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Annual Groundwater Monitoring and Corrective Action Report

Richmond Power and Light
Whitewater Valley Station Impoundment
Richmond, Indiana

GAI Project Number: C151119.04, Task 006.001

August 2019

RICHMOND POWER & LIGHT

Prepared by: GAI Consultants, Inc.
Murrysville Office
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Export, Pennsylvania 15632-1357

Prepared for: Richmond Power and Light
2000 US 27 South
Richmond, Indiana 47374

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1.0 Introduction

Title 40 Code of Federal Regulations (CFR) §257.90 mandates that existing Coal Combustion Residual (CCR) landfills and surface impoundments, also known as CCR units, be subject to groundwater monitoring and corrective action requirements as further detailed in §257.90 through §257.98. These requirements are part of the overall CCR Rule (Rule) which was published in the Federal Register on April 17, 2015 and which became effective on October 19, 2015. Specific obligations for Owners and Operators of existing CCR units regarding the preparation of "Annual Groundwater Monitoring and Corrective Action Reports (Annual Report)" are outlined in §257.90(e)(1-5). The Richmond Power and Light (RPL) inactive surface impoundment (Impoundment) was addressed under section §257.100, which allowed for an exemption from many of the Rule requirements and compliance deadlines.

The Rule was amended on August 5, 2016 and the amendment became effective on October 4, 2016. It amended section §257.100 by removing the exemptions for inactive CCR surface impoundments. The amendment changed the status of inactive CCR impoundments such that they were treated as other CCR units. They were therefore given an extension of the compliance deadlines of 547 days. As a result, the first Annual Report for the Impoundment must be placed within the facility's operating record no later than August 1, 2019.

The Annual Report must provide information to address the following aspects for the preceding calendar year:

- document the status of the groundwater monitoring and corrective action program for the respective CCR units;
- summarize key actions completed;
- describe any problems encountered and actions taken to resolve the problems; and
- offer a projection of key activities for the upcoming year.

At a minimum, the Annual Report must contain the following information to the extent applicable and available:

- a map, aerial image, or diagram showing the CCR unit and all background/upgradient and downgradient monitoring wells, to include the well identification numbers, that are part of the groundwater monitoring program;
- 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;
- 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/upgradient and downgradient well, the dates the samples were collected, and whether the sample was required by the detection monitoring or assessment monitoring programs;
- 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
- any other information required to be included as specified in §257.90 through §257.98.

The RPL Whitewater Valley Station (Station), is a coal-fired power plant located in Richmond, Wayne County, Indiana (see Figure 1). The Rule applies to this facility due to the management/disposal of CCR materials that are generated from the combustion of coal. The CCR unit associated with Station operations is the Impoundment used for the management of bottom ash. The CCR unit has a dedicated groundwater monitoring system that was originally installed to comply with Indiana Department of

Environmental Management (IDEM) recommendations and was subsequently evaluated and modified (as needed) for use under the CCR program.

In summary, this Annual Report has been prepared to comply with the requirements of §257.90(e), addressing the Whitewater Valley Station's CCR Unit with respect to the groundwater monitoring and corrective actions undertaken between April 2017 and August 2018. This Annual Report and all subsequent reports thereto will be placed in the Station's operating record per §257.105(h)(1), noticed to the State Director per §257.106(h)(1), and posted to the publicly accessible internet site per §257.107(h)(1).

2.0 Impoundment

2.1 Groundwater Monitoring Network

The CCR groundwater monitoring system for the impoundment is a subset of the larger site groundwater monitoring system established during original interactions with IDEM regarding the groundwater characterization and monitoring for the site. That larger site system, which is shown on Figure 2, is composed of:

- eight monitoring well (MW) pairs (shallow and deep wells designated as S and D) at locations A through H;
    - there is a third well at location G, a shallow well designated as MW-GSR, installed in place of MW-GS, which was found to have insufficient water for monitoring purposes.
    - it was determined during the characterization that the deep wells in each well pair would only be used as piezometers.
- two single, shallow monitoring wells at locations IS and JS;
- two older, shallow wells designated as MW-1 and MW-2 (used only as piezometers)
- associated with the groundwater MWs are:
    - five staff gauges (A-1, A-2, A-3, A-4 and P-4) to monitor pond levels; and,
    - four piezometers (PZ-1703, PZ-1704, PZ-1705 and PZ-1706).
        - PZ-1701 and PZ-1702 have been abandoned.

The monitoring wells at locations A through H were installed in 2016, along with the staff gauges. The five piezometers were installed in 2017. The single monitoring wells MW-IS and MW-JS were installed in March 2018.

The CCR groundwater monitoring system is comprised of seven wells within the larger site groundwater monitoring system, including three upgradient wells (MW-AS, MW-FS, and MW-GSR) and four downgradient wells (MW-BS, MW-CS, MW-DS, and MW-JS). The screened intervals of the wells monitor the uppermost aquifer on site, a soil aquifer composed of a continuous confined, sand or sand and gravel layer located within or at the base of the glacial till which blankets the site. Figure 3 shows a potentiometric map the uppermost aquifer based upon water level readings taken during the last round of background samples in August 2018.

2.2 Data Collection

Per the requirements of §257.94(b), background sampling to collect a minimum of eight independent samples was conducted from April 2017 through August 2018 from each of the background/upgradient and downgradient wells. Two new wells, MW IS and MW-JS, were installed in March 2018 resulting in only three background samples from MW-JS being collected.

