



2019 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT

PRIMARY EAST ASH POND
WOOD RIVER SITE
1 CHESSEN LANE
ALTON, ILLINOIS 62202

Prepared For:

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March 2020

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1.0 INTRODUCTION

In accordance with Code of Federal Regulation (CFR) requirements under 40 CFR 257.90(e), ATON Environmental Consulting and Engineering PLLC (ATON) has prepared this report on behalf of CTI Development LLC (CTI) for the 2019 Wood River Primary East Ash Pond in Alton, Illinois. CTI took possession of the power station property on August 30, 2019 from Luminant/Dynegy Midwest Generation, LLC (DMG).

The owner or operator of an existing Coal Combustion Residuals (CCR) unit shall 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. The report should summarize key actions completed, describe any problems encountered, discuss actions to resolve the problems, and key activities for the upcoming year per 40 CFR § 257.90(e). The annual report will minimally cover the following site-specific information:

1. A drawing or diagram showing the CCR unit, the designated background (or upgradient) monitoring wells, and the designated downgradient monitoring wells.
2. Identification and discussion of any monitoring wells that were installed or decommissioned during the preceding year.
3. Provide a summary of groundwater samples taken for the Primary East Ash Pond, including the number of groundwater samples collected for analysis at each of the designated background and downgradient wells, the dates collected, whether the sample was required by the detection monitoring or assessment monitoring programs, and the groundwater monitoring data obtained under 40 CFR 257.90 - 257.98.
4. A discussion of the groundwater monitoring program including:
 - a. Statistical analysis of groundwater data to identify constituents detected at a statistically significant increase over background levels.
 - b. The transition from detection groundwater monitoring to assessment monitoring of constituents identified in the statistical assessment.
5. Other information required to be included in the annual report as specified in 40 CFR 257.90 - 257.98.

2.0 MONITORING & CORRECTIVE ACTION PROGRAM STATUS

As referenced in the 2018 Annual Groundwater Monitoring and Corrective Action Report (NRT/OGB 2019), the Primary East Ash Pond has been in an Assessment Monitoring Program in accordance with 40 CFR 257.94(e)(2). DMG placed the required notification on April 9, 2019.

Assessment monitoring sampling was continued in 2019 during the semi-annual sampling events under the direction of DMG and the new owner, CTI. Samples were collected from each of the Primary East Ash Pond designated upgradient and downgradient wells and analyzed for the Appendix III and Appendix IV parameters. The analytical data was evaluated in accordance with the Statistical Analysis Plan (NRT/OBG 2017) provisions to determine if any statistically significant increases (SSIs) of the Appendix III parameters were above the background concentrations and if statistically significant levels (SSLs) of Appendix IV parameters were above the Groundwater Protections Standards (GWPSs).

In 2019, the Primary East Ash Pond groundwater well network was sampled on a semi-annual basis as outlined in the Groundwater Monitoring Plan (NRT/OBG Oct. 2016). Sampling events were completed by Teklab Inc. on the following dates:

Q1 Sample Date	Q3 Sample Date
2/18/2019	9/19/2019

Assessment Monitoring Program Summary November 2017 – November 2019

Well ID	Appendix III - SSIs		Appendix IV - SSLs	
	Trend	UCL Value	Trend	UCL Value
38	Statistically Insignificant	Boron Above Background	None	Molybdenum UCL Above GWPS
39S	Statistically Insignificant	Boron, Calcium, Sulfate, & TDS Above Background	None	Molybdenum UCL Above GWPS
40S	Statistically Insignificant	Boron, Calcium, & Sulfate Above Background	None	Lithium & Molybdenum UCL Above GWPS
41	Boron Increasing Trend; All Others Statistically Insignificant	Boron, Calcium, Sulfate, & TDS Above Background	None	Lithium & Molybdenum UCL Above GWPS

The Statistical Background Values for the SSIs evaluation from Appendix III are summarized in Table A. The GWPSs for the SSLs evaluation from Appendix IV are summarized in Table B.

