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**Dynegy Zimmer, LLC**

Date  
**January 31, 2021**

Project No.  
**1940074924**

# **2020 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT**

## **ZIMMER D BASIN, ZIMMER POWER STATION**



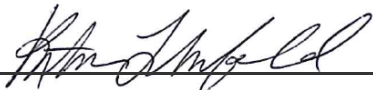
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**2020 ANNUAL GROUNDWATER MONITORING AND  
CORRECTIVE ACTION REPORT  
ZIMMER D BASIN, ZIMMER POWER STATION**


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## ACRONYMS AND ABBREVIATIONS

40 C.F.R.	Title 40 of the Code of Federal Regulations
ASD	Alternate Source Demonstration
CCR	Coal Combustion Residuals
CMA	Corrective Measures Assessment
GWPS	Groundwater Protection Standard
SSI	Statistically Significant Increase
SSL	Statistically Significant Level

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## EXECUTIVE SUMMARY

This report has been prepared to provide the information required by Title 40 of the Code of Federal Regulations (40 C.F.R.) § 257.90(e) for Zimmer D Basin located at Zimmer Power Station near Moscow, Ohio.

Groundwater is being monitored at Zimmer D Basin in accordance with the Assessment Monitoring Program requirements specified in 40 C.F.R. § 257.95. Assessment Monitoring was initiated at Zimmer D Basin on April 9, 2018.

No changes were made to the monitoring system in 2020.

No Statistically Significant Levels (SSLs) of 40 C.F.R. Part 257 Appendix IV parameters were determined. Consequently, a Corrective Measures Assessment (CMA) is not required and Zimmer D Basin remains in the Assessment Monitoring Program.

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## 1. INTRODUCTION

This report has been prepared by Ramboll Americas Engineering Solutions Inc. (Ramboll) on behalf of Dynegy Zimmer, LLC, to provide the information required by 40 C.F.R. § 257.90(e) for Zimmer D Basin located at Zimmer Power Station near Moscow, Ohio.

In accordance with 40 C.F.R. § 257.90(e), the owner or operator of a 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 [SSI] relative to background levels).
5. Other information required to be included in the annual report as specified in §§ 257.90 through 257.98.
6. A section at the beginning of the annual report that provides an overview of the current status of groundwater monitoring and corrective action programs for the CCR unit. At a minimum, the summary must specify all of the following:
  - i. At the start of the current annual reporting period, whether the CCR unit was operating under the detection monitoring program in §257.94 or the assessment monitoring program in §257.95.
  - ii. At the end of the current annual reporting period, whether the CCR unit was operating under the detection monitoring program in §257.94 or the assessment monitoring program in §257.95.
  - iii. If it was determined that there was a SSI over background for one or more constituents listed in Appendix III of §257 pursuant to §257.94(e):
    - A. Identify those constituents listed in Appendix III of §257 and the names of the monitoring wells associated with the SSI(s).

- B. Provide the date when the assessment monitoring program was initiated for the CCR unit.
- iv. If it was determined that there was a SSL above the Groundwater Protection Standard (GWPS) for one or more constituents listed in Appendix IV of §257 pursuant to §257.95(g) include all of the following:
  - A. Identify those constituents listed in Appendix IV of §257 and the names of the monitoring wells associated with the SSL(s).
  - B. Provide the date when the CMA was initiated for the CCR unit.
  - C. Provide the date when the public meeting was held for CMA for the CCR unit.
  - D. Provide the date when the CMA was completed for the CCR unit.
- v. Whether a remedy was selected pursuant to §257.97 during the current annual reporting period, and if so, the date of remedy selection.
- vi. Whether remedial activities were initiated or are ongoing pursuant to §257.98 during the current annual reporting period.

This report provides the required information for Zimmer D Basin for calendar year 2020.