The wells on site were originally analyzed for the CCR rule Appendix III and Appendix IV parameters in addition to parameters requested by IDEM. In January 2018, the parameter list was reduced to just the Appendix III and Appendix IV parameters. The results from the background sampling for the Appendix III and Appendix IV parameters are summarized in the attached Tables 1 and 2, respectively.

The initial detection monitoring samples for the Appendix III parameters were collected in March 2019. Background standards were calculated for the Appendix III parameters and during the June 2019 review, it was determined that there were statistically significant increases (SSIs) for one Appendix III parameter in two of the downgradient monitoring wells (see Table 3).

2.3 Monitoring Program Transitions

The Impoundment has been transitioned into the Assessment Monitoring Program based upon the June 2019 review of the March 2019 Detection Monitoring sampling results.

2.4 Corrective Actions

During the monitoring, there were no problems identified or corrective actions undertaken.

2.5 2019-2020 Projected Activities

Sampling under the Assessment Monitoring Program will be initiated for the Appendix IV parameters no later than September 29, 2019.

TABLES

Table 1
Groundwater Analytical Background Data
CCR Appendix III Constituents
Whitewater Valey Station Impoundment

Well	Parameter:	Boron, Total	Calcium, Total	Chloride	Fluoride	pH	Sulfate	Total Dissolved Solids
	Date / Unit:	mg/L	mg/L	mg/L	mg/L	s.u.	mg/L	mg/L
MW-AS	4/12/2017	0.19	116	154	0.17	7.3	94.5	636
	6/22/2017	0.189	110	198	< 0.10	7.3	103	743
	8/31/2017	0.211	110	161	0.14	7.2	103	711
	11/8/2017	0.234	106	150	0.11	7.2	102	677
	1/31/2018	0.217	98.6	122	0.12	7.4	99.5	641
	4/5/2018	0.214	98.6	121	< 0.10	7.3	94.4	613
	6/11/2018	0.197	95	124	< 0.10	7	92.1	652
	8/7/2018	0.218	101	140	0.1	7.5	88.1	647
MW-BS	4/12/2017	4.6	458	249	0.22	7.4	1400	2750
	6/22/2017	4.18	397	277	< 0.10	7.4	1460	2790
	8/31/2017	4.25	423	277	0.21	7.3	1360	2720
	11/9/2017	4.71	401	269	0.17	7.4	1270	2660
	1/30/2018	4.58	392	243	0.18	7.8	1240	2560
	4/5/2018	4.63	397	274	< 0.10	7.5	< 0.25	2560
	6/12/2018	4.5	385	267	0.22	7.3	1300	2490
	8/8/2018	4.07	352	267	0.18	7.4	1240	2420
MW-CS	4/13/2017	2.5	401	191	0.26	7.3	1180	2370
	6/22/2017	2.17	403	213	0.12	7.1	1350	2540
	8/31/2017	2.07	393	187	0.31	7.2	1270	2510
	11/9/2017	2.11	376	177	0.28	7.4	1160	2350
	1/31/2018	2	370	160	0.23	7.4	1140	2280
	4/5/2018	2.04	352	151	0.15	7.2	996	2140
	6/12/2018	2.24	337	122	0.31	7.3	1090	2030
	8/8/2018	2.08	347	144	0.3	7.4	1080	2100
MW-DS	4/13/2017	8.5	496	185	< 0.10	7.0	1230	2500
	6/22/2017	8.13	459	195	< 0.10	7.0	1320	2600
	8/31/2017	8.07	470	178	< 0.10	7.1	1230	2560
	11/9/2017	8.4	459	185	< 0.10	7.2	1200	2610
	1/31/2018	7.78	470	191	< 0.10	7.3	1250	2580
	4/6/2018	5.97	378	147	< 0.10	7.4	892	2060
	6/12/2018	7.3	442	223	< 0.10	7.4	1240	2480
	8/8/2018	7.77	452	244	< 0.10	7.2	1200	2500
MW-FS	4/12/2017	10.3	783	285	< 0.10	7.1	1700	3210
	6/21/2017	9.9	545	292	< 0.10	7.2	1780	3210
	8/30/2017	10.5	543	267	< 0.10	7.1	1640	3130
	11/8/2017	11.1	519	242	< 0.10	7.2	1540	2990
	1/30/2018	11.3	502	194	< 0.10	7.2	1480	2770
	4/5/2018	11.2	468	216	< 0.10	7.6	1470	2640
	6/11/2018	11.2	441	171	< 0.10	7.5	1400	2480
	8/7/2018	10.8	414	272	< 0.10	7.2	2110	2240
MW-GSR	4/12/2017	0.63	679	281	0.13	6.9	1800	3380
	6/21/2017	0.627	546	305	< 0.10	6.7	2050	3570
	8/30/2017	0.794	556	316	< 0.10	6.9	2000	3760
	11/8/2017	0.869	532	265	< 0.10	6.9	1900	3560
	1/30/2018	0.742	562	205	< 0.10	7.0	1890	3590
	4/5/2018	0.696	540	220	< 0.10	7.0	1800	3540
	6/11/2018	0.659	553	184	< 0.10	7.1	2030	3550
	8/7/2018	0.727	531	221	< 0.10	7.3	1900	3430
MW-JS[1]	4/6/2018	0.749	131	18.2	0.19	7.4	192	645
	6/12/2018	1.36	219	52.7	0.17	7.1	469	1220
	8/8/2018	1.06	126	13.9	0.18	7.2	148	566

Note:
1. Well was installed on March 23, 2018.

mg/L - milligrams per liter
s.u. - standard units
< - Represents non-detect. Values are shown at the laboratory reporting limit.

