2018 Annual Groundwater Monitoring and Corrective Action Report

Weston Units 3 & 4 Bottom Ash Basins

Rothschild, Wisconsin

Wisconsin Public Service Corporation

January 31, 2019

OBG
Part of Ramboll

JANUARY 31, 2019 | PROJECT #71202

2018 Annual Groundwater Monitoring and Corrective Action Report

Weston Units 3 & 4 Bottom Ash Basins

Rothschild, Wisconsin

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ACRONYMS AND ABBREVIATIONS

ASD	Alternate Source Demonstration
B	Boron
Ca	Calcium
CCR	Coal Combustion Residual
CFR	Code of Federal Regulations
Cl	Chloride
mg/L	milligrams per liter
OBG	O'Brien & Gere Engineers, Inc., part of Ramboll
SO_4	Sulfate
SSI	Statistically Significant Increase
TBD	To be Determined
TDS	Total Dissolved Solids
Weston	Weston Generating Station
WPSC	Wisconsin Public Service Corporation

1 INTRODUCTION

This report has been prepared on behalf of Wisconsin Public Service Corporation (WPSC) by O'Brien & Gere Engineers, Inc., part of Ramboll (OBG), to provide the information required by Title 40 of the Code of Federal Regulations (40 CFR) 257.90(e) for the Weston Generating Station (Weston) Units 3 & 4 Bottom Ash Basins located in Rothschild, Wisconsin.

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

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

This report provides the required information for the Weston Units 3 & 4 Bottom Ash Basins for calendar year 2018.

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

2 MONITORING AND CORRECTIVE ACTION PROGRAM STATUS

The Weston Units 3 & 4 Bottom Ash Basins remained in Detection Monitoring (40 CFR 257.94) during 2018. Detection Monitoring Program sampling dates and parameters collected are provided in Table 1. Analytical results from the two sampling rounds collected and those statistically analyzed in 2018 are included in Table 2.

In accordance with 40 CFR 257.93(h)(2), the *Statistical Analysis Plan, Weston Units 3 & 4 Bottom Ash Basins* (Natural Resource Technology, an OBG Company, 2017), and within 90 days of completing sampling and analysis (receipt of data); analytical data was evaluated for statistically significant increases (SSIs) over background concentrations for Appendix III constituents at monitoring wells at the Weston Units 3 & 4 Bottom Ash Basins. SSIs and the SSI determination dates are provided in Table 1.

40 CFR 257.94(e)(2) allows 90 days to demonstrate that a SSI was caused by a source other than the CCR unit or resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality (i.e., an alternate source demonstration). An alternate source demonstration (ASD) was completed for the Weston Units 3 & 4 Bottom Ash Basins on the date provided in Table 1. The ASD document is provided in Appendix A.

Table 1. Detection Monitoring Program Summary

Detection Monitoring Round	Sampling Date	Parameters Collected	Data Received	SSI Determination Date	SSI Parameters	Resample Date	ASD Date
1	10/12/2017	Appendix III	10/25/2017	1/15/2018	B, Ca, Cl, SO_4, TDS	1/18/2018	4/15/2018
2	4/25/2018	Appendix III	5/10/2018	8/8/2018	Cl	NA	4/15/2018
3	12/20/2018	Appendix III	1/14/2019	TBD (before 4/14/2019)	TBD	TBD	TBD

B – Boron
Ca – Calcium
Cl – Chloride
NA – Not applicable
SO_4 – Sulfate
TBD – To Be Determined
TDS – Total Dissolved Solids

The Weston Units 3 & 4 Bottom Ash Basins remain in the Detection Monitoring Program in accordance with 40 CFR 257.94.

3 KEY ACTIONS COMPLETED IN 2018

Two groundwater sampling events were completed in 2018 as part of the Detection Monitoring Program, Rounds 2 and 3. One groundwater sample was collected from each background and downgradient well in the monitoring system during each event. One resampling event was completed in accordance with the *Statistical Analysis Plan, Weston Units 3 & 4 Bottom Ash Basins* (Natural Resource Technology, an OBG Company, 2017). Sampling dates are summarized in Table 1. All samples were collected and analyzed in accordance with the *Sampling and Analysis Plan, Weston Units 3 & 4 Bottom Ash Basins* (Natural Resource Technology, an OBG Company, 2017). All monitoring data obtained under 40 CFR 257.90 through 257.98 (as applicable) in 2018 are presented in Table 2.

A map showing the groundwater monitoring system, including the CCR unit and all background (upgradient) and downgradient monitoring wells with well identification numbers, for the Weston Units 3 & 4 Bottom Ash Basins is presented on Figure 1. There were no changes to the monitoring system in 2018.

Statistical evaluation, including SSI determinations, of analytical data from the Detection Monitoring Program for October 12, 2017 (Detection Monitoring Round 1) and April 25, 2018 (Detection Monitoring Round 2) were completed within 90 days of receipt of the analytical data. Statistical evaluation of analytical data is being performed in accordance with the *Statistical Analysis Plan, Weston Units 3 & 4 Bottom Ash Basins* (Natural Resource Technology, an OBG Company, 2017).

An ASD for Detection Monitoring Round 1 dated April 15, 2018 was prepared for the Weston Units 3 & 4 Bottom Ash Basins in 2018 and is provided in Appendix A. The ASD dated April 15, 2018 is also applicable to Detection Monitoring Round 2. The ASD was prepared in accordance with 40 CFR 257.94(e)(2) and provides a description, data, and pertinent information supporting an alternate source applicable to the wells and parameters with SSIs at the Weston Units 3 & 4 Bottom Ash Basins. The ASD supports the position that the SSIs observed during the Detection Monitoring Program were not due to a release from the CCR unit but were either from anthropogenic impacts in the area of the Weston Units 3 & 4 Bottom Ash Basins or from naturally occurring conditions (e.g. natural variation in groundwater quality).

4 PROBLEMS ENCOUNTERED AND ACTIONS TO RESOLVE PROBLEMS

No problems were encountered during implementation of the Detection Monitoring Program during 2018. Groundwater samples were collected and analyzed in accordance with the *Sampling and Analysis Plan, Weston Units 3 & 4 Bottom Ash Basins* (Natural Resource Technology, an OBG Company, 2017), and all data was accepted.

5 KEY ACTIVITIES PLANNED FOR 2019

The following key activities are planned for 2019:

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

REFERENCES

Natural Resource Technology, an OBG Company, 2017, Sampling and Analysis Plan, Weston Units 3 & 4 Bottom Ash Basins, Rothschild, Wisconsin, October 2, 2017.

Natural Resource Technology, an OBG Company, 2017, Statistical Analysis Plan, Weston Units 3 & 4 Bottom Ash Basins, Rothschild, Wisconsin, October 17, 2017.

Tables

Weston Units 3&4 Bottom Ash
Table 2. Weston Units 3 &4 Bottom Ash Basins: Appendix III Analytical Results

Date Range: 10/01/2017 to 12/20/2018

Well Id	Date Sampled	Lab Id	B, tot, mg/L	Ca, tot, mg/L	Cl, tot, mg/L	F, tot, mg/L	pH (field), STD	SO4, tot, mg/L
OW-45	10/12/2017	40158567001	0.0351	19.6000	62.4	<0.10	6.84	14.6
	01/18/2018	40163679001	0.0373				7.00	
	04/25/2018	40168130001	0.0338	17.9000	32.2	<0.10	7.41	20.9
	12/20/2018	AE32672	0.0520	30.0000	100.0	0.09	6.40	11.0
OW-46	10/12/2017	40158567002	0.0406	12.6000	42.8	<0.10	6.56	15.8
	01/18/2018	40163679002	0.0345				7.62	
	04/25/2018	40168130002	0.0319	30.6000	122.0	<0.10	7.53	22.5
	12/20/2018	AE32673	0.0340	13.0000	56.0	0.10	6.60	12.0
OW-47R	10/12/2017	40158567003	0.0818	21.5000	63.2	<0.10	6.90	27.7
	01/18/2018	40163679003	0.0862				7.39	
	04/25/2018	40168130003	0.0684	22.6000	59.3	<0.10	7.23	25.1
	12/20/2018	AE32674	0.0990	24.0000	68.0	0.09	6.10	35.0
OW-48	10/12/2017	40158567004	0.4210	53.4000	86.4	<0.10	6.90	93.2
	01/18/2018	40163679004	0.5450				7.49	
	04/25/2018	40168130004	0.6240	72.6000	92.2	<0.10	7.51	144.0
	12/20/2018	AE32675	0.4800	63.0000	82.0	0.14	6.30	130.0
OW-49	10/12/2017	40158567005	0.4400	76.0000	103.0	<0.10	6.80	145.0
	01/18/2018	40163679005	0.4440				7.48	
	04/25/2018	40168130005	0.4140	63.9000	93.8	<0.10	7.37	110.0
	12/20/2018	AE32676	0.3800	65.0000	85.0	0.08	6.10	150.0
OW-50	10/12/2017	40158567006	0.0374	32.4000	74.3	<0.10	6.21	14.2
	04/25/2018	40168130006	0.0313	32.1000	73.1	<0.10	6.70	17.1
	12/20/2018	AE32677	0.0400	30.0000	60.0	0.08	5.70	21.0

Weston Units 3&4 Bottom Ash
Table 2. Weston Units 3 &4 Bottom Ash Basins: Appendix III Analytical Results

Date Range: 10/01/2017 to 12/20/2018

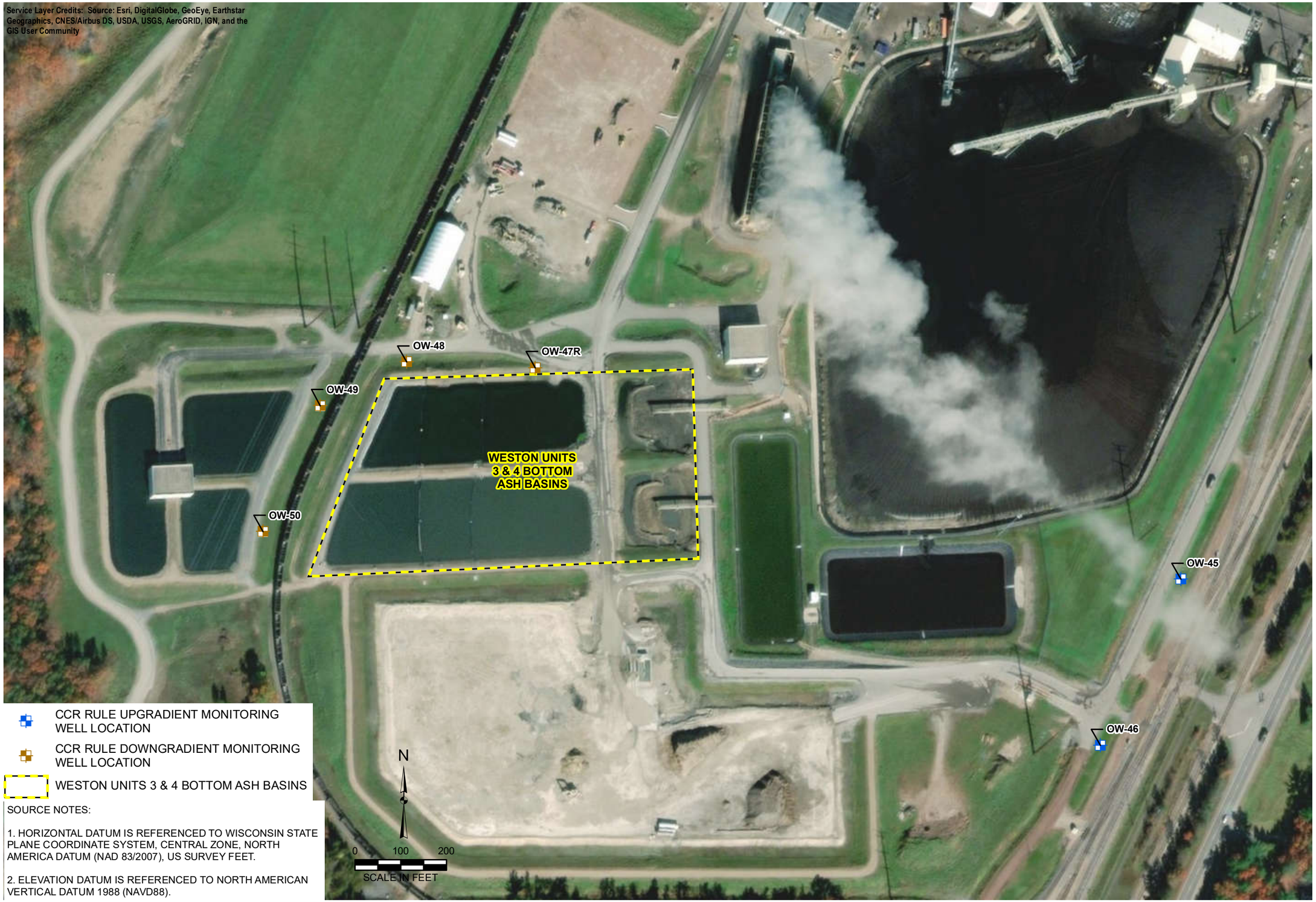
Well Id	Date Sampled	Lab Id	TDS, mg/L
OW-45	10/12/2017	40158567001	186.0
	04/25/2018	40168130001	154.0
	12/20/2018	AE32672	270.0
OW-46	10/12/2017	40158567002	164.0
	04/25/2018	40168130002	304.0
	12/20/2018	AE32673	150.0
OW-47R	10/12/2017	40158567003	204.0
	04/25/2018	40168130003	206.0
	12/20/2018	AE32674	220.0
OW-48	10/12/2017	40158567004	332.0
	04/25/2018	40168130004	434.0
	12/20/2018	AE32675	400.0
OW-49	10/12/2017	40158567005	466.0
	04/25/2018	40168130005	396.0
	12/20/2018	AE32676	430.0
OW-50	10/12/2017	40158567006	246.0
	04/25/2018	40168130006	266.0
	12/20/2018	AE32677	220.0

Figures

GROUNDWATER SAMPLING WELL LOCATION MAP

2018 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT
WESTON GENERATING STATION UNITS 3 & 4 BOTTOM ASH BASINS
ROTHSCHILD, WISCONSIN

DRAWN BY/DATE: MPG 1/16/18
REVIEWED BY/DATE: GRL 1/16/18
APPROVED BY DATE: GRL 1/16/18



CCR RULE UPGRADIENT MONITORING WELL LOCATION

CCR RULE DOWNGRADIENT MONITORING WELL LOCATION

WESTON UNITS 3 & 4 BOTTOM ASH BASINS

SOURCE NOTES:

1. HORIZONTAL DATUM IS REFERENCED TO WISCONSIN STATE PLANE COORDINATE SYSTEM, CENTRAL ZONE, NORTH AMERICA DATUM (NAD 83/2007), US SURVEY FEET.