Table A - Statistical Background Values

Parameter	Statistical Background Value
Appendix III	
Boron (mg/L)	1.22
Calcium (mg/L)	180.516
Chloride (mg/L)	88
Fluoride (mg/L)	0.76
pH (S.U.)	6.61 / 7.23
Sulfate (mg/L)	203
TDS (mg/L)	863

Notes:

mg/L = milligrams per liter

S.U. = Standard Units

TDS = Total Dissolved Solids

Table B - Groundwater Protection Standards

Parameter	Groundwater Protection Standard
Appendix IV	
Antimony (mg/L)	0.006
Arsenic (mg/L)	0.0574
Barium (mg/L)	2
Beryllium (mg/L)	0.004
Cadmium (mg/L)	0.005
Chromium (mg/L)	0.10
Cobalt (mg/L)	0.006
Fluoride (mg/L)	4
Lead (mg/L)	0.015
Lithium (mg/L)	0.171
Mercury (mg/L)	0.002
Molybdenum (mg/L)	0.10
Selenium (mg/L)	0.05
Thallium (mg/L)	0.002
Radium 226+228 (pCi/L)	5

Notes:

mg/L = milligrams per liter

pCi/L = picoCuries per liter

3.0 ACTIONS COMPLETED IN 2019

As previously noted, semi-annual groundwater sampling was completed for the Primary East Ash Pond in 2019 under the Assessment Monitoring Program. A summary of the analytical data and statistical analyses are found in Appendix B - Tables 1 and 2.

Appendix A - Figure 1 displays the designated groundwater well system for the West Ash Pond Complex.

4.0 PROBLEMS ENCOUNTERED & CORRECTIVE ACTIONS

Performance and assessment of the designated groundwater well system for the Primary East Ash Pond encountered no issues during 2019. Guidelines in the Sampling and Analysis Plan (NRT/OGB, 2017) were followed during the collection and analysis of the representative samples.

5.0 2020 PLANNED ACTIONS

The following actions are planned for 2020:

- The continuation of Assessment Monitoring Program of the Primary East Ash Pond with semi-annual sampling events.
- The continuation of statistical evaluation of the collected analytical data from the designated groundwater well system to determine if any SSLs for Appendix IV parameters has occurred.
- If an SSL has been identified, an assessment of “potential alternative sources” will be completed. A “potential alternative source” is one other than the referenced CCR unit that could have caused the SSL or the SSL resulted from an error in one of the following processes: sample collection, sample analysis, statistical evaluation, or a possible variation/change in the groundwater systems quality.
 - If an alternative source is causing the SSL, a documented demonstration will be completed within 90 days after the SSL discovery and included in the Groundwater Monitoring and Corrective Action report for that year.
 - If an alternative source is not the cause of the SSL, the procedure and requirements in 40 CFR 257.94 - 257.98 as applicable will be met. This also includes completion of the appropriate notifications required by 40 CFR 257.105 - 257.108.

6.0 REFERENCES

Natural Resource Technology, Inc. (NRT), January 31, 2019. 2018 Annual Groundwater Monitoring and Corrective Action Report, Primary East Ash Pond, Wood River Power Station, Alton, Illinois.

NRT/OBG, October 17, 2017. Sampling and Analysis Plan, Primary East Ash Pond, Wood River Power Station, Alton, Illinois.

NRT/OBG, October 17, 2017. Statistical Analysis Plan, Wood River Power Station, Alton, Illinois.



USEPA, April 17, 2015. 40 CFR Parts 257 and 261. Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities; Final Rule.



APPENDIX A

FIGURES



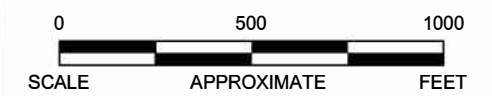
LEGEND


-  UPGRADIENT MONITORING MONITORING WELL LOCATION
-  DOWNGRADIENT MONITORING WELL LOCATION

-  EAST IMPOUNDMENT
-  PROPERTY BOUNDARY (BASED ON 1997 SURVEY DATA)

Notes:

1. Figure base map modified after Natural Resource Technology, 2017.
2. Reference elevation data developed by others, 2015.
3. Field and analytical data provided by Teklabs, 2019.
4. Soil boring/well installations provided by various contractors, 1994-2004.
5. Well locations are approximate.





