

January 29, 2021

ATC Group Services LLC

7988 Centerpoint Dr.  
Suite 100  
Indianapolis, IN 46256

Phone +1 317 849 4990  
Fax +1 317 849 4278

[www.atcgroupservices.com](http://www.atcgroupservices.com)

Mr. David M. Heger  
Senior Counsel  
AES US Services, LLC  
One Monument Circle, Suite 701A  
Indianapolis, Indiana 46204-2901

Re: **2020 CCR Annual Groundwater Monitoring and  
Corrective Action Report**  
Indianapolis Power & Light Company  
Petersburg Generating Station – RWS Type I Landfill  
Petersburg, Indiana  
ATC Project No. 170LF00874

Dear Mr. Heger:

ATC Group Services LLC (ATC) has prepared this 2020 CCR Annual Groundwater Monitoring and Corrective Action Report for the Restricted Waste Site (RWS) Type I Landfill at Indianapolis Power & Light Company's (IPL) Petersburg Generating Station located outside Petersburg, Pike County, Indiana. This report has been prepared to comply with reporting requirements described in the United States Environmental Protection Agency's (USEPA) Coal Combustion Residuals (CCR) Rule § 257.90(e). This annual report documents the status of the groundwater monitoring and corrective action program for the Landfill and summarizes information required by § 257.90(e)(1) through § 257.90(e)(6).

Federal CCR Rule § 257.90(e)(6) specifies the following:

*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 statistically significant increase over background for one or more constituents listed in appendix III to this part pursuant to § 257.94(e): (A) Identify those constituents listed in appendix III to this part and the names of the monitoring wells associated with such an increase; and (B) Provide the date when the assessment monitoring program was initiated for the CCR*

*unit. (iv) If it was determined that there was a statistically significant level above the groundwater protection standard for one or more constituents listed in appendix IV to this part pursuant to § 257.95(g) include all of the following: (A) Identify those constituents listed in appendix IV to this part and the names of the monitoring wells associated with such an increase; (B) Provide the date when the assessment of corrective measures was initiated for the CCR unit; (C) Provide the date when the public meeting was held for the assessment of corrective measures for the CCR unit; and (D) Provide the date when the assessment of corrective measures 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; and (vi) Whether remedial activities were initiated or are ongoing pursuant to § 257.98 during the current annual reporting period.*

## **Overview of 2020 Groundwater Monitoring and Corrective Action**

At the beginning and end of the 2020 reporting period, the CCR unit was operating under the Assessment Monitoring Program in § 257.95. Pursuant to 40 CFR 257.94(e)(2), 257.94(e)(3) and 257.95(b), the facility had previously established an Assessment Monitoring Program in accordance with the requirements of § 257.95 on July 16, 2018. Therefore, evaluation of statistically significant increase over background for one or more constituents listed in appendix III to this part pursuant to § 257.94(e) was not performed.

At the end of the 2020 reporting period, associated with the May 2020 monitoring event as November 2020 sampling data was not finalized in 2020, it was determined that the following Appendix IV constituents were at statistically significant levels (SSLs) above the associated groundwater protection standards (GWPS) pursuant to § 257.95(g): The May 2020 SSLs are as follows:

### Arsenic

MW-10<sup>1</sup>

### Lithium

MW-2R, MW-3, MW-4C

### Molybdenum

MW-3

The above listed May 2020 SSLs are not new constituent SSLs and were previously identified. Therefore, no new SSL notification was required pursuant to § 257.94(e).

The assessment of corrective measures was initiated for the CCR unit on April 15, 2019 in response to SSLs of Appendix IV constituents exceeding GWPS. Pursuant to 40 CFR §257.96(a), a

---

<sup>1</sup> An Alternate Source Demonstration (ASD) was successfully completed pursuant to § 257.95(g)(3)(ii) in October 2019 for total arsenic in monitoring well MW-10. The ASD report was provided as an attachment to the 2019 CCR Annual Groundwater Monitoring and Corrective Action Report dated January 30, 2020 for the Petersburg Generating Station – RWS Type I Landfill.

demonstration of need for a 60-day extension for the assessment of corrective measures was completed on July 12, 2019. The Corrective Measures Assessment (CMA) Report was completed and placed in the facility operating record on September 13, 2019 and subsequently amended on October 11, 2019. A public meeting was not held for the assessment of corrective measures for the CCR units in 2020 as nature and extent work is still ongoing at the facility in order to characterize the extent of the contamination plume and further support the CMA. A remedy was not selected pursuant to § 257.97 during the 2020 reporting period. Remedial activities were not initiated pursuant to § 257.98 during the 2020 reporting period.

Federal CCR Rule § 257.90(e) specifies the following:

*For existing CCR landfills and existing CCR surface impoundments, no later than January 31, 2019, and annually thereafter, the owner or operator must prepare an annual groundwater monitoring and corrective action report. For new CCR landfills, new CCR surface impoundments, and all lateral expansions of CCR units, the owner or operator must prepare the initial annual groundwater monitoring and corrective action report no later than January 31 of the year following the calendar year a groundwater monitoring system has been established for such CCR unit as required by this subpart, and annually thereafter. For the preceding calendar year, the annual report must document the status of the groundwater monitoring and corrective action program for the CCR unit, summarize key actions completed, describe any problems encountered, discuss actions to resolve the problems, and project key activities for the upcoming year. For purposes of this section, the owner or operator has prepared the annual report when the report is placed in the facility's operating record as required by § 257.105(h)(1).*

The following key actions have been completed in 2020 to comply with the CCR Rule:

- Efforts to determine the nature and extent (N&E) of the Appendix IV SSLs continued pursuant to § 257.95(g) including but not limited to the installation of additional on-site N&E monitoring equipment, review of groundwater analytical results/data to improve the groundwater site conceptual model, and groundwater modeling to support the CMA.
- Began evaluation to determine a source other than the CCR unit caused the contamination (Appendix IV SSLs) focusing on the historical on-site coal mining practices.
- Semi-annual assessment monitoring sampling events were conducted in 2020 as required by § 257.95(b) and § 257.95(d)(1). Subsequent SSLs evaluation of the November 2019 and May 2020 data were performed within 90 days of completing the sampling and analysis pursuant to § 257.93(h)(2).
- Semi-Annual Remedy Selection Progress Reports pursuant to § 257.97(a) for the period of September 13, 2019 through March 13, 2020, and for the period of March 14, 2020 through September 12, 2020 were completed and placed in the facility's operating record and posted to IPLs CCR Website.