## **2. MONITORING AND CORRECTIVE ACTION PROGRAM STATUS**

No changes have occurred to the Monitoring Program status in calendar year 2020, and Zimmer D Basin remains in the Assessment Monitoring Program in accordance with 40 C.F.R. § 257.95.

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### 3. KEY ACTIONS COMPLETED IN 2020

The Assessment Monitoring Program is summarized in Table A. The groundwater monitoring system, including the CCR unit and all background and downgradient monitoring wells, is presented in Figure 1. No changes were made to the monitoring system in 2020. In general, one groundwater sample was collected from each background and downgradient well during each monitoring event. All samples were collected and analyzed in accordance with the Sampling and Analysis Plan (AECOM, 2017). All monitoring data obtained under 40 C.F.R. §§ 257.90 through 257.98 (as applicable) in 2020, and analytical results for the September 2019 sampling event, are presented in Tables 1 and 2. Analytical data were evaluated in accordance with the Statistical Analysis Plan (NRT/OBG, 2017) to determine any Statistically Significant Levels (SSLs) of Appendix IV parameters over GWPSs.

Statistical background values are provided in Table 3 and GWPSs in Table 4.

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**Table A – 2019-2020 Assessment Monitoring Program Summary**

Sampling Dates	Analytical Data Receipt Date	Parameters Collected	SSL(s)	SSL(s) Determination Date
September 11, 2019	October 31, 2019	Appendix III Appendix IV Detected <sup>1</sup>	none	January 14, 2020
April 9, 2020	May 6, 2020	Appendix III Appendix IV	none	August 4, 2020
September 16 - 17, 2020	October 19, 2020	Appendix III Appendix IV Detected <sup>1</sup>	TBD	TBD

**Notes:**

NA: Not Applicable

TBD: To Be Determined

1. Groundwater sample analysis was limited to Appendix IV parameters detected in previous events in accordance with 40 C.F.R. § 257.95(d)(1).

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## **4. PROBLEMS ENCOUNTERED AND ACTIONS TO RESOLVE THE PROBLEMS**

No problems were encountered with the Groundwater Monitoring Program during 2020. Groundwater samples were collected and analyzed in accordance with the Sampling and Analysis Plan (AECOM, 2017), and all data were accepted.

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## 5. KEY ACTIVITIES PLANNED FOR 2021

The following key activities are planned for 2021:

- Continuation of the Assessment Monitoring Program with semi-annual sampling scheduled for the first and third quarters of 2021.
- Complete evaluation of analytical data from the downgradient wells, using GWPSs to determine whether an SSL of Appendix IV parameters has occurred.
- If an SSL is identified, potential alternate sources (*i.e.*, a source other than the CCR unit caused the SSL or that that SSL 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 SSL, a written demonstration will be completed within 90 days of SSL determination and included in the 2021 Annual Groundwater Monitoring and Corrective Action Report.
  - If an alternate source(s) is not identified to be the cause of the SSL, the applicable requirements of 40 C.F.R. §§ 257.94 through 257.98 (*e.g.*, assessment of corrective measures) as may apply in 2021 will be met, including associated recordkeeping/notifications required by 40 C.F.R. §§ 257.105 through 257.108.

## 6. REFERENCES

AECOM, 2017, Sampling and Analysis Plan, CCR Rule Groundwater Monitoring, Basin D, Unit 121, Zimmer Power Station, Moscow, Ohio, Job Number: 60442412, Revision 0, October 17, 2017.

Natural Resource Technology, an OBG Company (NRT/OBG), 2017, Statistical Analysis Plan, Zimmer Power Station, Dynegy Zimmer, LLC, October 17, 2017.

