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January 31, 2019

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

Re: **2018 CCR Annual Groundwater Monitoring and Corrective Action Report**
Indianapolis Power & Light Company
Petersburg Generating Station – RWS Type III Landfill
Indianapolis, Indiana
ATC Project No. 170LF00521

Dear Mr. Heger:

ATC Group Services LLC (ATC) has prepared this 2018 CCR Annual Groundwater Monitoring and Corrective Action Report for the Restricted Waste Site (RWS) Type III 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 ash pond system and summarizes information required by § 257.90(e)(1) through § 257.90(e)(5).

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

> *For existing CCR landfills and existing CCR surface impoundments, no later than January 31, 2018, 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 to comply with the CCR Rule:

- Appendix III groundwater monitoring data was evaluated for statistically significant exceedances (SSIs) pursuant to § 257.93(h) and 257.94(e).
- A Notice of Establishment of an Assessment Monitoring Program was completed as required by § 257.94(e)(3), effective July 16, 2018.
- Assessment monitoring sampling events were conducted in May and September 2018 as required by § 257.95. Appendix III constituents were included as part of the May 2018 sampling event during the transition period from detection monitoring to assessment monitoring.
- Groundwater Protection Standards were established in accordance with 40 CFR 257.95(d)(2) and 257.95(h) (Table 4).

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 and associated upgradient and downgradient monitoring wells is provided as Figure 2.

In January 2017, monitoring wells MW-10, MW-11, MW-12, and MW-13 were installed to comply with the CCR Rule. Documentation of the well installation was provided in the Type III RWS Landfill Monitoring Well Installation Coal Combustion Residuals (CCR) Rule report dated June 19, 2017. In addition, monitoring well MW-2 was abandoned and an offset well, monitoring well MW-2R, was installed in February 2017. Documentation of the well abandonment/installation was provided in the Monitoring Well MW-2 Abandonment and MW-2R "Offset" Installation Report dated June 20, 2017.

§ 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;

No monitoring wells were installed or decommissioned during this reporting period. The CCR groundwater monitoring system at the Petersburg Landfill consists of eight (8) monitoring wells: MW-1, MW-2R, MW-3, MW-4C, MW-10, MW-11, MW-12, and MW-13.

The groundwater monitoring network wells were installed between 1986 and 2017 and are installed in unconsolidated deposits, and weathered bedrock. Monitoring well installation complies with the requirements of Federal CCR Rule § 257.91. Monitoring wells MW-10, MW-11, MW-12, and MW-13 were installed to strictly comply with the requirements described in the CCR Rule. The location of the CCR monitoring well network is depicted on Figure 2.

§ 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 well, sampling dates, and designation of whether samples were required by the detection or assessment monitoring program. Groundwater analytical results for samples collected during the 2018 sampling events are summarized in Table 2 and Table 3.

§ 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);

Consistent with § 257.90(e), this annual report documents activities conducted during the 2018 calendar year at the CCR management units subject to the Rule.

Pursuant to 257.93(h) and 257.94(e), the statistical analysis of the initial minimum eight rounds of Appendix III groundwater sampling data was completed in January 2018. Based on the analysis, SSIs over background were detected as follows:

- Boron, total
- Calcium
- Chloride
- Sulfate
- Total Dissolved Solids

Pursuant to 40 CFR 257.94(e)(2), an Alternative Source Demonstration was initiated to evaluate whether a source other than the facility was causing the SSIs; however, a successful demonstration was not completed.

Pursuant to 40 CFR 257.94(e)(2), 257.94(e)(3) and 257.95(b), the facility established an Assessment Monitoring Program in accordance with the requirements of § 257.95 on July 16, 2018.

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

In accordance with §257.95(b), Appendix IV assessment monitoring was completed in May 2018. In accordance with §257.95(d), a resampling assessment monitoring event was completed in September 2018. Analytical results are summarized in Tables 2 and 3. Table 4 summarizes the groundwater protection standards established in accordance with § 257.95(d)(2) and § 257.95(h). Background analytical data was previously provided in the CCR Annual Groundwater Monitoring and Corrective Action Report dated January 31, 2018.