2. ELEVATION DATUM IS REFERENCED TO NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88).

PROJECT NO: 71202

FIGURE NO: 1

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Appendix A

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

OBG

Alternate Source Demonstration

Weston Units 3 & 4 Bottom Ash Basins

Rothschild, WI

Wisconsin Public Service Corporation

April 15, 2018

OBG

APRIL 15, 2018 | PROJECT #67985

Alternate Source Demonstration

Weston Units 3 & 4 Bottom Ash Basins
Rothschild, Wisconsin

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ACRONYMS AND ABBREVIATIONS

ASD	alternate source demonstration
Bottom Ash Basins	Weston Units 3 & 4 Bottom Ash Basins
CCR	Coal Combustion Residuals
CFR	Code of Federal Regulations
mg/L	milligrams per liter
NRT	Natural Resource Technology, an OBG Company
OBG	O'Brien & Gere Engineers, Inc.
SSI	statistically significant increase
STD	standard units
TDS	Total Dissolved Solids
WAC	Wisconsin Administrative Code
WDNR	Wisconsin Department of Natural Resources
WPDES	Wisconsin Pollution Discharge Elimination System

1 INTRODUCTION

1.1 OVERVIEW

This document has been prepared on behalf of Wisconsin Public Service Corporation (WPSC) by O'Brien & Gere Engineers, Inc. (OBG) to provide pertinent information for an alternate source demonstration (ASD) as allowed by 40 CFR § 257.94(e)(2) for the Weston Units 3 &4 Bottom Ash Basins (Bottom Ash Basins), located at the Weston Generating Station in Rothschild, Wisconsin (Figure 1).

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

- Boron and calcium above the background prediction interval at well OW-47R
- Boron, calcium, and total dissolved solids above the background prediction interval at well OW-48
- Boron, calcium, chloride, sulfate, and total dissolved solids (TDS) above the background prediction interval at well OW-49
- Calcium and total dissolved solids above the background prediction interval at well OW-50

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

1.2 BACKGROUND

The Bottom Ash Basins were constructed and placed into service in 1981 and operate in accordance with Wisconsin Pollution Discharge Elimination System (WPDES) Permit No. WI-0042765. The impoundments were constructed and lined in accordance with the design requirements found in Wisconsin Administrative Code (WAC) Chapter NR 213 - *Lining of Industrial Lagoons and Design of Storage Structures*; however, the basins were not in compliance with 40 CFR Part 257 Subpart D (CCR Rule) when promulgated and therefore categorized as "unlined" impoundments with respect to the federal regulation. The basins required retrofitting to be considered lined.

Retrofitting of the Bottom Ash Basins was completed in 2017, and both sets of basins were placed into service by October 4, 2017. The timeline of retrofitting activities justifies the use of intrawell statistics since observed groundwater concentrations were present prior to the completion of retrofitting and returning the existing basins to service.

1.3 GROUNDWATER MONITORING

Background groundwater sampling in compliance with the CCR Rule was initiated in February 2016, with the final round of background groundwater samples collected in June 2017. Groundwater is also sampled to meet the requirements of a Wisconsin Department of Natural Resources (WDNR) program and groundwater samples have been collected on other portions of the site since 1976. The CCR Rule monitoring program includes background wells OW-45 and OW-46 and downgradient wells OW-47R through OW-50. A map showing the

groundwater monitoring system, including the WDNR program and CCR Rule monitoring wells, is presented on Figure 1. Groundwater generally flows east to west, with a component to the northwest (Figure 2). As reported in the 2017 Annual Groundwater Monitoring and Corrective Action (OBG, 2018), based on observed groundwater elevation fluctuations and the inability to consistently sample monitoring well OW-47 during low water table conditions, well OW-47 was abandoned in 2017. OW-47 was abandoned on June 29, 2017 and a deeper replacement well OW-47R was constructed on June 29, 2017.

All monitoring data obtained under 40 CFR § 257.90 through 257.98 (as applicable) are presented in Table 1. Statistical evaluation of analytical data was performed in accordance with the Statistical Analysis Plan, Weston Units 3 & 4 Bottom Ash Basins (Natural Resource Technology, an OBG Company, 2017b).

1.4 GEOLOGY

A previous investigation and report focused on Weston North Unit 4, just north of Weston Units 3 & 4 Bottom Ash Basins (Black & Veatch Corporation, 2004), indicates the area is generally underlain by less than 1 foot of topsoil and fill, followed by unlithified alluvial sediments (Wisconsin River deposits), unlithified outwash sediments and weathered granite bedrock (Ninemile Granite). Representative cross-sections based on borings completed by Soil Testing Services of Wisconsin, Inc. in July 1974 near Weston Unit 3 show the geologic units found near Weston Unit 3 & 4 Bottom Ash Basins and their relative contact elevations (Figure 2.4-4, Attachment A). The topsoil and fill encountered in soil borings completed as part of the installation of the CCR monitoring network in 2015 and 2017 at the Weston Unit 3 & 4 Bottom Ash Basins was typically black silt with variable amounts of sand and gravel. The alluvium encountered in the CCR monitoring network borings was mostly brown to dark brown sand. Sand particle distribution ranged from well-graded to poorly-graded, and sand grain size varied from fine to coarse with variable amounts of gravel. The deepest soil boring completed during the installation of the CCR Rule monitoring network in 2015 and 2017 ended in alluvial sands at a depth of 50 feet below ground surface (OW-47R) and did not encounter bedrock. The 2004 B&V investigation for Weston North Unit 4 indicated granite bedrock surface occurred at depths ranging from 61.1 to 107.5 feet below ground surface. The bedrock surface encountered near Weston North Unit 4 was generally extremely weathered (top 1 to 8 feet), and graded into competent bedrock with depth (typically within 5 feet). As the granite bedrock graded from weathered to competent with depth, the fracture density also decreased from frequent to few.

2 ALTERNATE SOURCE DEMONSTRATION

2.1 SUMMARY

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

- Boron and calcium at well OW-47R greater than the background prediction interval
- Boron, calcium, and total dissolved solids at well OW-48 greater than background prediction interval
- Boron, calcium, chloride, sulfate, and TDS at well OW-49 greater than background prediction interval
- Calcium and total dissolved solids at well OW-50 greater than background prediction

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

- Existing Groundwater Concentrations (Intrawell statistics): The Bottom Ash Basins were originally put into service in 1981. During this time the liner was constructed to comply with the requirements of WAC Chapter NR213 and was approved by the WDNR. Following promulgation of the CCR Rule, the Bottom Ash Basins were retrofitted to comply with the liner requirements included in the Rule. In effect, the existing retrofitted Bottom Ash Basins are considered new units and comply with the CCR Rule requirements, they were placed into service by October 4, 2017.

  Due to the retrofitting of the Bottom Ash Basins and date they were placed into service, groundwater concentrations detected during the first eight rounds indicate that the uppermost aquifer had existing concentrations that exceeded background from prior site activities. It is therefore appropriate to use intrawell statistics to determine the effects of the retrofitted Bottom Ash Basins on groundwater quality.
- Upgradient Industrial Activities: Following completion of intrawell statistics, an SSI for chloride was detected in OW-50. However industrial activities, fertilizer application, and application of road salt during winter can lead to increased chloride concentrations in groundwater. Based on the geochemistry of the groundwater, increased chloride concentrations are not related to the retrofitted Bottom Ash Basins.

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

2.2 ASD SUPPORTING INFORMATION

2.2.1 Existing Groundwater Concentrations

Based on 40 CFR § 257.71, the Bottom Ash Basins existed as unlined surface impoundments. To meet the liner requirements of the CCR Rule, the bottom ash basins were retrofitted with liners in accordance with 40 CFR § 257.102 (k) – Criteria to Retrofit an Existing CCR Surface Impoundment. The liner retrofitting work was completed, and the Bottom Ash Basins were placed into service by October 4, 2017 as outlined in *Construction Documentation Report; Weston Units 3 & 4 Bottom Ash Basin Liner Retrofit*, prepared by GEI Consultants, Inc., dated January 10, 2017 (CDR). In summary, retrofitting of the basins included the following:

- Removal of all CCR and CCR impacted soil and sediments from the basins
- Decontamination of all areas affected by releases from the basins
- Preparation of subgrade
- Installation of an alternative composite liner system
- Reinstallation of the protective soil layers in the primary basins
- Installation of ballast and silt screens in the northeast and southeast secondary basins

- Installation of ballast in the northwest and southwest secondary basins

The retrofitted lined basins will remain in use until WPSC completes modifications to the Weston Unit 3 boiler to comply and ceases sluicing of bottom ash. Once the boiler modifications are complete, the primary ash basins are planned for closure by removal and the secondary basins will be dewatered, cleaned to remove all CCR and CCR impacted soil/sediment, and put back into service for management and treatment of non-CCR plant wastewater.

The retrofit was certified by GEI Consultants, Inc. (GEI; Attachment B). The retrofit and site restoration work for the basins was completed on July 21, 2017 for the south basins, and October 4, 2017 for the north basins, respectively. A marked decrease in pH values following the completion of pond retrofitting (Figure 3 below) was observed during the ASD evaluation process and after interwell statistical limits were established in accordance with the Statistical Analysis Plan[1].The change in pH indicated a change in groundwater conditions. Use of intrawell statistics is supported by the observed change in groundwater conditions and groundwater concentrations of boron, calcium, chloride, sulfate and TDS that existed prior to completion of the retrofitting as illustrated in Figures 4-8 below.

