules  3 3
  - b.  1/4 in.  3/8 in.  1/2 in. Bentonite chips  3 2
  - c. \_\_\_\_\_ Other
- 7. Fine sand material: Manufacturer, product name & mesh size
  - a. NA
  - b. Volume added \_\_\_\_\_ ft<sup>3</sup>
- 8. Filter pack material: Manufacturer, product name & mesh size
  - a. Red Flint Filter Sand
  - b. Volume added 2.1 ft<sup>3</sup>
- 9. Well casing: Flush threaded PVC schedule 40  2 3  
Flush threaded PVC schedule 80  2 4  
Other
- 10. Screen material: PVC
  - a. Screen Type: Factory cut  1 1  
Continuous slot  0 1  
Other
  - b. Manufacturer \_\_\_\_\_
  - c. Slot size: 0.010 in.
  - d. Slotted length: 10.0 ft.
- 11. Backfill material (below filter pack): None  1 4  
Other

- E. Bentonite seal, top 618.5 ft. MSL or 2.0 ft.
- F. Fine sand, top 612.6 ft. MSL or 7.9 ft.
- G. Filter pack, top 612.6 ft. MSL or 7.9 ft.
- H. Screen joint, top 610.5 ft. MSL or 10.0 ft.
- I. Well bottom 600.5 ft. MSL or 20.0 ft.
- J. Filter pack, bottom 600.5 ft. MSL or 20.0 ft.
- K. Borehole, bottom 600.5 ft. MSL or 20.0 ft.
- L. Borehole, diameter 6.0 in.
- M. O.D. well casing 2.38 in.
- N. I.D. well casing 2.07 in.

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature Nate Kelber/go Firm RMTINC

Tel:  
Fax:

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between \$10 and \$25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

Route To: Watershed/Wastewater   
Remediation/Redevelopment

Waste Management   
Other

Facility/Project Name <b>WPL - Nelson Dewey Generating Station</b>	County <b>Grant</b>	Well Name <b>B-07R</b>	
Facility License, Permit or Monitoring Number <b>02525</b>	County Code <b>22</b>	Wis. Unique Well Number <b>VU600</b>	DNR Well Number <b>156</b>

1. Can this well be purged dry?  Yes  No
2. Well development method:
- surged with bailer and bailed  4 1
  - surged with bailer and pumped  6 1
  - surged with block and bailed  4 2
  - surged with block and pumped  6 2
  - surged with block, bailed, and pumped  7 0
  - compressed air  2 0
  - bailed only  1 0
  - pumped only  5 1
  - pumped slowly  5 0
  - other surged and pumped with Whaler pump
3. Time spent developing well **115 min.**
4. Depth of well (from top of well casing) **23.0 ft.**
5. Inside diameter of well **2.07 in.**
6. Volume of water in filter pack and well casing **1.5 gal.**
7. Volume of water removed from well **20.0 gal.**
8. Volume of water added (if any) **10.0 gal.**
9. Source of water added fire suppression system hydrant
10. Analysis performed on water added?  Yes  No  
(If yes, attach results)

	Before Development	After Development
11. Depth to Water (from top of well casing)	a. <b>15.50 ft.</b>	<b>17.85 ft.</b>
Date	b. <b>4/29/2009</b>	<b>4/29/2009</b>
Time	c. <b>07:55</b> <input checked="" type="checkbox"/> a.m. <input type="checkbox"/> p.m.	<b>09:50</b> <input checked="" type="checkbox"/> a.m. <input type="checkbox"/> p.m.
12. Sediment in well bottom	inches	inches
13. Water clarity	Clear <input type="checkbox"/> 1 0 Turbid <input checked="" type="checkbox"/> 1 5 (Describe) <u>dark reddish brown, no odor</u>	Clear <input checked="" type="checkbox"/> 2 0 Turbid <input type="checkbox"/> 2 5 (Describe) <u>light brown, no odor</u>
Fill in if drilling fluids were used and well is at solid waste facility:		
14. Total suspended solids	mg/l	<b>96.7 mg/l</b>
15. COD	mg/l	mg/l
16. Well developed by: Person's Name and Firm	<b>Roy Buckenberger Layne Christensen, Co.</b>	

17. Additional comments on development:

Facility Address or Owner/Responsible Party Address

Name: Nathaniel Sievers

Firm: Nelson Dewey Generating Station

Street: 11999 County Rd VV

City/State/Zip: Cassville, WI 53806

I hereby certify that the above information is true and correct to the best of my knowledge.

Signature: Nate Keller /go

Print Name: Nathaniel Keller

Firm: RMT, Inc.

Route To:  
 Solid Waste  
 Emergency Response  
 Wastewater  
 Haz. Waste  
 Underground Tanks  
 Water Resources  
 Other

Facility/Project Name <b>WP&amp;L - Nelson Dewey 4293.02</b>		License/Permit/Monitoring Number <b>2525</b>		Boring Number <b>B-11R</b>	
Boring Drilled By (Firm name and name of crew chief) <b>Environmental &amp; Foundation Drilling; Crew Chief: Kevin Hargis</b>		Date Drilling Started <b>11/17/97</b>		Date Drilling Completed <b>11/17/97</b>	
DNR Facility Well No. <b>155</b>		WI Unique Well No.		Common Well Name	
Boring Location State Plane <b>NW 1/4 of WW 1/4 of Section 19 T 3 N,R 5 W</b>		Final Static Water Level Feet MSL		Surface Elevation <b>620.4 Feet MSL</b>	
County <b>Grant</b>		DNR County Code <b>22</b>		Civil Town/City/ or Village <b>Cassville</b>	
Local Grid Location (If applicable) <b>265,843</b> Feet <input checked="" type="checkbox"/> N <input type="checkbox"/> S		Borehole Diameter <b>8.0</b> Inches		Drilling Method <b>4 1/4 HSA</b>	
Lat <b>0 0 "</b>		Long <b>0 0 "</b>		<input checked="" type="checkbox"/> E <input type="checkbox"/> W	

Sample Number	Length (In) Recovered	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					Comments
									Standard Penetration	Moisture Content	Liquid Limit	Plastic Limit	P 200	
			1-23	Boring B-11R was blind drilled to a depth of 23 ft. See boring log B-11 for geologic description.	SP/SW									

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature:

Firm: **RMT**  
744 Heartland Trail, Madison Wisconsin  
Tel: 608-831-4444, Fax: 608-831-3334

This form is authorized by Chapters 144, 147 and 162, Wis. Stats. Completion of this report is mandatory. Penalties: Forfeit not less than \$10 nor more than \$5,000 for each violation. Fined not less than \$10 or more than \$100 or imprisoned not less than 30 days, or both for each violation. Each day of continued violation is a separate offense, pursuant to ss 144.99 and 162.06, Wis. Stats.



Facility/Project Name WP&L Nelson Dewey	4293.01	Local Grid Location of Well <input type="checkbox"/> N. <input type="checkbox"/> E. ____ ft. <input type="checkbox"/> S. ____ ft. <input type="checkbox"/> W.	Well Name B-11R
Facility License, Permit or Monitoring Number 2525		Grid Origin Location Lat. ____ ° ____ ' ____ " Long. ____ ° ____ ' ____ " or St. Plane 265,843 ft. N., 1,695,868 ft. E.	Wis. Unique Well Number DNR Well Number 155
Distance Well is From Waste/Source Boundary ft.		Section Location of Waste/Source <input type="checkbox"/> E. <input checked="" type="checkbox"/> W. NW 1/4 of NW 1/4 of Sec.19, T3N, R5	Date Well Installed 11/ 17/ 97 MM DD YY
Type of Well: Water Table Observation Well <input checked="" type="checkbox"/> 11 Piezometer <input type="checkbox"/> 12		Location of Well Relative to Waste/Source U <input type="checkbox"/> Upgradient S <input type="checkbox"/> Sidegradient D <input checked="" type="checkbox"/> Downgradient N <input type="checkbox"/> Not Known	Well Installed By: (Person's Name and Firm) Kevin Hargis Environmental and Foundation Drilling Waunakee, Wisconsin
Is Well A Point of Enforcement Std. Application? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			

Protective pipe, top elevation 622.56 ft. MSL

Casing, top elevation 622.62 ft. MSL

Surface elevation 620.4 ft. MSL

Seal, bottom 619.4 ft. MSL or 1.0 ft.

USCS classification of soil near screen:  
 GP  GM  GC  GW  SW  SP   
 SM  SC  ML  MH  CL  CH   
 Bedrock

Soil analysis attached? Yes  No

Drilling method used: Rotary  50  
 Hollow Stem Auger  41  
 Other

Drilling fluid used: Water  02 Air  01  
 Drilling Mud  03 None  99

Drilling additives used? Yes  No

Describe:

Source of water (attach analysis):

Seal, top 619.4 ft. MSL or 1.0 ft.

Seal, top 606.4 ft. MSL or 14 ft.

Seal, top 605.4 ft. MSL or 15 ft.

Seal, top 603.4 ft. MSL or 17 ft.

Seal, top 598.4 ft. MSL or 22 ft.

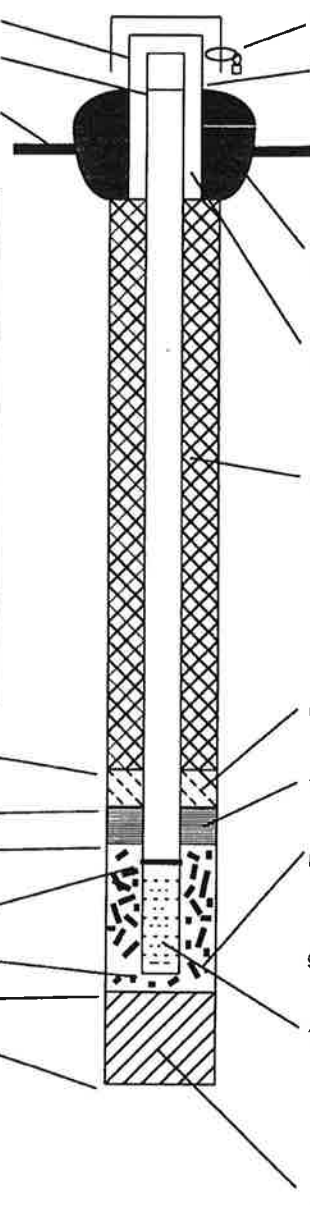
Seal, bottom 597.4 ft. MSL or 23 ft.

Seal, bottom 597.4 ft. MSL or 23 ft.

Seal diameter 8.25 in.

Casing 2.38 in.

Casing 2.00 in.



1. Cap and lock?  Yes  No

2. Protective cover pipe:  
 a. Inside diameter: 4.0 in.  
 b. Length: 7.0 ft.  
 c. Material: Steel  04  
 Other   
 d. Additional protection?  Yes  No  
 If yes, describe: \_\_\_\_\_

3. Surface seal: Bentonite  30  
 Concrete  01  
 Other

4. Material between well casing and protective pipe:  
 Bentonite  30  
 Annular space seal   
 Other

5. Annular space seal:  
 a. Granular Bentonite  33  
 b. Lbs/gal mud weight... Bentonite-sand slurry  35  
 c. Lbs/gal mud weight... Bentonite slurry  31  
 d. % Bentonite... Bentonite-cement grout  50  
 e. Ft<sup>3</sup> volume added for any of the above  
 f. How installed: Tremie  01  
 Tremie pumped  02  
 Gravity  08

6. Bentonite seal:  
 a. Bentonite granules  33  
 b.  1/4 in.  3/8 in.  1/2 in. Bentonite pellets  32  
 c. Other

7. Fine sand material: Manufacturer, product name, mesh size  
 a. Badger Mining Corp.  
 b. Volume added 20 lbs

8. Filter pack material: Manufacturer, product, mesh size  
 a. 30 - 50  
 b. Volume added 300 lbs

9. Well casing: Flush threaded PVC schedule 40  23  
 Flush threaded PVC schedule 80  24  
 Other

10. Screen Material: Sch 40 PVC  
 a. Screen type: Factory cut  11  
 Continuous slot  01  
 Other  b.  
 Manufacturer Boart Longyear  
 c. Slot size: 0.010 in.  
 d. Slotted length: 5.0 ft.

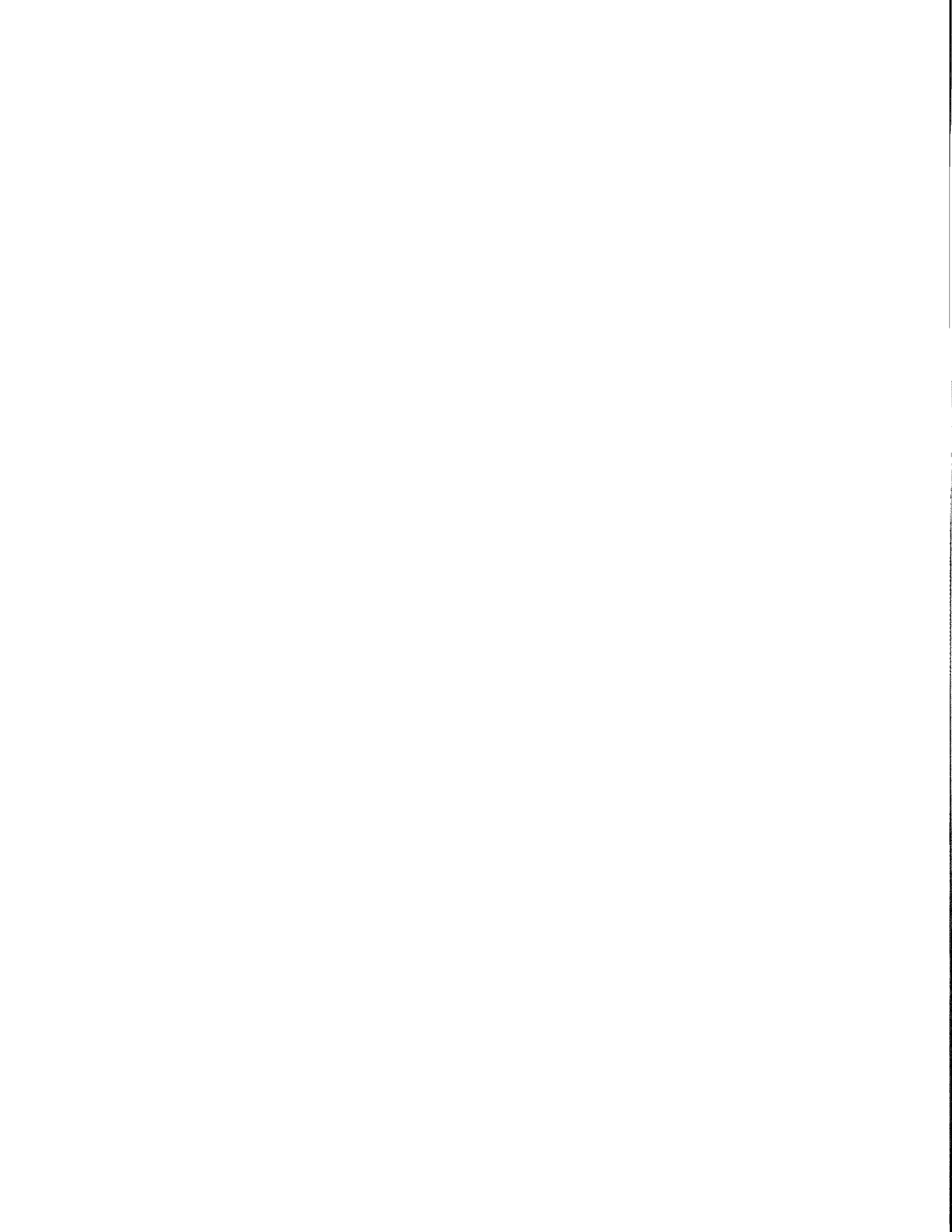
11. Backfill material (below filter pack): None  14  
 Other

I certify that the information on this form is true and correct to the best of my knowledge.

Firm

RMT, Inc.

Print both sides of this form and return to the appropriate DNR office listed at the top of this form as required by chs. 144, 147 and 160, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with ch. 144, Wis. Stats., failure to file this form may result in a forfeiture of not less than \$10, nor more than \$5,000 for each day of violation. In accordance with ch. 147, Wis. Stats., failure to file this form may result in a forfeiture of not more than \$10,000 for each day of violation. NOTE: Shaded areas are for DNR use only. See instructions for more information including where the completed form should be filed.





Route to: Solid Waste  Haz. Waste  Wastewater   
Env. Response & Repair  Underground Tanks  Other

Facility/Project Name WP&L Nelson Dewey		County Name Grant		Well Name B-11R	
Facility License, Permit or Monitoring Number 2525		County Code <u>22</u>		DNR Well Number <u>155</u>	
1. Can this well be purged dry? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		11. Depth to Water (from top of well casing)		Before Development	After Development
2. Well development method		Date			
surged with bailer and bailed <input type="checkbox"/> 41 surged with bailer and pumped <input checked="" type="checkbox"/> 61 surged with block and bailed <input type="checkbox"/> 42 surged with block and pumped <input type="checkbox"/> 62 surged with block, bailed and pumped <input type="checkbox"/> 70 compressed air <input type="checkbox"/> 20 bailed only <input type="checkbox"/> 10 pumped only <input type="checkbox"/> 51 pumped slowly <input type="checkbox"/> 50 Other <input type="checkbox"/>		b. <u>11/18/97</u> mm/dd/yy			<u>11/18/97</u> mm/dd/yy
3. Time spent developing well		Time			
<u>35</u> min.		c. <u>13:45</u> <input type="checkbox"/> a.m. <input checked="" type="checkbox"/> p.m.			<u>14:20</u> <input type="checkbox"/> a.m. <input checked="" type="checkbox"/> p.m.
4. Depth of well (from top of well casing)		12. Sediment in well bottom			
<u>25.5</u> ft.		<u>0.5</u> inches			<u>0.0</u> inches
5. Inside diameter of well		13. Water clarity			
<u>2.0</u> in.		Clear <input type="checkbox"/> 10 Turbid <input checked="" type="checkbox"/> 15 (Describe) _____ _____ _____ _____ _____		Clear <input checked="" type="checkbox"/> 20 Turbid <input type="checkbox"/> 25 (Describe) _____ _____ _____ _____ _____	
6. Volume of water in filter pack and well casing		Fill in if drilling fluids were used and well is at solid waste facility:			
<u>3.0</u> gal.					
7. Volume of water removed from well		14. Total suspended solids			
<u>35</u> gal.		_____ mg/l		<u>110</u> mg/L	
8. Volume of water added (if any)		15. COD			
<u>0</u> gal.		_____ mg/l		_____ mg/L	
9. Source of water added		16. Analysis performed on water added? (if yes, attach results) <input type="checkbox"/> Yes <input type="checkbox"/> No			
10. Additional comments on development:					

Well developed by: Person's Name and Firm  
Name: Kevin Baker  
Firm: RMT, Inc.

I hereby certify that the above information is true and correct to the best of my knowledge.  
Signature:  
Print Initials: K L B  
Firm:

NOTE: Shaded areas are for DNR use only. See instructions for more information including a list of county codes.

- Route To:
- Solid Waste
  - Emergency Response
  - Wastewater
  - Haz. Waste
  - Underground Tanks
  - Water Resources
  - Other

Facility/Project Name: **WP&L Nelson Dewey 3314.01** License/Permit/Monitoring Number: [ ] Boring Number: **B11A**

Boring Drilled By (Firm name and name of crew chief): **Environmental & Foundation Drilling, Crew Chief: G. Markgraf** Date Drilling Started: **12/1/94** Date Drilling Completed: **12/1/94** Drilling Method: **DTRC**

DNR Facility Well No. [ ] WI Unique Well No. [ ] Common Well Name [ ] Final Static Water Level: [ ] Feet MSL Surface Elevation: **620.2** Feet MSL Borehole Diameter: **7.5** Inches

Boring Location: State Plane **265903.10 N, 1727265.86 E** Lat: **09°** Long: **09°** Local Grid Location (If applicable): Feet  N  E  S  W

County: **Grant** DNR County Code: **22** Civil Town/City/ or Village: **Cassville**

Sample Number	Length (In) Recovered	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties				Comments	
									Standard Penetration	Moisture Content	Liquid Limit	Plastic Limit		P 200
			1	Boring blind drilled to 50' bgs. See log of B-11A for geologic description.										
			2											
			3											
			4											
			5											
			6											
			7											
			8											
			9											
			10											
			11											
			12											
			13											
			14											
			15											
			16											
			17											
			18											
			19											
			20											

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature: [ ] Firm: **RMT**  
 744 Heartland Trail, Madison Wisconsin  
 Tel: 608-831-4444, Fax: 608-831-3334

This form is authorized by Chapters 144, 147 and 162, Wis. Stats. Completion of this report is mandatory. Penalties: Forfeit not less than \$10 nor more than \$5,000 for each violation. Fined not less than \$10 or more than \$100 or imprisoned not less than 30 days, or both for each violation. Each day of continued violation is a separate offense, pursuant to ss 144.99 and 162.06, Wis. Stats.







Facility/Project Name WP&L Nelson Dewey 3314.01	Local Grid Location of Well _____ ft. <input type="checkbox"/> N. _____ ft. <input type="checkbox"/> E. _____ ft. <input type="checkbox"/> S. _____ ft. <input type="checkbox"/> W.	Well Name B-11B/A MCM 12/30/94
Facility License, Permit or Monitoring Number	Grid Origin Location Lat. _____ Long. _____ or St. Plane _____ ft. N, _____ ft. E. 265903.10N, 1727265.86E	Wis. Unique Well Number _____ DNR Well Number _____
Type of Well: Water Table Observation Well <input type="checkbox"/> 11 Piezometer <input checked="" type="checkbox"/> 12	Section Location of Waste/Source NE¼ of NE¼ of Sec. 19, T. 3N, R. 5 <input type="checkbox"/> E. <input checked="" type="checkbox"/> W.	Date Well Installed 12 / 01 / 94 MM DD YY
Distance Well is From Waste/Source Boundary Approx. 300' ft.	Location of Well Relative to Waste/Source U <input type="checkbox"/> Upgradient S <input type="checkbox"/> Sidegradient D <input checked="" type="checkbox"/> Downgradient N <input type="checkbox"/> Not Known	Well Installed By: (Persons' Name and Firm) Greg Markgraf, Environmental & Foundation Drilling
Is Well A Point of Enforcement Std. Application? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		

- A. Protective pipe, top elevation 622.20 ft MSL
- B. Well casing, top elevation 622.12 ft MSL
- C. Land surface elevation 620.2 ft MSL
- D. Surface seal, bottom \_\_\_\_\_ ft MSL or \_\_\_\_\_ ft

12. USCS classification of soil near screen:  
 GP  GM  GC  GW  SW  SP   
 SM  SC  ML  MH  CL  CH   
 Bedrock

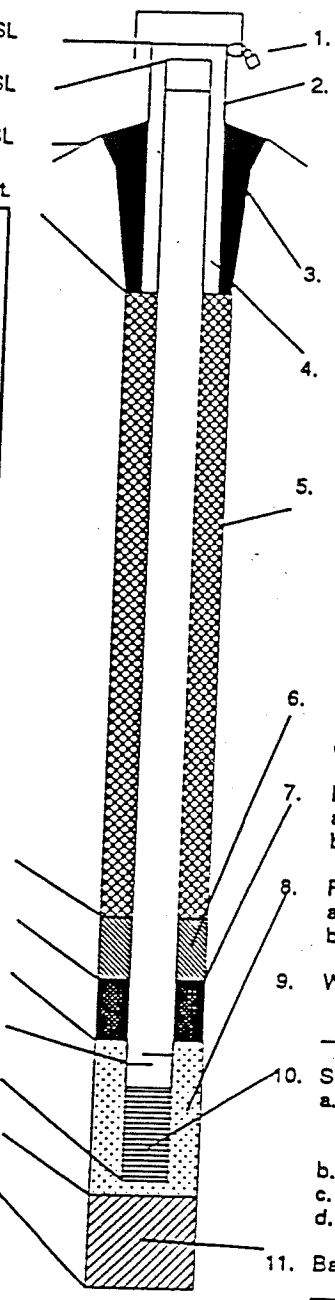
13. Sieve analysis attached? Yes  No

14. Drilling method used: Rotary  50  
 Hollow Stem Auger  41  
 Dual tube reverse circulation  Other

15. Drilling fluid used: Water  02 Air  01  
 Drilling Mud  03 None  99

16. Drilling additives used? Yes  No   
 Describe \_\_\_\_\_

17. Source of water (attach analysis): \_\_\_\_\_



- 1. Cap and lock?  Yes  No
- 2. Protective cover pipe:
  - a. Inside diameter: 3.8 in
  - b. Length: 7.0 ft
  - c. Material: Steel  04  
Other
  - d. Additional protection?  Yes  No  
If yes, describe: \_\_\_\_\_
- 3. Surface seal: Bentonite  30  
Concrete  01  
Other
- 4. Material between well casing and protective pipe: Bentonite  30  
Annular space seal   
Other
- 5. Annular space seal:
  - a. Granular Bentonite  33
  - b. \_\_\_ Lbs/gal mud weight... Bentonite-sand slurry  35
  - c. \_\_\_ Lbs/gal mud weight... Bentonite slurry  31
  - d. \_\_\_ % Bentonite... Bentonite-cement grout  50
  - e. \_\_\_ lb volume added for any of the above
  - f. How installed: Tremie  01  
Tremie pumped  02  
Gravity  08
- 6. Bentonite seal:
  - a. Bentonite granules  33
  - b.  1/4 in.  3/8 in.  1/2 in. Bentonite pellets  32
  - c. \_\_\_\_\_ Other
- 7. Fine sand material: Manufacturer, product name, mesh size  
 a. Badger Mining 40-60  
 b. Volume added 1 bag, 50 lbs
- 8. Filter pack material: Manufacturer, product, mesh size  
 a. Badger Mining #30  
 b. Volume added 500 lbs, 10 bags
- 9. Well casing: Flush threaded PVC schedule 40  23  
 Flush threaded PVC schedule 80  24  
 Other
- 10. Screen Material: PVC Schedule 40  
 a. Screen type: Factory cut  11  
 Continuous slot  01  
 Other   
 b. Manufacturer Northern Air  
 c. Slot size: 0.01 in.  
 d. Slotted length: 5.0 ft
- 11. Backfill material (below filter pack): None  14  
 Other

- E. Bentonite seal, top \_\_\_\_\_ ft MSL or 0.0 ft
- F. Fine sand, top \_\_\_\_\_ ft MSL or 41.0 ft
- G. Filter pack, top \_\_\_\_\_ ft MSL or 43.0 ft
- H. Screen joint, top \_\_\_\_\_ ft MSL or 45.0 ft
- I. Well bottom \_\_\_\_\_ ft MSL or 50.0 ft
- J. Filter pack, bottom \_\_\_\_\_ ft MSL or 56.0 ft
- K. Borehole, bottom \_\_\_\_\_ ft MSL or 56.0 ft
- L. Borehole, diameter 7.5 in.
- M. O.D. well casing 2.2 in.
- N. I.D. well casing 2.0 in.

I hereby certify that the information on this form is true and correct to the best of my knowledge.  
 Signature Martin G. Galt 12/21/94 Firm RMT, Inc

Please complete both sides of this form and return to the appropriate DNR office listed at the top of this form as required by chs. 144, 147 and 160, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with ch. 144, Wis. Stats., failure to file this form may result in a forfeiture of not less than \$10, nor more than \$5,000 for each day of violation. In accordance with ch. 147, Wis. Stats., failure to file this form may result in a forfeiture of not more than \$10,000 for each day of violation. NOTE: Shaded areas are for DNR use only. See instructions for more information including where the completed form should be sent.

Route to: Solid Waste  Haz. Waste  Wastewater   
 Env. Response & Repair  Underground Tanks  Other

Facility/Project Name: WP & L Nelson Dewey/Casewille  
 County Name: Grant  
 Well Name: E-118A MCA 12/90  
 Facility License, Permit or Monitoring Number: \_\_\_\_\_  
 County Code: \_\_\_\_\_  
 Wis. Unique Well Number: \_\_\_\_\_  
 DNR Well Number: \_\_\_\_\_

1. Can this well purged dry?  Yes  No
2. Well development method  
 surged with bailer and bailed  41  
 surged with bailer and pumped  61  
 surged with block and bailed  42  
 surged with block and pumped  62  
 surged with block, bailed and pumped  70  
 compressed air  20  
 bailed only  10  
 pumped only  51  
 pumped slowly  50  
 Other  \_\_\_\_\_
3. Time spent developing well: 45 min.
4. Depth of well (from top of well casing): 52.1 ft.
5. Inside diameter of well: 2.03 in.
6. Volume of water in filter pack and well casing: 2.2 gal./ft.
7. Volume of water removed from well: 1000.0 gal.
8. Volume of water added (if any): \_\_\_\_\_ gal.
9. Source of water added: \_\_\_\_\_
10. Analysis performed on water added? (if yes, attach results)  Yes  No
16. Additional comments on development: \_\_\_\_\_

	Before Development	After Development
11. Depth of Water (from top of well casing)	a. <u>16.4</u> ft.	<u>16.45</u> ft.
Date	b. <u>12/01/94</u> mm dd yy	<u>12/01/94</u> mm dd yy
Time	c. <u>5:05</u> <input type="checkbox"/> a.m. <input checked="" type="checkbox"/> p.m.	<u>5:45</u> <input type="checkbox"/> a.m. <input checked="" type="checkbox"/> p.m.
12. Sediment in well bottom	<u>0.0</u> inches	<u>0.0</u> inches
13. Water Clarity	Clear <input type="checkbox"/> 10 Turbid <input checked="" type="checkbox"/> 15 (Describe) _____	Clear <input checked="" type="checkbox"/> 20 Turbid <input type="checkbox"/> 25 (Describe) _____
14. Total suspended solids	_____ mg/l	_____ mg/l
15. COD	_____ mg/l	_____ mg/l

Fill in if drilling fluids were used and well is at solid waste facility:

Well developed by: Person's Name and Firm  
 Name: Charles Markgraf  
 Firm: Environmental & Foundation Drilling, Inc.

I hereby certify that the above information is true and correct to the best of my knowledge.

Signature: [Handwritten Signature]  
 Print Initials: G D A  
 Firm: Environmental & Foundation Drilling, Inc.

NOTE: Shaded areas are for DNR use only. See instructions for more information including a list of county codes.

- Route To:
- Solid Waste
  - Emergency Response
  - Wastewater
  - Haz. Waste
  - Underground Tanks
  - Water Resources
  - Other

Facility/Project Name <b>WP&amp;L Nelson Dewey 3314.01</b>		License/Permit/Monitoring Number		Boring Number <b>B11B</b>	
Boring Drilled By (Firm name and name of crew chief) <b>Environmental &amp; Foundation Drilling, Crew Chief: G. Markgraf</b>		Date Drilling Started <b>11/29/94</b>	Date Drilling Completed <b>11/30/94</b>	Drilling Method <b>DTRC</b>	
DNR Facility Well No.	WI Unique Well No.	Common Well Name		Final Static Water Level Feet MSL	Surface Elevation Feet MSL
Boring Location State Plane <b>265907.89 N, 1727255.90 E</b>		Lat <b>09 "</b>		Local Grid Location (If applicable)	
<b>NE 1/4 of NE 1/4 of Section 19 T 3 N,R 5W</b>		Long <b>09 "</b>		<input type="checkbox"/> N <input type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W	
County <b>Grant</b>		DNR County Code <b>22</b>	Civil Town/City/ or Village <b>Cassville</b>		

Sample Number	Length (In) Recovered	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					Comments		
									Standard Penetration	Moisture Content	Liquid Limit	Plastic Limit	P 200			
A			1-5	<b>POORLY GRADED SAND (SP), sand fine grained, yellowish brown 10YR 5/6.</b>	SP											
B			10-11	<b>As above, brown 10YR 4/3.</b>												
C			15-16	<b>As above, yellowish brown 10YR 5/6.</b>												

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature	Firm <b>RMT</b> 744 Heartland Trail, Madison Wisconsin Tel: 608-831-4444, Fax: 608-831-3334
-----------	------------------------------------------------------------------------------------------------------

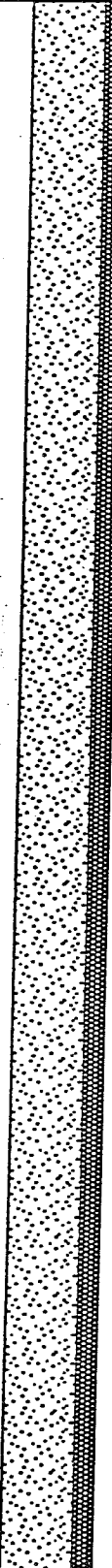

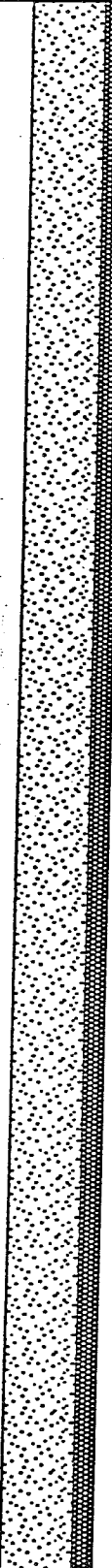

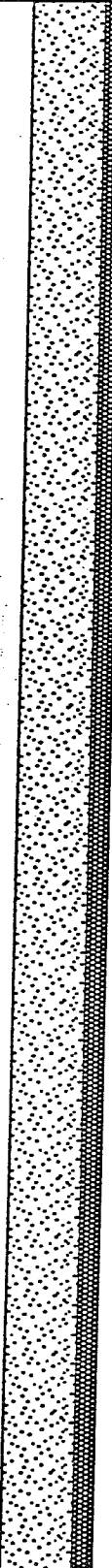

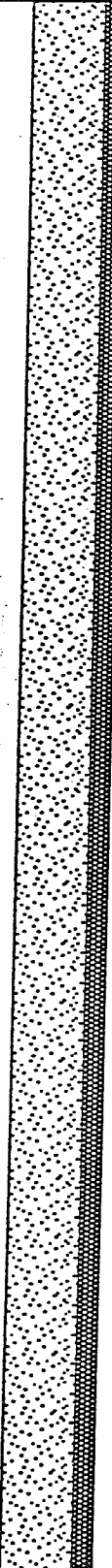

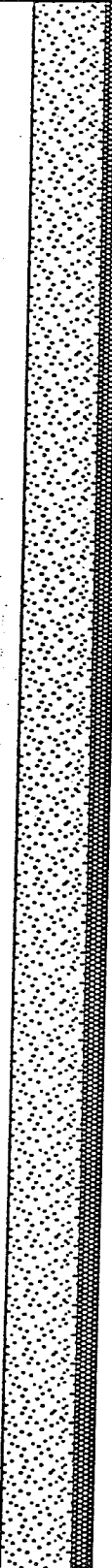

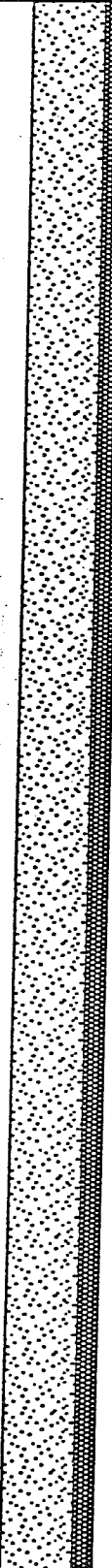

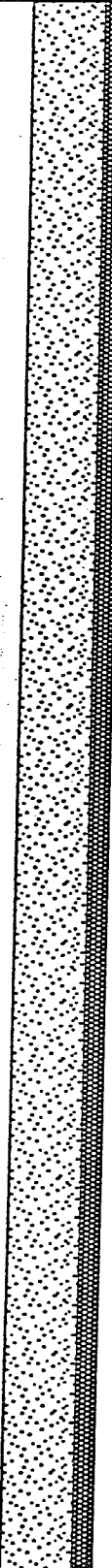

This form is authorized by Chapters 144, 147 and 162, Wis. Stats. Completion of this report is mandatory. Penalties: Forfeit not less than \$10 nor more than \$5,000 for each violation. Fined not less than \$10 or more than \$100 or imprisoned not less than 30 days, or both for each violation. Each day of continued violation is a separate offense, pursuant to ss 144.99 and 162.06, Wis. Stats.



Boring Number **B11B**

Use only as an attachment to Form 4400-122.

Page 3 of 4

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					Comments
Number	Length (In) Recovered								Standard Penetration	Moisture Content	Liquid Limit	Plastic Limit	P 200	
K			54	As above, sand finer grained than at 50', yellowish brown 10YR 5/4.										
														55
L			56	As above, sand medium grained.										
														57
M			58	As above.										
														59
N			60	As above.										
														61
O			62	As above, 75% medium and 25% coarse grained sand.										
														63
P			64	As above, sand fine grained.										
														65
Q			66	As above, 75% fine grained and 25% medium grained sand.										
														67

Boring Number

**B11B**

Use only as an attachment to Form 4400-122.

Page 4 of 4

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					Comments
Number	Length (In) Recovered								Standard Penetration	Moisture Content	Liquid Limit	Plastic Limit	P 200	
R			87	As above.										
			88											
S			89	As above, 75% medium and 25% coarse grained sand.										
			90											
			91											
			92											
F			93	As above, 50% medium and 50% coarse sand.										
			94											
			95											
			96											
U			97	As above, 90% medium and 10% coarse sand.										
			98											
			99											
			100											
V			101	As above, 50% medium and 50% coarse sand.										
			102											
			103											
			104											
			105	As above.										
		106												
		107												
		108												
			109	As above.										
		110												
		111												
		112												
			113	As above.										
		114												
		115												
		116												
			117	End of Boring at 117 Ft.										

Facility/Project Name WP&L Nelson Dewey 3314.01	Local Grid Location of Well _____ ft. <input type="checkbox"/> N. _____ ft. <input type="checkbox"/> E. _____ ft. <input type="checkbox"/> S. _____ ft. <input type="checkbox"/> W.	Well Name B-11x B MCM 12/30/94
Facility License, Permit or Monitoring Number	Grid Origin Location Lat _____ Long _____ or St. Plane _____ ft. N. _____ ft. E. 265907.89N, 1,727,255.90E	Wis. Unique Well Number DNR Well Number
Type of Well: Water Table Observation Well <input type="checkbox"/> 11 Piezometer <input checked="" type="checkbox"/> 12	Section Location of Waste/Source NE¼ of NE¼ of Sec. 19, T3N, R5 <input type="checkbox"/> E. <input checked="" type="checkbox"/> W.	Date Well Installed 11 / 30 / 94 MM DD YY
Distance Well is From Waste/Source Boundary Approx. 300' ft.	Location of Well Relative to Waste/Source U <input type="checkbox"/> Upgradient S <input type="checkbox"/> Sidegradient D <input checked="" type="checkbox"/> Downgradient N <input type="checkbox"/> Not Known	Well Installed By: (Persons' Name and Firm) Greg Markoraf, Environmental & Foundation Drilling
Is Well A Point of Enforcement Std. Application? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		

- A. Protective pipe, top elevation 622.02 ft. MSL  
 B. Well casing, top elevation 621.89 ft. MSL  
 C. Land surface elevation 619.7 ft. MSL  
 D. Surface seal, bottom- \_\_\_\_\_ ft. MSL or 15.0 ft.

12. USCS classification of soil near screen:  
 GP  GM  GC  GW  SW  SP   
 SM  SC  ML  MH  CL  CH   
 Bedrock

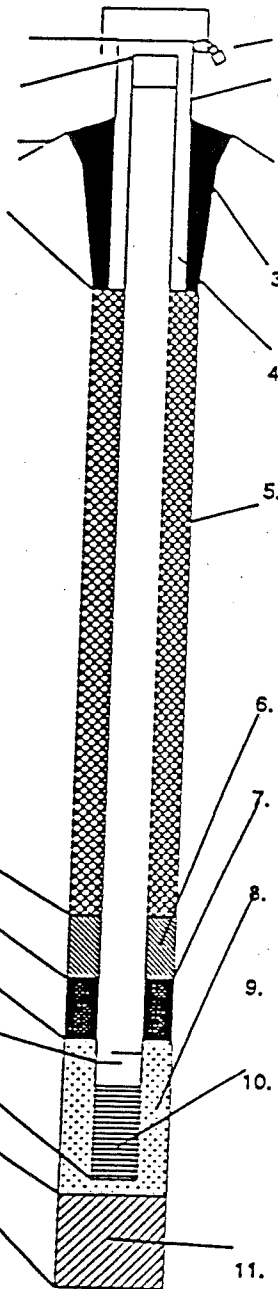
13. Sieve analysis attached? Yes  No

14. Drilling method used: Rotary  50  
 Hollow Stem Auger  41  
 Dual-tube reverse circulation  Other

15. Drilling fluid used: Water  02 Air  01  
 Drilling Mud  03 None  99

16. Drilling additives used? Yes  No   
 Describe \_\_\_\_\_

17. Source of water (attach analysis):  
 \_\_\_\_\_



1. Cap and lock?  Yes  No
2. Protective cover pipe:  
 a. Inside diameter: \_\_\_\_\_  
 b. Length: \_\_\_\_\_  
 c. Material: Flush Mount Steel  3  
 Other  7  
 d. Additional protection?  Yes  No  
 If yes, describe: \_\_\_\_\_
3. Surface seal:  
 13 bags bentonite chips  
 Bentonite  3  
 Concrete  0  
 Other
4. Material between well casing and protective pipe:  
 Bentonite  3  
 Annular space seal   
 Other
5. Annular space seal:  
 a. Granular Bentonite  3  
 b. \_\_\_\_\_ Lbs/gal mud weight... Bentonite-sand slurry  3  
 c. 1.9 Lbs/gal mud weight... Bentonite slurry  3  
 d. \_\_\_\_\_ % Bentonite... Bentonite-cement grout  50  
 e. 24 lb volume added for any of the above  
 f. How installed: Tremie  01  
 Tremie pumped  02  
 Gravity  08
6. Bentonite seal:  
 a. Bentonite granules  30  
 b.  1/4 in.  3/8 in.  1/2 in. Bentonite pellets  32  
 c. \_\_\_\_\_ Other
7. Fine sand material: Manufacturer, product name, mesh size  
 a. Unimin silica sand  
 b. Volume added 50 lbs, 1 bag
8. Filter pack material: Manufacturer, product, mesh size  
 a. Badoer Mining #30  
 b. Volume added 4 bags, 200 lbs
9. Well casing: Flush threaded PVC schedule 40  23  
 Flush threaded PVC schedule 80  24  
 Other
10. Screen Material: PVC Schedule 80  
 a. Screen type: Factory cut  11  
 Continuous slot  01  
 Other   
 b. Manufacturer Northern Air  
 c. Slot size: 0.01 in.  
 d. Slotted length: 5.0 ft.
11. Backfill material (below filter pack):  
 None  14  
 Natural material (medium sand)

- E. Bentonite seal, top \_\_\_\_\_ ft. MSL or 95.0 ft.  
 F. Fine sand, top \_\_\_\_\_ ft. MSL or 101.5 ft.  
 G. Filter pack, top \_\_\_\_\_ ft. MSL or 103.5 ft.  
 H. Screen joint, top \_\_\_\_\_ ft. MSL or 106.3 ft.  
 I. Well bottom \_\_\_\_\_ ft. MSL or 111.3 ft.  
 J. Filter pack, bottom \_\_\_\_\_ ft. MSL or 111.3 ft.  
 K. Borehole, bottom \_\_\_\_\_ ft. MSL or 117.0 ft.  
 L. Borehole, diameter 7.5 in.  
 M. O.D. well casing 2.38 in.  
 N. I.D. well casing 1.89 in.

I hereby certify that the information on this form is true and correct to the best of my knowledge.  
 Signature M. G. [unclear] 12/21/94 Firm RMT, Inc.

Please complete both sides of this form and return to the appropriate DNR office listed at the top of this form as required by chs. 144, 147 and 160, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with ch. 144, Wis. Stats., failure to file this form may result in a forfeiture of not less than \$10, nor more than \$5,000 for each day of violation. In accordance with ch. 147, Wis. Stats., failure to file this form may result in a forfeiture of not more than \$10,000 for each day of violation. NOTE: Shaded areas are for DNR use only. See instructions for more information including where the completed form should be sent.



Route to: Solid Waste  Haz. Waste  Wastewater   
Env. Response & Repair  Underground Tanks  Other

Facility/Project Name WP & L Nelson Dewey/Cassville	County Name Grant	Well Name E-11XB HCA 12/3
Facility License, Permit or Monitoring Number _____	County Code _____	Wis. Unique Well Number _____
		DNR Well Number _____

		Before Development	After Development
1. Can this well purged dry?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
2. Well development method		11. Depth of Water (from top of well casing)	
surged with bailer and bailed	<input type="checkbox"/> 41	a. <u>16.4</u> ft	<u>15.8</u> ft
surged with bailer and pumped	<input checked="" type="checkbox"/> 61	Date	b. <u>12/01/94</u>
surged with block and bailed	<input type="checkbox"/> 42	mm dd yy	<u>12/01/94</u>
surged with block and pumped	<input type="checkbox"/> 62	Time	<u>10:00</u> <input checked="" type="checkbox"/> a.m. <input type="checkbox"/> p.m.
surged with block, bailed and pumped	<input type="checkbox"/> 70		<u>10:45</u> <input type="checkbox"/> p.m.
compressed air	<input type="checkbox"/> 20	12. Sediment in well bottom	<u>0.0</u> inches
bailed only	<input type="checkbox"/> 10		<u>0.0</u> inches
pumped only	<input type="checkbox"/> 51	13. Water Clarity	Clear <input type="checkbox"/> 10
pumped slowly	<input type="checkbox"/> 50	Turbid <input checked="" type="checkbox"/> 15	Clear <input checked="" type="checkbox"/> 20
Other _____	<input type="checkbox"/>	(Describe)	Turbid <input type="checkbox"/> 25
3. Time spent developing well	<u>45</u> min.		(Describe)
4. Depth of well (from top of well casing)	<u>113.5</u> ft.		
5. Inside diameter of well	<u>2.03</u> in.		
6. Volume of water in filter pack and well casing	<u>2.2</u> gal.ft		
7. Volume of water removed from well	<u>1350.0</u> gal.		
8. Volume of water added (if any)	_____ gal.		
9. Source of water added _____			
10. Analysis performed on water added? (If yes, attach results)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	14. Total suspended solids	_____ mg/l
		15. COD	_____ mg/l
16. Additional comments on development:			

Well developed by: Person's Name and Firm

Name: Charles Markgraf

Firm: Environmental & Foundation Drilling, Inc.

I hereby certify that the above information is true and correct to the best of my knowledge.

Signature:

Print Initials: G D A

Firm: Environmental & Foundation Drilling, Inc.

NOTE: Shaded areas are for DNR use only. See instructions for more information including a list of county codes.

JOB NO. C 9065

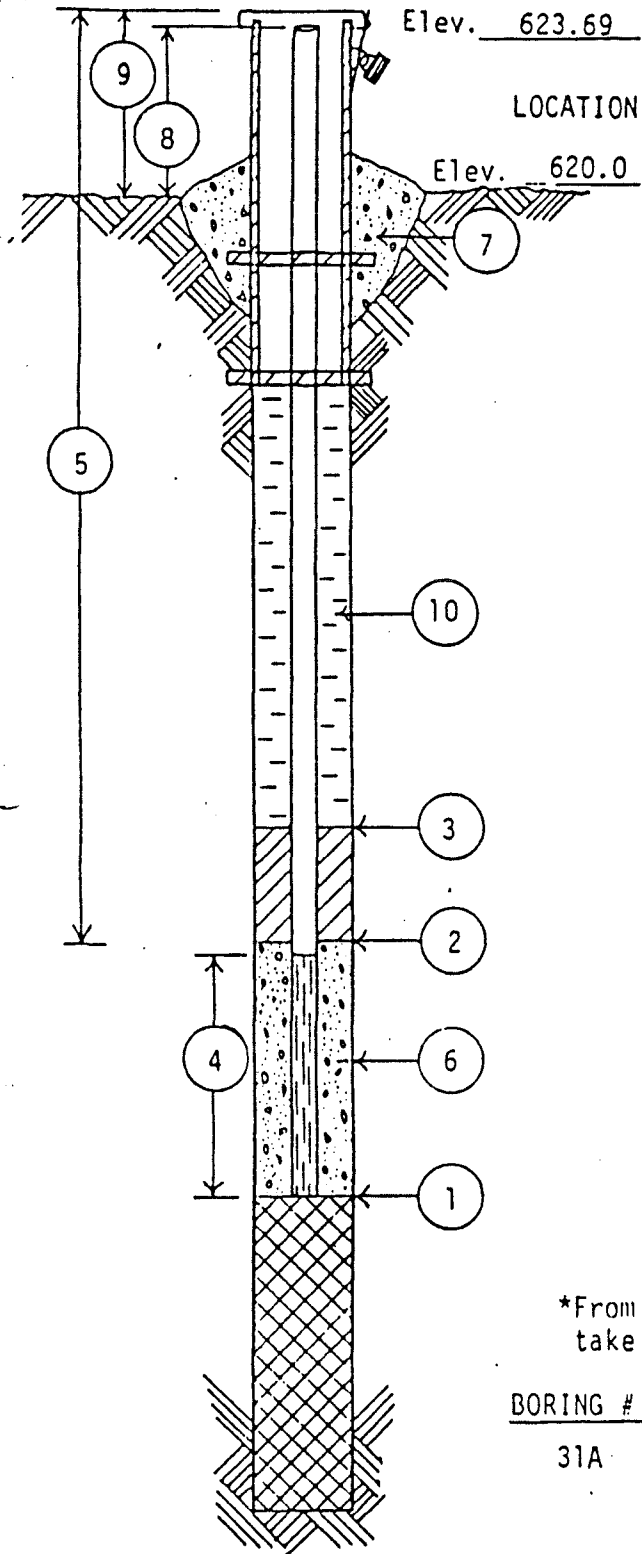
BORING NO. B 31A

DATE 2/28/80

CHIEF D. Braun

LOCATION Cassville, Wisconsin

All depth measurements of well detail assumed to be from ground surface unless otherwise indicated.



- ① DEPTH TO BOTTOM OF WELL POINT OR SLOTTED PIPE 34' FEET.
- ② DEPTH OF BOTTOM OF SEAL (if installed) 28 FEET.
- ③ DEPTH TO TOP OF SEAL (if installed) 25 FEET.
- ④ LENGTH OF WELL POINT, PVC WELL SCREEN, OR SLOTTED PIPE 5 FEET. (Circle One)
- ⑤ TOTAL LENGTH OF PIPE 33 FEET @ 2 IN. DIAMETER.
- ⑥ TYPE OF FILTER MATERIAL AROUND WELL POINT OR SLOTTED PIPE Sand.
- ⑦ CONCRETE CAP, YES NO (Circle One)
- ⑧ HEIGHT OF WELL CASING ABOVE GROUND 4 FEET.
- ⑨ PROTECTIVE CASING? YES NO (Circle One)  
HEIGHT ABOVE GROUND \_\_\_\_\_  
LOCKING CAP? YES NO (Circle One)
- ⑩ TYPE OF BACKFILL: Soil & Bentonite Mix

WATER LEVEL CHECKS

\*From top of casing, if protective casing higher, take measurement from top of protective casing.

BORING #	DATE	TIME	DEPTH TO WATER	REMARKS
31A	2/28/80		10.5'	½ hour

**WARZYN**



**ENGINEERING INC**

**LOG OF TEST BORING**

Project ..... Monitoring Well

Location ..... Cassville, Wisconsin

Boring No. .... 31

Surface Elevation .....

Job No. .... C. 9065

Sheet 1 of 1

1409 EMIL STREET • P.O. BOX 9538, MADISON, WIS. 53715 • TEL. (608) 257-4848

SAMPLE						VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
Recovery		Moisture			Depth		G <sub>s</sub>	W	LL	PL	D
No.	Type	↓	↓	N							
						For Soil Classification See Boring Log 31A					
					5						
					10						
					15						
					20		End Boring at 20'				
						Install 19.5' Observation Well					
					25						
					30						
					35						
					40						
<b>WATER LEVEL OBSERVATIONS</b>						<b>GENERAL NOTES</b>					
While Drilling _____						Start <u>2/28/80</u> Complete <u>2/28/80</u>					
Upon Completion of Drilling _____						Crew Chief <u>DB</u> Rig <u>Bomb</u>					
Time After Drilling _____						Drilling Method _____					
Depth to Water _____						.....					
Depth to Cave In _____						.....					

**WARZYN**



**LOG OF TEST BORING**

Project WP&L  
Nelson Dewey Generating Station  
 Location Cassville, Wisconsin

Boring No. B-31R  
 Surface Elevation \_\_\_\_\_  
 Job No. 13758  
 Sheet 1 of 1

ONE SCIENCE COURT • P.O. BOX 5385, MADISON, WIS. 53705 • TEL. (608) 273-0440

SAMPLE					VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
No.	TYPE	Rec (in.)	Moist	N		Depth	qu (qa) (tsf)	W	LL	PL
					TOPSOIL - Brown Silty Sand					
					FILL					
1		18	W	8	Loose, Tan Fine to Medium SAND (SW)					
2		18	W	12	Medium Dense, Tan Medium to Coarse SAND (SW)					
					End Boring at 22.0'					

**WATER LEVEL OBSERVATIONS**

**GENERAL NOTES**

Wash Drilling  Upon Completion of Drilling \_\_\_\_\_  
 Time After Drilling \_\_\_\_\_  
 Depth to Water \_\_\_\_\_ 14.0'   
 Depth to Cave in \_\_\_\_\_

Start 4/25/89 End 4/25/89  
 Driller E&F Chief GA Rig CME  
 Logger WB Editor AJS 65  
 Drill Method HSA 0-22'

The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

**WARZYN**



**ENGINEERING INC**

**LOG OF TEST BORING**

Project Nelson Dewey Generating Station

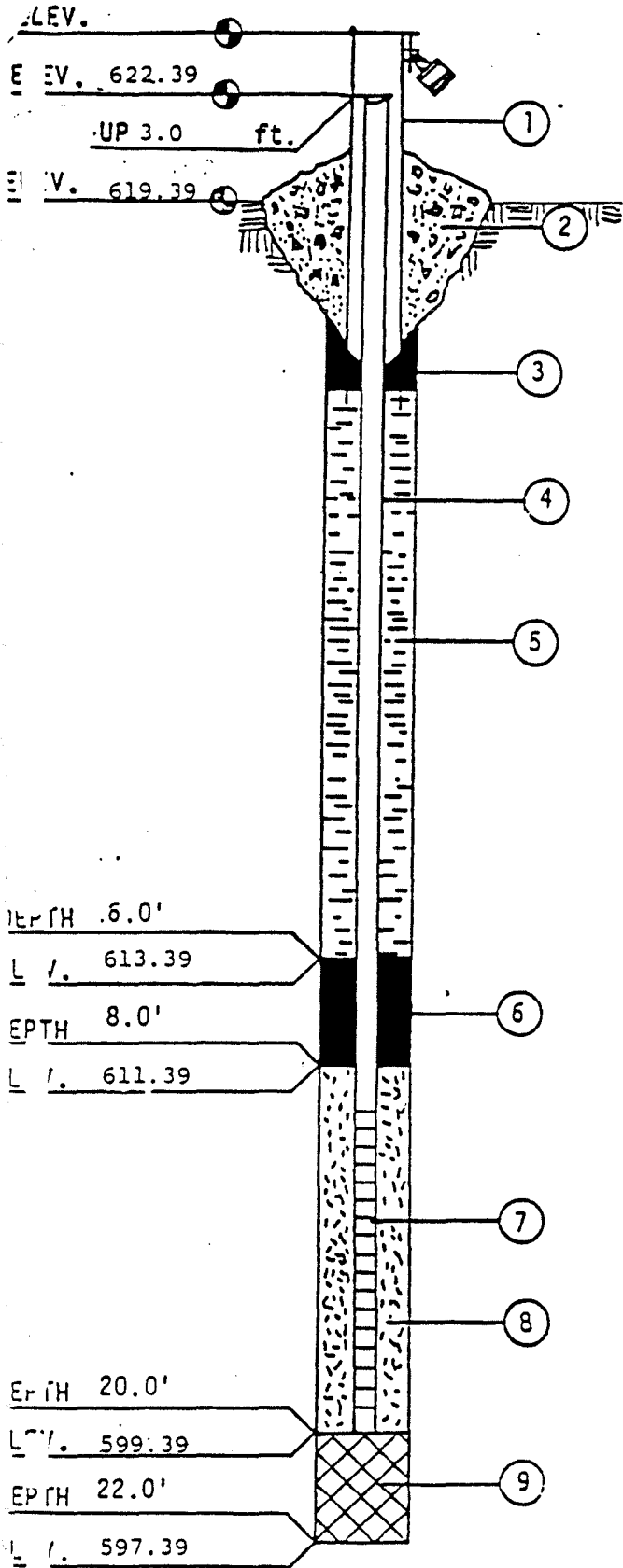
Location Cassville, Wisconsin

Boring No. B 31A  
 Surface Elevation 6200  
 Job No. C 9065  
 Sheet 1 of 1

1409 EMIL STREET • P.O. BOX 9538, MADISON, WIS. 53715 • TEL. (608) 257-4848

SAMPLE						VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES					
Recovery		Moisture		N	Depth		q <sub>u</sub>	W	LL	PL	D	
No.	Type	↓	↓									
1	SS	X	M	33		TOPSOIL-Brown Silty SAND						
2	SS	X	M	11	5	FILL						
3	SS	X	W	6								
4	SS	X	W	3	10							
5	SS	X	W	8	15	Tan Fine to Medium SAND						
6	SS	X	W	18	20	Tan Medium to Coarse SAND, Trace Gravel						
7	SS	X	W	11	25							
8	SS	NR	W	15	30	Very Fine Tan SAND, Little Silt						
9	SS	X	W	27	35							
						End Boring at 35'						
					40							

WATER LEVEL OBSERVATIONS						GENERAL NOTES	
While Drilling	_____	_____	_____	_____	_____	Start	2/28/80 Complete 2/28/80
Upon Completion of Drilling	_____	_____	_____	_____	_____	Crew Chief	DB Rig Bomb
Time After Drilling	<u>1/2 hour</u>	_____	_____	_____	_____	Drilling Method	0-10' Auger
Depth to Water	<u>10.5'</u>	_____	_____	_____	_____	10-35' Wash Bore	_____
Depth to Cave In	_____	_____	_____	_____	_____		_____



MONITORING WELL CONSTRUCTION INFORMATION

JOB NO. 13758

BORING/WELL NO. B-31R

DATE 4/25/89

CHIEF/UNIT Greg Anderson/CME 65

1. PROTECTIVE CASING  YES  NO  
 LOCKING  YES  NO
2. CONCRETE SEAL  YES  NO
3. TYPE OF SURFACE SEAL (IF INSTALLED)  
Granular Bentonite
4. SOLID PIPE TYPE PVC  
 SOLID PIPE LENGTH 13.0 ft.  
 JOINT TYPE SLIP/GLUED  THREADED
5. TYPE OF BACKFILL Granular Bentonite  
 HOW INSTALLED - TREMIE  FROM SURFACE
6. TYPE OF LOWER SEAL (IF INSTALLED)  
Bentonite Pellets
7. SCREEN TYPE PVC  
 SCREEN LENGTH 10.0 ft.  
 SLOT-SIZE 0.010" LENGTH 10 ft.  
 SCREEN DIAMETER 2.0 in.
8. TYPE OF BACKFILL AROUND SCREEN  
#20 Flint Sand
9. TYPE OF BACKFILL Natural Cave-in
10. DRILLING METHOD HSA
11. ADDITIVES USED (IF ANY)  
-

WATER LEVEL 14.0' DATE 4/25/89

\*ALL DEPTHS MEASURED FROM GROUND SURFACE.



WELL DETAIL INFORMATION SHEET

JOB NO. C 9036

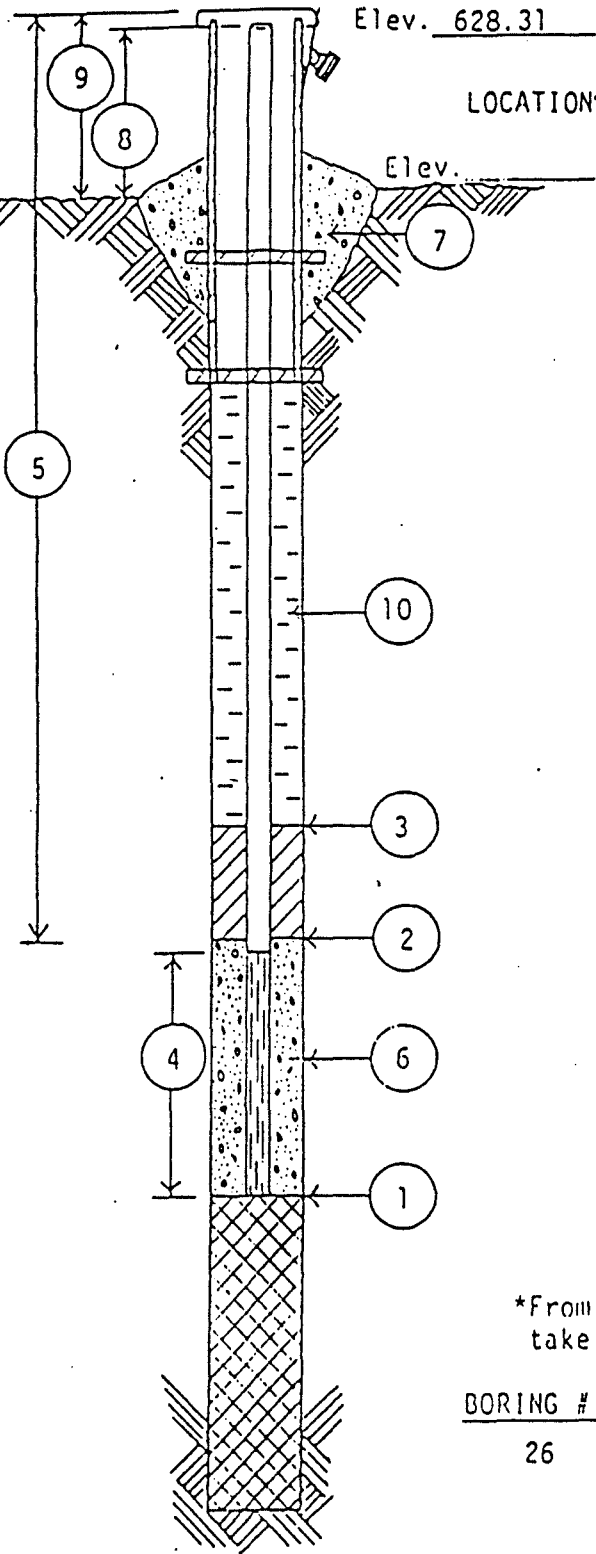
BORING NO. 26

DATE 2/28/80

CHIEF D. Braun

LOCATION: Nelson Dewey G.S.; Cassville, Wisconsin

All depth measurements of well detail assumed to be from ground surface unless otherwise indicated.



- ① DEPTH TO BOTTOM OF WELL POINT OR SLOTTED PIPE 29.5 FEET.
- ② DEPTH OF BOTTOM OF SEAL (if installed) 3 FEET.
- ③ DEPTH TO TOP OF SEAL (if installed) 0 FEET.
- ④ LENGTH OF WELL POINT, PVC WELL SCREEN OR SLOTTED PIPE 10 FEET. (Circle One)
- ⑤ TOTAL LENGTH OF PIPE 23.5 FEET @ 2 IN. DIAMETER.
- ⑥ TYPE OF FILTER MATERIAL AROUND WELL POINT OR SLOTTED PIPE Sand.
- ⑦ CONCRETE CAP, YES NO (Circle One)
- ⑧ HEIGHT OF WELL CASING ABOVE GROUND 4 FEET.
- ⑨ PROTECTIVE CASING? YES NO (Circle One)  
HEIGHT ABOVE GROUND -  
LOCKING CAP? YES NO (Circle One)
- ⑩ TYPE OF BACKFILL: Soil & Bentonite Mix

WATER LEVEL CHECKS

\*From top of casing, if protective casing higher, take measurement from top of protective casing.