ATON

FIGURE 1
 GROUNDWATER WELL SAMPLING LOCATION MAP Designated Wells for Primary East Ash Pond
 2019 Annual Groundwater Monitoring and Corrective Action Report
 CTI Development LLC
 Former Wood River Power Plant - Alton, IL

DESIGN: DB	DRAWN: LMC	CHKD.: DB
DATE: 04/07/2020	SCALE: AS SHOWN	REV.:
W.O.NO.: ATONWOOD RIVER/FIG 1 GW WELL SAMP LOC MAP EAST POND		

APPENDIX B

TABLES

Table 1
Summary of Analytical Analyses - Appendix III
Primary East Ash Pond

Sample Location	Date Sampled	Boron (mg/L)	Calcium (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	pH (S.U.)	Sulfate (mg/L)	TDS (mg/L)
	Background Values	1.22	180.516	88	0.76	6.61 / 7.23	203	863
Background / Upgradient Monitoring Wells								
21	5/2/2018	0.40	128.00	5.00	0.18	6.40	69.00	456.00
	7/31/2018	0.33	106.00	<5	0.18	6.90	57.00	448.00
	2/18/2019	0.42	117.00	4.00	0.19	6.95	63.00	470.00
	9/19/2019	0.17	94.80	2.00	0.20	6.79	40.00	394.00
37	5/2/2018	0.62	134.00	45.00	0.54	6.50	99.00	644.00
	7/31/2018	0.48	163.00	11.00	0.50	6.70	69.00	528.00
	2/18/2019	0.44	129.00	6.00	0.44	6.17	50.00	524.00
	9/19/2019	0.41	136.00	6.00	0.39	6.56	56.00	548.00
Downgradient Monitoring Wells								
38	11/2/2017	1.18	69.40	44.00	<0.1	7.60	80.00	384.00
	5/2/2018	3.12	94.10	43.00	0.30	6.70	130.00	500.00
	7/31/2018	2.69	102.00	45.00	0.31	7.20	94.00	438.00
	2/18/2019	3.08	103.00	44.00	0.31	6.57	105.00	508.00
	9/19/2019	3.12	92.10	38.00	0.33	7.20	94.00	472.00
39S	11/2/2017	59.40	212.00	<5	0.48	7.50	481.00	1050.00
	5/2/2018	51.20	241.00	5.00	0.46	6.50	515.00	1080.00
	7/31/2018	61.10	344.00	<5	0.40	6.80	509.00	1150.00
	2/18/2019	61.00	222.00	2.00	0.41	6.45	434.00	1080.00
	9/19/2019	55.20	210.00	3.00	0.46	6.63	333.00	984.00
40S	11/3/2017	25.10	236.00	10.00	0.14	7.60	548.00	1040.00
	5/2/2018	18.80	259.00	14.00	0.20	6.30	408.00	1140.00
	7/31/2018	27.30	360.00	10.00	0.10	7.10	604.00	1210.00
	2/18/2019	27.40	250.00	13.00	0.11	6.73	470.00	1050.00
	9/19/2019	24.80	247.00	13.00	0.13	6.89	513.00	1050.00
41	11/3/2017	8.07	293.00	18.00	0.15	7.50	642.00	1340.00
	5/2/2018	10.40	324.00	12.00	0.14	6.30	940.00	1620.00
	7/31/2018	10.10	441.00	22.00	0.14	7.00	1000.00	1800.00
	2/18/2019	11.10	349.00	17.00	0.14	6.98	847.00	1670.00
	9/19/2019	13.70	415.00	15.00	0.14	6.74	892.00	1820.00