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## TABLES

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**TABLE 1.**  
**ANALYTICAL RESULTS - GROUNDWATER ELEVATION AND APPENDIX III PARAMETERS**  
**2020 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT**  
 ZIMMER POWER STATION  
 121 - D BASIN  
 MOSCOW, OH

Well ID	Latitude (Decimal Degrees)	Longitude (Decimal Degrees)	Date	Depth to Groundwater (ft)	Groundwater Elevation (ft NAVD88)	Boron, total (mg/L)	Calcium, total (mg/L)	Chloride, total (mg/L)	Fluoride, total (mg/L)	pH (field) (STD)	Sulfate, total (mg/L)	Total Dissolved Solids (mg/L)
				6020A	6020A	6020A	6020A	9251	9214	SM4500 H+B	9036	SM 2540C
MW-1 Background	38.877476	-84.227174	9/10/2019	52.01	458.91							
			9/11/2019			<0.08	167	63.1	<1	7.0	90.6	637
			4/9/2020	39.67	471.25	0.123	170	80.5	<0.15	6.7	92.3	592
			9/16/2020	51.76	459.16	0.0365	169	84.3	<0.15	7.1	99.1	644
MW-8 Background	38.86994583	-84.22557183	9/10/2019	52.51	459.09							
			9/11/2019			<0.08	129	34	<1	6.8	59.5	508
			4/9/2020	41.15	470.45	<0.03	122	16	<0.15	6.8	65.2	421
			9/16/2020	53.62	457.98	0.0434	122	13.8	<0.15	7.0	67.2	473
MW-9 Downgradient	38.875469	-84.23018383	9/10/2019	53.31	456.6							
			9/11/2019			0.737	236	30.7	<1	8.3	495	1190
			4/9/2020	42.9	467.01	0.511	270	32.3	<0.15	6.9	589	1160
			9/16/2020	52.66	457.25	0.127	220	21.4	<0.15	7.2	485	999
MW-12 Background	38.87556583	-84.22642183	9/10/2019	52.38	459.54							
			9/11/2019			0.204	148	26.6	<1	7.7	90	557
			4/9/2020	39.26	472.66	0.21	162	32.5	<0.15	6.9	98.3	598
			9/16/2020	51.94	459.98	0.207	149	31.7	<0.15	7.0	98.3	579
MW-13 Downgradient	38.87510983	-84.230056	9/10/2019	42.98	456.42							
			9/11/2019			<0.08	144	14.4	<1	7.6	146	616
			4/9/2020	32.74	466.66	0.0597	166	20.4	0.165	7.0	281	715
			9/17/2020	42.4	457	0.0557	132	17.7	0.176	7.2	135	577
MW-14 Downgradient	38.874746	-84.230119	9/10/2019	47.5	456.31							
			9/11/2019			0.139	181	28.8	<1	7.4	287	836
			4/9/2020	37.31	466.5	0.116	213	40	0.179	7.4	427	939
			9/17/2020	46.97	456.84	0.119	156	29.4	0.2	7.1	237	745
MW-15 Downgradient	38.87445	-84.230181	9/10/2019	53.93	456.65							
			9/11/2019			0.12	241	36.2	<1	7.4	535	1170
			4/9/2020	43.89	466.69	0.079	258	41.1	0.175	7.4	567	1090
			9/17/2020	53.46	457.12	0.126	245	46.8	0.168	6.9	560	1250

**TABLE 1.**  
**ANALYTICAL RESULTS - GROUNDWATER ELEVATION AND APPENDIX III PARAMETERS**  
**2020 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT**  
ZIMMER POWER STATION  
121 - D BASIN  
MOSCOW, OH

Notes:

40 C.F.R. = Title 40 of the Code of Federal Regulations

ft = foot/feet

mg/L = milligrams per liter

NAVD88 = North American Vertical Datum of 1988

S.U. = Standard Units

< = concentration is less than the concentration shown, which corresponds to the reporting limit for the method; estimated concentrations below the reporting limit and associated qualifiers are not provided since not utilized in statistics to determine Statistically Significant Increases (SSIs) over background.

4-digit numbers below parameter represent SW-846 analytical methods and alpha-numeric values that begin with SM represent Standard Methods for the Examination of Water and Wastewater.

