Intended for
WEC Business Services, LLC

Document type
CCR Rule Annual Report

Date
January 31, 2020

2019 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT

WESTON UNITS 3 & 4 BOTTOM ASH BASINS

RAMBOLL Bright ideas. Sustainable change.

2019 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT
WESTON UNITS 3 & 4 BOTTOM ASH BASINS

Project name	**Landfill Database Management, Sampling, and Reporting**
Project no.	**71202**
Recipient	**WEC Business Services, LLC**
Document type	**CCR Rule Annual Report**
Revision	**0**
Date	**January 31, 2020**
Prepared by	**Glenn R. Luke, PE**
Checked by	**Nathaniel R. Keller, PG**
Approved by	**Tim Muehlfeld, PE**

Ramboll
234 W. Florida Street
Fifth Floor
Milwaukee, WI 53204
USA

T 414-837-3607
F 414-837-3608
https://ramboll.com

CONTENTS

TABLES

FIGURES

APPENDICES

ACRONYMS AND ABBREVIATIONS

ASD	Alternate Source Demonstration
CCR	Coal Combustion Residuals
CFR	Code of Federal Regulations
F	Fluoride
mg/L	milligrams per liter
NRT	Natural Resource Technology, an OBG Company
OBG	O'Brien & Gere Engineers, Inc.
Ramboll	O'Brien & Gere Engineers, Inc., a Ramboll Company
SSI	Statistically Significant Increase
TBD	To be Determined
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., a Ramboll Company (Ramboll) 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.

This report provides the required information for the Weston Units 3 & 4 Bottom Ash Basins for calendar year 2019.

2. MONITORING AND CORRECTIVE ACTION PROGRAM STATUS

The Weston Units 3 & 4 Bottom Ash Basins remained in Detection Monitoring (40 CFR 257.94) during 2019. 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 2019 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 in groundwater 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 for 2019 is provided in Appendix A.

Table 1. Detection Monitoring Program Summary

Detection Round	Sampling Date	Parameters Collected	Data Received	SSI Determination Date	SSI Parameters	Resample Date	ASD Date
3	12/20/18	Appendix III	1/14/19	4/14/19	F	4/17/19	7/13/19
4	6/13/19	Appendix III	8/6/19	11/4/19	None	NA	NA
5	12/19/19	Appendix III	1/16/20	TBD (before 4/15/20)	TBD	TBD	TBD

F - Fluoride

NA – Not applicable

TBD – To Be Determined

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 2019

Two groundwater sampling events were completed in 2019 as part of the Detection Monitoring Program, Rounds 4 and 5. 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 2019 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 2019.

Statistical evaluation, including SSI determinations, of analytical data from the Detection Monitoring Program for December 20, 2018 (Detection Monitoring Round 3) and June 13, 2019 (Detection Monitoring Round 4) were completed in 2019 and within 90 days of receipt of the analytical data. 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, 2017).

An Alternate Source Demonstration for Detection Monitoring Round 3 was prepared for the Weston Units 3 & 4 Bottom Ash Basins in 2019 and is provided in Appendix A. The ASD was prepared in accordance with 40 CFR 257.94(e)(2) and provides a description, data, and pertinent information to support an alternate source for the well and parameter with an SSI at the Weston Units 3 & 4 Bottom Ash Basins. The ASD provides justification that the SSIs observed during the Detection Monitoring Program were not due to a release from the CCR unit but were from laboratory variability in detection limits and statistical evaluation of non-detect data and potential anthropogenic impacts in the area surrounding the Weston Units 3 & 4 Bottom Ash Basins.

4. PROBLEMS ENCOUNTERED AND ACTIONS TO RESOLVE PROBLEMS

No problems were encountered during implementation of the Detection Monitoring Program during 2019. Groundwater samples were collected and analyzed in accordance with the *Sampling and Analysis Plan, Weston Units 3 & 4 Bottom Ash Basins* (Natural Resource Technology, and OBG Company, 2017), and all data was accepted.

5. KEY ACTIVITIES FOR 2020

The following key activities are planned for 2020:

- Continuation of the Detection Monitoring Program with semi-annual sampling scheduled for the 2nd and 4th quarters of 2020.
- Complete statistical evaluation of analytical data from the downgradient wells, using background data to determine whether a SSI over background concentrations has occurred for Appendix III parameters.
- 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 the SSI determination and will be included in the annual groundwater monitoring and corrective action report for 2020.
  - 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 2020, including associated recordkeeping/notifications required by 40 CFR 257.105 through 257.108.

