

Prepared for  
**Kincaid Generation, LLC**

Date  
**January 31, 2021**

Project No.  
**1940074921**

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

## **KINCAID ASH POND, KINCAID POWER STATION**

**2020 ANNUAL GROUNDWATER MONITORING AND  
CORRECTIVE ACTION REPORT  
KINCAID ASH POND, KINCAID POWER STATION**

Project name **Kincaid Power Station**  
Project no. **1940074921**  
Recipient **Kincaid Generation, LLC**  
Document type **Annual Groundwater Monitoring and Corrective Action Report**  
Version **FINAL**  
Date **January 31, 2021**  
Prepared by **Kristen L. Theesfeld**  
Checked by **Jacob J. Walczak, PG**  
Approved by **Lauren D. Cook**  
Description **Annual Report in Support of the CCR Rule Groundwater Monitoring Program**

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

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



---

**Kristen L. Theesfeld**  
Hydrogeologist



---

**Jacob J. Walczak, PG**  
Senior Hydrogeologist

## CONTENTS

<b>EXECUTIVE SUMMARY</b>	<b>3</b>
<b>1. Introduction</b>	<b>4</b>
<b>2. Monitoring and Corrective Action Program Status</b>	<b>6</b>
<b>3. Key Actions Completed in 2020</b>	<b>7</b>
<b>4. Problems Encountered and Actions to Resolve the Problems</b>	<b>9</b>
<b>5. Key Activities Planned for 2021</b>	<b>10</b>
<b>6. References</b>	<b>11</b>

### TABLES (IN TEXT)

Table A 2019-2020 Assessment Monitoring Program Summary

### TABLES (ATTACHED)

Table 1 Analytical Results – Groundwater Elevation and Appendix III Parameters  
Table 2 Analytical Results – Appendix IV Parameters  
Table 3 Statistical Background Values  
Table 4 Groundwater Protection Standards

### FIGURES

Figure 1 Monitoring Well Location Map

## ACRONYMS AND ABBREVIATIONS

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

Kincaid

## 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 Kincaid Ash Pond (AP) located at Kincaid Power Station near Kincaid, Illinois.

Groundwater is being monitored at Kincaid AP in accordance with the Assessment Monitoring Program requirements specified in 40 C.F.R. § 257.95. Assessment Monitoring was initiated at Kincaid AP 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 Kincaid AP remains in the Assessment Monitoring Program.

Kincaid

## 1. INTRODUCTION

This report has been prepared by Ramboll Americas Engineering Solutions Inc. (Ramboll) on behalf of Kincaid Generation, LLC, to provide the information required by 40 C.F.R. § 257.90(e) for Kincaid AP located at Kincaid Power Station near Kincaid, Illinois.

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 Kincaid AP for calendar year 2020.

Kincaid

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

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

Kincaid



### 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 (NRT/OBG, 2017a). All monitoring data obtained under 40 C.F.R. §§ 257.90 through 257.98 (as applicable) in 2020, and analytical results for the August 2019 sampling event, are presented in Tables 1 and 2. Analytical data were evaluated in accordance with the Statistical Analysis Plan (NRT/OBG, 2017a) to determine any (SSLs of Appendix IV parameters over GWPSs.

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

Kincaid

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

Sampling Dates	Analytical Data Receipt Date	Parameters Collected	SSL(s)	SSL(s) Determination Date
August 20 - 21, 2019	October 15, 2019	Appendix III Appendix IV Detected <sup>1</sup>	none	January 13, 2020
February 11, 2020	April 15, 2020	Appendix III Appendix IV	none	July 14, 2020
August 26, 2020	October 16, 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).

Kincaid

#### **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 (NRT/OBG, 2017a), and all data were accepted.

Kincaid

## 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

Natural Resource Technology, an OBG Company (NRT/OBG), 2017a. Sampling and Analysis Plan, Kincaid Ash Pond, Kincaid Power Station, Kincaid, Illinois, Project No. 2285, Revision 0, October 17, 2017.

Natural Resource Technology, an OBG Company (NRT/OBG), 2017a, Statistical Analysis Plan, Kincaid Power Station, Kincaid Generation, L.L.C., October 17, 2017.