BORING #	DATE	TIME	DEPTH TO WATER	REMARKS
26	2/28/80		17'8"	½ hour

# WARZYN



ENGINEERING INC

# LOG OF TEST BORING

Project Nelson Dewey Generating Station  
Proposed Slag Disposal Area  
 Location Cassville, Wisconsin

Boring No. B 26A  
 Surface Elevation 624.6  
 Job No. C 9036  
 Sheet 1 of 2

1409 EMIL STREET • P.O. BOX 9538, MADISON, WIS. 53715 • TEL. (608) 257-4848

SAMPLE						VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES					
No.	Type	Recovery		Moisture			Depth	q <sub>c</sub>	W	LL	PL	D
		↓	↓	M	Depth							
1	SS	X	M	11		TOPSOIL						
2	SS	X	M	4	5	Brown SILT, Some Clay, Some Sand (CL-ML) Occasional Sand Lenses	4.5					
	SS	X	M	-								
3	SS	X	M	5								
	SS	X	M	-								
4	SS	X	M	6	10				25.4	19.9		
5	SS	X	M	9	15							
6	SS	X	W	28	20	Tan Coarse to Medium SAND, Some to Trace Gravel, Trace Silt and Clay (SP)						
7	SS	X	W	20	25							
8	SS	X	W	11	30	Tan Medium to Fine SAND, Trace Gravel, Little to Trace Silt and Clay (SP)						
9	SS	X	W	19	35							
1	SS	X	W	27	40	Tan Coarse to Medium SAND, Some to Trace Gravel, Trace Silt and Clay (SP)						
	SS	X	W	26	45							
						End Boring at 45'						

(Continued)



**WARZYN**



**ENGINEERING INC**


**LOG OF TEST BORING**

Project Nelson Dewey Generating Station  
Proposed Slag Disposal Area  
Location Cassville, Wisconsin

Boring No. B 26A  
Surface Elevation 624.6  
Job No. C 9036  
Sheet 2 of 2

1409 EMIL STREET • P.O. BOX 9538, MADISON, WIS. 53715 • TEL. (608) 257-4848

SAMPLE						VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
Recovery		Moisture		N	Depth		q <sub>s</sub>	W	LL	PL	D
No.	Type	↓	↓								
					50						
					55						
					60						
					65						
					70						
					75						
					80						
					85						
<b>WATER LEVEL OBSERVATIONS</b>						<b>GENERAL NOTES</b>					
While Drilling <u>19.5'</u>						Start <u>2/27/80</u> Complete <u>2/27/80</u>					
Upon Completion of Drilling _____						Crew Chief <u>DB.</u> Rig <u>Bomb...</u>					
Time After Drilling <u>3/10/80</u>						Drilling Method _____					
Depth to Water <u>23.14</u>						Auger to <u>20'</u>					
Depth to Cave In _____						Wash Bore to <u>45'</u>					



Appendix C  
Analytical Laboratory Reports

## C1 April 2020 Detection Monitoring

April 30, 2020

Meghan Blodgett  
SCS ENGINEERS  
2830 Dairy Drive  
Madison, WI 53718

RE: Project: 25219071 NELSON DEWEY CCR  
Pace Project No.: 40206309

Dear Meghan Blodgett:

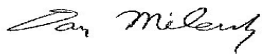
Enclosed are the analytical results for sample(s) received by the laboratory on April 16, 2020. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Green Bay

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



## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

## CERTIFICATIONS

Project: 25219071 NELSON DEWEY CCR

Pace Project No.: 40206309

---

### **Pace Analytical Services Green Bay**

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

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

## SAMPLE SUMMARY

Project: 25219071 NELSON DEWEY CCR

Pace Project No.: 40206309

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40206309001	FIELD BLANK	Water	04/14/20 13:45	04/16/20 09:05
40206309002	B-7R	Water	04/13/20 13:30	04/16/20 09:05
40206309003	B-11R	Water	04/13/20 16:45	04/16/20 09:05
40206309004	B-11A	Water	04/13/20 15:20	04/16/20 09:05
40206309005	B-11B	Water	04/13/20 14:40	04/16/20 09:05
40206309006	B-26	Water	04/14/20 16:10	04/16/20 09:05
40206309007	B-31R	Water	04/13/20 17:40	04/16/20 09:05
40206309008	B-31A	Water	04/13/20 18:25	04/16/20 09:05
40206309009	B-39	Water	04/14/20 13:10	04/16/20 09:05

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.



### SAMPLE ANALYTE COUNT

Project: 25219071 NELSON DEWEY CCR  
Pace Project No.: 40206309

Lab ID	Sample ID	Method	Analysts	Analytes Reported
40206309001	FIELD BLANK	EPA 6020	KXS	2
		SM 2540C	HNT	1
		EPA 9040	ALY	1
		EPA 300.0	HMB	3
40206309002	B-7R	EPA 6020	KXS	2
			HMG	7
		SM 2540C	HNT	1
		EPA 9040	ALY	1
40206309003	B-11R	EPA 300.0	HMB	3
		EPA 6020	KXS	2
			HMG	7
		SM 2540C	HNT	1
40206309004	B-11A	EPA 9040	ALY	1
		EPA 300.0	HMB	3
		EPA 6020	KXS	2
			HMG	7
40206309005	B-11B	SM 2540C	HNT	1
		EPA 9040	ALY	1
		EPA 300.0	HMB	3
		EPA 6020	KXS	2
40206309006	B-26		HMG	7
		SM 2540C	HNT	1
		EPA 9040	ALY	1
		EPA 300.0	HMB	3
40206309007	B-31R	EPA 6020	KXS	2
			HMG	7
		SM 2540C	HNT	1
		EPA 9040	ALY	1
40206309008	B-31A	EPA 300.0	HMB	3
		EPA 6020	KXS	2
			HMG	7
		SM 2540C	HNT	1

### REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

### SAMPLE ANALYTE COUNT

Project: 25219071 NELSON DEWEY CCR

Pace Project No.: 40206309

Lab ID	Sample ID	Method	Analysts	Analytes Reported
40206309009	B-39	EPA 9040	ALY	1
		EPA 300.0	HMB	3
		EPA 6020	KXS	2
			HMG	7
		SM 2540C	HNT	1
		EPA 9040	ALY	1
		EPA 300.0	HMB	3

PASI-G = Pace Analytical Services - Green Bay

### REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

### ANALYTICAL RESULTS

Project: 25219071 NELSON DEWEY CCR  
Pace Project No.: 40206309

<b>Sample: FIELD BLANK</b>									
<b>Lab ID: 40206309001</b>									
Collected: 04/14/20 13:45 Received: 04/16/20 09:05 Matrix: Water									
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>									
Analytical Method: EPA 6020 Preparation Method: EPA 3010									
Pace Analytical Services - Green Bay									
Boron	<3.0	ug/L	10.0	3.0	1	04/19/20 21:32	04/22/20 16:07	7440-42-8	
Calcium	<76.2	ug/L	254	76.2	1	04/19/20 21:32	04/22/20 16:07	7440-70-2	
<b>2540C Total Dissolved Solids</b>									
Analytical Method: SM 2540C									
Pace Analytical Services - Green Bay									
Total Dissolved Solids	<8.7	mg/L	20.0	8.7	1		04/16/20 17:15		
<b>9040 pH</b>									
Analytical Method: EPA 9040									
Pace Analytical Services - Green Bay									
pH at 25 Degrees C	6.3	Std. Units	0.10	0.010	1		04/20/20 07:48		H6
<b>300.0 IC Anions</b>									
Analytical Method: EPA 300.0									
Pace Analytical Services - Green Bay									
Chloride	<0.43	mg/L	2.0	0.43	1		04/21/20 19:08	16887-00-6	
Fluoride	<0.095	mg/L	0.32	0.095	1		04/21/20 19:08	16984-48-8	
Sulfate	<0.44	mg/L	2.0	0.44	1		04/21/20 19:08	14808-79-8	

<b>Sample: B-7R</b>									
<b>Lab ID: 40206309002</b>									
Collected: 04/13/20 13:30 Received: 04/16/20 09:05 Matrix: Water									
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>									
Analytical Method: EPA 6020 Preparation Method: EPA 3010									
Pace Analytical Services - Green Bay									
Boron	96.0	ug/L	10.0	3.0	1	04/19/20 21:32	04/23/20 07:18	7440-42-8	
Calcium	58700	ug/L	254	76.2	1	04/19/20 21:32	04/23/20 07:18	7440-70-2	
<b>Field Data</b>									
Analytical Method:									
Pace Analytical Services - Green Bay									
Field pH	6.60	Std. Units			1		04/13/20 13:30		
Field Specific Conductance	623.8	umhos/cm			1		04/13/20 13:30		
Oxygen, Dissolved	2.18	mg/L			1		04/13/20 13:30	7782-44-7	
REDOX	-124.0	mV			1		04/13/20 13:30		
Turbidity	8.20	NTU			1		04/13/20 13:30		
Static Water Level	614.12	feet			1		04/13/20 13:30		
Temperature, Water (C)	8.2	deg C			1		04/13/20 13:30		
<b>2540C Total Dissolved Solids</b>									
Analytical Method: SM 2540C									
Pace Analytical Services - Green Bay									
Total Dissolved Solids	306	mg/L	20.0	8.7	1		04/16/20 17:16		

### REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

### ANALYTICAL RESULTS

Project: 25219071 NELSON DEWEY CCR  
Pace Project No.: 40206309

Sample: B-7R      Lab ID: 40206309002      Collected: 04/13/20 13:30      Received: 04/16/20 09:05      Matrix: Water									
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>9040 pH</b>									
Analytical Method: EPA 9040 Pace Analytical Services - Green Bay									
pH at 25 Degrees C	<b>6.6</b>	Std. Units	0.10	0.010	1		04/20/20 07:42		H6
<b>300.0 IC Anions</b>									
Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay									
Chloride	<b>14.3</b>	mg/L	10.0	2.2	5		04/21/20 19:23	16887-00-6	
Fluoride	<b>&lt;0.48</b>	mg/L	1.6	0.48	5		04/21/20 19:23	16984-48-8	D3
Sulfate	<b>7.5J</b>	mg/L	10.0	2.2	5		04/21/20 19:23	14808-79-8	D3

Sample: B-11R      Lab ID: 40206309003      Collected: 04/13/20 16:45      Received: 04/16/20 09:05      Matrix: Water									
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>									
Analytical Method: EPA 6020    Preparation Method: EPA 3010 Pace Analytical Services - Green Bay									
Boron	<b>2140</b>	ug/L	10.0	3.0	1	04/19/20 21:32	04/23/20 07:39	7440-42-8	
Calcium	<b>117000</b>	ug/L	254	76.2	1	04/19/20 21:32	04/23/20 07:39	7440-70-2	
<b>Field Data</b>									
Analytical Method: Pace Analytical Services - Green Bay									
Field pH	<b>6.80</b>	Std. Units			1		04/13/20 16:45		
Field Specific Conductance	<b>993</b>	umhos/cm			1		04/13/20 16:45		
Oxygen, Dissolved	<b>0.22</b>	mg/L			1		04/13/20 16:45	7782-44-7	
REDOX	<b>-75.8</b>	mV			1		04/13/20 16:45		
Turbidity	<b>8.97</b>	NTU			1		04/13/20 16:45		
Static Water Level	<b>614.39</b>	feet			1		04/13/20 16:45		
Temperature, Water (C)	<b>10.1</b>	deg C			1		04/13/20 16:45		
<b>2540C Total Dissolved Solids</b>									
Analytical Method: SM 2540C Pace Analytical Services - Green Bay									
Total Dissolved Solids	<b>570</b>	mg/L	20.0	8.7	1		04/16/20 17:17		
<b>9040 pH</b>									
Analytical Method: EPA 9040 Pace Analytical Services - Green Bay									
pH at 25 Degrees C	<b>6.8</b>	Std. Units	0.10	0.010	1		04/20/20 07:51		H6
<b>300.0 IC Anions</b>									
Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay									
Chloride	<b>22.5</b>	mg/L	10.0	2.2	5		04/21/20 19:37	16887-00-6	
Fluoride	<b>&lt;0.48</b>	mg/L	1.6	0.48	5		04/21/20 19:37	16984-48-8	D3
Sulfate	<b>41.9</b>	mg/L	10.0	2.2	5		04/21/20 19:37	14808-79-8	

### REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

### ANALYTICAL RESULTS

Project: 25219071 NELSON DEWEY CCR

Pace Project No.: 40206309

**Sample: B-11A**      **Lab ID: 40206309004**      Collected: 04/13/20 15:20      Received: 04/16/20 09:05      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>									
Analytical Method: EPA 6020    Preparation Method: EPA 3010 Pace Analytical Services - Green Bay									
Boron	<b>86.3</b>	ug/L	10.0	3.0	1	04/19/20 21:32	04/23/20 07:45	7440-42-8	
Calcium	<b>57500</b>	ug/L	254	76.2	1	04/19/20 21:32	04/23/20 07:45	7440-70-2	
<b>Field Data</b>									
Analytical Method: Pace Analytical Services - Green Bay									
Field pH	<b>7.75</b>	Std. Units			1		04/13/20 15:20		
Field Specific Conductance	<b>720</b>	umhos/cm			1		04/13/20 15:20		
Oxygen, Dissolved	<b>0.19</b>	mg/L			1		04/13/20 15:20	7782-44-7	
REDOX	<b>-31.0</b>	mV			1		04/13/20 15:20		
Turbidity	<b>0.00</b>	NTU			1		04/13/20 15:20		
Static Water Level	<b>613.88</b>	feet			1		04/13/20 15:20		
Temperature, Water (C)	<b>13.4</b>	deg C			1		04/13/20 15:20		
<b>2540C Total Dissolved Solids</b>									
Analytical Method: SM 2540C Pace Analytical Services - Green Bay									
Total Dissolved Solids	<b>394</b>	mg/L	20.0	8.7	1		04/16/20 17:17		
<b>9040 pH</b>									
Analytical Method: EPA 9040 Pace Analytical Services - Green Bay									
pH at 25 Degrees C	<b>7.6</b>	Std. Units	0.10	0.010	1		04/20/20 07:53		H6
<b>300.0 IC Anions</b>									
Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay									
Chloride	<b>93.7</b>	mg/L	10.0	2.2	5		04/21/20 20:49	16887-00-6	
Fluoride	<b>0.27J</b>	mg/L	0.32	0.095	1		04/21/20 19:51	16984-48-8	
Sulfate	<b>1.4J</b>	mg/L	2.0	0.44	1		04/21/20 19:51	14808-79-8	

**Sample: B-11B**      **Lab ID: 40206309005**      Collected: 04/13/20 14:40      Received: 04/16/20 09:05      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>									
Analytical Method: EPA 6020    Preparation Method: EPA 3010 Pace Analytical Services - Green Bay									
Boron	<b>5380</b>	ug/L	200	60.6	20	04/19/20 21:32	04/23/20 15:44	7440-42-8	
Calcium	<b>115000</b>	ug/L	254	76.2	1	04/19/20 21:32	04/23/20 07:52	7440-70-2	
<b>Field Data</b>									
Analytical Method: Pace Analytical Services - Green Bay									
Field pH	<b>7.89</b>	Std. Units			1		04/13/20 14:40		
Field Specific Conductance	<b>1280</b>	umhos/cm			1		04/13/20 14:40		
Oxygen, Dissolved	<b>0.24</b>	mg/L			1		04/13/20 14:40	7782-44-7	
REDOX	<b>-57.9</b>	mV			1		04/13/20 14:40		
Turbidity	<b>0.00</b>	NTU			1		04/13/20 14:40		

### REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

### ANALYTICAL RESULTS

Project: 25219071 NELSON DEWEY CCR  
Pace Project No.: 40206309

Sample: B-11B      Lab ID: 40206309005      Collected: 04/13/20 14:40      Received: 04/16/20 09:05      Matrix: Water									
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>Field Data</b>									
Analytical Method: Pace Analytical Services - Green Bay									
Static Water Level	613.86	feet			1		04/13/20 14:40		
Temperature, Water (C)	13.50	deg C			1		04/13/20 14:40		
<b>2540C Total Dissolved Solids</b>									
Analytical Method: SM 2540C Pace Analytical Services - Green Bay									
Total Dissolved Solids	872	mg/L	20.0	8.7	1		04/16/20 17:17		
<b>9040 pH</b>									
Analytical Method: EPA 9040 Pace Analytical Services - Green Bay									
pH at 25 Degrees C	7.8	Std. Units	0.10	0.010	1		04/20/20 07:54		H6
<b>300.0 IC Anions</b>									
Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay									
Chloride	30.9	mg/L	20.0	4.3	10		04/21/20 21:46	16887-00-6	
Fluoride	<0.95	mg/L	3.2	0.95	10		04/21/20 21:46	16984-48-8	D3
Sulfate	378	mg/L	20.0	4.4	10		04/21/20 21:46	14808-79-8	

Sample: B-26      Lab ID: 40206309006      Collected: 04/14/20 16:10      Received: 04/16/20 09:05      Matrix: Water									
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>									
Analytical Method: EPA 6020      Preparation Method: EPA 3010 Pace Analytical Services - Green Bay									
Boron	66.1	ug/L	10.0	3.0	1	04/19/20 21:32	04/23/20 07:59	7440-42-8	
Calcium	88500	ug/L	254	76.2	1	04/19/20 21:32	04/23/20 07:59	7440-70-2	
<b>Field Data</b>									
Analytical Method: Pace Analytical Services - Green Bay									
Field pH	7.27	Std. Units			1		04/14/20 16:10		
Field Specific Conductance	852	umhos/cm			1		04/14/20 16:10		
Oxygen, Dissolved	8.43	mg/L			1		04/14/20 16:10	7782-44-7	
REDOX	160.4	mV			1		04/14/20 16:10		
Turbidity	0.00	NTU			1		04/14/20 16:10		
Static Water Level	613.76	feet			1		04/14/20 16:10		
Temperature, Water (C)	11.3	deg C			1		04/14/20 16:10		
<b>2540C Total Dissolved Solids</b>									
Analytical Method: SM 2540C Pace Analytical Services - Green Bay									
Total Dissolved Solids	464	mg/L	20.0	8.7	1		04/17/20 16:31		

### REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.



### ANALYTICAL RESULTS

Project: 25219071 NELSON DEWEY CCR  
Pace Project No.: 40206309

Sample: B-26									
Lab ID: 40206309006									
Collected: 04/14/20 16:10									
Received: 04/16/20 09:05									
Matrix: Water									
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>9040 pH</b>									
Analytical Method: EPA 9040									
Pace Analytical Services - Green Bay									
pH at 25 Degrees C	7.2	Std. Units	0.10	0.010	1		04/20/20 07:55		H6
<b>300.0 IC Anions</b>									
Analytical Method: EPA 300.0									
Pace Analytical Services - Green Bay									
Chloride	54.9	mg/L	2.0	0.43	1		04/27/20 11:12	16887-00-6	
Fluoride	0.11J	mg/L	0.32	0.095	1		04/27/20 11:12	16984-48-8	
Sulfate	30.2	mg/L	2.0	0.44	1		04/27/20 11:12	14808-79-8	

Sample: B-31R									
Lab ID: 40206309007									
Collected: 04/13/20 17:40									
Received: 04/16/20 09:05									
Matrix: Water									
Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>									
Analytical Method: EPA 6020 Preparation Method: EPA 3010									
Pace Analytical Services - Green Bay									
Boron	730	ug/L	10.0	3.0	1	04/19/20 21:32	04/23/20 08:06	7440-42-8	
Calcium	93800	ug/L	254	76.2	1	04/19/20 21:32	04/23/20 08:06	7440-70-2	
<b>Field Data</b>									
Analytical Method:									
Pace Analytical Services - Green Bay									
Field pH	6.79	Std. Units			1		04/13/20 17:40		
Field Specific Conductance	763	umhos/cm			1		04/13/20 17:40		
Oxygen, Dissolved	0.14	mg/L			1		04/13/20 17:40	7782-44-7	
REDOX	7.3	mV			1		04/13/20 17:40		
Turbidity	0.01	NTU			1		04/13/20 17:40		
Static Water Level	613.8	feet			1		04/13/20 17:40		
Temperature, Water (C)	12.0	deg C			1		04/13/20 17:40		
<b>2540C Total Dissolved Solids</b>									
Analytical Method: SM 2540C									
Pace Analytical Services - Green Bay									
Total Dissolved Solids	464	mg/L	20.0	8.7	1		04/17/20 16:31		
<b>9040 pH</b>									
Analytical Method: EPA 9040									
Pace Analytical Services - Green Bay									
pH at 25 Degrees C	6.8	Std. Units	0.10	0.010	1		04/20/20 07:57		H6
<b>300.0 IC Anions</b>									
Analytical Method: EPA 300.0									
Pace Analytical Services - Green Bay									
Chloride	29.9	mg/L	2.0	0.43	1		04/27/20 11:27	16887-00-6	
Fluoride	0.28J	mg/L	0.32	0.095	1		04/27/20 11:27	16984-48-8	
Sulfate	89.4	mg/L	10.0	2.2	5		04/27/20 23:19	14808-79-8	

### REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

### ANALYTICAL RESULTS

Project: 25219071 NELSON DEWEY CCR  
Pace Project No.: 40206309

**Sample: B-31A**      **Lab ID: 40206309008**      Collected: 04/13/20 18:25      Received: 04/16/20 09:05      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>									
Analytical Method: EPA 6020    Preparation Method: EPA 3010 Pace Analytical Services - Green Bay									
Boron	<b>132</b>	ug/L	10.0	3.0	1	04/19/20 21:32	04/23/20 08:13	7440-42-8	
Calcium	<b>50900</b>	ug/L	254	76.2	1	04/19/20 21:32	04/23/20 08:13	7440-70-2	
<b>Field Data</b>									
Analytical Method: Pace Analytical Services - Green Bay									
Field pH	<b>7.71</b>	Std. Units			1		04/13/20 18:25		
Field Specific Conductance	<b>556</b>	umhos/cm			1		04/13/20 18:25		
Oxygen, Dissolved	<b>0.24</b>	mg/L			1		04/13/20 18:25	7782-44-7	
REDOX	<b>-68.2</b>	mV			1		04/13/20 18:25		
Turbidity	<b>0.75</b>	NTU			1		04/13/20 18:25		
Static Water Level	<b>613.79</b>	feet			1		04/13/20 18:25		
Temperature, Water (C)	<b>13.6</b>	deg C			1		04/13/20 18:25		
<b>2540C Total Dissolved Solids</b>									
Analytical Method: SM 2540C Pace Analytical Services - Green Bay									
Total Dissolved Solids	<b>298</b>	mg/L	20.0	8.7	1		04/17/20 16:32		
<b>9040 pH</b>									
Analytical Method: EPA 9040 Pace Analytical Services - Green Bay									
pH at 25 Degrees C	<b>7.7</b>	Std. Units	0.10	0.010	1		04/20/20 07:58		H6
<b>300.0 IC Anions</b>									
Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay									
Chloride	<b>51.0</b>	mg/L	2.0	0.43	1		04/27/20 11:41	16887-00-6	
Fluoride	<b>0.19J</b>	mg/L	0.32	0.095	1		04/27/20 11:41	16984-48-8	
Sulfate	<b>16.6</b>	mg/L	2.0	0.44	1		04/27/20 11:41	14808-79-8	

**Sample: B-39**      **Lab ID: 40206309009**      Collected: 04/14/20 13:10      Received: 04/16/20 09:05      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>									
Analytical Method: EPA 6020    Preparation Method: EPA 3010 Pace Analytical Services - Green Bay									
Boron	<b>230</b>	ug/L	10.0	3.0	1	04/19/20 21:32	04/23/20 08:19	7440-42-8	
Calcium	<b>70800</b>	ug/L	254	76.2	1	04/19/20 21:32	04/23/20 08:19	7440-70-2	
<b>Field Data</b>									
Analytical Method: Pace Analytical Services - Green Bay									
Field pH	<b>6.94</b>	Std. Units			1		04/14/20 13:10		
Field Specific Conductance	<b>555</b>	umhos/cm			1		04/14/20 13:10		
Oxygen, Dissolved	<b>0.39</b>	mg/L			1		04/14/20 13:10	7782-44-7	
REDOX	<b>220.6</b>	mV			1		04/14/20 13:10		
Turbidity	<b>0.00</b>	NTU			1		04/14/20 13:10		

### REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

## ANALYTICAL RESULTS

Project: 25219071 NELSON DEWEY CCR  
Pace Project No.: 40206309

**Sample: B-39**      **Lab ID: 40206309009**      Collected: 04/14/20 13:10      Received: 04/16/20 09:05      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>Field Data</b>									
Analytical Method: Pace Analytical Services - Green Bay									
Static Water Level	<b>613.71</b>	feet			1		04/14/20 13:10		
Temperature, Water (C)	<b>12.4</b>	deg C			1		04/14/20 13:10		
<b>2540C Total Dissolved Solids</b>									
Analytical Method: SM 2540C Pace Analytical Services - Green Bay									
Total Dissolved Solids	<b>304</b>	mg/L	20.0	8.7	1		04/17/20 16:32		
<b>9040 pH</b>									
Analytical Method: EPA 9040 Pace Analytical Services - Green Bay									
pH at 25 Degrees C	<b>7.1</b>	Std. Units	0.10	0.010	1		04/20/20 08:00		H6
<b>300.0 IC Anions</b>									
Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay									
Chloride	<b>0.97J</b>	mg/L	2.0	0.43	1		04/27/20 11:56	16887-00-6	
Fluoride	<b>0.28J</b>	mg/L	0.32	0.095	1		04/27/20 11:56	16984-48-8	
Sulfate	<b>6.1</b>	mg/L	2.0	0.44	1		04/27/20 11:56	14808-79-8	

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

### QUALITY CONTROL DATA

Project: 25219071 NELSON DEWEY CCR  
Pace Project No.: 40206309

QC Batch:	352868	Analysis Method:	EPA 6020
QC Batch Method:	EPA 3010	Analysis Description:	6020 MET
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40206309001, 40206309002, 40206309003, 40206309004, 40206309005, 40206309006, 40206309007, 40206309008, 40206309009

METHOD BLANK: 2043162 Matrix: Water  
Associated Lab Samples: 40206309001, 40206309002, 40206309003, 40206309004, 40206309005, 40206309006, 40206309007, 40206309008, 40206309009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Boron	ug/L	<3.0	10.0	04/22/20 16:00	
Calcium	ug/L	<76.2	254	04/22/20 16:00	

LABORATORY CONTROL SAMPLE: 2043163

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	500	467	93	80-120	
Calcium	ug/L	5000	4890	98	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2043164 2043165

Parameter	Units	2043164		2043165		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40206347017 Result	MS Spike Conc.	MSD Spike Conc.	MS Result						
Boron	ug/L	10.4	500	500	469	472	92	92	75-125	1	20
Calcium	ug/L	76000	5000	5000	83800	81900	156	119	75-125	2	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

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

### QUALITY CONTROL DATA

Project: 25219071 NELSON DEWEY CCR  
Pace Project No.: 40206309

QC Batch: 352756 Analysis Method: SM 2540C  
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids  
Laboratory: Pace Analytical Services - Green Bay  
Associated Lab Samples: 40206309001, 40206309002, 40206309003, 40206309004, 40206309005

METHOD BLANK: 2042034 Matrix: Water  
Associated Lab Samples: 40206309001, 40206309002, 40206309003, 40206309004, 40206309005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	04/16/20 17:10	

LABORATORY CONTROL SAMPLE: 2042035

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	549	556	101	80-120	

SAMPLE DUPLICATE: 2042036

Parameter	Units	40206249001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	486	484	0	10	

SAMPLE DUPLICATE: 2042037

Parameter	Units	40206309001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	<8.7	<8.7		10	

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

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

### QUALITY CONTROL DATA

Project: 25219071 NELSON DEWEY CCR  
Pace Project No.: 40206309

QC Batch: 352851 Analysis Method: SM 2540C  
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids  
Laboratory: Pace Analytical Services - Green Bay  
Associated Lab Samples: 40206309006, 40206309007, 40206309008, 40206309009

METHOD BLANK: 2042748 Matrix: Water  
Associated Lab Samples: 40206309006, 40206309007, 40206309008, 40206309009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	04/17/20 16:30	

LABORATORY CONTROL SAMPLE: 2042749

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	549	536	98	80-120	

SAMPLE DUPLICATE: 2042750

Parameter	Units	40206314001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	246	234	5	10	

SAMPLE DUPLICATE: 2042751

Parameter	Units	40206319001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	478	496	4	10	

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

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.



### QUALITY CONTROL DATA

Project: 25219071 NELSON DEWEY CCR

Pace Project No.: 40206309

QC Batch: 352895

Analysis Method: EPA 9040

QC Batch Method: EPA 9040

Analysis Description: 9040 pH

Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40206309001, 40206309002, 40206309003, 40206309004, 40206309005, 40206309006, 40206309007, 40206309008, 40206309009

SAMPLE DUPLICATE: 2043258

Parameter	Units	40206309002 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	6.6	6.5	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

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

### QUALITY CONTROL DATA

Project: 25219071 NELSON DEWEY CCR  
Pace Project No.: 40206309

QC Batch: 352843 Analysis Method: EPA 300.0  
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions  
Laboratory: Pace Analytical Services - Green Bay  
Associated Lab Samples: 40206309001, 40206309002, 40206309003, 40206309004, 40206309005

METHOD BLANK: 2042700 Matrix: Water  
Associated Lab Samples: 40206309001, 40206309002, 40206309003, 40206309004, 40206309005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.43	2.0	04/21/20 09:17	
Fluoride	mg/L	<0.095	0.32	04/21/20 09:17	
Sulfate	mg/L	<0.44	2.0	04/21/20 09:17	

LABORATORY CONTROL SAMPLE: 2042701

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	18.9	94	90-110	
Fluoride	mg/L	2	1.9	94	90-110	
Sulfate	mg/L	20	18.7	94	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2042702 2042703

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40206360004	Result	Spike Conc.	Spike Conc.								
Chloride	mg/L	31.7	100	100	138	143	106	111	90-110	4	15	M0	
Fluoride	mg/L	ND	10	10	11.2	11.8	109	115	90-110	5	15	M0	
Sulfate	mg/L	12.9	100	100	120	126	107	113	90-110	5	15	M0	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2042704 2042705

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40206309005	Result	Spike Conc.	Spike Conc.								
Chloride	mg/L	30.9	200	200	235	233	102	101	90-110	1	15		
Fluoride	mg/L	<0.95	20	20	22.0	21.9	106	105	90-110	1	15		
Sulfate	mg/L	378	200	200	571	563	97	92	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

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

### QUALITY CONTROL DATA

Project: 25219071 NELSON DEWEY CCR  
Pace Project No.: 40206309

QC Batch: 352952 Analysis Method: EPA 300.0  
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions  
Laboratory: Pace Analytical Services - Green Bay  
Associated Lab Samples: 40206309006, 40206309007, 40206309008, 40206309009

METHOD BLANK: 2043405 Matrix: Water  
Associated Lab Samples: 40206309006, 40206309007, 40206309008, 40206309009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.43	2.0	04/27/20 10:01	
Fluoride	mg/L	<0.095	0.32	04/27/20 10:01	
Sulfate	mg/L	<0.44	2.0	04/27/20 10:01	

LABORATORY CONTROL SAMPLE: 2043406

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	19.3	96	90-110	
Fluoride	mg/L	2	1.9	96	90-110	
Sulfate	mg/L	20	19.1	96	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2043444 2043445

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40206339001 Result	Spike Conc.	Spike Conc.	MS Result								
Chloride	mg/L	118	200	200	329	328	105	105	90-110	0	15		
Fluoride	mg/L	126	200	200	291	360	82	117	90-110	21	15	M0, R1	
Sulfate	mg/L	27.4	200	200	232	230	102	102	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

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

## QUALIFIERS

Project: 25219071 NELSON DEWEY CCR

Pace Project No.: 40206309

---

### 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

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.

R1 RPD value was outside control limits.

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

**QUALITY CONTROL DATA CROSS REFERENCE TABLE**

Project: 25219071 NELSON DEWEY CCR  
Pace Project No.: 40206309

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40206309001	FIELD BLANK	EPA 3010	352868	EPA 6020	352938
40206309002	B-7R	EPA 3010	352868	EPA 6020	352938
40206309003	B-11R	EPA 3010	352868	EPA 6020	352938
40206309004	B-11A	EPA 3010	352868	EPA 6020	352938
40206309005	B-11B	EPA 3010	352868	EPA 6020	352938
40206309006	B-26	EPA 3010	352868	EPA 6020	352938
40206309007	B-31R	EPA 3010	352868	EPA 6020	352938
40206309008	B-31A	EPA 3010	352868	EPA 6020	352938
40206309009	B-39	EPA 3010	352868	EPA 6020	352938
40206309002	B-7R				
40206309003	B-11R				
40206309004	B-11A				
40206309005	B-11B				
40206309006	B-26				
40206309007	B-31R				
40206309008	B-31A				
40206309009	B-39				
40206309001	FIELD BLANK	SM 2540C	352756		
40206309002	B-7R	SM 2540C	352756		
40206309003	B-11R	SM 2540C	352756		
40206309004	B-11A	SM 2540C	352756		
40206309005	B-11B	SM 2540C	352756		
40206309006	B-26	SM 2540C	352851		
40206309007	B-31R	SM 2540C	352851		
40206309008	B-31A	SM 2540C	352851		
40206309009	B-39	SM 2540C	352851		
40206309001	FIELD BLANK	EPA 9040	352895		
40206309002	B-7R	EPA 9040	352895		
40206309003	B-11R	EPA 9040	352895		
40206309004	B-11A	EPA 9040	352895		
40206309005	B-11B	EPA 9040	352895		
40206309006	B-26	EPA 9040	352895		
40206309007	B-31R	EPA 9040	352895		
40206309008	B-31A	EPA 9040	352895		
40206309009	B-39	EPA 9040	352895		
40206309001	FIELD BLANK	EPA 300.0	352843		
40206309002	B-7R	EPA 300.0	352843		
40206309003	B-11R	EPA 300.0	352843		
40206309004	B-11A	EPA 300.0	352843		
40206309005	B-11B	EPA 300.0	352843		
40206309006	B-26	EPA 300.0	352952		
40206309007	B-31R	EPA 300.0	352952		
40206309008	B-31A	EPA 300.0	352952		
40206309009	B-39	EPA 300.0	352952		

**REPORT OF LABORATORY ANALYSIS**

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

(Please Print Clearly)



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

Page 1 of

4820809

# CHAIN OF CUSTODY

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

Filtered? (YES/NO)	Preservation (CODE)	VIN	Pick Letter
		Nb	A
		Nb	A
		Nb	D

**Analyses Requested**  
 Ph, Cl<sub>2</sub>, TDS, Fluoride, Sulfate, B, C<sub>2</sub>

**Company Name:** SCS  
**Branch/Location:** Madison, WI  
**Project Contact:** Meg Bradeth  
**Phone:** 608 216-7362  
**Project Number:** 25219071  
**Project Name:** Nelson Dwyer CCR  
**Project State:** WI  
**Sampled By (Print):** Paul A. Grover  
**Sampled By (Sign):** Paul A. Grover  
**PO #:** Paul A. Grover  
**Regulatory Program:**

DATE	TIME	MATRIX	ANALYSES REQUESTED
4-14	13:45	DI	X
4-13	13:30	GW	X
	16:45		
	15:30		
4-14	14:40		
4-14	16:10		
4-13	17:40		
	18:25		
4-14	13:10		

**Quote #:**  
**Mail To Contact:**  
**Mail To Company:**  
**Mail To Address:**  
**Invoice To Contact:**  
**Invoice To Company:**  
**Invoice To Address:**  
**Invoice To Phone:**  
**CLIENT COMMENTS**  
**LAB COMMENTS (Lab Use Only)**  
**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:**

**Relinquished By:** [Signature] **Date/Time:** 4-15-2020 14:20  
**Relinquished By:** [Signature] **Date/Time:** 4-15-2020 14:20  
**Relinquished By:** [Signature] **Date/Time:** 4-15-2020 14:20  
**Relinquished By:** [Signature] **Date/Time:** 4-15-2020 14:20

**Received By:** [Signature] **Date/Time:** 4-15-2020 14:20  
**Received By:** [Signature] **Date/Time:** 4-15-2020 14:20  
**Received By:** [Signature] **Date/Time:** 4-15-2020 14:20  
**Received By:** [Signature] **Date/Time:** 4-15-2020 14:20

**Receipt Temp =** 22.5 °C  
**Sampled Receipt pH** (OK/ Adjusted)  
**Cooler Custody Seal** Present / Not Present  
**Intact / Not Intact**

# Pace Container Order #636849

45200309

## Addresses

### Order By :

Company SCS ENGINEERS  
 Contact Blodgett, Meghan  
 Email mbloodgett@scsengineers.com  
 Address 2830 Dairy Drive  
 Address 2 \_\_\_\_\_  
 City Madison  
 State WI Zip 53718  
 Phone 608-216-7362

### Ship To :

Company SCS ENGINEERS (Pace Analytical Green)  
 Contact Paul Grover  
 Email pgrover@scsengineers.com  
 Address 2830 Dairy Drive  
 Address 2 \_\_\_\_\_  
 City Madison  
 State WI Zip 53718  
 Phone 608-216-7362

### Return To:

Company Pace Analytical Green Bay  
 Contact Milewsky, Dan  
 Email dan.milewsky@pacelabs.com  
 Address 1241 Bellevue Street  
 Address 2 Suite 9  
 City Green Bay  
 State WI Zip 54302  
 Phone (920)469-2436

## Info

**Project Name** CCR Rule Alliant Nelson Dewey (25219071)    **Due Date** 04/10/2020    **Profile** x    **Quote** \_\_\_\_\_  
**Project Manager** Milewsky, Dan    **Return Date** \_\_\_\_\_    **Carrier** Most Economical    **Location** \_\_\_\_\_

### Trip Blanks

Include Trip Blanks

### Bottle Labels

- Blank  
 Pre-Printed No Sample IDs  
 Pre-Printed With Sample IDs

### Bottles

- Boxed Cases  
 Individually Wrapped  
 Grouped By Sample ID/Matrix

### Return Shipping Labels

- No Shipper  
 With Shipper

### Misc

- Sampling Instructions  
 Custody Seal  
 Temp. Blanks  
 Coolers \_\_\_\_\_  
 Syringes \_\_\_\_\_
- Extra Bubble Wrap  
 Short Hold/Rush Stickers  
 DI Water 1 Liter(s)  
 USDA Regulated Soils

### COC Options

- Number of Blanks \_\_\_\_\_  
 Pre-Printed \_\_\_\_\_

# of Samples	Matrix	Test	Container	Total	# of	Lot #	Notes
9	WT	Boron/Calcium	250mL plastic w/HNO3	9	0	M-9-354-03BB	
9	WT	TDS, Cl, F, SO4	250ml plastic unpreserved	9	0	M-9-311-06BB	
9	WT	pH	250mL Plastic Unpreserved	9	0	M-9-311-06BB	

## Hazard Shipping Placard In Place : NA

### LAB USE:

\*Sample receiving hours are typically 8am-5pm, but may differ by location. Please check with your Pace Project Manager.

\*Pace Analytical reserves the right to return hazardous, toxic, or radioactive samples to you.

\*Pace Analytical reserves the right to charge for unused bottles, as well as cost associated with sample storage/disposal.

\*Payment term are net 30 days.

\*Please include the proposal number on the chain of custody to insure proper billing.

**Ship Date :** 04/08/2020

**Prepared By:** Mai Yer Her

**Verified By:** \_\_\_\_\_

### Sample

ALL SAMPLES UNFILTERED

### CLIENT USE (Optional):

**Date Rec'd:** \_\_\_\_\_

**Received By:** \_\_\_\_\_

**Verified By:** \_\_\_\_\_



# Sample Preservation Receipt Form

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

Client Name: SSS

Project # 40206309

Initial when completed: B Date/Time: B


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

Lab Lot# of pH paper: 1058741 Lab Sid #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	BG1U	AG1H	AG4S	AG4U	AG5U	AG2S	BG3U	BP1U	BP3U	BP3B	BP3N	BP3S	VG9A	DG9T	VG9U	VG9H	VG9M	VG9D	JGFU								JG9U	WGFU	WPFU
001																														2.5/5/10
002																														2.5/5/10
003																														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	VG9A	40 mL clear ascorbic	JGFU	4 oz amber jar unpres
BG1U	1 liter clear glass	BP3U	250 mL plastic unpres	DG9T	40 mL amber Na Thio	JG9U	9 oz amber jar unpres
AG1H	1 liter amber glass HCL	BP3B	250 mL plastic NaOH	VG9U	40 mL clear vial unpres	WGFU	4 oz clear jar unpres
AG4S	125 mL amber glass H2SO4	BP3N	250 mL plastic HNO3	VG9H	40 mL clear vial HCL	WPFU	4 oz plastic jar unpres
AG4U	120 mL amber glass unpres	BP3S	250 mL plastic H2SO4	VG9M	40 mL clear vial MeOH	SP5T	120 mL plastic Na Thiosulfate
AG5U	100 mL amber glass unpres			VG9D	40 mL clear vial DI	ZPLC	ziploc bag
AG2S	500 mL amber glass H2SO4					GN	
BG3U	250 mL clear glass unpres						

 1241 Bellevue Street, Green Bay, WI 54302	Document Name: <b>Sample Condition Upon Receipt (SCUR)</b>	Document Revised: 26Mar2020
	Document No.: <b>ENV-FRM-GBAY-0014-Rev.00</b>	Author: Pace Green Bay Quality Office

### Sample Condition Upon Receipt Form (SCUR)

**Client Name:** SLS  
**Courier:**  CS Logistics  Fed Ex  Speedee  UPS  Walto  
 Client  Pace Other: \_\_\_\_\_

Project #: **WO# : 40206309**  
  
 40206309

**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 -    **Type of Ice:** Wet Blue Dry None  Samples on ice, cooling process has begun  
**Cooler Temperature:** Uncorr: [handwritten] ICorr: [handwritten]  
**Temp Blank Present:**  yes  no    **Biological Tissue is Frozen:**  yes  no

**Person examining contents:**  
 Date: 4/16/20 Initials: BR  
 Labeled By Initials: SKW

Temp should be above freezing to 6°C.  
Biota Samples may be received at ≤ 0°C if shipped on Dry Ice.

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.	<u>4-15-20 BIL</u>
Chain of Custody Filled Out:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	2.	<u>No phone number / mail information,</u>
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.	<u>Invoice information, 4-15-20 BIL</u>
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.	
Samples Arrived within Hold Time: - VOA Samples frozen upon receipt	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Yes <input type="checkbox"/> No	5.	
Short Hold Time Analysis (<72hr):	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	6.	<u>4-16-20 BIL</u>
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.	
Sufficient Volume: For Analysis: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No    MS/MSD: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A		8.	
Correct Containers Used: -Pace Containers Used: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A -Pace IR Containers Used: <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A		9.	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.	
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.	
Sample Labels match COC: -Includes date/time/ID/Analysis    Matrix: <u>[handwritten]</u>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.	
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.	
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A		
Pace Trip Blank Lot # (if purchased):			

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

PM Review is documented electronically in LIMs. By releasing the project, the PM acknowledges they have reviewed the sample logir

## C2 October 2020 Detection Monitoring

October 29, 2020

Meghan Blodgett  
SCS ENGINEERS  
2830 Dairy Drive  
Madison, WI 53718

RE: Project: 25219071 CCR ALLIANT NELSON D  
Pace Project No.: 40216573

Dear Meghan Blodgett:

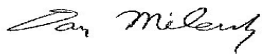
Enclosed are the analytical results for sample(s) received by the laboratory on October 15, 2020. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Green Bay

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



## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

## CERTIFICATIONS

Project: 25219071 CCR ALLIANT NELSON D

Pace Project No.: 40216573

---

### **Pace Analytical Services Green Bay**

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

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

## SAMPLE SUMMARY

Project: 25219071 CCR ALLIANT NELSON D

Pace Project No.: 40216573

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40216573001	FIELD BLANK	Water	10/12/20 17:10	10/15/20 10:15
40216573002	B-7R	Water	10/13/20 10:30	10/15/20 10:15
40216573003	B-11R	Water	10/12/20 17:10	10/15/20 10:15
40216573004	B-11A	Water	10/12/20 15:00	10/15/20 10:15
40216573005	B-11B	Water	10/12/20 15:40	10/15/20 10:15
40216573006	B-26	Water	10/13/20 11:40	10/15/20 10:15
40216573007	B-31R	Water	10/12/20 16:10	10/15/20 10:15
40216573008	B-31A	Water	10/12/20 17:25	10/15/20 10:15
40216573009	B-39	Water	10/13/20 09:25	10/15/20 10:15

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

### SAMPLE ANALYTE COUNT

Project: 25219071 CCR ALLIANT NELSON D  
Pace Project No.: 40216573

Lab ID	Sample ID	Method	Analysts	Analytes Reported
40216573001	FIELD BLANK	EPA 6020	DS1, KXS	2
		SM 2540C	HNT	1
		EPA 9040	ALY	1
		EPA 300.0	HMB	3
40216573002	B-7R	EPA 6020	KXS	2
			AXL	7
		SM 2540C	HNT	1
		EPA 9040	ALY	1
40216573003	B-11R	EPA 300.0	HMB	3
		EPA 6020	KXS	2
			AXL	7
		SM 2540C	HNT	1
40216573004	B-11A	EPA 9040	ALY	1
		EPA 300.0	HMB	3
		EPA 6020	KXS	2
			AXL	7
40216573005	B-11B	SM 2540C	HNT	1
		EPA 9040	ALY	1
		EPA 300.0	HMB	3
		EPA 6020	KXS	2
40216573006	B-26		AXL	7
		SM 2540C	HNT	1
		EPA 9040	ALY	1
		EPA 300.0	HMB	3
40216573007	B-31R	EPA 6020	KXS	2
			AXL	7
		SM 2540C	HNT	1
		EPA 9040	ALY	1
40216573008	B-31A	EPA 300.0	HMB	3
		EPA 6020	KXS	2
			AXL	7
		SM 2540C	HNT	1

### REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.



### SAMPLE ANALYTE COUNT

Project: 25219071 CCR ALLIANT NELSON D

Pace Project No.: 40216573

Lab ID	Sample ID	Method	Analysts	Analytes Reported
40216573009	B-39	EPA 9040	ALY	1
		EPA 300.0	HMB	3
		EPA 6020	KXS	2
			AXL	7
		SM 2540C	HNT	1
		EPA 9040	ALY	1
		EPA 300.0	HMB	3

PASI-G = Pace Analytical Services - Green Bay

### REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

## ANALYTICAL RESULTS

Project: 25219071 CCR ALLIANT NELSON D  
Pace Project No.: 40216573

**Sample: FIELD BLANK**      **Lab ID: 40216573001**      Collected: 10/12/20 17:10      Received: 10/15/20 10:15      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>									
Analytical Method: EPA 6020    Preparation Method: EPA 3010 Pace Analytical Services - Green Bay									
Boron	<3.0	ug/L	10.0	3.0	1	10/16/20 06:21	10/23/20 14:14	7440-42-8	
Calcium	<76.2	ug/L	254	76.2	1	10/16/20 06:21	10/26/20 16:35	7440-70-2	
<b>2540C Total Dissolved Solids</b>									
Analytical Method: SM 2540C Pace Analytical Services - Green Bay									
Total Dissolved Solids	10.0J	mg/L	20.0	8.7	1		10/15/20 19:37		
<b>9040 pH</b>									
Analytical Method: EPA 9040 Pace Analytical Services - Green Bay									
pH at 25 Degrees C	5.9	Std. Units	0.10	0.010	1		10/20/20 07:42		H6
<b>300.0 IC Anions</b>									
Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay									
Chloride	<0.43	mg/L	2.0	0.43	1		10/20/20 14:21	16887-00-6	
Fluoride	<0.095	mg/L	0.32	0.095	1		10/20/20 14:21	16984-48-8	
Sulfate	<0.44	mg/L	2.0	0.44	1		10/20/20 14:21	14808-79-8	

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

## ANALYTICAL RESULTS

Project: 25219071 CCR ALLIANT NELSON D  
Pace Project No.: 40216573

**Sample: B-7R**      **Lab ID: 40216573002**      Collected: 10/13/20 10:30      Received: 10/15/20 10:15      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020    Preparation Method: EPA 3010 Pace Analytical Services - Green Bay							
Boron	<b>145</b>	ug/L	10.0	3.0	1	10/16/20 06:21	10/24/20 03:54	7440-42-8	
Calcium	<b>41900</b>	ug/L	254	76.2	1	10/16/20 06:21	10/24/20 03:54	7440-70-2	
<b>Field Data</b>		Analytical Method: Pace Analytical Services - Green Bay							
Field pH	<b>6.35</b>	Std. Units			1		10/13/20 10:30		
Field Specific Conductance	<b>414.4</b>	umhos/cm			1		10/13/20 10:30		
Oxygen, Dissolved	<b>1.68</b>	mg/L			1		10/13/20 10:30	7782-44-7	
REDOX	<b>142.1</b>	mV			1		10/13/20 10:30		
Turbidity	<b>54.78</b>	NTU			1		10/13/20 10:30		
Static Water Level	<b>605.09</b>	feet			1		10/13/20 10:30		
Temperature, Water (C)	<b>13.7</b>	deg C			1		10/13/20 10:30		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C Pace Analytical Services - Green Bay							
Total Dissolved Solids	<b>208</b>	mg/L	20.0	8.7	1		10/15/20 19:38		
<b>9040 pH</b>		Analytical Method: EPA 9040 Pace Analytical Services - Green Bay							
pH at 25 Degrees C	<b>6.4</b>	Std. Units	0.10	0.010	1		10/20/20 07:44		H6
<b>300.0 IC Anions</b>		Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay							
Chloride	<b>6.7J</b>	mg/L	10.0	2.2	5		10/20/20 14:35	16887-00-6	D3
Fluoride	<b>&lt;0.48</b>	mg/L	1.6	0.48	5		10/20/20 14:35	16984-48-8	D3
Sulfate	<b>&lt;2.2</b>	mg/L	10.0	2.2	5		10/20/20 14:35	14808-79-8	D3

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

## ANALYTICAL RESULTS

Project: 25219071 CCR ALLIANT NELSON D

Pace Project No.: 40216573

**Sample: B-11R**      **Lab ID: 40216573003**      Collected: 10/12/20 17:10      Received: 10/15/20 10:15      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>									
Analytical Method: EPA 6020    Preparation Method: EPA 3010									
Pace Analytical Services - Green Bay									
Boron	<b>2870</b>	ug/L	10.0	3.0	1	10/16/20 06:21	10/24/20 04:01	7440-42-8	
Calcium	<b>120000</b>	ug/L	254	76.2	1	10/16/20 06:21	10/24/20 04:01	7440-70-2	
<b>Field Data</b>									
Analytical Method:									
Pace Analytical Services - Green Bay									
Field pH	<b>6.83</b>	Std. Units			1		10/12/20 17:10		
Field Specific Conductance	<b>1125.0</b>	umhos/cm			1		10/12/20 17:10		
Oxygen, Dissolved	<b>0.14</b>	mg/L			1		10/12/20 17:10	7782-44-7	
REDOX	<b>-139.8</b>	mV			1		10/12/20 17:10		
Turbidity	<b>6.58</b>	NTU			1		10/12/20 17:10		
Static Water Level	<b>604.57</b>	feet			1		10/12/20 17:10		
Temperature, Water (C)	<b>14.3</b>	deg C			1		10/12/20 17:10		
<b>2540C Total Dissolved Solids</b>									
Analytical Method: SM 2540C									
Pace Analytical Services - Green Bay									
Total Dissolved Solids	<b>600</b>	mg/L	20.0	8.7	1		10/15/20 19:38		
<b>9040 pH</b>									
Analytical Method: EPA 9040									
Pace Analytical Services - Green Bay									
pH at 25 Degrees C	<b>7.0</b>	Std. Units	0.10	0.010	1		10/20/20 07:45		H6
<b>300.0 IC Anions</b>									
Analytical Method: EPA 300.0									
Pace Analytical Services - Green Bay									
Chloride	<b>20.7</b>	mg/L	10.0	2.2	5		10/20/20 14:50	16887-00-6	
Fluoride	<b>&lt;0.48</b>	mg/L	1.6	0.48	5		10/20/20 14:50	16984-48-8	D3
Sulfate	<b>22.8</b>	mg/L	10.0	2.2	5		10/20/20 14:50	14808-79-8	

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

## ANALYTICAL RESULTS

Project: 25219071 CCR ALLIANT NELSON D  
Pace Project No.: 40216573

**Sample: B-11A**      **Lab ID: 40216573004**      Collected: 10/12/20 15:00      Received: 10/15/20 10:15      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020    Preparation Method: EPA 3010 Pace Analytical Services - Green Bay							
Boron	<b>99.3</b>	ug/L	10.0	3.0	1	10/16/20 06:21	10/24/20 04:08	7440-42-8	
Calcium	<b>55600</b>	ug/L	254	76.2	1	10/16/20 06:21	10/24/20 04:08	7440-70-2	
<b>Field Data</b>		Analytical Method: Pace Analytical Services - Green Bay							
Field pH	<b>7.74</b>	Std. Units			1		10/12/20 15:00		
Field Specific Conductance	<b>674</b>	umhos/cm			1		10/12/20 15:00		
Oxygen, Dissolved	<b>0.09</b>	mg/L			1		10/12/20 15:00	7782-44-7	
REDOX	<b>55.1</b>	mV			1		10/12/20 15:00		
Turbidity	<b>0.00</b>	NTU			1		10/12/20 15:00		
Static Water Level	<b>604.54</b>	feet			1		10/12/20 15:00		
Temperature, Water (C)	<b>14.2</b>	deg C			1		10/12/20 15:00		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C Pace Analytical Services - Green Bay							
Total Dissolved Solids	<b>364</b>	mg/L	20.0	8.7	1		10/15/20 19:38		
<b>9040 pH</b>		Analytical Method: EPA 9040 Pace Analytical Services - Green Bay							
pH at 25 Degrees C	<b>7.7</b>	Std. Units	0.10	0.010	1		10/20/20 07:51		H6
<b>300.0 IC Anions</b>		Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay							
Chloride	<b>65.3</b>	mg/L	10.0	2.2	5		10/20/20 17:13	16887-00-6	
Fluoride	<b>0.28J</b>	mg/L	0.32	0.095	1		10/20/20 15:47	16984-48-8	
Sulfate	<b>1.0J</b>	mg/L	2.0	0.44	1		10/20/20 15:47	14808-79-8	

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

### ANALYTICAL RESULTS

Project: 25219071 CCR ALLIANT NELSON D  
Pace Project No.: 40216573

**Sample: B-11B**      **Lab ID: 40216573005**      Collected: 10/12/20 15:40      Received: 10/15/20 10:15      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>									
Analytical Method: EPA 6020    Preparation Method: EPA 3010 Pace Analytical Services - Green Bay									
Boron	<b>3350</b>	ug/L	10.0	3.0	1	10/16/20 06:21	10/24/20 04:29	7440-42-8	
Calcium	<b>91200</b>	ug/L	254	76.2	1	10/16/20 06:21	10/24/20 04:29	7440-70-2	
<b>Field Data</b>									
Analytical Method: Pace Analytical Services - Green Bay									
Field pH	<b>7.80</b>	Std. Units			1		10/12/20 15:40		
Field Specific Conductance	<b>1348</b>	umhos/cm			1		10/12/20 15:40		
Oxygen, Dissolved	<b>0.22</b>	mg/L			1		10/12/20 15:40	7782-44-7	
REDOX	<b>225.0</b>	mV			1		10/12/20 15:40		
Turbidity	<b>0.00</b>	NTU			1		10/12/20 15:40		
Static Water Level	<b>604.44</b>	feet			1		10/12/20 15:40		
Temperature, Water (C)	<b>14.3</b>	deg C			1		10/12/20 15:40		
<b>2540C Total Dissolved Solids</b>									
Analytical Method: SM 2540C Pace Analytical Services - Green Bay									
Total Dissolved Solids	<b>906</b>	mg/L	20.0	8.7	1		10/15/20 19:38		
<b>9040 pH</b>									
Analytical Method: EPA 9040 Pace Analytical Services - Green Bay									
pH at 25 Degrees C	<b>7.9</b>	Std. Units	0.10	0.010	1		10/20/20 07:52		H6
<b>300.0 IC Anions</b>									
Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay									
Chloride	<b>33.4</b>	mg/L	2.0	0.43	1		10/20/20 16:02	16887-00-6	
Fluoride	<b>&lt;0.095</b>	mg/L	0.32	0.095	1		10/20/20 16:02	16984-48-8	
Sulfate	<b>388</b>	mg/L	20.0	4.4	10		10/22/20 01:06	14808-79-8	

### REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

### ANALYTICAL RESULTS

Project: 25219071 CCR ALLIANT NELSON D  
Pace Project No.: 40216573

**Sample: B-26**      **Lab ID: 40216573006**      Collected: 10/13/20 11:40      Received: 10/15/20 10:15      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>									
Analytical Method: EPA 6020    Preparation Method: EPA 3010 Pace Analytical Services - Green Bay									
Boron	<b>63.6</b>	ug/L	10.0	3.0	1	10/16/20 06:21	10/24/20 04:36	7440-42-8	
Calcium	<b>76500</b>	ug/L	254	76.2	1	10/16/20 06:21	10/24/20 04:36	7440-70-2	
<b>Field Data</b>									
Analytical Method: Pace Analytical Services - Green Bay									
Field pH	<b>7.34</b>	Std. Units			1		10/13/20 11:40		
Field Specific Conductance	<b>782</b>	umhos/cm			1		10/13/20 11:40		
Oxygen, Dissolved	<b>7.2</b>	mg/L			1		10/13/20 11:40	7782-44-7	
REDOX	<b>242.6</b>	mV			1		10/13/20 11:40		
Turbidity	<b>0.00</b>	NTU			1		10/13/20 11:40		
Static Water Level	<b>604.92</b>	feet			1		10/13/20 11:40		
Temperature, Water (C)	<b>11.9</b>	deg C			1		10/13/20 11:40		
<b>2540C Total Dissolved Solids</b>									
Analytical Method: SM 2540C Pace Analytical Services - Green Bay									
Total Dissolved Solids	<b>448</b>	mg/L	20.0	8.7	1		10/15/20 19:39		
<b>9040 pH</b>									
Analytical Method: EPA 9040 Pace Analytical Services - Green Bay									
pH at 25 Degrees C	<b>7.4</b>	Std. Units	0.10	0.010	1		10/20/20 07:53		H6
<b>300.0 IC Anions</b>									
Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay									
Chloride	<b>35.3</b>	mg/L	2.0	0.43	1		10/20/20 16:16	16887-00-6	
Fluoride	<b>&lt;0.095</b>	mg/L	0.32	0.095	1		10/20/20 16:16	16984-48-8	M0
Sulfate	<b>37.0</b>	mg/L	2.0	0.44	1		10/20/20 16:16	14808-79-8	

### REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.



### ANALYTICAL RESULTS

Project: 25219071 CCR ALLIANT NELSON D

Pace Project No.: 40216573

**Sample: B-31R**      **Lab ID: 40216573007**      Collected: 10/12/20 16:10      Received: 10/15/20 10:15      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>									
Analytical Method: EPA 6020    Preparation Method: EPA 3010									
Pace Analytical Services - Green Bay									
Boron	<b>702</b>	ug/L	10.0	3.0	1	10/16/20 06:21	10/24/20 04:42	7440-42-8	
Calcium	<b>95700</b>	ug/L	254	76.2	1	10/16/20 06:21	10/24/20 04:42	7440-70-2	
<b>Field Data</b>									
Analytical Method:									
Pace Analytical Services - Green Bay									
Field pH	<b>6.89</b>	Std. Units			1		10/12/20 16:10		
Field Specific Conductance	<b>826</b>	umhos/cm			1		10/12/20 16:10		
Oxygen, Dissolved	<b>0.22</b>	mg/L			1		10/12/20 16:10	7782-44-7	
REDOX	<b>-60.7</b>	mV			1		10/12/20 16:10		
Turbidity	<b>0</b>	NTU			1		10/12/20 16:10		
Static Water Level	<b>604.66</b>	feet			1		10/12/20 16:10		
Temperature, Water (C)	<b>14.0</b>	deg C			1		10/12/20 16:10		
<b>2540C Total Dissolved Solids</b>									
Analytical Method: SM 2540C									
Pace Analytical Services - Green Bay									
Total Dissolved Solids	<b>462</b>	mg/L	20.0	8.7	1		10/15/20 19:39		
<b>9040 pH</b>									
Analytical Method: EPA 9040									
Pace Analytical Services - Green Bay									
pH at 25 Degrees C	<b>7.1</b>	Std. Units	0.10	0.010	1		10/20/20 07:54		H6
<b>300.0 IC Anions</b>									
Analytical Method: EPA 300.0									
Pace Analytical Services - Green Bay									
Chloride	<b>24.4</b>	mg/L	10.0	2.2	5		10/27/20 15:38	16887-00-6	
Fluoride	<b>&lt;0.48</b>	mg/L	1.6	0.48	5		10/27/20 15:38	16984-48-8	D3,M0
Sulfate	<b>49.4</b>	mg/L	10.0	2.2	5		10/27/20 15:38	14808-79-8	

### REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

### ANALYTICAL RESULTS

Project: 25219071 CCR ALLIANT NELSON D  
Pace Project No.: 40216573

**Sample: B-31A**      **Lab ID: 40216573008**      Collected: 10/12/20 17:25      Received: 10/15/20 10:15      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>		Analytical Method: EPA 6020    Preparation Method: EPA 3010 Pace Analytical Services - Green Bay							
Boron	<b>127</b>	ug/L	10.0	3.0	1	10/16/20 06:21	10/24/20 04:49	7440-42-8	
Calcium	<b>47700</b>	ug/L	254	76.2	1	10/16/20 06:21	10/24/20 04:49	7440-70-2	
<b>Field Data</b>		Analytical Method: Pace Analytical Services - Green Bay							
Field pH	<b>7.78</b>	Std. Units			1		10/12/20 17:25		
Field Specific Conductance	<b>557.3</b>	umhos/cm			1		10/12/20 17:25		
Oxygen, Dissolved	<b>0.19</b>	mg/L			1		10/12/20 17:25	7782-44-7	
REDOX	<b>-55.9</b>	mV			1		10/12/20 17:25		
Turbidity	<b>1.11</b>	NTU			1		10/12/20 17:25		
Static Water Level	<b>604.54</b>	feet			1		10/12/20 17:25		
Temperature, Water (C)	<b>13.9</b>	deg C			1		10/12/20 17:25		
<b>2540C Total Dissolved Solids</b>		Analytical Method: SM 2540C Pace Analytical Services - Green Bay							
Total Dissolved Solids	<b>300</b>	mg/L	20.0	8.7	1		10/15/20 19:39		
<b>9040 pH</b>		Analytical Method: EPA 9040 Pace Analytical Services - Green Bay							
pH at 25 Degrees C	<b>7.7</b>	Std. Units	0.10	0.010	1		10/20/20 07:56		H6
<b>300.0 IC Anions</b>		Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay							
Chloride	<b>57.9</b>	mg/L	2.0	0.43	1		10/27/20 16:21	16887-00-6	
Fluoride	<b>0.18J</b>	mg/L	0.32	0.095	1		10/27/20 16:21	16984-48-8	
Sulfate	<b>16.8</b>	mg/L	2.0	0.44	1		10/27/20 16:21	14808-79-8	

### REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

### ANALYTICAL RESULTS

Project: 25219071 CCR ALLIANT NELSON D  
Pace Project No.: 40216573

**Sample: B-39**      **Lab ID: 40216573009**      Collected: 10/13/20 09:25      Received: 10/15/20 10:15      Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
<b>6020 MET ICPMS</b>									
Analytical Method: EPA 6020    Preparation Method: EPA 3010 Pace Analytical Services - Green Bay									
Boron	<b>208</b>	ug/L	10.0	3.0	1	10/16/20 06:21	10/24/20 04:56	7440-42-8	
Calcium	<b>54900</b>	ug/L	254	76.2	1	10/16/20 06:21	10/24/20 04:56	7440-70-2	
<b>Field Data</b>									
Analytical Method: Pace Analytical Services - Green Bay									
Field pH	<b>6.43</b>	Std. Units			1		10/13/20 09:25		
Field Specific Conductance	<b>416.5</b>	umhos/cm			1		10/13/20 09:25		
Oxygen, Dissolved	<b>0.23</b>	mg/L			1		10/13/20 09:25	7782-44-7	
REDOX	<b>212.5</b>	mV			1		10/13/20 09:25		
Turbidity	<b>0.00</b>	NTU			1		10/13/20 09:25		
Static Water Level	<b>605.06</b>	feet			1		10/13/20 09:25		
Temperature, Water (C)	<b>14.7</b>	deg C			1		10/13/20 09:25		
<b>2540C Total Dissolved Solids</b>									
Analytical Method: SM 2540C Pace Analytical Services - Green Bay									
Total Dissolved Solids	<b>236</b>	mg/L	20.0	8.7	1		10/15/20 19:39		
<b>9040 pH</b>									
Analytical Method: EPA 9040 Pace Analytical Services - Green Bay									
pH at 25 Degrees C	<b>6.8</b>	Std. Units	0.10	0.010	1		10/20/20 07:57		H6
<b>300.0 IC Anions</b>									
Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay									
Chloride	<b>0.77J</b>	mg/L	2.0	0.43	1		10/27/20 16:36	16887-00-6	
Fluoride	<b>0.23J</b>	mg/L	0.32	0.095	1		10/27/20 16:36	16984-48-8	
Sulfate	<b>2.6</b>	mg/L	2.0	0.44	1		10/27/20 16:36	14808-79-8	

### REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

### QUALITY CONTROL DATA

Project: 25219071 CCR ALLIANT NELSON D  
Pace Project No.: 40216573

QC Batch:	368457	Analysis Method:	EPA 6020
QC Batch Method:	EPA 3010	Analysis Description:	6020 MET
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40216573001, 40216573002, 40216573003, 40216573004, 40216573005, 40216573006, 40216573007, 40216573008, 40216573009

METHOD BLANK: 2130081 Matrix: Water  
Associated Lab Samples: 40216573001, 40216573002, 40216573003, 40216573004, 40216573005, 40216573006, 40216573007, 40216573008, 40216573009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Boron	ug/L	<3.0	10.0	10/23/20 14:07	
Calcium	ug/L	<76.2	254	10/26/20 16:29	

LABORATORY CONTROL SAMPLE: 2130082

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	500	476	95	80-120	
Calcium	ug/L	5000	5480	110	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2130083 2130084

Parameter	Units	40216585002 Result	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	MS Spike Conc.	MSD Spike Conc.	MS Result						
Boron	ug/L	6.3J	500	500	463	486	91	96	75-125	5	20	
Calcium	ug/L	40200	5000	5000	43600	44900	69	96	75-125	3	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

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

### QUALITY CONTROL DATA

Project: 25219071 CCR ALLIANT NELSON D  
Pace Project No.: 40216573

QC Batch:	368443	Analysis Method:	SM 2540C
QC Batch Method:	SM 2540C	Analysis Description:	2540C Total Dissolved Solids
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40216573001, 40216573002, 40216573003, 40216573004, 40216573005, 40216573006, 40216573007, 40216573008, 40216573009

METHOD BLANK: 2130049 Matrix: Water  
Associated Lab Samples: 40216573001, 40216573002, 40216573003, 40216573004, 40216573005, 40216573006, 40216573007, 40216573008, 40216573009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	10/15/20 19:35	

LABORATORY CONTROL SAMPLE: 2130050

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	584	576	99	80-120	

SAMPLE DUPLICATE: 2130051

Parameter	Units	40216537001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	134	130	3	10	

SAMPLE DUPLICATE: 2130053

Parameter	Units	40216573003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	600	600	0	10	

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

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

### QUALITY CONTROL DATA

Project: 25219071 CCR ALLIANT NELSON D

Pace Project No.: 40216573

QC Batch: 368741

Analysis Method: EPA 9040

QC Batch Method: EPA 9040

Analysis Description: 9040 pH

Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40216573001, 40216573002, 40216573003, 40216573004, 40216573005, 40216573006, 40216573007, 40216573008, 40216573009

SAMPLE DUPLICATE: 2131902

Parameter	Units	40216567010 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.8	7.8	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

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

### QUALITY CONTROL DATA

Project: 25219071 CCR ALLIANT NELSON D  
Pace Project No.: 40216573

QC Batch: 368419 Analysis Method: EPA 300.0  
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions  
Laboratory: Pace Analytical Services - Green Bay  
Associated Lab Samples: 40216573001, 40216573002, 40216573003, 40216573004, 40216573005, 40216573006

METHOD BLANK: 2129786 Matrix: Water  
Associated Lab Samples: 40216573001, 40216573002, 40216573003, 40216573004, 40216573005, 40216573006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.43	2.0	10/20/20 09:28	
Fluoride	mg/L	<0.095	0.32	10/20/20 09:28	
Sulfate	mg/L	<0.44	2.0	10/20/20 09:28	

LABORATORY CONTROL SAMPLE: 2129787

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	19.2	96	90-110	
Fluoride	mg/L	2	1.8	91	90-110	
Sulfate	mg/L	20	19.2	96	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2129788 2129789

Parameter	Units	40216308001 Result	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	MS Result	MSD Result							
Chloride	mg/L	0.63J	20	21.8	21.8	106	106	90-110	0	15		
Fluoride	mg/L	<0.095	2	2.2	2.2	109	109	90-110	0	15		
Sulfate	mg/L	8.4	20	30.2	30.3	109	109	90-110	0	15		

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2129790 2129791

Parameter	Units	40216573006 Result	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
			Spike Conc.	MS Result	MSD Result							
Chloride	mg/L	35.3	20	54.3	54.3	95	95	90-110	0	15		
Fluoride	mg/L	<0.095	2	2.3	2.3	113	114	90-110	0	15 M0		
Sulfate	mg/L	37.0	20	56.6	56.6	98	98	90-110	0	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

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.