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

Date Range: 12/01/2018 to 01/17/2020

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	12/20/2018	AE32672	0.0520	30.0000	100.0	0.09	6.40	11.0
	06/13/2019	AE38848	0.0340	15.0000	23.0	0.11	6.80	15.0
	12/19/2019	AE42883	0.0610	22.0000	46.0	0.05	6.82	16.0
OW-46	12/20/2018	AE32673	0.0340	13.0000	56.0	0.10	6.60	12.0
	06/13/2019	AE38849	0.0300	22.0000	94.0	0.11	6.60	13.0
	12/19/2019	AE42884	0.0360	23.0000	99.0	0.05	6.54	11.0
OW-47R	12/20/2018	AE32674	0.0990	24.0000	68.0	0.09	6.10	35.0
	06/13/2019	AE38850	0.0400	24.0000	62.0	0.09	6.20	32.0
	12/19/2019	AE42885	0.2100	34.0000	57.0	0.03	6.23	78.0
OW-48	12/20/2018	AE32675	0.4800	63.0000	82.0	0.14	6.30	130.0
	04/17/2019	AE35531				0.13	6.62	
	06/13/2019	AE38851	0.0970	28.0000	72.0	0.13	6.20	28.0
	12/19/2019	AE42886	0.3300	42.0000	68.0	0.07	6.18	97.0
OW-49	12/20/2018	AE32676	0.3800	65.0000	85.0	0.08	6.10	150.0
	06/13/2019	AE38852	0.2100	43.0000	81.0	0.08	6.20	71.0
	12/19/2019	AE42887	0.2900	46.0000	82.0	0.02	6.16	82.0
OW-50	12/20/2018	AE32677	0.0400	30.0000	60.0	0.08	5.70	21.0
	06/13/2019	AE38853	0.0370	28.0000	60.0	0.08	5.80	19.0
	12/19/2019	AE42888	0.0370	23.0000	42.0	0.01	5.78	21.0

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

Date Range: 12/01/2018 to 01/17/2020

Well Id	Date Sampled	Lab Id	TDS, mg/L
OW-45	12/20/2018	AE32672	270.0
	06/13/2019	AE38848	120.0
	12/19/2019	AE42883	170.0
OW-46	12/20/2018	AE32673	150.0
	06/13/2019	AE38849	240.0
	12/19/2019	AE42884	240.0
OW-47R	12/20/2018	AE32674	220.0
	06/13/2019	AE38850	210.0
	12/19/2019	AE42885	260.0
OW-48	12/20/2018	AE32675	400.0
	06/13/2019	AE38851	200.0
	12/19/2019	AE42886	300.0
OW-49	12/20/2018	AE32676	430.0
	06/13/2019	AE38852	310.0
	12/19/2019	AE42887	330.0
OW-50	12/20/2018	AE32677	220.0
	06/13/2019	AE38853	210.0
	12/19/2019	AE42888	160.0

FIGURES

CCR RULE UPGRADIENT MONITORING WELL LOCATION

CCR RULE DOWNGRADIENT MONITORING WELL LOCATION

WESTON UNITS 3 & 4 BOTTOM ASH BASINS

0 100 200 Feet

GROUNDWATER SAMPLING WELL LOCATION MAP

2019 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT
WESTON GENERATING STATION UNITS 3 & 4 BOTTOM ASH BASINS
ROTHSCHILD, WISCONSIN

FIGURE 1

RAMBOLL US CORPORATION
A RAMBOLL COMPANY

RAMBOLL

APPENDIX A
ALTERNATE SOURCE DEMONSTRATION (ASD)

APPENDIX A1
40 CFR SECTION 257.94(E)(2) ALTERNATE SOURCE DEMONSTRATION (ASD) DETECTION MONITORING ROUND 3, WISCONSIN PUBLIC SERVICE CORPORATION (WPSC) WESTON UNITS 3 &4 BOTTOM ASH BASINS

July 13, 2019

Mr. Tim Muehlfeld
WEC Business Services, LLC
333 W. Everett Street – A231
Milwaukee, WI 53226

RE: 40 CFR Section 257.94(e)(2) Alternate Source Demonstration (ASD)
Detection Monitoring Round 3, Wisconsin Public Service Corporation (WPSC)
Weston Units 3 &4 Bottom Ash Basins

Dear **Mr. Muehlfeld:**

This document has been prepared by O'Brien & Gere Engineers, Inc., Part of Ramboll (OBG) to provide pertinent information for an alternate source demonstration (ASD) as allowed by 40 CFR Section 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).

OVERVIEW

Detection Monitoring Round 3 samples were collected on December 20, 2018 for which analytical data was received on January 14, 2019. Analytical data is presented in the attached Table 1. In accordance with 40 CFR Section 257.93(h)(2), statistical analysis of the data from Detection Monitoring Round 3 to identify statistically significant increases (SSIs) of 40 CFR Part 257 Subpart D Appendix III parameters over background concentrations was completed within 90 days of receipt of the analytical data (April 14, 2019). The statistical determination using intrawell statistics, as described in *Alternate Source Demonstration, Weston Units 3 & 4 Bottom Ash Basins, Rothschild, Wisconsin* (OBG, 2018) dated April 15, 2018, identified the following SSIs at downgradient monitoring wells:

- Fluoride above the background prediction interval at well OW-48

To verify the SSI in Detection Monitoring Round 3, well OW-48 was resampled on April 20, 2019 and analyzed for only the SSI parameter (fluoride, dissolved and total), in accordance the *Statistical Analysis Plan, Weston Units 3 & 4 Bottom Ash Basins, Rothschild, Wisconsin*, dated October 17, 2017 (NRT, an OBG Company 2017) (SAP). Analytical results were received on May 2, 2019 and are included in Table 1. The concentration of fluoride in the sample collected during the resample event remained above the background prediction interval.