Table 2
Groundwater Analytical Background Data
CCR Appendix IV Constituents
Whitewater Valley Station Impoundment

Well	Parameter:	Antimony, Total	Arsenic, Total	Barium, Total	Beryllium, Total	Cadmium, Total	Chromium, Total	Cobalt, Total	Fluoride	Lead, Total	Lithium, Total	Mercury, Total	Molybdenum, Total	Total Radium[1]	Selenium, Total	Thallium, Total
	Date Unit:	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	mg/L
MW-AS	4/12/2017	< 0.0010	< 0.0010	0.11	< 0.00020	< 0.00020	< 0.0020	< 0.0010	0.17	< 0.0010	< 0.02	< 0.00020	0.0047	0.81	< 0.0010	< 0.0010
	6/22/2017	< 0.0010	< 0.0010	0.125	< 0.00020	< 0.00020	< 0.0020	< 0.0010	< 0.10	< 0.0010	< 0.01	< 0.0020	0.0047	1.66	< 0.0010	< 0.0010
	8/31/2017	< 0.0010	< 0.0010	0.112	< 0.00020	< 0.00020	< 0.0020	< 0.0010	0.14	< 0.0010	< 0.01	< 0.0020	0.0045	1.55	< 0.0010	< 0.0010
	11/8/2017	< 0.0010	< 0.0010	0.111	< 0.00020	< 0.00020	< 0.0020	< 0.0010	0.11	< 0.0010	< 0.01	< 0.0020	0.0047	1.03	< 0.0010	< 0.0010
	1/31/2018	< 0.0010	0.0013	0.114	< 0.00020	< 0.00020	< 0.0020	< 0.0010	0.12	< 0.0010	< 0.01	< 0.0020	0.0044	1.03	< 0.0010	< 0.0010
	4/5/2018	< 0.0010	< 0.0010	0.098	< 0.00020	< 0.00020	< 0.0020	< 0.0010	< 0.10	< 0.0010	< 0.01	< 0.0020	0.005	1.28	< 0.0010	< 0.0010
	6/11/2018	< 0.0010	< 0.0010	0.0936	< 0.00020	< 0.00020	< 0.0020	< 0.0010	< 0.10	< 0.0010	< 0.01	< 0.0020	0.0047	1.82	< 0.0010	< 0.0010
	8/7/2018	< 0.0010	< 0.0010	0.108	< 0.00020	< 0.00020	< 0.0020	< 0.0010	0.1	< 0.0010	< 0.02	< 0.0020	0.0054	0.913	< 0.0010	< 0.0010
MW-BS	4/12/2017	< 0.0010	< 0.0010	0.021	< 0.00020	< 0.00020	< 0.0020	0.0018	0.22	< 0.0010	0.090	< 0.20	0.12	1.68	< 0.0010	< 0.0010
	6/22/2017	< 0.0010	< 0.0010	0.019	< 0.00020	< 0.00020	< 0.0020	0.0022	< 0.10	< 0.0010	0.0829	< 0.0020	0.12	1.18	< 0.0010	< 0.0010
	8/31/2017	< 0.0010	< 0.0010	0.0191	< 0.00020	< 0.00020	< 0.0020	0.0016	0.21	< 0.0010	0.0946	< 0.0020	0.123	2.02	< 0.0010	< 0.0010
	11/9/2017	< 0.0010	< 0.0010	0.0197	< 0.00020	< 0.00020	< 0.0020	0.0016	0.17	< 0.0010	0.0835	< 0.0020	0.128	0.938	< 0.0010	< 0.0010
	1/30/2018	< 0.0010	< 0.0010	0.0197	< 0.00020	< 0.00020	< 0.0020	0.0018	0.18	< 0.0010	0.0908	< 0.0020	0.121	0.75	< 0.0010	< 0.0010
	4/5/2018	< 0.0010	< 0.0010	0.0196	< 0.00020	< 0.00020	< 0.0020	0.0016	< 0.10	< 0.0010	0.0813	< 0.0020	0.123	0.877	< 0.0010	< 0.0010
	6/12/2018	< 0.0010	< 0.0010	0.019	< 0.00020	< 0.00020	< 0.0020	0.0014	0.22	< 0.0010	0.0824	< 0.0020	0.121	0.36	< 0.0010	< 0.0010
	8/8/2018	< 0.0010	< 0.0010	0.019	< 0.00020	< 0.00020	< 0.0020	0.0015	0.18	< 0.0010	0.0815	< 0.0020	0.116	0.846	< 0.0010	< 0.0010
MW-CS	4/13/2017	< 0.0010	< 0.0010	0.021	< 0.00020	< 0.00020	< 0.0020	0.0020	0.26	< 0.0010	0.077	< 0.00020	0.10	1.43	0.0024	< 0.0010
	6/22/2017	< 0.0010	< 0.0010	0.0183	< 0.00020	< 0.00020	< 0.0020	0.0026	0.12	< 0.0010	0.0646	< 0.0020	0.0898	1.31	0.0019	< 0.0010
	8/31/2017	< 0.0010	0.0013	0.0215	< 0.00020	< 0.00020	< 0.0020	0.0023	0.31	< 0.0010	0.0735	< 0.0020	0.109	0.348	< 0.0010	< 0.0010
	11/9/2017	< 0.0010	< 0.0010	0.0214	< 0.00020	< 0.00020	< 0.0020	0.0022	0.28	< 0.0010	0.0591	< 0.0020	0.105	1.47	0.0012	< 0.0010
	1/31/2018	< 0.0010	0.0011	0.0198	< 0.00020	< 0.00020	< 0.0020	0.0022	0.23	< 0.0010	0.0603	< 0.0020	0.103	0.602	0.0015	< 0.0010
	4/5/2018	< 0.0010	0.0018	0.019	< 0.00020	< 0.00020	< 0.0020	0.0019	0.15	< 0.0010	0.0515	< 0.0020	0.0878	0.189	0.002	< 0.0010
	6/12/2018	< 0.0010	0.0017	0.0187	< 0.00020	< 0.00020	< 0.0020	0.0018	0.31	< 0.0010	0.0682	< 0.0020	0.099	0.48	< 0.0010	< 0.0010
	8/8/2018	< 0.0010	0.0021	0.0214	< 0.00020	< 0.00020	< 0.0020	0.0021	0.3	< 0.0010	0.0715	< 0.0020	0.1	0	0.0016	< 0.0010