### QUALITY CONTROL DATA

Project: 25219071 CCR ALLIANT NELSON D  
Pace Project No.: 40216573

QC Batch: 369237 Analysis Method: EPA 300.0  
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions  
Laboratory: Pace Analytical Services - Green Bay  
Associated Lab Samples: 40216573007, 40216573008, 40216573009

METHOD BLANK: 2134436 Matrix: Water  
Associated Lab Samples: 40216573007, 40216573008, 40216573009

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.43	2.0	10/27/20 14:27	
Fluoride	mg/L	<0.095	0.32	10/27/20 14:27	
Sulfate	mg/L	<0.44	2.0	10/27/20 14:27	

LABORATORY CONTROL SAMPLE: 2134437

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	21.3	106	90-110	
Fluoride	mg/L	2	2.2	108	90-110	
Sulfate	mg/L	20	21.3	106	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2134438 2134439

Parameter	Units	40216573007		40216573009		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result								
Chloride	mg/L	24.4	100	100	133	130	108	106	106	90-110	2	15	
Fluoride	mg/L	<0.48	10	10	11.4	11.3	114	113	113	90-110	1	15	M0
Sulfate	mg/L	49.4	100	100	156	153	107	104	104	90-110	2	15	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2134440 2134441

Parameter	Units	40216625001		40216625001		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result								
Chloride	mg/L	21.9	20	20	42.2	42.3	102	102	102	90-110	0	15	
Fluoride	mg/L	<0.095	2	2	2.3	2.3	116	116	116	90-110	1	15	M0
Sulfate	mg/L	5.0	20	20	26.9	27.0	109	110	110	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

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

## QUALIFIERS

Project: 25219071 CCR ALLIANT NELSON D

Pace Project No.: 40216573

---

### 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

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.

## REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.

### QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25219071 CCR ALLIANT NELSON D

Pace Project No.: 40216573

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40216573001	FIELD BLANK	EPA 3010	368457	EPA 6020	368529
40216573002	B-7R	EPA 3010	368457	EPA 6020	368529
40216573003	B-11R	EPA 3010	368457	EPA 6020	368529
40216573004	B-11A	EPA 3010	368457	EPA 6020	368529
40216573005	B-11B	EPA 3010	368457	EPA 6020	368529
40216573006	B-26	EPA 3010	368457	EPA 6020	368529
40216573007	B-31R	EPA 3010	368457	EPA 6020	368529
40216573008	B-31A	EPA 3010	368457	EPA 6020	368529
40216573009	B-39	EPA 3010	368457	EPA 6020	368529
40216573002	B-7R				
40216573003	B-11R				
40216573004	B-11A				
40216573005	B-11B				
40216573006	B-26				
40216573007	B-31R				
40216573008	B-31A				
40216573009	B-39				
40216573001	FIELD BLANK	SM 2540C	368443		
40216573002	B-7R	SM 2540C	368443		
40216573003	B-11R	SM 2540C	368443		
40216573004	B-11A	SM 2540C	368443		
40216573005	B-11B	SM 2540C	368443		
40216573006	B-26	SM 2540C	368443		
40216573007	B-31R	SM 2540C	368443		
40216573008	B-31A	SM 2540C	368443		
40216573009	B-39	SM 2540C	368443		
40216573001	FIELD BLANK	EPA 9040	368741		
40216573002	B-7R	EPA 9040	368741		
40216573003	B-11R	EPA 9040	368741		
40216573004	B-11A	EPA 9040	368741		
40216573005	B-11B	EPA 9040	368741		
40216573006	B-26	EPA 9040	368741		
40216573007	B-31R	EPA 9040	368741		
40216573008	B-31A	EPA 9040	368741		
40216573009	B-39	EPA 9040	368741		
40216573001	FIELD BLANK	EPA 300.0	368419		
40216573002	B-7R	EPA 300.0	368419		
40216573003	B-11R	EPA 300.0	368419		
40216573004	B-11A	EPA 300.0	368419		
40216573005	B-11B	EPA 300.0	368419		
40216573006	B-26	EPA 300.0	368419		
40216573007	B-31R	EPA 300.0	369237		
40216573008	B-31A	EPA 300.0	369237		
40216573009	B-39	EPA 300.0	369237		

### REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,  
without the written consent of Pace Analytical Services, LLC.



**CHAIN-OF-CUSTODY / Analytical Request Document**  
The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

40216 573  
10/21/20  
10/15/20  
570

<b>Section A</b>		<b>Required Client Information:</b>		<b>Section B</b>		<b>Required Project Information:</b>		<b>Section C</b>		<b>Invoice Information:</b>	
Company:	SCS ENGINEERS	Report To:	Meghan Blodgett	Attention:		Address:		Company Name:		Pace Project Manager:	dan.milevsky@paceabs.com
Address:	2830 Dairy Drive	Copy To:		Pace Quote:							
	Madison, WI 53718	Purchase Order #:		State / Location:							
Email:	mblodgett@csengineers.com	Requested Due Date:									
Phone:	608-216-7362										
Fax:											

ITEM #	SAMPLE ID <small>One Character per box: (A-Z, 0-9/, -)</small> Sample IDs must be unique	MATRIX CODE <small>(see valid codes to left)</small>	COLLECTED		SAMPLE TEMP AT COLLECTION	Preservatives							Analyses Test	Residual Chlorine (Y/N)					
			START	END		Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol			Other	Boron/Calcium	TDS, Cl, F, SO4	pH	
1	FIELD BLANK	WT	10/14/20	1710		3	2	1											001
2	B-7R	WT	10/13/20	1630															002
3	B-11R	WT	10/16/20	1710															003
4	B-11A	WT	10/12/20	1500															004
5	B11-B	WT	10/12/20	1540															005
6	B-26	WT	10/13/20	1140															006
7	B-31R	WT	10/12/20	1610															007
8	B-31A	WT	10/12/20	1725															008
9	B-39	WT	10/13/20	925															009
10		WT																	10/15/20
11																			
12																			

ADDITIONAL COMMENTS	REQUISISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS	
ALL SAMPLES UNFILTERED	<i>CS Engineers</i>	10/15/2015		<i>QuantaILGeo Pac</i>	10/15/2015		Y N Y	
<b>SAMPLER NAME AND SIGNATURE</b> PRINT Name of SAMPLER: Adam Watson SIGNATURE of SAMPLER: <i>Adam Watson</i> DATE Signed: 10/14/2020								
TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)					

# Pace Container Order #706345

40216573

## Addresses

### Order By :

Company SCS ENGINEERS  
 Contact Blodgett, Meghan  
 Email mblodgett@scsengineers.com  
 Address 2830 Dairy Drive  
 Address 2 \_\_\_\_\_  
 City Madison  
 State WI Zip 53718  
 Phone 608-216-7362

### Ship To :

Company SCS ENGINEERS (Pace Analytical Green  
 Contact Adam Watson  
 Email awatson@scsengineers.com  
 Address 2830 Dairy Drive  
 Address 2 \_\_\_\_\_  
 City Madison  
 State WI Zip 53718  
 Phone 608-216-7362

### Return To:

Company Pace Analytical Green Bay  
 Contact Milewsky, Dan  
 Email dan.milewsky@pacelabs.com  
 Address 1241 Bellevue Street  
 Address 2 Suite 9  
 City Green Bay  
 State WI Zip 54302  
 Phone (920)469-2436

## Info

**Project Name** CCR Rule Alliant Nelson Dewey (25219071) **Due Date** 10/09/2020 **Profile** 3946-13 **Quote** \_\_\_\_\_  
**Project Manager** Milewsky, Dan **Return Date** \_\_\_\_\_ **Carrier** Most Economical **Location** \_\_\_\_\_

### Trip Blanks

Include Trip Blanks

### Bottle Labels

Blank  
 Pre-Printed No Sample IDs  
 Pre-Printed With Sample IDs

### Bottles

Boxed Cases  
 Individually Wrapped  
 Grouped By Sample ID/Matrix

### Return Shipping Labels

No Shipper  
 With Shipper

### Misc

Sampling Instructions  
 Custody Seal  
 Temp. Blanks  
 Coolers \_\_\_\_\_  
 Syringes \_\_\_\_\_

Extra Bubble Wrap  
 Short Hold/Rush Stickers  
 DI Water 1 Liter(s)  
 USDA Regulated Soils

### COC Options

Number of Blanks \_\_\_\_\_  
 Pre-Printed \_\_\_\_\_

# of Samples	Matrix	Test	Container	Total	# of	Lot #	Notes
10	WT	Boron/Calcium	250mL plastic w/HNO3	10	0	M-9-354-03BB	
10	WT	TDS, Cl, F, SO4	250ml plastic unpreserved	10	0	M-0-156-05BB	
10	WT	pH	250mL Plastic Unpreserved	10	0	M-0-156-05BB	

## Hazard Shipping Placard In Place : NA

## LAB USE:

Sample receiving hours are typically 8am-5pm, but may differ by location. Please check with your Pace Project Manager.

Pace Analytical reserves the right to return hazardous, toxic, or radioactive samples to you.

Pace Analytical reserves the right to charge for unused bottles, as well as cost associated with sample storage/disposal.

Payment term are net 30 days.

Please include the proposal number on the chain of custody to insure proper billing.

**Ship Date :** 10/07/2020

**Prepared By:** MaiYer Her

**Verified By:** \_\_\_\_\_

## Sample

ALL SAMPLES UNFILTERED

## CLIENT USE (Optional):

**Date Rec'd:** \_\_\_\_\_

**Received By:** \_\_\_\_\_

**Verified By:** \_\_\_\_\_



# Sample Preservation Receipt Form

Client Name: SOS Environmental Project # 40216573

All containers needing preservation have been checked and noted below:

Lab Lot# of pH paper: 1054194

Lab Lot# of pH paper: 1054194 Lab Sid #ID of preservation (if pH adjusted):

Initial when completed: STW Date/Time:

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

Pace Lab #	AG1U BG1U AG1H AG4S AG4U AG5U AG2S BG3U	BP1U BP3U BP3B BP3N BP3S	VG9A DG9T VG9U VG9H VG9M VG9D	JGFU JG9U WGFU WPFU	SP5T ZPLC GN	VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)
001												2.5/5/10
002												2.5/5/10
003												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 DR0, Phenolics, Other: \_\_\_\_\_ Headspace in VOA Vials (>6mm) :  Yes  No  N/A \*If yes look in headspace column

AG1U	1 liter amber glass
BG1U	1 liter clear glass
AG1H	1 liter amber glass HCL
AG4S	125 mL amber glass H2SO4
AG4U	120 mL amber glass unpres
AG5U	100 mL amber glass unpres
AG2S	500 mL amber glass H2SO4
BG3U	250 mL clear glass unpres


BP1U	1 liter plastic unpres
BP3U	250 mL plastic unpres
BP3B	250 mL plastic NaOH
BP3N	250 mL plastic HNO3
BP3S	250 mL plastic H2SO4

VG9A	40 mL clear ascorbic
DG9T	40 mL amber Na Thio
VG9U	40 mL clear vial unpres
VG9H	40 mL clear vial HCL
VG9M	40 mL clear vial MeOH
VG9D	40 mL clear vial DI

JGFU	4 oz amber jar unpres
JG9U	9 oz amber jar unpres
WGFU	4 oz clear jar unpres
WPFU	4 oz plastic jar unpres
SP5T	120 mL plastic Na Thiosulfate
ZPLC	ziploc bag
GN	

**Sample Condition Upon Receipt Form (SCUR)**

Client Name: SCS Engineers

Project #: **WO# : 40216573**  
  
40216573

Courier:  CS Logistics  Fed Ex  Speedee  UPS  Walto  
 Client  Pace Other: \_\_\_\_\_

Tracking #: 1632 100820

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 - 83 Type of Ice:  Wet  Blue  Dry  None  Samples on ice, cooling process has begun

Cooler Temperature Uncorr: -1.5 / Corr: 0

Temp Blank Present:  yes  no Biological Tissue is Frozen:  yes  no

Person examining contents:  
Date: 10-15-20 / Initials: SKW  
Labeled By Initials: WB

Temp should be above freezing to 6°C.  
Biota Samples may be received at ≤ 0°C if shipped on Dry Ice.

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	2. <u>Proj #, Invoice info, Proj State</u>
Chain of Custody Relinquished:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	3. <u>10/15/20</u>
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5.
- VOA Samples frozen upon receipt	<input type="checkbox"/> Yes <input type="checkbox"/> No	Date/Time:
Short Hold Time Analysis (<72hr):	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.
Sufficient Volume:	For Analysis: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No MS/MSD: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
-Pace Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
-Pace IR Containers Used:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix:	<u>W</u>	
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

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


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

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

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

PM Review is documented electronically in LIMs. By releasing the project, the PM acknowledges they have reviewed the sample logir





Appendix D  
Historical Monitoring Results

# Single Location

Name: WPL - Nelson Dewey

Location ID: B-7R																
Number of Sampling Dates: 15																
Parameter Name	Units	12/9/2015	4/13/2016	7/18/2016	10/19/2016	1/12/2017	4/17/2017	6/7/2017	8/1/2017	10/19/2017	4/2/2018	10/9/2018	4/22/2019	10/14/2019	4/13/2020	10/13/2020
Boron	ug/L	110	115	164	154	159	129	110	129	159	121	73	93.5	139	96	145
Calcium	ug/L	31700	42300	44400	56600	56700	61400	51600	50400	56200	49200	38500	59400	57700	58700	41900
Chloride	mg/L	45.2	4.6	7.1	22	19.7	13.1	12.8	8.1	12	10.1	1.9	10.9	11.5	14.3	6.7
Fluoride	mg/L	<1	<0.2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5	<0.5	<0.1	<0.5	<0.5	<0.48	<0.48
Field pH	Std. Units	6.74	6.8	6.29	6.55	7.43	6.6	6.65	6.28	6.88	6.57	6.23	6.63	6.62	6.6	6.35
Sulfate	mg/L	17	2.5	2.4	<5	<5	<5	<5	3.7	<5	<5	3.2	<5	<5	7.5	<2.2
Total Dissolved Solids	mg/L	198	218	220	288	240	278	240	220	242	220	186	254	208	306	208
Antimony	ug/L	0.28	<0.073	0.25	0.086	0.2	0.18	<0.15	0.33	--	<0.15	--	--	--	--	--
Arsenic	ug/L	5	2	1.8	5.7	6.6	3.5	2.6	2	--	2.6	--	--	--	--	--
Barium	ug/L	77.8	67.8	54.5	78.8	98.4	83.3	65.8	54.2	--	89.3	--	--	--	--	--
Beryllium	ug/L	<0.13	<0.13	<0.13	<0.13	0.16	<0.13	<0.18	<0.18	--	<0.18	--	--	--	--	--
Cadmium	ug/L	0.17	<0.089	<0.089	0.13	0.16	0.11	<0.081	0.23	--	<0.081	--	--	--	--	--
Chromium	ug/L	0.5	<0.39	<0.39	<0.39	0.62	0.41	<1	<1	--	<1	--	--	--	--	--
Cobalt	ug/L	1.3	0.88	0.69	1.8	1.5	1.4	1.1	1.3	--	0.42	--	--	--	--	--
Lead	ug/L	0.21	0.16	0.078	0.14	0.42	0.26	<0.2	0.29	--	<0.2	--	--	--	--	--
Lithium	ug/L	0.45	0.14	0.18	0.23	0.35	0.26	<0.14	0.41	--	0.22	--	--	--	--	--
Mercury	ug/L	<0.1	<0.18	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	--	<0.13	--	--	--	--	--
Molybdenum	ug/L	9.6	1.4	1.4	4.3	3.3	2.1	2.8	1.9	--	0.84	--	--	--	--	--
Selenium	ug/L	0.44	0.24	0.26	0.23	0.47	0.39	<0.32	0.56	--	<0.32	--	--	--	--	--
Thallium	ug/L	0.2	<0.14	<0.14	<0.14	<0.14	0.22	<0.14	0.36	--	<0.14	--	--	--	--	--
Total Radium	pCi/L	0.933	1.18	0.598	0.118	0.828	0.747	0.181	0.967	--	0.339	--	--	--	--	--
Radium-226	pCi/L	0.341	0.436	-0.089	-0.243	-0.253	0.345	0.181	0.379	--	0.339	--	--	--	--	--
Radium-228	pCi/L	0.592	0.746	0.598	0.118	0.828	0.402	-0.057	0.588	--	-0.032	--	--	--	--	--
Field Specific Conductance	umhos/cm	367.8	410.9	422.3	583.4	1054	532	303	411.8	480.9	342.5	336	603.7	576.6	623.8	414.4
Oxygen, Dissolved	mg/L	4.88	1.29	0.55	0.37	0.1	0.1	0.22	0.47	0.31	0.3	1.24	0.17	0.11	2.18	1.68
Field Oxidation Potential	mV	-48.2	-46.1	-26.6	137.3	-122.2	-83.3	-12.6	-3	112.8	-74.1	54.5	-100.9	-132.2	-124	142.1
Groundwater Elevation	feet	606.69	609.32	606.54	608.59	604.94	609.08	610.74	607.02	609.6	604.82	610.76	615.28	613.43	614.12	605.09
Temperature	deg C	13.9	11.7	15.1	16	11.7	10.9	13.5	16.5	16	9.2	16.3	10.5	15.2	8.2	13.7
Turbidity	NTU	--	4.8	4.3	2.22	2.69	3.53	3.28	1.31	3	4.17	29.56	17.05	4.25	8.2	54.78
pH at 25 Degrees C	Std. Units	6.3	6.5	6.4	7.1	6.6	6.8	7.7	6.6	6.6	6.8	6.6	6.6	6.9	6.6	6.4



# Single Location

Name: WPL - Nelson Dewey

Location ID: B-11A																
Number of Sampling Dates: 15																
Parameter Name	Units	12/9/2015	4/13/2016	7/19/2016	10/19/2016	1/12/2017	4/17/2017	6/8/2017	8/1/2017	10/19/2017	4/2/2018	10/9/2018	4/22/2019	10/14/2019	4/13/2020	10/12/2020
Boron	ug/L	124	116	104	112	106	100	102	105	116	91	94.2	93.9	80.7	86.3	99.3
Calcium	ug/L	58800	60100	54000	54600	54500	54800	57800	54500	55000	53300	48600	60400	56600	57500	55600
Chloride	mg/L	40.4	43	46.6	46.5	46.6	45.4	46.9	46.7	49.9	54.7	57.8	83.6	96.6	93.7	65.3
Fluoride	mg/L	0.3	0.38	0.35	0.36	0.43	0.36	0.37	0.37	0.32	0.24	0.29	0.29	0.26	0.27	0.28
Field pH	Std. Units	7.7	7.75	7.42	7.47	7.89	7.38	7.78	7.67	7.96	8.04	7.43	7.62	7.66	7.75	7.74
Sulfate	mg/L	3.2	3.8	2.7	3	2.3	<1	1.4	2.4	5.1	12.3	6	1.9	<1	1.4	1
Total Dissolved Solids	mg/L	338	362	336	340	322	326	338	326	322	336	332	386	348	394	364
Antimony	ug/L	0.42	0.14	0.17	0.44	0.22	0.51	<0.15	0.27	--	<0.15	--	--	--	--	--
Arsenic	ug/L	0.27	0.19	0.18	0.51	0.19	0.4	<0.28	<0.28	--	<0.28	--	--	--	--	--
Barium	ug/L	202	206	171	181	187	192	194	184	--	170	--	--	--	--	--
Beryllium	ug/L	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.18	<0.18	--	<0.18	--	--	--	--	--
Cadmium	ug/L	<0.089	<0.089	<0.089	0.26	<0.089	0.24	<0.081	<0.081	--	<0.081	--	--	--	--	--
Chromium	ug/L	<0.39	<0.39	<0.39	<0.39	0.46	0.52	<1	<1	--	<1	--	--	--	--	--
Cobalt	ug/L	1.3	1.4	0.97	1.3	1.2	1.4	1.1	1.3	--	1.1	--	--	--	--	--
Lead	ug/L	0.083	<0.04	<0.04	0.34	<0.04	0.33	<0.2	<0.2	--	<0.2	--	--	--	--	--
Lithium	ug/L	5.9	6.1	5.8	5.9	5.9	5.9	6.1	4.9	--	5.1	--	--	--	--	--
Mercury	ug/L	<0.1	<0.18	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	--	<0.13	--	--	--	--	--
Molybdenum	ug/L	22.7	24.1	22.5	21.8	21.8	22.4	22.2	20	--	18.2	--	--	--	--	--
Selenium	ug/L	<0.21	<0.21	<0.21	0.27	<0.21	0.36	<0.32	<0.32	--	<0.32	--	--	--	--	--
Thallium	ug/L	0.14	<0.14	<0.14	0.5	<0.14	0.46	<0.14	0.15	--	<0.14	--	--	--	--	--
Total Radium	pCi/L	1.08	1.48	0.937	0.95	0.845	1.4	1.88	0.917	--	0.848	--	--	--	--	--
Radium-226	pCi/L	0.579	0.148	0.179	0.172	0	0.948	0.454	0.0728	--	0.405	--	--	--	--	--
Radium-228	pCi/L	0.503	1.33	0.758	0.778	0.845	0.447	1.43	0.844	--	0.443	--	--	--	--	--
Field Specific Conductance	umhos/cm	660	658	598.1	631	1049	583.3	407.9	588.8	519.1	481.9	654	721	708	720	674
Oxygen, Dissolved	mg/L	0.49	0.03	0.08	0.37	0.19	0.11	0.23	0.1	0.51	0.12	0.08	0.07	0.14	0.19	0.09
Field Oxidation Potential	mV	9.8	-31.2	84.2	-76.8	-88.3	-103.6	31.4	-44.1	112.1	-42.1	-47.9	218.3	-59	-31	55.1
Groundwater Elevation	feet	606.3	608.71	606.76	608.21	604.36	609.05	609.81	605.57	609.58	606.63	610.28	615.29	613.29	613.88	604.54
Temperature	deg C	14.8	14.8	14.8	14.9	14.2	14.4	14.3	14.7	14.9	13.9	15	13.8	14.3	13.4	14.2
Turbidity	NTU	--	0.23	0.01	0.15	0.21	0.51	0.39	0.12	0.78	0.5	3.15	0	2.58	0	0
pH at 25 Degrees C	Std. Units	7.4	7.5	7.5	7.9	7.7	7.7	7.7	7.7	7.6	7.8	7.7	7.7	7.8	7.6	7.7



# Single Location

Name: WPL - Nelson Dewey

Location ID: B-11B																	
Number of Sampling Dates: 16																	
Parameter Name	Units	12/9/2015	4/13/2016	7/19/2016	10/20/2016	1/12/2017	4/17/2017	6/8/2017	8/1/2017	10/19/2017	4/2/2018	10/9/2018	11/12/2018	4/22/2019	10/14/2019	4/13/2020	10/12/2020
Boron	ug/L	1140	1360	1210	1460	1540	1760	1880	1800	1500	2020	3620	--	6830	4630	5380	3350
Calcium	ug/L	64100	65400	59000	59100	63900	67400	68200	61400	52400	59000	66300	--	83300	91400	115000	91200
Chloride	mg/L	31.2	32.7	33.6	34.3	36.1	36.3	33.9	35.9	36.1	31.3	21.9	--	28.4	32.3	30.9	33.4
Fluoride	mg/L	0.44	0.49	0.45	0.53	0.52	0.58	0.59	0.6	0.59	0.65	0.61	--	0.64	0.62	<0.95	<0.095
Field pH	Std. Units	8.06	8.14	7.77	7.91	8.18	7.83	8.07	7.77	7.77	8.42	7.74	8.05	7.91	7.92	7.89	7.8
Sulfate	mg/L	134	148	165	178	182	181	191	179	175	200	197	--	303	339	378	388
Total Dissolved Solids	mg/L	494	512	520	496	488	502	516	498	510	550	602	594	742	728	872	906
Antimony	ug/L	0.32	<0.073	0.097	0.21	0.12	0.098	<0.15	<0.15	--	<0.15	--	--	--	--	--	--
Arsenic	ug/L	0.67	0.38	0.36	0.52	0.4	0.47	<0.28	<0.28	--	0.29	--	--	--	--	--	--
Barium	ug/L	147	153	128	130	145	151	151	132	--	128	--	--	--	--	--	--
Beryllium	ug/L	<0.13	<0.13	<0.13	<0.25	<0.13	<0.13	<0.18	<0.18	--	<0.18	--	--	--	--	--	--
Cadmium	ug/L	0.23	<0.089	<0.089	0.18	<0.089	<0.089	<0.081	<0.081	--	<0.081	--	--	--	--	--	--
Chromium	ug/L	0.7	0.74	<0.39	<0.39	<0.39	0.45	<1	<1	--	<1	--	--	--	--	--	--
Cobalt	ug/L	0.44	0.23	0.21	0.38	0.3	0.29	0.26	0.2	--	0.17	--	--	--	--	--	--
Lead	ug/L	0.45	<0.04	<0.04	0.36	0.083	0.061	<0.2	<0.2	--	<0.2	--	--	--	--	--	--
Lithium	ug/L	21.7	21.3	18.4	19.8	20	19.5	19.4	17	--	15.4	--	--	--	--	--	--
Mercury	ug/L	<0.1	<0.18	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	--	<0.13	--	--	--	--	--	--
Molybdenum	ug/L	46.2	51.7	48.7	48.1	52.6	53.8	55.1	55.9	--	77.7	--	--	--	--	--	--
Selenium	ug/L	0.46	<0.21	<0.21	0.28	<0.21	<0.21	<0.32	<0.32	--	<0.32	--	--	--	--	--	--
Thallium	ug/L	0.35	<0.14	<0.14	0.32	<0.14	<0.14	0.16	<0.14	--	0.16	--	--	--	--	--	--
Total Radium	pCi/L	0.862	1.69	0.977	0.534	0.787	0.643	1.05	2.21	--	1.02	--	--	--	--	--	--
Radium-226	pCi/L	0.733	0.0581	0.284	-0.487	-0.434	0.193	0.389	0.766	--	0.518	--	--	--	--	--	--
Radium-228	pCi/L	0.129	1.63	0.693	0.534	0.787	0.45	0.661	1.44	--	0.505	--	--	--	--	--	--
Field Specific Conductance	umhos/cm	631	808	785	807	1342	799	534.3	776	709	671	954	863	1129	1132	1280	1348
Oxygen, Dissolved	mg/L	0.84	0.04	0.08	0.3	0.16	0.09	0.28	0.13	0.22	0.59	0.13	0.16	0.09	0.19	0.24	0.22
Field Oxidation Potential	mV	-50.9	-66.9	-69	-114.5	-135.7	-121.3	36.2	-81.1	93.7	116.3	13.2	45.8	207.8	-48.9	-57.9	225
Groundwater Elevation	feet	606.26	608.68	606.74	608.19	604.32	608.99	610.08	605.5	609.65	606.55	610.24	609.14	615.28	613.18	613.86	604.44
Temperature	deg C	14.4	14.3	14.6	14.6	14.1	14.2	14.1	14.5	14.8	13.5	14.8	14.1	13.6	14.3	13.5	14.3
Turbidity	NTU	--	0.21	0.01	0.33	0.38	0.36	0.7	0.07	1.01	0.78	2.98	2.65	0	1.5	0	0
pH at 25 Degrees C	Std. Units	7.7	7.8	7.8	8	7.9	7.9	8.1	7.9	7.7	8.1	7.9	--	7.9	7.8	7.8	7.9

# Single Location

Name: WPL - Nelson Dewey

Location ID: B-11R																
Number of Sampling Dates: 15																
Parameter Name	Units	12/9/2015	4/13/2016	7/19/2016	10/20/2016	1/12/2017	4/17/2017	6/7/2017	8/1/2017	10/19/2017	4/2/2018	10/9/2018	4/22/2019	10/14/2019	4/13/2020	10/12/2020
Boron	ug/L	4170	3410	3530	4120	3530	3520	3420	2040	3120	3180	576	1360	1440	2140	2870
Calcium	ug/L	126000	141000	130000	128000	126000	123000	128000	139000	117000	124000	49900	82400	66000	117000	120000
Chloride	mg/L	39.2	7	38.9	39.1	42.3	40.2	42	24.7	38.8	36.8	5.9	12.6	13.1	22.5	20.7
Fluoride	mg/L	<1	<0.2	0.22	<0.5	<0.5	<0.5	<0.5	0.25	<0.5	<0.5	0.15	0.2	0.26	<0.48	<0.48
Field pH	Std. Units	7.07	6.78	6.69	6.77	6.98	7.11	6.8	6.7	7.22	7.14	6.55	6.82	6.83	6.8	6.83
Sulfate	mg/L	75.4	18.4	115	118	108	108	98.2	126	97.7	88.1	15.1	34.6	40.7	41.9	22.8
Total Dissolved Solids	mg/L	616	682	698	660	616	620	630	738	586	638	266	406	310	570	600
Antimony	ug/L	<0.073	<0.073	<0.073	0.22	<0.073	<0.073	<0.15	0.42	--	<0.15	--	--	--	--	--
Arsenic	ug/L	14.8	7	10.6	7.4	7.1	6.9	6.1	7.5	--	9.3	--	--	--	--	--
Barium	ug/L	204	169	187	159	144	149	152	168	--	144	--	--	--	--	--
Beryllium	ug/L	<0.13	<0.13	<0.13	0.36	<0.13	<0.13	<0.18	<0.18	--	<0.18	--	--	--	--	--
Cadmium	ug/L	<0.089	<0.089	<0.089	0.15	<0.089	<0.089	<0.081	0.32	--	<0.081	--	--	--	--	--
Chromium	ug/L	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	<1	<1	--	<1	--	--	--	--	--
Cobalt	ug/L	0.36	0.54	0.68	1	1.2	1.3	1.5	1.4	--	0.94	--	--	--	--	--
Lead	ug/L	0.21	<0.04	0.13	0.19	<0.04	0.12	<0.2	0.39	--	<0.2	--	--	--	--	--
Lithium	ug/L	2.3	1.5	1.6	2	1.4	1.4	1.3	2	--	1.6	--	--	--	--	--
Mercury	ug/L	<0.1	<0.18	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	--	<0.13	--	--	--	--	--
Molybdenum	ug/L	15.1	23.2	34.9	43.8	42.8	57.2	53.8	22.7	--	35.6	--	--	--	--	--
Selenium	ug/L	1.2	5	<0.21	0.3	<0.21	<0.21	<0.32	0.78	--	<0.32	--	--	--	--	--
Thallium	ug/L	<0.14	<0.14	<0.14	0.5	<0.14	<0.14	<0.14	0.47	--	<0.14	--	--	--	--	--
Total Radium	pCi/L	1.45	1.62	0.953	1.51	0.345	1.45	2.1	1.43	--	0.749	--	--	--	--	--
Radium-226	pCi/L	0.797	0.863	0.19	0.516	0	0.719	0.272	0.602	--	0.254	--	--	--	--	--
Radium-228	pCi/L	0.653	0.757	0.763	0.997	0.345	0.732	1.83	0.826	--	0.495	--	--	--	--	--
Field Specific Conductance	umhos/cm	931	1172	1160	1139	1876	1020	721	1192	870	839	463.2	737	612	993	1125
Oxygen, Dissolved	mg/L	2.47	0.03	0.08	0.34	0.14	0.11	0.21	0.1	0.19	0.09	0.34	0.37	0.1	0.22	0.14
Field Oxidation Potential	mV	-114.2	-91	-94.7	-113.2	-72.9	-53.3	-26.8	-41.3	133.4	-128.6	-49.5	-20.9	-4.7	-75.8	-139.8
Groundwater Elevation	feet	606.71	609.32	606.14	608.35	604.57	608.34	610.42	606.73	609.42	606.27	610.67	615.28	613.06	614.39	604.57
Temperature	deg C	14.5	10.9	14	15.5	12.7	11.7	11.9	14.4	15.1	11.1	16.2	10	14.5	10.1	14.3
Turbidity	NTU	--	3.18	2.11	1.66	2.51	3.85	1.72	1.04	2.5	3.58	10.05	8.88	7.5	8.97	6.58
pH at 25 Degrees C	Std. Units	6.9	6.8	6.8	7.3	6.9	7.2	7.1	6.9	6.8	7	6.9	6.9	7	6.8	7





# Single Location

Name: WPL - Nelson Dewey

Location ID: B-26																
Number of Sampling Dates: 15																
Parameter Name	Units	12/9/2015	4/12/2016	7/19/2016	10/20/2016	1/12/2017	4/17/2017	6/7/2017	8/2/2017	10/19/2017	4/3/2018	10/8/2018	4/23/2019	10/15/2019	4/14/2020	10/13/2020
Boron	ug/L	29.6	33.7	28.6	33	35.2	50.1	45.8	54.6	47.4	48	53.4	41.6	<3	66.1	63.6
Calcium	ug/L	81300	86200	82400	82700	89400	89000	105000	98100	102000	88100	78700	75300	<76.2	88500	76500
Chloride	mg/L	45.5	51.3	55.6	52.8	54.5	56	59.6	52.6	79.3	54.4	33.2	40.8	30.5	54.9	35.3
Fluoride	mg/L	<0.2	<0.2	<0.2	0.13	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.11	<0.095
Field pH	Std. Units	7.35	7.43	7.14	7.19	7.57	7.54	7.22	7.21	7.5	7.64	7.2	7.1	7.24	7.27	7.34
Sulfate	mg/L	37.1	38	36.2	35	35	32.4	31	28.5	25.3	19.1	25.1	26.7	36	30.2	37
Total Dissolved Solids	mg/L	424	456	504	466	446	468	538	496	542	464	450	458	404	464	448
Antimony	ug/L	0.075	<0.073	0.16	0.2	0.24	0.087	<0.15	<0.15	--	<0.15	--	--	--	--	--
Arsenic	ug/L	0.49	0.54	0.49	0.59	0.6	0.5	0.39	0.5	--	0.36	--	--	--	--	--
Barium	ug/L	73.7	81.8	77.8	81.2	89.2	91	107	100	--	91.5	--	--	--	--	--
Beryllium	ug/L	<0.13	<0.13	<0.13	<0.13	0.13	<0.13	<0.18	<0.18	--	<0.18	--	--	--	--	--
Cadmium	ug/L	<0.089	<0.089	<0.089	0.13	0.15	<0.089	<0.081	<0.081	--	0.085	--	--	--	--	--
Chromium	ug/L	0.94	4.1	1.1	0.83	1	1.1	<1	<1	--	<1	--	--	--	--	--
Cobalt	ug/L	0.17	0.13	0.086	0.21	0.25	0.13	<0.085	0.13	--	<0.085	--	--	--	--	--
Lead	ug/L	0.057	<0.04	<0.04	0.15	0.2	0.079	<0.2	<0.2	--	0.3	--	--	--	--	--
Lithium	ug/L	2.1	2.1	1.9	2.2	2.5	2.1	2.2	2	--	2.1	--	--	--	--	--
Mercury	ug/L	<0.1	<0.18	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	--	<0.13	--	--	--	--	--
Molybdenum	ug/L	0.19	0.5	0.15	0.39	0.34	0.2	<0.44	<0.44	--	<0.44	--	--	--	--	--
Selenium	ug/L	0.69	0.67	0.98	1.1	0.99	1.5	1.5	1.4	--	1.4	--	--	--	--	--
Thallium	ug/L	<0.14	<0.14	<0.14	0.27	0.16	<0.14	<0.14	<0.14	--	<0.14	--	--	--	--	--
Total Radium	pCi/L	1.22	0.773	0.416	0.713	0.672	0.867	0.646	0.681	--	0.449	--	--	--	--	--
Radium-226	pCi/L	0.404	-0.058	-0.089	0.353	0	0.398	0.124	0.224	--	0.261	--	--	--	--	--
Radium-228	pCi/L	0.82	0.773	0.416	0.36	0.672	0.469	0.522	0.457	--	0.188	--	--	--	--	--
Field Specific Conductance	umhos/cm	567	783	788	823	1394	800	575.9	836	786	655.2	661.9	815	753	852	782
Oxygen, Dissolved	mg/L	5.88	5.3	4.41	6.25	5.58	7.79	2.92	6.8	8.49	2.68	5.98	8.73	12.17	8.43	7.2
Field Oxidation Potential	mV	14.3	130.2	63.2	68.9	59.1	148.4	53.4	155.9	215.6	69.7	109.2	259.9	175.8	160.4	242.6
Groundwater Elevation	feet	606.8	609.81	606.09	608.84	604.52	608.59	611.25	607.39	608.84	606.49	610.34	615.49	613.1	613.76	604.92
Temperature	deg C	11.1	10.9	10.7	11.3	11.5	11.1	10.9	11.3	11.7	11.3	12	11.4	11.6	11.3	11.9
Turbidity	NTU	--	0.27	0.27	0.37	0.14	0.56	0.44	0.15	0.89	0.99	3.44	0	1.5	0	0
pH at 25 Degrees C	Std. Units	7.2	7.4	7.2	7.7	7.6	7.5	7.5	7.3	7.4	7.3	7.3	7.4	7.4	7.2	7.4



# Single Location

Name: WPL - Nelson Dewey


Location ID: B-31A		Number of Sampling Dates: 15														
Parameter Name	Units	12/9/2015	4/13/2016	7/19/2016	10/20/2016	1/12/2017	4/17/2017	6/8/2017	8/1/2017	10/19/2017	4/2/2018	10/9/2018	4/22/2019	10/14/2019	4/13/2020	10/12/2020
Boron	ug/L	59	79.2	67.2	63.7	76.4	69.9	58.5	56.3	63.9	74.8	71.8	86.2	98.5	132	127
Calcium	ug/L	48400	51900	48900	45800	46600	46900	49400	46000	49600	49300	46600	48200	52200	50900	47700
Chloride	mg/L	35.3	35.8	36.4	39	39.9	40.3	40.9	40.8	40.8	42.7	40.2	40.8	47.1	51	57.9
Fluoride	mg/L	<0.2	0.22	<0.2	0.18	0.22	0.19	0.18	0.2	0.16	0.13	0.17	0.22	0.22	0.19	0.18
Field pH	Std. Units	7.65	7.63	7.25	7.54	7.82	7.83	7.74	7.56	7.92	8	7.48	7.61	7.69	7.71	7.78
Sulfate	mg/L	26.2	22.6	24.2	27.2	29.8	31	31.2	26.6	26.1	27.4	24.8	21.6	22.3	16.6	16.8
Total Dissolved Solids	mg/L	274	302	280	292	284	318	296	284	290	282	278	284	272	298	300
Antimony	ug/L	<0.073	<0.073	0.14	0.084	<0.073	<0.073	<0.15	<0.15	--	<0.15	--	--	--	--	--
Arsenic	ug/L	1.6	1.6	1.4	1.5	1.5	1.3	1.3	1.2	--	1.3	--	--	--	--	--
Barium	ug/L	132	147	130	128	146	146	150	133	--	139	--	--	--	--	--
Beryllium	ug/L	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.18	<0.18	--	<0.18	--	--	--	--	--
Cadmium	ug/L	<0.089	<0.089	<0.089	<0.089	<0.089	<0.089	<0.081	<0.081	--	<0.081	--	--	--	--	--
Chromium	ug/L	<0.39	<0.39	<0.39	<0.39	<0.39	<0.39	9.4	<1	--	<1	--	--	--	--	--
Cobalt	ug/L	2.2	2.3	1.8	1.8	2	1.9	2.2	1.8	--	1.8	--	--	--	--	--
Lead	ug/L	0.08	<0.04	<0.04	0.05	<0.04	0.36	<0.2	<0.2	--	<0.2	--	--	--	--	--
Lithium	ug/L	0.83	0.91	0.77	0.97	0.98	0.97	0.94	0.93	--	0.86	--	--	--	--	--
Mercury	ug/L	<0.1	<0.18	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	--	<0.13	--	--	--	--	--
Molybdenum	ug/L	25.3	29.8	23.4	22.6	23.9	23.8	22.9	22.9	--	24.8	--	--	--	--	--
Selenium	ug/L	<0.21	<0.21	<0.21	<0.21	<0.21	<0.21	<0.32	<0.32	--	<0.32	--	--	--	--	--
Thallium	ug/L	<0.14	<0.14	<0.14	0.2	<0.14	<0.14	<0.14	<0.14	--	<0.14	--	--	--	--	--
Total Radium	pCi/L	1.47	0.387	0.492	0.331	0.407	1.18	1.34	1.15	--	0.289	--	--	--	--	--
Radium-226	pCi/L	0.484	-0.152	-0.097	0	0	0.482	0.594	0.163	--	0.132	--	--	--	--	--
Radium-228	pCi/L	0.985	0.387	0.492	0.331	0.407	0.696	0.746	0.982	--	0.157	--	--	--	--	--
Field Specific Conductance	umhos/cm	405	505.8	487.2	509.7	858	486	334.2	479.5	433.5	398.9	503.8	517	514	556	557.3
Oxygen, Dissolved	mg/L	0.88	0.04	0.18	0.34	0.13	0.14	0.25	0.12	0.23	0.14	0.1	0.13	0.12	0.24	0.19
Field Oxidation Potential	mV	-84.7	-106.2	-71.1	-113	-98.4	-55.2	-19.8	-77.3	97.1	-111.6	-75.8	-4.5	-60.5	-68.2	-55.9
Groundwater Elevation	feet	606.39	609.01	606.73	608.2	607.84	608.98	609.63	605.69	609.43	606.46	610.27	615.33	613.2	613.79	604.54
Temperature	deg C	15.1	15.4	15.3	15	14.6	14.8	14.7	14.9	14.9	14.4	15	13.9	14.2	13.6	13.9
Turbidity	NTU	--	0.36	0.63	0.38	0.21	0.37	0.66	0.17	1.25	0.42	2.83	0	2.66	0.75	1.11
pH at 25 Degrees C	Std. Units	7.4	7.3	7.6	7.8	7.3	7.7	7.8	7.6	7.5	7.7	7.7	7.6	7.7	7.7	7.7



# Single Location

Name: WPL - Nelson Dewey

Location ID: B-31R																	
Number of Sampling Dates: 16																	
Parameter Name	Units	12/9/2015	4/13/2016	7/19/2016	10/20/2016	1/12/2017	4/17/2017	6/8/2017	8/1/2017	10/19/2017	4/2/2018	10/9/2018	11/12/2018	4/22/2019	10/14/2019	4/13/2020	10/12/2020
Boron	ug/L	851	838	641	1020	749	929	895	1550	645	540	1430	--	906	915	730	702
Calcium	ug/L	77400	84900	76100	84200	73900	85600	90700	93400	75700	72900	125000	--	105000	110000	93800	95700
Chloride	mg/L	29.9	17.6	30.3	16.4	26	20.4	20.7	3.6	29	32.6	19.7	--	17.8	26	29.9	24.4
Fluoride	mg/L	<0.2	<0.2	<0.2	0.17	0.26	0.12	0.13	0.16	0.14	<0.1	<0.1	--	0.16	0.25	0.28	<0.48
Field pH	Std. Units	6.79	6.76	6.44	6.53	6.8	6.8	6.67	6.56	7.19	6.76	6.41	6.59	6.62	6.72	6.79	6.89
Sulfate	mg/L	28.8	34.1	38.5	49.7	34.9	43	41.1	55.6	19.2	22	186	162	121	146	89.4	49.4
Total Dissolved Solids	mg/L	374	404	406	452	380	416	426	432	358	374	668	596	516	480	464	462
Antimony	ug/L	0.47	0.15	0.21	0.24	0.18	0.22	<0.15	0.18	--	0.15	--	--	--	--	--	--
Arsenic	ug/L	0.47	0.24	0.37	0.37	0.22	0.29	<0.28	<0.28	--	<0.28	--	--	--	--	--	--
Barium	ug/L	86.2	93.5	85.3	92.6	86.7	91.1	93.9	97.4	--	72.1	--	--	--	--	--	--
Beryllium	ug/L	<0.13	<0.13	<0.13	<0.25	<0.13	<0.13	<0.18	<0.18	--	<0.18	--	--	--	--	--	--
Cadmium	ug/L	2.5	2.5	2	3	2.2	3	2.9	3.1	--	2	--	--	--	--	--	--
Chromium	ug/L	0.43	0.4	<0.39	<0.39	0.41	<0.39	<1	<1	--	<1	--	--	--	--	--	--
Cobalt	ug/L	3	3.5	5.4	5.2	6.6	3.1	2.3	4.4	--	3.3	--	--	--	--	--	--
Lead	ug/L	1.8	0.53	0.14	0.37	0.047	0.57	<0.2	<0.2	--	<0.2	--	--	--	--	--	--
Lithium	ug/L	18.6	18	18.1	22.3	21.4	21.7	21.4	22	--	16.2	--	--	--	--	--	--
Mercury	ug/L	<0.1	<0.18	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	--	<0.13	--	--	--	--	--	--
Molybdenum	ug/L	31.4	27.2	23.9	24.4	27.1	26.8	25.4	21.6	--	31.9	--	--	--	--	--	--
Selenium	ug/L	0.69	0.48	<0.21	0.29	0.63	0.96	<0.32	1.4	--	0.93	--	--	--	--	--	--
Thallium	ug/L	2.2	1.9	2	2.3	2.1	2.2	2.2	2	--	1.8	--	--	--	--	--	--
Total Radium	pCi/L	1.34	1.22	1.16	1.3	1.23	0.613	1.36	1.31	--	0.676	--	--	--	--	--	--
Radium-226	pCi/L	0.575	0.661	0.513	0.583	0.92	0.38	0.534	0.612	--	0.132	--	--	--	--	--	--
Radium-228	pCi/L	0.769	0.559	0.649	0.717	0.31	0.233	0.827	0.698	--	0.544	--	--	--	--	--	--
Field Specific Conductance	umhos/cm	543	674	660	742	1100	637	465.4	697	519.6	476.8	1016	858	827	837	763	826
Oxygen, Dissolved	mg/L	2.36	0.07	0.09	0.33	0.21	0.16	0.21	0.27	0.21	0.45	0.12	0.19	0.1	0.1	0.14	0.22
Field Oxidation Potential	mV	77.6	36.2	-11	5.8	12.3	676	64.7	2.9	153	28	-0.5	1	94.2	20.7	7.3	-60.7
Groundwater Elevation	feet	607.4	609.34	606.55	608.51	608.37	607.2	610.5	606.84	609.47	604.44	610.39	609.11	615.01	612.5	613.8	604.66
Temperature	deg C	15.8	15	15.1	15.2	14.5	13.8	13.6	14.8	15	13.8	15.9	15	11.8	14.2	12	14
Turbidity	NTU	--	1.01	1.5	0.7	0.72	0.62	0.92	1.18	1.53	1.29	3.94	3.83	0	2.81	0.01	0
pH at 25 Degrees C	Std. Units	6.7	6.8	6.6	7.1	6.8	6.8	6.8	6.8	6.8	6.8	6.8	--	6.8	7	6.8	7.1



Appendix E  
Statistical Evaluation



January 14, 2021  
File No. 25220071.00

## TECHNICAL MEMORANDUM

**SUBJECT:** Statistical Evaluation of Groundwater Monitoring Results – Prediction Limit Update  
Nelson Dewey Generating Station

**PREPARED BY:** Nicole Kron

**CHECKED BY:** Sherren Clark

## STATISTICAL METHOD

Groundwater monitoring data for the Nelson Dewey Generating Station (NED) Slag Pond, is evaluated in accordance with 40 CFR 257.93(f)(3), using a prediction interval procedure, in which an interval for each constituent is established from the distribution of the background data, and the level of each constituent in each compliance well is compared to the upper prediction limit.

Statistical evaluation is performed using commercially available software (*Sanitas for Groundwater*® or similar) in general accordance with the USEPA's *Unified Guidance for Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities* dated March 2009 (Unified Guidance) (USEPA, 2009) and generally accepted procedures.

The NED monitoring data includes one background monitoring well, B-26, as well six compliance monitoring wells, B-7R, B-11A, B-11B, B-11R, B-31A, and B-31R. The statistical analysis includes Interwell evaluation for the Appendix III parameters.

The initial UPLs were calculated based on nine rounds of background monitoring performed up to the initiation of compliance monitoring for the existing CCR unit at NED, from December 2015 through October 2017. Since then, additional rounds of monitoring for Appendix III parameters have been performed at the background well. As part of the evaluation of the October 2020 monitoring results, the background data set for the UPL calculations is being updated to include data from the background well collected through October 2020. This memo addresses updated UPLs for Appendix III parameters.

## TIME SERIES PLOTS

Time series plots are prepared for the required monitoring parameters to show the concentration variations over time. Time series graphs are included in **Attachment 1**.

## OUTLIER ANALYSIS - INTERWELL

For interwell analysis, an outlier evaluation is performed for background monitoring results at the upgradient well. A statistical outlier is a value that is extremely different from the other values in the



data set. The Sanitas outlier tests identify data points that do not appear to fit the distribution of the rest of the data set and determine if they differ significantly from the rest of the data. The outlier analysis performed in Sanitas includes the following steps:

- 1) Run normality test (Shapiro Wilk/Francia).
- 2) If normally distributed, run USEPA's 1989 Outlier Test to identify suspected outliers.
  - a) If number of background samples is less than or equal to 25, run Dixon's test for suspected outliers.
  - b) If number of background samples is more than 25, run Rosner's test for suspected outliers.
- 3) If not normally distributed, run Tukey's test for outliers.
- 4) Review data flagged as possible outliers to evaluate whether they should be removed from the background data set. Also review time series plots for possible outliers that were not picked up in the statistical evaluation (e.g., outlier test may not identify outliers when two values are similar to each other, but very different from all other data).

Results identified as statistical outliers are checked for possible lab instrument failure, field collection problems, or data entry errors; however, outliers may exist naturally in the data if there is an extremely wide inherent or temporal variability in the data. The Unified Guidance states that unless a likely error can be identified, the outlier should not be removed.

For the interwell evaluation of the October 2020 sampling event, the following background values were identified as potential outliers and handled as described:

- **Boron.** One low result from the October 2019 event was flagged as statistical outlier. The low result was removed as an outlier because it was below detection, which appears very unlikely to be a valid result based on other detections. Review of the October 2019 data indicates that this was likely due to a sampling or laboratory error that resulted in the field blank sample and B-26 sample for metals being switched.
- **Calcium.** One low result from the October 2019 event was flagged as statistical outlier. The low result was removed as an outlier because it was below detection, which appears very unlikely to be a valid result based on other detections, and was likely due to the same sampling or laboratory analysis error noted for the boron result above.

Outlier analyses are included in **Attachment 2**.

## BACKGROUND UPDATE

The background data pool was updated in accordance with the Unified Guidance, which recommends updating background every 2 to 3 years for semiannual sampling. Prior to expanding the data pool, the original background data set (12/2015 through 10/2017) and the data to be added (4/2018 through 10/2020) were compared. The Unified Guidance states that recently collected measurements from the background wells can be added to the existing pool if a Student's t-test or Wilcoxon rank-sum test finds no significant difference between the two groups at the 1% level of significance.

The Sanitas background group comparison for the NED background data sets, included in **Attachment 3**, indicated no significant difference at the 1% level; therefore, the more recent data can be added to the background pool. The comparison uses Welch’s t-test for normally distributed data and the Mann-Whitney test for non-normal data. (Note: The Sanitas output labels the earlier background dataset as “Background” and the later background dataset as “Compliance,” but all data from background well B-26 is background data.)

## INTERWELL PREDICTION LIMITS

Interwell prediction limits are calculated using background data from the upgradient monitoring well (B-26) for each monitored constituent, with outliers removed as noted above. During this evaluation of compliance monitoring groundwater results from December 2015 through October 2020 were included to calculate the interwell prediction limits. The prediction limit analysis performed in Sanitas includes the following steps:

- 1) If 100% of the background values are non-detect, the Double Quantification rule applies and no prediction limit is calculated.
- 2) If more than 50% of results are non-detect, then a non-parametric prediction limit is calculated.
- 3) If 50% or fewer of the results are non-detect, run normality test (Shapiro Wilk/Francia) to assess whether the data fit a normal distribution or can be transformed to fit a normal distribution (e.g., lognormal).
- 4) If normal or transformed normal, calculate parametric prediction limit.
- 5) If not normal or transformed normal, calculate non-parametric prediction limit.

Consistent with the Unified Guidance, parametric prediction limits are calculated based on a 1-of-2 retesting protocol and a 10 percent site-wide false positive rate. Sanitas establishes the per-test significance level based on user inputs of the number of events per year, number of constituents being evaluated, and number of compliance wells. For the October 2020 event, the following values were used:

Parameter	Value	Comments
Evaluations per year	2	Spring and Fall events
Constituents analyzed	7	Appendix III parameters
Compliance wells	6	

Non-parametric prediction limits are also based on a 1-of-2 retesting protocol. The non-parametric limit is the highest value in the background dataset. Due to the small sample size, the false positive rate for the non-parametric tests is higher than for the parametric tests, but will go down as more background data are obtained.

For results with 100 percent non-detects in the background data, evaluation under the Double Quantification Rule means that a statistically significant increase (SSI) has not occurred for a compliance well unless two sample results from the well exceed the laboratory’s reporting limit or

TECHNICAL MEMORANDUM

January 14, 2021

Page 4

quantification limit. For the current background dataset, none of the Appendix III parameters had 100 percent non-detects, so the Double Quantification rule was not applied.

For evaluation of parameters with less than 100 percent non-detects in the background sampling, the non-detects were adjusted using the Kaplan-Meier technique, unless the non-detects represent less than 15 percent of the total samples, in which case one-half of the detection limit was used. Interwell prediction limit analysis results are included in **Attachment 4**.