40 CFR Section 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 Section 257.94(e)(2), the following demonstrates that sources other than the Bottom Ash Basins were the cause of the SSIs listed above. This ASD was completed within 90 days of determination of the SSIs (July 13, 2019) as required by 40 CFR Section 257.94(e)(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.

Subsequent sampling in Detection Monitoring Rounds 1 and 2 indicated that only chloride in OW-50 exceeded the background prediction interval. However, an ASD completed on April 15, 2018 (OBG, 2018) indicated that chloride was not related to the CCR unit for the following reasons:

- The concentration of boron is not elevated when compared to previous sampling events.
- Groundwater characteristics illustrated that the ratios of anions in OW-50 (including chloride) is similar to ratios observed in upgradient well OW-46.
- Ion ratios in OW-50 were diverging from ratios detected in leachate and moving toward background ratios. 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.

ALTERNATE SOURCE DEMONSTRATION SUMMARY

Intrawell statistical analysis of Detection Monitoring Round 3 sample for SSIs of 40 CFR Section Part 257 Appendix III parameters over background concentrations identified the following SSIs at downgradient monitoring wells:

- Fluoride at well OW-48 greater than background prediction interval

As allowed by 40 CFR Section 257.94(e)(2), this ASD demonstrates that sources other than the retrofitted Bottom Ash Basins caused the apparent SSI. Lines of evidence supporting this ASD include the following:

- Variability in Detection Limits: The detection limits for fluoride have been variable and have decreased from those used during background monitoring. Therefore, fluoride was detected at a concentration (0.14 mg/L) which previously would may have been non-detect during background monitoring (detection limit 0.1-0.5 mg/L).
- Lack CCR Indicators and Upgradient Industrial Activities: Boron (a conservative indicator of CCR impacts), and sulfate do not show similar increases in concentration coincident with the detected fluoride concentration. A release from the Bottom Ash Basins would result in elevated concentrations of these parameters as well. Concentrations of fluoride have been detected in upgradient well OW-45. Based on the geochemistry of the groundwater, detection of fluoride is not indicative of a release from the Bottom Ash Basins.

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

ASD SUPPORTING INFORMATION

Variability in Detection Limits

The eight rounds of background groundwater sampling were completed February 2016 through June 2017. The laboratory analysis was completed by Pace Analytical in Green Bay, WI. Subsequent sample events were analyzed by We Energies Laboratory in Milwaukee, WI. The results of all fluoride sampling are included in the time series plot below (Figure 2) and summarized in Table 1. As displayed in the plot non-detect values (circled), the detection limits for fluoride during the background sampling were as follows: 0.1 mg/L (3 rounds),

0.2 mg/L (4 rounds) and 0.5 mg/L (1 round). Fluoride was detected in OW-48 during one event (March 8, 2017; 0.11 mg/L). Based on the procedures provided in the SAP (NRT an OBG Company, 2017), the only concentration detected (0.11 mg/L) was selected as the background concentration limit. Note this concentration value is between the detection limit (0.1 mg/L) and the reporting limit (0.3 mg/L) and can be considered an estimated value.

However, even though non-detect results were reported for seven of the rounds, the actual concentration in groundwater during these rounds is between zero and the reported detection limit (DL). In four out of seven of the rounds, concentrations may have been higher than the reported Detection Monitoring Round 3 SSI (0.14 mg/L) but not detected by the laboratory. Therefore, non-detect background concentrations were evaluated using multiple approaches to determine whether detection limits were a potential source for the SSI in OW-48.