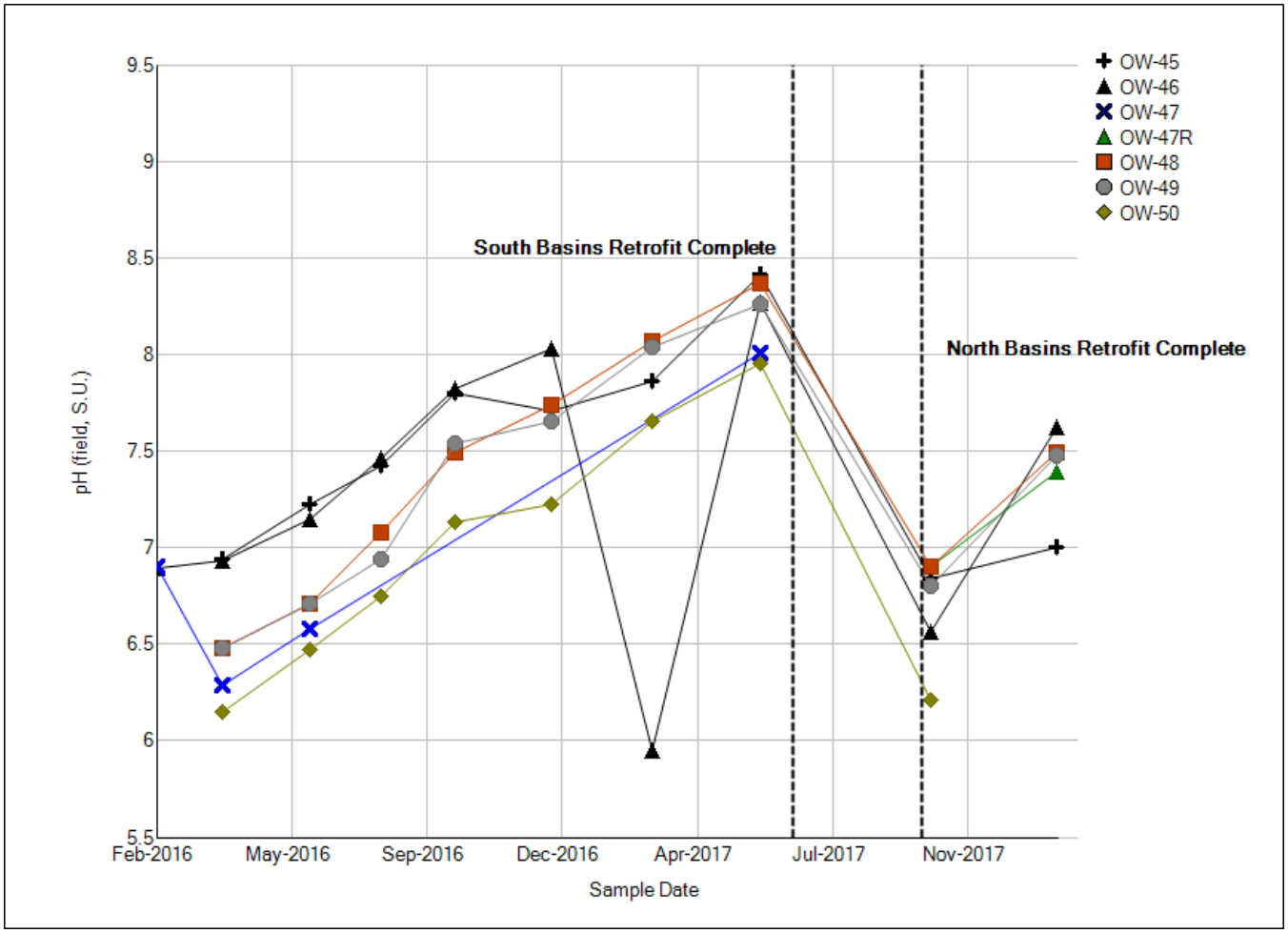


Figure 3. Time Series Plot of Field pH

[1] Natural Resource Technology, an OBG Company, 2017, Statistical Analysis Plan, Weston Units 3 & 4 Bottom Ash Basins, We Energies, October 17, 2017.