MW-DS	4/13/2017	< 0.0010	< 0.0010	0.027	< 0.00020	< 0.00020	< 0.0020	0.001	< 0.10	< 0.0010	0.052	< 0.00020	0.01	0.82	< 0.0010	< 0.0010
	6/22/2017	< 0.0010	< 0.0010	0.029	< 0.00020	< 0.00020	< 0.0020	0.002	< 0.10	< 0.0010	0.0554	< 0.0020	0.0125	0.533	< 0.0010	< 0.0010
	8/31/2017	< 0.0010	< 0.0010	0.0283	< 0.00020	< 0.00020	< 0.0020	< 0.0010	< 0.10	< 0.0010	0.0661	< 0.0020	0.0116	0.575	< 0.0010	< 0.0010
	11/9/2017	< 0.0010	0.0011	0.0293	< 0.00020	< 0.00020	< 0.0020	< 0.0010	< 0.10	< 0.0010	0.0552	< 0.0020	0.0129	0.105	< 0.0010	< 0.0010
	1/31/2018	< 0.0010	< 0.0010	0.0263	< 0.00020	< 0.00020	< 0.0020	0.0012	< 0.10	< 0.0010	0.0621	< 0.0020	0.0076	0.0407	< 0.0010	< 0.0010
	4/6/2018	< 0.0010	< 0.0010	0.0206	< 0.00020	< 0.00020	< 0.0020	< 0.0010	< 0.10	< 0.0010	0.0347	< 0.0020	0.0067	0.348	0.0011	< 0.0010
	6/12/2018	< 0.0010	< 0.0010	0.0271	< 0.00020	< 0.00020	< 0.0020	< 0.0010	< 0.10	< 0.0010	0.0611	< 0.0020	0.0074	1.62	< 0.0010	< 0.0010
	8/8/2018	< 0.0010	< 0.0010	0.0281	< 0.00020	< 0.00020	< 0.0020	0.0011	< 0.10	< 0.0010	0.0762	< 0.0020	0.0076	0.855	< 0.0010	< 0.0010
MW-FS	4/12/2017	< 0.0010	< 0.0010	0.032	< 0.00020	< 0.00020	< 0.0020	0.0026	< 0.10	< 0.0010	0.36	< 0.00020	0.055	1.11	< 0.0010	< 0.0010
	6/21/2017	< 0.0010	< 0.0010	0.0313	< 0.00020	< 0.00020	< 0.0020	0.0027	< 0.10	< 0.0010	0.337	< 0.0020	0.0468	1.19	< 0.0010	< 0.0010
	8/30/2017	< 0.0010	< 0.0010	0.0273	< 0.00020	< 0.00020	< 0.0020	0.0021	< 0.10	< 0.0010	0.364	< 0.0020	0.0494	0.57	< 0.0010	< 0.0010
	11/8/2017	< 0.0010	< 0.0010	0.0262	< 0.00020	< 0.00020	< 0.0020	0.0018	< 0.10	< 0.0010	0.315	< 0.0020	0.0531	1.2	< 0.0010	< 0.0010
	1/30/2018	< 0.0010	< 0.0010	0.0263	< 0.00020	< 0.00020	< 0.0020	0.0022	< 0.10	< 0.0010	0.33	< 0.0020	0.0577	1.22	< 0.0010	< 0.0010
	4/5/2018	< 0.0010	< 0.0010	0.0237	< 0.00020	< 0.00020	< 0.0020	0.0018	< 0.10	< 0.0010	0.322	< 0.0020	0.0554	1.49	< 0.0010	< 0.0010
	6/11/2018	< 0.0010	< 0.0010	0.0221	< 0.00020	< 0.00020	< 0.0020	0.0017	< 0.10	< 0.0010	0.284	< 0.0020	0.0574	1.67	< 0.0010	< 0.0010
	8/7/2018	< 0.0010	< 0.0010	0.0214	< 0.00020	< 0.00020	< 0.0020	0.0016	< 0.10	< 0.0010	0.284	< 0.0020	0.0608	1.09	< 0.0010	< 0.0010
MW-GSR	4/12/2017	< 0.0010	< 0.0010	0.012	< 0.00020	0.00026	< 0.0020	0.013	0.13	< 0.0010	0.027	< 0.00020	< 0.0010	0.377	< 0.0010	< 0.0010
	6/21/2017	< 0.0010	< 0.0010	0.0123	< 0.00020	0.00028	< 0.0020	0.0134	< 0.10	< 0.0010	0.0284	< 0.0020	< 0.0010	0.617	< 0.0010	< 0.0010
	8/30/2017	< 0.0010	< 0.0010	0.014	< 0.00020	0.00031	< 0.0020	0.0138	< 0.10	< 0.0010	0.0322	< 0.0020	< 0.0010	1.81	< 0.0010	< 0.0010
	11/8/2017	< 0.0010	< 0.0010	0.0137	< 0.00020	0.00032	< 0.0020	0.0142	< 0.10	< 0.0010	0.0265	< 0.0020	< 0.0010	0.562	< 0.0010	< 0.0010
	1/30/2018	< 0.0010	< 0.0010	0.0132	< 0.00020	0.00026	< 0.0020	0.013	< 0.10	< 0.0010	0.0346	< 0.0020	< 0.0010	1.95	< 0.0010	< 0.0010
	4/5/2018	< 0.0010	< 0.0010	0.0114	< 0.00020	0.00024	< 0.0020	0.012	< 0.10	< 0.0010	0.0149	< 0.0020	< 0.0010	1.25	< 0.0010	< 0.0010
	6/11/2018	< 0.0010	< 0.0010	0.011	< 0.00020	0.00027	< 0.0020	0.0126	< 0.10	< 0.0010	0.0349	< 0.0020	< 0.0010	0.798	< 0.0010	< 0.0010
	8/7/2018	< 0.0010	< 0.0010	0.0129	< 0.00020	0.00026	< 0.0020	0.0127	< 0.10	< 0.0010	0.0489	< 0.0020	< 0.0010	0.741	< 0.0010	< 0.0010
MW-JS[2]	4/6/2018	< 0.0010	< 0.0010	0.102	< 0.00020	< 0.00020	< 0.0020	< 0.0010	0.19	< 0.0010	0.0143	< 0.0020	0.0171	1.12	0.0079	< 0.0010
	6/12/2018	< 0.0010	< 0.0010	0.151	< 0.00020	< 0.00020	< 0.0020	0.0021	0.17	< 0.0010	0.038	< 0.0020	0.0283	0.739	0.0032	< 0.0010
	8/8/2018	< 0.0010	< 0.0010	0.136	< 0.00020	< 0.00020	< 0.0020	< 0.0010	0.18	< 0.0010	0.0258	< 0.0020	0.0247	1.44	0.0057	< 0.0010