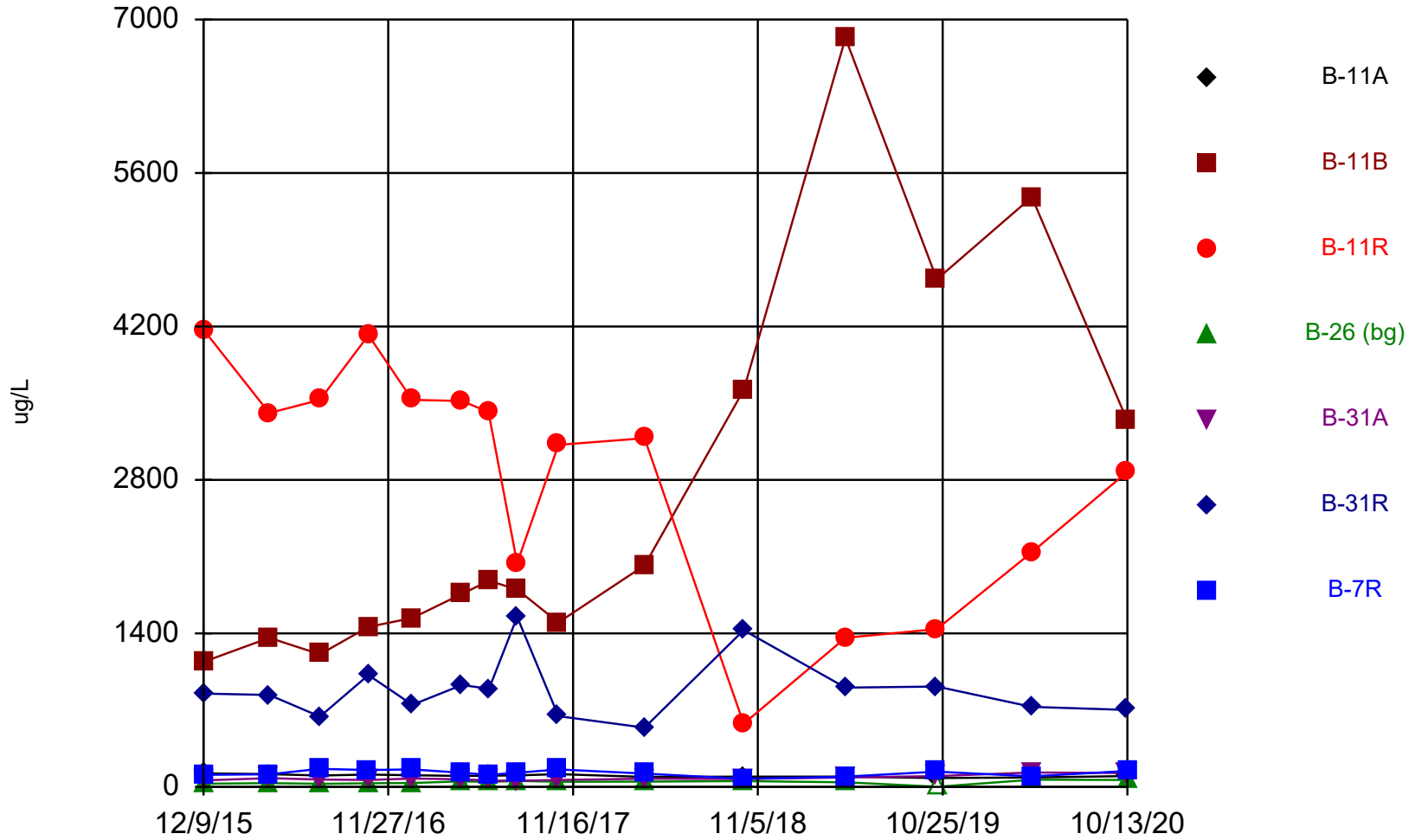
NDK/SCC

I:\25220071.00\Data and Calculations\Sanitas\NED CCR Stats Memo.docx

## Attachment 1

### Times Series Graphs

# Boron



Time Series Analysis Run 12/21/2020 6:05 PM

Nelson Dewey Generating Station Client: SCS Engineers Data: NED - Chempoint- export-Dec2020

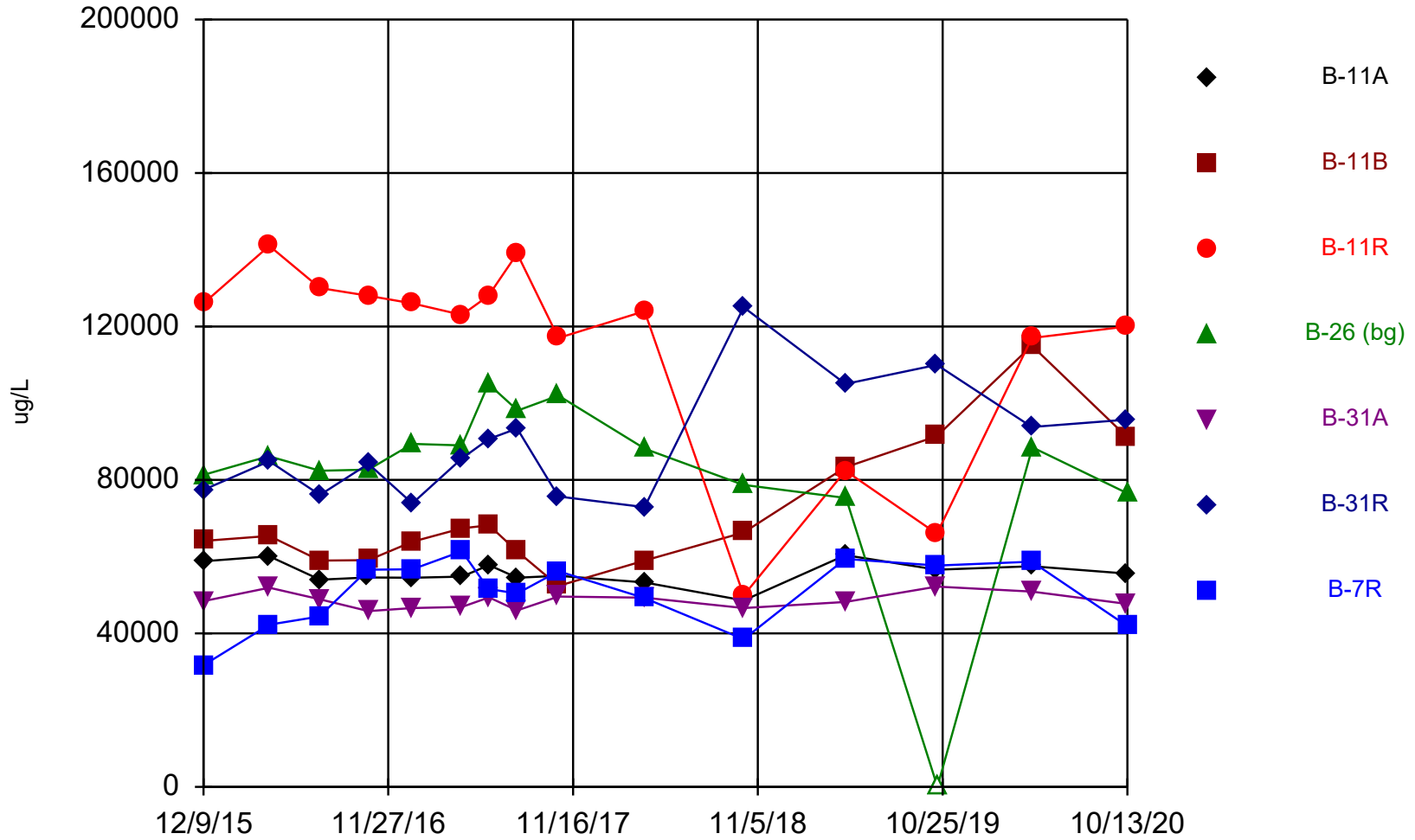
# Time Series

Constituent: Boron (ug/L) Analysis Run 12/21/2020 6:08 PM

Nelson Dewey Generating Station Client: SCS Engineers Data: NED - Chempoint- export-Dec2020

	B-11A	B-11B	B-11R	B-26 (bg)	B-31A	B-31R	B-7R
12/9/2015	124	1140	4170	29.6	59	851	110
4/12/2016				33.7			
4/13/2016	116	1360	3410		79.2	838	115
7/18/2016							164
7/19/2016	104	1210	3530	28.6	67.2	641	
10/19/2016	112						154
10/20/2016		1460	4120	33	63.7	1020	
1/12/2017	106	1540	3530	35.2	76.4	749	159
4/17/2017	100	1760	3520	50.1	69.9	929	129
6/7/2017			3420	45.8			110
6/8/2017	102	1880			58.5	895	
8/1/2017	105	1800	2040		56.3	1550	129
8/2/2017				54.6			
10/19/2017	116	1500	3120	47.4	63.9	645	159
4/2/2018	91	2020	3180		74.8	540	121
4/3/2018				48			
10/8/2018				53.4			
10/9/2018	94.2	3620	576		71.8	1430	73
4/22/2019	93.9	6830	1360		86.2	906	93.5
4/23/2019				41.6			
10/14/2019	80.7	4630	1440		98.5	915	139
10/15/2019				<3 (U)			
4/13/2020	86.3	5380	2140		132	730	96
4/14/2020				66.1			
10/12/2020	99.3	3350	2870		127	702	
10/13/2020				63.6			145

# Calcium



Time Series Analysis Run 12/21/2020 6:05 PM

Nelson Dewey Generating Station Client: SCS Engineers Data: NED - Chempoint- export-Dec2020



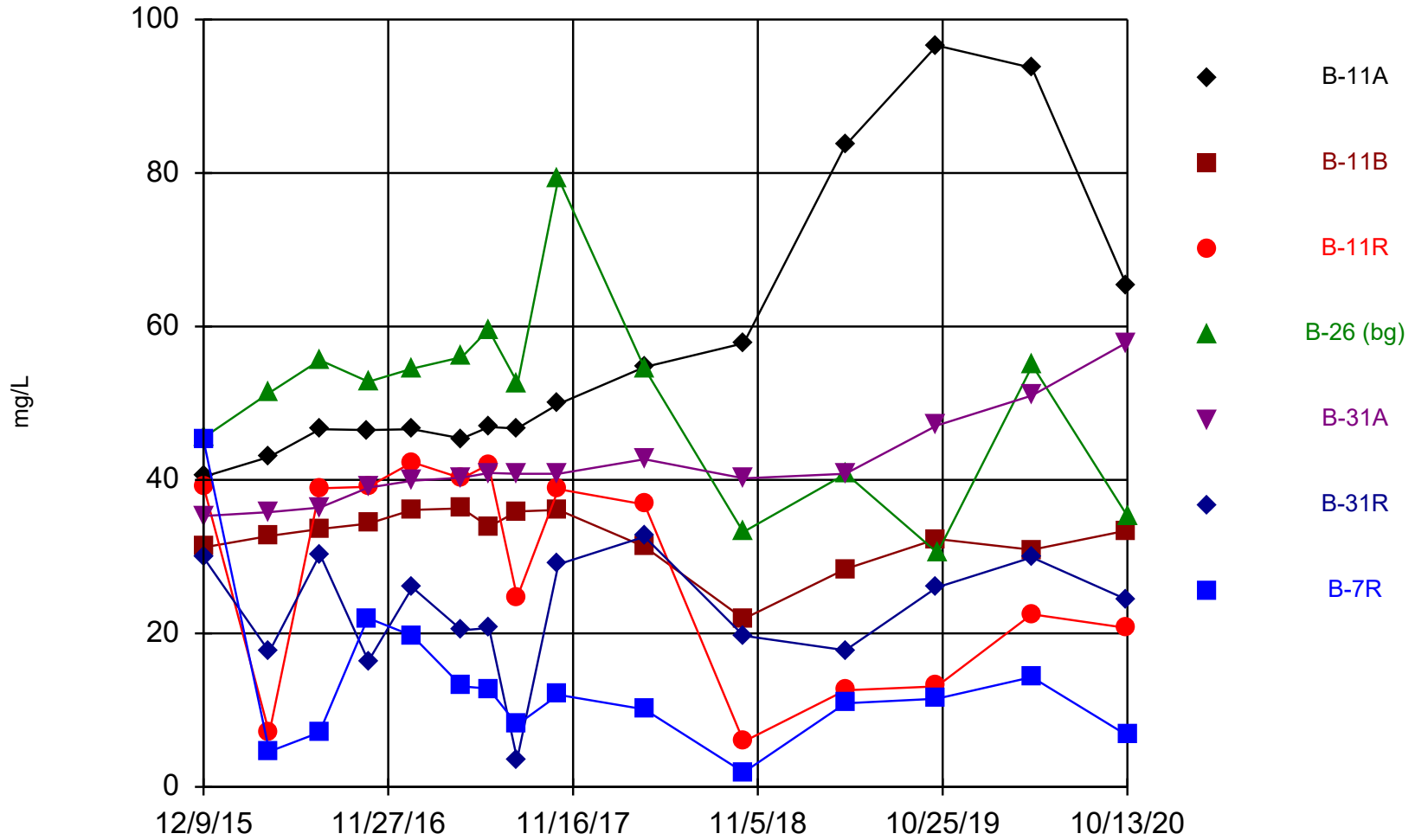
# Time Series

Constituent: Calcium (ug/L) Analysis Run 12/21/2020 6:08 PM

Nelson Dewey Generating Station Client: SCS Engineers Data: NED - Chempoint- export-Dec2020

	B-11A	B-11B	B-11R	B-26 (bg)	B-31A	B-31R	B-7R
12/9/2015	58800	64100	126000	81300	48400	77400	31700
4/12/2016				86200			
4/13/2016	60100	65400	141000		51900	84900	42300
7/18/2016							44400
7/19/2016	54000	59000	130000	82400	48900	76100	
10/19/2016	54600						56600
10/20/2016		59100	128000	82700	45800	84200	
1/12/2017	54500	63900	126000	89400	46600	73900	56700
4/17/2017	54800	67400	123000	89000	46900	85600	61400
6/7/2017			128000	105000			51600
6/8/2017	57800	68200			49400	90700	
8/1/2017	54500	61400	139000		46000	93400	50400
8/2/2017				98100			
10/19/2017	55000	52400	117000	102000	49600	75700	56200
4/2/2018	53300	59000	124000		49300	72900	49200
4/3/2018				88100			
10/8/2018				78700			
10/9/2018	48600	66300	49900		46600	125000	38500
4/22/2019	60400	83300	82400		48200	105000	59400
4/23/2019				75300			
10/14/2019	56600	91400	66000		52200	110000	57700
10/15/2019				<76.2 (U)			
4/13/2020	57500	115000	117000		50900	93800	58700
4/14/2020				88500			
10/12/2020	55600	91200	120000		47700	95700	
10/13/2020				76500			41900

# Chloride



Time Series Analysis Run 12/21/2020 6:05 PM

Nelson Dewey Generating Station Client: SCS Engineers Data: NED - Chempoint- export-Dec2020

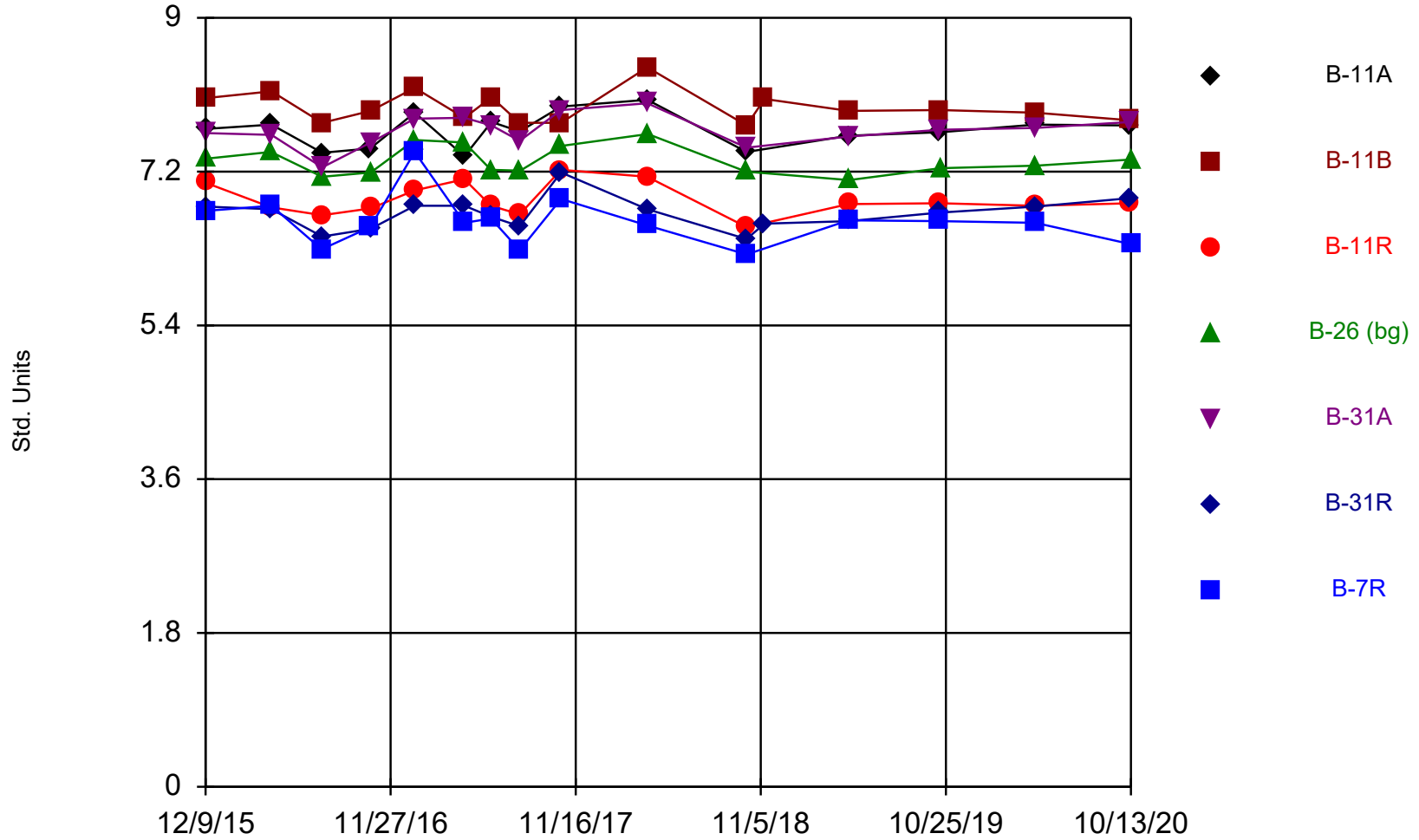
# Time Series

Constituent: Chloride (mg/L) Analysis Run 12/21/2020 6:08 PM

Nelson Dewey Generating Station Client: SCS Engineers Data: NED - Chempoint- export-Dec2020

	B-11A	B-11B	B-11R	B-26 (bg)	B-31A	B-31R	B-7R
12/9/2015	40.4	31.2	39.2	45.5	35.3	29.9	45.2
4/12/2016				51.3			
4/13/2016	43	32.7	7		35.8	17.6	4.6
7/18/2016							7.1
7/19/2016	46.6	33.6	38.9	55.6	36.4	30.3	
10/19/2016	46.5						22
10/20/2016		34.3	39.1	52.8	39	16.4	
1/12/2017	46.6	36.1	42.3	54.5	39.9	26	19.7
4/17/2017	45.4	36.3	40.2	56	40.3	20.4	13.1
6/7/2017			42	59.6			12.8
6/8/2017	46.9	33.9			40.9	20.7	
8/1/2017	46.7	35.9	24.7		40.8	3.6	8.1
8/2/2017				52.6			
10/19/2017	49.9	36.1	38.8	79.3	40.8	29	12
4/2/2018	54.7	31.3	36.8		42.7	32.6	10.1
4/3/2018				54.4			
10/8/2018				33.2			
10/9/2018	57.8	21.9	5.9		40.2	19.7	1.9 (J)
4/22/2019	83.6	28.4	12.6		40.8	17.8	10.9
4/23/2019				40.8			
10/14/2019	96.6	32.3	13.1		47.1	26	11.5
10/15/2019				30.5			
4/13/2020	93.7	30.9	22.5		51	29.9	14.3
4/14/2020				54.9			
10/12/2020	65.3	33.4	20.7		57.9	24.4	
10/13/2020				35.3			6.7 (J)

### Field pH



Time Series Analysis Run 12/21/2020 6:05 PM

Nelson Dewey Generating Station Client: SCS Engineers Data: NED - Chempoint- export-Dec2020

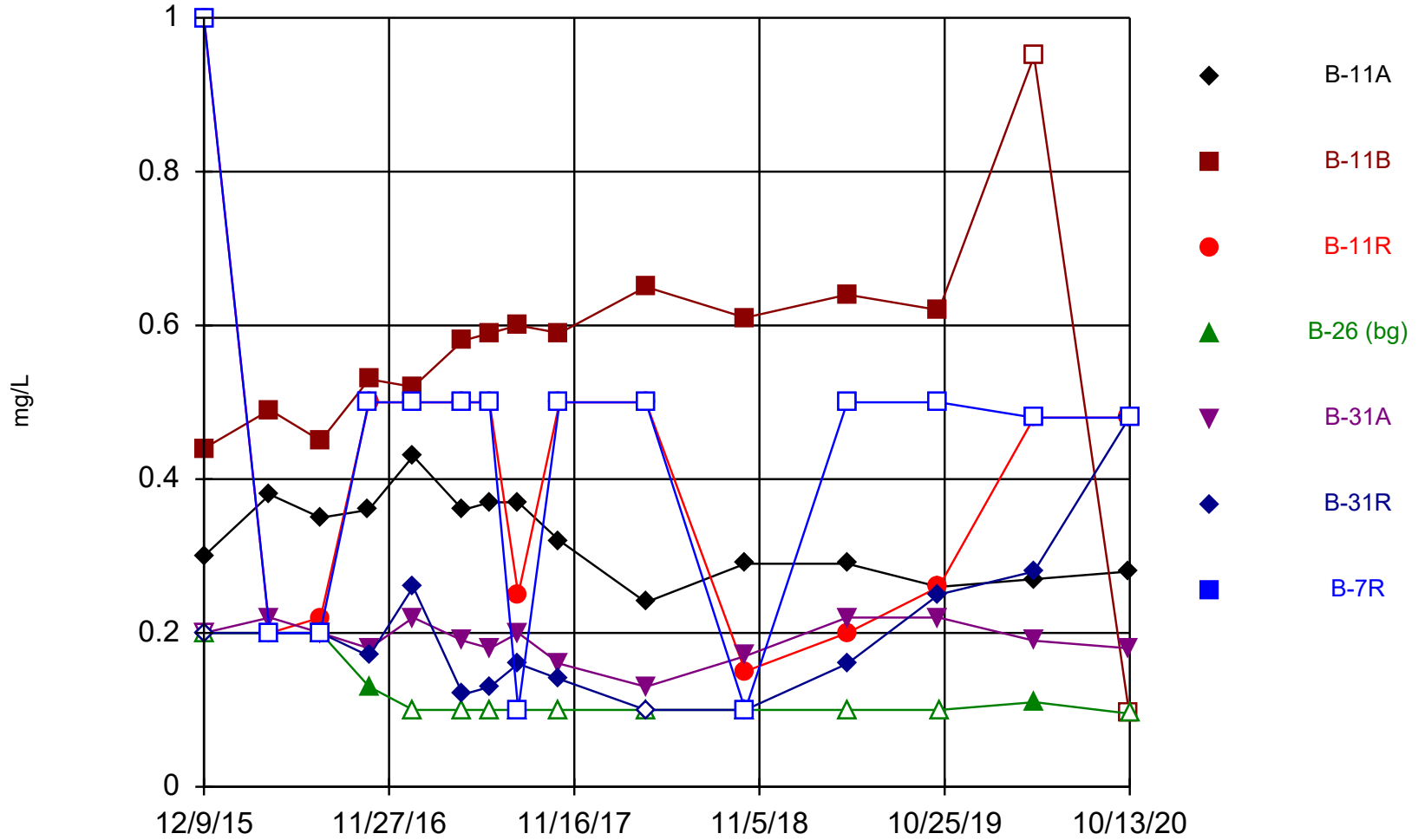
# Time Series

Constituent: Field pH (Std. Units) Analysis Run 12/21/2020 6:08 PM

Nelson Dewey Generating Station Client: SCS Engineers Data: NED - Chempoint- export-Dec2020

	B-11A	B-11B	B-11R	B-26 (bg)	B-31A	B-31R	B-7R
12/9/2015	7.7	8.06	7.07	7.35	7.65	6.79	6.74
4/12/2016				7.43			
4/13/2016	7.75	8.14	6.78		7.63	6.76	6.8
7/18/2016							6.29
7/19/2016	7.42	7.77	6.69	7.14	7.25	6.44	
10/19/2016	7.47						6.55
10/20/2016		7.91	6.77	7.19	7.54	6.53	
1/12/2017	7.89	8.18	6.98	7.57	7.82	6.8	7.43
4/17/2017	7.38	7.83	7.11	7.54	7.83	6.8	6.6
6/7/2017			6.8	7.22			6.65
6/8/2017	7.78	8.07			7.74	6.67	
8/1/2017	7.67	7.77	6.7		7.56	6.56	6.28
8/2/2017				7.21			
10/19/2017	7.96	7.77	7.22	7.5	7.92	7.19	6.88
4/2/2018	8.04	8.42	7.14		8	6.76	6.57
4/3/2018				7.64			
10/8/2018				7.2			
10/9/2018	7.43	7.74	6.55		7.48	6.41	6.23
11/12/2018		8.05				6.59	
4/22/2019	7.62	7.91	6.82		7.61	6.62	6.63
4/23/2019				7.1			
10/14/2019	7.66	7.92	6.83		7.69	6.72	6.62
10/15/2019				7.24			
4/13/2020	7.75	7.89	6.8		7.71	6.79	6.6
4/14/2020				7.27			
10/12/2020	7.74	7.8	6.83		7.78	6.89	
10/13/2020				7.34			6.35

# Fluoride



Time Series Analysis Run 12/21/2020 6:05 PM

Nelson Dewey Generating Station Client: SCS Engineers Data: NED - Chempoint- export-Dec2020

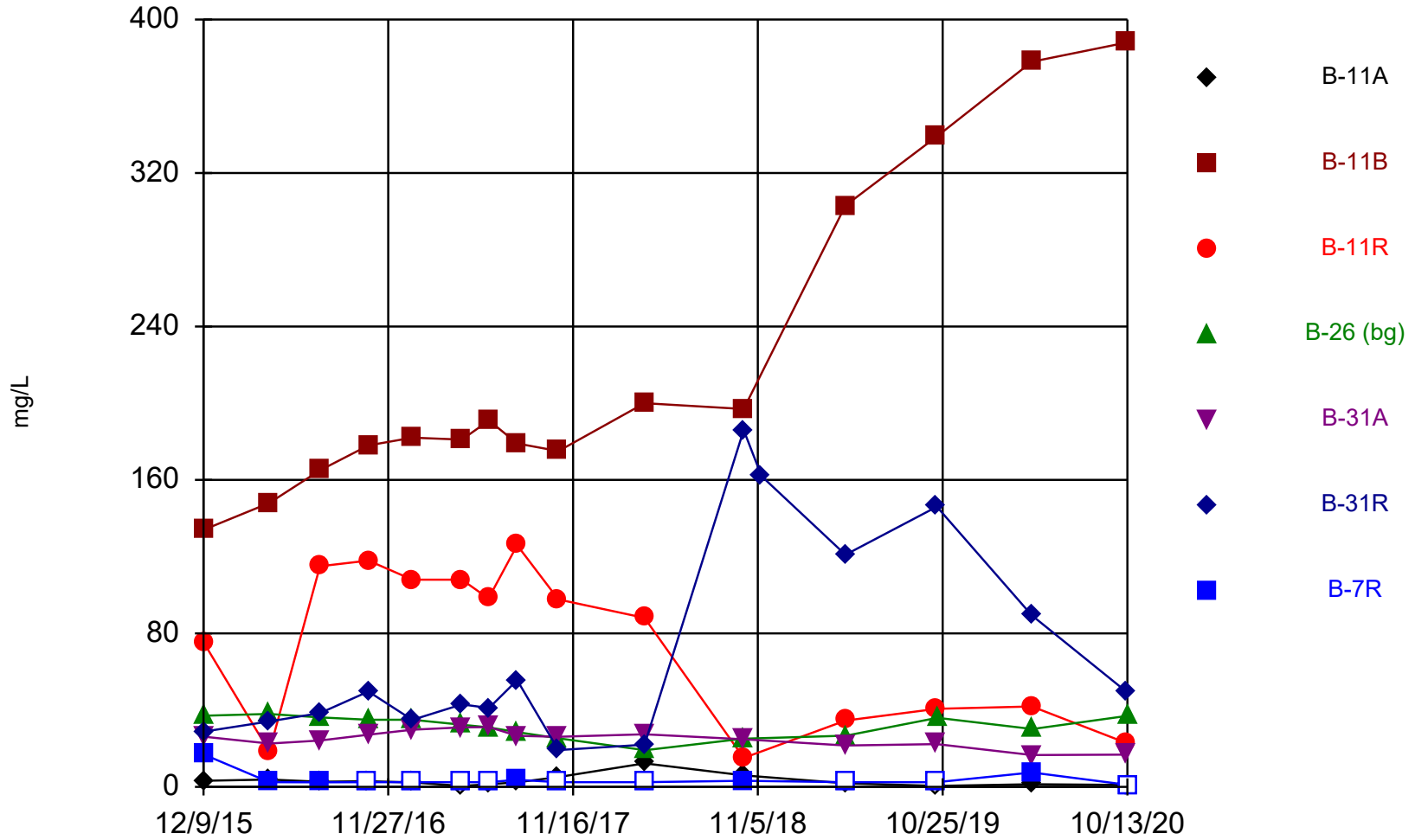
# Time Series

Constituent: Fluoride (mg/L) Analysis Run 12/21/2020 6:08 PM

Nelson Dewey Generating Station Client: SCS Engineers Data: NED - Chempoint- export-Dec2020

	B-11A	B-11B	B-11R	B-26 (bg)	B-31A	B-31R	B-7R
12/9/2015	0.3 (J)	0.44	<1 (U)	<0.2 (U)	<0.2 (U)	<0.2 (U)	<1 (U)
4/12/2016				<0.2 (U)			
4/13/2016	0.38 (J)	0.49	<0.2 (U)		0.22 (J)	<0.2 (U)	<0.2 (U)
7/18/2016							<0.2 (U)
7/19/2016	0.35 (J)	0.45	0.22 (J)	<0.2 (U)	<0.2 (U)	<0.2 (U)	
10/19/2016	0.36						<0.5 (U)
10/20/2016		0.53	<0.5 (U)	0.13 (J)	0.18 (J)	0.17 (J)	
1/12/2017	0.43	0.52	<0.5 (U)	<0.1 (U)	0.22 (J)	0.26 (J)	<0.5 (U)
4/17/2017	0.36	0.58	<0.5 (U)	<0.1 (U)	0.19 (J)	0.12 (J)	<0.5 (U)
6/7/2017			<0.5 (U)	<0.1 (U)			<0.5 (U)
6/8/2017	0.37	0.59			0.18 (J)	0.13 (J)	
8/1/2017	0.37	0.6	0.25 (J)		0.2 (J)	0.16 (J)	<0.1 (U)
8/2/2017				<0.1 (U)			
10/19/2017	0.32	0.59	<0.5 (U)	<0.1 (U)	0.16 (J)	0.14 (J)	<0.5 (U)
4/2/2018	0.24 (J)	0.65	<0.5 (U)		0.13 (J)	<0.1 (U)	<0.5 (U)
4/3/2018				<0.1 (U)			
10/8/2018				<0.1 (U)			
10/9/2018	0.29 (J)	0.61	0.15 (J)		0.17 (J)	<0.1 (U)	<0.1 (U)
4/22/2019	0.29 (J)	0.64	0.2 (J)		0.22 (J)	0.16 (J)	<0.5 (U)
4/23/2019				<0.1 (U)			
10/14/2019	0.26 (J)	0.62	0.26 (J)		0.22 (J)	0.25 (J)	<0.5 (U)
10/15/2019				<0.1 (U)			
4/13/2020	0.27 (J)	<0.95 (U)	<0.48 (U)		0.19 (J)	0.28 (J)	<0.48 (U)
4/14/2020				0.11 (J)			
10/12/2020	0.28 (J)	<0.095 (U)	<0.48 (U)		0.18 (J)	<0.48 (U)	
10/13/2020				<0.095 (U)			<0.48 (U)

### Sulfate



Time Series Analysis Run 12/21/2020 6:05 PM

Nelson Dewey Generating Station Client: SCS Engineers Data: NED - Chempoint- export-Dec2020



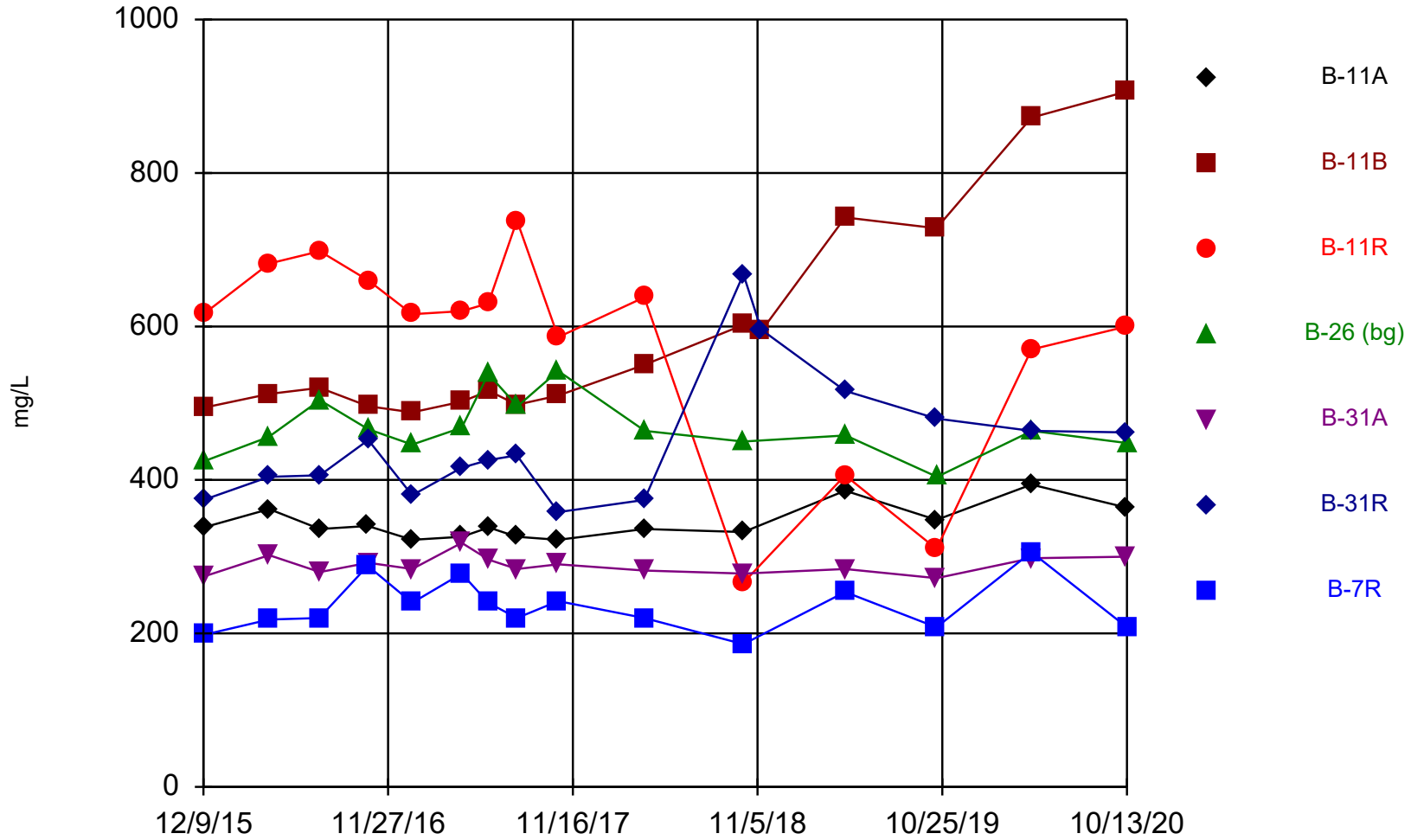
# Time Series

Constituent: Sulfate (mg/L) Analysis Run 12/21/2020 6:08 PM

Nelson Dewey Generating Station Client: SCS Engineers Data: NED - Chempoint- export-Dec2020

	B-11A	B-11B	B-11R	B-26 (bg)	B-31A	B-31R	B-7R
12/9/2015	3.2 (J)	134	75.4	37.1	26.2	28.8	17 (J)
4/12/2016				38			
4/13/2016	3.8 (J)	148	18.4		22.6	34.1	2.5 (J)
7/18/2016							2.4 (J)
7/19/2016	2.7 (J)	165	115	36.2	24.2	38.5	
10/19/2016	3 (J)						<5 (U)
10/20/2016		178	118	35	27.2	49.7	
1/12/2017	2.3 (J)	182	108	35	29.8	34.9	<5 (U)
4/17/2017	<1 (U)	181	108	32.4	31	43	<5 (U)
6/7/2017			98.2	31			<5 (U)
6/8/2017	1.4 (J)	191			31.2	41.1	
8/1/2017	2.4 (J)	179	126		26.6	55.6	3.7
8/2/2017				28.5			
10/19/2017	5.1	175	97.7	25.3	26.1	19.2	<5 (U)
4/2/2018	12.3	200	88.1		27.4	22	<5 (U)
4/3/2018				19.1			
10/8/2018				25.1			
10/9/2018	6	197	15.1		24.8	186	3.2
11/12/2018						162	
4/22/2019	1.9 (J)	303	34.6		21.6	121	<5 (U)
4/23/2019				26.7			
10/14/2019	<1 (U)	339	40.7		22.3	146	<5 (U)
10/15/2019				36			
4/13/2020	1.4 (J)	378	41.9		16.6	89.4	7.5 (J)
4/14/2020				30.2			
10/12/2020	1 (J)	388	22.8		16.8	49.4	
10/13/2020				37			<2.2 (U)

### Total Dissolved Solids



Time Series Analysis Run 12/21/2020 6:05 PM

Nelson Dewey Generating Station Client: SCS Engineers Data: NED - Chempoint- export-Dec2020

# Time Series

Constituent: Total Dissolved Solids (mg/L) Analysis Run 12/21/2020 6:08 PM

Nelson Dewey Generating Station Client: SCS Engineers Data: NED - Chempoint- export-Dec2020

	B-11A	B-11B	B-11R	B-26 (bg)	B-31A	B-31R	B-7R
12/9/2015	338	494	616	424	274	374	198
4/12/2016				456			
4/13/2016	362	512	682		302	404	218
7/18/2016							220
7/19/2016	336	520	698	504	280	406	
10/19/2016	340						288
10/20/2016		496	660	466	292	452	
1/12/2017	322	488	616	446	284	380	240
4/17/2017	326	502	620	468	318	416	278
6/7/2017			630	538			240
6/8/2017	338	516			296	426	
8/1/2017	326	498	738		284	432	220
8/2/2017				496			
10/19/2017	322	510	586	542	290	358	242
4/2/2018	336	550	638		282	374	220
4/3/2018				464			
10/8/2018				450			
10/9/2018	332	602	266		278	668	186
11/12/2018		594				596	
4/22/2019	386	742	406		284	516	254
4/23/2019				458			
10/14/2019	348	728	310		272	480	208
10/15/2019				404			
4/13/2020	394	872	570		298	464	306
4/14/2020				464			
10/12/2020	364	906	600		300	462	
10/13/2020				448			208

Attachment 2

Outlier Analysis

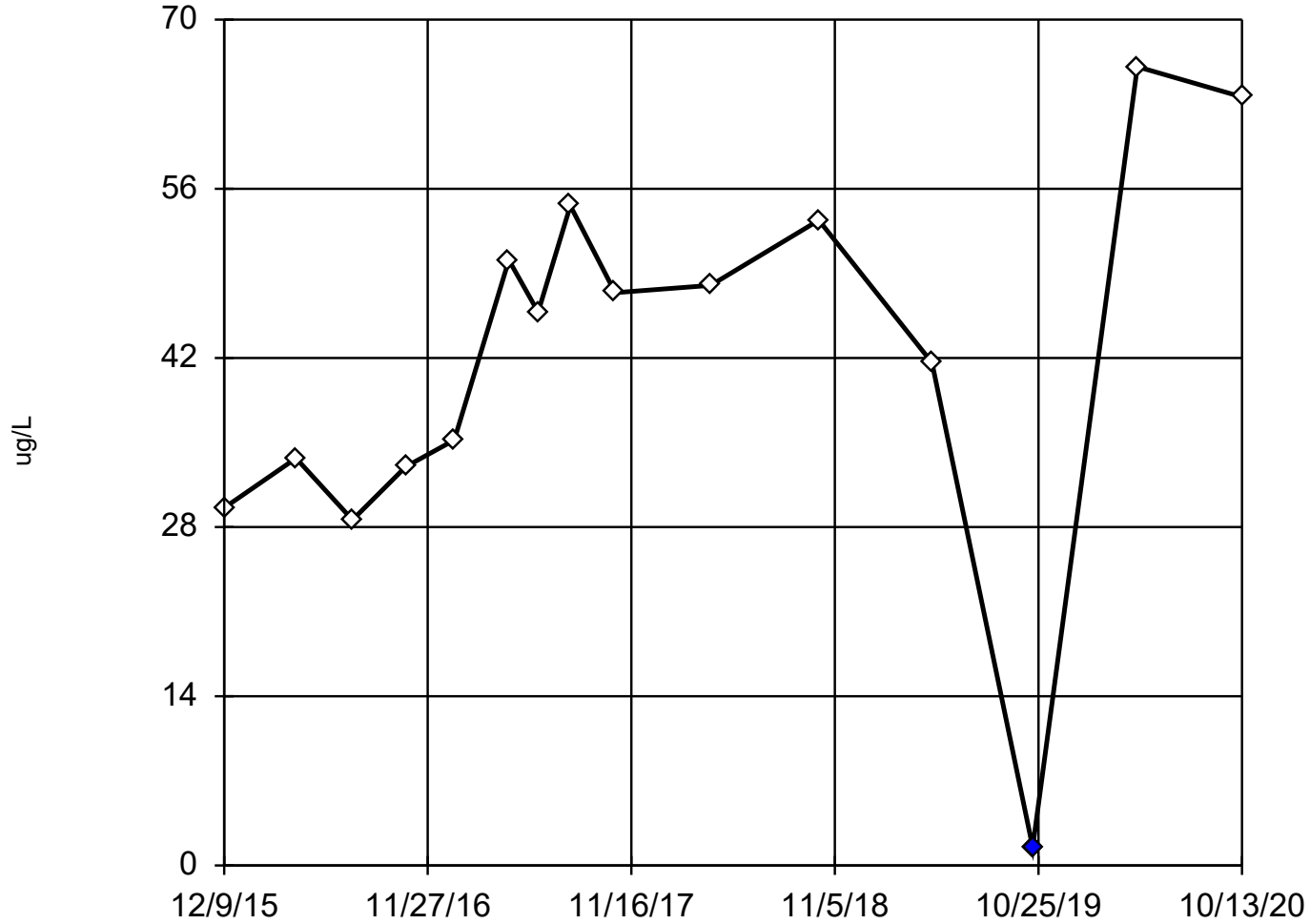
# Outlier Analysis

Nelson Dewey Generating Station Client: SCS Engineers Data: NED - Chempoint- export-Dec2020 Printed 12/21/2020, 6:11 PM

<u>Constituent</u>	<u>Well</u>	<u>Outlier</u>	<u>Value(s)</u>	<u>Date(s)</u>	<u>Method</u>	<u>Alpha</u>	<u>N</u>	<u>Mean</u>	<u>Std. Dev.</u>	<u>Distribution</u>	<u>Normality Test</u>
<b>Boron (ug/L)</b>	<b>B-26 (bg)</b>	<b>Yes</b>	<b>1.5</b>	<b>10/15/2019</b>	<b>Dixon`s</b>	<b>0.05</b>	<b>15</b>	<b>42.15</b>	<b>16.15</b>	<b>normal</b>	<b>ShapiroWilk</b>
<b>Calcium (ug/L)</b>	<b>B-26 (bg)</b>	<b>Yes</b>	<b>38.1</b>	<b>10/15/2019</b>	<b>Dixon`s</b>	<b>0.05</b>	<b>15</b>	<b>81549</b>	<b>24188</b>	<b>normal</b>	<b>ShapiroWilk</b>
Chloride (mg/L)	B-26 (bg)	No	n/a	n/a	EPA 1989	0.05	15	50.42	12.19	normal	ShapiroWilk
Field pH (Std. Units)	B-26 (bg)	No	n/a	n/a	EPA 1989	0.05	15	7.329	0.1692	normal	ShapiroWilk
Fluoride (mg/L)	B-26 (bg)	No	n/a	n/a	NP (nrm)	NaN	15	0.1223	0.04101	unknown	ShapiroWilk
Sulfate (mg/L)	B-26 (bg)	No	n/a	n/a	Dixon`s	0.05	15	31.51	5.598	normal	ShapiroWilk
Total Dissolved Solids (mg/L)	B-26 (bg)	No	n/a	n/a	EPA 1989	0.05	15	468.5	37.77	normal	ShapiroWilk

### Dixon's Outlier Test

B-26 (bg)



n = 15

Statistical outlier is drawn as solid.  
Testing for 1 low outlier.  
Mean = 42.15.  
Std. Dev. = 16.15.  
<3 (U): c = 0.5292  
tab1 = 0.525.  
Alpha = 0.05.

Normality test used:  
Shapiro Wilk@alpha = 0.1  
Calculated = 0.9463  
Critical = 0.895  
The distribution, after removal of suspect value, was found to be normally distributed.

Constituent: Boron Analysis Run 12/21/2020 6:09 PM

Nelson Dewey Generating Station Client: SCS Engineers Data: NED - Chempoint- export-Dec2020

# Dixon's Outlier Test

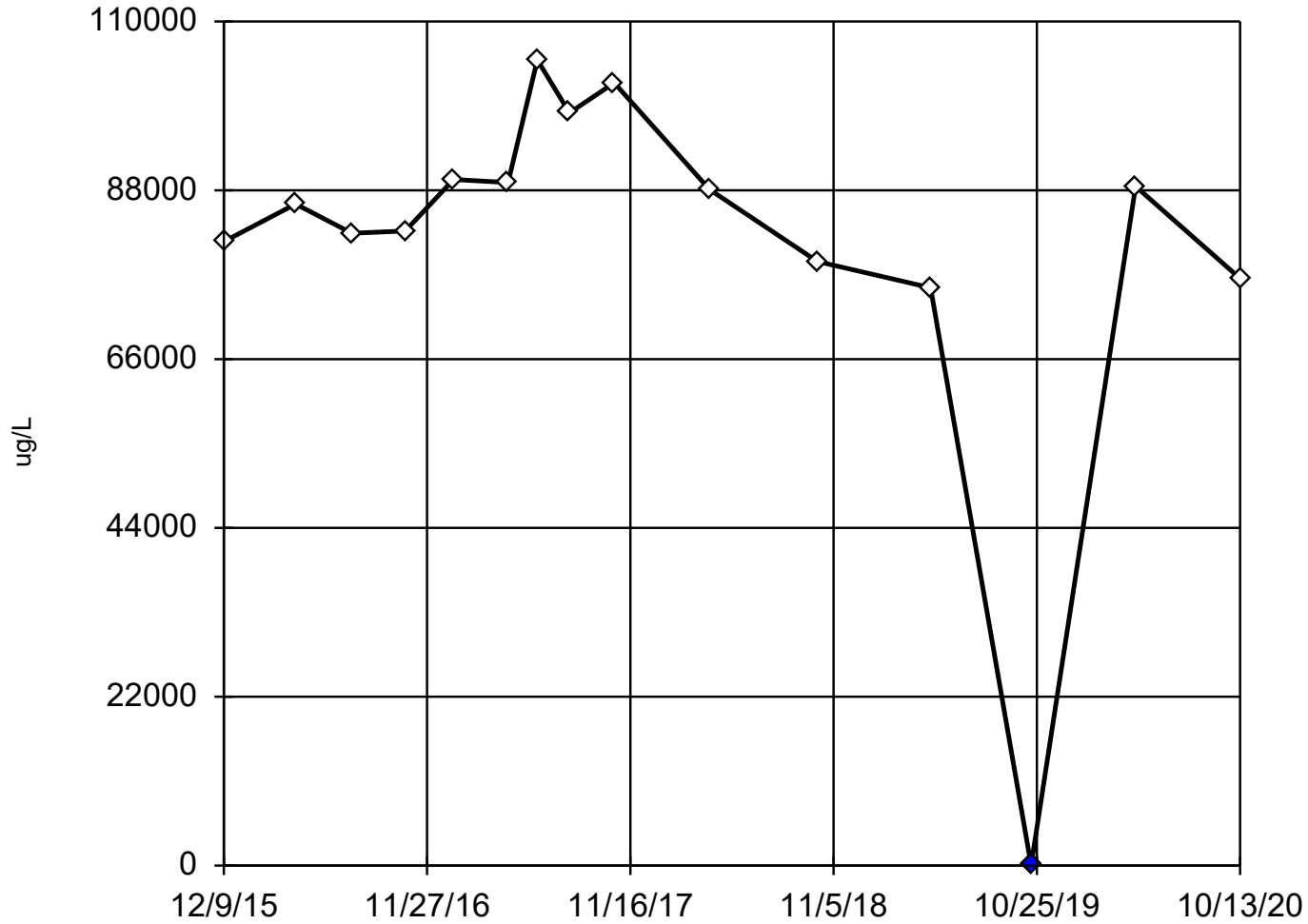
Constituent: Boron (ug/L) Analysis Run 12/21/2020 6:11 PM

Nelson Dewey Generating Station Client: SCS Engineers Data: NED - Chempoint- export-Dec2020

	B-26 (bg)
12/9/2015	29.6
4/12/2016	33.7
7/19/2016	28.6
10/20/2016	33
1/12/2017	35.2
4/17/2017	50.1
6/7/2017	45.8
8/2/2017	54.6
10/19/2017	47.4
4/3/2018	48
10/8/2018	53.4
4/23/2019	41.6
10/15/2019	<3 (UO)
4/14/2020	66.1
10/13/2020	63.6

### Dixon's Outlier Test

B-26 (bg)



n = 15

Statistical outlier is drawn as solid.  
Testing for 1 low outlier.  
Mean = 81549.  
Std. Dev. = 24188.  
<76.2 (U): c = 0.7797  
tab1 = 0.525.  
Alpha = 0.05.

Normality test used:  
Shapiro Wilk@alpha = 0.1  
Calculated = 0.9297  
Critical = 0.895  
The distribution, after removal of suspect value, was found to be normally distributed.

Constituent: Calcium Analysis Run 12/21/2020 6:09 PM

Nelson Dewey Generating Station Client: SCS Engineers Data: NED - Chempoint- export-Dec2020



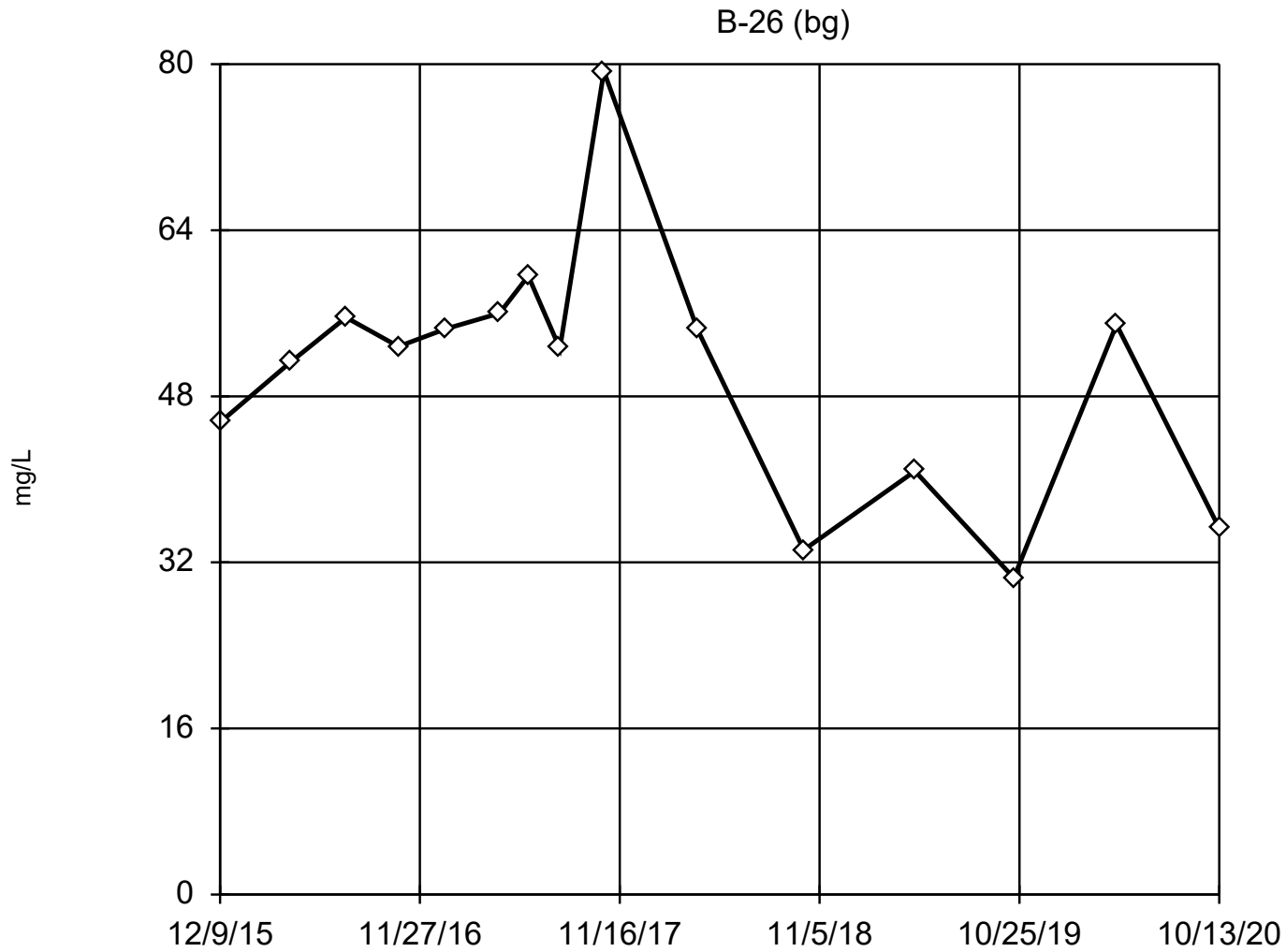
# Dixon's Outlier Test

Constituent: Calcium (ug/L) Analysis Run 12/21/2020 6:11 PM

Nelson Dewey Generating Station Client: SCS Engineers Data: NED - Chempoint- export-Dec2020

	B-26 (bg)
12/9/2015	81300
4/12/2016	86200
7/19/2016	82400
10/20/2016	82700
1/12/2017	89400
4/17/2017	89000
6/7/2017	105000
8/2/2017	98100
10/19/2017	102000
4/3/2018	88100
10/8/2018	78700
4/23/2019	75300
10/15/2019	<76.2 (UO)
4/14/2020	88500
10/13/2020	76500

### EPA Screening (suspected outliers for Dixon's Test)



n = 15  
Dixon's will not be run.  
No suspect values identified or unable to establish suspect values.  
Mean 50.42, std. dev. 12.19, critical Tn 2.409  
Normality test used:  
Shapiro Wilk@alpha = 0.1  
Calculated = 0.9076  
Critical = 0.901  
The distribution was found to be normally distributed.

Constituent: Chloride Analysis Run 12/21/2020 6:09 PM

Nelson Dewey Generating Station Client: SCS Engineers Data: NED - Chempoint- export-Dec2020

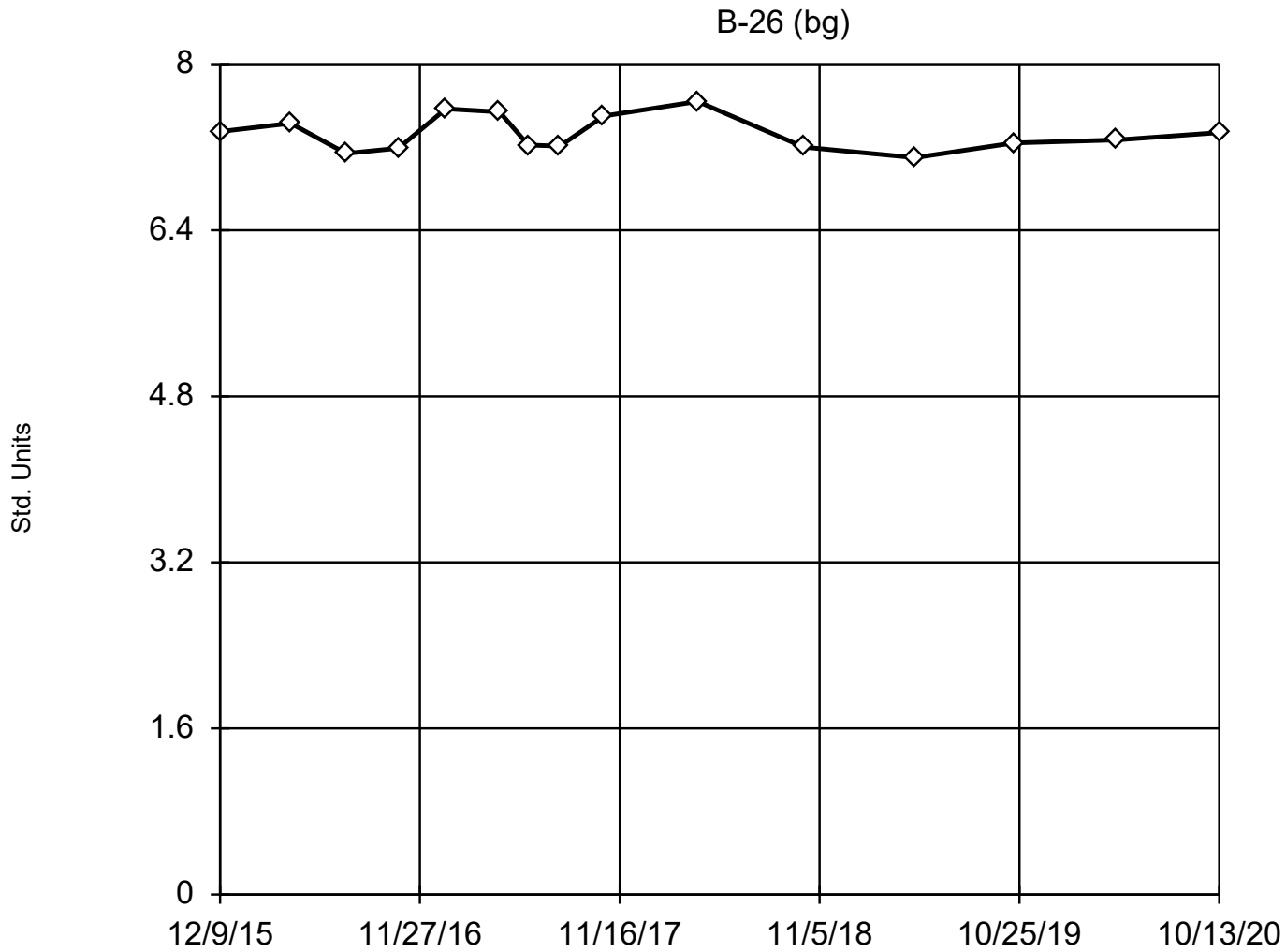
# EPA 1989 Outlier Screening

Constituent: Chloride (mg/L) Analysis Run 12/21/2020 6:11 PM

Nelson Dewey Generating Station Client: SCS Engineers Data: NED - Chempoint- export-Dec2020

	B-26 (bg)
12/9/2015	45.5
4/12/2016	51.3
7/19/2016	55.6
10/20/2016	52.8
1/12/2017	54.5
4/17/2017	56
6/7/2017	59.6
8/2/2017	52.6
10/19/2017	79.3
4/3/2018	54.4
10/8/2018	33.2
4/23/2019	40.8
10/15/2019	30.5
4/14/2020	54.9
10/13/2020	35.3

### EPA Screening (suspected outliers for Dixon's Test)



n = 15  
Dixon's will not be run.  
No suspect values identified or unable to establish suspect values.  
Mean 7.329, std. dev. 0.1692, critical Tn 2.409  
  
Normality test used:  
Shapiro Wilk@alpha = 0.1  
Calculated = 0.9265  
Critical = 0.901  
The distribution was found to be normally distributed.

Constituent: Field pH Analysis Run 12/21/2020 6:09 PM

Nelson Dewey Generating Station Client: SCS Engineers Data: NED - Chempoint- export-Dec2020

# EPA 1989 Outlier Screening

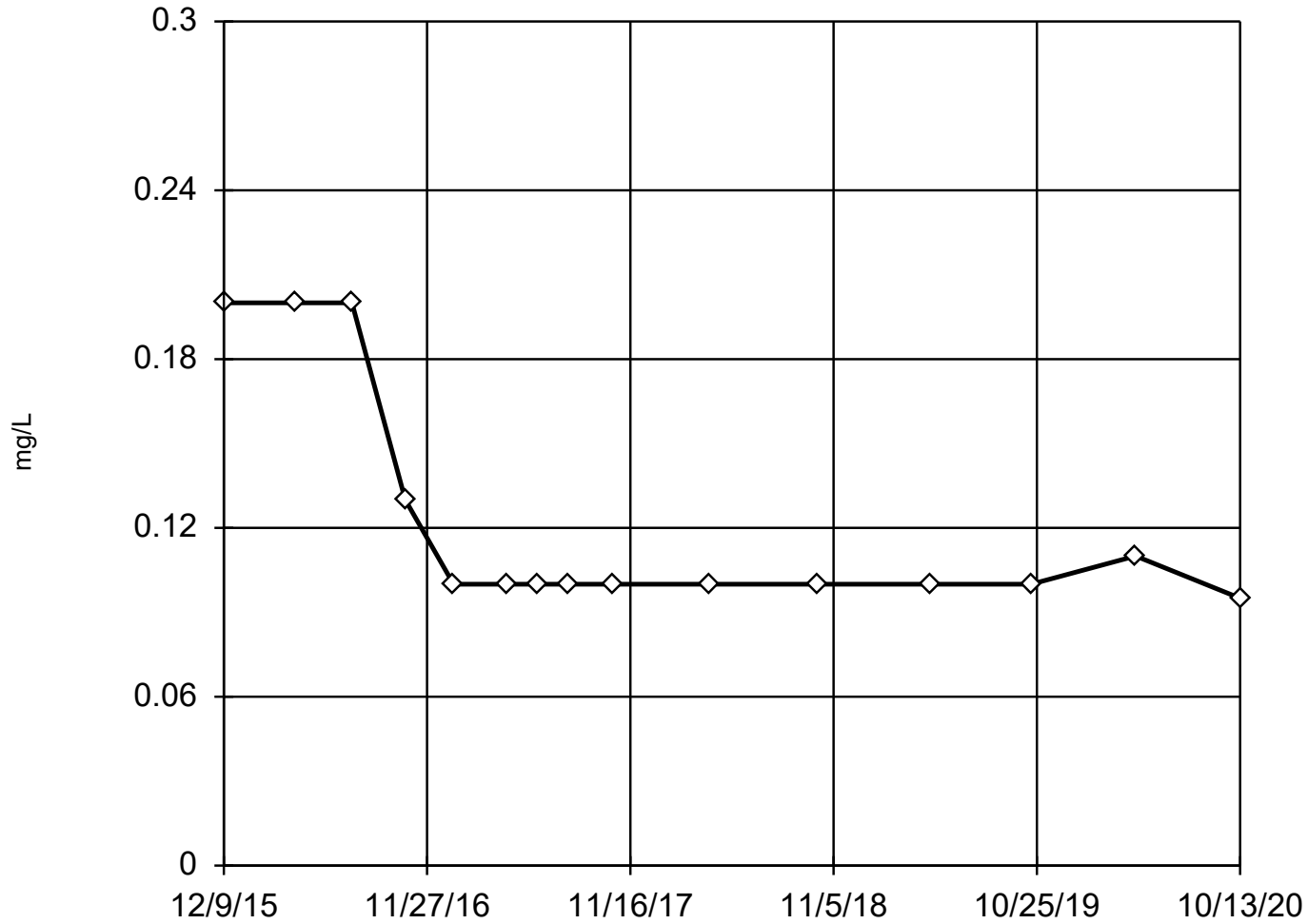
Constituent: Field pH (Std. Units) Analysis Run 12/21/2020 6:11 PM

Nelson Dewey Generating Station Client: SCS Engineers Data: NED - Chempoint- export-Dec2020

	B-26 (bg)
12/9/2015	7.35
4/12/2016	7.43
7/19/2016	7.14
10/20/2016	7.19
1/12/2017	7.57
4/17/2017	7.54
6/7/2017	7.22
8/2/2017	7.21
10/19/2017	7.5
4/3/2018	7.64
10/8/2018	7.2
4/23/2019	7.1
10/15/2019	7.24
4/14/2020	7.27
10/13/2020	7.34

# Tukey's Outlier Screening

B-26 (bg)



n = 15

No outliers found.  
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0.1 alpha level.

Data were natural log transformed to achieve best W statistic (graph shown in original units).

High cutoff = 0.2856,  
low cutoff = 0.04552,  
based on IQR multiplier of 3.

Constituent: Fluoride Analysis Run 12/21/2020 6:09 PM

Nelson Dewey Generating Station Client: SCS Engineers Data: NED - Chempoint- export-Dec2020

# Tukey's Outlier Screening

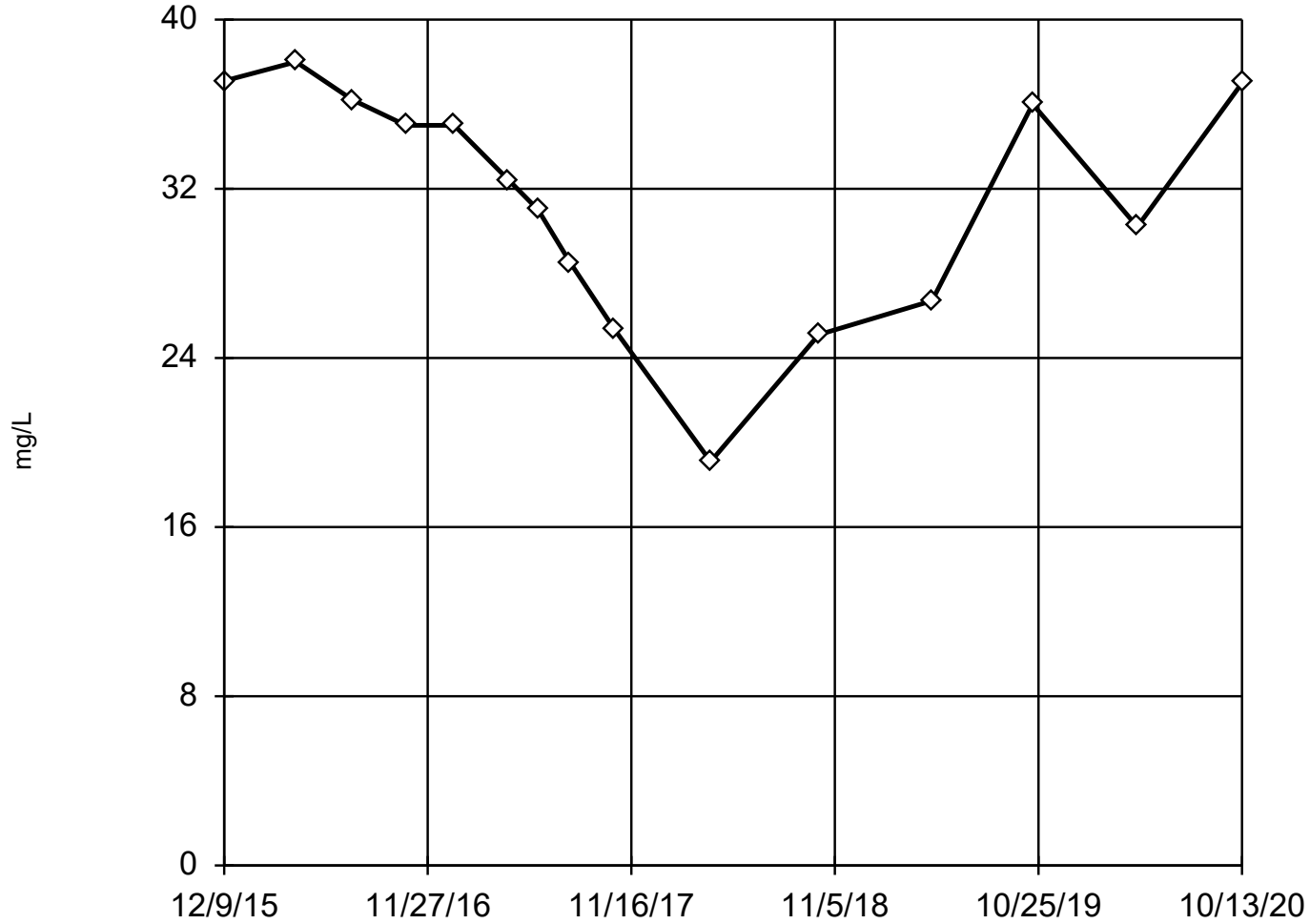
Constituent: Fluoride (mg/L) Analysis Run 12/21/2020 6:11 PM

Nelson Dewey Generating Station Client: SCS Engineers Data: NED - Chempoint- export-Dec2020

	B-26 (bg)
12/9/2015	<0.2 (U)
4/12/2016	<0.2 (U)
7/19/2016	<0.2 (U)
10/20/2016	0.13 (J)
1/12/2017	<0.1 (U)
4/17/2017	<0.1 (U)
6/7/2017	<0.1 (U)
8/2/2017	<0.1 (U)
10/19/2017	<0.1 (U)
4/3/2018	<0.1 (U)
10/8/2018	<0.1 (U)
4/23/2019	<0.1 (U)
10/15/2019	<0.1 (U)
4/14/2020	0.11 (J)
10/13/2020	<0.095 (U)

### Dixon's Outlier Test

B-26 (bg)



n = 15

No statistical outliers.  
Testing for 1 low outlier.  
Mean = 31.51.  
Std. Dev. = 5.598.  
19.1: c = 0.3464  
tab1 = 0.525.  
Alpha = 0.05.

Normality test used:  
Shapiro Wilk@alpha = 0.1  
Calculated = 0.8985  
Critical = 0.895  
The distribution was found  
to be normally distrib-  
uted.

Constituent: Sulfate Analysis Run 12/21/2020 6:09 PM

Nelson Dewey Generating Station Client: SCS Engineers Data: NED - Chempoint- export-Dec2020



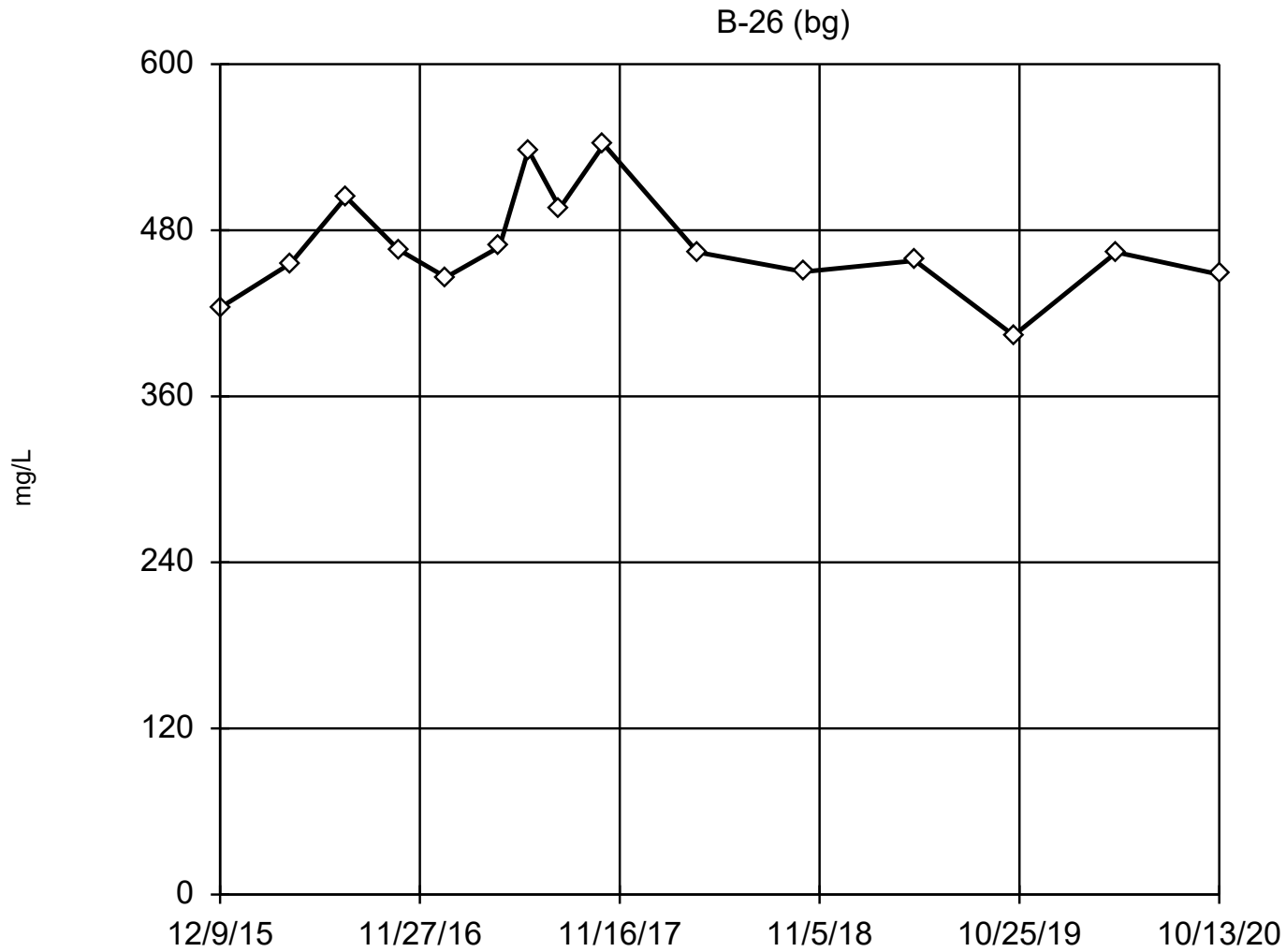
# Dixon's Outlier Test

Constituent: Sulfate (mg/L) Analysis Run 12/21/2020 6:11 PM

Nelson Dewey Generating Station Client: SCS Engineers Data: NED - Chempoint- export-Dec2020

	B-26 (bg)
12/9/2015	37.1
4/12/2016	38
7/19/2016	36.2
10/20/2016	35
1/12/2017	35
4/17/2017	32.4
6/7/2017	31
8/2/2017	28.5
10/19/2017	25.3
4/3/2018	19.1
10/8/2018	25.1
4/23/2019	26.7
10/15/2019	36
4/14/2020	30.2
10/13/2020	37

### EPA Screening (suspected outliers for Dixon's Test)



n = 15

Dixon's will not be run.  
No suspect values identified  
or unable to establish  
suspect values.  
Mean 468.5, std. dev.  
37.77, critical Tn 2.409

Normality test used:  
Shapiro Wilk@alpha = 0.1  
Calculated = 0.9236  
Critical = 0.901  
The distribution was found  
to be normally distrib-  
uted.