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**TABLE 2.**  
**ANALYTICAL RESULTS - APPENDIX IV PARAMETERS**  
**2020 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT**  
 ZIMMER POWER STATION  
 121 - D BASIN  
 MOSCOW, OH

Well ID	Date	Antimony, total (mg/L)	Arsenic, total (mg/L)	Barium, total (mg/L)	Beryllium, total (mg/L)	Cadmium, total (mg/L)	Chromium, total (mg/L)	Cobalt, total (mg/L)	Fluoride, total (mg/L)	Lead, total (mg/L)	Lithium, total (mg/L)	Mercury, total (mg/L)	Molybdenum, total (mg/L)	Radium-226 + Radium 228, total (pCi/L)	Selenium, total (mg/L)	Thallium, total (mg/L)
		6020A	6020A	6020A	6020A	6020A	6020A	6020A	6020A	6020A	6020A	6020A	7470A	6020A	6020A	6020A
MW-1 Background	9/11/2019		<0.001	0.077	<0.001		<0.002	<0.0005	<1	<0.001	0.0109		<0.005	0.11	<0.005	
	4/9/2020	<0.004	<0.002	0.0725	<0.002	<0.001	<0.002	<0.002	<0.15	<0.005	0.00964	<0.0002	<0.005	0.0302	<0.002	<0.002
	9/16/2020		<0.002	0.073	<0.002	<0.001	<0.002	<0.002	<0.15	<0.005	0.00966		<0.005	0.215	<0.002	
MW-8 Background	9/11/2019		<0.001	0.0552	<0.001		0.00206	<0.0005	<1	<0.001	0.00754		<0.005	0.261	<0.005	
	4/9/2020	<0.004	<0.002	0.046	<0.002	<0.001	<0.002	<0.002	<0.15	<0.005	0.00464	<0.0002	<0.005	0.292	<0.002	<0.002
	9/16/2020		<0.002	0.0452	<0.002	<0.001	<0.002	<0.002	<0.15	<0.005	0.00612		<0.005	0.0611	<0.002	
MW-9 Downgradient	9/11/2019		0.00188	0.0261	<0.001		0.00237	0.00267	<1	<0.001	0.0135		<0.005	0.372	<0.005	
	4/9/2020	<0.004	<0.002	0.026	<0.002	<0.001	<0.002	0.00286	<0.15	<0.005	0.00709	<0.0002	<0.005	6.29	<0.002	<0.002
	9/16/2020		<0.002	0.0215	<0.002		<0.002	0.00242	<0.15	<0.005	0.0068		<0.005	0.727	<0.002	
MW-12 Background	9/11/2019		<0.001	0.0692	<0.001		0.00249	<0.0005	<1	<0.001	0.0114		<0.005	0.118	<0.005	
	4/9/2020	<0.004	<0.002	0.0657	<0.002	<0.001	<0.002	<0.002	<0.15	<0.005	0.00591	<0.0002	<0.005	3.9	<0.002	<0.002
	9/16/2020		<0.002	0.0629	<0.002		<0.002	<0.002	<0.15	<0.005	0.00612		<0.005	0.409	<0.002	
MW-13 Downgradient	9/11/2019		0.00525	0.0461	<0.001		0.00231	0.00368	<1	<0.001	0.00811		<0.005	0.449	<0.005	
	4/9/2020	<0.004	0.00261	0.0477	<0.002	<0.001	<0.002	0.00297	0.165	<0.005	0.00266	<0.0002	<0.005	3.43	<0.002	<0.002
	9/17/2020		<0.002	0.039	<0.002		<0.002	0.0028	0.176	<0.005	0.00274		<0.005	1.73	<0.002	
MW-14 Downgradient	9/11/2019		0.00155	0.0554	<0.001		0.00254	0.00239	<1	<0.001	0.00843		<0.005	1.94	<0.005	
	4/9/2020	<0.004	<0.002	0.0501	<0.002	<0.001	<0.002	0.00223	0.179	<0.005	0.00236	<0.0002	<0.005	1.6	<0.002	<0.002
	9/17/2020		<0.002	0.0417	<0.002		<0.002	<0.002	0.2	<0.005	0.0024		<0.005	0.919	<0.002	
MW-15 Downgradient	9/11/2019		<0.001	0.0836	<0.001		0.00257	0.00381	<1	<0.001	0.00845		<0.005	0.756	<0.005	
	4/9/2020	<0.004	<0.002	0.0663	<0.002	<0.001	<0.002	0.00374	0.175	<0.005	0.00213	<0.0002	<0.005	3.26	<0.002	<0.002
	9/17/2020		<0.002	0.069	<0.002		<0.002	0.00289	0.168	<0.005	0.00244		<0.005	1.13	<0.002	