Table 2
Summary of Analytical Analyses - Appendix IV
Primary East Ash Pond

Sample Location	Date Sampled	Sb, total	As, total	Ba, total	Be, total	Cd, total	Cr, total	Co, total	F, total	Pb, total	Li, total	Hg, total	Mo, total	Ra 226/228 Combined	Se, total	Tl, total
		(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(pCi/L)	(mg/L)
GWPS		0.006	0.01	2	0.004	0.005	0.1	0.006	4	0.015	0.0409	0.002	0.1	5	0.05	0.002
Background / Upgradient Monitoring Wells																
21	5/2/2018	0.001	0.0023	0.204	<0.001	0.001	<0.0015	0.001	0.18	<0.001	0.0117	<0.0002	0.0015	1.5	0.0021	<0.002
	7/31/2018	<0.001	0.0023	0.176	NA	<0.001	NA	<0.001	0.18	NA	0.0093	<0.0002	<0.0015	0.17	<0.001	NA
	2/18/2019	0.0005	0.0021	0.177	<0.001	<0.001	0.001	0.0001	0.19	<0.001	0.0111	<0.0002	0.0007	0.39	0.0008	<0.002
	9/19/2019	<0.001	0.0017	0.204	<0.001	<0.001	0.0014	0.0001	0.2	<0.001	0.0081	<0.0002	<0.0015	0.25	0.0021	<0.002
37	5/2/2018	<0.001	0.001	0.106	<0.001	<0.001	<0.0015	0.001	0.54	<0.001	0.0315	<0.0002	0.0034	1.59	<0.001	<0.002
	7/31/2018	<0.001	<0.001	0.121	NA	<0.001	NA	<0.001	0.5	NA	0.0251	<0.0002	0.0034	0	<0.001	NA
	2/18/2019	<0.001	<0.001	0.0938	<0.001	<0.001	<0.0015	0.0001	0.44	<0.001	0.0276	<0.0002	0.0025	0.42	<0.001	<0.002
	9/19/2019	<0.001	<0.001	0.0925	<0.001	0.0002	<0.0015	0.0001	0.39	<0.001	0.0281	<0.0002	0.0023	0.14	<0.001	<0.002
Downgradient Monitoring Wells																
38	5/2/2018	<0.001	<0.001	0.151	<0.001	<0.001	<0.0015	<0.001	0.3	<0.001	0.0135	<0.0002	0.076	1.23	<0.001	<0.002
	7/31/2018	<0.001	<0.001	0.167	NA	<0.001	NA	<0.001	0.31	NA	0.0135	<0.0002	0.128	0.53	<0.001	NA
	2/18/2019	<0.001	<0.001	0.165	<0.001	<0.001	<0.0015	0.0001	0.31	<0.001	0.0161	<0.0002	0.105	0.5	<0.001	<0.002
	9/19/2019	<0.001	<0.001	0.145	<0.001	<0.001	<0.0015	0.0001	0.33	<0.001	0.0149	<0.0002	0.116	0.7	<0.001	<0.002
39S	5/2/2018	<0.001	0.0014	0.0317	<0.001	0.001	<0.0015	0.001	0.46	<0.001	0.0138	<0.0002	0.931	1.9	<0.001	<0.002
	7/31/2018	<0.001	0.002	0.0496	NA	<0.001	NA	0.0012	0.4	NA	0.0129	<0.0002	1.05	0.07	<0.001	NA
	2/18/2019	0.0005	0.0013	0.0327	<0.001	0.0005	0.0015	0.0011	0.41	<0.001	0.0135	<0.0002	0.732	0.39	<0.001	<0.002
	9/19/2019	0.0005	0.0015	0.0382	<0.001	0.0004	<0.0015	0.0015	0.46	<0.001	0.0106	<0.0002	0.704	0.26	<0.001	<0.002
40S	5/2/2018	0.0011	0.001	0.104	<0.001	0.001	<0.0015	0.0016	0.2	<0.001	0.026	0.00025	0.0925	0.88	0.0039	<0.002
	7/31/2018	0.0021	0.001	0.113	NA	<0.001	NA	0.0012	0.1	NA	0.0599	<0.0002	0.195	0.56	0.0062	NA
	2/18/2019	0.001	0.0013	0.0669	<0.001	0.0003	0.0006	0.0007	0.11	<0.001	0.0335	<0.0002	0.189	0.55	0.004	<0.002
	9/19/2019	0.0008	0.0015	0.0606	<0.001	0.0003	<0.0015	0.0008	0.13	<0.001	0.0272	<0.0002	0.162	0.52	0.0071	<0.002
41	5/2/2018	<0.001	<0.001	0.0296	<0.001	0.001	<0.0015	0.001	0.14	<0.001	0.0288	<0.0002	0.036	0.43	0.001	<0.002
	7/31/2018	<0.001	<0.001	0.0327	NA	<0.001	NA	<0.001	0.14	NA	0.0366	<0.0002	0.0506	0	0.002	NA
	2/18/2019	<0.001	<0.001	0.0288	<0.001	<0.001	0.0007	0.0002	0.14	0.0002	0.0385	<0.0002	0.0361	0.57	0.0013	<0.002
	9/19/2019	<0.001	<0.001	0.0242	<0.001	<0.001	<0.0015	0.0001	0.14	<0.001	0.0441	<0.0002	0.0313	0.37	0.0011	<0.002