Constituent: Total Dissolved Solids Analysis Run 12/21/2020 6:09 PM

Nelson Dewey Generating Station Client: SCS Engineers Data: NED - Chempoint- export-Dec2020

# EPA 1989 Outlier Screening

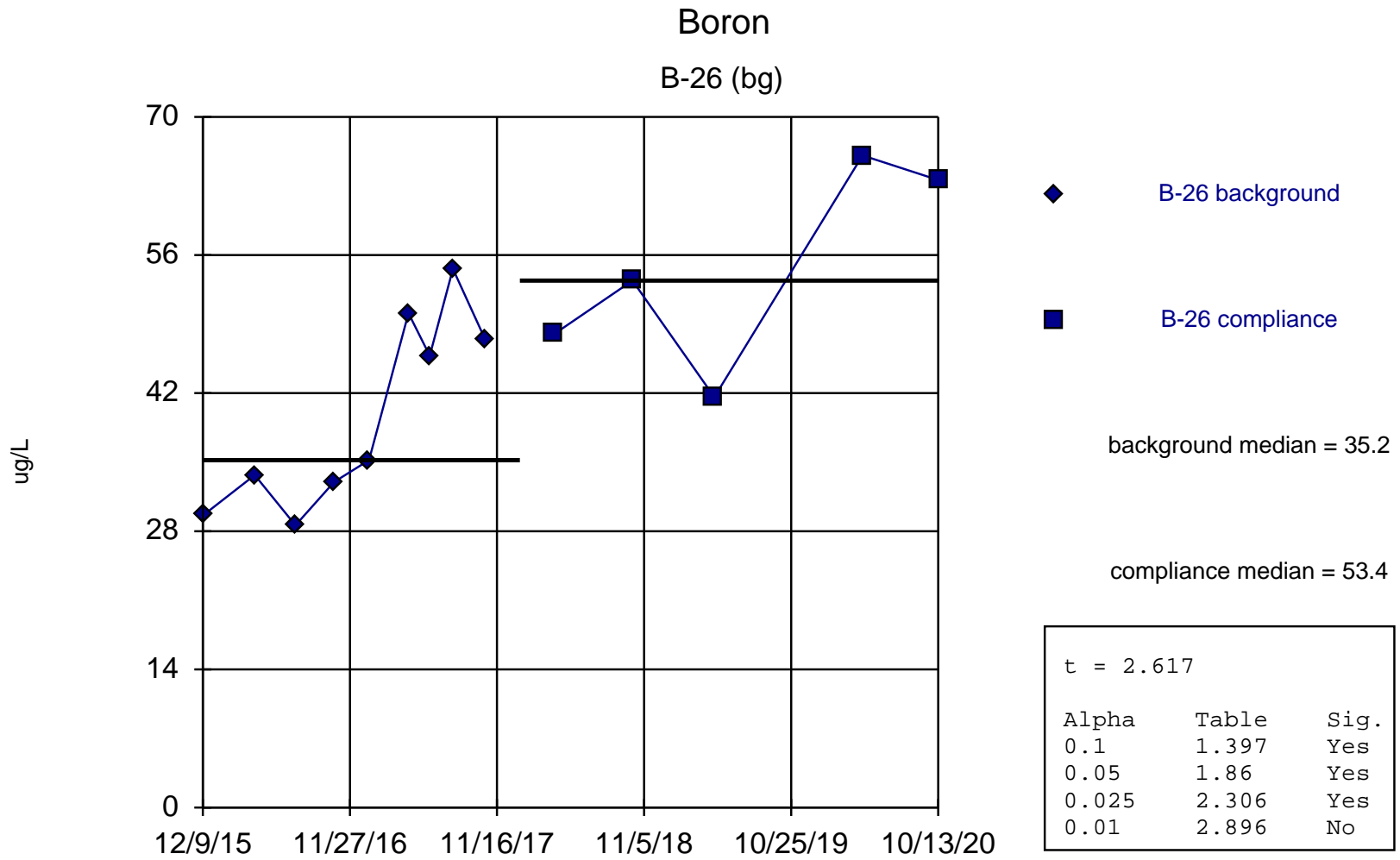
Constituent: Total Dissolved Solids (mg/L) Analysis Run 12/21/2020 6:11 PM

Nelson Dewey Generating Station Client: SCS Engineers Data: NED - Chempoint- export-Dec2020

	B-26 (bg)
12/9/2015	424
4/12/2016	456
7/19/2016	504
10/20/2016	466
1/12/2017	446
4/17/2017	468
6/7/2017	538
8/2/2017	496
10/19/2017	542
4/3/2018	464
10/8/2018	450
4/23/2019	458
10/15/2019	404
4/14/2020	464
10/13/2020	448

## Attachment 3

### Welch's/Mann-Whitney Comparison



Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8943, critical = 0.829.

Welch's t-test Analysis Run 1/11/2021 12:14 PM

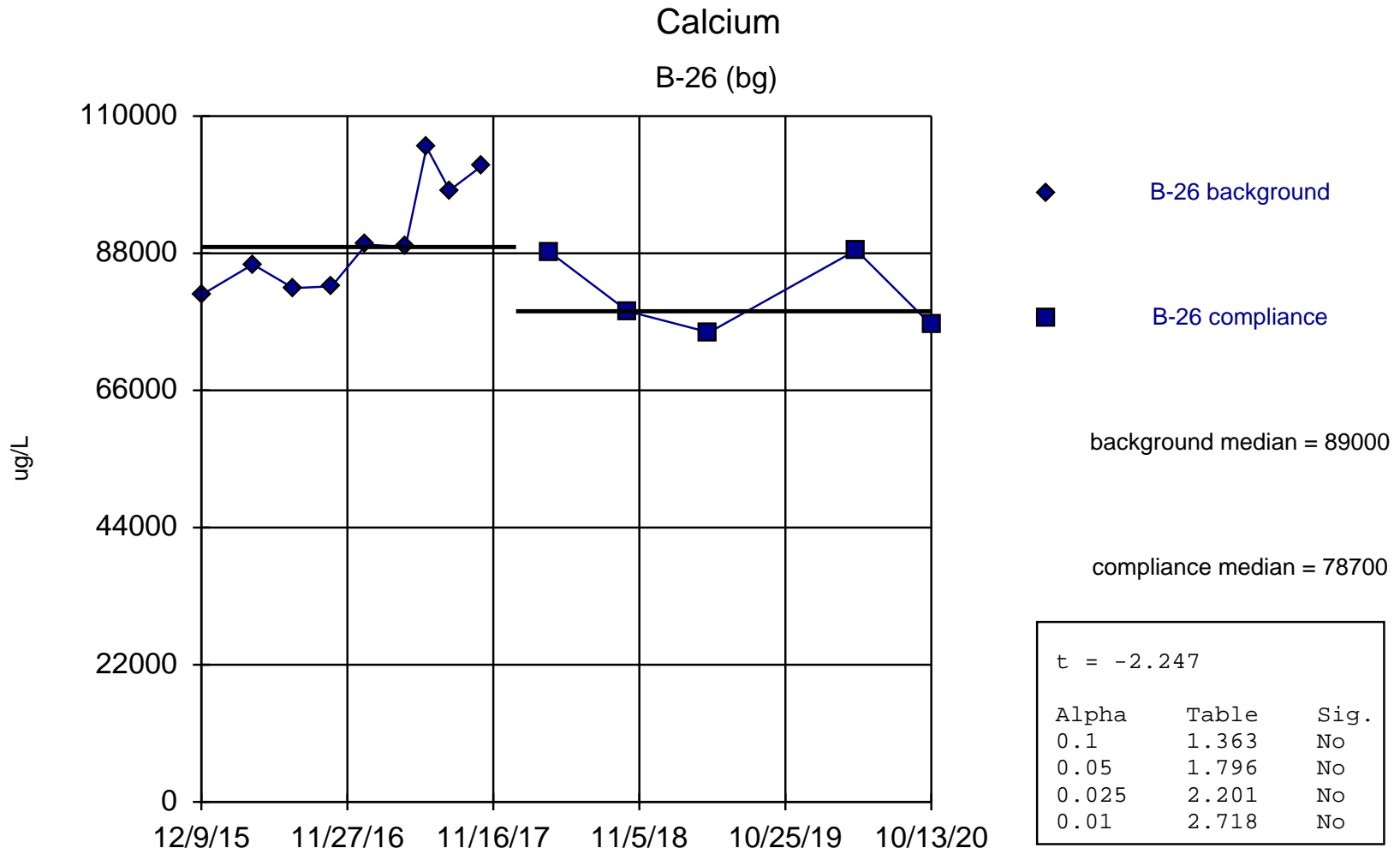
Nelson Dewey Generating Station Client: SCS Engineers Data: NED - Chempoint- export-Dec2020

# Welch's t-test

Constituent: Boron (ug/L) Analysis Run 1/11/2021 12:23 PM

Nelson Dewey Generating Station Client: SCS Engineers Data: NED - Chempoint- export-Dec2020

	B-26	B-26
12/9/2015	29.6	
4/12/2016	33.7	
7/19/2016	28.6	
10/20/2016	33	
1/12/2017	35.2	
4/17/2017	50.1	
6/7/2017	45.8	
8/2/2017	54.6	
10/19/2017	47.4	
4/3/2018		48
10/8/2018		53.4
4/23/2019		41.6
10/15/2019	<3 (UX)	
4/14/2020		66.1
10/13/2020		63.6



Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8842, critical = 0.829.

Welch's t-test Analysis Run 1/11/2021 12:14 PM

Nelson Dewey Generating Station Client: SCS Engineers Data: NED - Chempoint- export-Dec2020

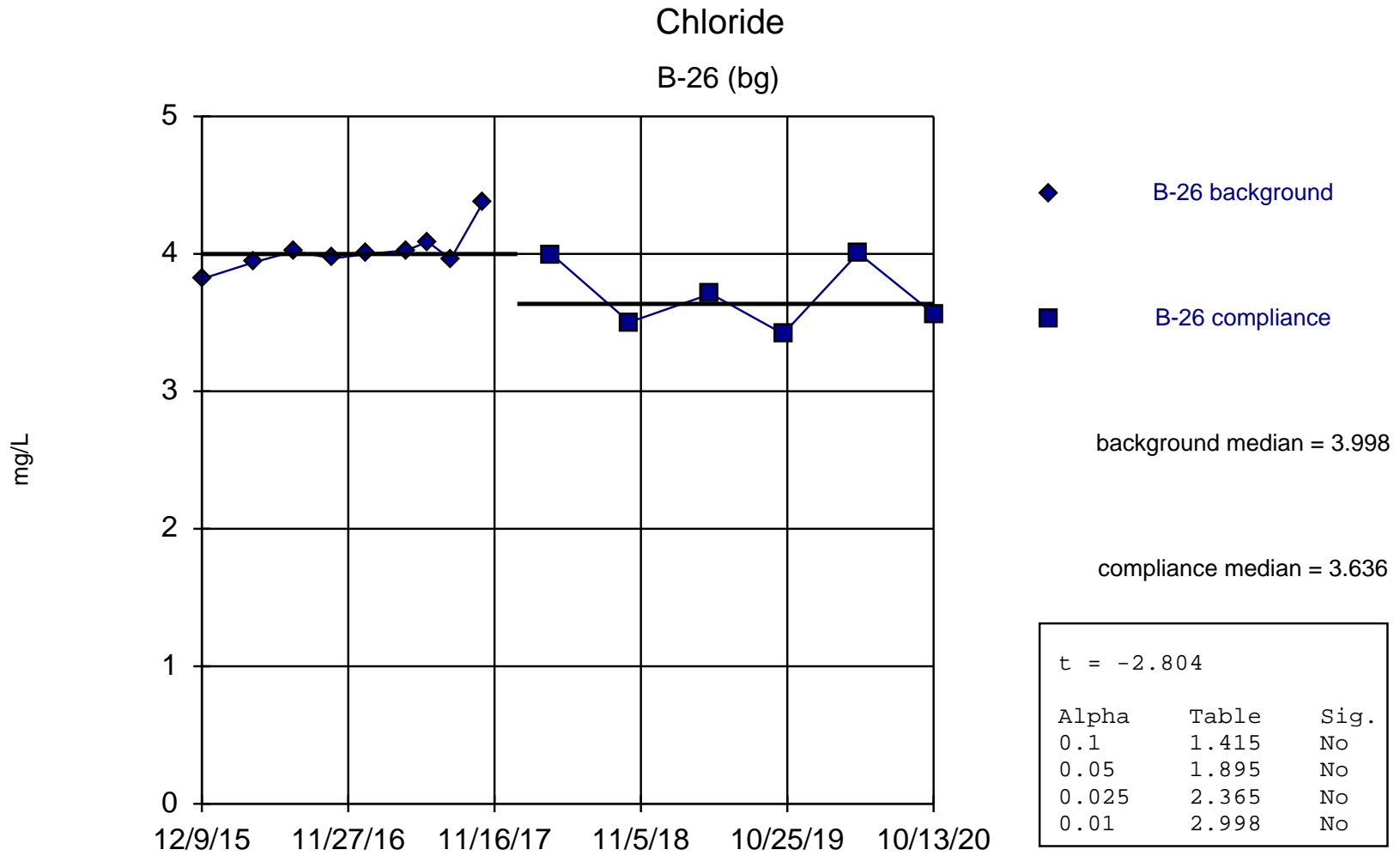
# Welch's t-test

Constituent: Calcium (ug/L) Analysis Run 1/11/2021 12:23 PM

Nelson Dewey Generating Station Client: SCS Engineers Data: NED - Chempoint- export-Dec2020

	B-26	B-26
12/9/2015	81300	
4/12/2016	86200	
7/19/2016	82400	
10/20/2016	82700	
1/12/2017	89400	
4/17/2017	89000	
6/7/2017	105000	
8/2/2017	98100	
10/19/2017	102000	
4/3/2018		88100
10/8/2018		78700
4/23/2019		75300
10/15/2019	<76.2 (UX)	
4/14/2020		88500
10/13/2020		76500





Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8409 after natural log transformation, critical = 0.829.

Welch's t-test Analysis Run 1/11/2021 12:14 PM

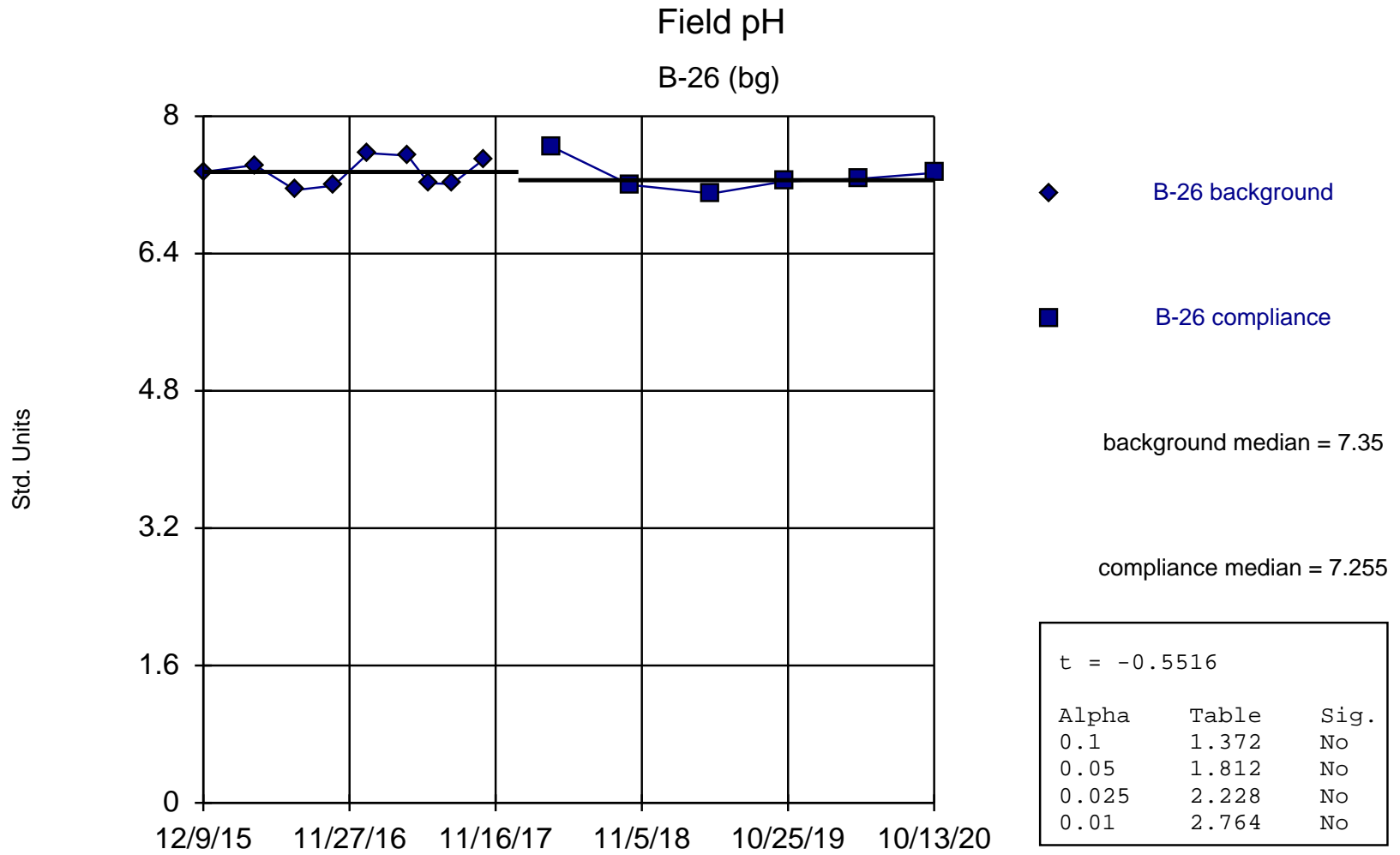
Nelson Dewey Generating Station Client: SCS Engineers Data: NED - Chempoint- export-Dec2020

# Welch's t-test

Constituent: Chloride (mg/L) Analysis Run 1/11/2021 12:23 PM

Nelson Dewey Generating Station Client: SCS Engineers Data: NED - Chempoint- export-Dec2020

	B-26	B-26
12/9/2015	45.5	
4/12/2016	51.3	
7/19/2016	55.6	
10/20/2016	52.8	
1/12/2017	54.5	
4/17/2017	56	
6/7/2017	59.6	
8/2/2017	52.6	
10/19/2017	79.3	
4/3/2018		54.4
10/8/2018		33.2
4/23/2019		40.8
10/15/2019		30.5
4/14/2020		54.9
10/13/2020		35.3



Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8974, critical = 0.829.

Welch's t-test Analysis Run 1/11/2021 12:14 PM

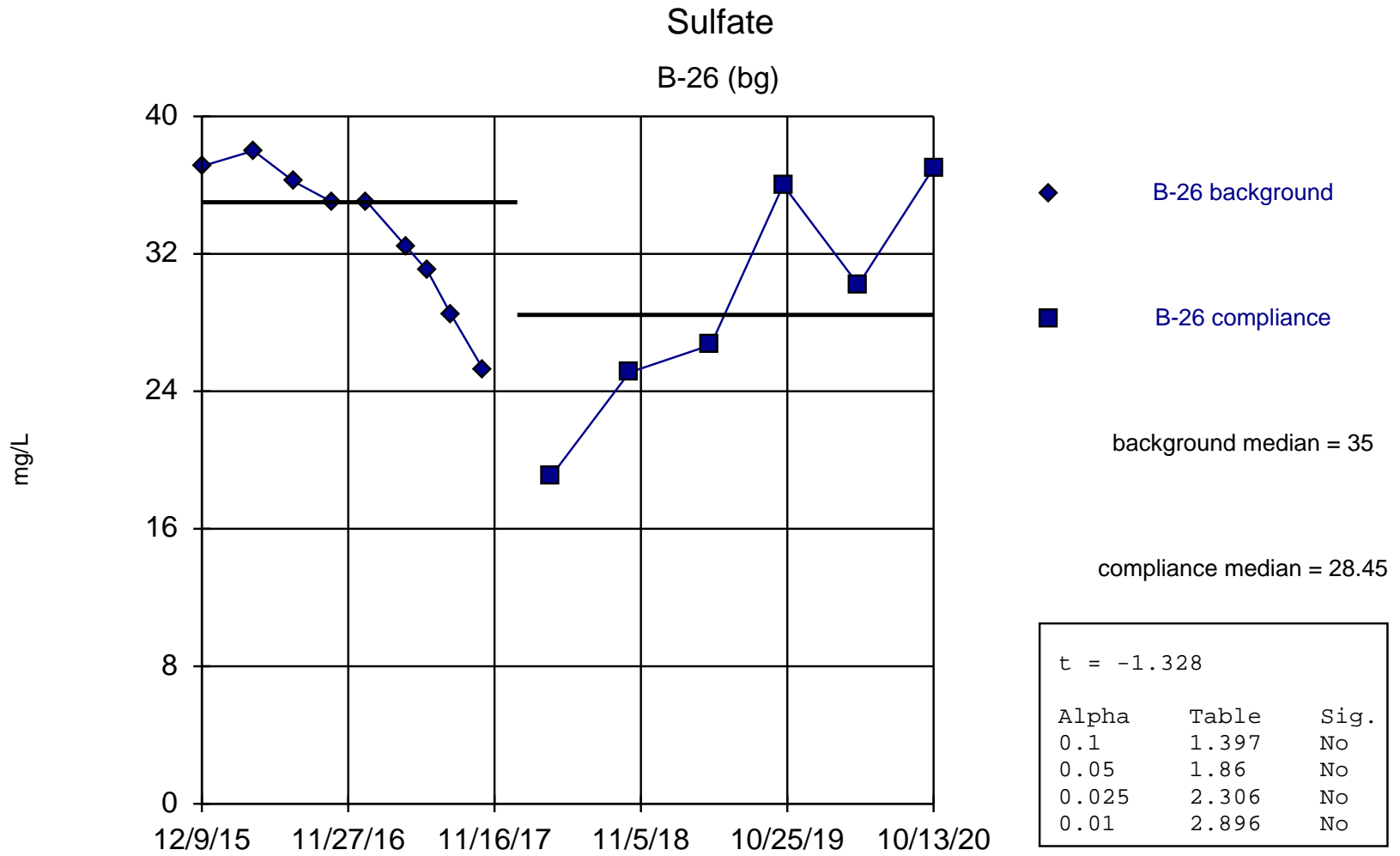
Nelson Dewey Generating Station Client: SCS Engineers Data: NED - Chempoint- export-Dec2020

# Welch's t-test

Constituent: Field pH (Std. Units) Analysis Run 1/11/2021 12:23 PM

Nelson Dewey Generating Station Client: SCS Engineers Data: NED - Chempoint- export-Dec2020

	B-26	B-26
12/9/2015	7.35	
4/12/2016	7.43	
7/19/2016	7.14	
10/20/2016	7.19	
1/12/2017	7.57	
4/17/2017	7.54	
6/7/2017	7.22	
8/2/2017	7.21	
10/19/2017	7.5	
4/3/2018		7.64
10/8/2018		7.2
4/23/2019		7.1
10/15/2019		7.24
4/14/2020		7.27
10/13/2020		7.34



Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9269, critical = 0.829.

Welch's t-test Analysis Run 1/11/2021 12:14 PM

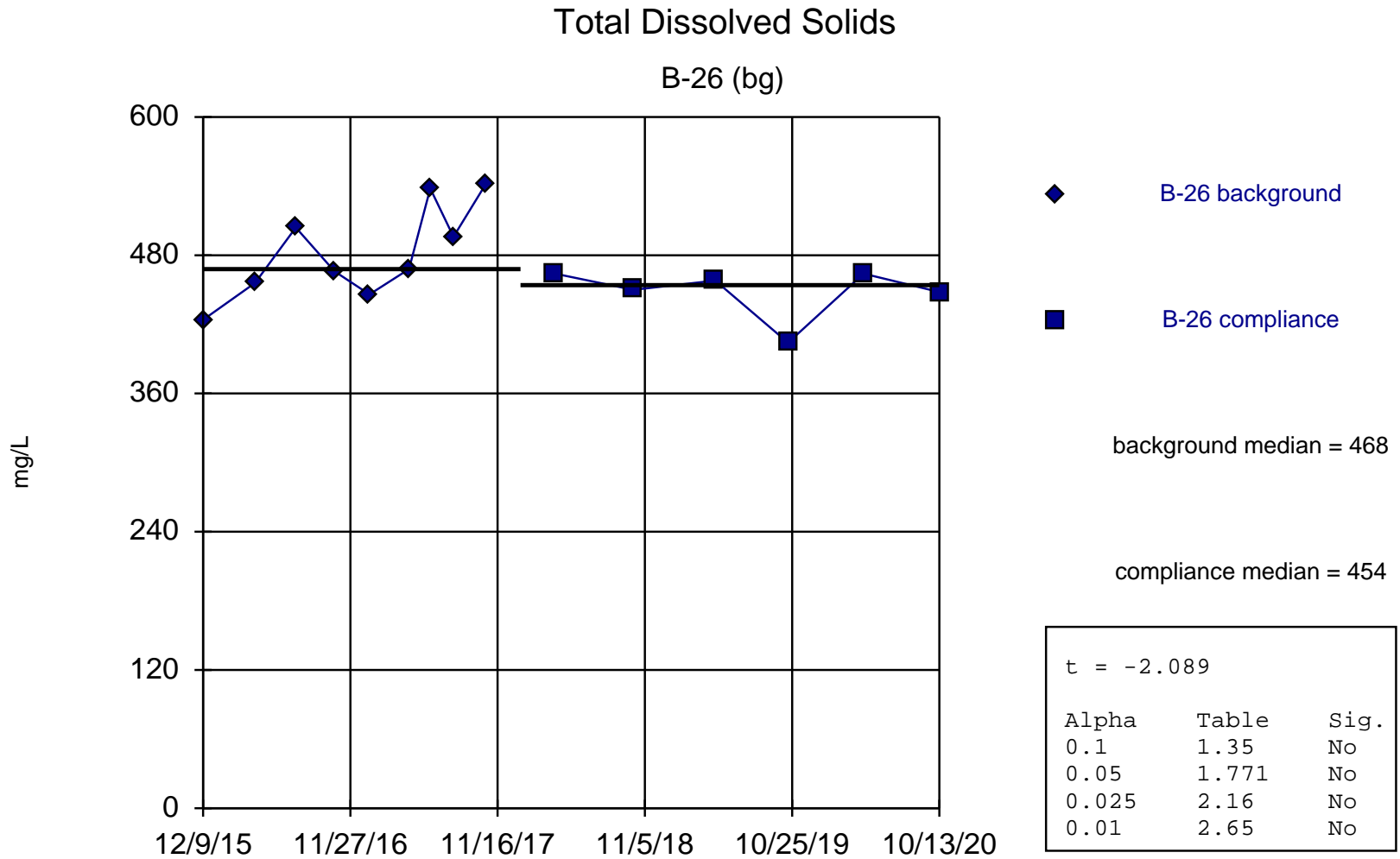
Nelson Dewey Generating Station Client: SCS Engineers Data: NED - Chempoint- export-Dec2020

# Welch's t-test

Constituent: Sulfate (mg/L) Analysis Run 1/11/2021 12:23 PM

Nelson Dewey Generating Station Client: SCS Engineers Data: NED - Chempoint- export-Dec2020

	B-26	B-26
12/9/2015	37.1	
4/12/2016	38	
7/19/2016	36.2	
10/20/2016	35	
1/12/2017	35	
4/17/2017	32.4	
6/7/2017	31	
8/2/2017	28.5	
10/19/2017	25.3	
4/3/2018		19.1
10/8/2018		25.1
4/23/2019		26.7
10/15/2019		36
4/14/2020		30.2
10/13/2020		37



Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9441, critical = 0.829.

Welch's t-test Analysis Run 1/11/2021 12:14 PM

Nelson Dewey Generating Station Client: SCS Engineers Data: NED - Chempoint- export-Dec2020

# Welch's t-test

Constituent: Total Dissolved Solids (mg/L) Analysis Run 1/11/2021 12:23 PM

Nelson Dewey Generating Station Client: SCS Engineers Data: NED - Chempoint- export-Dec2020

	B-26	B-26
12/9/2015	424	
4/12/2016	456	
7/19/2016	504	
10/20/2016	466	
1/12/2017	446	
4/17/2017	468	
6/7/2017	538	
8/2/2017	496	
10/19/2017	542	
4/3/2018		464
10/8/2018		450
4/23/2019		458
10/15/2019		404
4/14/2020		464
10/13/2020		448



# Welch's t-test/Mann-Whitney

Nelson Dewey Generating Station Client: SCS Engineers Data: NED - Chempoint- export-Dec2020 Printed 1/11/2021, 12:23 PM

<u>Constituent</u>	<u>Well</u>	<u>Calc.</u>	<u>0.1</u>	<u>0.05</u>	<u>0.025</u>	<u>0.01</u>	<u>Alpha</u>	<u>Sig.</u>	<u>Bg. Wells</u>	<u>Method</u>
Boron (ug/L)	B-26 (bg)	2.617	Yes	Yes	Yes	No	0.01	No	(inrawell)	Welch`s
Calcium (ug/L)	B-26 (bg)	-2.247	No	No	No	No	0.01	No	(inrawell)	Welch`s
Chloride (mg/L)	B-26 (bg)	-2.804	No	No	No	No	0.01	No	(inrawell)	Welch`s
Field pH (Std. Units)	B-26 (bg)	-0....	No	No	No	No	0.01	No	(inrawell)	Welch`s
Sulfate (mg/L)	B-26 (bg)	-1.328	No	No	No	No	0.01	No	(inrawell)	Welch`s
Total Dissolved Solids (mg/L)	B-26 (bg)	-2.089	No	No	No	No	0.01	No	(inrawell)	Welch`s

## Attachment 4

### Interwell Prediction Limit Analysis

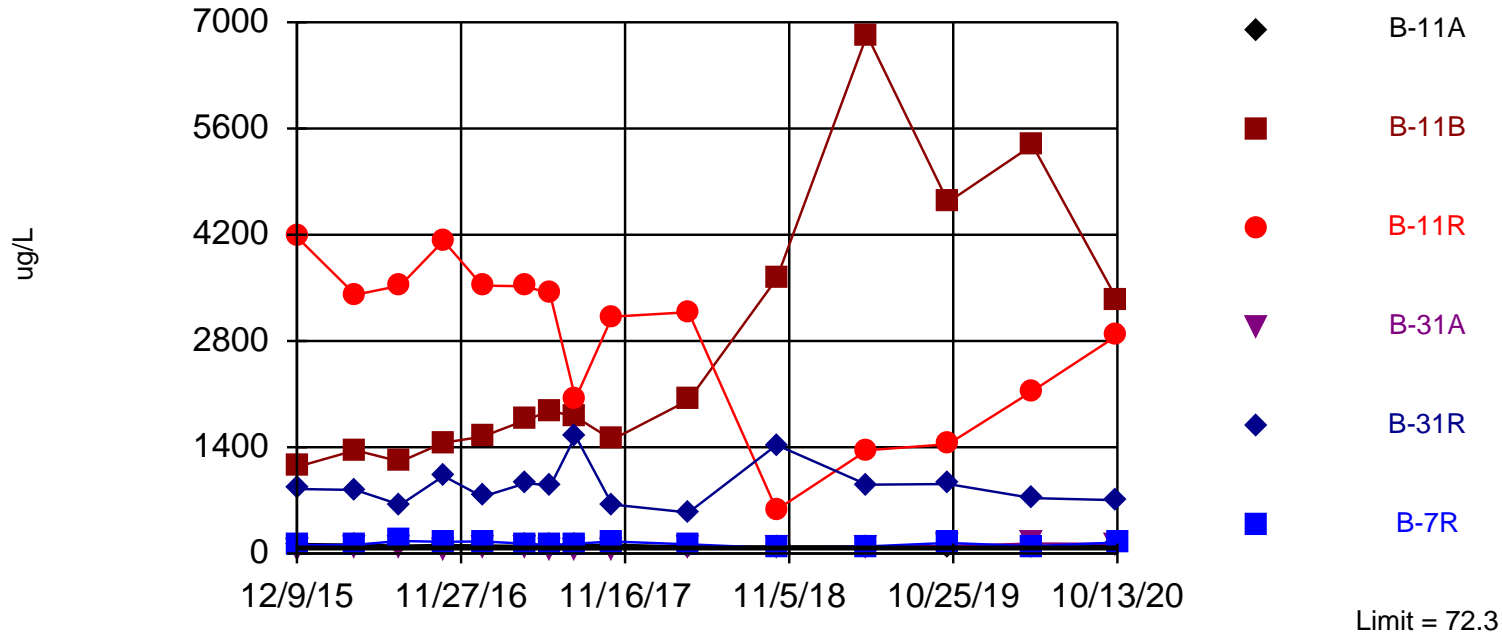
# Prediction Limit

Nelson Dewey Generating Station Client: SCS Engineers Data: NED - Chempoint- export-Dec2020 Printed 1/14/2021, 1:49 PM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	Bg Wells	Bg Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
<b>Boron (ug/L)</b>	<b>B-11A</b>	<b>72.3</b>	<b>n/a</b>	<b>10/12/2020</b>	<b>99.3</b>	<b>Yes</b>	<b>14</b>	<b>B-26</b>	<b>45.05</b>	<b>12.03</b>	<b>0</b>	<b>None</b>	<b>No</b>	<b>0.001254</b>	<b>Param Inter 1 of 2</b>
<b>Boron (ug/L)</b>	<b>B-11B</b>	<b>72.3</b>	<b>n/a</b>	<b>10/12/2020</b>	<b>3350</b>	<b>Yes</b>	<b>14</b>	<b>B-26</b>	<b>45.05</b>	<b>12.03</b>	<b>0</b>	<b>None</b>	<b>No</b>	<b>0.001254</b>	<b>Param Inter 1 of 2</b>
<b>Boron (ug/L)</b>	<b>B-11R</b>	<b>72.3</b>	<b>n/a</b>	<b>10/12/2020</b>	<b>2870</b>	<b>Yes</b>	<b>14</b>	<b>B-26</b>	<b>45.05</b>	<b>12.03</b>	<b>0</b>	<b>None</b>	<b>No</b>	<b>0.001254</b>	<b>Param Inter 1 of 2</b>
<b>Boron (ug/L)</b>	<b>B-31A</b>	<b>72.3</b>	<b>n/a</b>	<b>10/12/2020</b>	<b>127</b>	<b>Yes</b>	<b>14</b>	<b>B-26</b>	<b>45.05</b>	<b>12.03</b>	<b>0</b>	<b>None</b>	<b>No</b>	<b>0.001254</b>	<b>Param Inter 1 of 2</b>
<b>Boron (ug/L)</b>	<b>B-31R</b>	<b>72.3</b>	<b>n/a</b>	<b>10/12/2020</b>	<b>702</b>	<b>Yes</b>	<b>14</b>	<b>B-26</b>	<b>45.05</b>	<b>12.03</b>	<b>0</b>	<b>None</b>	<b>No</b>	<b>0.001254</b>	<b>Param Inter 1 of 2</b>
<b>Boron (ug/L)</b>	<b>B-7R</b>	<b>72.3</b>	<b>n/a</b>	<b>10/13/2020</b>	<b>145</b>	<b>Yes</b>	<b>14</b>	<b>B-26</b>	<b>45.05</b>	<b>12.03</b>	<b>0</b>	<b>None</b>	<b>No</b>	<b>0.001254</b>	<b>Param Inter 1 of 2</b>
Calcium (ug/L)	B-11A	108000	n/a	10/12/2020	55600	No	14	B-26	87371	9082	0	None	No	0.001254	Param Inter 1 of 2
Calcium (ug/L)	B-11B	108000	n/a	10/12/2020	91200	No	14	B-26	87371	9082	0	None	No	0.001254	Param Inter 1 of 2
<b>Calcium (ug/L)</b>	<b>B-11R</b>	<b>108000</b>	<b>n/a</b>	<b>10/12/2020</b>	<b>120000</b>	<b>Yes</b>	<b>14</b>	<b>B-26</b>	<b>87371</b>	<b>9082</b>	<b>0</b>	<b>None</b>	<b>No</b>	<b>0.001254</b>	<b>Param Inter 1 of 2</b>
Calcium (ug/L)	B-31A	108000	n/a	10/12/2020	47700	No	14	B-26	87371	9082	0	None	No	0.001254	Param Inter 1 of 2
Calcium (ug/L)	B-31R	108000	n/a	10/12/2020	95700	No	14	B-26	87371	9082	0	None	No	0.001254	Param Inter 1 of 2
Calcium (ug/L)	B-7R	108000	n/a	10/13/2020	41900	No	14	B-26	87371	9082	0	None	No	0.001254	Param Inter 1 of 2
Chloride (mg/L)	B-11A	77.6	n/a	10/12/2020	65.3	No	15	B-26	50.42	12.19	0	None	No	0.001254	Param Inter 1 of 2
Chloride (mg/L)	B-11B	77.6	n/a	10/12/2020	33.4	No	15	B-26	50.42	12.19	0	None	No	0.001254	Param Inter 1 of 2
Chloride (mg/L)	B-11R	77.6	n/a	10/12/2020	20.7	No	15	B-26	50.42	12.19	0	None	No	0.001254	Param Inter 1 of 2
Chloride (mg/L)	B-31A	77.6	n/a	10/12/2020	57.9	No	15	B-26	50.42	12.19	0	None	No	0.001254	Param Inter 1 of 2
Chloride (mg/L)	B-31R	77.6	n/a	10/12/2020	24.4	No	15	B-26	50.42	12.19	0	None	No	0.001254	Param Inter 1 of 2
Chloride (mg/L)	B-7R	77.6	n/a	10/13/2020	6.7J	No	15	B-26	50.42	12.19	0	None	No	0.001254	Param Inter 1 of 2
<b>Field pH (Std. Units)</b>	<b>B-11A</b>	<b>7.71</b>	<b>n/a</b>	<b>10/12/2020</b>	<b>7.74</b>	<b>Yes</b>	<b>15</b>	<b>B-26</b>	<b>7.329</b>	<b>0.1692</b>	<b>0</b>	<b>None</b>	<b>No</b>	<b>0.001254</b>	<b>Param Inter 1 of 2</b>
<b>Field pH (Std. Units)</b>	<b>B-11B</b>	<b>7.71</b>	<b>n/a</b>	<b>10/12/2020</b>	<b>7.8</b>	<b>Yes</b>	<b>15</b>	<b>B-26</b>	<b>7.329</b>	<b>0.1692</b>	<b>0</b>	<b>None</b>	<b>No</b>	<b>0.001254</b>	<b>Param Inter 1 of 2</b>
Field pH (Std. Units)	B-11R	7.71	n/a	10/12/2020	6.83	No	15	B-26	7.329	0.1692	0	None	No	0.001254	Param Inter 1 of 2
<b>Field pH (Std. Units)</b>	<b>B-31A</b>	<b>7.71</b>	<b>n/a</b>	<b>10/12/2020</b>	<b>7.78</b>	<b>Yes</b>	<b>15</b>	<b>B-26</b>	<b>7.329</b>	<b>0.1692</b>	<b>0</b>	<b>None</b>	<b>No</b>	<b>0.001254</b>	<b>Param Inter 1 of 2</b>
Field pH (Std. Units)	B-31R	7.71	n/a	10/12/2020	6.89	No	15	B-26	7.329	0.1692	0	None	No	0.001254	Param Inter 1 of 2
Field pH (Std. Units)	B-7R	7.71	n/a	10/13/2020	6.35	No	15	B-26	7.329	0.1692	0	None	No	0.001254	Param Inter 1 of 2
Fluoride (mg/L)	B-11A	0.200	n/a	10/12/2020	0.28J	No	15	B-26	n/a	n/a	86.67	n/a	n/a	0.006613	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	B-11B	0.200	n/a	10/12/2020	0.095ND	No	15	B-26	n/a	n/a	86.67	n/a	n/a	0.006613	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	B-11R	0.200	n/a	10/12/2020	0.48ND	No	15	B-26	n/a	n/a	86.67	n/a	n/a	0.006613	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	B-31A	0.200	n/a	10/12/2020	0.18J	No	15	B-26	n/a	n/a	86.67	n/a	n/a	0.006613	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	B-31R	0.200	n/a	10/12/2020	0.48ND	No	15	B-26	n/a	n/a	86.67	n/a	n/a	0.006613	NP Inter (NDs) 1 of 2
Fluoride (mg/L)	B-7R	0.200	n/a	10/13/2020	0.48ND	No	15	B-26	n/a	n/a	86.67	n/a	n/a	0.006613	NP Inter (NDs) 1 of 2
Sulfate (mg/L)	B-11A	44	n/a	10/12/2020	1J	No	15	B-26	31.51	5.598	0	None	No	0.001254	Param Inter 1 of 2
<b>Sulfate (mg/L)</b>	<b>B-11B</b>	<b>44</b>	<b>n/a</b>	<b>10/12/2020</b>	<b>388</b>	<b>Yes</b>	<b>15</b>	<b>B-26</b>	<b>31.51</b>	<b>5.598</b>	<b>0</b>	<b>None</b>	<b>No</b>	<b>0.001254</b>	<b>Param Inter 1 of 2</b>
Sulfate (mg/L)	B-11R	44	n/a	10/12/2020	22.8	No	15	B-26	31.51	5.598	0	None	No	0.001254	Param Inter 1 of 2
Sulfate (mg/L)	B-31A	44	n/a	10/12/2020	16.8	No	15	B-26	31.51	5.598	0	None	No	0.001254	Param Inter 1 of 2
<b>Sulfate (mg/L)</b>	<b>B-31R</b>	<b>44</b>	<b>n/a</b>	<b>10/12/2020</b>	<b>49.4</b>	<b>Yes</b>	<b>15</b>	<b>B-26</b>	<b>31.51</b>	<b>5.598</b>	<b>0</b>	<b>None</b>	<b>No</b>	<b>0.001254</b>	<b>Param Inter 1 of 2</b>
Sulfate (mg/L)	B-7R	44	n/a	10/13/2020	1.1ND	No	15	B-26	31.51	5.598	0	None	No	0.001254	Param Inter 1 of 2
Total Dissolved Solids (mg/L)	B-11A	553	n/a	10/12/2020	364	No	15	B-26	468.5	37.77	0	None	No	0.001254	Param Inter 1 of 2
<b>Total Dissolved Solids (mg/L)</b>	<b>B-11B</b>	<b>553</b>	<b>n/a</b>	<b>10/12/2020</b>	<b>906</b>	<b>Yes</b>	<b>15</b>	<b>B-26</b>	<b>468.5</b>	<b>37.77</b>	<b>0</b>	<b>None</b>	<b>No</b>	<b>0.001254</b>	<b>Param Inter 1 of 2</b>
<b>Total Dissolved Solids (mg/L)</b>	<b>B-11R</b>	<b>553</b>	<b>n/a</b>	<b>10/12/2020</b>	<b>600</b>	<b>Yes</b>	<b>15</b>	<b>B-26</b>	<b>468.5</b>	<b>37.77</b>	<b>0</b>	<b>None</b>	<b>No</b>	<b>0.001254</b>	<b>Param Inter 1 of 2</b>
Total Dissolved Solids (mg/L)	B-31A	553	n/a	10/12/2020	300	No	15	B-26	468.5	37.77	0	None	No	0.001254	Param Inter 1 of 2
Total Dissolved Solids (mg/L)	B-31R	553	n/a	10/12/2020	462	No	15	B-26	468.5	37.77	0	None	No	0.001254	Param Inter 1 of 2
Total Dissolved Solids (mg/L)	B-7R	553	n/a	10/13/2020	208	No	15	B-26	468.5	37.77	0	None	No	0.001254	Param Inter 1 of 2

Exceeds Limit: B-11A, B-11B, B-11R, B-31A, B-31R, B-7R

### Boron Interwell Parametric



Background Data Summary: Mean=45.05, Std. Dev.=12.03, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9463, critical = 0.825. Kappa = 2.269 (c=7, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Individual comparison alpha = 0.001254. Comparing 6 points to limit.

Prediction Limit Analysis Run 1/14/2021 1:45 PM

Nelson Dewey Generating Station Client: SCS Engineers Data: NED - Chempoint- export-Dec2020

# Prediction Limit

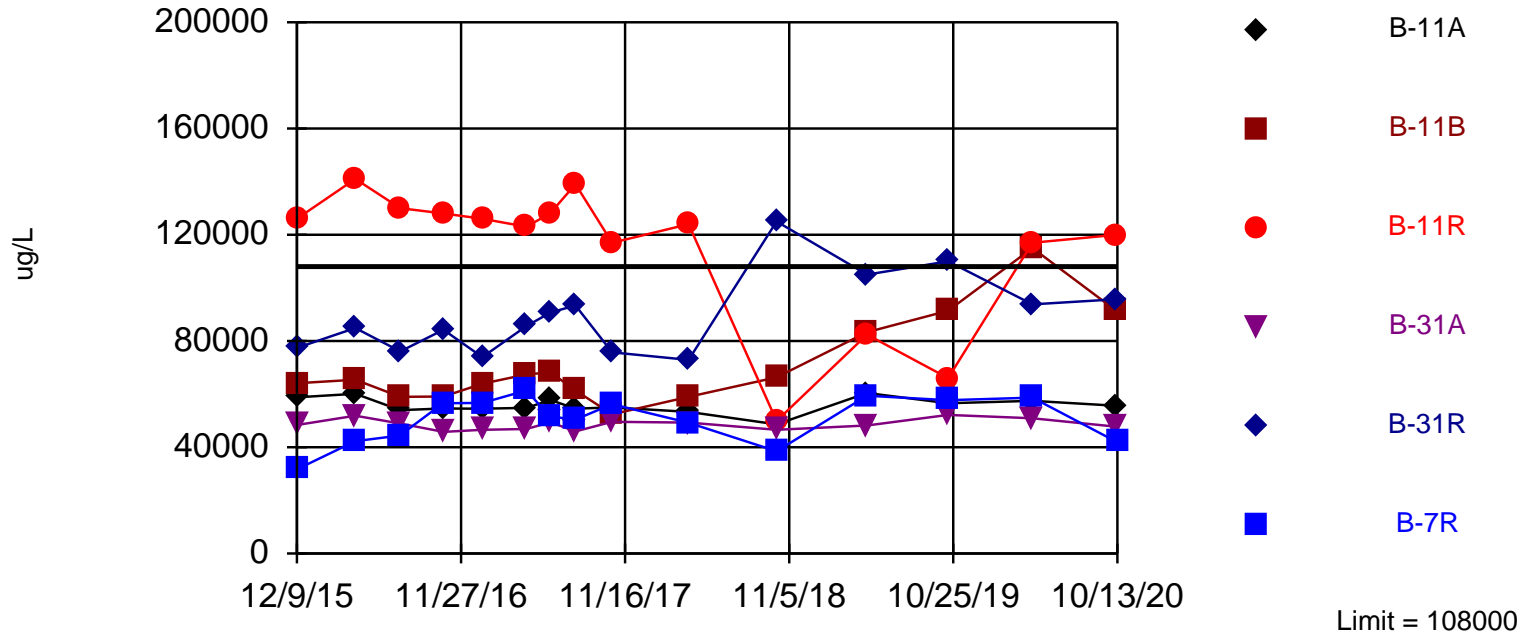
Constituent: Boron (ug/L) Analysis Run 1/14/2021 1:49 PM

Nelson Dewey Generating Station Client: SCS Engineers Data: NED - Chempoint- export-Dec2020

	B-11A	B-31A	B-11R	B-31R	B-11B	B-7R	B-26 (bg)
12/9/2015	124	59	4170	851	1140	110	29.6
4/12/2016							33.7
4/13/2016	116	79.2	3410	838	1360	115	
7/18/2016						164	
7/19/2016	104	67.2	3530	641	1210		28.6
10/19/2016	112					154	
10/20/2016		63.7	4120	1020	1460		33
1/12/2017	106	76.4	3530	749	1540	159	35.2
4/17/2017	100	69.9	3520	929	1760	129	50.1
6/7/2017			3420			110	45.8
6/8/2017	102	58.5		895	1880		
8/1/2017	105	56.3	2040	1550	1800	129	
8/2/2017							54.6
10/19/2017	116	63.9	3120	645	1500	159	47.4
4/2/2018	91	74.8	3180	540	2020	121	
4/3/2018							48
10/8/2018							53.4
10/9/2018	94.2	71.8	576	1430	3620	73	
4/22/2019	93.9	86.2	1360	906	6830	93.5	
4/23/2019							41.6
10/14/2019	80.7	98.5	1440	915	4630	139	
10/15/2019							<3 (UX)
4/13/2020	86.3	132	2140	730	5380	96	
4/14/2020							66.1
10/12/2020	99.3	127	2870	702	3350		
10/13/2020						145	63.6

Exceeds Limit: B-11R

## Calcium Interwell Parametric



Background Data Summary: Mean=87371, Std. Dev.=9082, n=14. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9297, critical = 0.825. Kappa = 2.269 (c=7, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Individual comparison alpha = 0.001254. Comparing 6 points to limit.

Prediction Limit Analysis Run 1/14/2021 1:45 PM

Nelson Dewey Generating Station Client: SCS Engineers Data: NED - Chempoint- export-Dec2020

# Prediction Limit

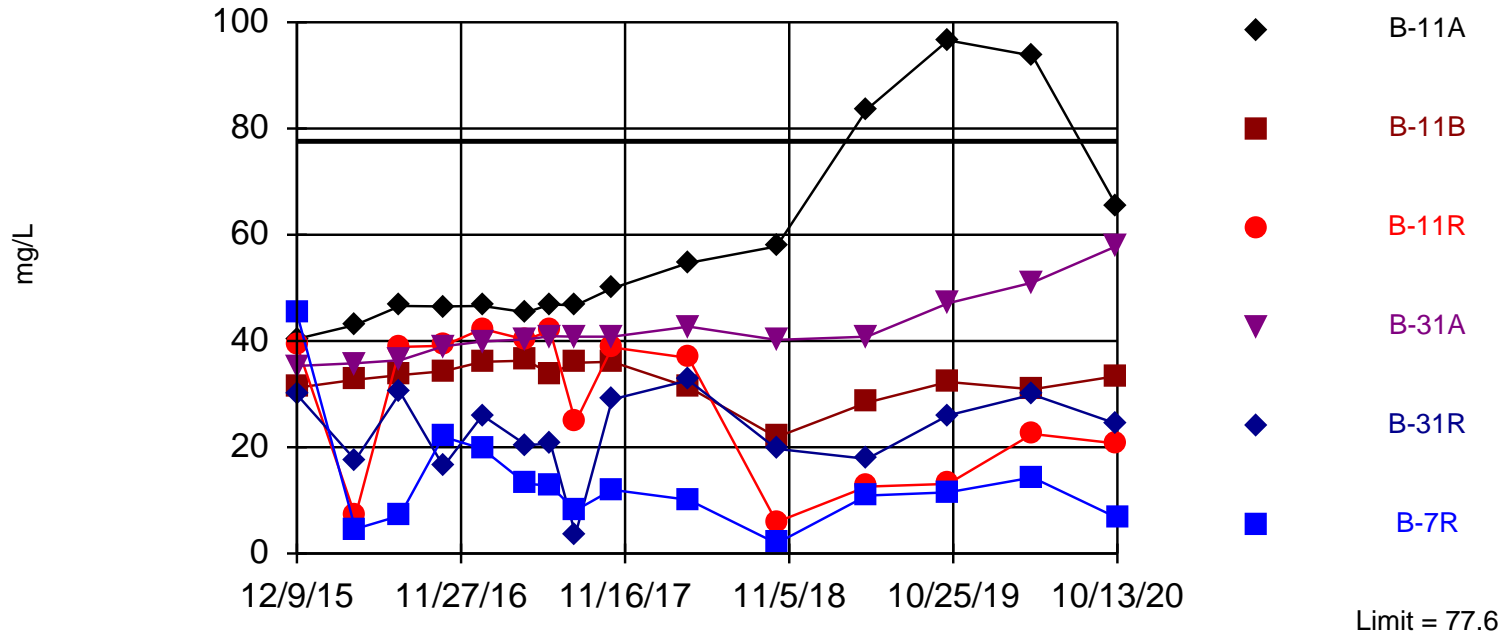
Constituent: Calcium (ug/L) Analysis Run 1/14/2021 1:49 PM

Nelson Dewey Generating Station Client: SCS Engineers Data: NED - Chempoint- export-Dec2020

	B-11A	B-31A	B-11R	B-31R	B-11B	B-7R	B-26 (bg)
12/9/2015	58800	48400	126000	77400	64100	31700	81300
4/12/2016							86200
4/13/2016	60100	51900	141000	84900	65400	42300	
7/18/2016						44400	
7/19/2016	54000	48900	130000	76100	59000		82400
10/19/2016	54600					56600	
10/20/2016		45800	128000	84200	59100		82700
1/12/2017	54500	46600	126000	73900	63900	56700	89400
4/17/2017	54800	46900	123000	85600	67400	61400	89000
6/7/2017			128000			51600	105000
6/8/2017	57800	49400		90700	68200		
8/1/2017	54500	46000	139000	93400	61400	50400	
8/2/2017							98100
10/19/2017	55000	49600	117000	75700	52400	56200	102000
4/2/2018	53300	49300	124000	72900	59000	49200	
4/3/2018							88100
10/8/2018							78700
10/9/2018	48600	46600	49900	125000	66300	38500	
4/22/2019	60400	48200	82400	105000	83300	59400	
4/23/2019							75300
10/14/2019	56600	52200	66000	110000	91400	57700	
10/15/2019							<76.2 (UX)
4/13/2020	57500	50900	117000	93800	115000	58700	
4/14/2020							88500
10/12/2020	55600	47700	120000	95700	91200		
10/13/2020						41900	76500

Within Limit

## Chloride Interwell Parametric



Background Data Summary: Mean=50.42, Std. Dev.=12.19, n=15. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9076, critical = 0.835. Kappa = 2.228 (c=7, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Individual comparison alpha = 0.001254. Comparing 6 points to limit.

Prediction Limit Analysis Run 1/14/2021 1:45 PM

Nelson Dewey Generating Station Client: SCS Engineers Data: NED - Chempoint- export-Dec2020



# Prediction Limit

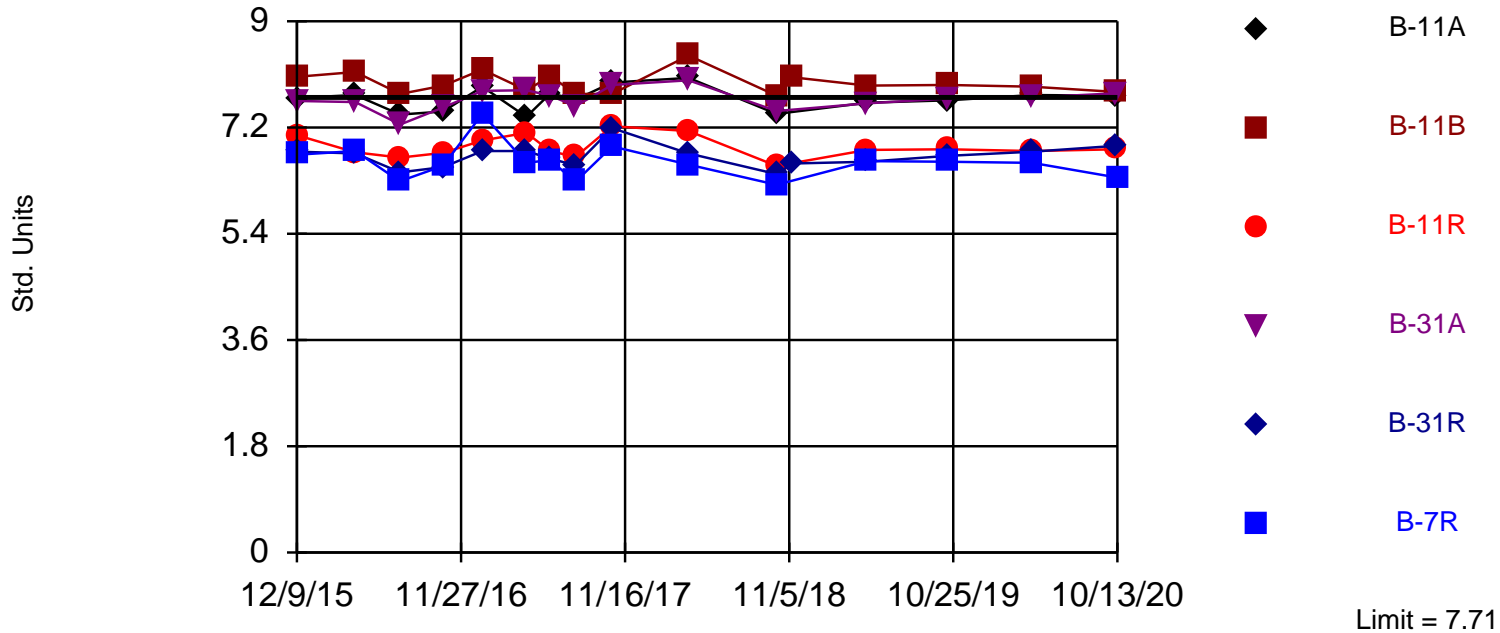
Constituent: Chloride (mg/L) Analysis Run 1/14/2021 1:49 PM

Nelson Dewey Generating Station Client: SCS Engineers Data: NED - Chempoint- export-Dec2020

	B-11A	B-26 (bg)	B-31R	B-11R	B-7R	B-11B	B-31A
12/9/2015	40.4	45.5	29.9	39.2	45.2	31.2	35.3
4/12/2016		51.3					
4/13/2016	43		17.6	7	4.6	32.7	35.8
7/18/2016					7.1		
7/19/2016	46.6	55.6	30.3	38.9		33.6	36.4
10/19/2016	46.5				22		
10/20/2016		52.8	16.4	39.1		34.3	39
1/12/2017	46.6	54.5	26	42.3	19.7	36.1	39.9
4/17/2017	45.4	56	20.4	40.2	13.1	36.3	40.3
6/7/2017		59.6		42	12.8		
6/8/2017	46.9		20.7			33.9	40.9
8/1/2017	46.7		3.6	24.7	8.1	35.9	40.8
8/2/2017		52.6					
10/19/2017	49.9	79.3	29	38.8	12	36.1	40.8
4/2/2018	54.7		32.6	36.8	10.1	31.3	42.7
4/3/2018		54.4					
10/8/2018		33.2					
10/9/2018	57.8		19.7	5.9	1.9 (J)	21.9	40.2
4/22/2019	83.6		17.8	12.6	10.9	28.4	40.8
4/23/2019		40.8					
10/14/2019	96.6		26	13.1	11.5	32.3	47.1
10/15/2019		30.5					
4/13/2020	93.7		29.9	22.5	14.3	30.9	51
4/14/2020		54.9					
10/12/2020	65.3		24.4	20.7		33.4	57.9
10/13/2020		35.3			6.7 (J)		

Exceeds Limit: B-11A, B-11B, B-31A

### Field pH Interwell Parametric



Background Data Summary: Mean=7.329, Std. Dev.=0.1692, n=15. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9265, critical = 0.835. Kappa = 2.228 (c=7, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Individual comparison alpha = 0.001254. Comparing 6 points to limit.

Prediction Limit Analysis Run 1/14/2021 1:45 PM

Nelson Dewey Generating Station Client: SCS Engineers Data: NED - Chempoint- export-Dec2020

# Prediction Limit

Constituent: Field pH (Std. Units) Analysis Run 1/14/2021 1:49 PM

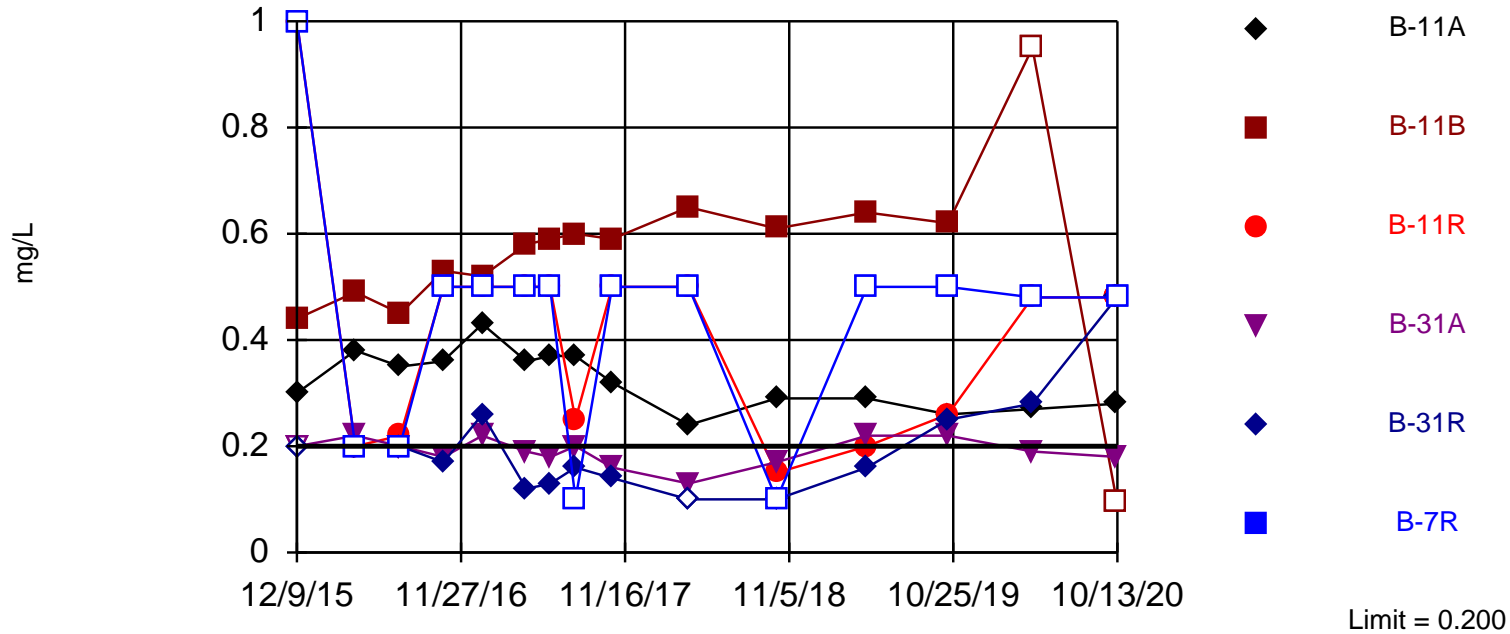
Nelson Dewey Generating Station Client: SCS Engineers Data: NED - Chempoint- export-Dec2020

	B-11A	B-26 (bg)	B-31R	B-11R	B-7R	B-11B	B-31A
12/9/2015	7.7	7.35	6.79	7.07	6.74	8.06	7.65
4/12/2016		7.43					
4/13/2016	7.75		6.76	6.78	6.8	8.14	7.63
7/18/2016					6.29		
7/19/2016	7.42	7.14	6.44	6.69		7.77	7.25
10/19/2016	7.47				6.55		
10/20/2016		7.19	6.53	6.77		7.91	7.54
1/12/2017	7.89	7.57	6.8	6.98	7.43	8.18	7.82
4/17/2017	7.38	7.54	6.8	7.11	6.6	7.83	7.83
6/7/2017		7.22		6.8	6.65		
6/8/2017	7.78		6.67			8.07	7.74
8/1/2017	7.67		6.56	6.7	6.28	7.77	7.56
8/2/2017		7.21					
10/19/2017	7.96	7.5	7.19	7.22	6.88	7.77	7.92
4/2/2018	8.04		6.76	7.14	6.57	8.42	8
4/3/2018		7.64					
10/8/2018		7.2					
10/9/2018	7.43		6.41	6.55	6.23	7.74	7.48
11/12/2018			6.59			8.05	
4/22/2019	7.62		6.62	6.82	6.63	7.91	7.61
4/23/2019		7.1					
10/14/2019	7.66		6.72	6.83	6.62	7.92	7.69
10/15/2019		7.24					
4/13/2020	7.75		6.79	6.8	6.6	7.89	7.71
4/14/2020		7.27					
10/12/2020	7.74		6.89	6.83		7.8	7.78
10/13/2020		7.34			6.35		

Within Limit

## Fluoride

### Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 15 background values. 86.67% NDs. Annual per-constituent alpha = 0.07653. Individual comparison alpha = 0.006613 (1 of 2). Comparing 6 points to limit.