To report on the activities conducted during the prior calendar year and document compliance with the CCR Rule, the specific requirements listed in § 257.90(e)(1) through § 257.90(e)(5) are provided below in bold/italic type followed by a short narrative addressing how that specific requirement has been met.

***At a minimum, the annual groundwater monitoring and corrective action report must contain the following information, to the extent available:***

***§ 257.90(e)(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;***

IPL operates the Petersburg Station located approximately four miles north of Petersburg, Indiana. It is located at 6925 North State Road 57. A Site Location Map is provided as Figure 1. A map showing the location of each CCR management unit, associated upgradient and downgradient CCR monitoring wells, and N&E monitoring equipment installed in 2019 and 2020 is provided as Figure 2.

***§ 257.90(e)(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;***

The CCR groundwater monitoring system at the Petersburg Landfill consists of eight (8) monitoring wells: one (1) upgradient monitoring well MW-1, and seven (7) downgradient monitoring wells MW-2R, MW-3, MW-4C, MW-10, MW-11, MW-12, and MW-13.

In addition to the CCR ash pond groundwater monitoring system, three (3) N&E wells (MW-14, MW-15, and MW-16) were installed in 2019. These wells were installed to characterize the nature and extent of the contamination plume and to support the CMA. Since there is a “weak” hydraulic connection between the landfill and the ash pond system, monitoring wells MW-19B, MW-19I and MW-19A that were installed at the facility boundary pursuant to § 257.95(g)(1)(iii) serve the same purpose for the landfill.

To characterize the N&E of the release and any relevant site condition that may affect the remedy ultimately selected, as required by § 257.95(g)(1), additional investigation activities were initiated in 2020 as follows.

- IPL installed an additional nested N&E monitoring well (MW-20A, MW-20I, MW-20B) along the White River in April 2020 to better define the lateral extent Appendix IV constituents as there is “weak” hydraulic connection between the landfill and the ash pond system.
- Five (5) exploratory borings (LB-1 through LB-5) were completed within the landfill in late January and early February 2020 to obtain representative samples to characterize the material to aid in the remedy design process. The locations were completed as piezometers to provide piezometric data within the landfill.



- Three temporary monitoring wells (MW-22, MW-23, and MW-24) were installed in October 2020 to evaluate potential alternative sources of Appendix IV constituents and better define the subsurface conditions beneath the landfill.

The location of the CCR monitoring well network and N&E wells are depicted on Figure 2. No wells were abandoned during the 2020 reporting period.

**§ 257.90(e)(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;***

Table 1 provides a summary of the number of samples collected at each CCR monitoring well and N&E well, sampling dates, and designation of whether samples were required by the detection or assessment monitoring program, or N&E. Groundwater elevation data is provided in Table 2. Assessment monitoring groundwater analytical results for the November 2019 semi-annual sampling event are summarized in Table 3; these results were not finalized by the end of 2019 for inclusion in the associated 2020 Annual Report. Assessment Monitoring groundwater analytical results for the May 2020 sampling event are summarized in Table 4. N&E sampling results for the June 2020 sampling event are summarized in Table 5. Groundwater results for the November 2020 semi-annual assessment monitoring sampling event were not finalized in 2020 and therefore are not included in this report.

**§ 257.90(e)(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);***

IPL Petersburg operated under the assessment monitoring in accordance with § 257.95. No transition between monitoring programs was conducted in 2020.

During 2020, statistical evaluations of the November 2019 and May 2020 analytical data were performed in order to determine whether there was a SSL of a new Appendix IV constituent detected above the relevant GWPS in accordance with § 257.95(g) and 257.93(h). The evaluations were completed in March 2020 and September 2020, respectively. Based on the evaluations, it was determined that the Appendix IV constituents that exceeded the GWPS include arsenic, lithium, and molybdenum; however, these are the same constituent SSLs previously identified. Since there were no new Appendix IV constituents identified, an additional notification was not triggered pursuant to 40 CFR 257.95(g).

**§ 257.90(e)(5) Other information required to be included in the annual report as specified in § 257.90 through § 257.98.**

Table 6A and Table 6B summarize the groundwater protection standards established in accordance with § 257.95(d)(2) and § 257.95(h) associated with the November 2019 and May 2020 semi-annual assessment monitoring events, respectively.

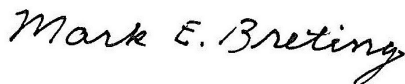
Projected key activities for the upcoming year include the following:

- Assessment monitoring sampling events in accordance with § 257.95.
- Finalize November 2020 analytical data. Completion of statistical evaluation of November 2020 analytical data to determine whether there is a SSL above GWPS for Appendix IV constituents in accordance with § 257.95(g) and 257.93(h). Perform SSL evaluations of final May 2021 assessment monitoring analytical data.
- Continue nature and extent work pursuant to § 257.95(g).
- Prepare semi-annual report(s) describing process in selecting and designing the remedy pursuant to § 257.97(a).
- Continue the ongoing landfill characterization efforts and install supplemental piezometers/wells and additional borings to better define the subsurface conditions immediately surrounding the landfill as it relates to the alternative source investigation.

We appreciate the opportunity to assist with IPL's CCR Rule groundwater monitoring program at Petersburg Station's RWS Type I Landfill. Please contact either of the undersigned at 317.849.4990 if you have any questions regarding this report.

Sincerely,

**ATC Group Services LLC**



Mark E. Breting, L.P.G.  
Senior Project Geologist



Robert T. Duncan, L.P.G.  
Senior Project Geologist

Copies: Ms. Nysa Hogue  
Mr. Wil Teague

## TABLES

Table 1:	Well Sampling Summary
Table 2:	Groundwater Elevation Data
Table 3:	Summary of Monitoring Results – November 2019
Table 4:	Summary of Monitoring Results – May 2020
Table 5:	Summary of Monitoring Results – June 2020
Table 6A:	Groundwater Protection Standards Summary – November 2019
Table 6B:	Groundwater Protection Standards Summary – May 2020

**Table 1**  
Well Sampling Summary  
RWS Type I Landfill  
Indianapolis Power and Light Company  
Petersburg Generating Station  
Petersburg, Indiana  
ATC Project No. 170LF00874