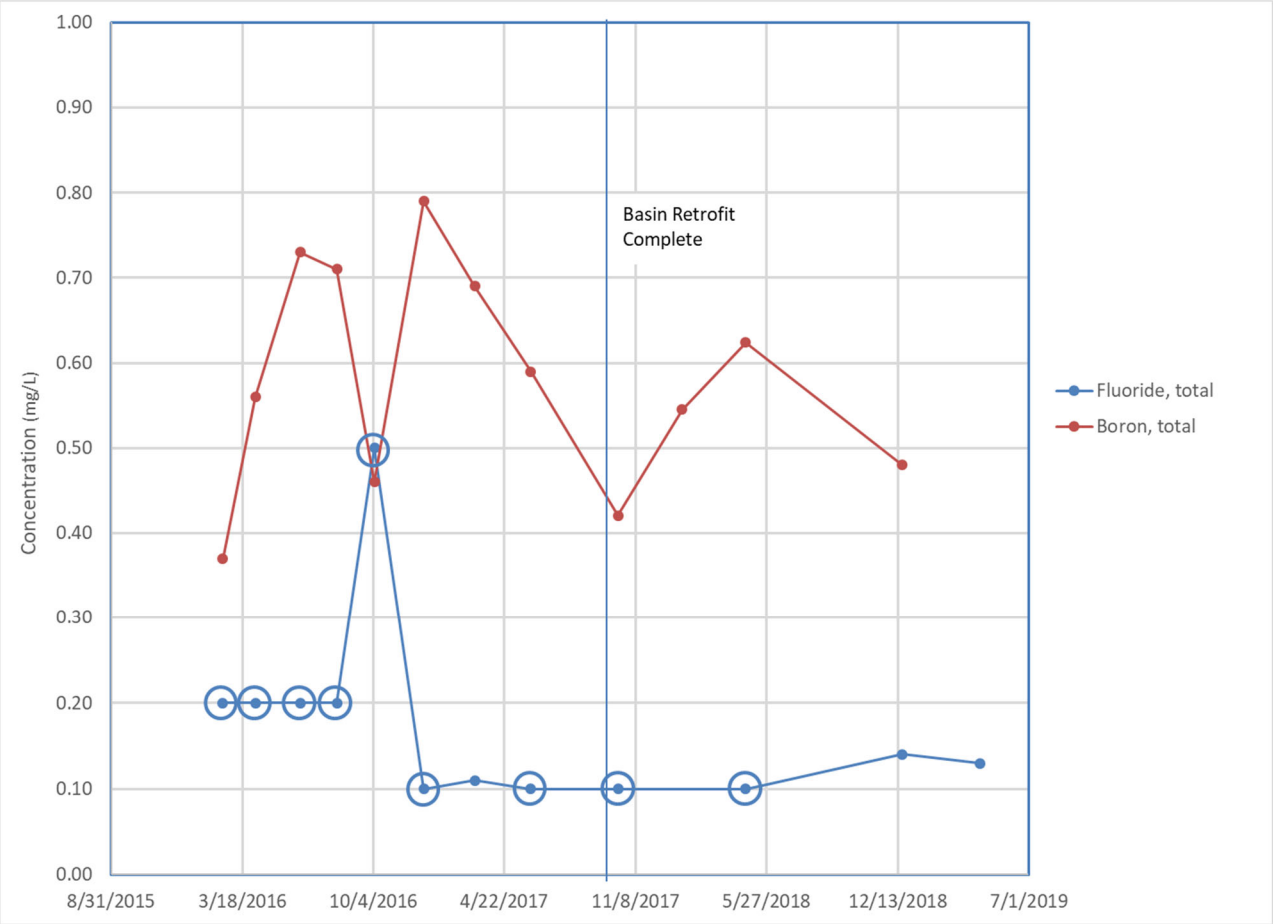


Figure 2. Time Series Plot of Fluoride and Boron

Given the large number of non-detects, the underlying distribution of fluoride concentration in OW-48 is unknown, and the limit is based only on one estimated detection value. The entire data set is11 samples, 3 had detections, but 2 of the detected concentrations were between the detection limit and the reporting limit and can be considered estimated values. To account for variable detection limits, a random number between zero and the detection limit was generated in Excel and used for statistical analysis Table 2 (below). Using the detection limit is a conservative approach in comparison to using the reporting limit as discussed in the

Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities Unified Guidance (USEPA, 2009) as follows:

> ***"As a general rule, non-detect concentrations should not be assumed to be bounded above by the MDL. The MDL is usually estimated on the basis of ideal laboratory conditions with physical analyte samples that may or may not account for matrix or other interferences encountered when analyzing specific field samples. For certain trace element analytical methods, individual laboratories may report detectable limits closer to an MDL than a nominal QL. So long as the laboratory has confidence in the ability to quantify at its lab- or occasionally event-specific detection level, this RL may also be satisfactory. The RL should typically be taken as a more reasonable upper bound for non-detects when imputing estimated concentration values to these measurements."***