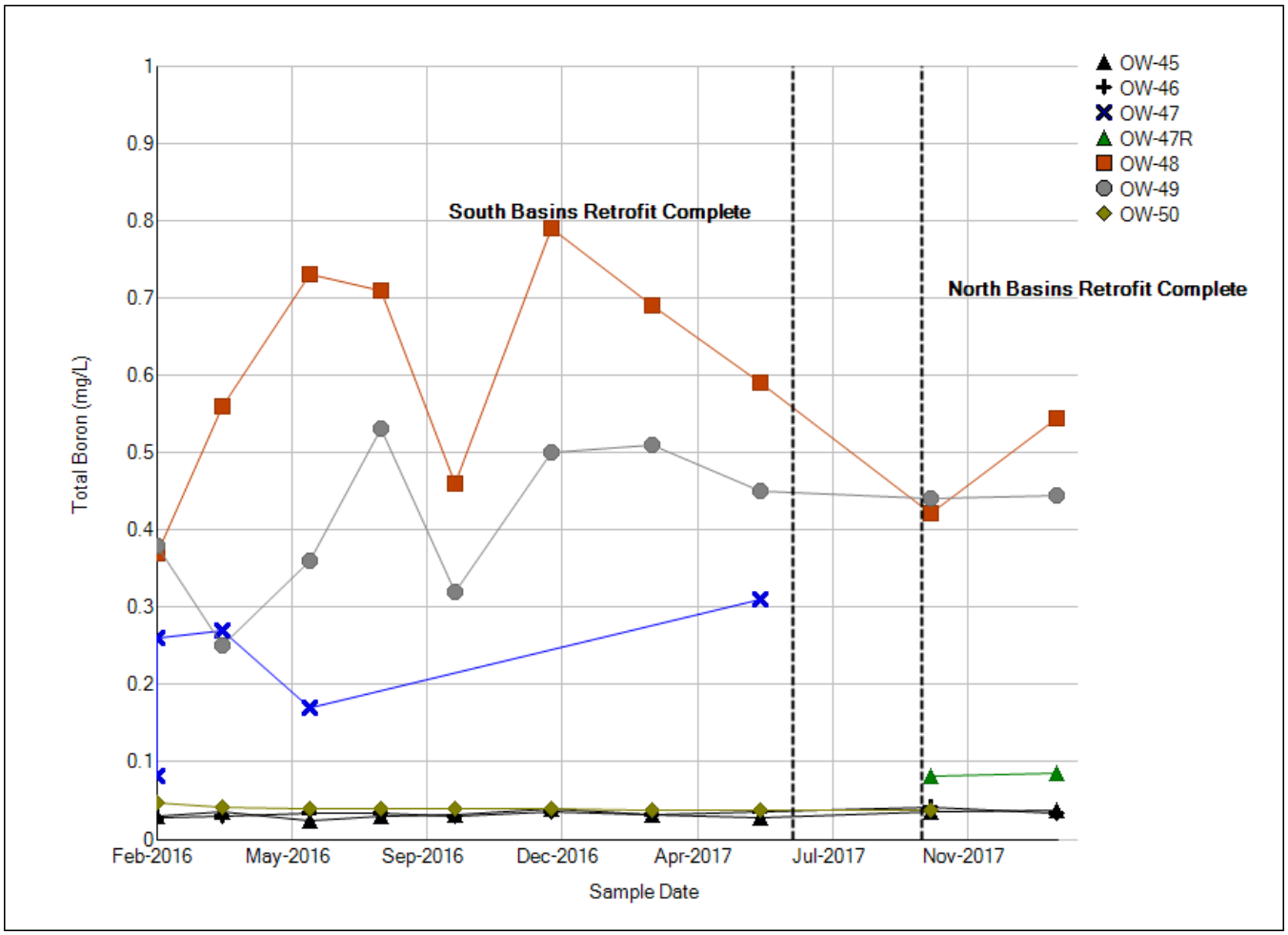


Figure 4. Time Series Plot of Boron Concentrations

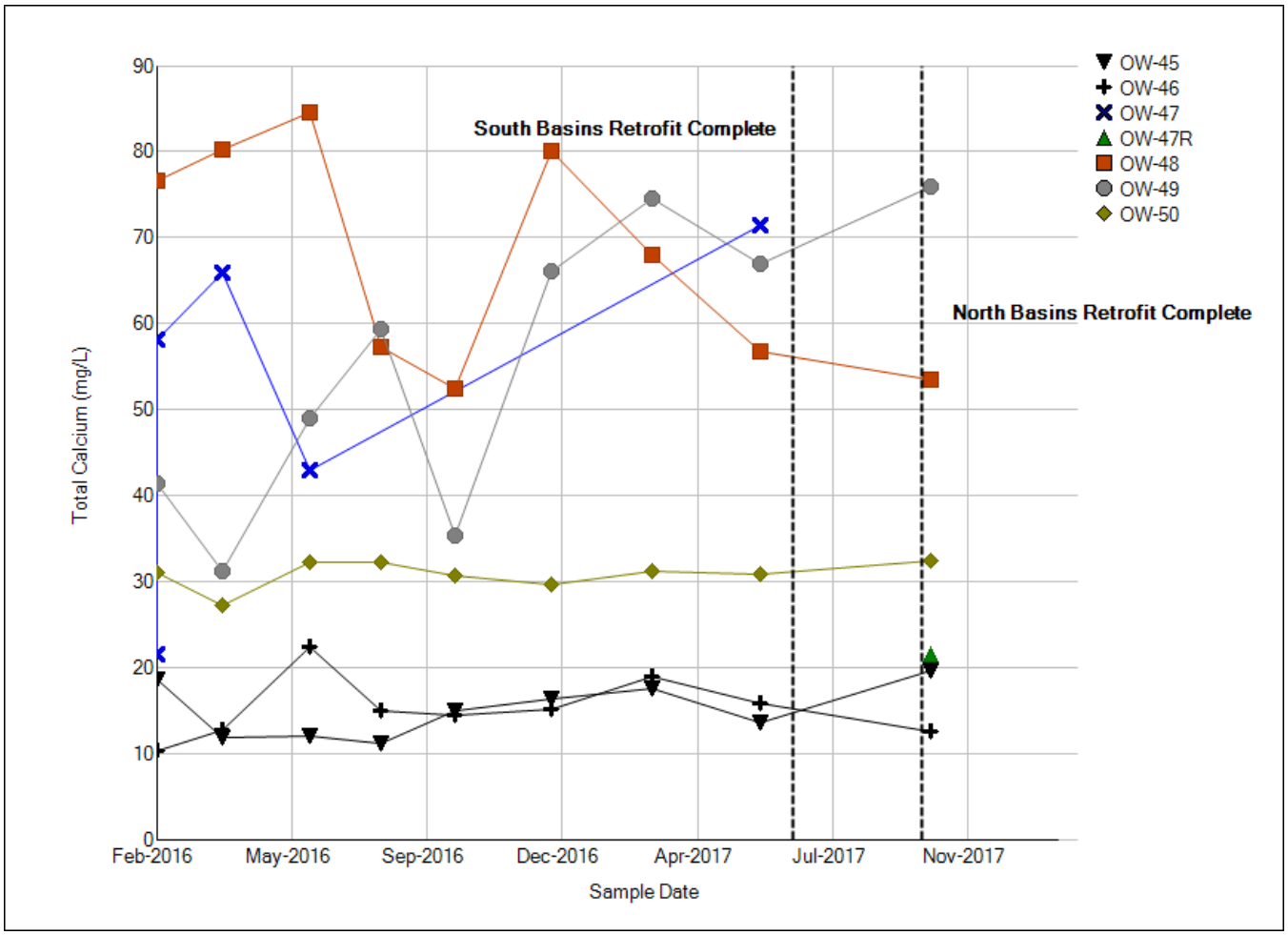


Figure 5. Time Series Plot of Calcium Concentrations

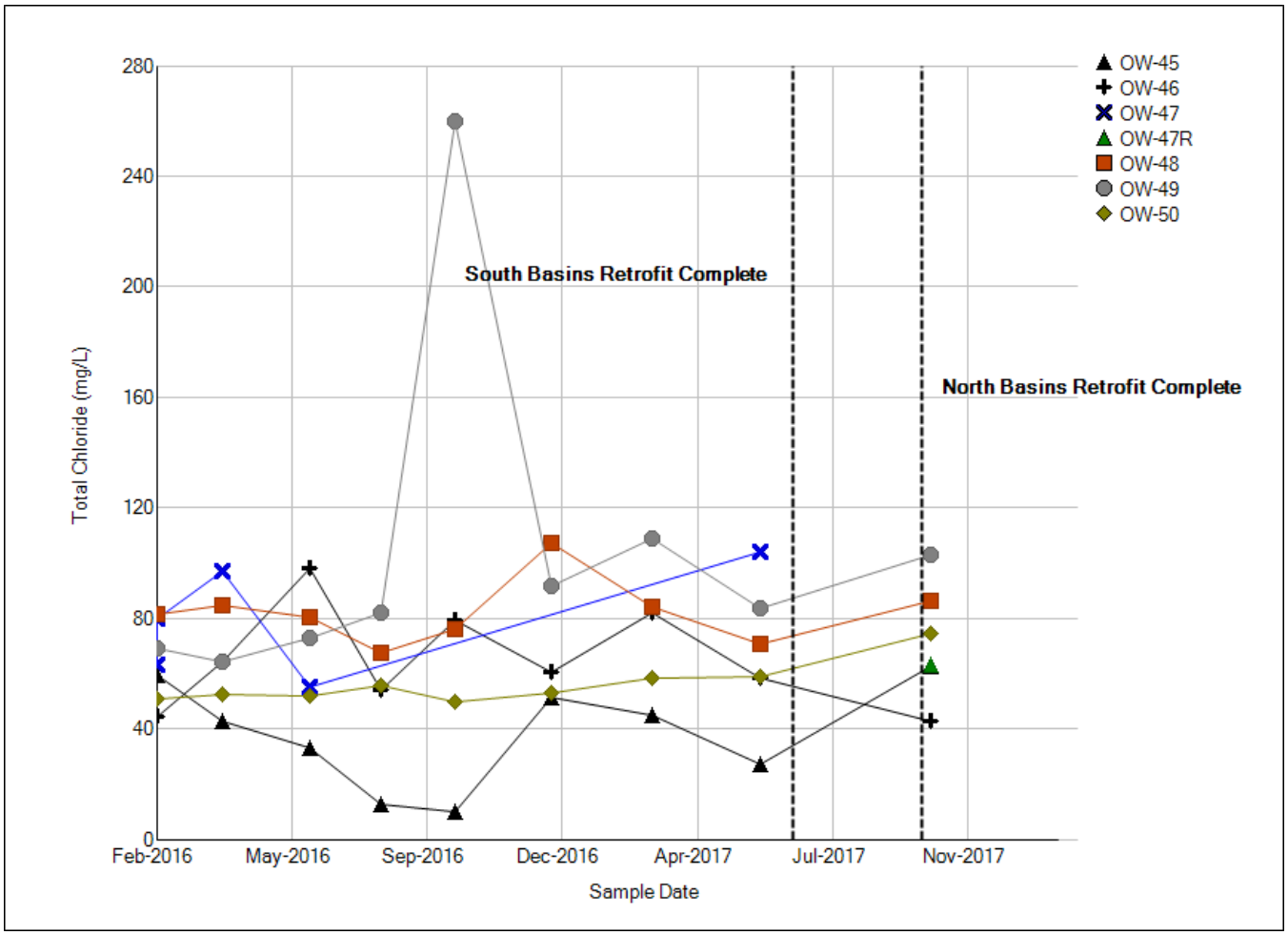


Figure 6. Time Series Plot of Chloride Concentrations

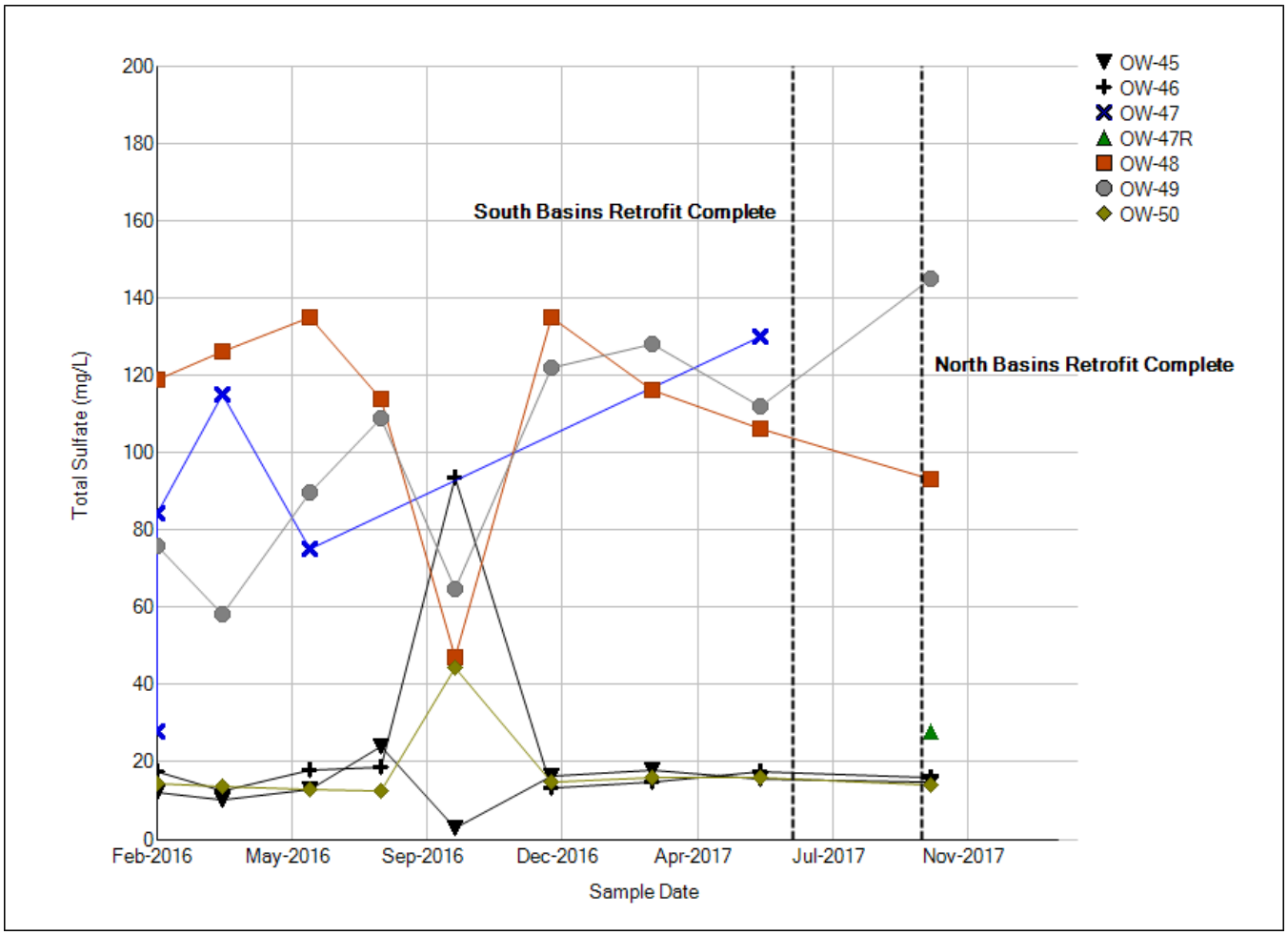


Figure 7. Time Series Plot of Sulfate Concentrations

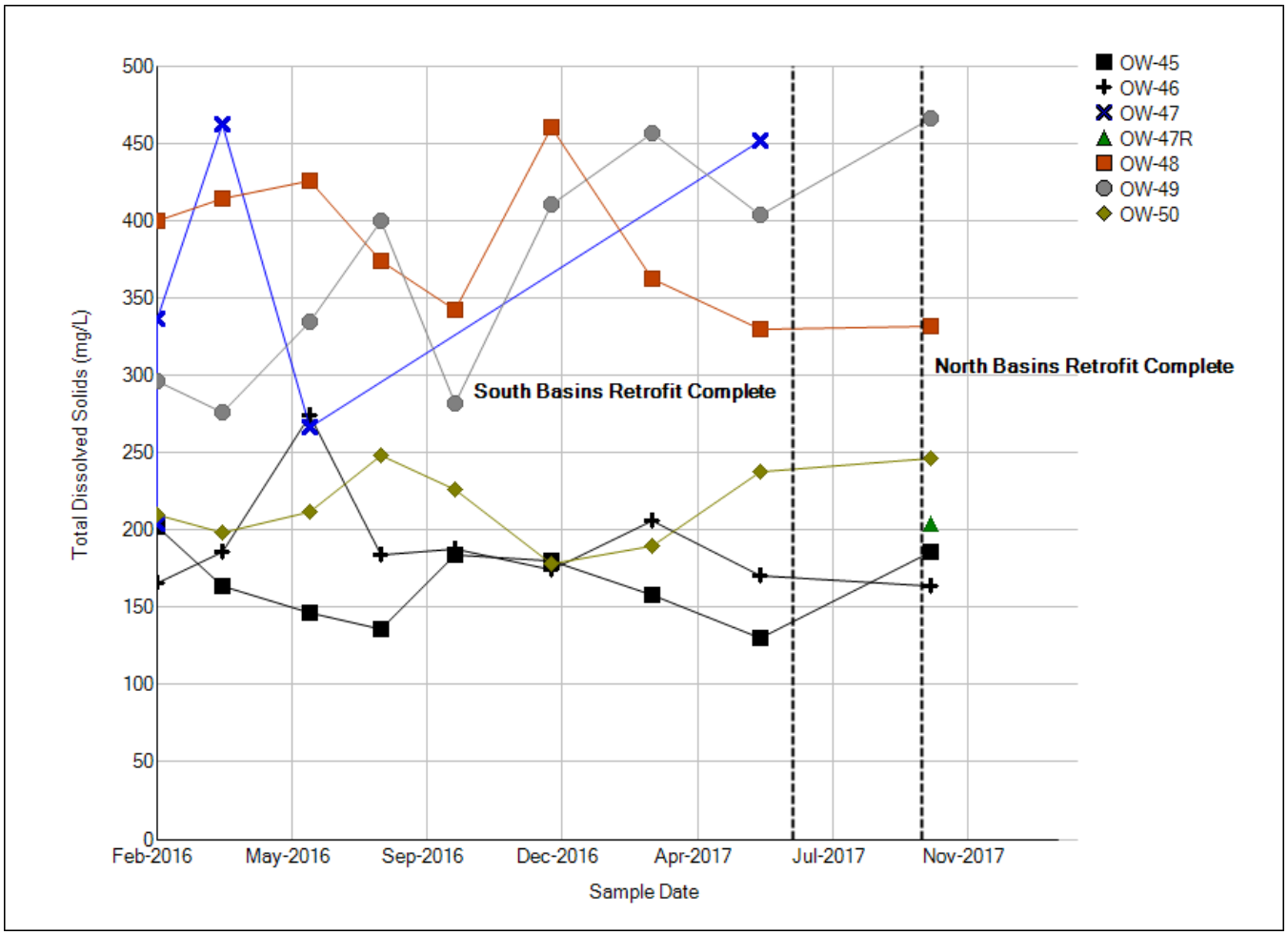


Figure 8. Time Series Plot of TDS Concentrations

Revised limits were determined for the downgradient wells using intrawell statistical analyses. The Intrawell Detection Monitoring Summary is provided in Attachment C. The analytical results for the first semi-annual detection monitoring sampling event on October 12, 2017 were compared to the intrawell statistical limits and were within the recalculated limits, except for chloride at OW-50.

2.2.2 Upgradient Industrial Activities

The SSI detected for chloride in OW-50 is unrelated to the CCR Unit for the following reasons:

- The concentration of boron is not elevated when compared to previous sampling events. Boron is a conservative and non-reactive tracer that can be used to identify groundwater potentially impacted by CCR leachate. However, the lack of elevated boron concentrations in OW-50 indicates that a CCR source is unlikely.
- A Piper diagram (Figure 9 below) illustrates that the ratios of anions in OW-50 (including chloride) is similar to ratios observed in upgradient well OW-46. As shown on Figure 9, the groundwater sample from OW-50 plots outside the potential mixing zone between leachate and background groundwater samples at OW-45 and OW-46. The mixing zone is the area on the diagram between the background wells and leachate.
- Ion ratios (Table 2 below) in OW-50 are diverging from ratios detected in leachate and moving toward background ratios. If groundwater was being affected by the leachate, these ratios should be similar to, or moving toward the ratios calculated in the leachate. Dilution of the leachate by groundwater would not

change the ratio. The fact that the ratios are getting further apart indicates that CCR impacts are not the source of chloride to groundwater at OW-50.

- Concentrations of chloride in OW-50 have typically been less than concentrations detected in background well OW-46, indicating that sources of elevated chloride exist upgradient.