Identification	Date Installed	Upgradient/Background, Downgradient, or Nature & Extent	Number of Samples	Sample Date	Detection or Assessment Monitoring Program
MW-1	11/21/1986	Upgradient	2	5/6/2020 11/3/2020	Assessment
MW-2 (2R)	MW-2 - 1986 MW-2R - 2/1/2017	Upgradient	2	5/13/2020 11/3/2020	Assessment
MW-3	1986	Upgradient	2	5/13/2020 11/3/2020	Assessment
MW-4C	9/29/1992	Upgradient	2	5/13/2020 11/3/2020	Assessment
MW-10	1/30/2017	Downgradient	2	5/5/2020 11/4/2020	Assessment
MW-11	1/25/2017	Downgradient	2	5/5/2020 11/4/2020	Assessment
MW-12	1/26/2017	Downgradient	2	5/6/2020 11/4/2020	Assessment
MW-13	1/31/2017	Downgradient	2	5/5/2020 11/4/2020	Assessment
MW-14	4/3/2019	Nature & Extent	2	5/12/2020 11/4/2020	Assessment
MW-15	4/2/2019	Nature & Extent	2	5/12/2020 11/4/2020	Assessment
MW-16	4/1/2019	Nature & Extent	2	5/12/2020 11/4/2020	Assessment
MW-19B	8/1/2019	Nature & Extent	2	5/6/2020 11/6/2020	Assessment
MW-19I	8/1/2019	Nature & Extent	2	5/6/2020 11/6/2020	Assessment
MW-19A	8/1/2019	Nature & Extent	2	5/6/2020 11/6/2020	Assessment

**Table 2**  
Groundwater Elevation Data  
RWS Type I Landfill  
Indianapolis Power and Light Company  
Petersburg Generating Station  
Petersburg, Indiana  
ATC Project No. 170LF00874

Monitoring Well/Piezometer Location	Gauging Date	TOC Elevation (ft-MSL)	Depth to Water (ft)	Water Elevation (ft-MSL)
MW-1	3/3/2020	528.11	29.87	498.24
	5/4/2020		28.60	499.51
	11/2/2020		31.34	496.77
MW-2 (2R)	4/16/2020	455.00	12.13	442.87
	5/4/2020		12.66	442.34
	11/2/2020		18.20	436.80
MW-3	4/16/2020	450.71	9.32	441.39
	5/4/2020		9.37	441.34
	11/2/2020		9.87	440.84
MW-4C	4/16/2020	454.44	5.59	448.85
	5/4/2020		5.30	449.14
	11/2/2020		5.20	449.24
MW-10	3/3/2020	502.38	37.40	464.98
	5/4/2020		37.52	464.86
	11/2/2020		40.44	461.94
MW-11	3/3/2020	517.51	31.95	485.56
	5/4/2020		31.85	485.66
	11/2/2020		38.23	479.28
MW-12	3/3/2020	517.64	23.60	494.04
	5/4/2020		23.57	494.07
	11/2/2020		31.18	486.46
MW-13	3/3/2020	480.97	9.78	471.19
	5/4/2020		10.52	470.45
	11/2/2020		14.77	466.20
MW-14	5/4/2020	436.46	8.31	428.15
	11/2/2020		9.78	426.68
MW-15	4/16/2020	444.11	18.98	425.13
	5/4/2020		19.36	424.75
	6/11/2020		19.92	424.19
	11/2/2020		22.73	421.38
MW-16	4/16/2020	442.78	4.33	438.45
	5/4/2020		4.08	438.70
	11/2/2020		3.08	439.70

**Table 2**  
Groundwater Elevation Data  
RWS Type I Landfill  
Indianapolis Power and Light Company  
Petersburg Generating Station  
Petersburg, Indiana  
ATC Project No. 170LF00874

Monitoring Well/Piezometer Location	Gauging Date	TOC Elevation (ft-MSL)	Depth to Water (ft)	Water Elevation (ft-MSL)
MW-17	3/3/2020	472.33	15.07	457.26
	5/4/2020		15.56	456.77
	11/2/2020		17.90	454.43
MW-18	3/3/2020	458.27	5.36	452.91
	5/4/2020		5.66	452.61
	11/2/2020		7.39	450.88
MW-19B	3/3/2020	421.51	6.36	415.15
	5/4/2020		10.81	410.70
	11/2/2020		13.90	407.61
MW-19I	3/3/2020	421.28	6.18	415.10
	5/4/2020		10.78	410.50
	11/2/2020		13.60	407.68
MW-19A	3/3/2020	421.41	6.31	415.10
	5/4/2020		10.87	410.54
	11/2/2020		13.70	407.71
MW-20A	5/15/2020	424.23	15.29	408.94
	5/22/2020		6.10	418.13
	5/29/2020		9.50	414.73
	6/5/2020		11.53	412.70
	6/12/2020		14.88	409.35
	6/19/2020		16.80	407.43
	6/26/2020		16.70	407.53
	7/2/2020		16.93	407.30
	7/10/2020		17.52	406.71
	7/21/2020		18.41	405.82
	8/21/2020		17.08	407.15
	11/2/2020		15.61	408.62

**Table 2**  
Groundwater Elevation Data  
RWS Type I Landfill  
Indianapolis Power and Light Company  
Petersburg Generating Station  
Petersburg, Indiana  
ATC Project No. 170LF00874

Monitoring Well/Piezometer Location	Gauging Date	TOC Elevation (ft-MSL)	Depth to Water (ft)	Water Elevation (ft-MSL)
MW-20I	5/15/2020	424.00	15.00	409.00
	5/22/2020		5.75	418.25
	5/29/2020		9.23	414.77
	6/5/2020		11.24	412.76
	6/12/2020		14.60	409.40
	6/19/2020		16.33	407.67
	6/26/2020		17.38	406.62
	7/2/2020		16.74	407.26
	7/10/2020		17.26	406.74
	7/21/2020		18.19	405.81
	8/21/2020		16.81	407.19
	11/2/2020		15.41	408.59
MW-20B	5/15/2020	423.97	15.83	408.14
	5/22/2020		5.87	418.10
	5/29/2020		9.07	414.90
	6/5/2020		11.09	412.88
	6/12/2020		14.45	409.52
	6/19/2020		16.25	407.72
	6/26/2020		17.33	406.64
	7/2/2020		16.83	407.14
	7/10/2020		17.15	406.82
	7/21/2020		18.20	405.77
	8/21/2020		16.90	407.07
	11/2/2020		15.53	408.44
MW-22	11/2/2020	561.61	82.70	478.91
	11/24/2020		82.22	479.39
	12/16/2020		84.03	477.58
MW-23	11/2/2020	564.60	80.75	483.85
	11/24/2020		81.20	483.40
	12/16/2020		81.31	483.29
MW-24	11/2/2020	452.71	12.56	440.15
	11/24/2020		12.60	440.11
	12/16/2020		12.61	440.10