Prediction Limit Analysis Run 1/14/2021 1:45 PM

Nelson Dewey Generating Station Client: SCS Engineers Data: NED - Chempoint- export-Dec2020

# Prediction Limit

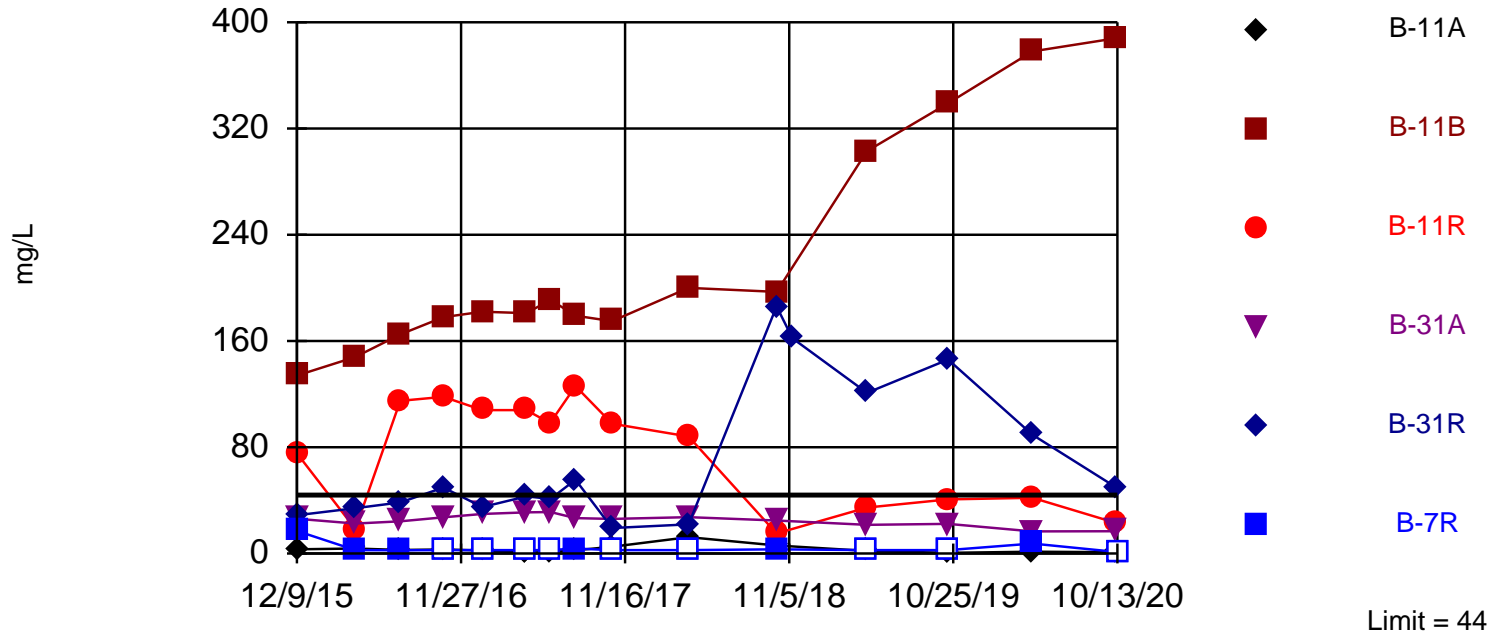
Constituent: Fluoride (mg/L) Analysis Run 1/14/2021 1:49 PM

Nelson Dewey Generating Station Client: SCS Engineers Data: NED - Chempoint- export-Dec2020

	B-11A	B-26 (bg)	B-31R	B-11R	B-7R	B-11B	B-31A
12/9/2015	0.3 (J)	<0.2 (U)	<0.2 (U)	<1 (U)	<1 (U)	0.44	<0.2 (U)
4/12/2016		<0.2 (U)					
4/13/2016	0.38 (J)		<0.2 (U)	<0.2 (U)	<0.2 (U)	0.49	0.22 (J)
7/18/2016					<0.2 (U)		
7/19/2016	0.35 (J)	<0.2 (U)	<0.2 (U)	0.22 (J)		0.45	<0.2 (U)
10/19/2016	0.36				<0.5 (U)		
10/20/2016		0.13 (J)	0.17 (J)	<0.5 (U)		0.53	0.18 (J)
1/12/2017	0.43	<0.1 (U)	0.26 (J)	<0.5 (U)	<0.5 (U)	0.52	0.22 (J)
4/17/2017	0.36	<0.1 (U)	0.12 (J)	<0.5 (U)	<0.5 (U)	0.58	0.19 (J)
6/7/2017		<0.1 (U)		<0.5 (U)	<0.5 (U)		
6/8/2017	0.37		0.13 (J)			0.59	0.18 (J)
8/1/2017	0.37		0.16 (J)	0.25 (J)	<0.1 (U)	0.6	0.2 (J)
8/2/2017		<0.1 (U)					
10/19/2017	0.32	<0.1 (U)	0.14 (J)	<0.5 (U)	<0.5 (U)	0.59	0.16 (J)
4/2/2018	0.24 (J)		<0.1 (U)	<0.5 (U)	<0.5 (U)	0.65	0.13 (J)
4/3/2018		<0.1 (U)					
10/8/2018		<0.1 (U)					
10/9/2018	0.29 (J)		<0.1 (U)	0.15 (J)	<0.1 (U)	0.61	0.17 (J)
4/22/2019	0.29 (J)		0.16 (J)	0.2 (J)	<0.5 (U)	0.64	0.22 (J)
4/23/2019		<0.1 (U)					
10/14/2019	0.26 (J)		0.25 (J)	0.26 (J)	<0.5 (U)	0.62	0.22 (J)
10/15/2019		<0.1 (U)					
4/13/2020	0.27 (J)		0.28 (J)	<0.48 (U)	<0.48 (U)	<0.95 (U)	0.19 (J)
4/14/2020		0.11 (J)					
10/12/2020	0.28 (J)		<0.48 (U)	<0.48 (U)		<0.095 (U)	0.18 (J)
10/13/2020		<0.095 (U)			<0.48 (U)		

Exceeds Limit: B-11B, B-31R

## Sulfate Interwell Parametric



Limit = 44

Background Data Summary: Mean=31.51, Std. Dev.=5.598, n=15. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9132, critical = 0.835. Kappa = 2.228 (c=7, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Individual comparison alpha = 0.001254. Comparing 6 points to limit.

Prediction Limit Analysis Run 1/14/2021 1:45 PM

Nelson Dewey Generating Station Client: SCS Engineers Data: NED - Chempoint- export-Dec2020

# Prediction Limit

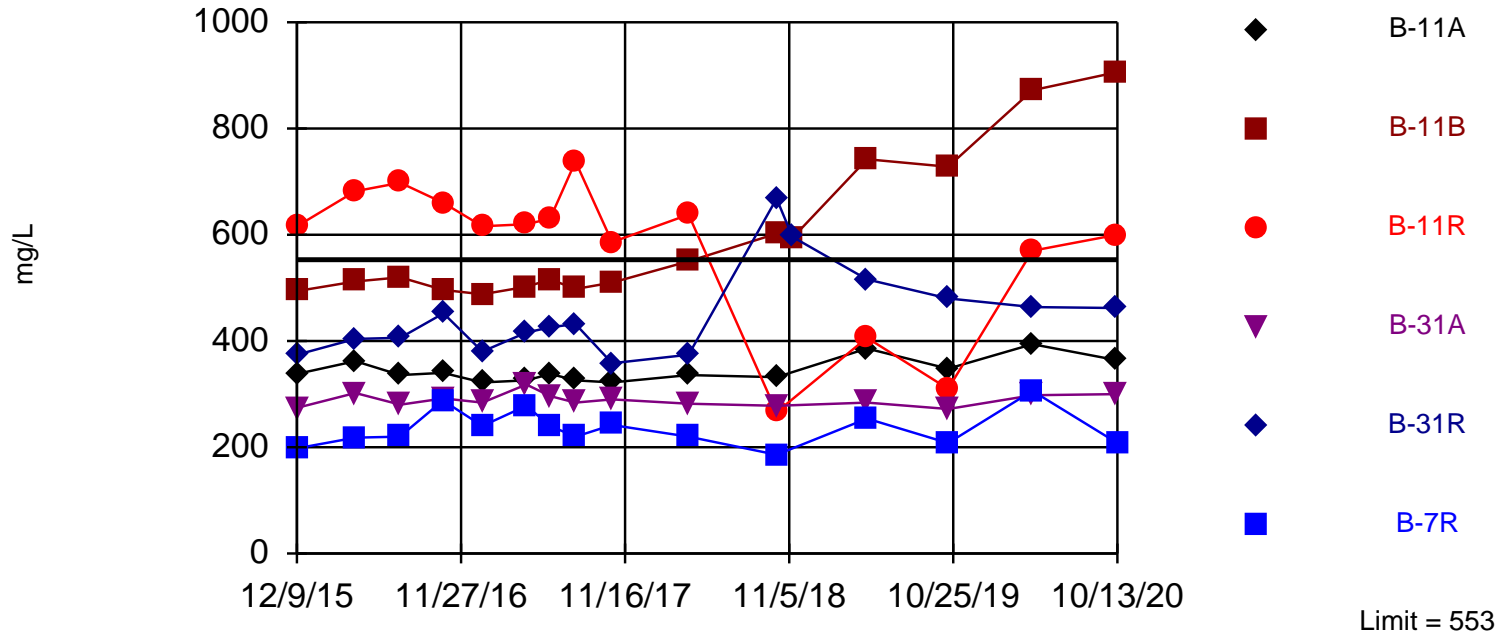
Constituent: Sulfate (mg/L) Analysis Run 1/14/2021 1:49 PM

Nelson Dewey Generating Station Client: SCS Engineers Data: NED - Chempoint- export-Dec2020

	B-11A	B-26 (bg)	B-31R	B-11R	B-7R	B-11B	B-31A
12/9/2015	3.2 (J)	37.1	28.8	75.4	17 (J)	134	26.2
4/12/2016		38					
4/13/2016	3.8 (J)		34.1	18.4	2.5 (J)	148	22.6
7/18/2016					2.4 (J)		
7/19/2016	2.7 (J)	36.2	38.5	115		165	24.2
10/19/2016	3 (J)				<5 (U)		
10/20/2016		35	49.7	118		178	27.2
1/12/2017	2.3 (J)	35	34.9	108	<5 (U)	182	29.8
4/17/2017	<1 (U)	32.4	43	108	<5 (U)	181	31
6/7/2017		31		98.2	<5 (U)		
6/8/2017	1.4 (J)		41.1			191	31.2
8/1/2017	2.4 (J)		55.6	126	3.7	179	26.6
8/2/2017		28.5					
10/19/2017	5.1	25.3	19.2	97.7	<5 (U)	175	26.1
4/2/2018	12.3		22	88.1	<5 (U)	200	27.4
4/3/2018		19.1					
10/8/2018		25.1					
10/9/2018	6		186	15.1	3.2	197	24.8
11/12/2018			162				
4/22/2019	1.9 (J)		121	34.6	<5 (U)	303	21.6
4/23/2019		26.7					
10/14/2019	<1 (U)		146	40.7	<5 (U)	339	22.3
10/15/2019		36					
4/13/2020	1.4 (J)		89.4	41.9	7.5 (J)	378	16.6
4/14/2020		30.2					
10/12/2020	1 (J)		49.4	22.8		388	16.8
10/13/2020		37			<2.2 (U)		

Exceeds Limit: B-11B, B-11R

## Total Dissolved Solids Interwell Parametric



Background Data Summary: Mean=468.5, Std. Dev.=37.77, n=15. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9236, critical = 0.835. Kappa = 2.228 (c=7, w=6, 1 of 2, event alpha = 0.05132). Report alpha = 0.007498. Individual comparison alpha = 0.001254. Comparing 6 points to limit.

Prediction Limit Analysis Run 1/14/2021 1:45 PM

Nelson Dewey Generating Station Client: SCS Engineers Data: NED - Chempoint- export-Dec2020




# Prediction Limit

Constituent: Total Dissolved Solids (mg/L) Analysis Run 1/14/2021 1:49 PM

Nelson Dewey Generating Station Client: SCS Engineers Data: NED - Chempoint- export-Dec2020

	B-11A	B-26 (bg)	B-31R	B-11R	B-7R	B-11B	B-31A
12/9/2015	338	424	374	616	198	494	274
4/12/2016		456					
4/13/2016	362		404	682	218	512	302
7/18/2016					220		
7/19/2016	336	504	406	698		520	280
10/19/2016	340				288		
10/20/2016		466	452	660		496	292
1/12/2017	322	446	380	616	240	488	284
4/17/2017	326	468	416	620	278	502	318
6/7/2017		538		630	240		
6/8/2017	338		426			516	296
8/1/2017	326		432	738	220	498	284
8/2/2017		496					
10/19/2017	322	542	358	586	242	510	290
4/2/2018	336		374	638	220	550	282
4/3/2018		464					
10/8/2018		450					
10/9/2018	332		668	266	186	602	278
11/12/2018			596			594	
4/22/2019	386		516	406	254	742	284
4/23/2019		458					
10/14/2019	348		480	310	208	728	272
10/15/2019		404					
4/13/2020	394		464	570	306	872	298
4/14/2020		464					
10/12/2020	364		462	600		906	300
10/13/2020		448			208		



Appendix F  
Alternative Source Demonstration

## F1 October 2019 Alternative Source Demonstration

# Alternative Source Demonstration October 2019 Detection Monitoring

Slag Pond  
Nelson Dewey Generating Station  
Cassville, Wisconsin

Prepared for:



**SCS ENGINEERS**

25220071.00 | April 14, 2020

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

## Table of Contents

Section	Page
<b>PE Certification</b> .....	<b>iii</b>
<b>1.0 Introduction</b> .....	<b>1</b>
1.1 §257.94(e)(2) Alternative Source Demonstration Requirements .....	1
1.2 Site Information and Map .....	1
1.3 Statistically Significant Increases Identified .....	2
1.4 Overview of Alternative Source Demonstration Approach .....	2
<b>2.0 Background</b> .....	<b>2</b>
2.1 Geologic and Hydrogeologic Setting.....	3
2.1.1 Regional Information.....	3
2.1.2 Site Information.....	3
2.2 CCR Rule Monitoring System .....	3
2.3 Other Monitoring Wells.....	3
<b>3.0 Methodology and Analysis Review</b> .....	<b>4</b>
3.1 Sampling and Field Analysis Review .....	4
3.2 Laboratory Analysis Review .....	4
3.3 Statistical Evaluation Review.....	5
3.4 Summary of Methodology and Analysis Review Findings .....	5
<b>4.0 Alternative Sources</b> .....	<b>5</b>
4.1 Potential Causes of SSI.....	5
4.1.1 Natural Variation .....	5
4.1.2 Man-Made Alternative Sources .....	5
4.2 Lines of Evidence .....	6
4.2.1 Grant County Fluoride Data .....	6
4.2.2 Previous CCR Pond and Landfill Study.....	7
4.2.3 Slag Pond Closure Sampling Results .....	7
4.2.4 State Program Groundwater Monitoring Results .....	8
4.2.5 Chloride Lines of Evidence.....	8
Chloride versus CCR Indicator Concentrations.....	8
Slag Pond Sediment versus Groundwater Concentrations.....	8
Historical Groundwater Monitoring .....	9
<b>5.0 Alternative Source Demonstration Conclusions</b> .....	<b>9</b>
<b>6.0 Site Groundwater Monitoring Recommendations</b> .....	<b>10</b>
<b>7.0 References</b> .....	<b>10</b>

### Tables

Table 1.	Groundwater Analytical Results Summary - CCR Program - Detection Monitoring
Table 2.	Analytical Results – Appendix III Constituents with SSIs
Table 3.	Groundwater Elevations – State and CCR Monitoring Wells
Table 4.	Analytical Results – State Monitoring Program

## Figures


- Figure 1. Site Location Map
- Figure 2. Aerial View
- Figure 3. Site Plan and Monitoring Well Locations
- Figure 4. Water Table Flow Map – October 2019

## Appendices

- Appendix A CCR Well Trend Plots
- Appendix B Grant County Fluoride Concentrations
- Appendix C 1994 RMT Environmental Contamination Assessment Information
- Appendix D 2016 Low-Hazard Waste Exemption Leaching Test Results – Slag and Ash

I:\25220071.00\Deliverables\2019 October ASD Report - NED\200414\_NED\_Oct ASD.docx

# PE CERTIFICATION

	<p>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.</p>
	<p><i>SC Clark</i> <span style="float: right;">4-13-2020</span></p> <p>(signature) <span style="float: right;">(date)</span></p>
	<p><i>Sherren Clark</i></p> <p>(printed or typed name)</p>
	<p>License number E-29863</p> <p>My license renewal date is July 31, 2020.</p>
	<p>Pages or sheets covered by this seal:          Alternative Source Demonstration, October 2019          Detection Monitoring – Slag Pond          Nelson Dewey Generating Station, Cassville</p>

[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 October 2019 detection monitoring event at the Nelson Dewey Generating Station (NED). The first ASD was prepared for this facility evaluating the SSIs observed in the statistical evaluation of the October 2017 detection monitoring event (SCS Engineers [SCS], 2018). The October 2017 ASD and subsequent semiannual updates have concluded that several lines of evidence demonstrate that SSIs reported for boron, fluoride, field pH, sulfate, and total dissolved solids (TDS) 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 October 2019 monitoring event were generally consistent with those for the previous event. An SSI for chloride was also identified at NED in October 2019. An SSI for chloride was first observed in the April 2019 sampling data evaluation and is further discussed later in this report.

### 1.2 SITE INFORMATION AND MAP

The NED site is located along the east bank of the Mississippi River, north of the Village 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 closure area 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, chloride, fluoride, field pH, sulfate, and TDS at one or more wells in the October 2019 monitoring event. A summary of the October 2019 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.

The SSIs for the October 2019 event were consistent with the April 2019 SSIs, and generally similar to SSIs reported for previous detection monitoring events.

### **1.4 OVERVIEW OF ALTERNATIVE SOURCE DEMONSTRATION 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 for the parameters with SSIs are provided in **Table 2**. The laboratory report for the October 2019 event was included in the 2019 Annual Groundwater Monitoring and Corrective Action report completed in January 2020. Complete laboratory reports for the background monitoring events and previous detection monitoring events were included in the previous annual groundwater monitoring and corrective action reports.

## **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, 2018).

## 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, 2018).

### 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, 2018). 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 October 2019 detection monitoring event was toward the Mississippi River with flow moving south to southwest (**Figure 4**). The groundwater elevations are provided in **Table 3**. At the times of the April and October 2019 detection monitoring events, the Mississippi River and certain areas of the site were flooded from continued rain events.

## 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 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, chloride, 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 reports for the October 2019 detection monitoring events were reviewed to evaluate whether 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 events were reviewed for the October 2017 ASD. Laboratory reports for subsequent detection monitoring events were reviewed as part of the ASD preparation for each event.

Based on the review of the laboratory reports, SCS did not identify any indication that any SSI was due to a laboratory analysis error. There were no laboratory quality control flags or issues identified in the laboratory reports 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 October 2019 results for the downgradient wells are generally consistent with the historical data. Chloride concentrations at B-11A appear to be increasing and are discussed in more detail in **Section 4.2.5**. The boron concentration at B-11B decreased with the October 2019 sampling results after increasing in the previous three sampling events.

The sulfate concentrations detected at B-31R in October and November 2018 and B-11B in April and October 2019 are the highest detected at this well in several years, but remain below the highest concentrations observed prior to the CCR landfill closure. The sulfate concentration in the sample

from B-31R in April 2019 was lower than the 2018 results. None of the trend plots appeared to indicate a sampling or laboratory error.

### **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
- Statistical method and process for each SSI

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, chloride, 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 October 2019 detection monitoring events 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 October 2019 detection monitoring results to the upper prediction limits (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, sulfate, chloride, and TDS SSIs. These parameters were detected at higher concentrations than would likely be present naturally.

Based on fluoride data for wells in Grant County, natural variation may also have caused or contributed to the SSI for fluoride at B-11B.

#### **4.1.2 Man-Made Alternative Sources**

Man-made alternative sources that could potentially contribute to the boron, chloride, fluoride, pH, sulfate, and TDS SSIs could include the closed CCR landfill, the coal storage area, or other plant operations. Based on 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. For the chloride SSI at B-11A, another man-made source, such as road salt, appears to be the most likely cause of the SSI.

## 4.2 LINES OF EVIDENCE

The 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, 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:

1. 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.
2. 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, chloride, fluoride, and sulfate.
3. Groundwater monitoring performed under the state monitoring program showed that groundwater quality improved in response to termination of fly ash sluicing and closure, and capping of the ash landfill, in the 1990s. Recent concentration increases at some wells in the state monitoring program appear to be attributable to the closed CCR landfill source and to changes in groundwater flow at the site in response to closure of the Slag Pond.

The lines of evidence indicating that the SSI for chloride is not due to the closed Slag Pond include:

1. The recent increase in chloride at B-11A does not correlate with increases in CCR-related parameters such as boron and sulfate.
2. Chloride results for the Slag Pond sediment and soil leach test samples were much lower than chloride levels in groundwater.
3. Historical groundwater monitoring results do not indicate that either the ash sluice pond or the Slag Pond were significant sources of chloride.

The data supporting these lines of evidence are discussed below. Most of these lines of evidence and the supporting data were discussed in detail in the ASD for the October 2017 detection monitoring event (SCS, 2018), with the exception of the chloride and TDS SSI concentrations. For lines of evidence included in previous ASDs, the discussion focuses 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 431 fluoride analysis results in the GRN database for water supply wells in Grant County, as of December 2019, 89 percent had fluoride detected. The average concentration of fluoride in Grant County well samples with fluoride detections was 0.38 milligrams per liter (mg/L). The fluoride concentration reported for B-11B for October 2019, 0.62 mg/L, is in the range of concentrations in the GRN database for Grant County.



The Grant County fluoride data are included in **Appendix B**. 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 ASD for boron, 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 C, Table 5**).
- Surface water samples from the then 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. The surface water pH measurement was also higher in the ash sluice pond. The 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 C, 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 C, 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, chloride, fluoride, and sulfate) are summarized in **Appendix D**.

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, chloride, 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 four parameters. The results were also below the concentrations of boron, chloride, 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, 2018). 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, fluoride, sulfate, and TDS concentrations are likely residual contamination from historic ash disposal in the CCR landfill area. Recent increases in concentrations at B-11B and other wells in the state monitoring program appear to be attributable to the closed CCR landfill and to changes in groundwater flow at the site, related to a decrease in the volume of water discharged to the Slag Pond and subsequent closure of the Slag Pond. A summary of state analytical groundwater results are provided in **Table 4**.

#### **4.2.5 Chloride Lines of Evidence**

As listed above, three primary lines of evidence indicate the chloride SSI at well B-11A is not due to the closed Slag Pond. Unlike the reported SSIs for some other parameters, the increased chloride concentrations are not clearly attributable to historic ash disposal in the closed CCR landfill area. Elevated chloride concentrations are likely related another man-made source, such as road salt. Although the specific source is unknown, the evidence detailed below indicates that the closed Slag Pond is not the source.

#### **Chloride versus CCR Indicator Concentrations**

The recent increase in chloride at B-11A does not correlate with increases in CCR-related parameters such as boron and sulfate. Although chloride exceeds the interwell UPL, other CCR indicator parameters such as boron and sulfate were not detected at concentrations exceeding background water levels in the sample from B-11A. The time series plots show the boron and sulfate concentrations at B-11A remained stable while the chloride concentration at B-11A has increased gradually since November 2017 and more sharply since October 2018 (**Appendix A**). The absence of other CCR indicator parameters with increasing trends suggests that the chloride SSI is due to some other source.

#### **Slag Pond Sediment versus Groundwater Concentrations**

Chloride results for Slag Pond sediment and soil leach test samples were much lower than chloride levels in groundwater. As discussed in **Section 4.2.3**, sediment and soil samples were previously collected in March 2017 to characterize the materials that would remain on site under the Closure Plan for Low Hazard Exemption Request to the WDNR (SCS, 2017). The water leach testing analytical results show that the chloride leach test concentrations are significantly lower than the groundwater



chloride concentrations observed at B-11A. The leach test results for chloride ranged from below the detection limit up to 4 mg/L, while the chloride concentrations in groundwater samples from B-11A ranged from approximately 40 mg/L to 96.6 mg/L (**Table 2**) during background and compliance sampling for the CCR monitoring program.

Chloride groundwater concentrations at background monitoring well B-26 also exceed the water leach test sediment results from the Slag Pond, ranging from 33.2 mg/L to approximately 80 mg/L. The low chloride concentrations observed from the Slag Pond sediment leach testing suggest the higher groundwater chloride concentrations observed at B-11A are due to another source and not the Slag Pond.

### **Historical Groundwater Monitoring**

Historical groundwater monitoring results do not indicate that either the ash sluice pond or the Slag Pond were significant sources of chloride. The previous investigation by RMT in 1994, referenced in **Section 4.2.2**, included an analysis of chloride with its evaluation of groundwater impacts associated with the fly ash disposal from the closed CCR landfill and Slag Pond area.

The historical results from the 1994 report that support the current ASD for chloride include:

- 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 lower concentrations of chloride observed, ranging from 23 mg/L to 26 mg/L from the June and September 1993 sampling events (**Appendix C, Table 8**). Monitoring wells downgradient from the active Slag Pond had even lower chloride concentrations.
- The background monitoring well, B-26, showed generally higher chloride concentrations, ranging from 21 mg/L to 43 mg/L, which may be associated with road salt use on Highway V (**Appendix C, Table 8**).
- The highest chloride concentrations were detected in samples from well B-35, which is located off site on the historic Stonefield Village property. Chloride concentrations at this well ranged from 80 mg/L to 110 mg/L in the 1993 sampling (**Appendix C, Table 8**).

Based on these results, the chloride concentrations observed at B-11A appear to be likely from another source and not from the former ash sluice pond, closed landfill, or Slag Pond. The historically higher chloride concentrations at B-26 and B-35 suggest the chloride concentrations observed at B-11A may be due to other man-made sources, such as road salt, septic systems, or agriculture.

## **5.0 ALTERNATIVE SOURCE DEMONSTRATION CONCLUSIONS**

The lines of evidence discussed above regarding the SSIs reported for boron, chloride, fluoride, field pH, sulfate, and TDS concentrations in downgradient monitoring wells demonstrate that the SSIs are likely primarily due to sources other than the closed Slag Pond. Most of the SSIs appear to be 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 2020 Annual Report due January 31, 2021.

## **7.0 REFERENCES**

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

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

SCS Engineers, 2018, 2017 Alternative Source Demonstration, October 2017 Monitoring Event, Nelson Dewey Generating Station, April 2018.

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.

## Tables

- 1 Groundwater Analytical Results Summary - CCR Program - Detection Monitoring
- 2 Analytical Results – Appendix III Constituents with SSIs
- 3 Groundwater Elevations – State and CCR Monitoring Wells
- 4 Analytical Results – State Monitoring Program

**Table 1. Groundwater Analytical Results Summary - CCR Program - Detection Monitoring  
Nelson Dewey Slag Pond, Cassville, WI / SCS Engineers Project #25220071.00**

Parameter Name	UPL		Background Well	Compliance Wells					
			B-26	B-7R	B-11A	B-11B	B-11R	B-31A	B-31R
			10/15/2019	10/14/2019	10/14/2019	10/14/2019	10/14/2019	10/14/2019	10/14/2019
<b>Appendix III</b>									
Boron, ug/L	66.5	<b>UPL only</b>	<3.0	139	80.7	4,630	1,440	98.5	915
Calcium, ug/L	155,155		<76.2	57,700	56,600	91,400	66,000	52,200	110,000
Chloride, mg/L	65.4		30.5	11.5	96.6	32.3	13.1	47.1	26
Fluoride, mg/L	LOQ (varies by well)		<0.10	<0.50 D3	0.26 J	0.62	0.26 J	0.22 J	0.25 J
Field pH, Std. Units	7.81		7.24	6.62	7.66	7.92	6.83	7.69	6.72
Sulfate, mg/L	44.8		36	<5.0 D3	<1.0	339	40.7	22.3	146
Total Dissolved Solids, mg/L	594		404	208	348	728	310	272	480

Blue highlighted cell indicates the compliance well result is an SSI. UPLs are based on a 1-of-2 retesting approach; therefore, an SSI is indicated only if both the original result and the retest (if performed) are above the UPL and the LOQ.

**Abbreviations:**

UPL = Upper Prediction Limit                      LOQ = Limit of Quantification  
 NA = Not Available                                      ug/L = micrograms per liter

**Notes:**

D3 = Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.  
 J = Estimated concentration at or above the LOD and below the LOQ.  
 M0 = Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.  
 P6 = Matrix spike recovery

Created by: <u>NDK</u>	Date: <u>5/1/2018</u>
Last revision by: <u>AJR</u>	Date: <u>11/19/2019</u>
Checked by: <u>JSN</u>	Date: <u>11/19/2019</u>
Proj Mgr QA/QC/Scientist: <u>NDK</u>	Date: <u>12/24/2019</u>

**Table 2. Analytical Results - Appendix III Constituents with SSIs  
Nelson Dewey Generating Station - Cassville, Wisconsin / SCS Engineers Project #25220071.00**

Well Group	Well	Collection Date	Boron (µg/L)	Chloride (mg/L)	Field pH (St. Units)	Fluoride (mg/L)	Sulfate (mg/L)	Total Dissolved Solids (mg/L)
Background	B-26	12/9/2015	29.6	45.5	7.35	<0.20 U	37.1	424
		4/12/2016	33.7	51.3	7.43	<0.20 U	38	456
		7/19/2016	28.6	55.6	7.14	<0.20 U	36.2	504
		10/20/2016	33	52.8	7.19	0.13 J	35	466
		1/12/2017	35.2	54.5	7.57	<0.10 U	35	446
		4/17/2017	50.1	56.0	7.54	<0.10 U	32.4	468
		6/7/2017	45.8	59.6	7.22	<0.10 U	31	538
		8/2/2017	54.6	52.6	7.21	<0.10 U	28.5	496
		10/19/2017	47.4	79.3	7.5	<0.10 U	25.3	542
		4/2/2018	48.0	54.4	7.64	<0.10 U	19.1	464
		10/8/2018	53.4	33.2	7.2	<0.10 U	25.1	450
		4/22/2019	41.6	40.8	7.1	<0.10 U	26.7	458
10/15/2019	<3.0 U	30.5	7.24	<0.10 U	36	404		
Compliance	B-11A	12/9/2015	124	40.4	7.7	0.30 J	3.2 J	338
		4/13/2016	116	43.0	7.75	0.38 J	3.8 J	362
		7/19/2016	104	46.6	7.42	0.35 J	2.7 J	336
		10/19/2016	112	46.5	7.47	0.36	3 J	340
		1/12/2017	106	46.6	7.89	0.43	2.3 J	322
		4/17/2017	100	45.4	7.38	0.36	<1 U	326
		6/8/2017	102	46.9	7.78	0.37	1.4 J	338
		8/1/2017	105	46.7	7.67	0.37	2.4 J	326
		10/19/2017	116	49.9	7.96	0.32	5.1	322
		4/2/2018	91	54.7 J, M0	8.04	0.24 J, M0	12.3 M0	336
		10/9/2018	94.2	57.8	7.43	0.29 J	6	332
		4/22/2019	93.9	83.6	7.62	0.29 J	1.9 J	386
	10/14/2019	80.7	96.6	7.66	0.26 J	<1.0 U	348	
	B-11B	12/9/2015	1140	31.2	8.06	0.44	134	494
		4/13/2016	1360	32.7	8.14	0.49	148	512
		7/19/2016	1210	33.6	7.77	0.45	165	520
		10/20/2016	1460	34.3	7.91	0.53	178	496
		1/12/2017	1540	36.1	8.18	0.52	182	488
		4/17/2017	1760	36.3	7.83	0.58	181	502
		6/8/2017	1880	33.9	8.07	0.59	191	516
		8/1/2017	1800	35.9	7.77	0.60	179	498
		10/19/2017	1500	36.1	7.77	0.59	175	510
		4/2/2018	2020	31.3	8.42	0.65	200	550
		10/9/2018	3620	21.9	7.74	0.61	197	602
11/12/2018		--	--	8.05	--	--	594	
4/22/2019	6,830	28.4	7.91	0.64	303	742		
10/14/2019	4,630	32.3	7.92	0.62	339	728		

**Table 2. Analytical Results - Appendix III Constituents with SSIs  
Nelson Dewey Generating Station - Cassville, Wisconsin / SCS Engineers Project #25220071.00**

Well Group	Well	Collection Date	Boron (µg/L)	Chloride (mg/L)	Field pH (St. Units)	Fluoride (mg/L)	Sulfate (mg/L)	Total Dissolved Solids (mg/L)
Compliance	B-11R	12/9/2015	4170	39.2	7.07	<10 U	75.4	616
		4/13/2016	3410	7.0	6.78	<0.20 U	18.4	682
		7/19/2016	3530	38.9	6.69	0.22 J	115	698
		10/20/2016	4120	39.1	6.77	<0.50 U	118	660
		1/12/2017	3530	42.3	6.98	<0.50 U	108	616
		4/17/2017	3520	40.2	7.11	<0.50 U	108	620
		6/7/2017	3420	42.0	6.8	<0.50 U	98.2	630
		8/1/2017	2040	24.7	6.7	0.25 J	126	738
		10/19/2017	3120	38.8	7.22	<0.50 U, D3	97.7	586
		4/2/2018	3180	36.8	7.14	<0.50 U, D3, M0	88.1	638
		10/9/2018	576	5.9	6.55	0.15 J	15.1	266
	4/22/2019	1,360	12.6	6.82	0.20 J	34.6	406	
	10/14/2019	1,440	13.1	6.83	0.26 J	40.7	310	
	B-31A	12/9/2015	59	35.3	7.65	<0.20 U	26.2	274
		4/13/2016	79.2	35.8	7.63	0.22 J	22.6	302
		7/19/2016	67.2	36.4	7.25	<0.20 U	24.2	280
		10/20/2016	63.7	39.0	7.54	0.18 J	27.2	292
		1/12/2017	76.4	39.9	7.82	0.22 J	29.8	284
		4/17/2017	69.9	40.3	7.83	0.19 J	31.0	318
		6/8/2017	58.5	40.9	7.74	0.18 J	31.2	296
		8/1/2017	56.3	40.8	7.56	0.20 J	26.6	284
		10/19/2017	63.9	40.8	7.92	0.16 J	26.1	290
		4/2/2018	74.8	42.7	8.0	0.13 J	27.4	282
		10/9/2018	71.8	40.2	7.48	0.17 J	24.8	278
	4/22/2019	86.2	40.8	7.61	0.22 J	21.6	284	
	10/14/2019	98.5	47.1	7.69	0.22 J	22.3	272	
	B-31R	12/9/2015	851	29.9	6.79	<0.20 U	28.8	374
		4/13/2016	838	17.6	6.76	<0.20 U	34.1	404
		7/19/2016	641	30.3	6.44	<0.20 U	38.5	406
		10/20/2016	1020	16.4	6.53	0.17 J	49.7	452
		1/12/2017	749	26.0	6.8	0.26 J	34.9	380
		4/17/2017	929	20.4	6.8	0.12 J	43.0	416
		6/8/2017	895	20.7	6.67	0.13 J	41.1	426
8/1/2017		1550	3.6	6.56	0.16 J	55.6	432	
10/19/2017		645	29	7.19	0.14 J	19.2	358	
4/2/2018		540	32.6	6.76	<0.10 U	22.0	374	
10/9/2018		1430	19.7	6.41	<0.10 U	186.0	668	
11/12/2018	--	--	6.59	--	162.0	596		
4/22/2019	906	17.8	6.62	0.16 J	121.0	516		
10/14/2019	915	26	6.72	0.25 J	146.0	480		

**Table 2. Analytical Results - Appendix III Constituents with SSIs  
Nelson Dewey Generating Station - Cassville, Wisconsin / SCS Engineers Project #25220071.00**

Well Group	Well	Collection Date	Boron (µg/L)	Chloride (mg/L)	Field pH (St. Units)	Fluoride (mg/L)	Sulfate (mg/L)	Total Dissolved Solids (mg/L)
Compliance	B-7R	12/9/2015	110	45.2	6.74	<1.0 U	17 J	198
		4/13/2016	115	4.6	6.8	<0.20 U	2.5 J	218
		7/18/2016	164	7.1	6.29	<0.20 U	2.4 J	220
		10/19/2016	154	22.0	6.55	<0.50 U	<5 U	288
		1/12/2017	159	19.7	7.43	<0.50 U	<5 U	240
		4/17/2017	129	13.1	6.6	<0.50 U	<5 U	278
		6/7/2017	110	12.8	6.65	<0.50 U	<5 U	240
		8/1/2017	129	8.1	6.28	<0.10 U	3.7	220
		10/19/2017	159	12	6.88	<0.50 U, D3	<5 U, D3	242
		4/2/2018	121	10.1	6.57	<0.50 U, D3	<5 U, D3	220
		10/9/2018	73	1.9 J	6.23	<0.10 U	3.2	186
		4/22/2019	93.5	10.9	6.63	<0.50 U, D3	<0.5 U, D3	254
10/14/2019	139.0	11.5	6.62	<0.50 U, D3	<0.5 U, D3	208		

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.

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

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

-- = Not applicable

Created by: NDK  
Last revision by: NDK  
Checked by: AJR

Date: 3/8/2018  
Date: 3/23/2020  
Date: 3/23/2020

I:\25220071.00\Data and Calculations\Tables\NED ASD Oct 2019 Tables\[Tables-NED-2,3, and 4.xlsx]2. Analytical Results

**Table 3. Groundwater Elevations - State and CCR Monitoring Wells  
Nelson Dewey Generating Station - Cassville, Wisconsin / SCS Engineers Project #25220071.00**

Raw Data	Depth to Water in feet below top of well casing																
	B-7R	B-8R	B-11R	B-11A	B-11B	B-21R	B-26	B-26A	B-28	B-30R	B-30AR	B-31R	B-31A	B-35	B-35A	B-37	B-37A
Measurement Date																	
October 5-6, 2011	18.41	22.84	18.05	17.76	17.57	16.60	21.88	21.85	12.20	17.44	17.19	14.05	18.27	15.91	16.39	10.48	10.46
April 2, 2013	16.31	21.12	16.47	14.92	14.72	14.73	20.80	20.76	10.91	15.90	16.47	15.29	15.56	14.65	14.95	7.86	7.83
October 16-17, 2013	18.84	23.24	18.45	18.22	18.02	16.92	22.09	22.08	12.45	17.73	18.34	17.55	18.69	16.32	16.76	10.80	10.81
April 10, 2014	15.93	20.16	15.17	14.84	14.63	NM	19.18	19.17	NM	NM	NM	15.05	15.41	13.32	13.81	7.60	7.59
October 14-15, 2014	17.68	22.31	17.45	17.22	16.98	6.11	21.40	21.39	11.68	16.89	17.48	16.06	17.15	15.42	15.87	9.91	9.86
April 16, 2015	16.09	20.63	15.51	14.97	14.84	NM	20.00	19.99	NM	NM	NM	15.05	15.60	14.05	14.42	7.86	7.97
October 1-2, 2015	18.21	22.85	18.09	17.70	17.51	16.67	21.97	21.90	12.27	17.47	18.08	17.29	18.31	16.02	16.45	10.55	10.46
December 8, 2015	16.66	NM	15.91	15.82	15.63	NM	19.60	NM	NM	NM	NM	15.02	16.3	NM	NM	NM	NM
April 12, 2016	14.03	18.15	13.30	13.41	13.21	NM	16.59	16.68	NM	NM	NM	13.08	13.68	11.05	11.55	6.06	6.06
July 18-19, 2016	16.81	NM	16.48	15.36	15.15	NM	20.31	NM	NM	NM	NM	15.87	15.96	NM	NM	NM	NM
October 19-20, 2016	14.76	19.05	14.27	13.91	13.7	12.66	17.56	17.64	8.18	13.36	13.94	13.91	14.49	12	12.46	6.65	6.67
January 11-12, 2017	15.33		14.66	14.29	14.11		17.84					14.52	14.85				
April 17, 2017	14.27	18.69	14.28	13.07	12.9	NM	17.81	17.86	6.87	13.24	13.76	15.22	13.71	11.78	12.18	5.83	5.83
June 8, 2017	12.61	NM	12.2	12.31	11.81	NM	15.15	NM	NM	NM	NM	12.79	12.19	NM	NM	NM	NM
August 1-2, 2017	16.33	NM	15.89	16.55	16.39	NM	19.01	NM	NM	NM	NM	15.58	17.00	NM	NM	NM	NM
October 9-10, 2017	16.42	21.00	16.37	15.11	14.95	NM	20.18	20.27	10.48	15.37	15.95	15.74	15.76	14.13	14.49	NM	NM
October 20, 2017	13.75	NM	13.2	12.54	12.24	NM	17.56	NM	NM	NM	NM	12.95	13.26	NM	NM	5.45	5.45
November 17, 2017	NM	NM	NM	NM	NM	14.68	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
December 19, 2017	NM	NM	NM	NM	NM	16.22	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
February 7, 2018	17.98	NM	17.29	17.16	16.97	NM	NM	NM	11.39	NM	NM	17.11	17.68	NM	NM	NM	NM

Ground Water Elevation in feet above mean sea level (amsl)																	
Well Number	B-7R	B-8R	B-11R	B-11A	B-11B	B-21R	B-26	B-26A	B-28	B-30R	B-30AR	B-31R	B-31A	B-35	B-35A	B-37	B-37A
Top of Casing Elevation (feet amsl)	623.35	627.51	622.62	622.12	621.89	621.03	626.40	626.40	616.81	621.81	622.4	622.42	622.69	620.78	621.2	614.85	614.85
Screen Length (ft)	10	10	10	5	5	10	10	5	10	10	5	10	5	10	5	10	5
Total Depth (ft from top of casing)	23.05	27.25	24.15	52.00	113.90	20.50	31.67	45.78	16.70	22.20	46.90	22.82	35.52	16.60	47.00	19.95	48.20
Top of Well Screen Elevation (ft)	610.30	610.26	608.47	575.12	512.99	610.53	604.73	585.62	610.11	609.61	580.50	609.60	592.17	614.18	579.20	604.90	571.65
Measurement Date																	
December 8, 2015	606.69	NM	606.71	606.30	606.26	NM	606.80	NM	NM	NM	NM	607.40	606.39	NM	NM	NM	NM
April 12, 2016	609.32	609.36	609.32	608.71	608.68	NM	609.81	609.72	NM	NM	NM	609.34	609.01	609.73	609.65	608.79	608.79
July 18-19, 2016	606.54	NM	606.14	606.76	606.74	NM	606.09	NM	NM	NM	NM	606.55	606.73	NM	NM	NM	NM
October 19-20, 2016	608.59	608.46	608.35	608.21	608.19	608.37	608.84	608.76	608.63	608.45	608.46	608.51	608.20	608.78	608.74	608.20	608.18
January 11-12, 2017	608.02	NM	607.96	607.83	607.78	NM	608.56	NM	NM	NM	NM	607.90	607.84	NM	NM	NM	NM
April 17, 2017	609.08	608.82	608.34	609.05	608.99	NM	608.59	608.54	609.94	608.57	608.64	607.20	608.98	609.00	609.02	609.02	609.02
June 8, 2017	610.74	NM	610.42	609.81	610.08	NM	611.25	NM	NM	NM	NM	609.63	610.50	NM	NM	NM	NM
August 1-2, 2017	607.02	NM	606.73	605.57	605.50	NM	607.39	NM	NM	NM	NM	606.84	605.69	NM	NM	NM	NM
October 9-10, 2017	606.93	606.51	606.25	607.01	606.94	NM	606.22	606.13	606.33	606.44	606.45	606.68	606.93	606.65	606.71	NM	NM
October 20, 2017	609.60	NM	609.42	609.58	609.65	NM	608.84	NM	NM	NM	NM	609.47	609.43	NM	NM	609.40	609.40
April 2-3, 2018	604.82	606.61	606.27	606.63	606.55	606.52	606.49	606.37	NM	NM	NM	604.44	606.46	606.68	606.70	606.77	606.83
October 8-10, 2018	610.76	610.68	610.67	610.28	610.24	NM	610.34	610.28	610.83	610.09	610.05	610.39	610.27	610.72	610.54	NM	NM
November 12, 2018	NM	NM	NM	NM	609.14	NM	NM	NM	NM	NM	NM	609.11	NM	NM	NM	NM	NM
February 7, 2018	605.37	NM	605.33	604.96	604.92	NM	NM	NM	605.42	NM	NM	605.31	605.01	NM	NM	NM	NM
April 22-23, 2019	615.28	615.66	615.28	615.29	615.28	614.98	615.49	615.31	615.40	615.36	615.35	615.01	615.33	615.87	615.98	NM	NM
October 14-16, 2019	613.43	613.11	613.06	613.29	613.18	612.47	613.10	613.10	612.71	612.83	612.78	612.50	613.20	613.10	613.15	NM	NM
Bottom of Well Elevation (ft)	600.30	600.26	598.47	570.12	507.99	600.53	594.73	580.62	600.11	599.61	575.50	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: 3/23/2020  
Checked by: AJR      Date: 3/23/2020



**Table 4. Analytical Results - State Monitoring Program**  
**Nelson Dewey Generating Station - Cassville, Wisconsin / SCS Engineers Project #25220071.00**

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
	2018-Apr	115	<0.50 D3	<5.0 D3	6.57
	2018-Oct	89.8	<0.10	3.4	6.23
	2019-Apr	95.7	<0.50 D3	<5.0 D3	6.63
	2019-Oct	140	<0.50 D3, M0	<5.0 D3	6.62
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
	2018-Apr	1,700	0.14 J	28.7	7.02
	2018-Oct	1,500	0.25 J	30.6	6.18
	2019-Apr	1,560	0.24 J	39.8	6.65
	2019-Oct	1,110	0.49	23.6	6.85
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
	2018-Apr	89.4	0.30 J	12.7	8.04
	2018-Oct	142	0.16 J	5.3	7.43
	2019-Apr	94	0.29 J	1.9 J	7.62
	2019-Oct	82.3	0.27 J	<1.0	7.66
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
	2018-Apr	2,020	0.68	195	8.42
	2018-Oct	3,910	0.41	195	7.74
	2019-Apr	6,670	0.6	289	7.91
	2019-Oct	4,860	0.64	335	7.92
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
	2018-Apr	2,790	<0.50 D3	78.6	7.14
	2018-Oct	635	0.14 J	15.6	6.55
	2019-Apr	1,310	0.19 J	34.5	6.82
	2019-Oct	1,500	0.28 J	39.2	6.83
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
	2018-Apr	46.8	<0.10	19.2	7.64
	2018-Oct	55.2	<0.10	24.9	7.20
	2019-Apr	41.8	<0.10	26.4	7.10
	2019-Oct	50.8	0.11 J	37.0	7.24
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
	2018-Apr	27.6	<0.10	37	7.47
	2018-Oct	18.4	<0.10	33.3	7.38
	2019-Apr	27.6	0.11 J	27	7.35
	2019-Oct	47	0.14 J	35.6	7.31

**Table 4. Analytical Results - State Monitoring Program**  
**Nelson Dewey Generating Station - Cassville, Wisconsin / SCS Engineers Project #25220071.00**

WELL ID	SAMPLE MONTH	BORON, DISSOLVED (UG/L)	FLUORIDE, DISSOLVED (MG/L F)	SULFATE, DISSOLVED (MG/L SO4)	PH, FIELD (STANDARD UNITS)
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	7.60
	2018-Apr	69.3	0.17 J	28.1	8.00
	2018-Oct	103	0.14 J	26.2	7.48
	2019-Apr	86	0.22 J	21.6	7.61
	2019-Oct	112	0.23 J	22.5	7.69
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
	2018-Apr	520	0.11 J	23.3	6.76
	2018-Oct	1,530	<1.0 D3	179	6.41
	2019-Apr	892	0.17 J, D3	114	6.62
	2019-Oct	1,000	0.26 J	145	6.72
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
	2018-Apr	28.9	<0.10 M0	4.8 M0	7.01
	2018-Oct	40	0.13 J	3.6	6.58
	2019-Apr	33.6	<0.10	4.9	7.26
	2019-Oct	41.0	0.12 J	5.6	7.07
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
	2018-Apr	28.9	<0.10 M0	23.1	7.45
	2018-Oct	59.8	<0.50 D3	6.0 J, D3	6.95
	2019-Apr	30.3	0.12 J	16.7	7.3
	2019-Oct	33.7	0.13 J	18.9	7.3
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
	2018-Apr	164	<0.10	49	8.1
	2018-Oct	--	--	--	--
	2019-Apr	--	--	--	--
	2019-Oct	--	--	--	--
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
	2018-Apr	204	<0.10	43.9	8.39
	2018-Oct	--	--	--	--
	2019-Apr	--	--	--	--
	2019-Oct	--	--	--	--

Note:

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

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

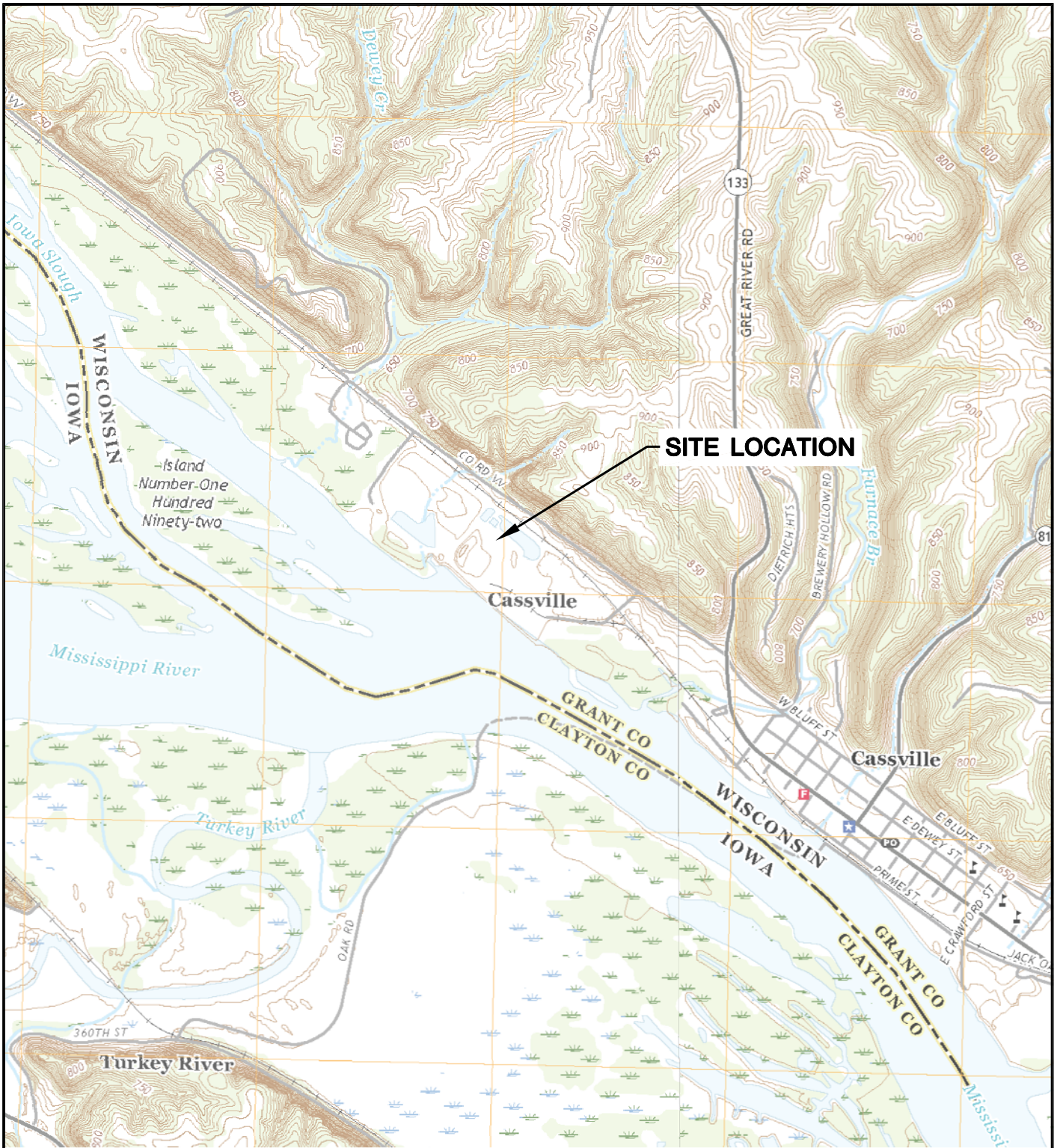
M0: Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

Created by: JSN	Date: 12/29/2017
Last revision by: NDK	Date: 3/23/2020
Checked by: AJR	Date: 3/23/2020

I:\25220071.00\Data and Calculations\Tables\NED ASD Oct 2019 Tables\[Tables-NED-2,3, and 4.xlsx]4. State Analytical

## Figures

- 1 Site Location Map
- 2 Aerial View
- 3 Site Plan and Monitoring Well Locations
- 4 Water Table Flow Map – October 2019

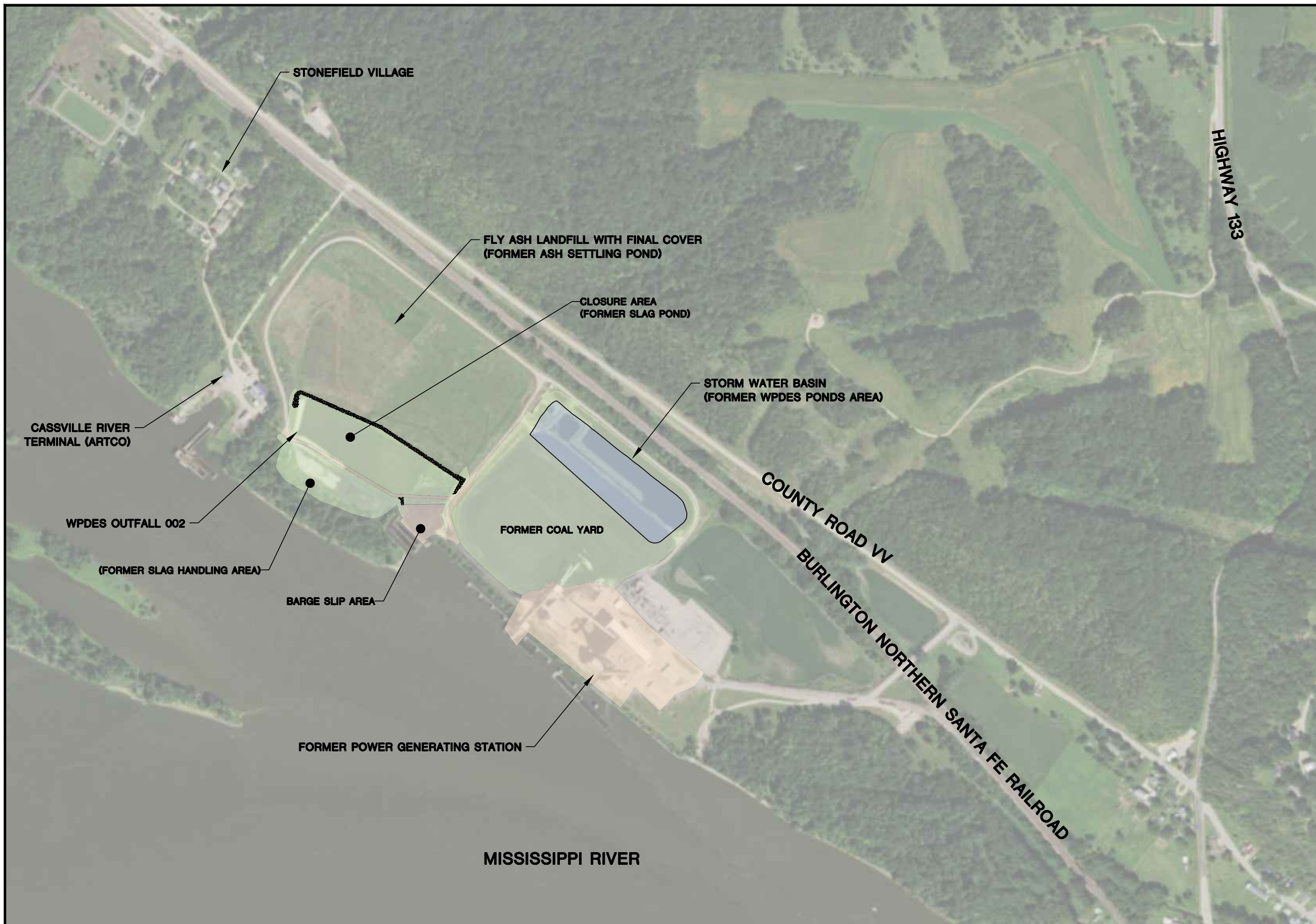


CASSVILLE AND TURKEY RIVER QUADRANGLES  
 WISCONSIN-IOWA  
 7.5 MINUTE SERIES (TOPOGRAPHIC)  
 2018  
 SCALE: 1" = 2,000'



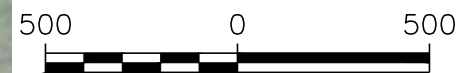
CLIENT	ALLIANT ENERGY 4902 N. BILTMORE LANE, #1000 MADISON, WI 53718		SITE	ALLIANT ENERGY NELSON DEWEY GENERATING STATION CASSVILLE, WISCONSIN		ENGINEER	SITE LOCATION MAP	
	PROJECT NO.	25220071.00		DRAWN BY:	BSS		SCS ENGINEERS 2830 DAIRY DRIVE MADISON, WI 53718-6751 PHONE: (608) 224-2830	FIGURE
DRAWN:	11/27/2019	CHECKED BY:	MDB	APPROVED BY:	TK 04/10/2020			
REVISED:	01/14/2020							





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.

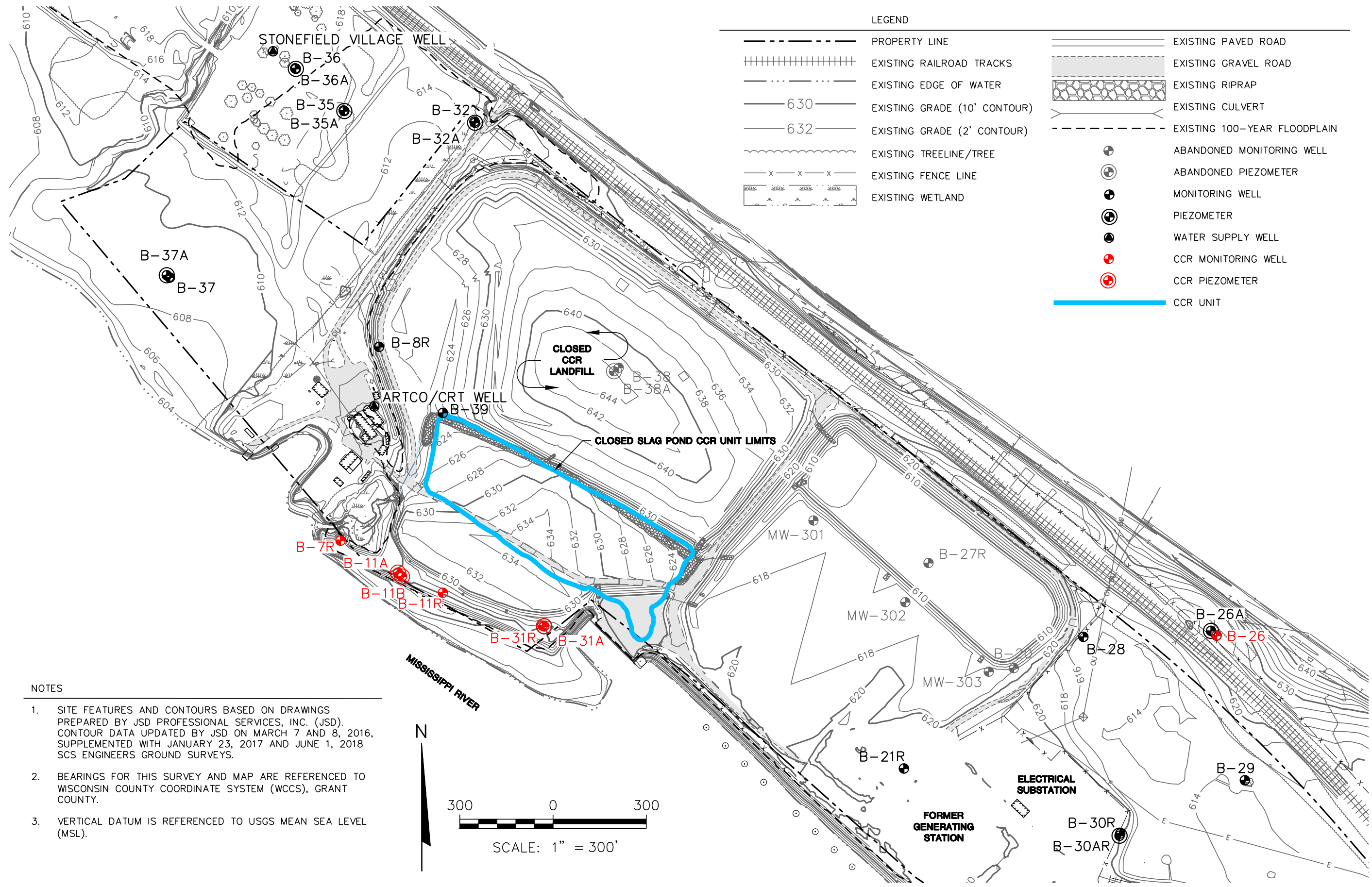


SCALE: 1" = 500'

PROJECT NO.	25220071.00	DRAWN BY:	BJM	<p>2830 DAIRY DRIVE MADISON, WI 53718-6751 PHONE: (608) 224-2830</p>	<p>CLIENT WISCONSIN POWER AND LIGHT CO. NELSON DEWEY GENERATING STATION 11999 COUNTY HIGHWAY VV CASSVILLE WI, 53806</p>	<p>SITE WISCONSIN POWER AND LIGHT NELSON DEWEY GENERATING STATION CASSVILLE WISCONSIN</p>	<p>AERIAL VIEW</p>	FIGURE
DRAWN:	12/18/13	CHECKED BY:	KAK					2
REVISED:	01/22/20	APPROVED BY:	TK 04/10/2020					

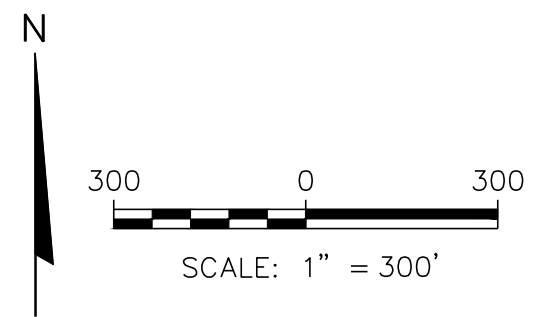


I:\2520071\_00\Drawings\ASD\Site Plan and Monitoring Well Locations.dwg, 4/12/2020 7:22:25 PM



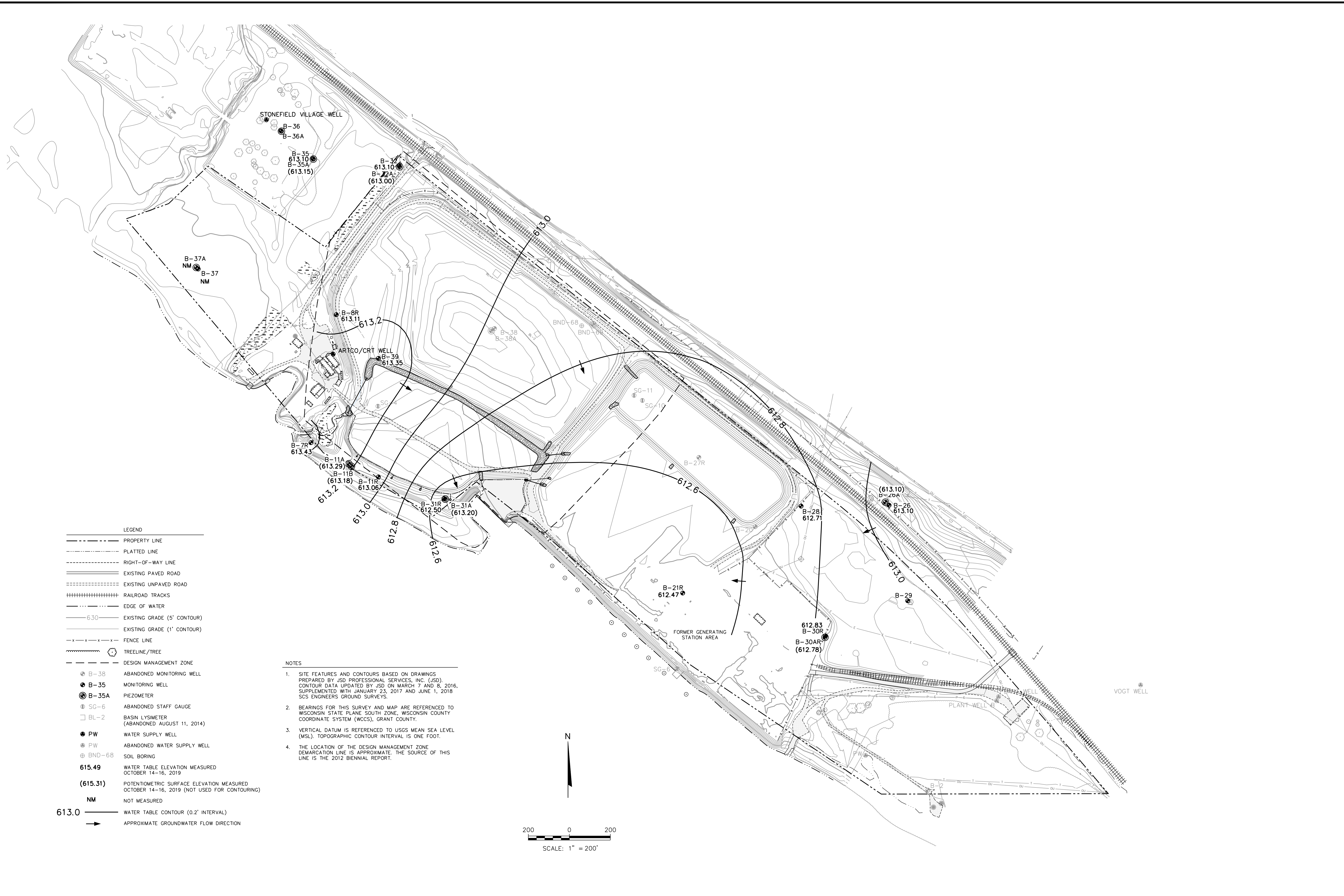
LEGEND	
	PROPERTY LINE
	EXISTING RAILROAD TRACKS
	EXISTING EDGE OF WATER
	EXISTING GRADE (10' CONTOUR)
	EXISTING GRADE (2' CONTOUR)
	EXISTING TREELINE/TREE
	EXISTING FENCE LINE
	EXISTING WETLAND
	EXISTING PAVED ROAD
	EXISTING GRAVEL ROAD
	EXISTING RIPRAP
	EXISTING CULVERT
	EXISTING 100-YEAR FLOODPLAIN
	ABANDONED MONITORING WELL
	ABANDONED PIEZOMETER
	MONITORING WELL
	PIEZOMETER
	WATER SUPPLY WELL
	CCR MONITORING WELL
	CCR PIEZOMETER
	CCR UNIT

- 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).