Table 2. Revised Prediction Interval using Generated Random Numbers

Date	OW-48 Results	Detection Limit	Random Numbers between 0 and DL (generated by Excel)	Reporting Limit	Random Numbers between 0 and RL (generated by Excel)	Comment
2/17/2016	<0.2	0.2	0.02	0.4	0.26	ND- Excel Random Number
4/7/2016	<0.2	0.2	0.19	0.4	0.00	ND- Excel Random Number
6/14/2016	<0.2	0.2	0.09	0.4	0.14	ND- Excel Random Number
8/9/2016	<0.2	0.2	0.01	0.4	0.32	ND- Excel Random Number
10/6/2016	<0.5	0.5	0.35	1.5	1.26	ND- Excel Random Number
12/20/2016	<0.1	0.1	0.02	0.3	0.09	ND- Excel Random Number
3/8/2017	0.11	0.11	0.11	0.11	0.11	Estimated value between the detection limit and the reporting limit
6/1/2017	<0.1	0.1	0.04	0.3	0.22	ND- Excel Random Number
	Mean	0.20	0.10	0.48	0.30	
	Std Dev.	0.13	0.12	0.43	0.40	
	99% Conf. Interval	0.12	0.11	0.39	0.37	
	Upper Limit	0.32	0.21	0.86	0.67	

As displayed in Table 2 the resulting limit for fluoride using random values generated between zero and the detection limit is 0.21 mg/L at 99% confidence. This calculated limit provides a representation of the variability observed in the detection limits at the labs and uncertainty associated with estimated low-level detections. The calculated limit (0.21 mg/L) is above the fluoride concentration from Detection Monitoring Round 3 (0.14 mg/L) and subsequent resample (estimated at 0.13 mg/L). Therefore, the variable detection limits and non-detect handling in statistical analysis have resulted in the apparent SSI and fluoride does not exceed the background limit as calculated above.

If data was reported to the reporting limit for non-detects, as suggested in the Unified Guidance, instead of the method detection limit, only one value (0.14 mg/L) would be reported as a detection. Furthermore, if the reporting limit is used as the upper bound for generation of random numbers the upper limit of the prediction interval would be 0.67 mg/L, and all detections would be below the limit.

Lack of Additional CCR Indicators and Upgradient Industrial Activity

The concentrations of fluoride and other CCR indicators (boron and sulfate) do not show a strong correlation (Figure 2 and Figure 3). It is expected that concentrations would increase for both boron and sulfate in conjunction with fluoride if a release had occurred from the CCR unit and resulted in an SSI. Review of the data indicates the following:

- The concentration of boron or sulfate 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 or sulfate concentrations in OW-48 concurrent with the fluoride detections indicates that a CCR source is unlikely.
- An elevated concentration of fluoride (0.84 mg/L, in August 2016) was detected previously in background well OW-45, indicating that sources of elevated fluoride may occasionally exist upgradient.