**Table 2**  
Groundwater Elevation Data  
RWS Type I Landfill  
Indianapolis Power and Light Company  
Petersburg Generating Station  
Petersburg, Indiana  
ATC Project No. 170LF00874

Monitoring Well/Piezometer Location	Gauging Date	TOC Elevation (ft-MSL)	Depth to Water (ft)	Water Elevation (ft-MSL)
TP-1	3/3/2020	500.75	36.18	464.57
	5/4/2020		36.29	464.46
	11/2/2020		38.92	461.83
TP-2	3/3/2020	501.39	36.94	464.45
	5/4/2020		37.03	464.36
	11/2/2020		39.97	461.42
TP-3	3/3/2020	500.83	36.31	464.52
	5/4/2020		36.48	464.35
	11/2/2020		39.45	461.38
LW-1A	3/3/2020	504.40	10.30	494.10
	5/4/2020		10.54	493.86
	11/2/2020		15.28	489.12
LW-1B	3/3/2020	504.40	7.42	496.98
	5/4/2020		7.87	496.53
	11/2/2020		12.57	491.83
LW-2	3/3/2020	518.90	80.24	438.66
	5/4/2020		80.30	438.60
	11/2/2020		80.73	438.17
LW-6A	3/3/2020	518.90	39.63	479.27
	5/4/2020		39.63	479.27
	11/2/2020		44.57	474.33
LW-8A	3/3/2020	524.90	59.32	465.58
	5/4/2020		59.24	465.66
	11/2/2020		60.20	464.70
LW-8B	3/3/2020	524.90	29.65	495.25
	5/4/2020		28.00	496.90
	11/2/2020		31.69	493.21
LW-28A	3/3/2020	504.40	17.10	487.30
	5/4/2020		17.16	487.24
	11/2/2020		20.57	483.83
LW-28B	3/3/2020	504.40	16.02	488.38
	5/4/2020		16.17	488.23
	11/2/2020		17.36	487.04



**Table 2**  
Groundwater Elevation Data  
RWS Type I Landfill  
Indianapolis Power and Light Company  
Petersburg Generating Station  
Petersburg, Indiana  
ATC Project No. 170LF00874

Monitoring Well/Piezometer Location	Gauging Date	TOC Elevation (ft-MSL)	Depth to Water (ft)	Water Elevation (ft-MSL)
LW-18	3/3/2020	510.70	42.13	468.57
	4/16/2020		41.78	468.92
	5/4/2020		41.10	469.60
	6/26/2020		41.55	469.15
	6/30/2020		41.43	469.27
	11/2/2020		46.39	464.31
LB-1	4/10/2020	572.85	90.35	482.50
	4/16/2020		90.63	482.22
	5/7/2020		90.45	482.40
	6/11/2020		90.74	482.11
	6/25/2020		90.84	482.01
	11/2/2020		93.45	479.40
LB-2	4/10/2020	564.01	76.48	487.53
	4/16/2020		76.59	487.42
	5/7/2020		76.33	487.68
	6/11/2020		76.55	487.46
	6/25/2020		76.42	487.59
	11/2/2020		78.70	485.31
	12/16/2020		78.95	485.06
LB-3	4/10/2020	559.73	77.65	482.08
	4/16/2020		77.80	481.93
	5/7/2020		77.45	482.28
	6/11/2020		77.61	482.12
	6/25/2020		77.57	482.16
	11/2/2020		80.25	479.48
	12/16/2020		80.20	479.53
LB-4	4/10/2020	563.42	82.68	480.74
	4/16/2020		82.71	480.71
	5/7/2020		82.47	480.95
	6/11/2020		82.86	480.56
	6/25/2020		82.90	480.52
	11/2/2020		85.25	478.17

**Table 2**  
Groundwater Elevation Data  
RWS Type I Landfill  
Indianapolis Power and Light Company  
Petersburg Generating Station  
Petersburg, Indiana  
ATC Project No. 170LF00874

Monitoring Well/Piezometer Location	Gauging Date	TOC Elevation (ft-MSL)	Depth to Water (ft)	Water Elevation (ft-MSL)
LB-5	4/10/2020	559.42	78.89	480.53
	4/16/2020		DRY	#VALUE!
	5/7/2020		DRY	#VALUE!
	6/11/2020		DRY	#VALUE!
	11/2/2020		79.37	480.05

Notes:

TOC = Top of Casing

ft-MSL = feet above Mean Sea Level

**Table 3**  
Summary of Monitoring Results - November 2019  
RWS Type I Landfill  
Indianapolis Power and Light Company  
Petersburg Generating Station  
Petersburg, Indiana  
ATC Project No. 170LF00874