Notes:
1. Total Radium is Radium-226 and Radium-228 combined
2. Well was installed on March 23, 2018.

mg/L - milligrams per liter
pCi/L - Picocuries per liter
< - Represents non-detect. Values are shown at the laboratory reporting limit.

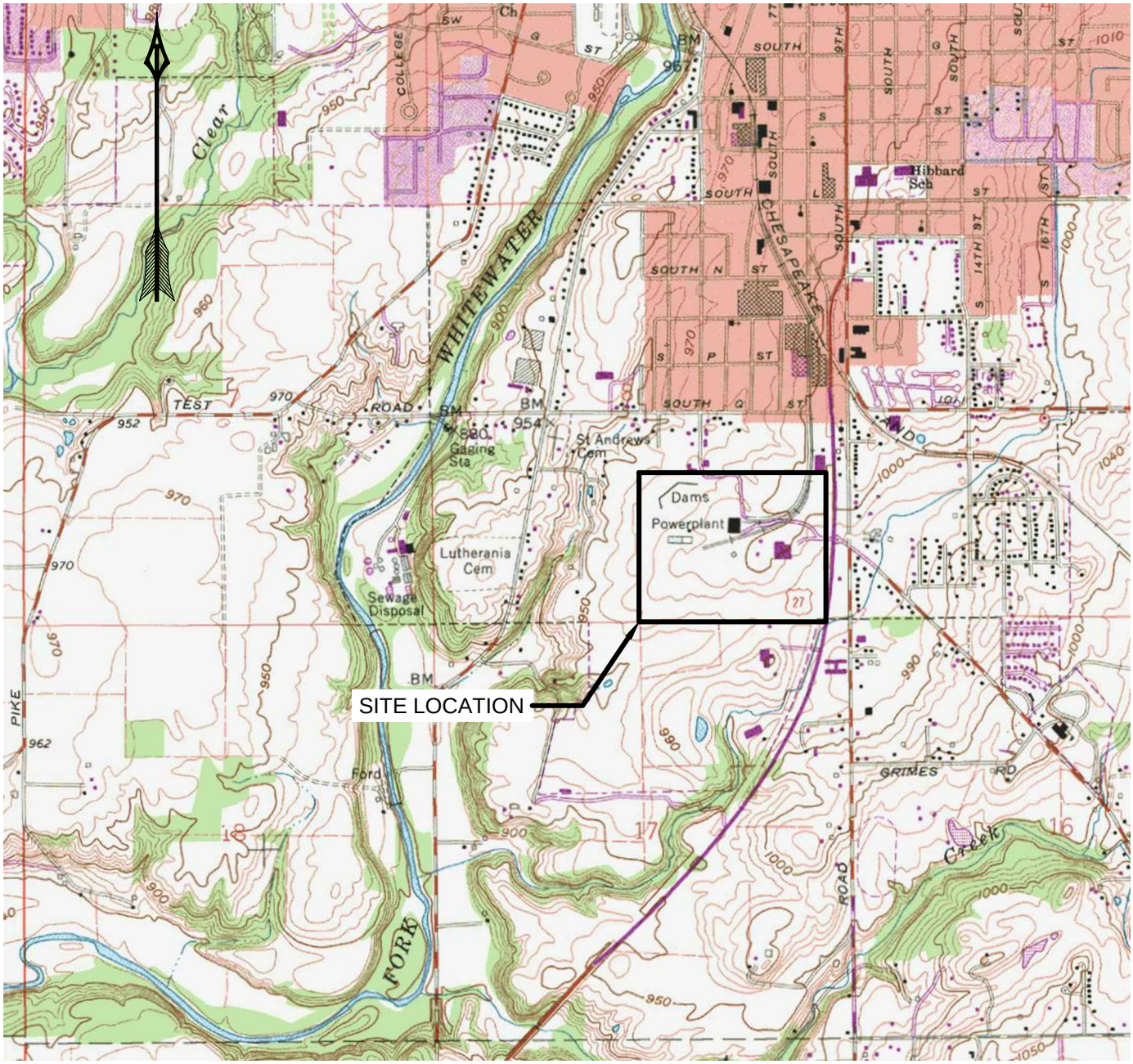
Table 3
Calculated Background Concentrations and March 2019 Detection Sample Results
Whitewater Valley Station Impoundment