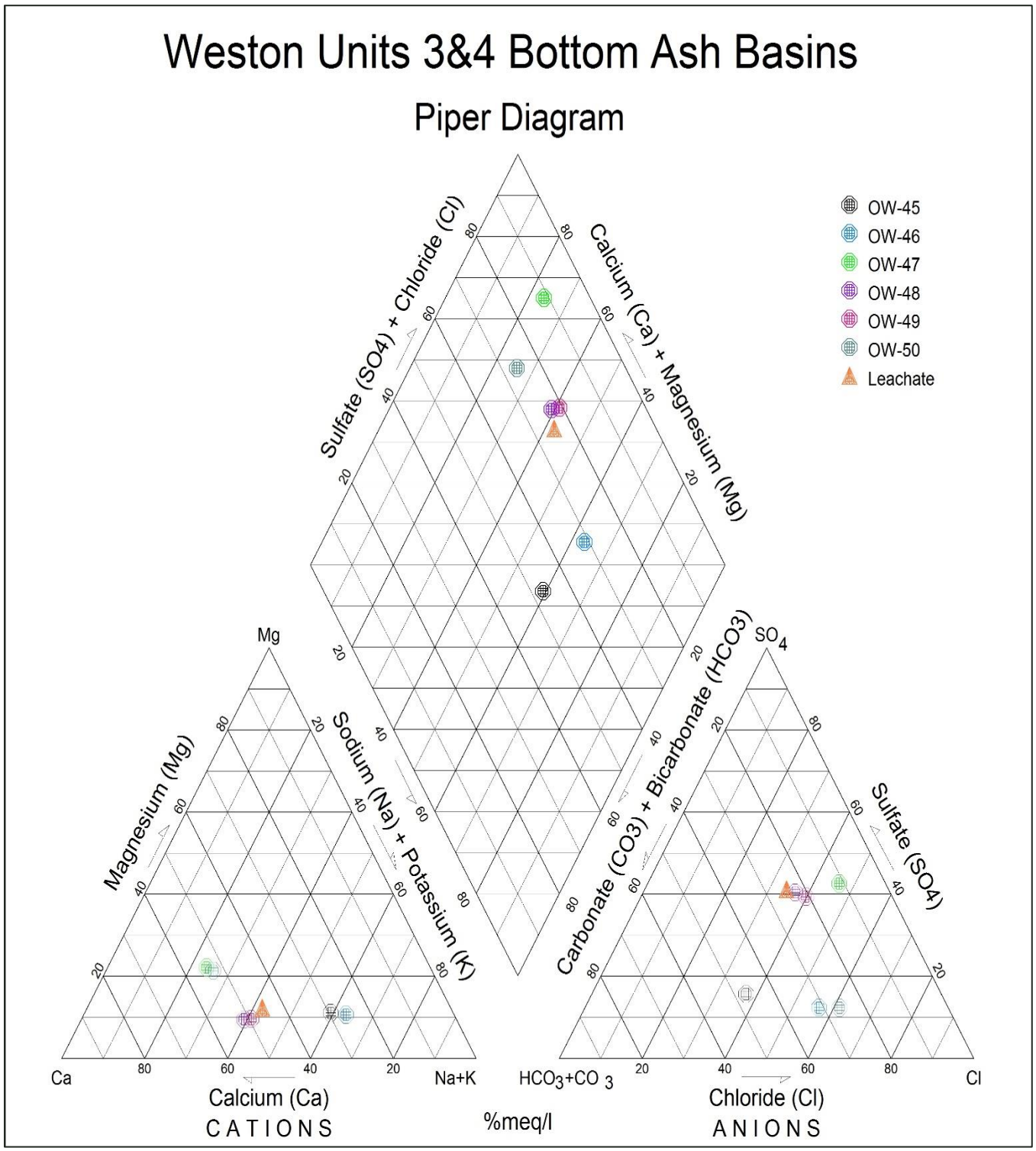


Figure 9. Piper Diagram Weston Bottom Ash Basins

Table 3. Summary of Average Ion Ratios

Date	2/17/16	4/7/16	6/14/16	8/9/16	10/6/16	12/20/16	3/8/17	6/1/17	10/12/17
B/Cl Ratios									
OW-45	2052	1189	1383	438	316	1310	1455	968	1778
OW-46	1641	2214	2885	1633	2647	1726	2566	1663	1054
OW-50	1083	1243	1303	1421	1272	1318	1576	1545	1987
Leachate	--	--	--	--	--	--	--	--	123
SO4/Cl Ratios									
OW-45	0.20	0.24	0.38	1.88	0.31	0.32	0.39	0.57	0.23
OW-46	0.39	0.19	0.18	0.34	1.18	0.22	0.18	0.30	0.37
OW-50	0.28	0.26	0.25	0.23	0.90	0.28	0.27	0.27	0.19
Leachate	--	--	--	--	--	--	--	--	2.5
Ca/Cl Ratios									
OW-45	0.31	0.28	0.36	0.87	1.53	0.32	0.39	0.50	0.31
OW-46	0.23	0.20	0.23	0.28	0.18	0.25	0.23	0.27	0.29
OW-50	0.61	0.52	0.62	0.58	0.62	0.56	0.54	0.53	0.44
Leachate	--	--	--	--	--	--	--	--	1.1

3 CONCLUSIONS AND CERTIFICATION

This document has been prepared on behalf of WPSC by OBG to provide pertinent information for an ASD as allowed by 40 CFR §257.94(e)(2) for the Weston Units 3 &4 Bottom Ash Basins located at the Weston Generating Station in Rothschild, Wisconsin

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

- Boron at wells OW-47R, OW-48, and OW-49
- Sulfate at well OW-49
- Calcium at wells OW-47R, OW-48, OW-49, and OW-50
- Chloride at well OW-49
- TDS at wells OW-48, OW-49, and OW-50

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

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

- Basin retrofitting in accordance with 40 CFR § 257.102 (k) – Criteria to Retrofit an Existing CCR Surface Impoundment
- Existing groundwater concentrations and applicability of Intrawell Statistics
- Upgradient industrial activities

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

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

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

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

Nathaniel R. Keller, PG
Professional Geologist No. 1283-013
State of Wisconsin
O'Brien & Gere Engineers, Inc.
Date: April 15, 2018

REFERENCES

Black & Veatch Corporation (B&V), January 14, 2004, Weston North Unit 4 Geotechnical Report Revision 0, Rothschild, Wisconsin prepared for Wisconsin Public Service Corporation.

GEI Consultants, Inc. (GEI), September 2016, Weston Units 3 & 4 Bottom Ash Basins Retrofit, Closure, and Post Closure Care Plan, Weston Generating Station, Rothschild, Wisconsin

GEI Consultants, Inc. (GEI), November 29, 2017, Construction Certification for the Weston Units 3 & 4 Ash Basins Liner Retrofit, Wisconsin Public Service Corporation, Weston Generating Station, Rothschild, Wisconsin.

GEI Consultants, Inc. (GEI), January 2018, Construction Documentation Report, Weston Units 3 & 4 Bottom Ash Basin Liner Retrofit, Weston Generating Station, Rothschild, Wisconsin

Natural Resource Technology, an OBG Company, 2017a, Sampling and Analysis Plan, Weston Units 3 & 4 Bottom Ash Basins, Rothschild, Wisconsin, October 2, 2017.

Natural Resource Technology, an OBG Company, 2017b, Statistical Analysis Plan, Weston Units 3 & 4 Bottom Ash Basins, Rothschild, Wisconsin, October 17, 2017.

O'Brien & Gere Engineers, Inc, 2018, 2017 Annual Groundwater Monitoring and Corrective Action Report, Weston Units 3 & 4 Bottom Ash Basins, Rothschild, Wisconsin, January 31, 2018.

Tables

Weston Units 3&4 Bottom Ash
Table 1. Weston Units 3 &4 Bottom Ash Basins: Appendix III Analytical Results

Date Range: 02/16/2016 to 04/09/2018

Well Id	Date Sampled	Lab Id	B, tot, mg/L	Ca, tot, mg/L	Cl, tot, mg/L	F, tot, mg/L	pH (field), STD	SO4, tot, mg/L
OW-45	02/17/2016	40128335001	0.0290	18.500	59.500	<0.200		12.100
	04/07/2016	40130422001	0.0360	11.900	42.800	<0.200	6.940	10.200
	06/14/2016	40133803001	0.0240	12.000	33.200	<0.200	7.220	12.700
	08/09/2016	40136463001	0.0290	11.100	12.700	0.840	7.420	23.900
	10/06/2016	40139739001	0.0310	15.000	9.800	<0.100	7.800	3.000
	12/20/2016	40143714001	0.0390	16.300	51.100	<0.100	7.710	16.300
	03/08/2017	40146663001	0.0310	17.600	45.100	<0.100	7.860	17.800
	06/01/2017	40150932001	0.0280	13.600	27.100	<0.100	8.410	15.500
	10/12/2017	40158567001	0.0351	19.600	62.400	<0.100	6.840	14.600
	01/18/2018	40163679001	0.0373				7.000	
OW-46	02/17/2016	40128335002	0.0270	10.200	44.300	<0.200	6.890	17.300
	04/07/2016	40130422002	0.0290	12.700	64.200	<0.200	6.930	12.400
	06/14/2016	40133803002	0.0340	22.300	98.100	<0.200	7.150	17.700
	08/09/2016	40136463002	0.0330	14.900	53.900	<0.200	7.460	18.500
	10/06/2016	40139739002	0.0300	14.400	79.400	<0.500	7.820	93.600
	12/20/2016	40143714002	0.0350	15.200	60.400	<0.100	8.030	13.200
	03/08/2017	40146663002	0.0320	19.000	82.100	<0.100	5.950	14.600
	06/01/2017	40150932002	0.0350	15.800	58.200	<0.100	8.270	17.300
	10/12/2017	40158567002	0.0406	12.600	42.800	<0.100	6.560	15.800
	01/18/2018	40163679002	0.0345				7.620	
OW-47	02/17/2016	40128335003	0.2600	58.100	79.600	<0.200		84.100
	04/07/2016	40130422003	0.2700	65.900	97.100	<0.200	6.290	115.000
	06/14/2016	40133803003	0.1700	42.900	55.300	<0.200	6.580	75.000
	06/01/2017	40150932003	0.3100	71.400	104.000	<0.100	8.010	130.000
OW-47R	10/12/2017	40158567003	0.0818	21.500	63.200	<0.100	6.900	27.700
	01/18/2018	40163679003	0.0862				7.390	
OW-48	02/17/2016	40128335004	0.3700	76.600	81.600	<0.200		119.000
	04/07/2016	40130422004	0.5600	80.300	84.700	<0.200	6.480	126.000
	06/14/2016	40133803004	0.7300	84.500	80.200	<0.200	6.710	135.000
	08/09/2016	40136463003	0.7100	57.200	67.200	<0.200	7.080	114.000
	10/06/2016	40139739003	0.4600	52.400	76.200	<0.500	7.490	47.000
	12/20/2016	40143714003	0.7900	80.000	107.000	<0.100	7.740	135.000
	03/08/2017	40146663003	0.6900	67.900	84.100	0.110	8.070	116.000
	06/01/2017	40150932004	0.5900	56.700	70.900	<0.100	8.370	106.000
	10/12/2017	40158567004	0.4210	53.400	86.400	<0.100	6.900	93.200
	01/18/2018	40163679004	0.5450				7.490	

Weston Units 3&4 Bottom Ash
Table 1. Weston Units 3 &4 Bottom Ash Basins: Appendix III Analytical Results

Date Range: 02/16/2016 to 04/09/2018

			B, tot, mg/L	Ca, tot, mg/L	Cl, tot, mg/L	F, tot, mg/L	pH (field), STD	SO4, tot, mg/L
OW-49	02/17/2016	40128335005	0.3800	41.400	69.200	<0.200		75.700
	04/07/2016	40130422005	0.2500	31.200	64.100	<0.200	6.480	58.200
	06/14/2016	40133803005	0.3600	49.000	72.700	<0.200	6.710	89.700
	08/09/2016	40136463004	0.5300	59.400	81.700	<0.200	6.940	109.000
	10/06/2016	40139739004	0.3200	35.300	260.000	<0.500	7.540	64.500
	12/20/2016	40143714004	0.5000	66.000	91.600	<0.100	7.650	122.000
	03/08/2017	40146663004	0.5100	74.500	109.000	<0.100	8.040	128.000
	06/01/2017	40150932005	0.4500	67.000	83.500	<0.100	8.260	112.000
	10/12/2017	40158567005	0.4400	76.000	103.000	<0.100	6.800	145.000
	01/18/2018	40163679005	0.4440				7.480	
OW-50	02/17/2016	40128335006	0.0470	31.000	50.900	<0.200		14.400
	04/07/2016	40130422006	0.0420	27.200	52.200	<0.200	6.150	13.800
	06/14/2016	40133803006	0.0400	32.200	52.100	<0.200	6.470	12.800
	08/09/2016	40136463005	0.0390	32.300	55.400	<0.200	6.750	12.600
	10/06/2016	40139739005	0.0390	30.600	49.600	<0.100	7.130	44.400
	12/20/2016	40143714005	0.0400	29.600	52.700	<0.100	7.220	14.800
	03/08/2017	40146663005	0.0370	31.200	58.300	<0.100	7.650	15.800
	06/01/2017	40150932006	0.0380	30.900	58.700	<0.100	7.950	16.000
	10/12/2017	40158567006	0.0374	32.400	74.300	<0.100	6.210	14.200

Weston Units 3&4 Bottom Ash
Table 1. Weston Units 3 &4 Bottom Ash Basins: Appendix III Analytical Results

Date Range: 02/16/2016 to 04/09/2018

Well Id	Date Sampled	Lab Id	TDS, mg/L
OW-45	02/17/2016	40128335001	202.000
	04/07/2016	40130422001	164.000
	06/14/2016	40133803001	146.000
	08/09/2016	40136463001	136.000
	10/06/2016	40139739001	184.000
	12/20/2016	40143714001	180.000
	03/08/2017	40146663001	158.000
	06/01/2017	40150932001	130.000
	10/12/2017	40158567001	186.000
OW-46	02/17/2016	40128335002	166.000
	04/07/2016	40130422002	186.000
	06/14/2016	40133803002	274.000
	08/09/2016	40136463002	184.000
	10/06/2016	40139739002	188.000
	12/20/2016	40143714002	174.000
	03/08/2017	40146663002	206.000
	06/01/2017	40150932002	170.000
	10/12/2017	40158567002	164.000
OW-47	02/17/2016	40128335003	336.000
	04/07/2016	40130422003	462.000
	06/14/2016	40133803003	266.000
	06/01/2017	40150932003	452.000
OW-47R	10/12/2017	40158567003	204.000
OW-48	02/17/2016	40128335004	400.000
	04/07/2016	40130422004	414.000
	06/14/2016	40133803004	426.000
	08/09/2016	40136463003	374.000
	10/06/2016	40139739003	342.000
	12/20/2016	40143714003	460.000
	03/08/2017	40146663003	362.000
	06/01/2017	40150932004	330.000
	10/12/2017	40158567004	332.000
OW-49	02/17/2016	40128335005	296.000
	04/07/2016	40130422005	276.000
	06/14/2016	40133803005	334.000
	08/09/2016	40136463004	400.000

Weston Units 3&4 Bottom Ash
Table 1. Weston Units 3 &4 Bottom Ash Basins: Appendix III Analytical Results

Date Range: 02/16/2016 to 04/09/2018

			TDS, mg/L
OW-49	10/06/2016	40139739004	282.000
	12/20/2016	40143714004	410.000
	03/08/2017	40146663004	456.000
	06/01/2017	40150932005	404.000
	10/12/2017	40158567005	466.000
OW-50	02/17/2016	40128335006	210.000
	04/07/2016	40130422006	198.000
	06/14/2016	40133803006	212.000
	08/09/2016	40136463005	248.000
	10/06/2016	40139739005	226.000
	12/20/2016	40143714005	178.000
	03/08/2017	40146663005	190.000
	06/01/2017	40150932006	238.000
	10/12/2017	40158567006	246.000

Figures

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

W-35A
W-35B
W-36B
W-36A
W-31A
W-31B
W-29A-R
W-29B-R
W-34A
W-34B
W-30B
W-30A
W-LY1
W-LY2
W-28A-R
W-28B-R
W-40A
W-40B
W-33B
W-33A
W-38
W-43B
W-43A
OW-39
OW-27
OW-48
OW-47R
OW-49
WESTON UNITS 3 & 4 BOTTOM ASH BASINS
OW-50
OW-23
OW-45
OW-4
OW-46

N

0 125 250
SCALE IN FEET

MONITORING WELL LOCATION

CCR RULE MONITORING WELL LOCATION

WESTON UNITS 3 & 4 BOTTOM ASH BASINS

SOURCE NOTES:

1. HORIZONTAL DATUM IS REFERENCED TO WISCONSIN STATE PLANE COORDINATE SYSTEM, CENTRAL ZONE, NORTH AMERICA DATUM (NAD 83/2007), US SURVEY FEET.