Well ID		MW-1	MW-2R	MW-3	MW-4C	MW-10	MW-11	MW-12	MW-13	MW-14	MW-15	MW-16	MW-19B
Lab ID		50241027001	50241029001	50241029002	50241029003	50241027002	50241027003	50241027004	50241027005	50241023001	50241023002	50241023003	50241026005
Sample Date		11/6/2019	11/6/2019	11/6/2019	11/6/2019	11/6/2019	11/6/2019	11/6/2019	11/6/2019	11/6/2019	11/6/2019	11/6/2019	11/5/2019
Static Water Elevation (ft MSL)		497.91	437.64	440.97	449.31	462.72	481.51	489.29	467.84	427.24	422.36	439.16	405.27
<b>Field Parameters</b>	<b>Units</b>												
Temperature	°C	13.03	15.52	16.30	15.84	13.88	14.76	13.49	16.12	18.15	14.37	16.88	15.83
Dissolved Oxygen, Field	mg/L	7.69	0.29	0.19	0.37	0.16	4.61	9.09	0.99	0.19	0.63	0.21	2.75
Conductivity, Field	uS/cm	868.47	2770.35	2489.72	2756.15	2893.00	1031.77	419.33	2268.36	1264.96	2159.63	2997.92	777.92
ORP, Field	mV	88.81	-72.59	33.96	70.33	-125.55	47.95	95.43	70.98	-74.17	-56.74	-100.73	66.96
pH, Field	Std. Units	7.18	6.98	7.31	6.93	7.08	7.14	7.17	7.09	7.04	7.16	7.25	7.17
<b>Analytical Data</b>													
Antimony, Total	ug/L	<1.0	<1.0	<1.0	<1.0	1.9	<1.0	<1.0	1.1	<1.0	<1.0	<1.0	<1.0
Arsenic, Total	ug/L	<1.0	10.5	10.3	<1.0	127	8.2	<1.0	<1.0	2.6	<1.0	4.8	<1.0
Barium, Total	ug/L	41.9	39.0	42.8	29.1	150	58.5	26.3	25.0	69.9	88.2	73.6	66.8
Beryllium, Total	ug/L	<0.20	<0.20	<0.20	<0.20	3.3	0.63	<0.20	<0.20	<0.20	<0.20	<0.40	<0.20
Boron, Total	ug/L	120	2210	1070	4250	30000	1170	<100	2740	990	1740	3190	667
Cadmium, Total	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Calcium, Total	ug/L	124000	451000	299000	557000	483000	148000	46700	574000	219000	306000	383000	115000
Chloride	mg/L	4.3	65.1	88.4	37.0	94.6	2.0	10.6	1.5	6.0	80.5	59.2	16.8
Chromium, Total	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cobalt, Total	ug/L	<1.0	3.1	2.6	<1.0	9.2	2.1	<1.0	<1.0	1.7	<1.0	1.3	<1.0
Fluoride	mg/L	0.12	<0.1	0.13	0.12	0.44	0.13	0.13	0.61	0.11	<0.1	0.11	<0.1
Lead, Total	ug/L	<10.0	<10.0	<10.0	<10.0	29.5	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
Lithium, Total	ug/L	<20.0	495	1930	284	48.5	<20.0	<20.0	28.6	<20.0	813	2320	<20.0
Mercury, Total	ug/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Molybdenum, Total	ug/L	<10.0	<10.0	508	<10.0	25	<10.0	<10.0	37.6	<10.0	61.5	555	<10.0
pH at 25 Degrees C	Std. Units	7.2	6.9	7.3	7.0	7.0	7.1	7.2	7.1	7.1	7.2	7.2	7.2
Selenium, Total	ug/L	<1.0	<1.0	<1.0	<1.0	1.9	3.4	<1.0	2.9	<1.0	<1.0	<1.0	4.9
Sulfate	mg/L	190	1460	1060	1420	967	409	14.8	1320	384	921	1500	58.5
Thallium, Total	ug/L	<1.0	<1.0	<1.0	<1.0	1.7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Dissolved Solids	mg/L	589	2390	1850	2500	2270	762	227	2110	896	1660	2420	432
Total Radium	pCi/L	<0.632	0.851	4.4	<0.65	1.25	6.38	1.16	0.693	1.19	2.48	2.24	<0.381

Notes:  
ft MSL: Elevation, feet mean sea level  
°C: Degrees celcius  
uS/cm: microsiemen per centimeter  
umhos/cm: micromhos per centimeter  
NA: Not analyzed  
mV: millivolt  
Std. Units: standard units  
mg/L: milligram per liter  
ug/L: microgram per liter  
pCi/L: picoCurie per liter  
Static water elevation listed for a well may have been collected on a date different than date of well sampling.

**Table 3**  
Summary of Monitoring Results - November 2019  
RWS Type I Landfill  
Indianapolis Power and Light Company  
Petersburg Generating Station  
Petersburg, Indiana  
ATC Project No. 170LF00874

Well ID		MW-19I	MW-19A
Lab ID		50241026004	50241026003
Sample Date		11/5/2019	11/5/2019
Static Water Elevation (ft MSL)		405.23	405.25
<b>Field Parameters</b>	<b>Units</b>		
Temperature	°C	14.34	14.30
Dissolved Oxygen, Field	mg/L	0.55	0.84
Conductivity, Field	uS/cm	835.41	2466.15
ORP, Field	mV	37.07	-79.1
pH, Field	Std. Units	7.18	7.19
<b>Analytical Data</b>			
Antimony, Total	ug/L	<1.0	<1.0
Arsenic, Total	ug/L	<1.0	1.7
Barium, Total	ug/L	75.3	39.9
Beryllium, Total	ug/L	<0.20	<0.20
Boron, Total	ug/L	1490	23400
Cadmium, Total	ug/L	<2.0	<2.0
Calcium, Total	ug/L	122000	579000
Chloride	mg/L	14.7	92.7
Chromium, Total	ug/L	NA	NA
Cobalt, Total	ug/L	1.2	1.4
Fluoride	mg/L	<0.1	<0.1
Lead, Total	ug/L	<10.0	<10.0
Lithium, Total	ug/L	<20.0	<20.0
Mercury, Total	ug/L	NA	NA
Molybdenum, Total	ug/L	<10.0	810
pH at 25 Degrees C	Std. Units	7.1	7.0
Selenium, Total	ug/L	<1.0	<1.0
Sulfate	mg/L	144	1380
Thallium, Total	ug/L	<1.0	<1.0
Total Dissolved Solids	mg/L	517	2260
Total Radium	pCi/L	0.854	1.04

Notes:  
ft MSL: Elevation, feet mean sea level  
°C: Degrees celcius  
uS/cm: microsiemen per centimeter  
umhos/cm: micromhos per centimeter  
NA: Not analyzed  
mV: millivolt  
Std. Units: standard units  
mg/L: milligram per liter  
ug/L: microgram per liter  
pCi/L: picoCurie per liter  
Static water elevation listed for a well may have been collected on a date different than date of well sampling.

**Table 4**  
Summary of Monitoring Results - May 2020  
RWS Type I Landfill  
Indianapolis Power and Light Company  
Petersburg Generating Station  
Petersburg, Indiana  
ATC Project No. 170LF00874