Kincaid

## TABLES

Kincaid

**TABLE 1.**  
**ANALYTICAL RESULTS - GROUNDWATER ELEVATION AND APPENDIX III PARAMETERS**  
**2020 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT**

KINCAID POWER STATION  
 141 - ASH POND  
 KINCAID, IL

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	39.592051	-89.490283	8/20/2019	15.27	589.44							
			8/21/2019			0.29	60.2	10	0.18	6.3	80	334
			2/11/2020	13.9	590.81	0.222	59.6	8	0.18	6.6	92	366
			8/26/2020	15.71	589	0.252	57.5	7	0.23	6.6	93	300
MW-2 Background	39.590698	-89.488916	8/20/2019	7.16	593.94	0.0667	94.2	16	0.48	7.1	119	488
			2/11/2020	4.6	596.5	0.0565	94.9	18	0.52	7.4	138	508
			8/26/2020	7.67	593.43	0.0576	96.6	17	0.55	7.3	139	442
MW-5 Downgradient	39.601296	-89.490402	8/20/2019	26.5	592.94							
			8/21/2019			0.547	150	41	0.18	6.6	<10	646
			2/11/2020	25.01	594.43	0.542	146	44	0.18	6.7	<10	684
			8/26/2020	27.62	591.82	0.507	146	45	<0.2	6.7	14	622
MW-6 Downgradient	39.598638	-89.498944	8/20/2019	10.32	590.14							
			8/21/2019			1.32	113	<5	0.19	6.4	153	550
			2/11/2020	6.23	594.23	0.632	90.9	<5	0.2	6.7	97	478
			8/26/2020	10.06	590.4	1.09	103	<5	0.24	6.6	157	476
MW-7 Downgradient	39.597637	-89.498959	8/20/2019	6.57	591.18							
			8/21/2019			0.395	133	<5	0.25	6.7	150	654
			2/11/2020	2.47	595.28	0.12	110	<5	0.21	7.2	168	556
			8/26/2020	10.05	587.7	0.33	104	<5	0.36	7.1	160	494
MW-8 Downgradient	39.594399	-89.496829	8/20/2019	8.46	594.68							
			8/21/2019			1.1	166	19	0.21	6.5	258	864
			2/11/2020	5.72	597.42	0.858	168	17	0.26	6.7	337	966
			8/26/2020	9.84	593.3	0.918	154	17	0.21	6.7	289	836
MW-11 Downgradient	39.593104	-89.491115	8/20/2019	11.55	590.26							
			8/21/2019			1.85	125	30	0.49	6.7	88	628
			2/11/2020	11.27	590.54	1.49	121	34	0.53	6.9	95	658
			8/26/2020	11.76	590.05	1.55	120	35	0.59	6.9	107	554
MW-12 Downgradient	39.6002	-89.49638	8/20/2019	6.64	584.8	4.42	219	29	0.18	6.4	371	1160
			2/11/2020	5.59	585.85	2.26	197	22	0.17	6.7	370	1070
			8/26/2020	6.79	584.65	3.76	211	31	0.22	6.6	424	1100

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.

**TABLE 2.**  
**ANALYTICAL RESULTS - APPENDIX IV PARAMETERS**  
**2020 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT**  
 KINCAID POWER STATION  
 141 - ASH POND  
 KINCAID, IL

