

2018 Annual Groundwater Monitoring and Corrective Action Report

Duck Creek Bottom Ash Basin – CCR Unit ID 205
Duck Creek Power Station
17751 North Cilco Road
Canton, Illinois 61520

Illinois Power Resources Generating, LLC

January 31, 2019



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2018 Annual Groundwater Monitoring and Corrective Action Report

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Duck Creek Power Station
Canton, Illinois

Prepared for:
Illinois Power Resources Generating, LLC



RACHEL A. BANOFF
Environmental Engineer



NIKKI PAGANO, PE, PG
Senior Managing Engineer

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ACRONYMS AND ABBREVIATIONS

CCR	Coal Combustion Residuals
CFR	Code of Federal Regulations
GWPS	Groundwater Protection Standard
mg/L	milligrams per liter
NRT/OBG	Natural Resource Technology, an OBG Company
OBG	O'Brien & Gere Engineers, part of Ramboll
SSI	Statistically Significant Increase
S.U.	Standard Units
TDS	Total Dissolved Solids

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SECTION 1: INTRODUCTION

This report has been prepared on behalf of Illinois Power Resources Generating, LLC by O'Brien & Gere Engineers, part of Ramboll (OBG), to provide the information required by the Code of Federal Regulations (CFR) found in 40 CFR 257.90(e) for the Duck Creek Bottom Ash Basin located at Duck Creek Power Station near Canton, Illinois.

In accordance with 40 CFR § 257.90(e), the owner or operator of an existing Coal Combustion Residuals (CCR) unit must prepare an annual groundwater monitoring and corrective action report, for the preceding calendar year, that documents the status of the groundwater monitoring and corrective action program for the CCR unit, summarizes key actions completed, describes any problems encountered, discusses actions to resolve the problems, and projects 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 §§ 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).
5. Other information required to be included in the annual report as specified in §§ 257.90 through 257.98¹.

This report provides the required information for the Duck Creek Bottom Ash Basin 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 §§ 257.96 through 257.98 is not applicable.

SECTION 2: MONITORING AND CORRECTIVE ACTION PROGRAM STATUS

Groundwater sampling event dates and parameters collected are provided in the detection monitoring program summary table below. One sample was collected from each background and downgradient well in the monitoring system during each sampling event. Analytical data was evaluated after each event in accordance with the Statistical Analysis Plan, Duck Creek Power Station, Illinois Power Resources Generating, LLC (NRT/OBG, 2017a) to determine if there were any statistically significant increases (SSIs) of Appendix III parameters over background concentrations. The dates that SSIs were evaluated are provided in the detection monitoring program summary table below. No SSIs were identified.

Sampling Dates	Parameters Collected	SSIs
November 7 and 9, 2017	Appendix III	No
June 5, 2018	Appendix III	No
October 13, 2018	Appendix III	To Be Determined

Statistical background values are provided in Table 1. Analytical results from the events summarized in the detection monitoring program summary table above are included in Table 2.

The Duck Creek Bottom Ash Basin remains in the Detection Monitoring Program in accordance with 40 CFR § 257.94.

SECTION 3: KEY ACTIONS COMPLETED IN 2018

Two groundwater monitoring events were completed in 2018 under the Detection Monitoring Program. These events occurred in June and October, and are detailed in Section 2. One groundwater sample was collected from each background and downgradient well in the monitoring system during each event. All samples were collected and analyzed in accordance with the Sampling and Analysis Plan (NRT/OBG, 2017b). All monitoring data obtained under 40 CFR §§ 257.90 through 257.98 (as applicable) in 2018 are presented in Table 2.

The groundwater monitoring system, including the CCR unit and all background and downgradient monitoring wells, is presented in Figure 1.

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SECTION 4: PROBLEMS ENCOUNTERED AND ACTIONS TO RESOLVE THE PROBLEMS

No problems were encountered with the groundwater monitoring program during 2018. Groundwater samples were collected and analyzed in accordance with the Sampling and Analysis Plan (NRT/OBG, 2017b), and all data was accepted.

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SECTION 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 first and third quarters of 2019.
- Complete evaluation of analytical data from the downgradient wells, using background data to determine whether an 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 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) as may apply in 2019 will be met, including associated recordkeeping/notifications required by 40 CFR §§ 257.105 through 257.108.