Well ID		MW-1	MW-2R	MW-3	MW-4C	MW-10	MW-11	MW-12	MW-13	MW-14	MW-15	MW-16	MW-19B
Lab ID		50256673001	50257179001	50257179002	50257179003	50256673002	50256673003	50256673004	50256673005	50257173001	50257173002	50257173003	50256676004
Sample Date		5/6/2020	5/13/2020	5/13/2020	5/13/2020	5/5/2020	5/5/2020	5/6/2020	5/5/2020	5/12/2020	5/12/2020	5/12/2020	5/6/2020
Static Water Elevation (ft MSL)		499.51	442.34	441.34	449.14	464.86	485.66	494.07	470.45	428.15	424.75	438.70	410.70
<b>Field Parameters</b>	<b>Units</b>												
Temperature	°C	11.27	12.61	14.56	12.39	14.33	14.63	13.30	10.19	13.79	16.08	14.05	13.32
Dissolved Oxygen, Field	mg/L	7.62	0.11	0.05	0.29	0.06	6.27	9.20	7.19	0.08	1.15	0.07	6.56
Conductivity, Field	uS/cm	876.98	2045.84	2359.05	2081.86	3372.12	963.78	431.13	1914.59	853.08	1800.03	2645.61	548.89
ORP, Field	mV	33.39	-78.55	-90.43	-28.13	-96.58	44.73	40.49	74.84	-97.27	-89.04	-173.77	23.78
pH, Field	Std. Units	6.98	6.85	7.25	6.87	6.80	6.94	6.97	7.23	6.94	6.45	7.16	7.25
<b>Analytical Data</b>													
Antimony, Total	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NA	NA	NA	NA
Arsenic, Total	ug/L	<1.0	14.7	16.2	<1.0	95.4	<1.0	<1.0	<1.0	4.5	<1.0	3.9	<1.0
Barium, Total	ug/L	42.6	42.5	43.7	28.3	68.5	30.7	31.3	19.6	NA	NA	NA	NA
Beryllium, Total	ug/L	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	NA	NA	NA	NA
Boron, Total	ug/L	108	2240	1300	3760	22200	1140	<100	1660	647	1760	3180	347
Cadmium, Total	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	NA	NA	NA	NA
Calcium, Total	ug/L	136000	488000	476000	538000	620000	160000	53100	520000	162000	308000	419000	84300
Chloride	mg/L	3.9	43.7	57.1	38.8	128	1.4	9.9	0.51	3.9	87.4	61.3	9.7
Chromium, Total	ug/L	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	NA	NA	NA	NA
Cobalt, Total	ug/L	<1.0	2.8	2.7	<1.0	3.7	<1.0	<1.0	<1.0	1.1	<1.0	1.2	<1.0
Fluoride	mg/L	0.13	0.12	0.35	0.19	0.48	0.18	0.16	0.72	0.12	0.1	0.12	0.18
Lead, Total	ug/L	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
Lithium, Total	ug/L	<20.0	638	1520	242	56.6	<20.0	<20.0	39.6	<20.0	837	2560	<20.0
Mercury, Total	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	NA	NA	NA	NA
Molybdenum, Total	ug/L	<10.0	11.7	529	<10.0	21.4	<10.0	<10.0	48.9	<10.0	72.9	570	<10.0
pH at 25 Degrees C	Std. Units	7.5	7.3	7.7	7.3	7.2	7.6	7.5	7.7	7.5	7.5	7.5	8.0
Selenium, Total	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	2.7	<1.0	4.3	NA	NA	NA	NA
Sulfate	mg/L	170	1500	1540	1380	1730	398	15.7	1150	231	945	1630	32.6
Thallium, Total	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NA	NA	NA	NA
Total Dissolved Solids	mg/L	579	2170	2420	2380	2800	730	252	1780	682	1670	2560	301
Total Radium	pCi/L	<1.82	1.01	1.8	<1.99	1.21	0.868	<1.56	<1.37	NA	NA	NA	NA

Notes:  
ft MSL: Elevation, feet mean sea level  
°C: Degrees celcius  
uS/cm: microsiemen per centimeter  
umhos/cm: micromhos per centimeter  
NA: Not analyzed  
mV: millivolt  
Std. Units: standard units  
mg/L: milligram per liter  
ug/L: microgram per liter  
pCi/L: picoCurie per liter  
Static water elevation listed for a well may have been collected on a date different than date of well sampling.

**Table 4**  
Summary of Monitoring Results - May 2020  
RWS Type I Landfill  
Indianapolis Power and Light Company  
Petersburg Generating Station  
Petersburg, Indiana  
ATC Project No. 170LF00874

Well ID		MW-19I	MW-19A
Lab ID		50256676003	50256676005
Sample Date		5/6/2020	5/6/2020
Static Water Elevation (ft MSL)		410.50	410.54
<b>Field Parameters</b>	<b>Units</b>		
Temperature	°C	14.42	16.02
Dissolved Oxygen, Field	mg/L	0.10	0.11
Conductivity, Field	uS/cm	743.98	2590.11
ORP, Field	mV	-21.37	-158.74
pH, Field	Std. Units	7.11	7.07
<b>Analytical Data</b>			
Antimony, Total	ug/L	NA	NA
Arsenic, Total	ug/L	<1.0	1.1
Barium, Total	ug/L	NA	NA
Beryllium, Total	ug/L	NA	NA
Boron, Total	ug/L	1070	24500
Cadmium, Total	ug/L	NA	NA
Calcium, Total	ug/L	114000	596000
Chloride	mg/L	12.8	119
Chromium, Total	ug/L	NA	NA
Cobalt, Total	ug/L	<1.0	1.1
Fluoride	mg/L	0.12	<0.10
Lead, Total	ug/L	<10.0	<10.0
Lithium, Total	ug/L	<20.0	22.6
Mercury, Total	ug/L	NA	NA
Molybdenum, Total	ug/L	<10.0	962
pH at 25 Degrees C	Std. Units	7.7	7.5
Selenium, Total	ug/L	NA	NA
Sulfate	mg/L	96.3	1520
Thallium, Total	ug/L	NA	NA
Total Dissolved Solids	mg/L	444	2440
Total Radium	pCi/L	NA	NA

Notes:  
ft MSL: Elevation, feet mean sea level  
°C: Degrees celcius  
uS/cm: microsiemen per centimeter  
umhos/cm: micromhos per centimeter  
NA: Not analyzed  
mV: millivolt  
Std. Units: standard units  
mg/L: milligram per liter  
ug/L: microgram per liter  
pCi/L: picoCurie per liter  
Static water elevation listed for a well may have  
been collected on a date different than date of  
well sampling.

**Table 5**  
**Summary of Monitoring Results - June 2020**  
**RWS Type I Landfill**  
**Indianapolis Power and Light Company**  
**Petersburg Generating Station**  
**Petersburg, Indiana**  
**ATC Project No. 170LF00874**