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	8/21/2019		<0.001	0.0489			<0.0015	<0.001	0.18	<0.001	<0.003		<0.0015	0.68	<0.001	
	2/11/2020	<0.001	<0.001	0.0466	<0.001	<0.001	<0.0015	<0.001	0.18	<0.001	<0.003	<0.0002	<0.0015	2.38	<0.001	<0.002
	8/26/2020	<0.001	<0.001	0.0463	<0.001		<0.0015	<0.001	0.23	<0.001	<0.003		<0.0015	2.55	<0.001	
MW-2 Background	8/20/2019		0.001	0.107			<0.0015	<0.001	0.48	<0.001	0.0051		0.0046	0.94	<0.001	
	2/11/2020	<0.001	0.0021	0.117	<0.001	<0.001	<0.0015	<0.001	0.52	<0.001	0.007	<0.0002	0.005	0.99	<0.001	<0.002
	8/26/2020	<0.001	<0.001	0.106	<0.001		<0.0015	<0.001	0.55	<0.001	0.0051		0.0047	0.92	<0.001	
MW-5 Downgradient	8/21/2019		<0.001	0.15			<0.0015	<0.001	0.18	<0.001	<0.003		<0.0015	1.15	<0.001	
	2/11/2020	<0.001	<0.001	0.131	<0.001	<0.001	<0.0015	<0.001	0.18	<0.001	<0.003	<0.0002	<0.0015	0.85	<0.001	<0.002
	8/26/2020	<0.001	<0.001	0.151	<0.001		<0.0015	<0.001	<0.2	<0.001	<0.003		<0.0015	0.94	<0.001	
MW-6 Downgradient	8/21/2019		<0.001	0.0395			<0.0015	<0.001	0.19	<0.001	<0.003		<0.0015	0.75	<0.001	
	2/11/2020	<0.001	<0.001	0.0267	<0.001	<0.001	<0.0015	<0.001	0.2	<0.001	<0.003	<0.0002	<0.0015	1.25	<0.001	<0.002
	8/26/2020	<0.001	<0.001	0.0425	<0.001		<0.0015	<0.001	0.24	<0.001	<0.003		<0.0015	1.02	<0.001	
MW-7 Downgradient	8/21/2019		0.0017	0.0634			<0.0015	0.0011	0.25	<0.001	0.0048		0.0033	0.41	<0.001	
	2/11/2020	<0.001	<0.001	0.0473	<0.001	<0.001	<0.0015	<0.001	0.21	<0.001	<0.003	<0.0002	0.0022	0.25	<0.001	<0.002
	8/26/2020	<0.001	<0.001	0.0437	<0.001		<0.0015	<0.001	0.36	<0.001	<0.003		0.0029	1.66	<0.001	
MW-8 Downgradient	8/21/2019		<0.001	0.033			<0.0015	0.0014	0.21	<0.001	<0.003		<0.0015	0.34	<0.001	
	2/11/2020	<0.001	<0.001	0.0222	<0.001	<0.001	<0.0015	<0.001	0.26	<0.001	<0.003	<0.0002	<0.0015	0.23	<0.001	<0.002
	8/26/2020	<0.001	<0.001	0.0306	<0.001		<0.0015	0.0013	0.21	<0.001	<0.003		<0.0015	0.6	<0.001	
MW-11 Downgradient	8/21/2019		0.0012	0.129			<0.0015	<0.001	0.49	<0.001	<0.003		0.0024	0.7	0.0027	
	2/11/2020	<0.001	0.0011	0.113	<0.001	<0.001	<0.0015	<0.001	0.53	<0.001	<0.003	<0.0002	0.002	1.28	0.0016	<0.002
	8/26/2020	<0.001	0.0013	0.129	<0.001		<0.0015	<0.001	0.59	<0.001	<0.003		0.0021	1.08	0.0016	
MW-12 Downgradient	8/20/2019		<0.001	0.0655			<0.0015	<0.001	0.18	<0.001	0.0087		<0.0015	1.02	<0.001	
	2/11/2020	<0.001	<0.001	0.056	<0.001	<0.001	<0.0015	<0.001	0.17	<0.001	0.0068	<0.0002	<0.0015	0.99	<0.001	<0.002
	8/26/2020	<0.001	<0.001	0.0734	<0.001		<0.0015	<0.001	0.22	<0.001	0.0079		<0.0015	4.2	<0.001	

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**  
 KINCAID POWER STATION  
 141 - ASH POND  
 KINCAID, ILLINOIS  
 ASSESSMENT MONITORING PROGRAM

Parameter	Statistical Background Value (UPL)
<b>40 C.F.R. Part 257 Appendix III</b>	
Boron (mg/L)	0.27
Calcium (mg/L)	105
Chloride (mg/L)	17
Fluoride (mg/L)	0.47
pH (S.U.)	6.3 / 7.7
Sulfate (mg/L)	178
Total Dissolved Solids (mg/L)	666

[O: RAB 12/23/19, C: KLT 12/24/19]

**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

Kincaid

**TABLE 4.**  
**GROUNDWATER PROTECTION STANDARDS**  
**2020 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT**  
 KINCAID POWER STATION  
 141 - ASH POND  
 KINCAID, ILLINOIS  
 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 12/23/19, C: KLT 12/24/19]