CLIENT	ALLIANT ENERGY 4902 N. BILTMORE LANE, #1000 MADISON, WI 53718		SITE	ALLIANT ENERGY NELSON DEWEY GENERATING STATION CASSVILLE, WISCONSIN		ENGINEER	SCS ENGINEERS 2830 DAIRY DRIVE, MADISON, WI 53718-6751 PHONE: (608) 224-2830		FIGURE	3
	PROJECT NO.	25220071-00		DRAWN BY:	BSS		CHECKED BY:	MDB		APPROVED BY:

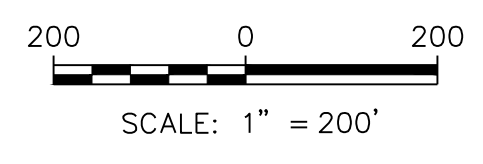




**LEGEND**

---	PROPERTY LINE
---	PLATTED LINE
---	RIGHT-OF-WAY LINE
---	EXISTING PAVED ROAD
---	EXISTING UNPAVED ROAD
	RAILROAD TRACKS
---	EDGE OF WATER
---	EXISTING GRADE (5' CONTOUR)
---	EXISTING GRADE (1' CONTOUR)
-x-x-x-	FENCE LINE
○	TREELINE/TREE
---	DESIGN MANAGEMENT ZONE
⊕	ABANDONED MONITORING WELL
⊙	MONITORING WELL
⊕	PIEZOMETER
⊕	ABANDONED STAFF GAUGE
□	BASIN LYSIMETER (ABANDONED AUGUST 11, 2014)
⊙	WATER SUPPLY WELL
⊕	ABANDONED WATER SUPPLY WELL
⊕	SOIL BORING
615.49	WATER TABLE ELEVATION MEASURED OCTOBER 14-16, 2019
(615.31)	POTENTIOMETRIC SURFACE ELEVATION MEASURED OCTOBER 14-16, 2019 (NOT USED FOR CONTOURING)
NM	NOT MEASURED
613.0	WATER TABLE CONTOUR (0.2' INTERVAL)
→	APPROXIMATE GROUNDWATER FLOW DIRECTION

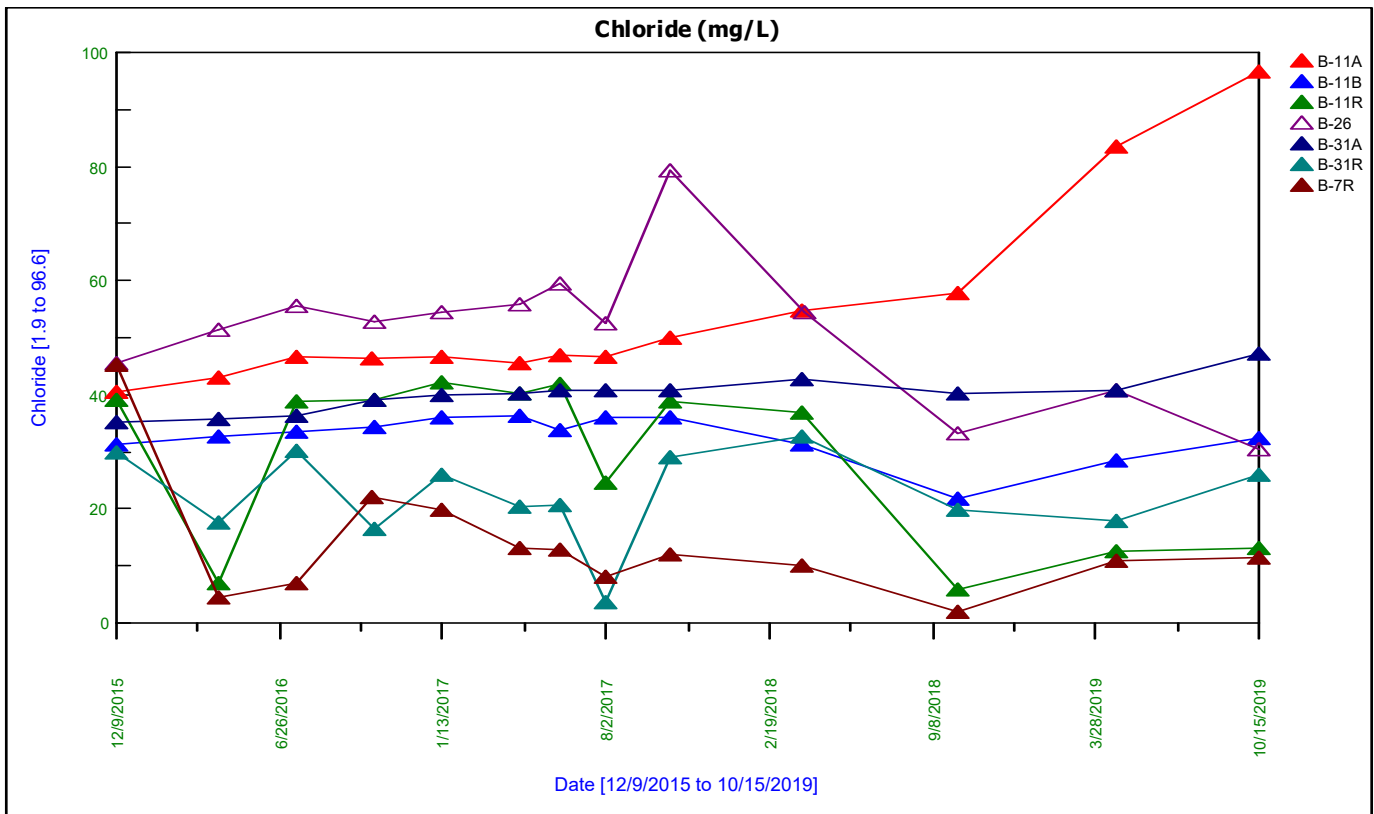
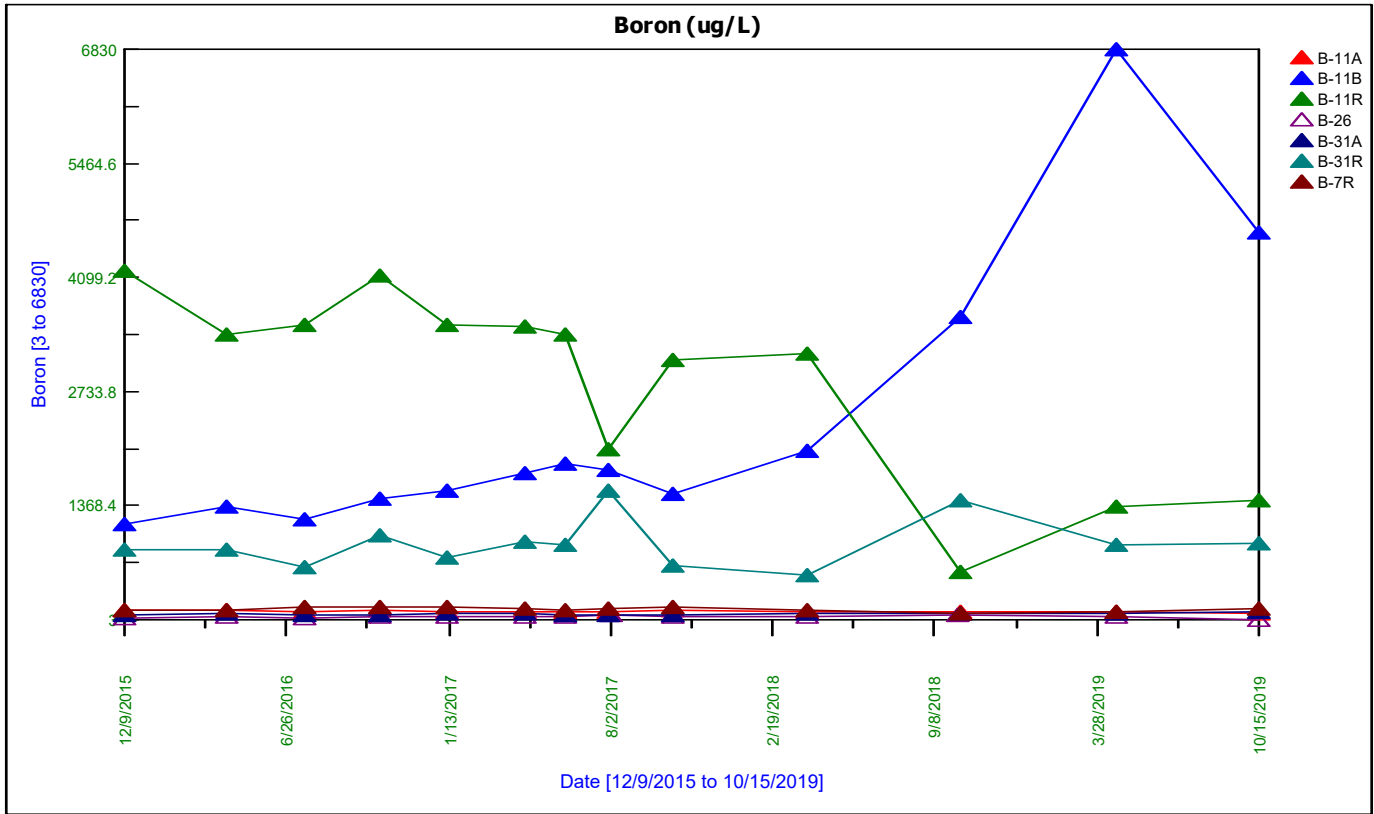
- NOTES**
1. SITE FEATURES AND CONTOURS BASED ON DRAWINGS PREPARED BY JSD PROFESSIONAL SERVICES, INC. (JSD). CONTOUR DATA UPDATED BY JSD ON MARCH 7 AND 8, 2016, SUPPLEMENTED WITH JANUARY 23, 2017 AND JUNE 1, 2018 SCS ENGINEERS GROUND SURVEYS.
  2. BEARINGS FOR THIS SURVEY AND MAP ARE REFERENCED TO WISCONSIN 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.

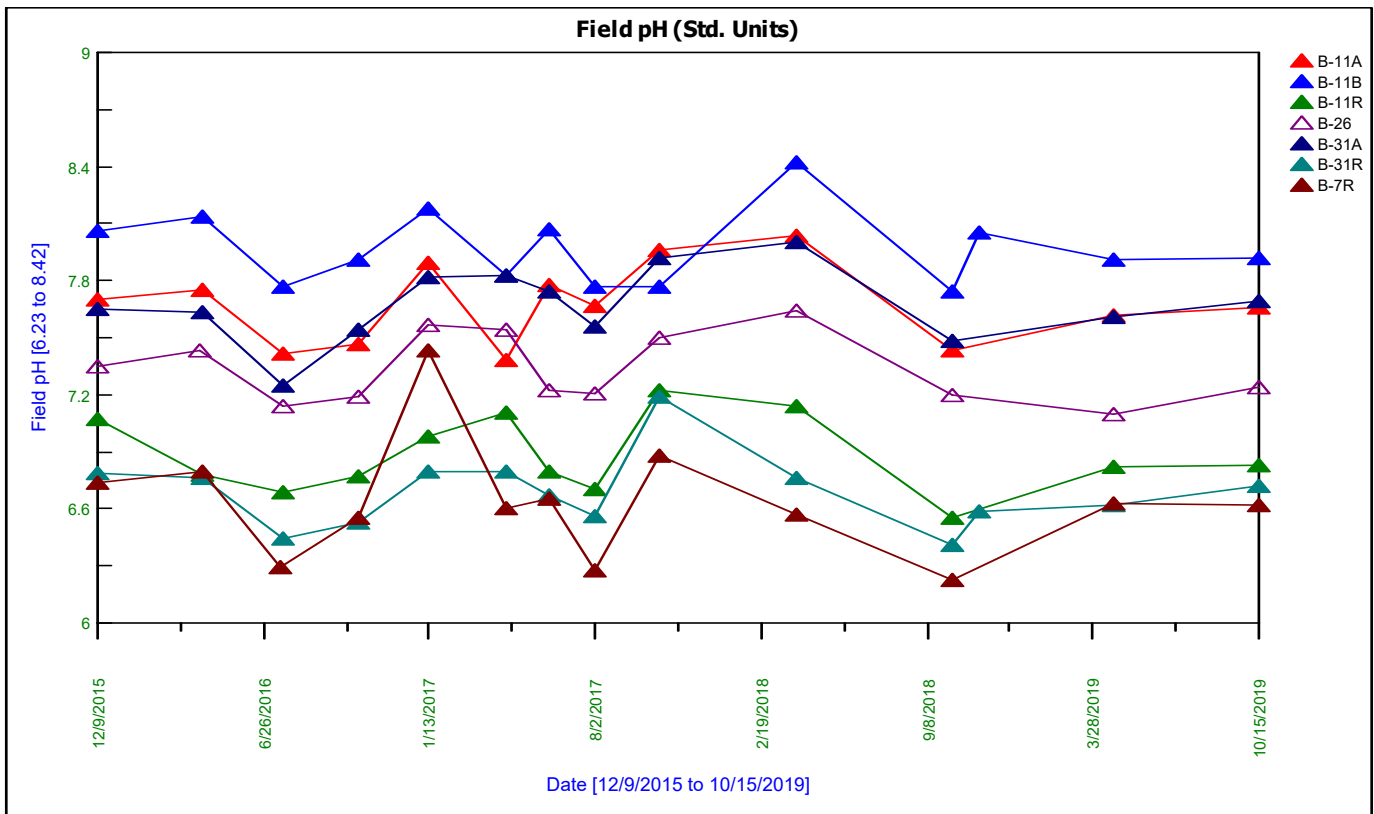
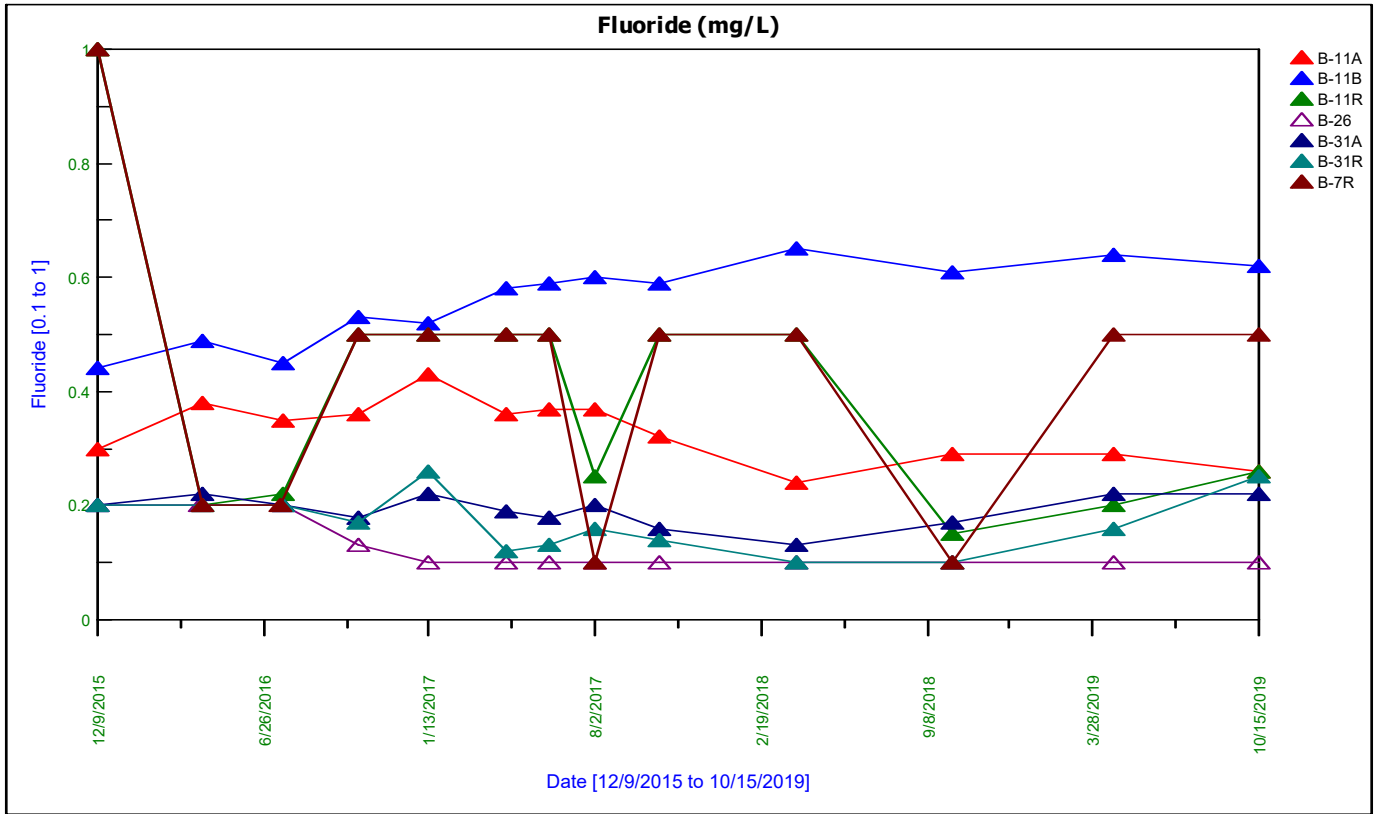


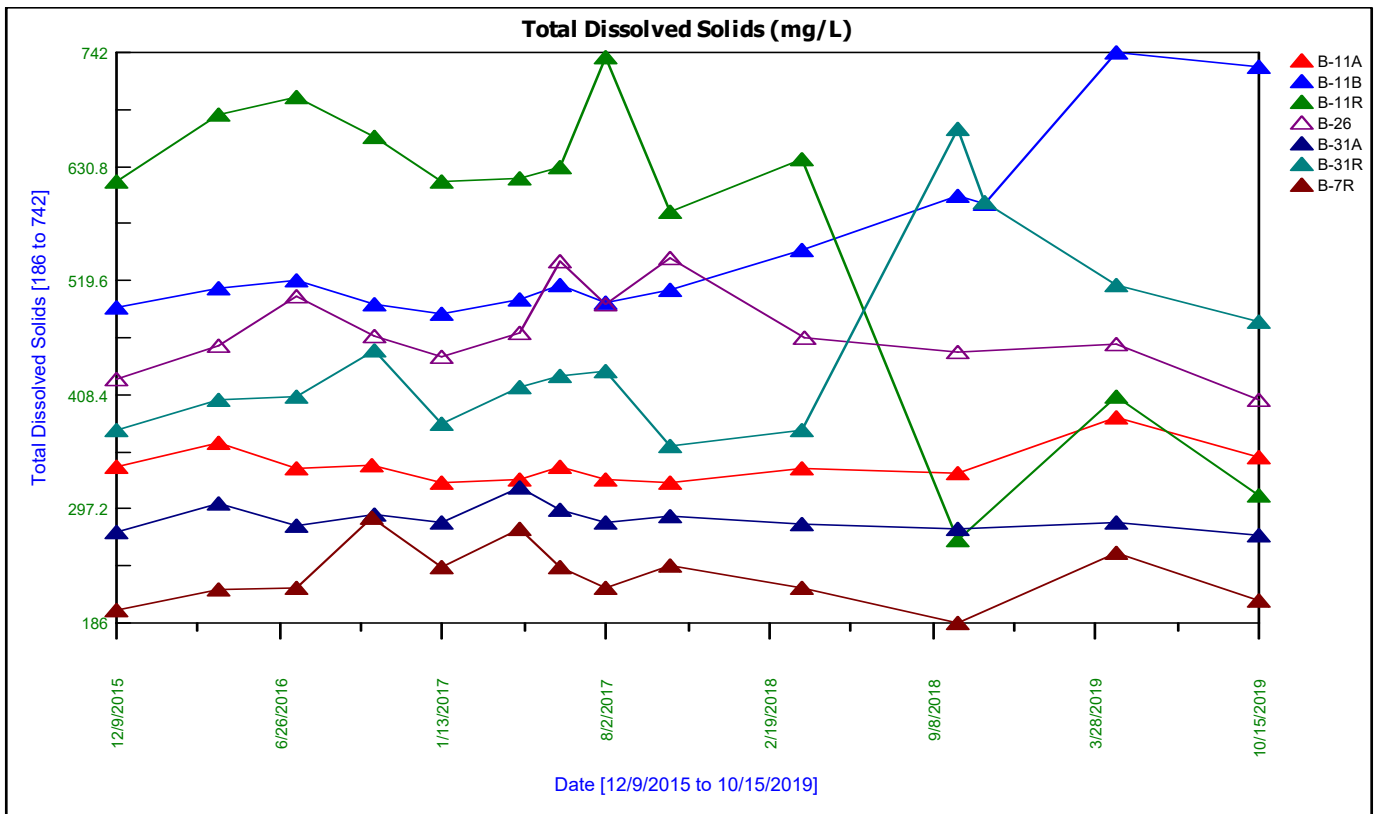
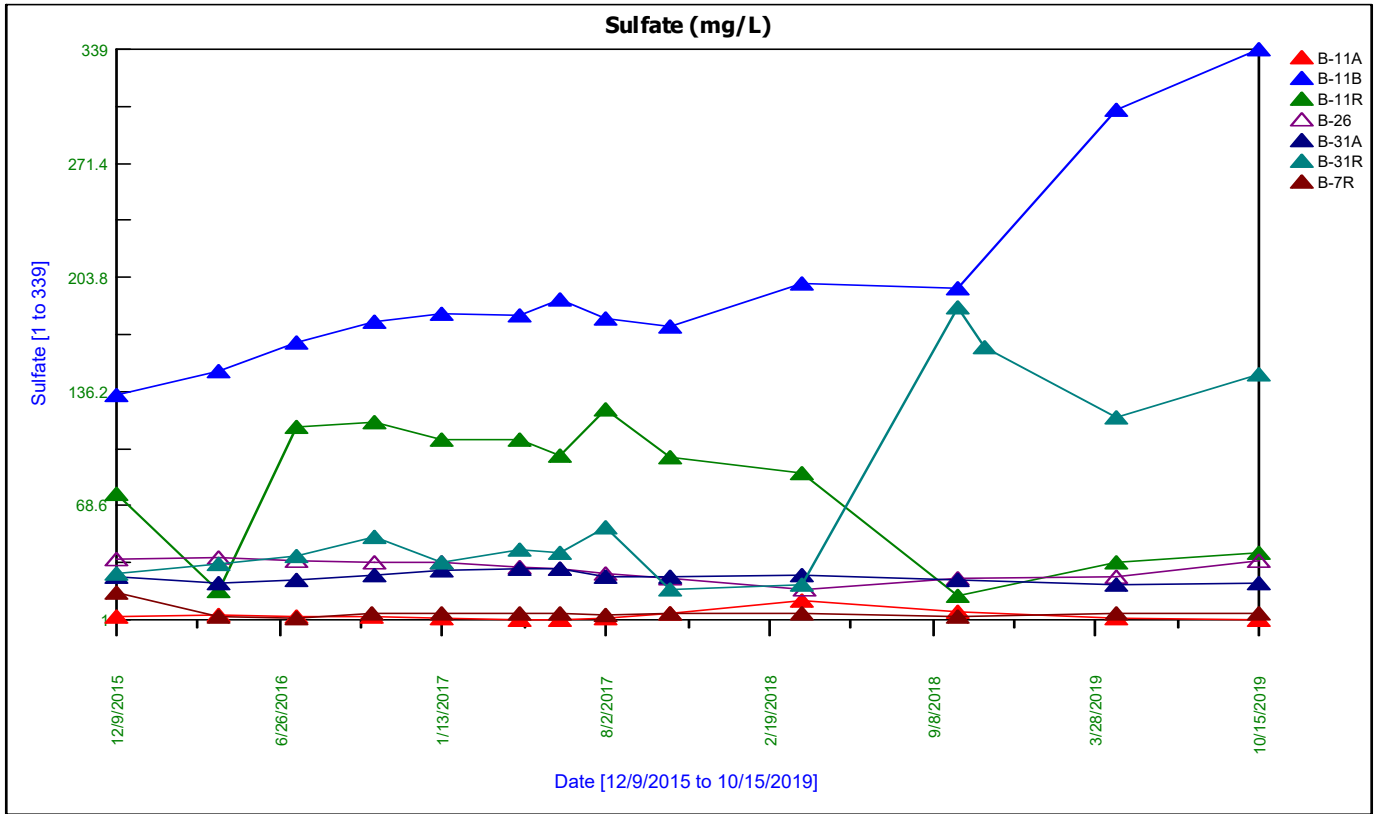



Appendix A  
CCR Well Trend Plots











Appendix B  
Grant County Fluoride Concentrations

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

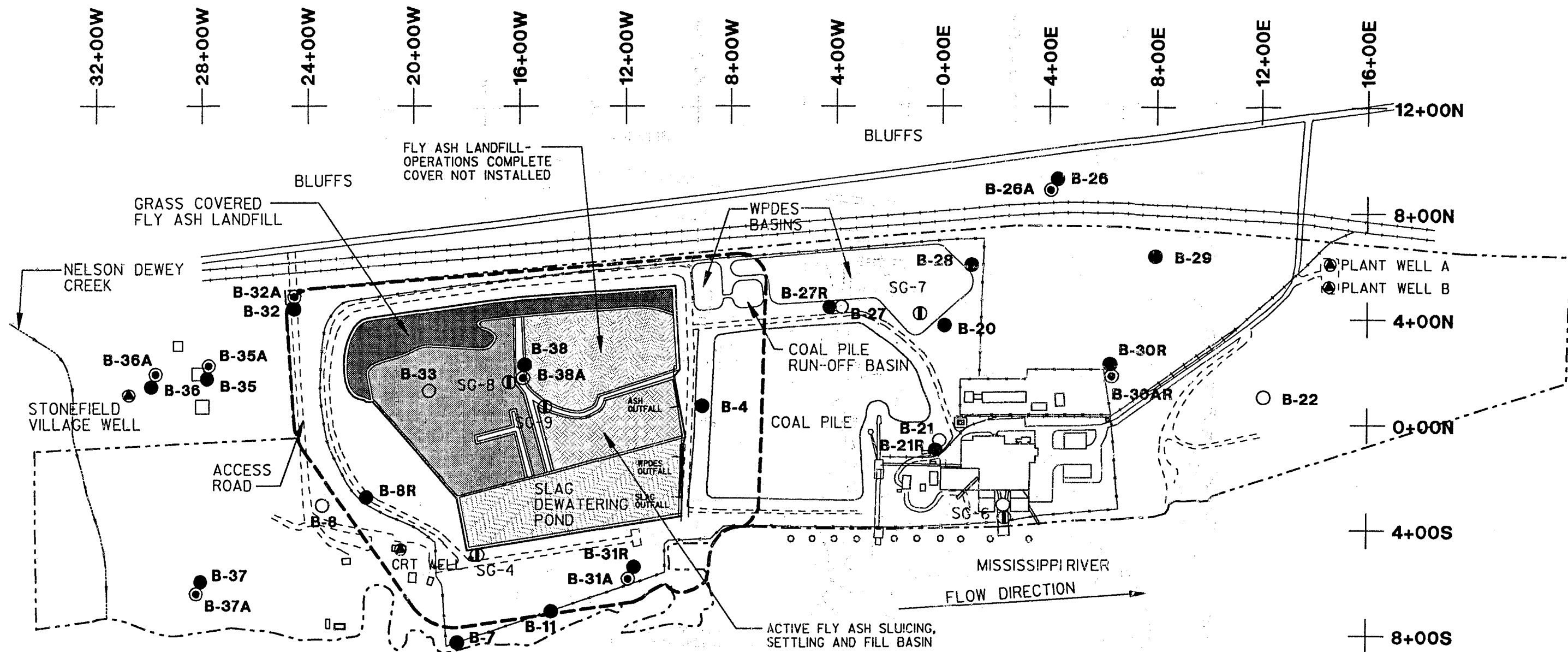
<b>Row Labels</b>	<b>Count of Result amount</b>
<b>FLUORIDE TOTAL</b>	<b>431</b>
DETECT BETWEEN LOD & LOQ	101
NON-DETECT	46
NORMAL QUANTIFIED RESULT	284
<b>(blank)</b>	
(blank)	
<b>Grand Total</b>	<b>431</b>

<b>Percent With Fluoride Detected</b>	<b>89%</b>
---------------------------------------	------------

Data downloaded by NDK on 3/24/2020 (Data collected through 12/31/2019)

## Appendix C

### 1994 RMT Environmental Contamination Assessment Information

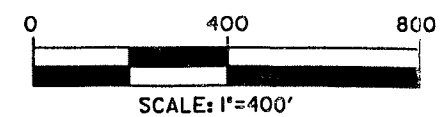
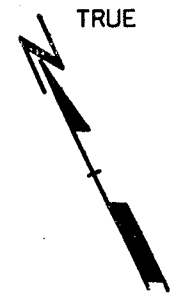


**LEGEND**

● 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
+ 8+00E	LOCAL GRID
□	BUILDINGS
○	PILINGS

**NOTES**

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



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



Drawn By	COH
Approved By	ELM
Date	OCTOBER 1994
Proj. No.	2767.03
File No.	276703OLDGN

OCT 31 1994

FIGURE 4

TABLE 5

## SUMMARY OF LEACHING TEST RESULTS

Year	Fly Ash		Slag
	1983	1990 to 1992	1987 to 1992
Coal Type	Eastern (and Western)	Western (and Eastern)	Western (and Eastern) <sup>1</sup>
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	SLAG BASIN
		07-SEP-93 3302-011	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 CaCO <sub>3</sub>	MG/L	230	160
HARDNESS AS CaCO <sub>3</sub>	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

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

TABLE 8  
 GROUNDWATER CHEMISTRY

PARAMETER	UNITS	B-04	B-04	B-07 ND	B-07 ND	B-08	B-08R
		01-JUN-93 1670-015	07-SEP-93 3293-010	01-JUN-93 1670-020	07-SEP-93 3302-004	01-JUN-93 1670-001	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	< 1.0	< 1.0	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	B-11	B-20	B-26	B-26	B-26A
		07-SEP-93 X0001	29-OCT-93 3485-001	07-SEP-93 X0002	01-JUN-93 1670-022	07-SEP-93 3302-005	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	< 1.0	< 1.0
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	B-27R	B-28	B-28	B-29	B-30AR
		07-SEP-93 3302-006	07-SEP-93 X0003	01-JUN-93 1670-014	07-SEP-93 3302-003	07-SEP-93 X0004	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
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	B-30R	B-30R	B-31A	B-31A	B-31R
		07-SEP-93 3302-002	01-JUN-93 1670-012	07-SEP-93 3302-001	01-JUN-93 1670-019	07-SEP-93 3293-011	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	1.3	3.2	< 1.0	< 1.0	1.2
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	B-32	B-32	B-32A	B-32A	B-35
		07-SEP-93 3293-012	01-JUN-93 1670-002	07-SEP-93 3293-016	01-JUN-93 1670-003	07-SEP-93 3293-017	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	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
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	B-35A	B-35A	B-36	B-36	B-36A
		07-SEP-93 3293-002	01-JUN-93 1670-005	07-SEP-93 3293-003	01-JUN-93 1670-007	07-SEP-93 3293-004	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 CaCO <sub>3</sub>	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 CaCO <sub>3</sub>	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	< 1.0	< 1.0	1.0	2.6	< 1.0
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	B-37	B-37A	B-38	B-38	B-38A
		07-SEP-93 3293-005	07-SEP-93 3302-007	07-SEP-93 3302-008	01-JUN-93 1670-016	07-SEP-93 3293-006	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 D

### 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)	Chloride (mg/L)
<b>WPDES POND</b>									
SED-1	8/3/2016	0-1.3	Fly Ash	--	240	6,100	<1.0	4.4	4.3
SED-2	8/3/2016	0-1.0	Fly Ash	--	200	5,900	<1.0	11.5	4.3
QC-3 (SED-2)	8/3/2016	0-1	Fly Ash	--	240	5,900 J	<1.0	6.1	3.5 J
SED-3	7/20/2016	0-4.5	Slag	--	130	2,200	<1.0	5	2.7 J
	7/20/2016	4.5-5.5	SP	--	<50	<500	<0.20	<2.0	2.5 J
SED-4	7/19/2016	0-4.8	ML	--	510	4,100	<10.0	11.9 J	10.5 J
	7/19/2016	4.8-5.5		--	74 J	NA	NA	NA	NA
GP-19	8/4/2016	8-12	SM	--	62 J	<500	<1.0	2 J	2.4 J
<b>SLAG POND</b>									
SED-5	7/20/2016	0-1.6	ML-OL	--	54 J	18,200	<1.0	33.3	3.2 J
SED-6	7/20/2016	0-1.0	ML	--	60 J	17,500	0.36 J	59.1	3.7 J
SED-7	8/4/2016	0-3.0	Fly Ash	--	88 J	11,300	<1.0	10.5	4
SED-8	8/4/2016	1.0-1.5	Fly Ash	--	82 J	11,400	<1.0	12.1	3.7 J
<b>COAL YARD</b>									
TP-CY-1	7/19/2016	0-0.5	Coal	--	140	<500	<2.0	<20.0	<20.0
	7/19/2016	3.0-3.5	SM	--	100 J	<500	<1.0	<2.0	2.8 J
TP-CY-3	7/20/2016	1.9-2.1	GM	--	<50	7,600	<0.20	2.8 J	3.9 J
	7/20/2016	4.8-5.5	SM	--	NA	NA	NA	NA	NA
TP-CY-4	7/19/2016	0-2.8	Coal	--	190	<500	<2.0	<20.0	<20.0
	7/19/2016	2.8-3.2	GP & SM	--	<50	4,500	<1.0	<10.0	<10.0
	7/19/2016	3.6-4.8	Slag	--	<50	<500	<2.0	<20.0	<20.0
	7/19/2016	4.8-5.0		--	NA	NA	NA	NA	NA
TP-CY-6	7/19/2016	0-0.5	Coal	--	190	<500	<2.0	<20.0	<20.0
	7/19/2016	0.7-1.0	SP	--	<50	2,600	<0.20	2.3 J	2.5 J
TP-CY-10	7/19/2016	0-0.5	Coal	--	120	<25	<1.0	11.6	2.4 J
	7/19/2016	1.0-2.0	SM	--	<50	2,000	<1.0	2.3 J	2.2 J
	7/19/2016	6.5-7.0	SP	--	NA	NA	NA	NA	NA
TP-CY-12	7/20/2016	0-0.3	Coal	--	160	<500	<2.0	<20.0	<20.0
	7/20/2016	0.3-2.0	SP	--	<50	2,600	<0.20	2.2 J	2.2 J
	7/20/2016	2.0-2.7	SP	--	<50	700 J	<0.20	27.5	2.3 J
QC-1 (TP-CY-12)	7/20/2016	0.3-2.0	SP	--	<50	11,000	<0.20	2.5 J	2.6 J
<b>SLAG HANDLING AREA</b>									
GP-5	8/3/2016	12.5-15	Fly Ash	--	100	3,000	<1.0	3.0 J	<2.0
	8/3/2016	18-24	ML & SM	--	99 J	2,300	<1.0	<2.0	3.3 J
GP-7	8/3/2016	7.5-18	Slag	--	<50	720 J	<1.0	<2.0	2.2 J
QC-2 (GP-7)	8/3/2016	7.5-18	Slag	--	<50	710 J	<1.0	<2.0	2.2 J
GP-14	8/4/2016	12.5-15	Fly Ash	--	120	25,200	<1.0	13.4	<2.0

**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)	Chloride (mg/L)
<b>SLAG SAMPLES<sup>1</sup></b>									
Slag 01 <sup>2</sup>	6/3/2013	--	Slag	--	NA	NA	NA	NA	NA
Slag 01	12/23/2013	--	Slag	--	12.5 A B	1,240	NA	0.218	0.277 B
NED Slag Composite 2014	7/1/2014	--	Slag	--	11.7 AB <sup>^A</sup>	879 A	NA	0.457 B	< 0.142
Slag Sample	4/14/2015	--	Slag	--	< 1020 A	1,140 A	NA	0.427	0.751
<b>FLY ASH SAMPLES<sup>1</sup></b>									
NED Flyash Composite <sup>2</sup>	2/14/2014	--	Fly Ash	--	NA	NA	NA	6,530 B	NA
Week of 062815 <sup>2</sup>	7/3/2015	--	Fly Ash	--	NA	NA	NA	6,260	NA
Week of 010916	1/4/2016	--	Fly Ash	--	NA	NA	NA	NA	NA
NR 140 Preventive Action Limits (PALs)					200	NE	0.8	125	125
NR 140 Enforcement Standards (ESs)					1,000	NE	4	250	250
40 CFR Part 141.62 Maximum Contaminant Levels (MCL)					NE	NE	4	NE	NE
NR 538 Table 1A Standards					190	NE	0.8	125	125
NR 538 Table 2A Standards					1,900	NE	8	1,250	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:

- Slag and Fly Ash samples were collected by the plant as part of permit requirements.
  - 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:\25220071.00\Deliverables\2019 October ASD Report - NED\Appendix D 2017 leachate results slag and ash\[Table 4. Sediment\_Soil\_Water Leach Results\_SSIParameters.xlsx]Leach Test - SSI Parameters

## F2 April 2020 Alternative Source Demonstration

# Alternative Source Demonstration April 2020 Detection Monitoring

Slag Pond  
Nelson Dewey Generating Station  
Cassville, Wisconsin

Prepared for:



**SCS ENGINEERS**

25220071.00 | October 12, 2020

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

## Table of Contents

Section	Page
<b>PE Certification</b> .....	<b>iii</b>
<b>1.0 Introduction</b> .....	<b>1</b>
1.1 §257.94(e)(2) Alternative Source Demonstration Requirements .....	1
1.2 Site Information and Map .....	1
1.3 Statistically Significant Increases Identified .....	2
1.4 Overview of Alternative Source Demonstration Approach .....	2
<b>2.0 Background</b> .....	<b>3</b>
2.1 Geologic and Hydrogeologic Setting.....	3
2.1.1 Regional Information.....	3
2.1.2 Site Information.....	3
2.2 Coal Combustion Residuals Rule Monitoring System .....	4
2.3 Other Monitoring Wells.....	4
<b>3.0 Methodology and Analysis Review</b> .....	<b>4</b>
3.1 Sampling and Field Analysis Review .....	4
3.2 Laboratory Analysis Review .....	4
3.3 Statistical Evaluation Review.....	5
3.4 Summary of Methodology and Analysis Review Findings .....	5
<b>4.0 Alternative Sources</b> .....	<b>5</b>
4.1 Potential Causes of Statistically Significant Increases .....	5
4.1.1 Natural Variation .....	5
4.1.2 Man-Made Alternative Sources .....	5
4.2 Lines of Evidence .....	6
4.2.1 Previous CCR Pond and Landfill Study.....	6
4.2.2 Slag Pond Closure Sampling Results .....	7
4.2.3 State Program Groundwater Monitoring Results .....	8
4.2.4 Chloride Lines of Evidence.....	8
Chloride versus CCR Indicator Concentrations.....	8
Slag Pond Sediment vs Groundwater Concentrations.....	8
Historical Groundwater Monitoring .....	9
<b>5.0 Alternative Source Demonstration Conclusions</b> .....	<b>9</b>
<b>6.0 Site Groundwater Monitoring Recommendations</b> .....	<b>9</b>
<b>7.0 References</b> .....	<b>9</b>

## Tables

Table 1.	Groundwater Analytical Results Summary – April 2020 Event
Table 2.	Historical Analytical Results for Parameters with SSIs
Table 3.	Groundwater Elevations – State and CCR Monitoring Wells
Table 4.	Analytical Results – State Monitoring Program

## Figures

- Figure 1. Site Location Map
- Figure 2. Aerial View
- Figure 3. Monitoring Well Location Map
- Figure 4. Water Table Flow Map – April 2020


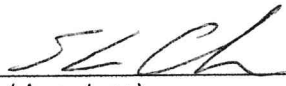
## Appendices

- Appendix A CCR Well Trend Plots
- Appendix B 1994 RMT Environmental Contamination Assessment Information
- Appendix C 2016 Low-Hazard Waste Exemption Leaching Test Results – Slag and Ash

\\Mad-fs01\data\Projects\25220071.00\Deliverables\2020 April ASD NED\201012\_NED\_April20 ASD\_Final.docx



## PE CERTIFICATION

	<p>I, Sherren Clark, hereby certify that that the information in this alternative 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.</p>
	<p style="text-align: center;">  <span style="float: right;">10-9-2020</span> </p> <p>(signature) <span style="float: right;">(date)</span></p>
	<p style="text-align: center; font-size: 1.2em;">Sherren Clark</p> <p>(printed or typed name)</p>
	<p>License number <u>E-29863</u></p>
	<p>My license renewal date is January 31, 2021.</p>
	<p>Pages or sheets covered by this seal:</p> <p>Alternative Source Demonstration, April 2020</p>
<p>Detection Monitoring – Slag Pond Nelson Dewey Generating Station, Cassville (Entire Document)</p>	

[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 2020 detection monitoring event at the Nelson Dewey Generating Station (NED). The first ASD was prepared for this facility evaluating the SSIs observed in the statistical evaluation of the October 2017 detection monitoring event (SCS Engineers [SCS], 2018). The October 2017 ASD and subsequent semiannual updates have concluded that several lines of evidence demonstrate that SSIs reported for boron, chloride, field pH, sulfate, and total dissolved solids (TDS) concentrations in the downgradient monitoring wells were likely due to man-made sources other than the slag pond CCR unit and/or naturally occurring constituents in the alluvial aquifer.

### 1.2 SITE INFORMATION AND MAP

The NED site is located along the east bank of the Mississippi River, north of the Village 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 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 surface impoundment – closed January 2018)

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 closure area 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. Closure of the slag pond was completed in January 2018.

### 1.3 STATISTICALLY SIGNIFICANT INCREASES IDENTIFIED

The statistical evaluation was completed in accordance with 40 CFR 257.93(f)(3) using a prediction interval procedure, in which an interval for each constituent is established from the distribution of the background data, and the level of each constituent in each compliance well is compared to the upper prediction limit (UPL). The initial evaluation was based on an interwell comparison. The UPLs were calculated based on a 1-of-2 resampling approach. The UPLs and the analytical results for the April 2020 monitoring event are summarized in the attached **Table 1**.

The initial evaluation indicated that the April 2020 monitoring event results represent a statistically significant increase (SSI) over background for the following parameters and wells:

- Boron: B-7R, B-11A, B-11B, B-11R, B-31A, B-31R
- Chloride: B-11A
- pH: B-11B
- Sulfate: B-11B, B-31R
- Total Dissolved Solids (TDS): B-11B

The SSIs are consistent with SSIs identified in previous detection monitoring results. Although the UPLs were calculated based on a 1-of-2 resampling approach, optional retesting for the April 2020 event was not conducted, and the determination of SSIs is based solely on the April results.

### 1.4 OVERVIEW OF ALTERNATIVE SOURCE DEMONSTRATION 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**)

Historical monitoring results from background and compliance sampling for the CCR Rule constituents with SSIs are provided in **Table 2**. The laboratory report for the April 2020 event will be included in the 2020 Annual Groundwater Monitoring and Corrective Action report due in January 2021. Complete laboratory reports for the background monitoring events and previous detection monitoring events were included in the previous annual groundwater monitoring and corrective action reports.

## 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, 2018).

## 2.1 GEOLOGIC AND HYDROGEOLOGIC SETTING

### 2.1.1 Regional Information

The uppermost geologic formation beneath the NED site 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, 2018).

### 2.1.2 Site Information

The thickness of the alluvium in the immediate vicinity of the site is over 125 feet, as evidenced by local water supply well logs (SCS, 2018). 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 directions during the April 2020 detection monitoring event were variable across the site. At the time of the April 2020 detection monitoring event, the Mississippi River and certain areas of the site were flooded from earlier spring rain events. Based on the measured water levels, localized flow to the northeast, from the Mississippi River toward the former slag pond area, was superimposed on the typical flow direction to the southwest, from the bluffs toward the Mississippi River (**Figure 4**). The groundwater elevations are provided in **Table 3**.

## 2.2 COAL COMBUSTION RESIDUALS 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 several additional 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**. The state program 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 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, chloride, 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 reports for the April 2020 detection monitoring events were reviewed to evaluate whether 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 events were reviewed for the October 2017 ASD. Laboratory reports for subsequent detection monitoring events were reviewed as part of the ASD preparation for each event.



Based on the review of the laboratory reports, SCS did not identify any indication that any SSI was due to a laboratory analysis error. There were no laboratory quality control flags or issues identified in the laboratory reports 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**. None of the time series plots included anomalous results that appeared to indicate a sampling or laboratory error.

### **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
- Statistical method and process for each SSI

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, chloride, 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 2020 detection monitoring events 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 STATISTICALLY SIGNIFICANT INCREASES**

#### **4.1.1 Natural Variation**

The statistical analysis was completed using an interwell approach, comparing the April 2020 detection monitoring results to the upper prediction limits (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, chloride, pH, sulfate and TDS SSIs. These parameters were detected at higher concentrations than would likely be present naturally.

#### **4.1.2 Man-Made Alternative Sources**

Man-made alternative sources that could potentially contribute to the boron, chloride, pH, sulfate, and TDS SSIs could include the closed CCR landfill, the coal storage area, or other plant operations. Based on 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. For the chloride SSI at B-11A, another man-made source, such as road salt, appears to be the most likely cause of the SSI.

## 4.2 LINES OF EVIDENCE

The lines of evidence indicating that the SSIs for boron, 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:

1. 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.
2. 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, chloride, sulfate, and TDS.
3. 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. Recent concentration increases at some wells in the state monitoring program appear to be attributable to the closed CCR landfill source and to changes in groundwater flow at the site in response to closure of the Slag Pond.

The lines of evidence indicating that the SSI for Chloride is not due to the closed Slag Pond include:

1. The recent increasing trend in chloride at B-11A does not correlate with increases in CCR-related parameters such as boron and sulfate.
2. Chloride results for the slag pond sediment and soil leach test samples were much lower than chloride levels in groundwater.
3. Historical groundwater monitoring results do not indicate that either the ash sluice pond or the slag pond were significant sources of chloride.

The data supporting these lines of evidence are discussed below. Most of these lines of evidence and the supporting data were discussed in detail in the ASD for the October 2017 detection monitoring event (SCS, 2018), with the exception of the chloride and TDS SSI concentrations. For lines of evidence included in previous ASDs, the discussion focuses on any updated information collected since the previous ASD, with references to the previous ASD for additional details.

### 4.2.1 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 ASD for boron, 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 then 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. The surface water pH measurement was also higher in the ash sluice pond. The 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, sulfate, and TDS (**Appendix B, Site Map and 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.

## 4.2.2 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, chloride, sulfate, and TDS) 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, chloride, sulfate, or TDS. The leach test results for slag, Slag Pond sediment, and soil in the Slag Handling Area were below the state groundwater standards for these parameters: boron, chloride, and sulfate. The parameter TDS does not currently have a state standard but the leach test results for slag, Slag Pond sediment, and soil in the Slag Handling Area were all below the calculated TDS UPL for the site (**Table 1 and Appendix C**). The results were also below the concentrations of boron, chloride, sulfate, and TDS 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 (**Appendix B, Table 8**).

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

### 4.2.3 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, 2018). The long-term trends show that concentrations of boron and sulfate in groundwater have decreased or stabilized 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, sulfate, and Field pH concentrations are likely residual contamination from historic ash disposal in the CCR landfill area. Increasing boron and sulfate concentrations at B-11B appear to be attributable to the closed CCR landfill and to changes in groundwater flow at the site, related to a decrease in the volume of water discharged to the Slag Pond and subsequent closure of the Slag Pond. A summary of state analytical groundwater results are provided in **Table 4**.

### 4.2.4 Chloride Lines of Evidence

As listed above, three primary lines of evidence indicate the chloride SSI at well B-11A is not due to the closed Slag Pond. Unlike the reported SSIs for some other parameters, the increased chloride concentrations are not clearly attributable to historic ash disposal in the closed CCR landfill area. Elevated chloride concentrations are likely related another man-made source, such as road salt. Although the specific source is unknown, the evidence detailed below indicates that the closed Slag Pond is not the source.

#### Chloride versus CCR Indicator Concentrations

The recent increase in chloride at B-11A does not correlate with increases in CCR-related parameters such as boron and sulfate. Although chloride exceeds the interwell UPL, other CCR indicator parameters such as boron and sulfate have occasional UPL exceedances. The time series plots show the boron and sulfate concentrations at B-11A remained stable, or have decreased, while the chloride concentration at B-11A has increased gradually since November 2017 and more sharply since October 2018 (**Appendix A**). The absence of other CCR indicator parameters with increasing trends suggests that the chloride SSI is due to some other source.

#### Slag Pond Sediment vs Groundwater Concentrations

Chloride results for slag pond sediment and soil leach test samples were much lower than chloride levels in groundwater. As discussed in **Section 4.2.2**, sediment and soil samples were previously collected in March 2017 to characterize the materials that would remain on site under the Closure Plan for Low Hazard Exemption Request to the WDNR (SCS, 2017). The water leach testing analytical results show that the chloride leach test concentrations are significantly lower than the groundwater chloride concentrations observed at B-11A. The leach test results for chloride ranged from below the detection limit up to 4 mg/L (**Appendix C**), while the chloride concentrations in groundwater samples from B-11A ranged from approximately 40.4 mg/L to 96.6 mg/L (**Table 2**) during background and compliance sampling for the CCR monitoring program.

Chloride groundwater concentrations at background monitoring well B-26 also exceed the water leach test sediment results from the slag pond, ranging from 30.5 mg/L to approximately 80 mg/L (**Table 2**). The low chloride concentrations observed from the slag pond sediment leach testing suggest the higher groundwater chloride concentrations observed at B-11A are due to another source and not the slag pond.

## Historical Groundwater Monitoring

Historical groundwater monitoring results do not indicate that either the ash sluice pond or the slag pond were significant sources of chloride. The previous investigation by RMT in 1994, referenced in **Section 4.2.1**, included an analysis of chloride with its evaluation of groundwater impacts associated with the fly ash disposal from the closed CCR landfill and Slag pond area.

The historical results from the 1994 report that support the current ASD for chloride include:

- 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 low concentrations of chloride, ranging from 23 mg/L to 26 mg/L from the June and September 1993 sampling events (**Appendix B, Table 8**). Monitoring wells downgradient from the active slag pond had even lower chloride concentrations.
- The background monitoring well, B-26, showed generally higher chloride concentrations, ranging from 21 mg/L to 43 mg/L, which may be associated with road salt use on Highway V (**Appendix B, Table 8**).
- The highest chloride concentrations were detected in samples from well B-35, which is located off-site on the historic Stonefield Village property. Chloride concentrations at this well ranged from 80 mg/L to 110 mg/L in the 1993 sampling (**Appendix B, Table 8**).

Based on these results, the chloride concentrations observed at B-11A appear to be likely from another source and not from the former ash sluice pond, closed landfill, or the Slag Pond. The historically higher chloride concentrations at B-26 and B-35 suggest the chloride concentrations observed at B-11A may be due to other man-made sources, such as road salt, septic systems, or agriculture.

## 5.0 ALTERNATIVE SOURCE DEMONSTRATION CONCLUSIONS

The lines of evidence discussed above regarding the SSIs reported for boron, chloride, field pH, sulfate, and TDS concentrations in downgradient monitoring wells demonstrate that the SSIs are likely primarily due to sources other than the closed Slag Pond. Most of the SSIs appear to be 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 SSI for chloride at B-11A appears to be due to man-made source other than the Slag Pond or historical ash disposal.

## 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 2020 Annual Report due January 31, 2021.

## 7.0 REFERENCES

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

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

SCS Engineers, 2018, 2017 Alternative Source Demonstration, October 2017 Monitoring Event, Nelson Dewey Generating Station, April 2018.

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.

## Tables

- 1 Groundwater Analytical Results Summary – April 2020 Event
- 2 Historical Analytical Results for Parameters with SSIs
- 3 Groundwater Elevations – State and CCR Monitoring Wells
- 4 Analytical Results – State Monitoring Program

**Table 1. Groundwater Analytical Results Summary - April 2020 Event  
Nelson Dewey Slag Pond, Cassville, WI / SCS Engineers Project #25220071.00**

Parameter Name	UPL	Compliance Wells						
		Background Well	B-7R	B-11A	B-11B	B-11R	B-31A	B-31R
		B-26						
		4/14/2020	4/13/2020	4/13/2020	4/13/2020	4/13/2020	4/13/2020	4/13/2020
<b>Appendix III</b>								
Boron, ug/L	66.5	66.1	96.0	86.3	5,380	2,140	132	730
Calcium, ug/L	155,155	88,500	58,700	57,500	115,000	117,000	50,900	93,800
Chloride, mg/L	65.4	54.9	14.3	93.7	30.9	22.5	51.0	29.9
Fluoride, mg/L	DQ	0.11 J	<0.48 D3	0.27 J	<0.95 D3	<0.48 D3	0.19 J	0.28 J
Field pH, Std. Units	7.81	7.27	6.60	7.75	7.89	6.80	7.71	6.79
Sulfate, mg/L	44.8	30.2	7.5 J, D3	1.4 J	378	41.9	16.6	89.4
Total Dissolved Solids, mg/L	594	464	306	394	872	570	298	464

7.81 Blue shaded cell indicates the compliance well result exceeds the UPL (background) and the Limit of Quantitation (LOQ).

**Abbreviations:**

UPL = Upper Prediction Limit

SSI = Statistically Significant Increase

DQ = Double Quantification

LOQ = Limit of Quantitation

LOD = Limit of Detection

ug/L = micrograms per liter

mg/L = milligrams per liter

**Lab Notes:**

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

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

**Notes:**

1. An individual result above the UPL may not constitute an SSI above background. See the accompanying report text for identification of statistically significant results.

2. Interwell UPLs calculated based on results from background well B-26. UPLs are based on a 1-of-2 retesting approach.

Created by: ZTW  
 Last revision by: NDK  
 Checked by: SCC  
 Proj Mgr QA/QC/Scientist: TK

Date: 6/4/2020  
 Date: 7/6/2020  
 Date: 7/9/2020  
 Date: 7/10/2020

**Table 2. Historical Analytical Results for Parameters with SSIs  
Nelson Dewey Generating Station - Cassville, Wisconsin / SCS Engineers Project #25220071.00**

Well Group	Well	Collection Date	Boron (µg/L)	Chloride (mg/L)	Field pH (St. Units)	Sulfate (mg/L)	Total Dissolved Solids (mg/L)
Background	B-26	12/9/2015	29.6	45.5	7.35	37.1	424
		4/12/2016	33.7	51.3	7.43	38.0	456
		7/19/2016	28.6	55.6	7.14	36.2	504
		10/20/2016	33.0	52.8	7.19	35.0	466
		1/12/2017	35.2	54.5	7.57	35.0	446
		4/17/2017	50.1	56.0	7.54	32.4	468
		6/7/2017	45.8	59.6	7.22	31.0	538
		8/2/2017	54.6	52.6	7.21	28.5	496
		10/19/2017	47.4	79.3	7.50	25.3	542
		4/2/2018	48.0	54.4	7.64	19.1	464
		10/8/2018	53.4	33.2	7.20	25.1	450
		4/22/2019	41.6	40.8	7.10	26.7	458
10/15/2019	<3.00 U	30.5	7.24	36.0	404		
4/14/2020	66.1	54.9	7.27	30.2	464		
Compliance	B-11A	12/9/2015	124	40.4	7.70	3.20 J	338
		4/13/2016	116	43.0	7.75	3.80 J	362
		7/19/2016	104	46.6	7.42	2.70 J	336
		10/19/2016	112	46.5	7.47	3.00 J	340
		1/12/2017	106	46.6	7.89	2.30 J	322
		4/17/2017	100	45.4	7.38	<1.00 U	326
		6/8/2017	102	46.9	7.78	1.40 J	338
		8/1/2017	105	46.7	7.67	2.40 J	326
		10/19/2017	116	49.9	7.96	5.10	322
		4/2/2018	91.0	54.7 J, M0	8.04	12.3 M0	336
		10/9/2018	94.2	57.8	7.43	6.00	332
		4/22/2019	93.9	83.6	7.62	1.90 J	386
	10/14/2019	80.7	96.6	7.66	<1.00 U	348	
	4/13/2020	86.3	93.7	7.75	1.40 J	394	
	B-11B	12/9/2015	1,140	31.2	8.06	134	494
		4/13/2016	1,360	32.7	8.14	148	512
		7/19/2016	1,210	33.6	7.77	165	520
		10/20/2016	1,460	34.3	7.91	178	496
		1/12/2017	1,540	36.1	8.18	182	488
		4/17/2017	1,760	36.3	7.83	181	502
		6/8/2017	1,880	33.9	8.07	191	516
		8/1/2017	1,800	35.9	7.77	179	498
		10/19/2017	1,500	36.1	7.77	175	510
		4/2/2018	2,020	31.3	8.42	200	550
		10/9/2018	3,620	21.9	7.74	197	602
		11/12/2018	--	--	8.05	--	594
	4/22/2019	6,830	28.4	7.91	303	742	
	10/14/2019	4,630	32.3	7.92	339	728	
	4/13/2020	5,380	30.9	7.89	378	872	
	B-11R	12/9/2015	4,170	39.2	7.07	75.4	616
		4/13/2016	3,410	7.00	6.78	18.4	682
		7/19/2016	3,530	38.9	6.69	115	698
		10/20/2016	4,120	39.1	6.77	118	660
		1/12/2017	3,530	42.3	6.98	108	616
		4/17/2017	3,520	40.2	7.11	108	620
		6/7/2017	3,420	42.0	6.80	98.2	630
8/1/2017		2,040	24.7	6.70	126	738	
10/19/2017		3,120	38.8	7.22	97.7	586	
4/2/2018		3,180	36.8	7.14	88.1	638	
10/9/2018		576	5.90	6.55	15.1	266	
4/22/2019		1,360	12.6	6.82	34.6	406	
10/14/2019	1,440	13.1	6.83	40.7	310		
4/13/2020	2,140	22.5	6.80	41.9	570		

**Table 2. Historical Analytical Results for Parameters with SSIs  
Nelson Dewey Generating Station - Cassville, Wisconsin / SCS Engineers Project #25220071.00**

Well Group	Well	Collection Date	Boron (µg/L)	Chloride (mg/L)	Field pH (Std. Units)	Sulfate (mg/L)	Total Dissolved Solids (mg/L)
Compliance	B-31A	12/9/2015	59.0	35.3	7.65	26.2	274
		4/13/2016	79.2	35.8	7.63	22.6	302
		7/19/2016	67.2	36.4	7.25	24.2	280
		10/20/2016	63.7	39.0	7.54	27.2	292
		1/12/2017	76.4	39.9	7.82	29.8	284
		4/17/2017	69.9	40.3	7.83	31.0	318
		6/8/2017	58.5	40.9	7.74	31.2	296
		8/1/2017	56.3	40.8	7.56	26.6	284
		10/19/2017	63.9	40.8	7.92	26.1	290
		4/2/2018	74.8	42.7	8.00	27.4	282
		10/9/2018	71.8	40.2	7.48	24.8	278
		4/22/2019	86.2	40.8	7.61	21.6	284
	10/14/2019	98.5	47.1	7.69	22.3	272	
	4/13/2020	132	51.0	7.71	16.6	298	
	B-31R	12/9/2015	851	29.9	6.79	28.8	374
		4/13/2016	838	17.6	6.76	34.1	404
		7/19/2016	641	30.3	6.44	38.5	406
		10/20/2016	1,020	16.4	6.53	49.7	452
		1/12/2017	749	26.0	6.80	34.9	380
		4/17/2017	929	20.4	6.80	43.0	416
		6/8/2017	895	20.7	6.67	41.1	426
		8/1/2017	1,550	3.60	6.56	55.6	432
		10/19/2017	645	29.0	7.19	19.2	358
		4/2/2018	540	32.6	6.76	22.0	374
		10/9/2018	1,430	19.7	6.41	186	668
		11/12/2018	--	--	6.59	162	596
	4/22/2019	906	17.8	6.62	121	516	
	10/14/2019	915	26.0	6.72	146	480	
	4/13/2020	730	29.9	6.79	89.4	464	
	B-7R	12/9/2015	110	45.2	6.74	17.0 J	198
		4/13/2016	115	4.60	6.80	2.50 J	218
		7/18/2016	164	7.10	6.29	2.40 J	220
		10/19/2016	154	22.0	6.55	<5.00 U	288
		1/12/2017	159	19.7	7.43	<5.00 U	240
		4/17/2017	129	13.1	6.60	<5.00 U	278
		6/7/2017	110	12.8	6.65	<5.00 U	240
8/1/2017		129	8.10	6.28	3.70	220	
10/19/2017		159	12.0	6.88	<5.00 U, D3	242	
4/2/2018		121	10.1	6.57	<5.00 U, D3	220	
10/9/2018		73.0	1.90 J	6.23	3.20	186	
4/22/2019		93.5	10.9	6.63	<0.50 U, D3	254	
10/14/2019	139	11.5	6.62	<0.50 U, D3	208		
4/13/2020	96.0	14.3	6.60	7.50 J, D3	306		

Abbreviations:

µg/L = micrograms per liter or parts per billion (ppb)

mg/L = milligrams per liter or parts per million (ppm)

Std. Units = Standard Units

Flags:

U = Not detected.