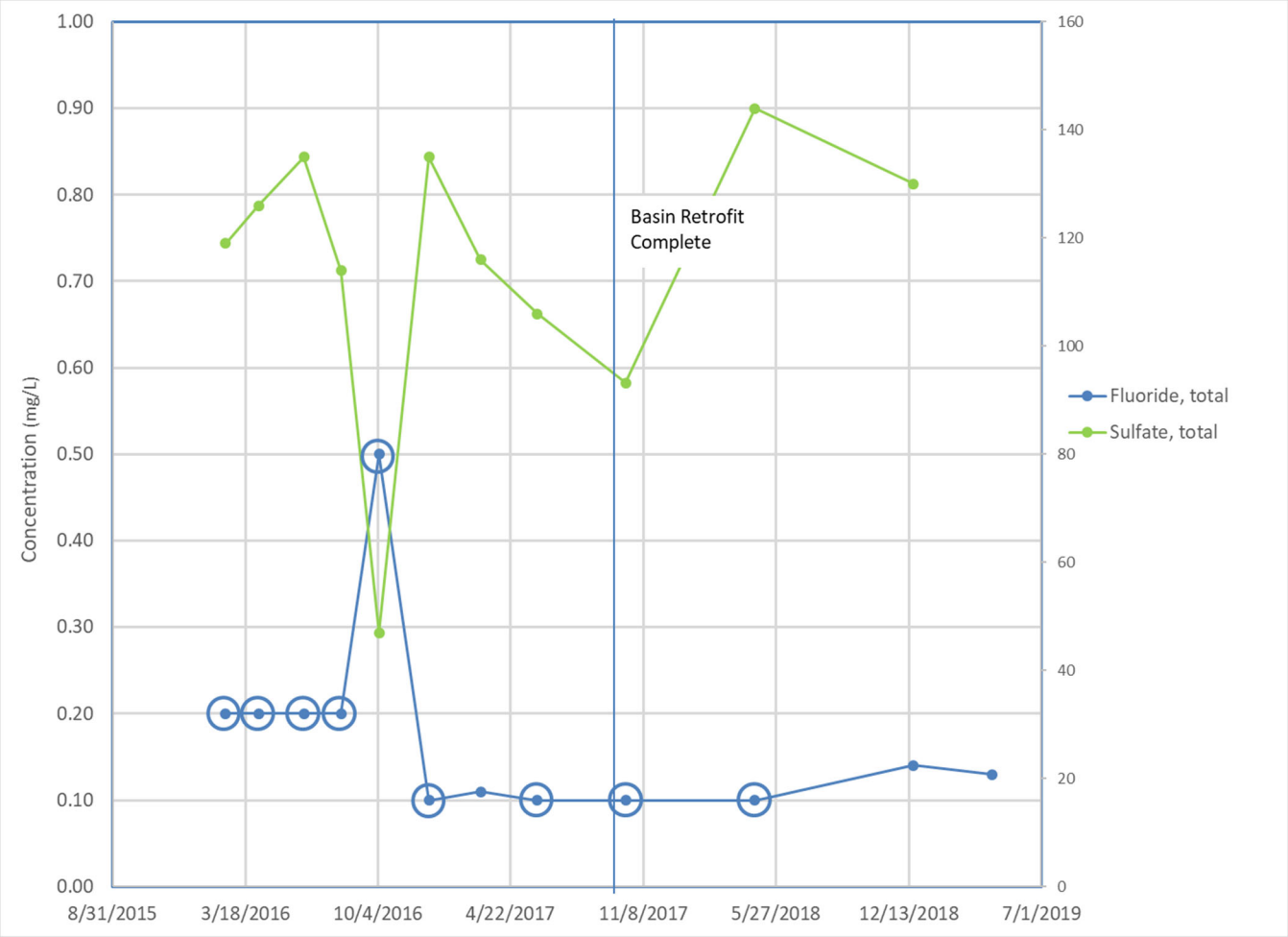


Figure 3. Time Series Plot of Fluoride and Sulfate

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 Section257.94(e)(2) for the Weston Units 3 &4 Bottom Ash Basins located at the Weston Generating Station in Rothschild, Wisconsin. Statistical analysis of the Detection Monitoring Round 3 sample for SSIs of 40 CFR Part 257 Appendix III parameters over background concentrations was completed within 90 days of collection of the sample (December 20, 2018). The determination identified the following SSIs (concentrations greater than background prediction intervals) at downgradient monitoring wells:

- Fluoride at well OW-48

40 CFR Section 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 Section 257.94(e)(2), this document demonstrates that sources other than the Bottom Ash Basins were the cause of the apparent SSI listed above. This ASD was completed within 90 days of determination of the SSIs (July 13, 2019) as required by 40 CFR Section 257.94(e)(2).

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

- Variable detection limits in statistical analysis
- Lack of additional CCR indicators and upgradient industrial activities

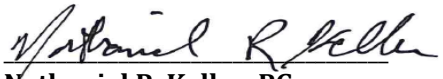
The preceding information serves as the ASD prepared in accordance with 40 CFR Section 257.94(e)(2) and supports the position that the SSIs observed during Detection Monitoring Round 3 are not due to a release from the CCR unit but were from laboratory variability in detection limits and statistical evaluation of non-detect data, and potentially 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.

If you have any questions regarding this document, please do not hesitate to contact us.

Sincerely,
O'BRIEN & GERE ENGINEERS, INC.

Glenn R. Luke, PE
Managing Engineer
Professional Engineer No. 42834-6
State of Wisconsin
O'Brien & Gere Engineers, Inc., Part of Ramboll
Date: July 13, 2019

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.



Nathaniel R. Keller, PG
Senior Hydrogeologist
Professional Geologist No. 1283-013
State of Wisconsin
O'Brien & Gere Engineers, Inc., Part of Ramboll
Date: July 13, 2019

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.