2. ELEVATION DATUM IS REFERENCED TO NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88).

Y:\GIS\Projects\16\16680\Weston_Power_Plant\MXD\ASD\Fig1_MW Locs Unit3_4 BAP.mxd Author: stolzsd Date/Time: 4/11/2018, 9:21:26 PM

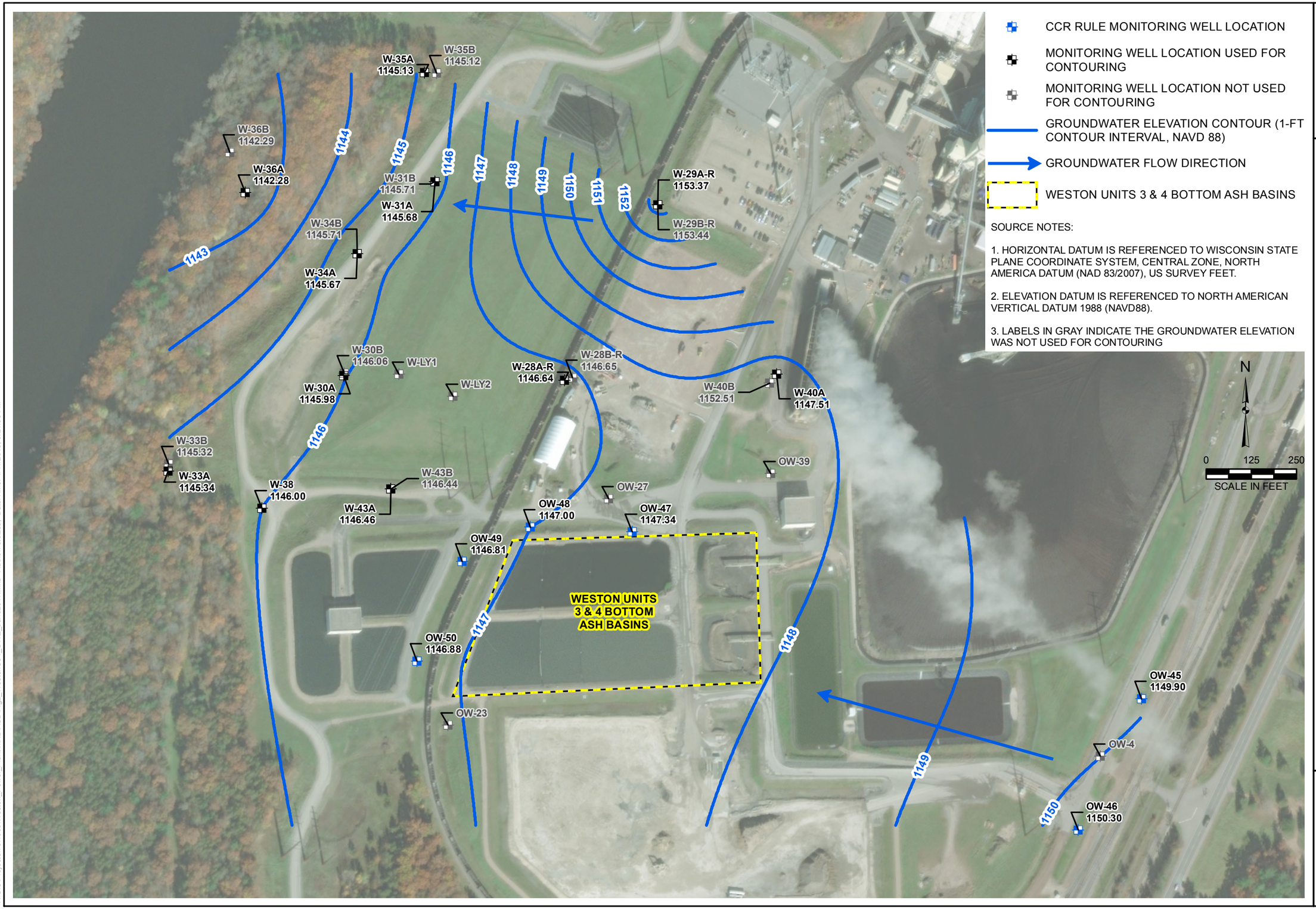
DRAWN BY/DATE: SDS 4/11/18
REVIEWED BY/DATE: JJW 4/11/18
APPROVED BY DATE: NRK 4/12/18

GROUNDWATER SAMPLING WELL LOCATION MAP

WPSC CCR RULE GROUNDWATER MONITORING
ALTERNATE SOURCE DEMONSTRATION
WESTON GENERATING STATION UNITS 3 & 4 BOTTOM ASH BASINS
ROTHSCHILD, WISCONSIN

PROJECT NO: 67985

FIGURE NO: 1



CCR RULE MONITORING WELL LOCATION

MONITORING WELL LOCATION USED FOR CONTOURING

MONITORING WELL LOCATION NOT USED FOR CONTOURING

GROUNDWATER ELEVATION CONTOUR (1-FT CONTOUR INTERVAL, NAVD 88)

GROUNDWATER FLOW DIRECTION

WESTON UNITS 3 & 4 BOTTOM ASH BASINS

SOURCE NOTES:

1. HORIZONTAL DATUM IS REFERENCED TO WISCONSIN STATE PLANE COORDINATE SYSTEM, CENTRAL ZONE, NORTH AMERICA DATUM (NAD 83/2007), US SURVEY FEET.

2. ELEVATION DATUM IS REFERENCED TO NORTH AMERICAN VERTICAL DATUM 1988 (NAVD88).

3. LABELS IN GRAY INDICATE THE GROUNDWATER ELEVATION WAS NOT USED FOR CONTOURING

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

WESTON GENERATING STATION UNITS 3 & 4 BOTTOM ASH BASINS
UPPERMOST AQUIFER UNIT
GROUNDWATER ELEVATION CONTOUR MAP - JUNE 1, 2017

WPSC CCR RULE GROUNDWATER MONITORING
ALTERNATE SOURCE DEMONSTRATION
WESTON GENERATING STATION UNITS 3 & 4 BOTTOM ASH BASINS
ROTHSCHILD, WISCONSIN

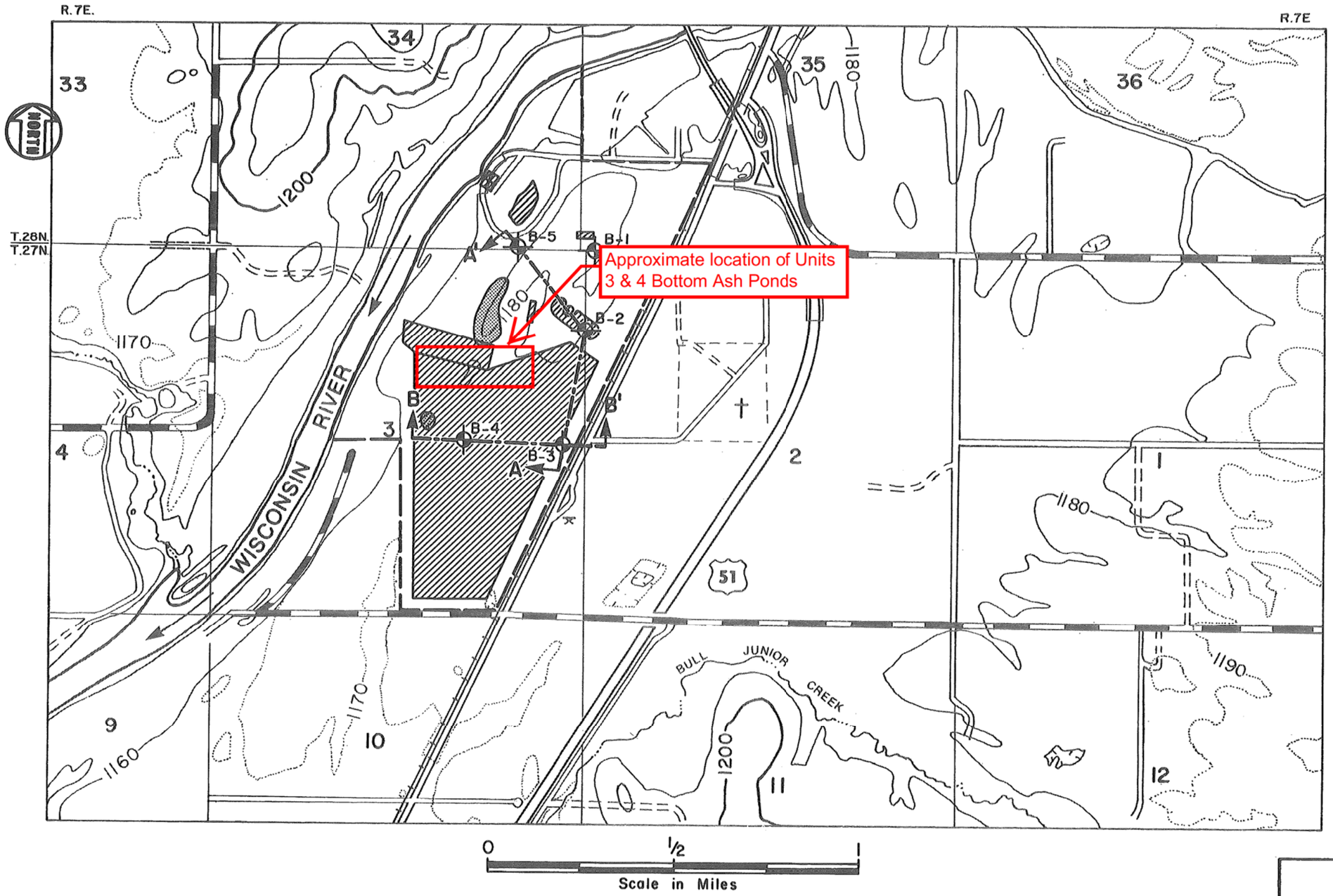
PROJECT NO: 67985

FIGURE NO: 2

Y:\GIS\Projects\161660\Weston_Power_Plant\MXD\ASD\Fig2_WestonU34_GWE_June2017.mxd Author: stolzsd: Date/Time: 4/11/2018, 9:24:08 PM