Notes:

40 C.F.R. = Title 40 of the Code of Federal Regulations

mg/L = milligrams per liter

NA = Not Analyzed

pCi/L = picoCuries per liter

< = concentration is less than concentration shown, which corresponds to the reporting limit for the method; estimated concentrations below the reporting limit and associated qualifiers are not provided since not utilized in statistics to determine Statistically Significant Levels (SSLs) over Groundwater Protection Standards.

4-digit numbers below parameter represent SW-846 analytical methods and 3-digit numbers represent Clean Water Act analytical methods.

**TABLE 3.**  
**STATISTICAL BACKGROUND VALUES**  
**2020 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT**  
 ZIMMER POWER STATION  
 121 - D BASIN  
 MOSCOW, OHIO  
 ASSESSMENT MONITORING PROGRAM

Parameter	Statistical Background Value (UPL)
<b>40 C.F.R. Part 257 Appendix III</b>	
Boron (mg/L)	0.38
Calcium (mg/L)	200
Chloride (mg/L)	72.87
Fluoride (mg/L)	0.2
pH (S.U.)	6.7 / 7.4
Sulfate (mg/L)	129.2
Total Dissolved Solids (mg/L)	695

[O: RAB 12/25/19, C: KLT 12/26/19]

**Notes:**

40 C.F.R. = Title 40 of the Code of Federal Regulations  
 mg/L = milligrams per liter  
 S.U. = Standard Units  
 UPL = Upper Prediction Limit

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**TABLE 4.**  
**GROUNDWATER PROTECTION STANDARDS**  
**2020 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT**  
 ZIMMER POWER STATION  
 121 - D BASIN  
 MOSCOW, OHIO  
 ASSESSMENT MONITORING PROGRAM

Parameter	Groundwater Protection Standard <sup>1</sup>
<b>40 C.F.R. Part 257 Appendix IV</b>	
Antimony (mg/L)	0.006
Arsenic (mg/L)	0.010
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)	0.040
Mercury (mg/L)	0.002
Molybdenum (mg/L)	0.10
Radium 226+228 (pCi/L)	5
Selenium (mg/L)	0.05
Thallium (mg/L)	0.002

[O: RAB 12/25/19, C: KLT 12/26/19]

**Notes:**

40 C.F.R. = Title 40 of the Code of Federal Regulations

mg/L = milligrams per liter

pCi/L = picoCuries per liter

<sup>1</sup>Groundwater Protection Standard is the higher of the Maximum Contaminant Level / Health-Based Level or background.

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## FIGURES

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- BACKGROUND MONITORING WELL LOCATION
- DOWNGRAIDENT MONITORING WELL LOCATION
- CCR MONITORED UNIT



**MONITORING WELL LOCATION MAP**  
**ZIMMER D BASIN**  
**UNIT ID:121**

**2020 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT**  
 VISTRA CCR RULE GROUNDWATER MONITORING  
 ZIMMER POWER STATION  
 MOSCOW, OHIO

**FIGURE 1**

RAMBOLL AMERICAS  
 ENGINEERING SOLUTIONS, INC.