Well ID		MW-20A	MW-20B	MW-20I
Lab ID		50261089001	50261089003	50261089002
Sample Date		6/26/2020	6/25/2020	6/26/2020
Static Water Elevation (ft MSL)		407.53	406.64	406.62
<b>Field Parameters</b>	<b>Units</b>			
Temperature	°C	17.22	21.75	14.20
Dissolved Oxygen, Field	mg/L	0.13	0.28	0.04
Conductivity, Field	uS/cm	1460	740	660
ORP, Field	mV	-102	153.7	42.3
pH, Field	Std. Units	7.26	6.47	6.86
<b>Analytical Data</b>				
Antimony, Total	ug/L	<1.0	<1.0	<1.0
Antimony, Dissolved	ug/L	<1.0	<1.0	<1.0
Arsenic, Total	ug/L	2.0	5.1	<1.0
Arsenic, Dissolved	ug/L	1.6	<1.0	<1.0
Barium, Total	ug/L	35.2	209	74.4
Barium, Dissolved	ug/L	<50.0	125	66.3
Beryllium, Total	ug/L	<0.20	0.56	<0.20
Beryllium, Dissolved	ug/L	<0.20	<0.20	<0.20
Boron, Total	ug/L	13200	522	276
Boron, Dissolved	ug/L	12400	551	275
Cadmium, Total	ug/L	<2.0	<2.0	<2.0
Cadmium, Dissolved	ug/L	<1.0	<1.0	<1.0
Calcium, Total	ug/L	364000	195000	126000
Calcium, Dissolved	ug/L	350000	185000	120000
Chloride	mg/L	55.0	14.3	8.3
Chromium, Total	ug/L	<10.0	16.8	<10.0
Chromium, Dissolved	ug/L	<20.0	<20.0	<20.0
Cobalt, Total	ug/L	1.2	7.1	2.7
Cobalt, Dissolved	ug/L	<1.0	<1.0	1.7
Fluoride	mg/L	<0.1	<0.1	0.1
Lead, Total	ug/L	<10.0	11.2	<10.0
Lead, Dissolved	ug/L	<10.0	<10.0	<10.0
Lithium, Total	ug/L	<20.0	<20.0	<20.0
Lithium, Dissolved	ug/L	<20.0	<20.0	<20.0
Mercury	ug/L	<2.0	<2.0	<2.0
Mercury, Dissolved	ug/L	<0.2	<0.2	<0.2
Molybdenum, Total	ug/L	401	<10.0	<10.0
Molybdenum, Dissolved	ug/L	378	<10.0	<10.0
pH at 25 Degrees C	Std. Units	7.0	6.6	6.9
Selenium, Total	ug/L	<1.0	2.3	2.9
Selenium, Dissolved	ug/L	<2.0	<2.0	2.9
Sulfate	mg/L	824	80.7	36.1
Thallium, Total	ug/L	<1.0	<1.0	<1.0
Thallium, Dissolved	ug/L	<1.0	<1.0	<1.0
Total Dissolved Solids	mg/L	1320	658	433
Total Radium	pCi/L	<0.571	4.26	<0.608

Notes:

ft MSL: Elevation, feet mean sea level

°C: Degrees celcius

uS/cm: microsiemen per centimeter

umhos/cm: micromhos per centimeter

mV: millivolt

Std. Units: standard units

mg/L: milligram per liter

ug/L: microgram per liter

pCi/L: picoCurie per liter

Static water elevation listed for a well may have been collected on a date different than date of well sampling.

**Table 6A**  
Groundwater Protection Standards - November 2019  
RWS Type I Landfill  
Indianapolis Power and Light Company  
Petersburg Generating Station  
Petersburg, Indiana  
ATC Project No. 170LF00874

Parameter	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Fluoride	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium	Radium 226/228 Combined
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L
GWPS	6	10	2000	4	5	100	6	4	15	40	2	100	50	2	5.5854

Notes:  
ug/L = micrograms per liter (ppb)  
mg/L = milligrams per liter (ppm)  
pCi/L = picoCuries per liter  
GWPS = Groundwater Protection Standard



**Table 6B**  
Groundwater Protection Standards - May 2020  
RWS Type I Landfill  
Indianapolis Power and Light Company  
Petersburg Generating Station  
Petersburg, Indiana  
ATC Project No. 170LF00874

Parameter	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Fluoride	Lead	Lithium	Mercury	Molybdenum	Selenium	Thallium	Radium 226/228 Combined
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	mg/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	pCi/L
GWPS	6	10	2000	4	5	100	6	4	15	40	2	100	50	2	5

Notes:  
ug/L = micrograms per liter (ppb)  
mg/L = milligrams per liter (ppm)  
pCi/L = picoCuries per liter  
GWPS = Groundwater Protection Standard