Attachment A

Weston Units 3 Environmental Report – Geologic Cross-Section



LEGEND

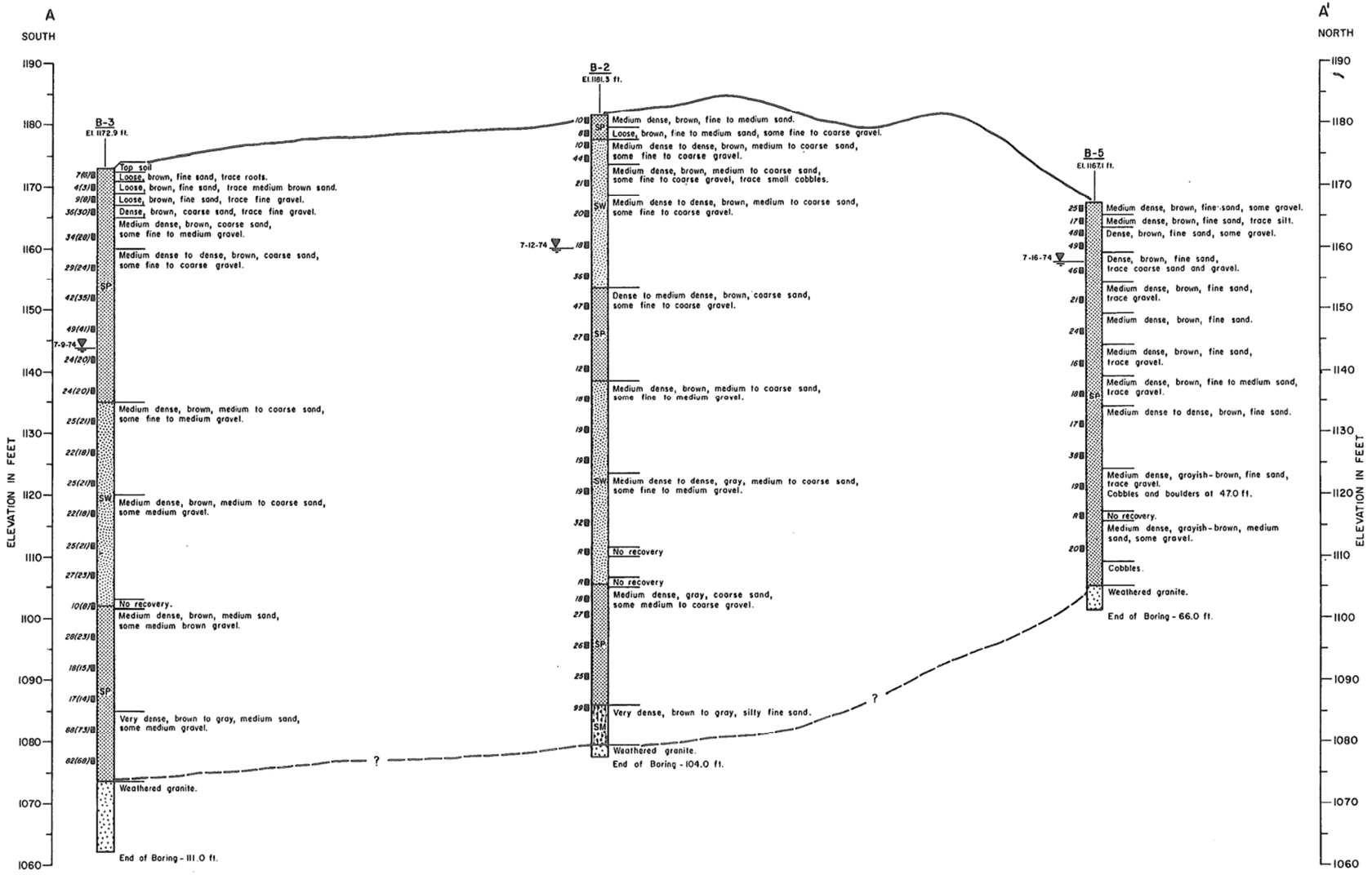
- B-2 — Boring location and number
- Proposed site boundary
- Sand pit
- Major structures Units 1, 2 and 3

NOTES

1. Contour interval is 20 feet, 10 feet where dotted.
2. Base map modified from USGS Topographic Map, 15 minute series, Wausau, Wisconsin Quadrangle, 1963.
3. Geologic profiles along A-A' and B-B' are shown in Figures 2.4.-4 and 2.4-5.
4. Borings were performed by Soil Testing Services of Wisconsin, Inc. during July 1974.

WESTON - UNIT 3
ENVIRONMENTAL REPORT

FIGURE 2.2-7
LOCATION OF BORINGS AND ABANDONED SAND PITS IN THE SITE AREA



LEGEND

- 24 — Standard Penetration Value (blows/foot)
- R — Refusal
- Water Level, date recorded

Unified Soil Classification System

- SW — Well-graded sands or gravelly sands, little or no fines
- SP — Poorly graded sands or gravelly sands, little or no fines
- SM — Silty sands, sand-silt mixtures.

NOTES

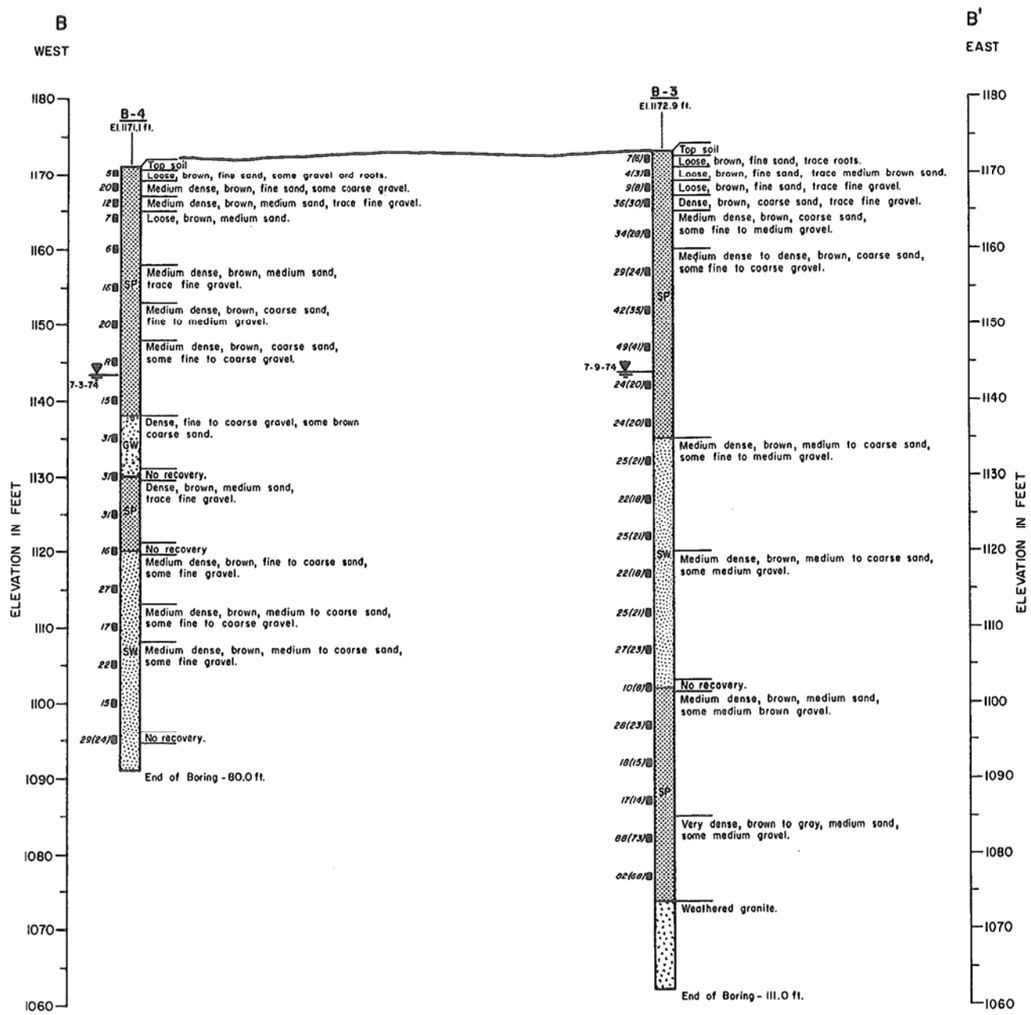
1. Borings were performed by Soil Testing Services of Wisconsin, Inc. during July 1974. Soil deposits were described and classified by Soil Testing Services of Wisconsin, Inc.
2. Samples were taken every 2 feet between 0 to 8 feet and every 5 feet below 10 feet.
3. Standard penetration values are stated as blows per foot of a 140-pound hammer falling 30 inches on a 2-inch OD split spoon. Blow counts in parentheses are adjusted to reflect a 25-inch height of fall; densities are based upon the adjusted standard penetration values.
4. Bedrock surface is projected between borings.
5. Boring locations are shown in Figure 2.2-5.

200 0 200 400
Horizontal Scale in Feet
Vertical Exaggeration 20x

WESTON - UNIT 3
ENVIRONMENTAL REPORT

FIGURE 2.4-4

NORTH-SOUTH SITE GEOLOGIC PROFILE



LEGEND

29 Standard Penetration Value (blows/foot)

R Refusal

Water Level, date recorded

Unified Soil Classification System

GW Well-graded gravel or gravel-sand mixtures, little or no fines

SW Well-graded sands or gravelly sands, little or no fines

SP Poorly graded sands or gravelly sand, little or no fines

NOTES

1. Borings were performed by Soil Testing Services of Wisconsin, Inc. during July 1974. Soil deposits were described and classified by Soil Testing Services of Wisconsin, Inc.
2. Samples were taken every 2 feet between 0 to 8 feet and every 5 feet below 10 feet.
3. Standard penetration values are stated as blows per foot of a 140-pound hammer falling 30 inches on a 2-inch OD split spoon. Blow counts in parentheses are adjusted to reflect a 25-inch height of fall; densities are based upon the adjusted standard penetration values.
4. Boring locations are shown in Figure 2.2-5.

200 0 200 400
Horizontal Scale in Feet

Vertical Exaggeration 20x

WESTON - UNIT 3
ENVIRONMENTAL REPORT

FIGURE 2.4-5

EAST-WEST SITE GEOLOGIC PROFILE

Attachment B

Construction Certification for the Weston Units 3 & 4 Ash Basins Liner Retrofit

GEI Consultants

Consulting Engineers and Scientists

November 29, 2017

Project 1609370

Mr. Robert Leigh
WEC Business Services, LLC
700 N. Adams Street, PO Box 19001
Green Bay, Wisconsin 54307-9001

Re: Construction Certification for the Weston Units 3 & 4 Ash Basins Liner Retrofit
Wisconsin Public Service Corporation, Weston Generating Station
Rothschild, Wisconsin

Dear Mr. Leigh,

GEI Consultants, Inc. (GEI) is pleased to provide this construction certification for the retrofit of the Weston Units 3 & 4 Bottom Ash Basins at the Wisconsin Public Service Corporation (WPSC) Weston Generating Station, Rothschild, Wisconsin. The basins were originally designed, permitted, and constructed in accordance with chapter NR 213 - *Lining of Industrial Lagoons and Design of Storage Structures* of the Wisconsin Administrative Code. However, with the promulgation of new federal rules on April 17, 2015, the lining system of the basins did not meet the minimum criteria of 40 CFR Part 257 Subpart D - *Disposal of Coal Combustion Residuals from Electric Utilities.*

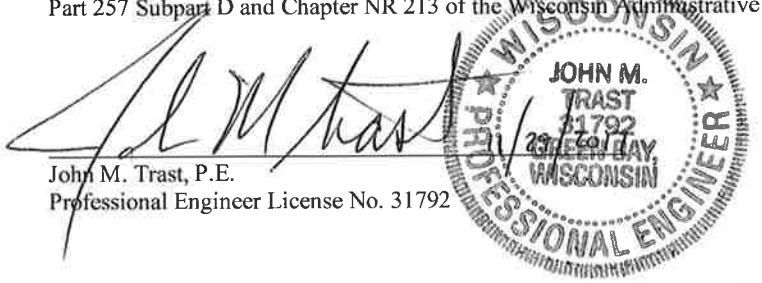
On January 13, 2017, WPSC submitted a Wastewater System Approval Request and engineering report to the Wisconsin Department of Natural Resources (WDNR) to retrofit the Weston Units 3 & 4 Bottom Ash Basins in accordance NR 213. The approval request and engineering report meet the requirements of § 257.102(k) – *Criteria to Retrofit and Existing CCR Surface Impoundment* to retrofit the basins with a lining system meeting the requirements of § 257.70(c) of the federal rules. The WDNR approved the retrofit plan on February 16, 2017. The WDNR also determined that liner retrofit construction activities would be regulated under NR 216 – *Storm Water Discharge Permits* and in accordance with Wisconsin Pollutant Discharge Elimination System (WPDES) General Permit No. WI-S067831-05.

Construction to retrofit the basins began on April 3, 2017, with the general contractor mobilizing to the site and installing stormwater and erosion control measures. The retrofit and site restoration work were substantially completed with the submittal of a *Notice of Termination – Storm Water Discharges Associated with Land Disturbing Construction Activities General Permit* by WPSC to the WDNR on November 16, 2017.

In accordance with § 257.102(k)(4) upon completion a qualified professional engineer must prepare a certification verifying that the retrofit activities have been completed in accordance with the retrofit plan.

GEI Consultants, Inc.
3159 Voyager Drive, Green Bay, Wisconsin 54311
920.455.8200 fax 920.455.8225

I, John, M. Trast, P.E., herby certify that I am a licensed professional engineer in the State of Wisconsin in accordance with the requirements of ch. A-E 4, Wisconsin Administrative Code; that this document has been prepared in accordance with the Rules of Professional Conduct in ch. A-E 8, Wisconsin Administrative Code; and that, to the best of my knowledge, all information contained in this document is correct; the construction of the Weston Units 3 & 4 Bottom Ash Basins Liner Retrofit was completed in accordance with the Weston Units 3 & 4 Bottom Ash Basins Retrofit, Closure, and Post Closure Care Plan dated September 2016, the engineering report titled Weston Units 3 & 3 Bottom Ash Basins Retrofit Plan dated January 2017, and in compliance with all applicable requirements in 40 CFR Part 257 Subpart D and Chapter NR 213 of the Wisconsin Administrative Code.



John M. Trast, P.E.
Professional Engineer License No. 31792

If you have any questions related to this construction certification for the Weston Units 3 & 4 Bottom Ash Basins please call Mr. John Trast at 920-455-8299.