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

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

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

-- = Not applicable

Created by: NDK Date: 3/8/2018  
 Last revision by: ZTW Date: 9/3/2020  
 Checked by: JSN Date: 9/3/2020

I:\25220071.00\Data and Calculations\Tables\NED ASD Apr 2020 Tables\[2\_Analytical Results - App III - NED.xlsx]2. Analytical



Table 3. Groundwater Elevations - State and CCR Monitoring Wells  
 Nelson Dewey Closed Ash Disposal Facility / SCS Engineers Project #25220071.00

Well Number	Ground Water Elevation in feet above mean sea level (amsl)																				Barge Gauge 616.60	Pond Gauge <sup>^</sup> See notes	
	B-7R	B-8R	B-11R	B-11A	B-11B	B-21R	B-26	B-26A	B-28	B-30R	B-30AR	B-31R	B-31A	B-32	B-32A	B-35	B-35A	B-37	B-37A	B-39			MW-301
Top of Casing Elevation (feet amsl)	623.35	627.51	622.62	622.12	621.89	623.31	626.40	626.40	616.81	621.81	622.4	622.42	622.69	614.18	614.4	620.78	621.09	614.85	614.85	626.48	619.09	619.21	618.49
Screen Length (ft)	10	10	10	5	5	10	10	10	5	10	5	10	5	10	5	10	5	10	5	10	10	10	10
Total Depth (ft from top of casing)	23.05	27.25	24.15	52.00	113.90	20.50	31.67	45.78	16.70	22.20	46.90	22.82	35.52	14.79	52.00	16.60	47.00	19.95	48.20	26.90	21.11	21.27	20.15
Top of Well Screen Elevation (ft)	610.30	610.26	608.47	575.12	512.99	612.81	604.73	585.62	610.11	609.61	580.50	609.60	592.17	609.39	567.40	614.18	579.20	604.90	571.65	609.58	607.98	607.94	608.34
Measurement Date																							
October 5-6, 2011	604.94	606.29	604.57	604.34	604.32	604.43	604.52	604.55	604.61	604.37	605.21	608.37	604.42	604.88	604.82	604.87	604.81	604.37	604.39				
April 25-26, 2012	606.58	606.30	606.07	606.30	606.28		605.89	605.91				608.65	606.31	604.33		606.29	621.20	606.16	606.17	606.17			
October 17, 2012	604.39	604.16	604.10	603.98	603.98	604.08	604.12	604.14	604.31	603.97	603.98	607.32	604.07	604.33	604.35		621.20	603.93	603.93	603.93			
April 2, 2013	607.04	608.01	606.15	607.20	607.17	606.30	605.60	605.64	605.90	605.91	605.93	607.13	607.13	606.11	606.14	606.13	606.25	606.99	607.02				
October 16-17, 2013	604.51	605.89	604.17	603.90	603.87	604.11	604.31	604.32	604.36	604.08	604.06	604.87	604.00	604.53	604.56	604.46	604.44	604.05	604.04				
April 10, 2014	607.42	608.97	607.45	607.28	607.26		607.22	607.23				607.37	607.28		607.46	607.39	607.25	607.26					
October 14-15, 2014	605.67	606.82	605.17	604.90	604.91	614.92	605.00	605.01	605.13	604.92	604.92	606.36	605.54	605.41	605.45	605.36	605.33	604.94	604.99				
April 16, 2015	607.26	608.50	607.11	607.15	607.05		606.40	606.41				607.37	607.09		606.73	606.78	606.99	606.88					
October 1-2, 2015	605.14	604.66	604.53	604.42	604.38	604.36	604.43	604.50	604.54	604.34	604.32	605.13	604.38	604.76	604.82	604.76	604.75	604.30	604.39				
December 8, 2015	606.69		606.71	606.30	606.26		606.80					607.40	606.39							607.54			
April 12, 2016	609.32	609.36	609.32	608.71	608.68		609.81	609.72				609.34	609.01		609.73	609.65	608.79	608.79	610.23				
July 18-19, 2016	606.54		606.14	606.76	606.74		606.09					606.55	606.73						606.28				
October 19-20, 2016	608.59	608.46	608.35	608.21	608.19	608.37	608.84	608.76	608.63	608.45	608.46	608.51	608.20	608.69	608.73	608.78	608.74	608.20	608.18	609.09			
January 11-12, 2017	608.02	607.96	607.96	607.83	607.78		608.56					607.90	607.84						608.92				
April 17, 2017	609.08	608.82	608.34	609.05	608.99	NM	608.59	608.54	609.94	608.57	608.64	607.20	608.98	608.96	608.98	609.00	609.02	609.02	609.02	610.23			
June 8, 2017	610.74		610.42	609.81	610.08		611.25					609.63	610.50						611.53				
August 1-2, 2017	607.02		606.73	605.57	605.50		607.39					606.84	605.69						608.71				
October 9-10, 2017	606.93	606.51	606.25	607.01	606.94		606.22	606.13	606.33	606.44	606.45	606.68	606.93	606.57	606.61	606.65	606.71						
October 19, 2017	609.60		609.42	609.58	609.65		608.84					609.47	609.43					609.40	609.40	608.55			
November 17, 2017							606.35																
December 19, 2017							604.81																
February 7, 2018	605.37			605.33	604.96	604.92				616.81			605.31	605.01						606.19	605.08	605.05	605.00
March 16, 2018																				604.64	604.6	604.56	
April 203, 2018 **	604.82	606.61	606.27	606.63	606.55	606.52	606.49	606.37	606.39	606.46	606.43	604.44	606.46	606.58	606.66	606.68	606.70	606.77	606.83	606.19			
May 23, 2018																					610.68	610.78	610.61
October 8-10, 2018	610.76	610.68	610.67	610.28	610.24	610.02	610.34	610.28	610.83	610.09	610.05	610.39	610.27	611.05	610.94	610.72	610.54			611.44			
November 11, 2018					609.14							609.11											
April 22-23, 2019	615.28	615.66	615.28	615.29	615.28	614.98	615.49	615.31	615.40	615.36	615.35	615.01	615.33			615.87	615.98			615.40			615.17
October 14-16, 2019	613.43	613.11	613.06	613.29	613.18	612.47	613.10	613.10	612.71	612.83	612.78	612.50	613.20	613.10	613.00	613.10	613.15			613.35			612.33
April 13-14, 2020	614.12	613.76	614.39	613.88	613.86	613.22	613.76	613.73	613.68	613.60	613.56	613.80	613.79			614.04	614.00			613.71			612.89
Bottom of Well Elevation (ft)	600.30	600.26	598.47	570.12	507.99	602.81	594.73	580.62	600.11	599.61	575.50	599.60	587.17	599.39	562.40	604.18	574.20	594.90	566.65	599.58	597.98	597.94	598.34

Notes:  
 NM = not measured  
 \*The PVC casing of B-35A was cut down on June 28, 2018 to allow the protective cover to close. Groundwater elevations prior to 6/28/18 are calculated using the old top of casing (TOC) elevation of 621.20 ft amsl. Groundwater elevations after 6/28/18 are calculated using the new TOC elevation (621.09 ft amsl).  
 \*\* The PVC casing at B-21R was extended in 2018 following well rehabilitation. The well was resurveyed on April 22, 2019. The old top of casing elevation was 621.03 ft. The new TOC elevation is 623.31 ft.  
 ^ One pond staff gauge was installed on April 22, 2019. The base of the gauge (0 reading) is at 615.056 ft amsl. Two additional gauges were installed on March 24, 2020. These gauge bases are at 609' and 612' amsl.

Created by:      MDB                      Date:      4/1/2013  
 Last revision by:      MDB                      Date:      4/21/2020  
 Checked by:      LMH                      Date:      4/21/2020  
 Proj Mgr QA/QC:      TK                      Date:      10/1/2020

**Table 4. Analytical Results - State Monitoring Program  
Nelson Dewey Generating Station  
Cassville, Wisconsin / SCS Engineers Project #25220071.00**

WELL ID	SAMPLE MONTH	BORON, DISSOLVED (UG/L)	SULFATE, DISSOLVED (MG/L)	PH, FIELD (STANDARD UNITS)
B-7R	2016-Apr	110	7.40	6.80
	2016-Oct	147	<20.0	6.55
	2017-Apr	127	<5.00	6.60
	2017-Oct	159	<5.00	6.61
	2018-Apr	115	<5.00 D3	6.57
	2018-Oct	89.8	3.40	6.23
	2019-Apr	95.7	<5.00 D3	6.63
	2019-Oct	140	<5.00 D3	6.62
	2020-Apr	90.8	5.20 J, D3	6.60
B-8R	2016-Apr	2,250	30.0	6.64
	2016-Oct	2,130	47.0	6.38
	2017-Apr	1,970	30.5	6.83
	2017-Oct	2,490	32.5	6.87
	2018-Apr	1,700	28.7	7.02
	2018-Oct	1,500	30.6	6.18
	2019-Apr	1,560	39.8	6.65
	2019-Oct	1,110	23.6	6.85
	2020-Apr	1,340	20.9	6.61
B-11A	2016-Apr	110	3.80 J	7.75
	2016-Oct	111	2.80 J	7.47
	2017-Apr	106	<1.00	7.38
	2017-Oct	97.7	8.30	7.91
	2018-Apr	89.4	12.70	8.04
	2018-Oct	142	5.30	7.43
	2019-Apr	94.0	1.90 J	7.62
	2019-Oct	82.3	<1.00	7.66
	2020-Apr	83.3	1.50 J	7.75
B-11B	2016-Apr	1,240	153	8.14
	2016-Oct	1,410	181	7.91
	2017-Apr	1,720	186	7.83
	2017-Oct	1,900	169	7.80
	2018-Apr	2,020	195	8.42
	2018-Oct	3,910	195	7.74
	2019-Apr	6,670	289	7.91
	2019-Oct	4,860	335	7.92
	2020-Apr	5,080	362	7.89
B-11R	2016-Apr	3,290	93.9	6.98
	2016-Oct	4,070	115	6.77
	2017-Apr	3,710	111	7.11
	2017-Oct	3,400	94.0	6.75
	2018-Apr	2,790	78.6	7.14
	2018-Oct	635	15.6	6.55
	2019-Apr	1,310	34.5	6.82
	2019-Oct	1,500	39.2	6.83
	2020-Apr	2,250	39.8	6.80
B-26	2016-Apr	37.0	40.1	7.43
	2016-Oct	48.7	34.4	7.19
	2017-Apr	37.3	32.3	7.54
	2017-Oct	44.5	25.0	7.35
	2018-Apr	46.8	19.2	7.64
	2018-Oct	55.2	24.9	7.20
	2019-Apr	41.8	26.4	7.10
	2019-Oct	50.8	37.0	7.24
	2020-Apr	49.2	29.1	7.27

**Table 4. Analytical Results - State Monitoring Program  
Nelson Dewey Generating Station  
Cassville, Wisconsin / SCS Engineers Project #25220071.00**

WELL ID	SAMPLE MONTH	BORON, DISSOLVED (UG/L)	SULFATE, DISSOLVED (MG/L)	PH, FIELD (STANDARD UNITS)
B-26A	2016-Apr	33.1	40.1	7.06
	2016-Oct	30.5	39.9	7.26
	2017-Apr	52.6	42.3	7.96
	2017-Oct	28.4	38.4	7.44
	2018-Apr	27.6	37.0	7.47
	2018-Oct	18.4	33.3	7.38
	2019-Apr	27.6	27.0	7.35
	2019-Oct	47.0	35.6	7.31
	2020-Apr	37.7	39.2 M0	7.38
B-31A	2016-Apr	69.4	22.8	7.63
	2016-Oct	81.0	27.9	7.54
	2017-Apr	80.3	30.8	7.83
	2017-Oct	61.5	26.2	7.60
	2018-Apr	69.3	28.1	8.00
	2018-Oct	103	26.2	7.48
	2019-Apr	86.0	21.6	7.61
	2019-Oct	112	22.5	7.69
	2020-Apr	121	17.7	7.71
B-31R	2016-Apr	759	34.3	6.76
	2016-Oct	956	48.5	6.53
	2017-Apr	910	42.9	6.80
	2017-Oct	618	23.2	6.78
	2018-Apr	520	23.3	6.76
	2018-Oct	1,530	179	6.41
	2019-Apr	892	114	6.62
	2019-Oct	1,000	145	6.72
	2020-Apr	765	97.6 M0	6.79
B-35	2016-Apr	38.7	8.10	6.89
	2016-Oct	46.4	6.50	6.86
	2017-Apr	54.4	7.70	6.68
	2017-Oct	40.8	3.80	7.65
	2018-Apr	28.9	4.80 M0	7.01
	2018-Oct	40.0	3.60	6.58
	2019-Apr	33.6	4.90	7.26
	2019-Oct	41.0	5.60	7.07
	2020-Apr	27.0	4.20	6.87
B-35A	2016-Apr	21.7	26.2	6.96
	2016-Oct	23.4	27.4	7.17
	2017-Apr	29.9	25.4	7.27
	2017-Oct	51.4	4.00	7.44
	2018-Apr	28.9	23.1	7.45
	2018-Oct	59.8	6.00 J, D3	6.95
	2019-Apr	30.3	16.7	7.30
	2019-Oct	33.7	18.9	7.30
	2020-Apr	32.1	20.2	7.29
B-37	2016-Apr	121	17.4	7.6
	2016-Oct	159	45.4	7.59
	2017-Apr	252	75.6	7.55
	2017-Oct	231	59.7	8.61
	2018-Apr	164	49.0	8.10
	2018-Oct	--	--	--
	2019-Apr	--	--	--
	2019-Oct	--	--	--
	2020-Apr	--	--	--

**Table 4. Analytical Results - State Monitoring Program  
Nelson Dewey Generating Station  
Cassville, Wisconsin / SCS Engineers Project #25220071.00**

WELL ID	SAMPLE MONTH	BORON, DISSOLVED (UG/L)	SULFATE, DISSOLVED (MG/L)	PH, FIELD (STANDARD UNITS)
B-37A	2016-Apr	326	42.4	7.21
	2016-Oct	279	38.6	7.39
	2017-Apr	269	39.8	7.53
	2017-Oct	320	39.5	8.28
	2018-Apr	204	43.9	8.39
	2018-Oct	--	--	--
	2019-Apr	--	--	--
	2019-Oct	--	--	--
	2020-Apr	--	--	--

Note:

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

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

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

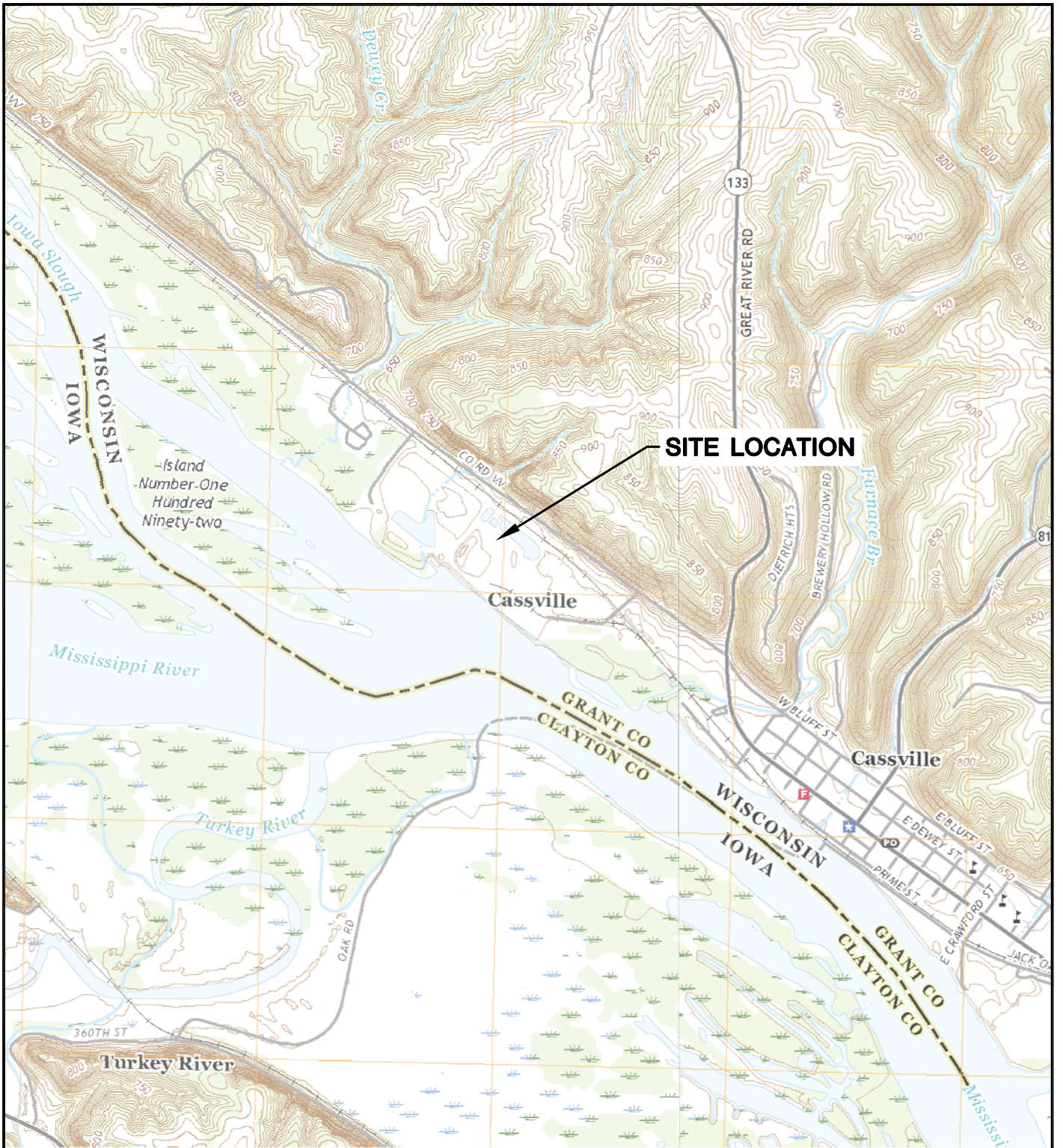
Created by: JSN  
 Last revision by: ZTW  
 Checked by: JSN

Date: 12/29/2017  
 Date: 9/3/2020  
 Date: 9/3/2020

I:\25220071.00\Data and Calculations\Tables\NED ASD Apr 2020 Tables\[4\_Analytical Results - State Monitoring - NED.xlsx]4. State Analytical

## Figures

- 1 Site Location Map
- 2 Aerial View
- 3 Monitoring Well Location Map
- 4 Water Table Flow Map – April 2020

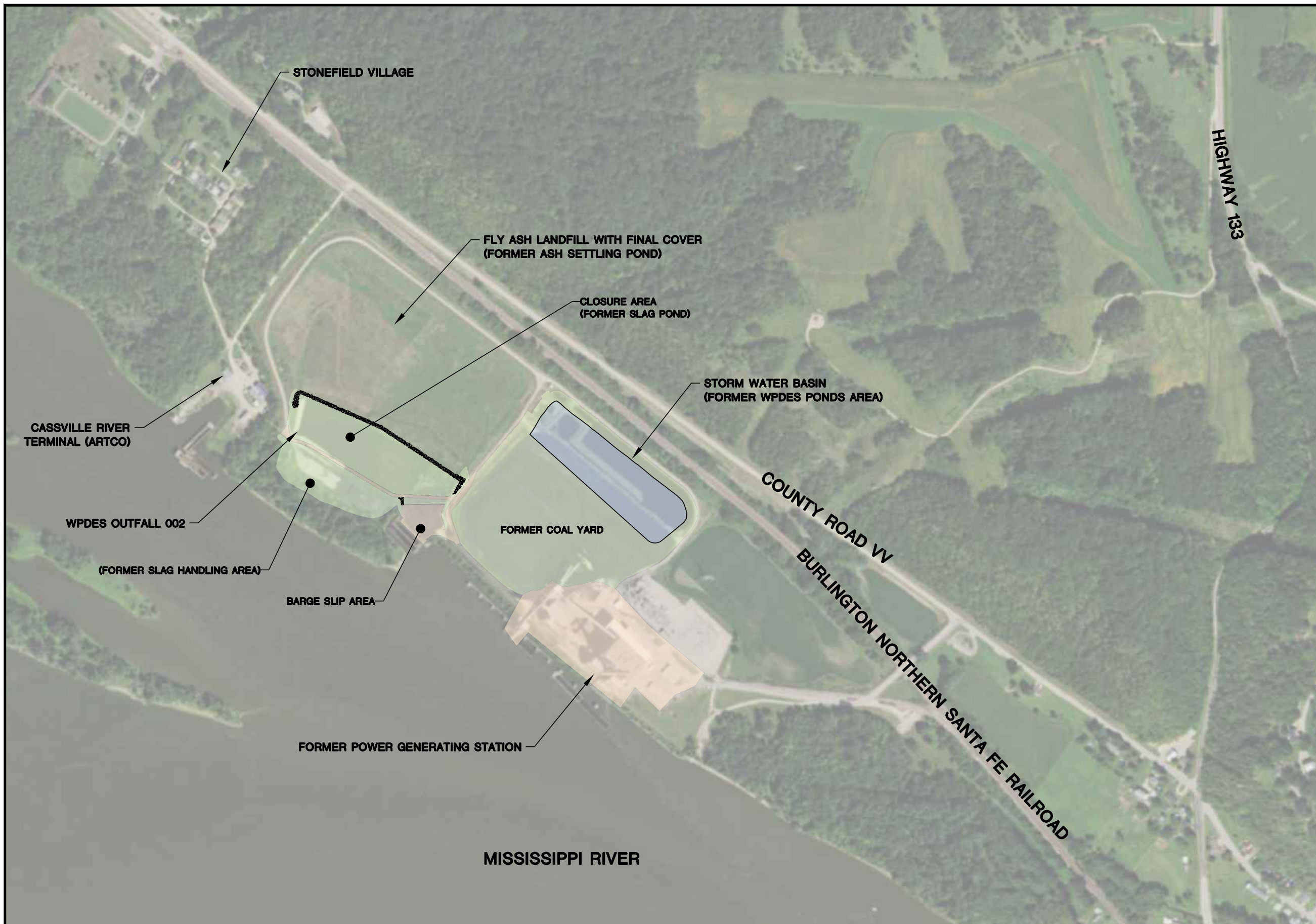


CASSVILLE AND TURKEY RIVER QUADRANGLES  
 WISCONSIN-IOWA  
 7.5 MINUTE SERIES (TOPOGRAPHIC)  
 2018  
 SCALE: 1" = 2,000'



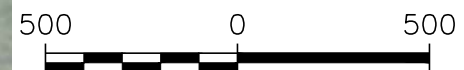
CLIENT	ALLIANT ENERGY 4902 N. BILTMORE LANE, #1000 MADISON, WI 53718		SITE	ALLIANT ENERGY NELSON DEWEY GENERATING STATION CASSVILLE, WISCONSIN		ENGINEER	<b>SCS ENGINEERS</b> 2830 DAIRY DRIVE MADISON, WI 53718-6751 PHONE: (608) 224-2830	FIGURE	1
	PROJECT NO.	25220071.00		DRAWN BY:	BSS				
	DRAWN:	11/27/2019	CHECKED BY:	MDB					
	REVISED:	01/14/2020							





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.

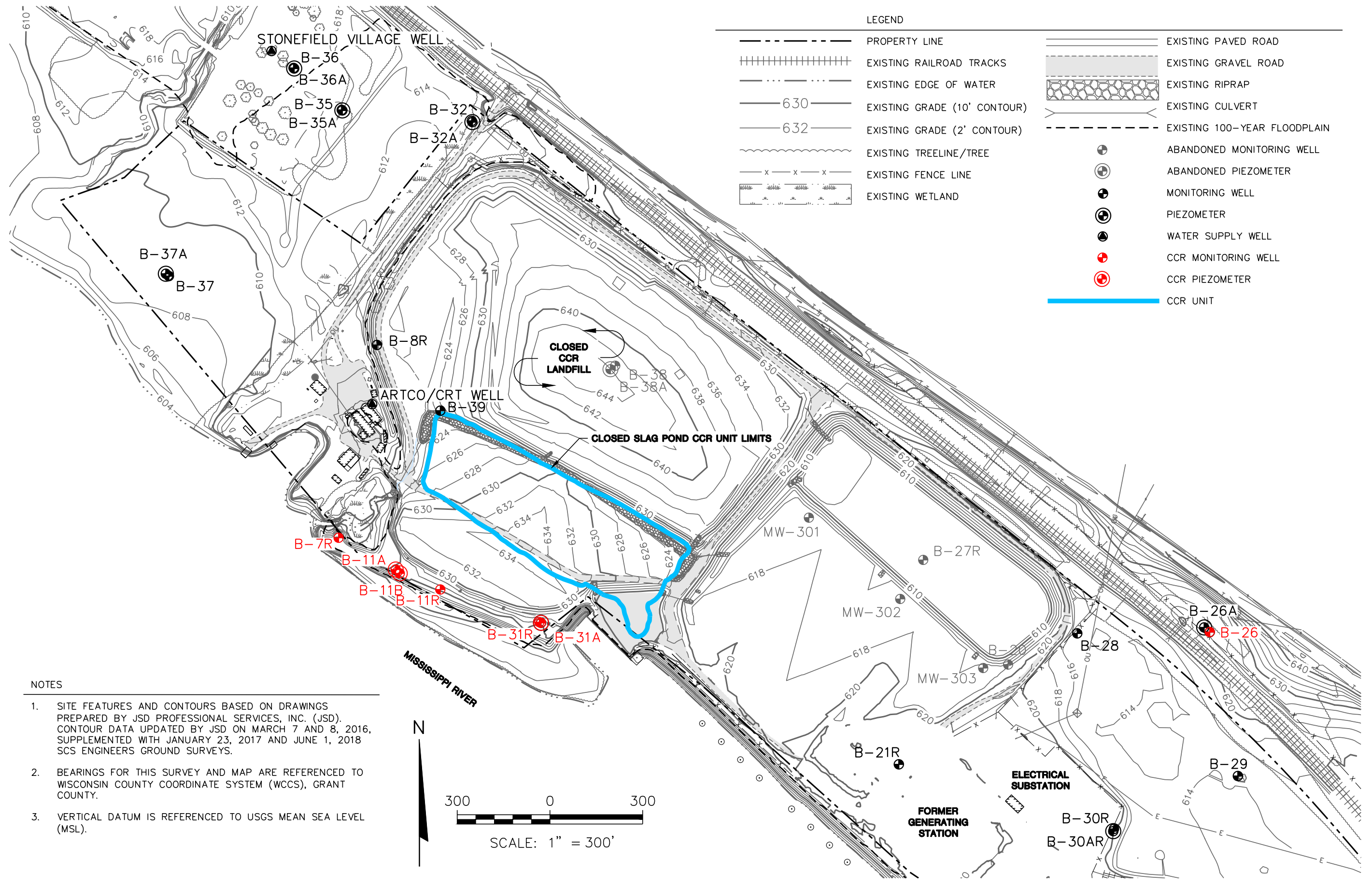


SCALE: 1" = 500'

PROJECT NO.	25220071.00	DRAWN BY:	BJM	<p>2830 DAIRY DRIVE MADISON, WI 53718-6751 PHONE: (608) 224-2830</p>	<p>CLIENT WISCONSIN POWER AND LIGHT CO. NELSON DEWEY GENERATING STATION 11999 COUNTY HIGHWAY VV CASSVILLE WI, 53806</p>	<p>SITE WISCONSIN POWER AND LIGHT NELSON DEWEY GENERATING STATION CASSVILLE WISCONSIN</p>	<p>AERIAL VIEW</p>	FIGURE
DRAWN:	12/18/13	CHECKED BY:	KAK					2
REVISED:	01/22/20	APPROVED BY:	TK 04/10/2020					



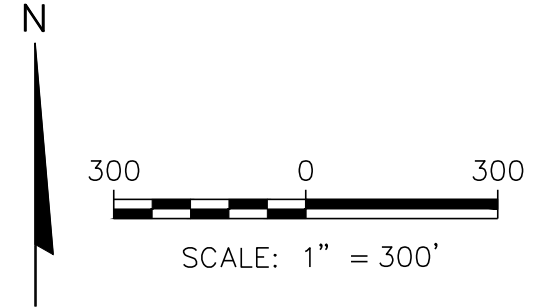
I:\2520071\_00\Drawings\ASD\Site Plan and Monitoring Well Locations.dwg, 4/12/2020 7:22:25 PM



LEGEND

	PROPERTY LINE		EXISTING PAVED ROAD
	EXISTING RAILROAD TRACKS		EXISTING GRAVEL ROAD
	EXISTING EDGE OF WATER		EXISTING RIPRAP
	EXISTING GRADE (10' CONTOUR)		EXISTING CULVERT
	EXISTING GRADE (2' CONTOUR)		EXISTING 100-YEAR FLOODPLAIN
	EXISTING TREELINE/TREE		ABANDONED MONITORING WELL
	EXISTING FENCE LINE		ABANDONED PIEZOMETER
	EXISTING WETLAND		MONITORING WELL
			PIEZOMETER
			WATER SUPPLY WELL
			CCR MONITORING WELL
			CCR PIEZOMETER
			CCR UNIT

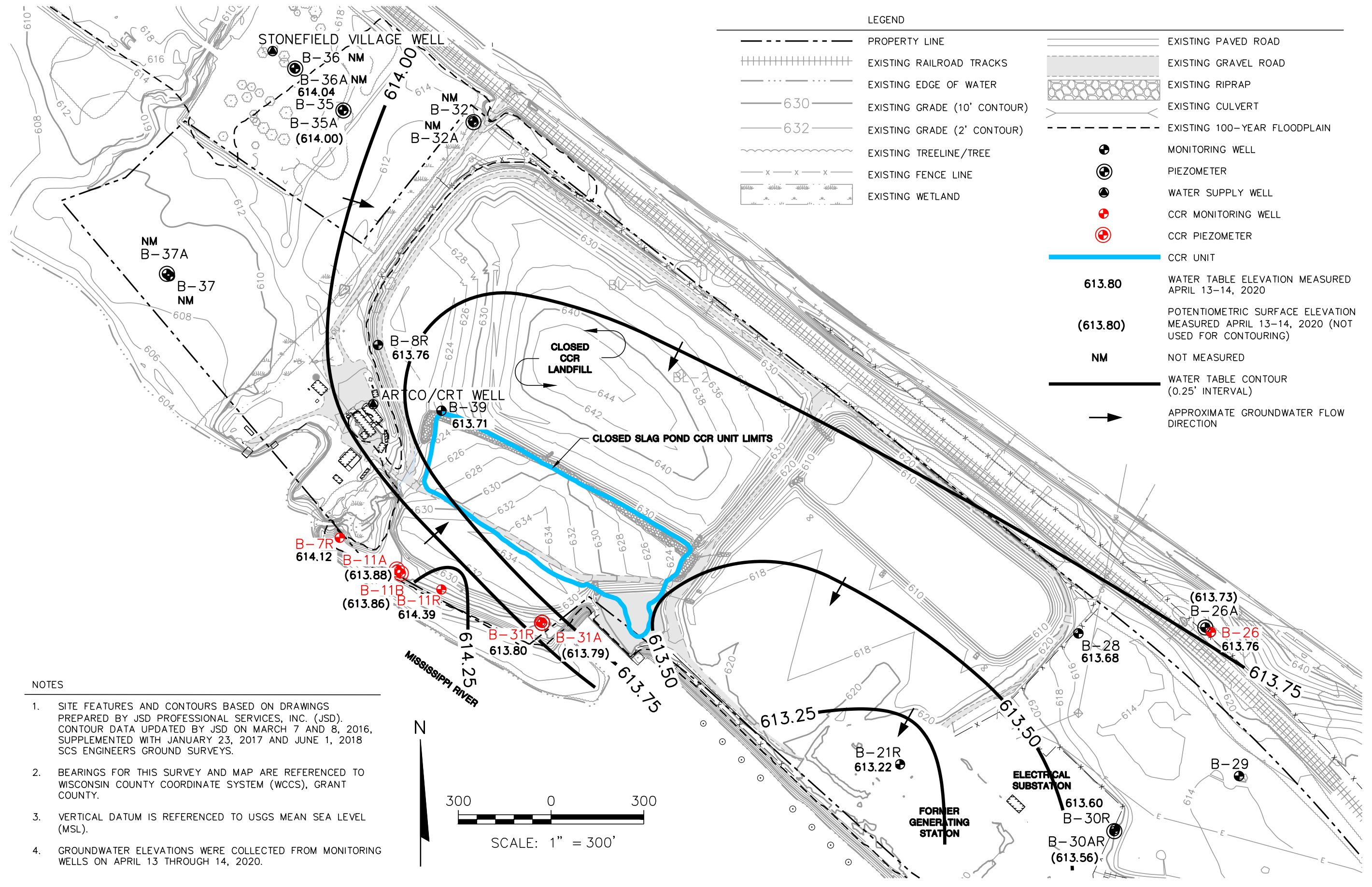
- NOTES
- SITE FEATURES AND CONTOURS BASED ON DRAWINGS PREPARED BY JSD PROFESSIONAL SERVICES, INC. (JSD). CONTOUR DATA UPDATED BY JSD ON MARCH 7 AND 8, 2016, SUPPLEMENTED WITH JANUARY 23, 2017 AND JUNE 1, 2018 SCS ENGINEERS GROUND SURVEYS.
  - BEARINGS FOR THIS SURVEY AND MAP ARE REFERENCED TO WISCONSIN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



CLIENT	ALLIANT ENERGY 4902 N. BILTMORE LANE, #1000 MADISON, WI 53718		SITE	ALLIANT ENERGY NELSON DEWEY GENERATING STATION CASSVILLE, WISCONSIN		ENGINEER	SCS ENGINEERS 2830 DAIRY DRIVE, MADISON, WI 53718-6751 PHONE: (608) 224-2830		FIGURE	3
	PROJECT NO.	25220071-00		DRAWN BY:	BSS		CHECKED BY:	MDB		APPROVED BY:

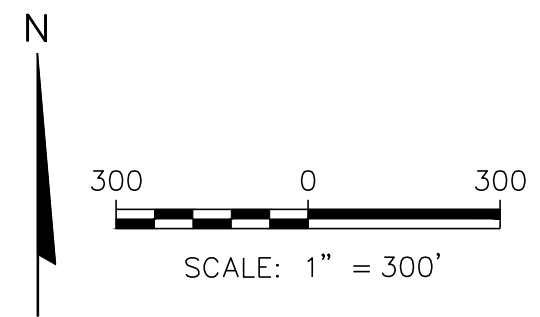


I:\2520071\_00\Drawings\ASD\APRIL 2020\WTBL.dwg, 9/30/2020 2:34:59 PM




LEGEND	
	PROPERTY LINE
	EXISTING RAILROAD TRACKS
	EXISTING EDGE OF WATER
	EXISTING GRADE (10' CONTOUR)
	EXISTING GRADE (2' CONTOUR)
	EXISTING TREELINE/TREE
	EXISTING FENCE LINE
	EXISTING WETLAND
	EXISTING PAVED ROAD
	EXISTING GRAVEL ROAD
	EXISTING RIPRAP
	EXISTING CULVERT
	EXISTING 100-YEAR FLOODPLAIN
	MONITORING WELL
	PIEZOMETER
	WATER SUPPLY WELL
	CCR MONITORING WELL
	CCR PIEZOMETER
	CCR UNIT
<b>613.80</b>	WATER TABLE ELEVATION MEASURED APRIL 13-14, 2020
<b>(613.80)</b>	POTENTIOMETRIC SURFACE ELEVATION MEASURED APRIL 13-14, 2020 (NOT USED FOR CONTOURING)
<b>NM</b>	NOT MEASURED
	WATER TABLE CONTOUR (0.25' INTERVAL)
	APPROXIMATE GROUNDWATER FLOW DIRECTION

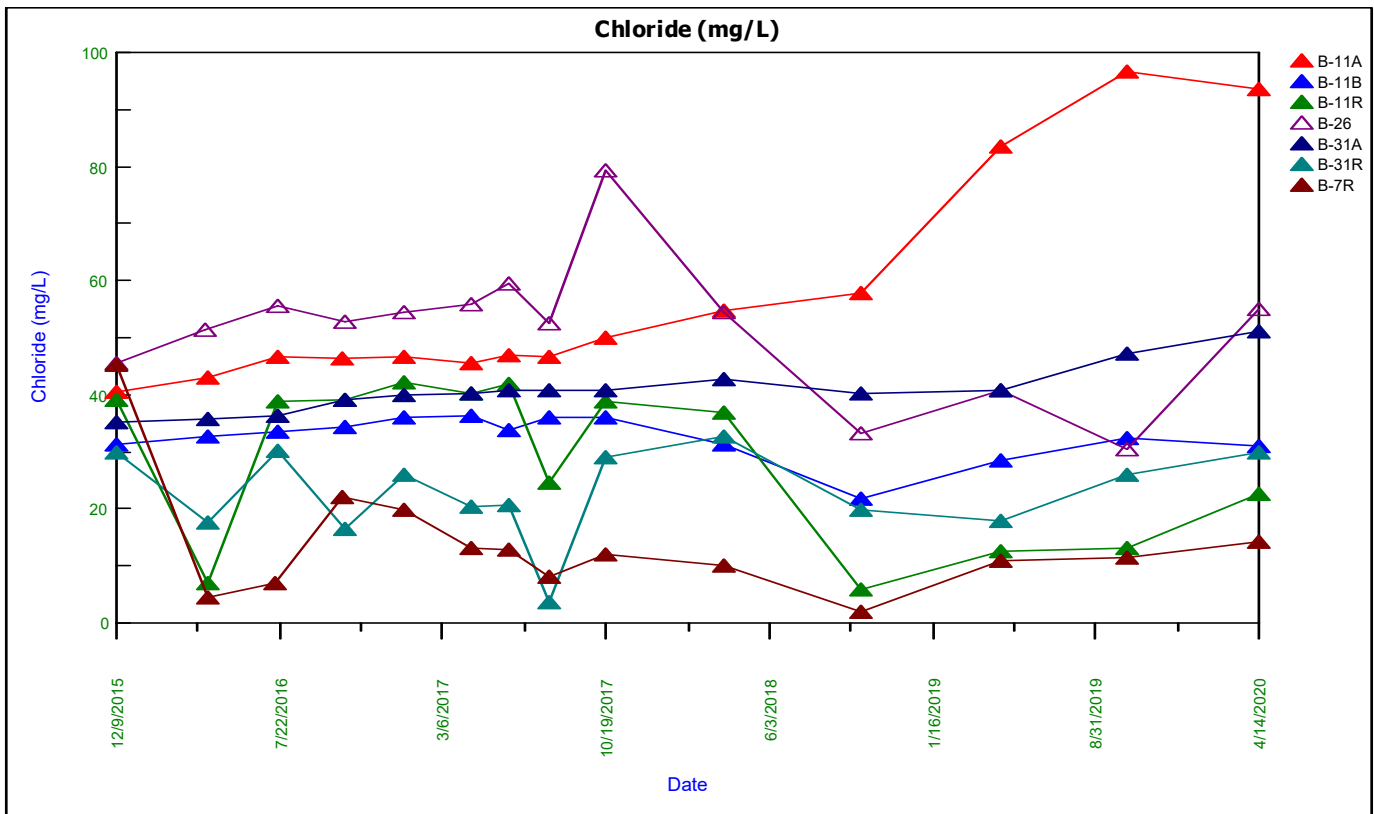
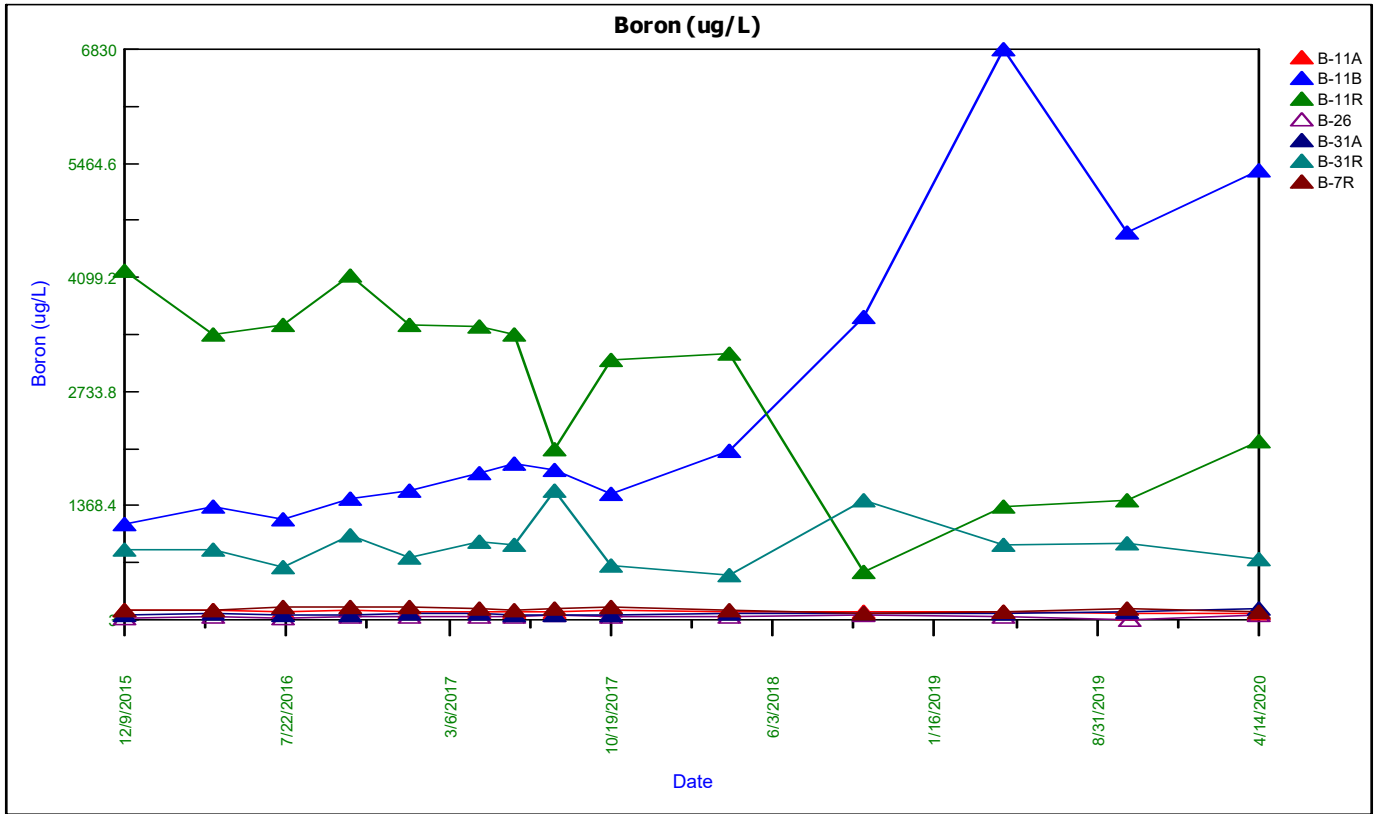
- NOTES
- SITE FEATURES AND CONTOURS BASED ON DRAWINGS PREPARED BY JSD PROFESSIONAL SERVICES, INC. (JSD). CONTOUR DATA UPDATED BY JSD ON MARCH 7 AND 8, 2016, SUPPLEMENTED WITH JANUARY 23, 2017 AND JUNE 1, 2018 SCS ENGINEERS GROUND SURVEYS.
  - BEARINGS FOR THIS SURVEY AND MAP ARE REFERENCED TO WISCONSIN COUNTY COORDINATE SYSTEM (WCCS), GRANT COUNTY.
  - VERTICAL DATUM IS REFERENCED TO USGS MEAN SEA LEVEL (MSL).
  - GROUNDWATER ELEVATIONS WERE COLLECTED FROM MONITORING WELLS ON APRIL 13 THROUGH 14, 2020.

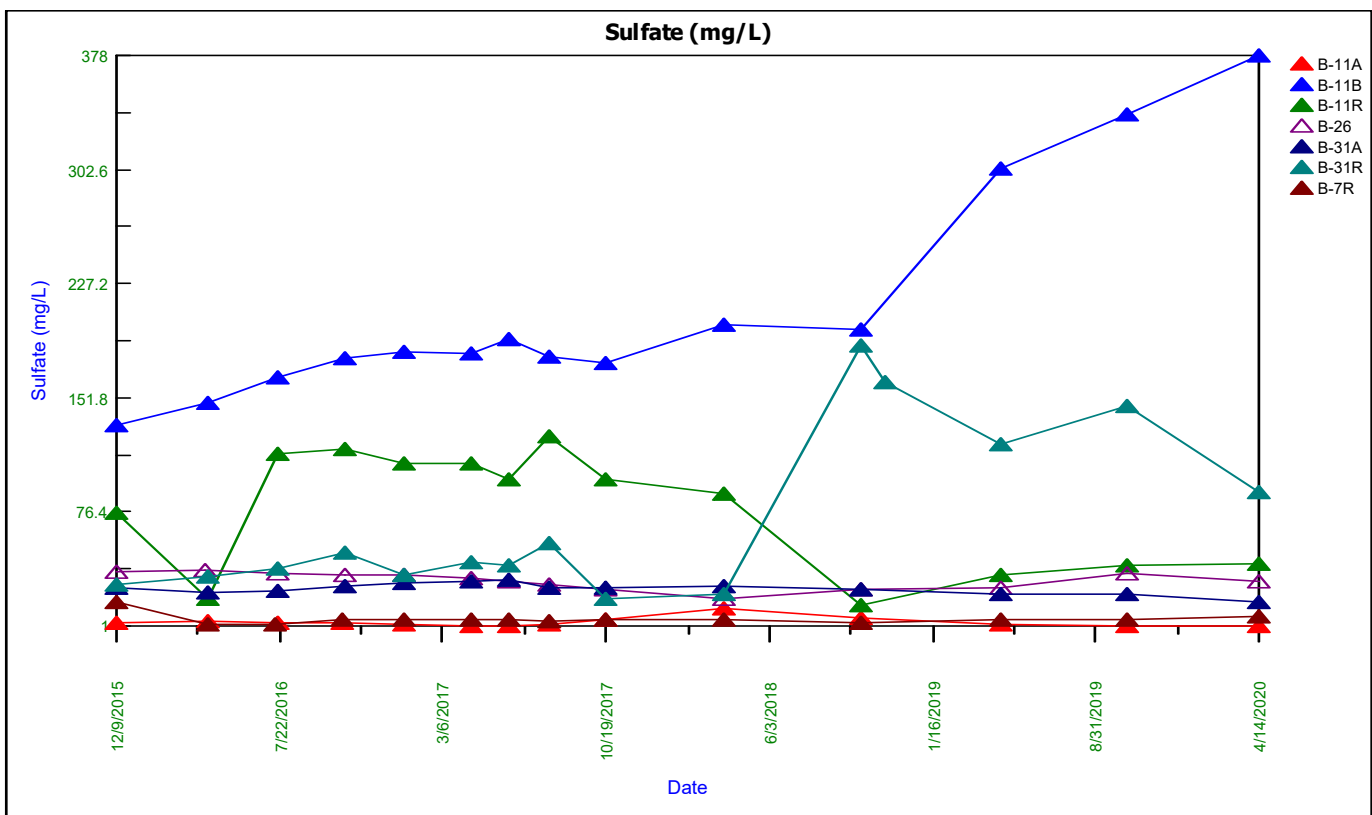
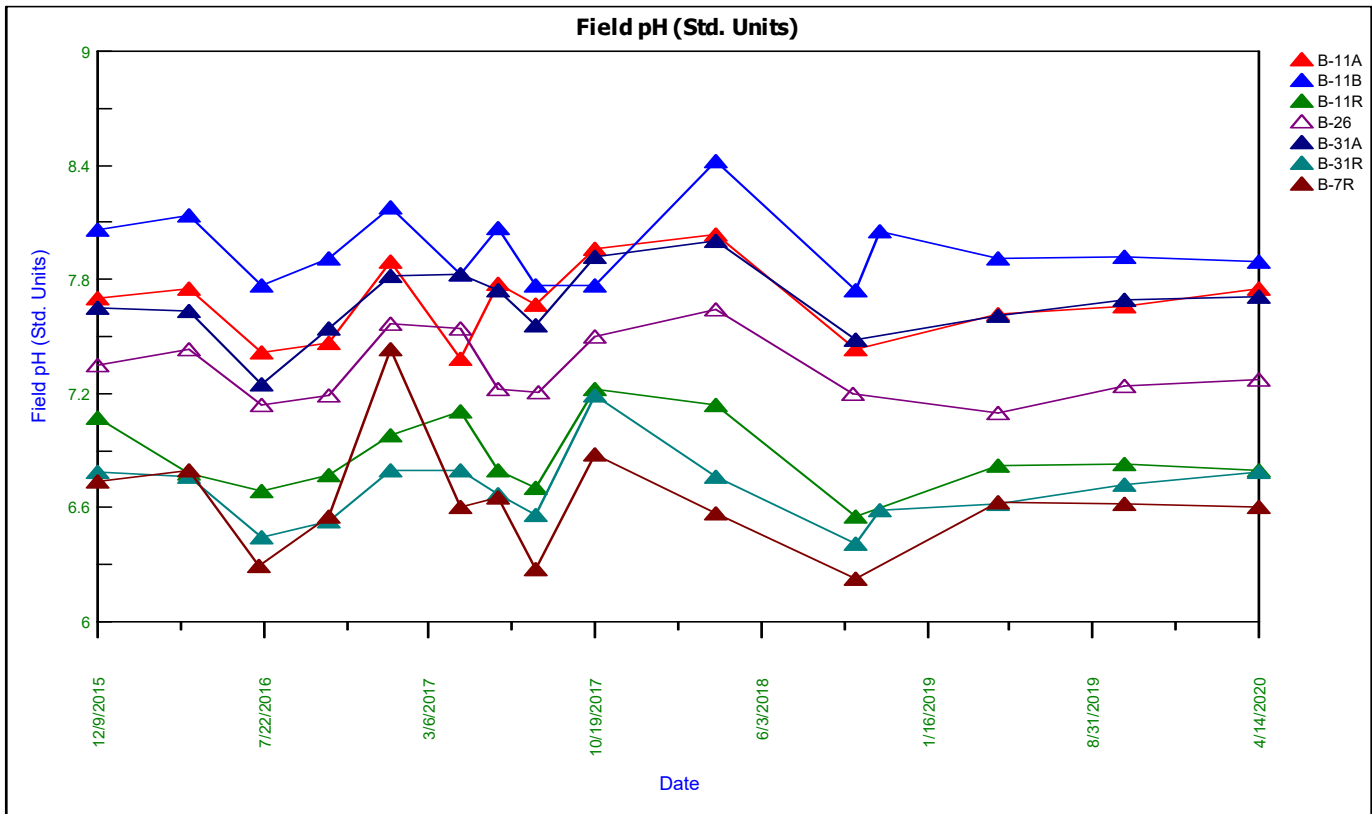


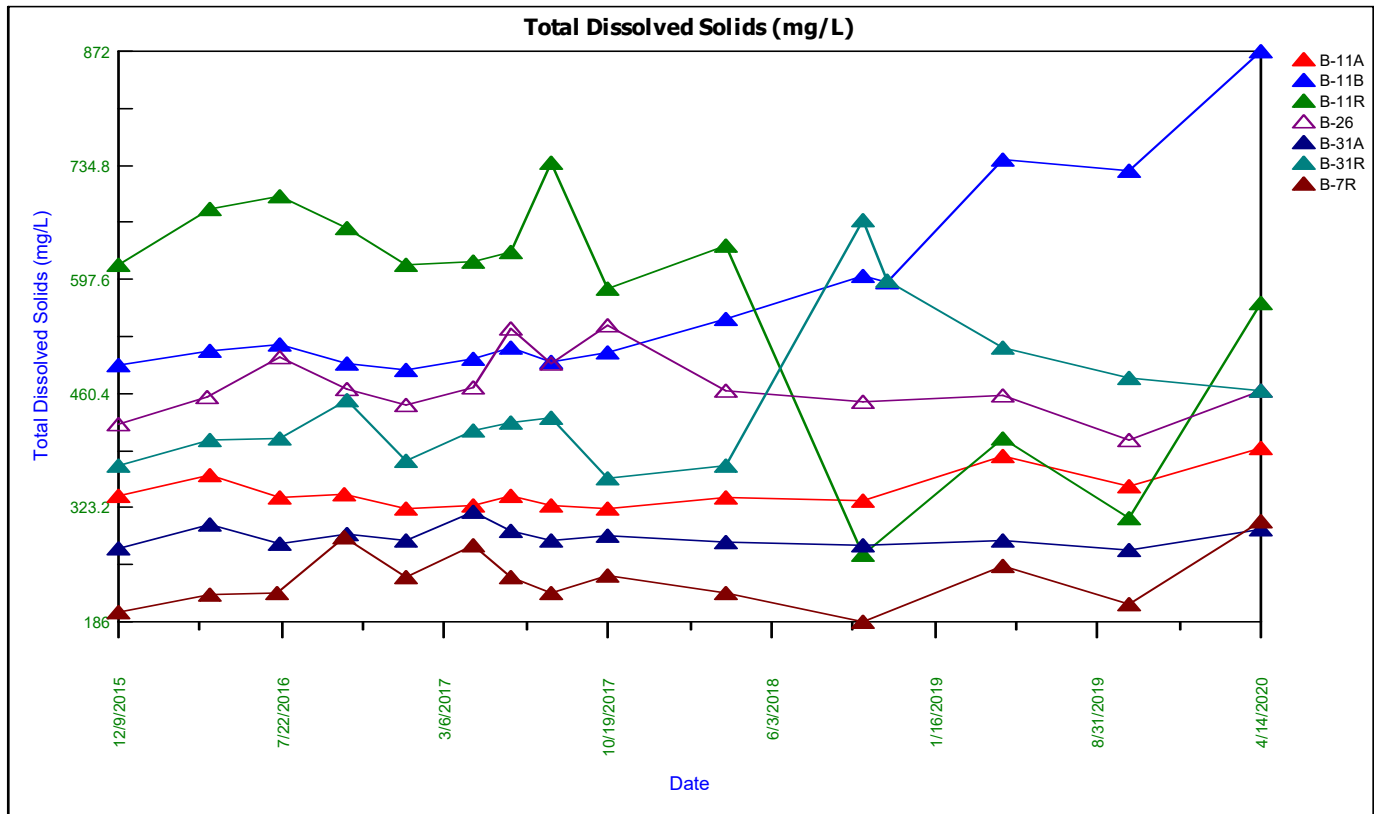
CLIENT	PROJECT NO.	25220071.00	ENGINEER	SCS ENGINEERS 2830 DAIRY DRIVE MADISON, WI 53718-6751 PHONE: (608) 224-2830	FIGURE 4
	DRAWN BY:	11/27/2019			
SITE	DRAWN BY:	BSS/ZTW	ENGINEER	SCS ENGINEERS 2830 DAIRY DRIVE MADISON, WI 53718-6751 PHONE: (608) 224-2830	FIGURE 4
	CHECKED BY:	NDK			
ALLIANT ENERGY 4902 N. BILTMORE LANE, #1000 MADISON, WI 53718	APPROVED BY:	SCC 09/30/2020	ENGINEER	SCS ENGINEERS 2830 DAIRY DRIVE MADISON, WI 53718-6751 PHONE: (608) 224-2830	FIGURE 4
	APPROVED BY:	SCC 09/30/2020			
PROJECT NO.		25220071.00	WATER TABLE FLOW MAP APRIL 2020		
DRAWN BY:		11/27/2019	ALLIANT ENERGY NELSON DEWEY GENERATING STATION CASSVILLE, WISCONSIN		
CHECKED BY:		NDK	WATER TABLE FLOW MAP APRIL 2020		
APPROVED BY:		SCC 09/30/2020	WATER TABLE FLOW MAP APRIL 2020		



Appendix A  
CCR Well Trend Plots

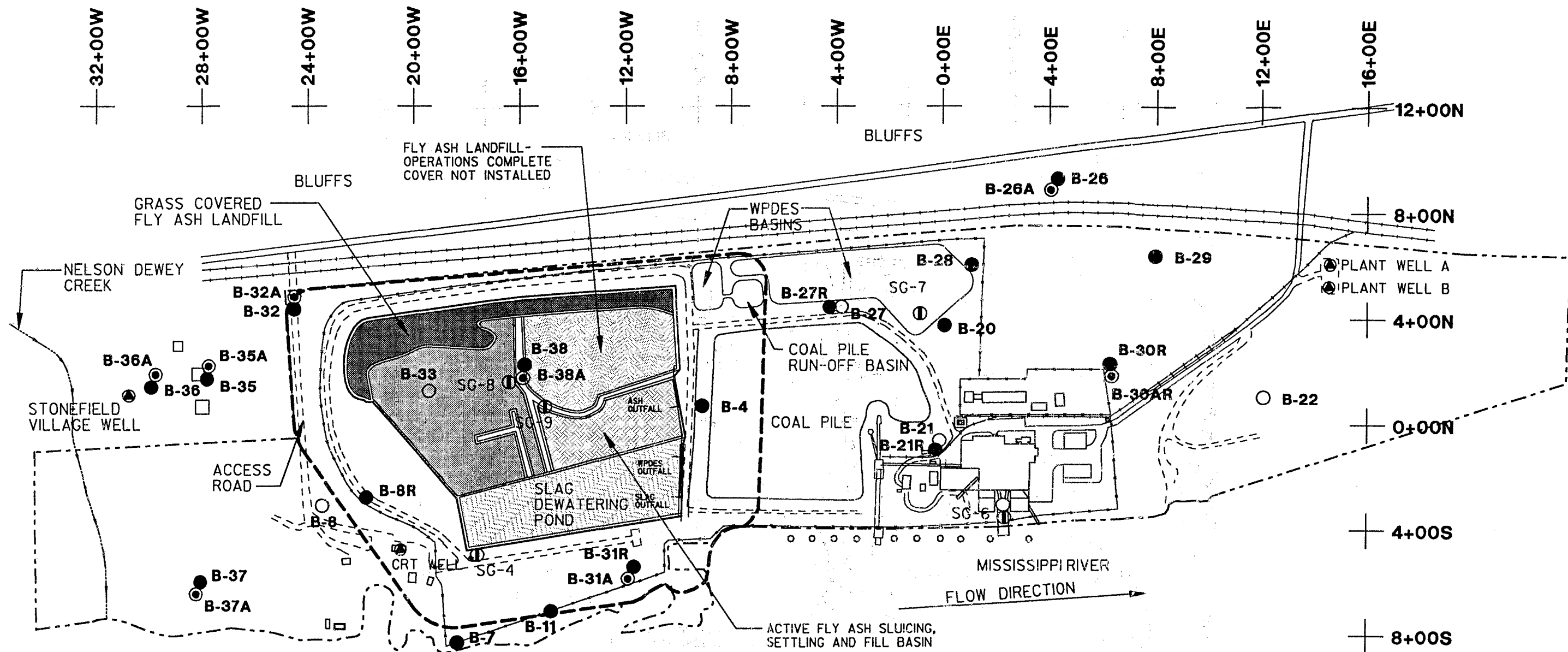






## Appendix B

### 1994 RMT Environmental Contamination Assessment Information



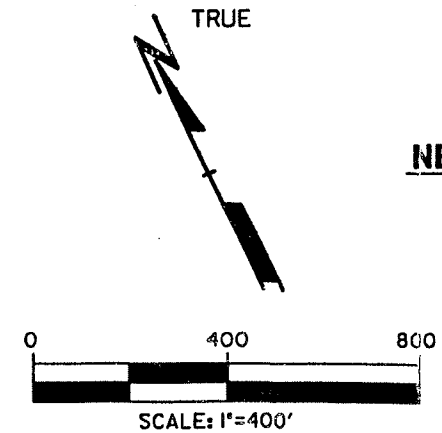
**LEGEND**

● 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
+ 8+000	LOCAL GRID
□	BUILDINGS
○	PILINGS

**NOTES**

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

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



	Drawn By	COH
	Approved By	ELM
	Date	OCTOBER 1994
	Proj. No.	2767.03
	File No.	276703OLDGN



TABLE 5

## SUMMARY OF LEACHING TEST RESULTS

Year	Fly Ash		Slag
	1983	1990 to 1992	1987 to 1992
Coal Type	Eastern (and Western)	Western (and Eastern)	Western (and Eastern) <sup>1</sup>
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	SLAG BASIN
		07-SEP-93 3302-011	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

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

TABLE 8  
 GROUNDWATER CHEMISTRY

PARAMETER	UNITS	B-04	B-04	B-07 ND	B-07 ND	B-08	B-08R
		01-JUN-93 1670-015	07-SEP-93 3293-010	01-JUN-93 1670-020	07-SEP-93 3302-004	01-JUN-93 1670-001	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	< 1.0	< 1.0	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	B-11	B-20	B-26	B-26	B-26A
		07-SEP-93 X0001	29-OCT-93 3485-001	07-SEP-93 X0002	01-JUN-93 1670-022	07-SEP-93 3302-005	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	< 1.0	< 1.0
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
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	B-30R	B-30R	B-31A	B-31A	B-31R
		07-SEP-93 3302-002	01-JUN-93 1670-012	07-SEP-93 3302-001	01-JUN-93 1670-019	07-SEP-93 3293-011	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	1.3	3.2	< 1.0	< 1.0	1.2
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	B-32	B-32	B-32A	B-32A	B-35
		07-SEP-93 3293-012	01-JUN-93 1670-002	07-SEP-93 3293-016	01-JUN-93 1670-003	07-SEP-93 3293-017	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	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
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	B-35A	B-35A	B-36	B-36	B-36A
		07-SEP-93 3293-002	01-JUN-93 1670-005	07-SEP-93 3293-003	01-JUN-93 1670-007	07-SEP-93 3293-004	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 CaCO <sub>3</sub>	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 CaCO <sub>3</sub>	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	< 1.0	< 1.0	1.0	2.6	< 1.0
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	B-37	B-37A	B-38	B-38	B-38A
		07-SEP-93 3293-005	07-SEP-93 3302-007	07-SEP-93 3302-008	01-JUN-93 1670-016	07-SEP-93 3293-006	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 CaCO <sub>3</sub>	MG/L	90
CHLORIDE	MG/L	21
COD	MG/L	
FLUORIDE	MG/L	3.4
HARDNESS AS CaCO <sub>3</sub>	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)	Chloride (mg/L)	Sulfate (mg/L)	TDS (mg/L)
<b>WPDES POND</b>								
SED-1	8/3/2016	0-1.3	Fly Ash	--	240	4.3	4.4	54
SED-2	8/3/2016	0-1.0	Fly Ash	--	200	4.3	11.5	60
QC-3 (SED-2)	8/3/2016	0-1	Fly Ash	--	240	3.5 J	6.1	52
SED-3	7/20/2016	0-4.5	Slag	--	130	2.7 J	5	28
	7/20/2016	4.5-5.5	SP	--	<50	2.5 J	<2.0	14 J
SED-4	7/19/2016	0-4.8	ML	--	510	10.5 J	11.9 J	86
	7/19/2016	4.8-5.5		--	74 J	NA	NA	NA
GP-19	8/4/2016	8-12	SM	--	62 J	2.4 J	2 J	16 J
<b>SLAG POND</b>								
SED-5	7/20/2016	0-1.6	ML-OL	--	54 J	3.2 J	33.3	90
SED-6	7/20/2016	0-1.0	ML	--	60 J	3.7 J	59.1	130
SED-7	8/4/2016	0-3.0	Fly Ash	--	88 J	4	10.5	76
SED-8	8/4/2016	1.0-1.5	Fly Ash	--	82 J	3.7 J	12.1	74
<b>COAL YARD</b>								
TP-CY-1	7/19/2016	0-0.5	Coal	--	140	<20.0	<20.0	32
	7/19/2016	3.0-3.5	SM	--	100 J	2.8 J	<2.0	20
TP-CY-3	7/20/2016	1.9-2.1	GM	--	<50	3.9 J	2.8 J	50
	7/20/2016	4.8-5.5	SM	--	NA	NA	NA	NA
TP-CY-4	7/19/2016	0-2.8	Coal	--	190	<20.0	<20.0	38
	7/19/2016	2.8-3.2	GP & SM	--	<50	<10.0	<10.0	34
	7/19/2016	3.6-4.8	Slag	--	<50	<20.0	<20.0	10 J
	7/19/2016	4.8-5.0		--	NA	NA	NA	NA
TP-CY-6	7/19/2016	0-0.5	Coal	--	190	<20.0	<20.0	54
	7/19/2016	0.7-1.0	SP	--	<50	2.5 J	2.3 J	30
TP-CY-10	7/19/2016	0-0.5	Coal	--	120	2.4 J	11.6	48
	7/19/2016	1.0-2.0	SM	--	<50	2.2 J	2.3 J	28
TP-CY-12	7/20/2016	0-0.3	Coal	--	160	<20.0	<20.0	44
	7/20/2016	0.3-2.0	SP	--	<50	2.2 J	2.2 J	24
	7/20/2016	2.0-2.7	SP	--	<50	2.3 J	27.5	50
QC-1 (TP-CY-12)	7/20/2016	0.3-2.0	SP	--	<50	2.6 J	2.5 J	24
<b>SLAG HANDLING AREA</b>								
GP-5	8/3/2016	12.5-15	Fly Ash	--	100	<2.0	3.0 J	22
	8/3/2016	18-24	ML & SM	--	99 J	3.3 J	<2.0	24
GP-7	8/3/2016	7.5-18	Slag	--	<50	2.2 J	<2.0	<8.7
QC-2 (GP-7)	8/3/2016	7.5-18	Slag	--	<50	2.2 J	<2.0	10 J
GP-14	8/4/2016	12.5-15	Fly Ash	--	120	<2.0	13.4	96

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

Sample	Date	Depth (feet)	Material Type	Lab Notes	Boron (ug/L)	Chloride (mg/L)	Sulfate (mg/L)	TDS (mg/L)
<b>SLAG SAMPLES<sup>1</sup></b>								
Slag 01 <sup>2</sup>	6/3/2013	--	Slag	--	NA	NA	NA	NA
Slag 01	12/23/2013	--	Slag	--	12.5 AB	0.277 B	0.218	NA
NED Slag Composite 2014	7/1/2014	--	Slag	--	11.7 AB* <sup>A</sup>	< 0.142	0.457 B	98 H
Slag Sample	4/14/2015	--	Slag	--	< 1020 A	0.751	0.427	NA
<b>FLY ASH SAMPLES<sup>1</sup></b>								
NED Flyash Composite <sup>2</sup>	2/14/2014	--	Fly Ash	--	NA	NA	6,530 B	NA
Week of 062815 <sup>2</sup>	7/3/2015	--	Fly Ash	--	NA	NA	6,260	NA
Week of 010916	1/4/2016	--	Fly Ash	--	NA	NA	NA	NA
NR 140 Preventative Action Limits (PALs)					200	125	125	NE
NR 140 Enforcement Standards (ESs)					1000	250	250	NE
40 CFR Part 141.62 Maximum Contaminant Levels (MCL)					NE	NE	NE	NE
NR 538 Table 1A Standards					190	125	125	NE
NR 538 Table 2A Standards					1900	1,250	1,250	NE

Abbreviations:

mg/L = micrograms per liter  
 ML = Silt  
 ML-OL = Silty Organic Clay

NE = No Standard Established  
 ML-CL = Silty Clay  
 SP = Poorly Graded Sand

NA = Not Analyzed  
 SM = Silty Sand  
 ML-OL = Silty Organic Clay

GM = Silty Gravel  
 GP = Poorly Graded Gravel  
 TDS = Total Dissolved Solids

Notes:

- Slag and Fly Ash samples were collected by the plant as part of permit requirements.
  - 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.  
 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 NDK, 9/14/2020.

I:\25220071.00\Deliverables\2020 April ASD NED\Appendix C 2017 leachate results slag and ash\[Table 4. Sediment\_Soil\_Water Leach Results-Updated.xlsx]Leach Test - SSI Parameters