**Notes:**

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

mg/L = milligrams per liter

pCi/L = picoCuries per liter

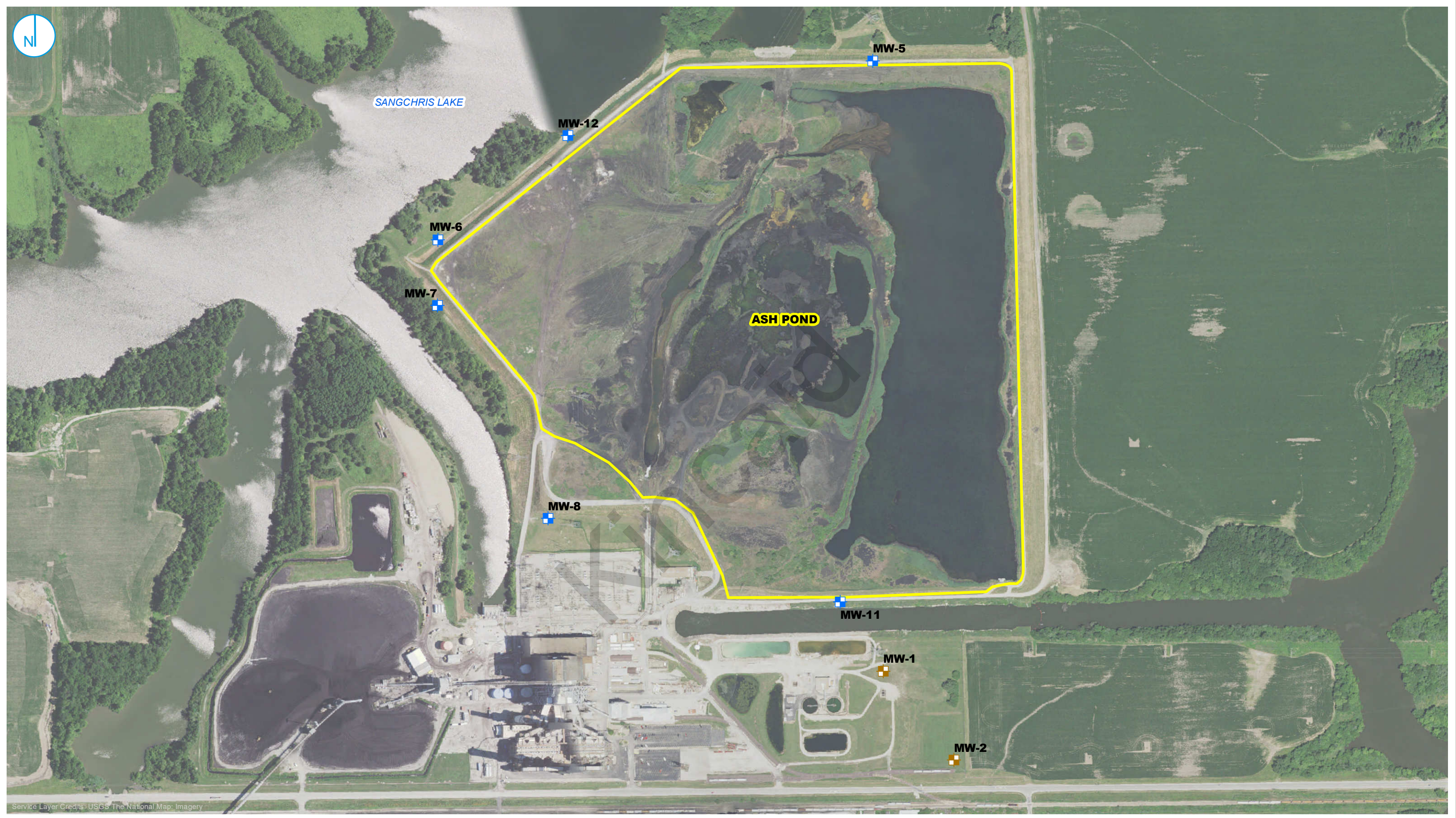
<sup>1</sup>Groundwater Protection Standard is the higher of the Maximum Contaminant Level / Health-Based Level or background.

Kincaid

## FIGURES

Kincaid

PROJECT: 169000XXXXX | DATED: 1/25/2021 | DESIGNER: gblarmmc  
Y:\Mapping\Projects\1222285\MXD\2020\_AnnualGWM\_CAR\Figure 1\_GWS\_WellLoc\_Kincaid.mxd



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



### MONITORING WELL LOCATION MAP KINCAID ASH POND UNIT ID:141

2020 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT  
VISTRA CCR RULE GROUNDWATER MONITORING  
KINCAID POWER STATION  
KINCAID, ILLINOIS

FIGURE 1

RAMBOLL AMERICAS  
ENGINEERING SOLUTIONS, INC.