Parameter	Calculated Background Concentration	Location ID:	Upgradient			Downgradient			
		Sample Date:	MW-AS	MW-FS	MW-GSR	MW-BS	MW-CS	MW-DS	MW-JS
		Units	3/19/2019	3/20/2019	3/19/2019	3/19/2019	3/20/2019	3/20/2019	3/20/2019
Boron, Total	11.3	mg/L	0.202	11.4	0.704	4.9	2.22	6.3	1.3
Calcium, Total	783	mg/L	95.2	390	534	401	242	371	215
Chloride	371	mg/L	122	99.5	149	339	68.5	191	31.4
Fluoride	0.17	mg/L	0.13	< 0.10	0.15	0.25	0.36	0.10	0.14
pH	6.55/7.79	s.u.	7.4	7.2	7.1	7.4	7.3	7.1	7.1
Sulfate	2110	mg/L	87.2	1570	1480	1750	931	1130	422
Total Dissolved Solids	3760	mg/L	581	2130	3280	2540	1480	2130	1100

Note:
1. Highlighted values are SSIs.

mg/L - milligrams per liter
s.u. - standard units
< - Represents non-detect. Values are shown at the laboratory reporting limit.

FIGURES



MAP REFERENCE:
RICHMOND, IN 7.5 MINUTE
QUADRANGLE DATED 1960
PHOTO REVISED 1981

SCALE: 1" = 2000'

2000 0 2000 4000

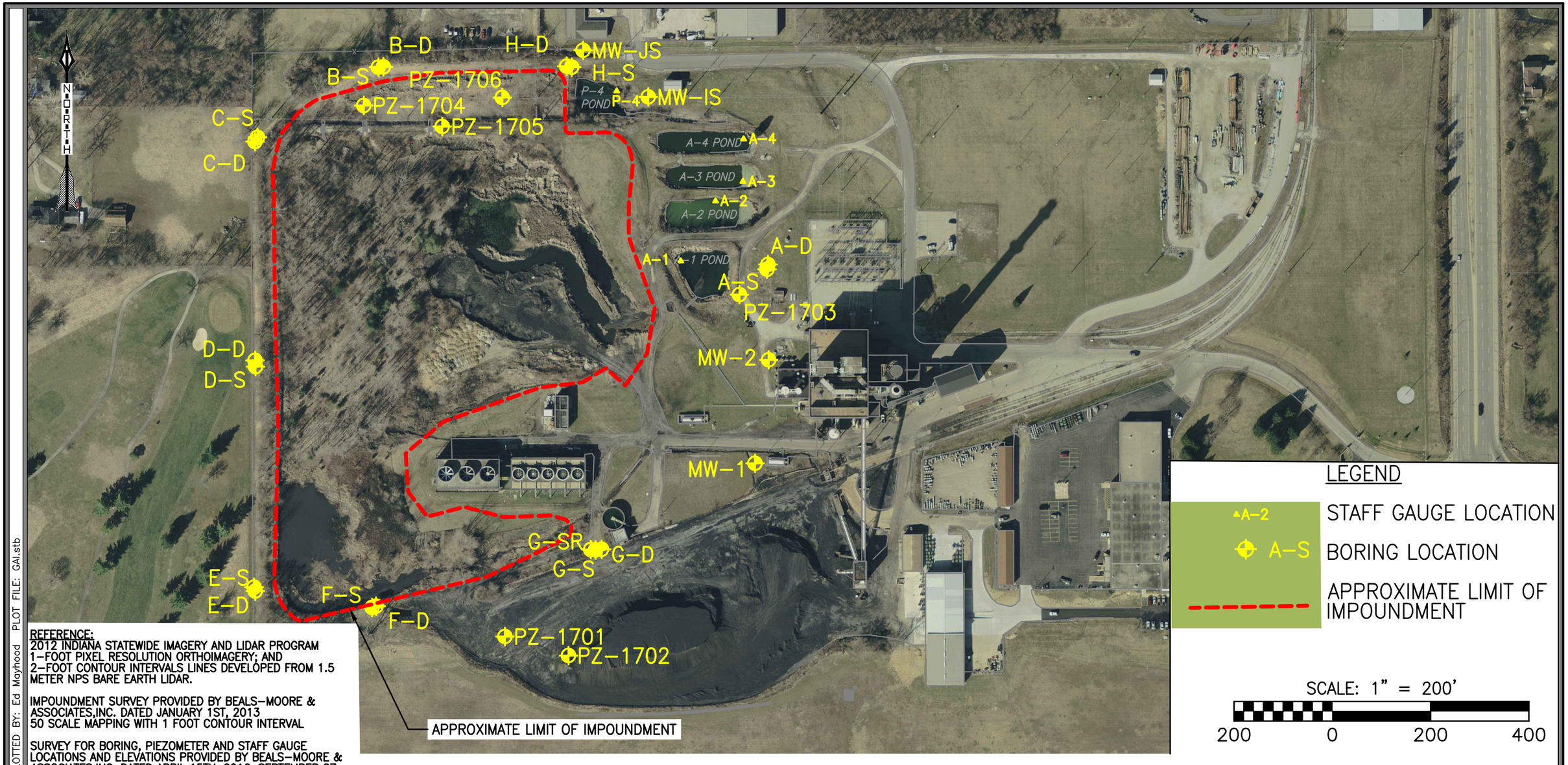
DRAWING TITLE: **FIGURE 1 - SITE LOCATION MAP**		GAI DRAWING NUMBER: **A2-001**
PROJECT: **WHITEWATER IDEM CLOSURE PLAN**	gai consultants	GAI FILE NUMBER: **C151119-04-002-001-A2-001**
CLIENT: **RICHMOND POWER AND LIGHT COMPANY RICHMOND, INDIANA**		DRAWN BY: **MAYHOEJ** / CHECKED BY: / APPROVED BY:
		SHEET NO.: **1 OF 1** / SCALE: **AS SHOWN** / ISSUE DATE: **08/16/2016**