## FIGURES

Figure 1: Site Location Map

Figure 2: Groundwater Monitoring System – CCR Network Wells and N&E Wells



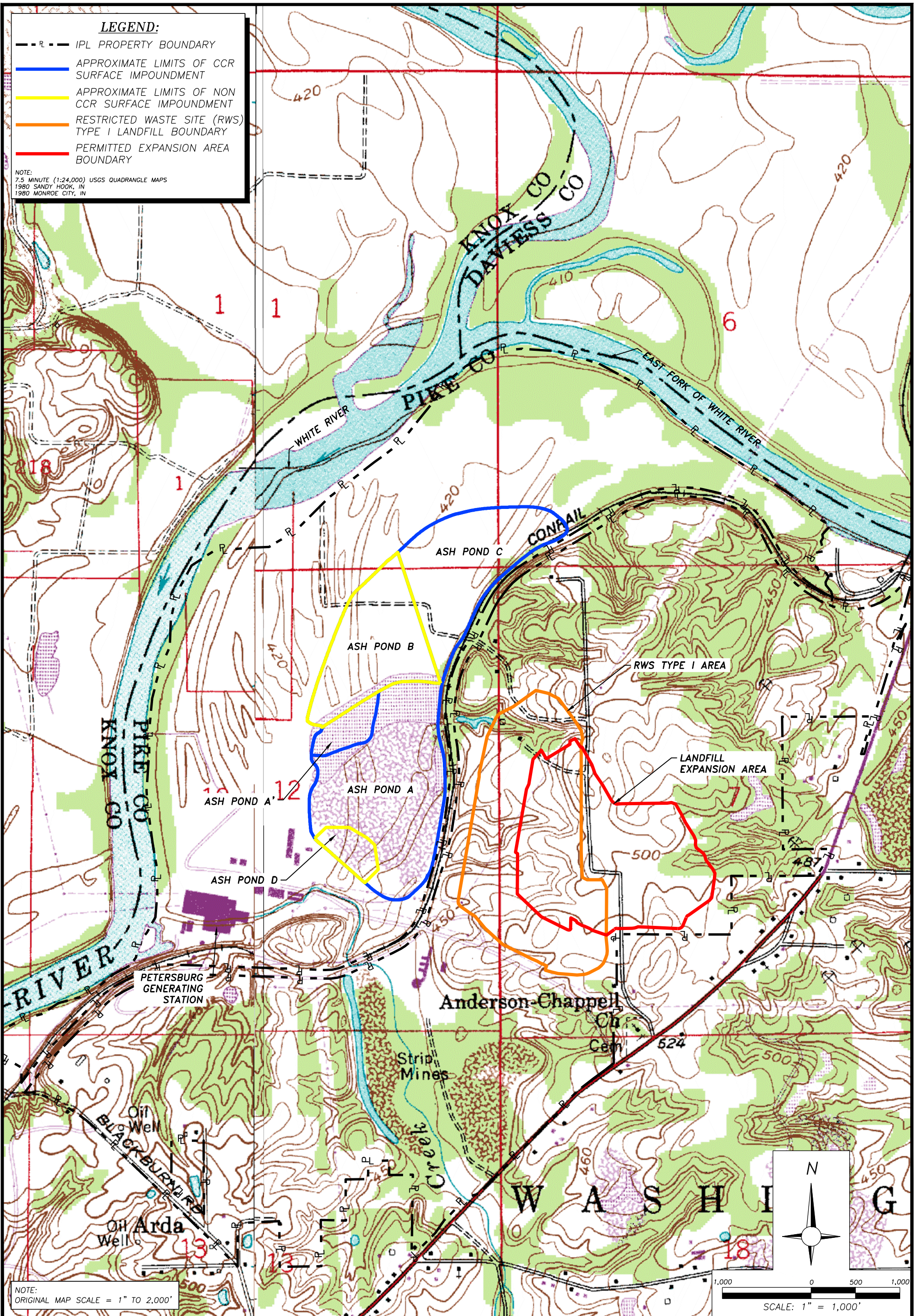


Figure:  1	AS SHOWN	Scale:  1/21	Date:  1/21	<div>SITE LOCATION MAP</div> <div>IPL PETERSBURG GENERATING STATION</div> <div>RWS TYPE I LANDFILL</div> <div>PETERSBURG, INDIANA</div>	Project Number:  17OLF00874		Drn. By:  BH
					Drawing File:  SEE TOP LEFT		Ckd. By:  MB
					<div>ATC</div>		App'd By:
							Ckd. Date:



H:\2021\IPL\PETERSBURG\17OLF00874\17OLF00874-MW SYSTEM.DWG, 11X17L

**LEGEND:**

**MW-1** CCR MONITORING WELL  
Well Identification

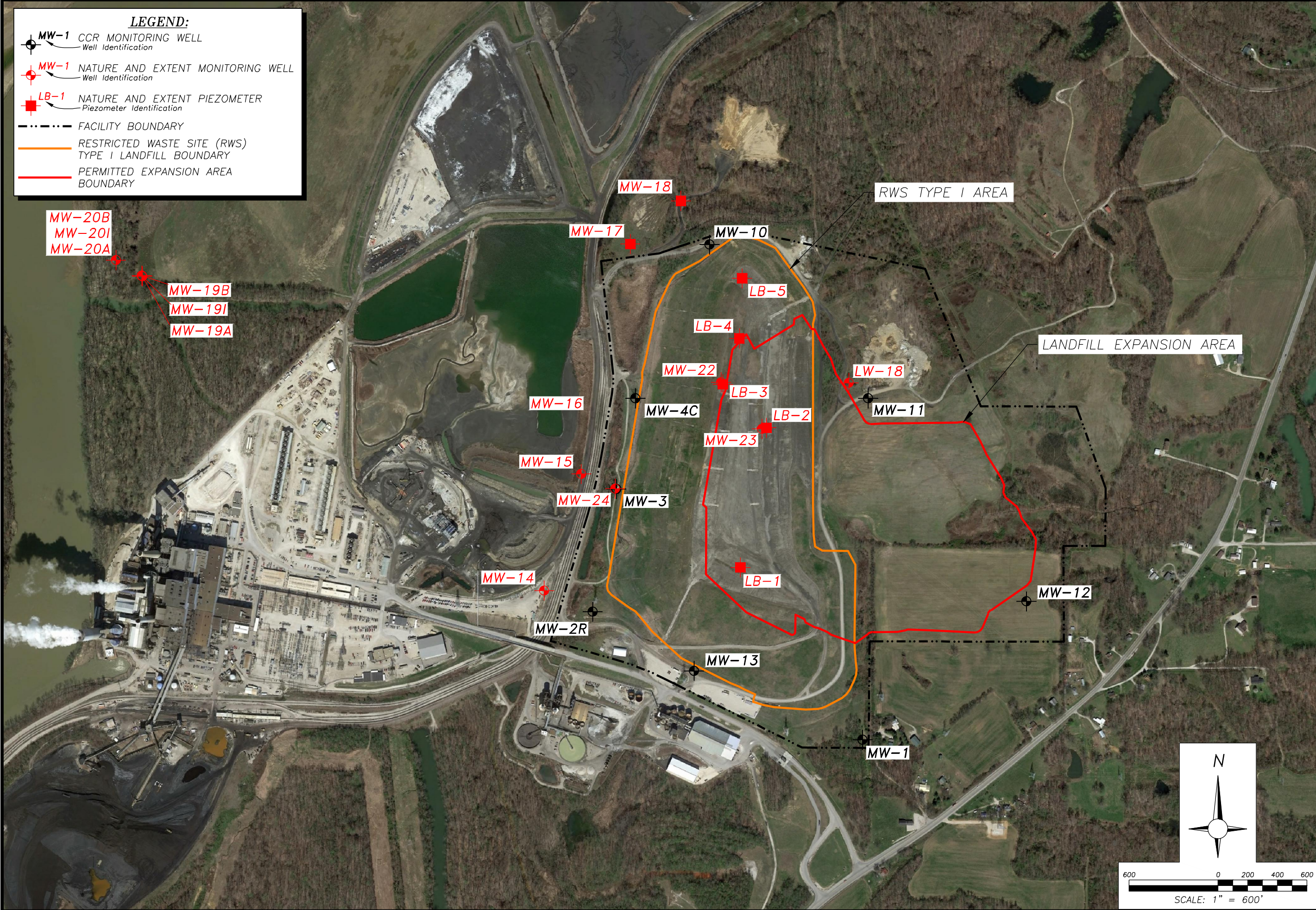
**MW-1** NATURE AND EXTENT MONITORING WELL  
Well Identification

**LB-1** NATURE AND EXTENT PIEZOMETER  
Piezometer Identification

FACILITY BOUNDARY

RESTRICTED WASTE SITE (RWS)  
TYPE I LANDFILL BOUNDARY

PERMITTED EXPANSION AREA  
BOUNDARY



**CCR GROUNDWATER MONITORING SYSTEM**

IPL PETERSBURG GENERATING STATION  
RWS TYPE I LANDFILL  
PETERSBURG, INDIANA

Date: 1/21  
Scale: AS SHOWN  
Figure: 2

Drn. By:	BH	Ckd. By:	MB	App'd By:		
Project Number:	17OLF00705	Drawing File:	SEE LOWER LEFT			