Figures

Figure 1 Groundwater Sampling Well Location Map

Tables

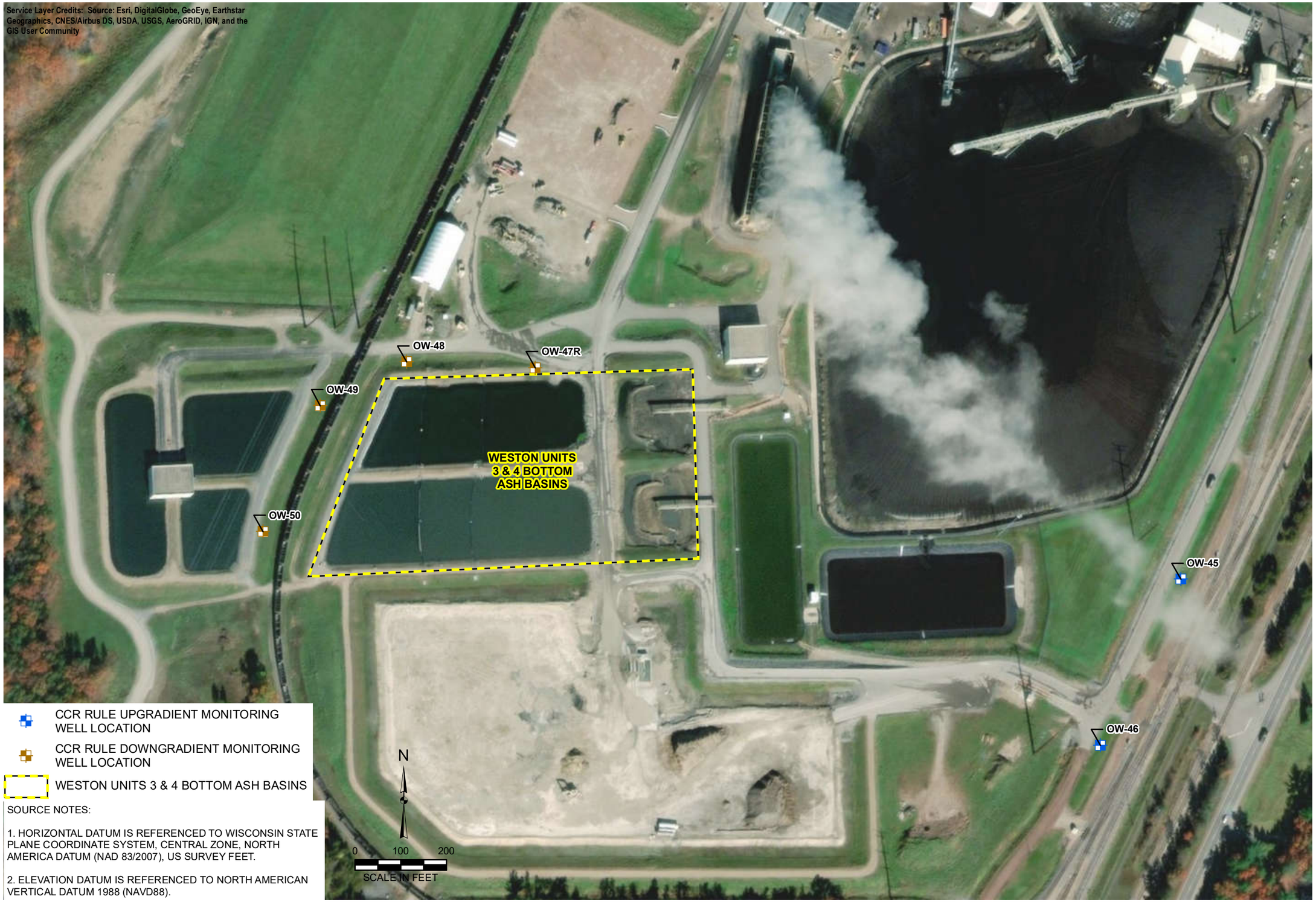
Table 1 Weston Bottom Ash Basins Appendix III Analytical Results

Figures

GROUNDWATER SAMPLING WELL LOCATION MAP

WPSC CCR RULE GROUNDWATER MONITORING
ALTERNATE SOURCE DEMONSTRATION
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



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

OBG
Part of Ramboll

Tables

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

Date Range: 10/01/2015 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	02/17/2016	40128335001	0.0290	18.5000	59.5	<0.20		12.1
	04/07/2016	40130422001	0.0360	11.9000	42.8	<0.20	6.94	10.2
	06/14/2016	40133803001	0.0240	12.0000	33.2	<0.20	7.22	12.7
	08/09/2016	40136463001	0.0290	11.1000	12.7	0.84	7.42	23.9
	10/06/2016	40139739001	0.0310	15.0000	9.8	<0.10	7.80	3.0
	12/20/2016	40143714001	0.0390	16.3000	51.1	<0.10	7.71	16.3
	03/08/2017	40146663001	0.0310	17.6000	45.1	<0.10	7.86	17.8
	06/01/2017	40150932001	0.0280	13.6000	27.1	<0.10		15.5
	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	02/17/2016	40128335002	0.0270	10.2000	44.3	<0.20	6.89	17.3
	04/07/2016	40130422002	0.0290	12.7000	64.2	<0.20	6.93	12.4
	06/14/2016	40133803002	0.0340	22.3000	98.1	<0.20	7.15	17.7
	08/09/2016	40136463002	0.0330	14.9000	53.9	<0.20	7.46	18.5
	10/06/2016	40139739002	0.0300	14.4000	79.4	<0.50	7.82	93.6
	12/20/2016	40143714002	0.0350	15.2000	60.4	<0.10	8.03	13.2
	03/08/2017	40146663002	0.0320	19.0000	82.1	<0.10	5.95	14.6
	06/01/2017	40150932002	0.0350	15.8000	58.2	<0.10		17.3
	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-48	02/17/2016	40128335004	0.3700	76.6000	81.6	<0.20		119.0
	04/07/2016	40130422004	0.5600	80.3000	84.7	<0.20	6.48	126.0
	06/14/2016	40133803004	0.7300	84.5000	80.2	<0.20	6.71	135.0
	08/09/2016	40136463003	0.7100	57.2000	67.2	<0.20	7.08	114.0
	10/06/2016	40139739003	0.4600	52.4000	76.2	<0.50	7.49	47.0
	12/20/2016	40143714003	0.7900	80.0000	107.0	<0.10	7.74	135.0
	03/08/2017	40146663003	0.6900	67.9000	84.1	0.11	8.07	116.0
	06/01/2017	40150932004	0.5900	56.7000	70.9	<0.10	8.37	106.0
	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