Sincerely,

GEI CONSULTANTS, INC.

John M. Trast, P.E.
Senior Consultant

Michael G. Ruetten
Vice President

JXT:cah
K:\WEC Energy Group\1609370_WPS Weston Units 3-4 Ash Impoundments\In_Progress\11_Construction Working Documents\Documentation Report\C1609370_Weston Unit 34 Construction Certification.docx

Attachment C

Intrawell Detection Monitoring Summary

Weston Units 3&4 Bottom Ash

Detection Monitoring Summary

Run Id: 1

Location Id: **OW-47R**

Compliance Test: **Parametric Prediction Interval on Background**

Parameter	Sample Date	Lab Id	Re Testing	Upper Limit	Compliance Result	Exceedance	Possible SSI	Post-Hoc Trend
B, tot mg/L	10/12/2017	40158567005	1 of 2	0.5992	0.0001	n		--
B, tot mg/L	01/18/2018	40158567005	1 of 2	0.5992	0.0001	n		--

Run Id: 2

Location Id: **OW-47R**

Compliance Test: **Parametric Prediction Interval on Background**

Parameter	Sample Date	Lab Id	Re Testing	Upper Limit	Compliance Result	Exceedance	Possible SSI	Post-Hoc Trend
Ca, tot mg/L	10/12/2017	40158567001	1 of 2	126.7333	0.0215	n		--

Run Id: 3

Location Id: **OW-47R**

Compliance Test: **Parametric Prediction Interval on Background**

Parameter	Sample Date	Lab Id	Re Testing	Upper Limit	Compliance Result	Exceedance	Possible SSI	Post-Hoc Trend
Cl, tot mg/L	10/12/2017	40158567003	1 of 2	128.1	63.2	n		--

Run Id: 4

Location Id: **OW-47R**

Compliance Test: **Non-Parametric Prediction Interval on Background Useing largest background data value.**

Parameter	Sample Date	Lab Id	Re Testing	Upper Limit	Compliance Result	Exceedance	Possible SSI	Post-Hoc Trend
F, tot mg/L	10/12/2017	40158567004	1 of 2	0.10	0.10	n		--

NOTE: If trend test is performed, the background slope is listed under the Upper Limit heading and the compliance slope is listed under the Compliance Result heading.

Weston Units 3&4 Bottom Ash

Detection Monitoring Summary

Run Id: 5

Location Id: **OW-47R**

Compliance Test: **Parametric Prediction Interval on Background**

Parameter	Sample Date	Lab Id	Re Testing	Upper Limit	Compliance Result	Exceedance	Possible SSI	Post-Hoc Trend
pH (field) STD	10/12/2017	40158567006	1 of 2	10.04	6.90	n/n		--
pH (field) STD	01/18/2018	40158567006	1 of 2	10.04	7.39	n/n		--

Run Id: 6

Location Id: **OW-47R**

Compliance Test: **Parametric Prediction Interval on Background**

Parameter	Sample Date	Lab Id	Re Testing	Upper Limit	Compliance Result	Exceedance	Possible SSI	Post-Hoc Trend
SO4, tot mg/L	10/12/2017	40158567004	1 of 2	154.1	27.7	n		--

Run Id: 7

Location Id: **OW-47R**

Compliance Test: **Parametric Prediction Interval on Background**

Parameter	Sample Date	Lab Id	Re Testing	Upper Limit	Compliance Result	Exceedance	Possible SSI	Post-Hoc Trend
TDS mg/L	10/12/2017	40158567001	1 of 2	570.9	204.0	n		--

Run Id: 8

Location Id: **OW-48**

Compliance Test: **Parametric Prediction Interval on Background**

Parameter	Sample Date	Lab Id	Re Testing	Upper Limit	Compliance Result	Exceedance	Possible SSI	Post-Hoc Trend
B, tot mg/L	10/12/2017	40158567004	1 of 2	0.9894	0.4210	n		--

NOTE: If trend test is performed, the background slope is listed under the Upper Limit heading and the compliance slope is listed under the Compliance Result heading.

Weston Units 3&4 Bottom Ash

Detection Monitoring Summary

Run Id: 8

Location Id: **OW-48**

B, tot mg/L	01/18/2018	40163679004	1 of 2	0.9894	0.5450	n		--

Run Id: 9

Location Id: **OW-48**

Compliance Test: **Parametric Prediction Interval on Background**

Parameter	Sample Date	Lab Id	Re Testing	Upper Limit	Compliance Result	Exceedance	Possible SSI	Post-Hoc Trend
Ca, tot mg/L	10/12/2017	40158567004	1 of 2	102.3353	53.4000	n		--

Run Id: 10

Location Id: **OW-48**

Compliance Test: **Parametric Prediction Interval on Background**

Parameter	Sample Date	Lab Id	Re Testing	Upper Limit	Compliance Result	Exceedance	Possible SSI	Post-Hoc Trend
Cl, tot mg/L	10/12/2017	40158567004	1 of 2	112.9	86.4	n		--

Run Id: 11

Location Id: **OW-48**

Compliance Test: **Non-Parametric Prediction Interval on Background Useing largest background data value.**

Parameter	Sample Date	Lab Id	Re Testing	Upper Limit	Compliance Result	Exceedance	Possible SSI	Post-Hoc Trend
F, tot mg/L	10/12/2017	40158567004	1 of 2	0.11	0.10	n		--

Run Id: 12

Location Id: **OW-48**

Compliance Test: **Parametric Prediction Interval on Background**

Parameter	Sample Date	Lab Id	Re Testing	Upper Limit	Compliance Result	Exceedance	Possible SSI	Post-Hoc Trend

NOTE: If trend test is performed, the background slope is listed under the Upper Limit heading and the compliance slope is listed under the Compliance Result heading.

Weston Units 3&4 Bottom Ash

Detection Monitoring Summary

Run Id: 12

Location Id: **OW-48**

pH (field) STD	10/12/2017	40158567004	1 of 2	9.71	6.90	n/n		--
pH (field) STD	01/18/2018	40163679004	1 of 2	9.71	7.49	n/n		--

Run Id: 13

Location Id: **OW-48**

Compliance Test: **Parametric Prediction Interval on Background**

Parameter	Sample Date	Lab Id	Re Testing	Upper Limit	Compliance Result	Exceedance	Possible SSI	Post-Hoc Trend
SO4, tot mg/L	10/12/2017	40158567004	1 of 2	185.9	93.2	n		--

Run Id: 14

Location Id: **OW-48**

Compliance Test: **Parametric Prediction Interval on Background**

Parameter	Sample Date	Lab Id	Re Testing	Upper Limit	Compliance Result	Exceedance	Possible SSI	Post-Hoc Trend
TDS mg/L	10/12/2017	40158567004	1 of 2	504.3	332.0	n		--

Run Id: 15

Location Id: **OW-49**

Compliance Test: **Parametric Prediction Interval on Background**

Parameter	Sample Date	Lab Id	Re Testing	Upper Limit	Compliance Result	Exceedance	Possible SSI	Post-Hoc Trend
B, tot mg/L	10/12/2017	40158567005	1 of 2	0.6755	0.4400	n		--
B, tot mg/L	01/18/2018	40163679005	1 of 2	0.6755	0.4440	n		--

Run Id: 16

NOTE: If trend test is performed, the background slope is listed under the Upper Limit heading and the compliance slope is listed under the Compliance Result heading.

Weston Units 3&4 Bottom Ash

Detection Monitoring Summary

Run Id: 16

Location Id: **OW-49**

Compliance Test: **Parametric Prediction Interval on Background**

Parameter	Sample Date	Lab Id	Re Testing	Upper Limit	Compliance Result	Exceedance	Possible SSI	Post-Hoc Trend
Ca, tot mg/L	10/12/2017	40158567005	1 of 2	94.8920	76.0000	n		--

Run Id: 17

Location Id: **OW-49**

Compliance Test: **Parametric Prediction Interval on Background**

Parameter	Sample Date	Lab Id	Re Testing	Upper Limit	Compliance Result	Exceedance	Possible SSI	Post-Hoc Trend
Cl, tot mg/L	10/12/2017	40158567005	1 of 2	299.1	103.0	n		--

Run Id: 18

Location Id: **OW-49**

Compliance Test: **Double Quantification Rule (DQR requires a second sample for a determination)**

Parameter	Sample Date	Lab Id	Re Testing	Upper Limit	Compliance Result	Exceedance	Possible SSI	Post-Hoc Trend
F, tot mg/L	10/12/2017	40158567005	--	--	0.10	n		--

Run Id: 19

Location Id: **OW-49**

Compliance Test: **Parametric Prediction Interval on Background**

Parameter	Sample Date	Lab Id	Re Testing	Upper Limit	Compliance Result	Exceedance	Possible SSI	Post-Hoc Trend
pH (field) STD	10/12/2017	40158567005	1 of 2	9.59	6.80	n/n		--
pH (field) STD	01/18/2018	40163679005	1 of 2	9.59	7.48	n/n		--

NOTE: If trend test is performed, the background slope is listed under the Upper Limit heading and the compliance slope is listed under the Compliance Result heading.

Weston Units 3&4 Bottom Ash

Detection Monitoring Summary

Run Id: 20

Location Id: **OW-49**

Compliance Test: **Parametric Prediction Interval on Background**

Parameter	Sample Date	Lab Id	Re Testing	Upper Limit	Compliance Result	Exceedance	Possible SSI	Post-Hoc Trend
SO4, tot mg/L	10/12/2017	40158567005	1 of 2	164.5	145.0	n		--

Run Id: 21

Location Id: **OW-49**

Compliance Test: **Parametric Prediction Interval on Background**

Parameter	Sample Date	Lab Id	Re Testing	Upper Limit	Compliance Result	Exceedance	Possible SSI	Post-Hoc Trend
TDS mg/L	10/12/2017	40158567005	1 of 2	536.6	466.0	n		--

Run Id: 22

Location Id: **OW-50**

Compliance Test: **Parametric Prediction Interval on Background**

Parameter	Sample Date	Lab Id	Re Testing	Upper Limit	Compliance Result	Exceedance	Possible SSI	Post-Hoc Trend
B, tot mg/L	10/12/2017	40158567006	1 of 2	0.0484	0.0374	n		--

Run Id: 23

Location Id: **OW-50**

Compliance Test: **Parametric Prediction Interval on Background**

Parameter	Sample Date	Lab Id	Re Testing	Upper Limit	Compliance Result	Exceedance	Possible SSI	Post-Hoc Trend
Ca, tot mg/L	10/12/2017	40158567006	1 of 2	34.8791	32.4000	n		--

Run Id: 24

Location Id: **OW-50**

NOTE: If trend test is performed, the background slope is listed under the Upper Limit heading and the compliance slope is listed under the Compliance Result heading.

Weston Units 3&4 Bottom Ash

Detection Monitoring Summary

Run Id: 24

Location Id: **OW-50**

Compliance Test: **Parametric Prediction Interval on Background**

Parameter	Sample Date	Lab Id	Re Testing	Upper Limit	Compliance Result	Exceedance	Possible SSI	Post-Hoc Trend
Cl, tot mg/L	10/12/2017	40158567006	1 of 2	62.5	74.3	y		Upward

Run Id: 25

Location Id: **OW-50**

Compliance Test: **Double Quantification Rule (DQR requires a second sample for a determination)**

Parameter	Sample Date	Lab Id	Re Testing	Upper Limit	Compliance Result	Exceedance	Possible SSI	Post-Hoc Trend
F, tot mg/L	10/12/2017	40158567006	--	--	0.10	n		--

Run Id: 26

Location Id: **OW-50**

Compliance Test: **Parametric Prediction Interval on Background**

Parameter	Sample Date	Lab Id	Re Testing	Upper Limit	Compliance Result	Exceedance	Possible SSI	Post-Hoc Trend
pH (field) STD	10/12/2017	40158567006	1 of 2	9.13	6.21	n/n		--

Run Id: 27

Location Id: **OW-50**

Compliance Test: **Non-Parametric Prediction Interval on Background Useing largest background data value.**

Parameter	Sample Date	Lab Id	Re Testing	Upper Limit	Compliance Result	Exceedance	Possible SSI	Post-Hoc Trend
SO4, tot mg/L	10/12/2017	40158567006	1 of 2	44.4	14.2	n		--

Run Id: 28

Location Id: **OW-50**

NOTE: If trend test is performed, the background slope is listed under the Upper Limit heading and the compliance slope is listed under the Compliance Result heading.

Weston Units 3&4 Bottom Ash

Detection Monitoring Summary

Run Id: 28

Location Id: **OW-50**

Compliance Test: **Parametric Prediction Interval on Background**

Parameter	Sample Date	Lab Id	Re Testing	Upper Limit	Compliance Result	Exceedance	Possible SSI	Post-Hoc Trend
TDS mg/L	10/12/2017	40158567006	1 of 2	274.9	246.0	n		--

NOTE: If trend test is performed, the background slope is listed under the Upper Limit heading and the compliance slope is listed under the Compliance Result heading.

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