This drawing was produced with computer aided drafting technology and is supported by electronic drawing files. Do not revise this drawing via manual drafting methods.

ISSUING OFFICE: Pittsburgh | 385 E. Waterfront Drive, Homestead, PA 15120

PLOTTED ON: 8/17/2016 10:38:44 AM PLOTTED BY: William Harris PLOT FILE: GAI.stb

GAI CAD FILE PATH: Z:\Energy\2015\C151119.04 - RPL GW IDEM Closure Nar\CAD\Production Drawings\C151119-04-002-001-A2-001.dwg



REFERENCE:
2012 INDIANA STATEWIDE IMAGERY AND LIDAR PROGRAM
1–FOOT PIXEL RESOLUTION ORTHOIMAGERY; AND
2–FOOT CONTOUR INTERVALS LINES DEVELOPED FROM 1.5 METER NPS BARE EARTH LIDAR.

IMPOUNDMENT SURVEY PROVIDED BY BEALS–MOORE & ASSOCIATES,INC. DATED JANUARY 1ST, 2013
50 SCALE MAPPING WITH 1 FOOT CONTOUR INTERVAL

SURVEY FOR BORING, PIEZOMETER AND STAFF GAUGE LOCATIONS AND ELEVATIONS PROVIDED BY BEALS–MOORE & ASSOCIATES,INC. DATED APRIL 15TH, 2016, SEPTEMBER 27, 2016 AND JULY 10, 2017.

LEGEND

▲A–2 STAFF GAUGE LOCATION

A–S BORING LOCATION

APPROXIMATE LIMIT OF IMPOUNDMENT

SCALE: 1" = 200'

200 0 200 400

NO.:	DATE:	DWN:	CHK:	APV:	DESCRIPTION:
2	5/23/2018	MAYHOEJ	HENGELM	TURKARJ	ADDED MW-IS AND MW-JS
1	9/30/2016	NEIMAJC	MURAOTI	TURKARJ	ADDED BORINGS G, H, MW-1 AND MW-2

REVISION RECORD

DRAWING TITLE
FIGURE 2 PIEZOMETER LOCATION MAP

PROJECT
IMPOUNDMENT CLOSURE
WHITEWATER VALLEY STATION
WAYNE COUNTY
RICHMOND, INDIANA 47374

gai consultants

CLIENT
RICHMOND POWER & LIGHT
2000 US 27 SOUTH
RICHMOND, INDIANA 47374

DRAWN BY:	CHECKED BY:	APPROVED BY:
MAYHOEJ	MURAOTI	TURKARJ
REVISION 1	SCALE: AS SHOWN	ISSUE DATE: 05/24/2018
	SHEET NO.: 1 OF 1	