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

Date Range: 10/01/2015 to 12/20/2018

			B, tot, mg/L	Ca, tot, mg/L	Cl, tot, mg/L	F, tot, mg/L	pH (field), STD	SO4, tot, mg/L
OW-48	04/17/2019	AE35531				0.13	6.62	
OW-49	02/17/2016	40128335005	0.3800	41.4000	69.2	<0.20		75.7
	04/07/2016	40130422005	0.2500	31.2000	64.1	<0.20	6.48	58.2
	06/14/2016	40133803005	0.3600	49.0000	72.7	<0.20	6.71	89.7
	08/09/2016	40136463004	0.5300	59.4000	81.7	<0.20	6.94	109.0
	10/06/2016	40139739004	0.3200	35.3000	260.0	<0.50	7.54	64.5
	12/20/2016	40143714004	0.5000	66.0000	91.6	<0.10	7.65	122.0
	03/08/2017	40146663004	0.5100	74.5000	109.0	<0.10	8.04	128.0
	06/01/2017	40150932005	0.4500	67.0000	83.5	<0.10	8.26	112.0
	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	02/17/2016	40128335006	0.0470	31.0000	50.9	<0.20		14.4
	04/07/2016	40130422006	0.0420	27.2000	52.2	<0.20	6.15	13.8
	06/14/2016	40133803006	0.0400	32.2000	52.1	<0.20	6.47	12.8
	08/09/2016	40136463005	0.0390	32.3000	55.4	<0.20	6.75	12.6
	10/06/2016	40139739005	0.0390	30.6000	49.6	<0.10	7.13	44.4
	12/20/2016	40143714005	0.0400	29.6000	52.7	<0.10	7.22	14.8
	03/08/2017	40146663005	0.0370	31.2000	58.3	<0.10	7.65	15.8
	06/01/2017	40150932006	0.0380	30.9000	58.7	<0.10	7.95	16.0
	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 Unit 3&4 Bottom Ash CCR
Table 1. Weston Units 3 &4 Bottom Ash Basins: Appendix III Analytical Results

Date Range: 10/01/2015 to 12/20/2018

Well Id	Date Sampled	Lab Id	TDS, mg/L
OW-45	02/17/2016	40128335001	202.0
	04/07/2016	40130422001	164.0
	06/14/2016	40133803001	146.0
	08/09/2016	40136463001	136.0
	10/06/2016	40139739001	184.0
	12/20/2016	40143714001	180.0
	03/08/2017	40146663001	158.0
	06/01/2017	40150932001	130.0
	10/12/2017	40158567001	186.0
	04/25/2018	40168130001	154.0
	12/20/2018	AE32672	270.0
OW-46	02/17/2016	40128335002	166.0
	04/07/2016	40130422002	186.0
	06/14/2016	40133803002	274.0
	08/09/2016	40136463002	184.0
	10/06/2016	40139739002	188.0
	12/20/2016	40143714002	174.0
	03/08/2017	40146663002	206.0
	06/01/2017	40150932002	170.0
	10/12/2017	40158567002	164.0
	04/25/2018	40168130002	304.0
	12/20/2018	AE32673	150.0
OW-48	02/17/2016	40128335004	400.0
	04/07/2016	40130422004	414.0
	06/14/2016	40133803004	426.0
	08/09/2016	40136463003	374.0
	10/06/2016	40139739003	342.0
	12/20/2016	40143714003	460.0
	03/08/2017	40146663003	362.0
	06/01/2017	40150932004	330.0
	10/12/2017	40158567004	332.0
	04/25/2018	40168130004	434.0
	12/20/2018	AE32675	400.0
OW-49	02/17/2016	40128335005	296.0
	04/07/2016	40130422005	276.0
	06/14/2016	40133803005	334.0

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

Date Range: 10/01/2015 to 12/20/2018

			TDS, mg/L
OW-49	08/09/2016	40136463004	400.0
	10/06/2016	40139739004	282.0
	12/20/2016	40143714004	410.0
	03/08/2017	40146663004	456.0
	06/01/2017	40150932005	404.0
	10/12/2017	40158567005	466.0
	04/25/2018	40168130005	396.0
	12/20/2018	AE32676	430.0
OW-50	02/17/2016	40128335006	210.0
	04/07/2016	40130422006	198.0
	06/14/2016	40133803006	212.0
	08/09/2016	40136463005	248.0
	10/06/2016	40139739005	226.0
	12/20/2016	40143714005	178.0
	03/08/2017	40146663005	190.0
	06/01/2017	40150932006	238.0
	10/12/2017	40158567006	246.0
	04/25/2018	40168130006	266.0
	12/20/2018	AE32677	220.0