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REFERENCES

Natural Resource Technology, an OBG Company, 2017a, Statistical Analysis Plan, Duck Creek Power Station, Edwards Power Station, Illinois Power Resources Generating, LLC, October 17, 2017.

Natural Resource Technology, an OBG Company, 2017b, Sampling and Analysis Plan, Duck Creek Bottom Ash Basin, Duck Creek Power Station, Canton, Illinois, Project No. 2285, Revision 0, October 17, 2017.

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Figures

Duck Creek

Y:\Mapping\Projects\222285\MXD\2018_AnnualGWM_CAR\Figure_1_GWS_WellLoc_DuckCreek_BAB.mxd Author: stolzsd; Date/Time: 1/28/2019, 1:28:00 PM



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

-  UPGRADIENT MONITORING WELL LOCATION
-  DOWNGRADIENT MONITORING WELL LOCATION
-  CCR MONITORED UNIT

DRAWN BY/DATE:
SDS 11/28/18
REVIEWED BY/DATE:
AJB 1/24/19
APPROVED BY/DATE:
NMP 1/28/19

GROUNDWATER SAMPLING WELL LOCATION MAP
 DUCK CREEK BOTTOM ASH BASIN
 UNIT: 205
 2018 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT
 VISTRA CCR RULE GROUNDWATER MONITORING
 DUCK CREEK POWER STATION
 CANTON, ILLINOIS

PROJECT NO: 70089
 FIGURE NO: 1



Tables

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Table 1. Statistical Background Values

2018 Annual Groundwater Monitoring and Corrective Action Report

Duck Creek Power Station

Unit ID 205 - Duck Creek Bottom Ash Basin

Parameter	Statistical Background Value
Appendix III	
Boron (mg/L)	3.9
Calcium (mg/L)	408.7
Chloride (mg/L)	650
Fluoride (mg/L)	0.529
pH (S.U.)	6.9 / 7.7
Sulfate (mg/L)	596.3
TDS (mg/L)	2164

[O: KLS 8/30/18, C: RAB 8/31/18]

Notes:

mg/L = milligrams per liter

S.U. = Standard Units

TDS = Total Dissolved Solids

Table 2. Appendix III Analytical Results

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 Unit ID 205 - Duck Creek Bottom Ash Basin

Sample Location	Date Sampled	B, total (mg/L)	Ca, total (mg/L)	Cl, total (mg/L)	F, total (mg/L)	pH (field) (S.U.)	SO4, total (mg/L)	TDS (mg/L)
Background / Upgradient Monitoring Wells								
BA05	11/9/2017	0.19	220	20	0.349	7.3	380	920
	6/5/2018	0.16	190	13	0.305	7.1	440	960
	10/13/2018	0.15	200	11	<0.25	7.2	450	1100
BA06	11/9/2017	3.5	340	530	<0.25	6.9	400	1500
	6/5/2018	2.9	510	610	0.319	7.2	450	1900
	10/13/2018	3.8	390	640	0.31	7.2	480	2000
Downgradient Monitoring Wells								
BA01	11/7/2017	0.044	120	11	0.317	6.9	150	580
	6/5/2018	0.019	120	11	0.254	7.1	140	520
	10/13/2018	0.024	130	9.9	<0.25	7.1	150	640
BA02	11/7/2017	0.046	82	9.7	0.308	7.1	10	480
	6/5/2018	0.041	100	9.3	<0.25	7.3	13	420
	10/13/2018	0.057	110	9.9	<0.25	7.2	11	500
BA03	11/7/2017	0.037	92	5.7	0.335	7.3	16	440
	6/5/2018	0.021	110	6.5	0.265	7.4	18	390
	10/13/2018	0.046	150	6.4	<0.25	7.3	18	470
BA04	11/7/2017	0.28	110	33	0.361	7.3	140	600
	6/5/2018	0.10	120	25	0.327	6.9	120	520
	10/13/2018	0.54	120	28	0.291	7.1	120	670

[O: RAB 12/26/18, C: JQW 12/27/18][U: RAB 1/26/19]

Notes:

mg/L = milligrams per liter

S.U. = Standard Units

TDS = Total Dissolved Solids

< = concentration is less than the reporting limit

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