GAI FILE NUMBER: C151119-04-002-001-B2-028
GAI DRAWING NUMBER: B2-028

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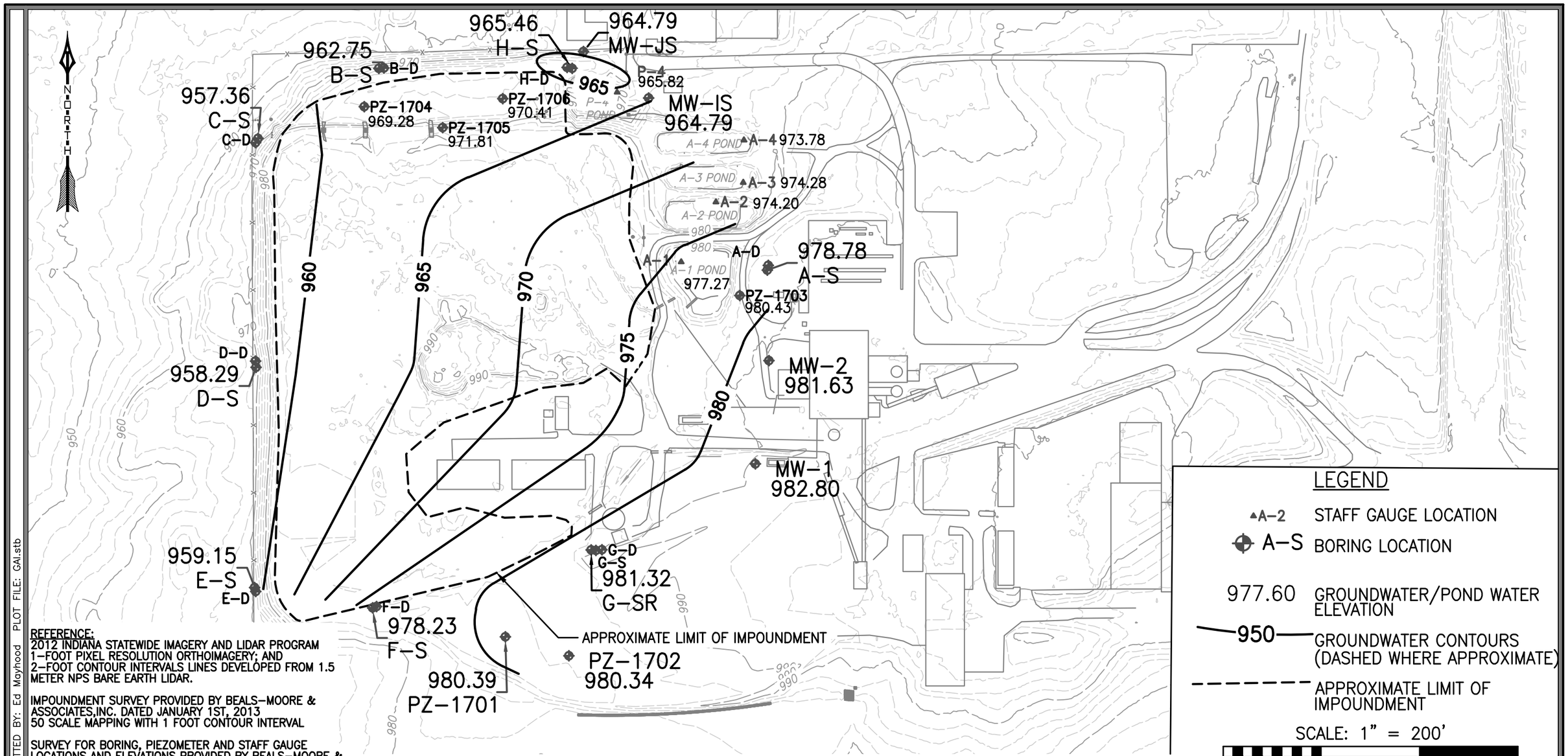
ISSUING OFFICE: Murrysville | 4200 Triangle Lane, Export, PA 15632-1358

GAI CAD FILE PATH: Z:\Energy\2015\C151119.04 – RPL GW IDEM Closure Nar\CAD\Production Drawings\Archive 11–15–16 before construction set\C151119–04–002–001–B2–028.dwg

PLOTTED ON: 5/24/2018 2:53:44 PM PLOTTED BY: Ed Mayhood PLOT FILE: GAI.stb



REFERENCE:
2012 INDIANA STATEWIDE IMAGERY AND LIDAR PROGRAM
1–FOOT PIXEL RESOLUTION ORTHOIMAGERY; AND
2–FOOT CONTOUR INTERVALS LINES DEVELOPED FROM 1.5 METER NPS BARE EARTH LIDAR.

IMPOUNDMENT SURVEY PROVIDED BY BEALS–MOORE & ASSOCIATES,INC. DATED JANUARY 1ST, 2013
50 SCALE MAPPING WITH 1 FOOT CONTOUR INTERVAL

SURVEY FOR BORING, PIEZOMETER AND STAFF GAUGE LOCATIONS AND ELEVATIONS PROVIDED BY BEALS–MOORE & ASSOCIATES,INC. DATED APRIL 15TH, 2016, SEPTEMBER 27, 2016 AND JULY 10, 2017.

LEGEND

▲A–2	STAFF GAUGE LOCATION
⊕ A–S	BORING LOCATION
977.60	GROUNDWATER/POND WATER ELEVATION
950	GROUNDWATER CONTOURS (DASHED WHERE APPROXIMATE)
- - - - - - -	APPROXIMATE LIMIT OF IMPOUNDMENT

SCALE: 1" = 200'

200 0 200 400

NO.:	DATE:	DWN:	CHK:	APV:	DESCRIPTION:

REVISION RECORD

DRAWING TITLE

FIGURE 3 - POTENTIOMETRIC SURFACE MAP - SOIL 8\07\2018

PROJECT

IMPOUNDMENT CLOSURE
WHITEWATER VALLEY STATION
WAYNE COUNTY
RICHMOND, INDIANA 47374

gai consultants

CLIENT

RICHMOND POWER & LIGHT
2000 US 27 SOUTH
RICHMOND, INDIANA 47374

DRAWN BY:	CHECKED BY:	APPROVED BY:
MAYHOEJ	TURKARJ	TURKARJ
REVISION 0	SCALE: AS SHOWN	ISSUE DATE: 07/31/2019
	SHEET NO.: 1 OF 1	

GAI FILE NUMBER: **C151119-04-002-001-B2-101**

GAI DRAWING NUMBER: **B2-101**

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ISSUING OFFICE: Murrysville | 4200 Triangle Lane, Export, PA 15632-1358

GAI CAD FILE PATH: Z:\Energy\2015\C151119.04 – RPL GW IDEM Closure Nar\CAD\Production Drawings\Archive 11–15–16 before construction set\C151119–04–002–001–B2–101.dwg

PLOTTED ON: 7/31/2019 2:18:57 PM PLOTTED BY: Ed Mayhood PLOT FILE: GAI.stb