Projected key activities for the upcoming year include the following:

- Completion of statistical evaluation to determine whether there is a statistically significant exceedance of groundwater protection standards for Appendix IV constituents in accordance with § 257.95(g) and 257.93(h).
- Pursuant to § 257.95, annual and semi-annual assessment monitoring sampling events.

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

Sincerely,

Mark E. Breting

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

John R. Noel

John R. Noel, L.P.G.
Principal Geologist

Copies: Ms. Nysa Hogue
Mr. Wil Teague

TABLES

Table 1: Well Sampling Summary
Table 2: Summary of Monitoring Results – May 2018
Table 3: Summary of Monitoring Results – September 2018
Table 4: Groundwater Protection Standards Summary

Table 1
Well Sampling Summary
RWS Type III Landfill
Indianapolis Power and Light Company
Petersburg Generating Station
Petersburg, Indiana
ATC Project No. 170LF00521

Identification	Date Installed	Upgradient, Background, or Downgradient	Number of Samples	Sample Date	Detection or Assessment Monitoring
MW-1	11/21/1986	Upgradient	2	5/10/2018 9/12/2018	Assessment
MW-2 (2R)	2/2017 (MW-2R)	Downgradient	2	5/9/2018 9/12/2018	Assessment
MW-3	1986	Downgradient	2	5/9/2018 9/12/2018	Assessment
MW-4C	9/29/1992	Downgradient	2	5/9/2018 9/12/2018	Assessment
MW-10	1/30/2017	Downgradient	2	5/9/2018 9/12/2018	Assessment
MW-11	1/25/2017	Downgradient	2	5/9/2018 9/12/2018	Assessment
MW-12	1/26/2017	Downgradient	2	5/8/2018 9/12/2018	Assessment
MW-13	1/31/2017	Downgradient	2	5/9/2018 9/12/2018	Assessment

Table 2
Summary of Monitoring Results - May 2018
RWS Type III Landfill
Indianapolis Power and Light Company
Petersburg Generating Station
Petersburg, Indiana
ATC Project No. 170LF00521

Well ID		MW-1	MW-2R	MW-3	MW-4C	MW-10	MW-11	MW-12	MW-13
Microbac Lab ID		L8E0719-01	L8E0723-01	L8E0723-02	L8E0723-03	L8E0719-02	L8E0719-03	L8E0719-04	L8E0719-05
Sample Date		5/10/2018	5/9/2018	5/9/2018	5/9/2018	5/9/2018	5/9/2018	5/8/2018	5/9/2018
Static Water Elevation (ft MSL)		496.75	442.44	435.43	447.49	464.12	484.55	488.22	468.93
Field Parameters									
Temperature	°C	14.67	16.47	16.45	15.29	17.75	18.28	16.83	13.15
Dissolved Oxygen, Field	mg/L	8.03	0.17	0.17	0.42	0.50	6.60	9.51	9.66
Conductivity, Field	µS/cm	910.80	2635.52	2895.14	2717.28	2909.91	1142.23	404.70	2012.27
ORP, Field	mV	86.16	-76.34	23.83	24.27	-90.76	4.08	46.56	56.35
pH, Field	Std. Units	7.20	7.00	7.09	7.36	6.84	7.35	7.42	7.42
Analytical Data									
Antimony, Total	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Arsenic, Total	mg/L	<0.0050	0.031	<0.0050	<0.0050	0.047	<0.0050	<0.0050	<0.0050
Barium, Total	mg/L	0.047	0.073	0.038	0.014	0.068	0.027	0.038	<0.010
Beryllium, Total	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Boron, Total	mg/L	<0.50	2.2	1.2	4.7	37	1.5	<0.50	1.2
Cadmium, Total	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Calcium, Total	mg/L	150	450	470	570	630	170	48	550
Chromium, Total	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cobalt, Total	mg/L	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Lead, Total	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Lithium, Total	mg/L	<0.10	0.96	2.6	0.25	<0.10	<0.10	<0.10	<0.10
Mercury, Total	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Molybdenum, Total	mg/L	<0.10	<0.10	0.39	<0.10	<0.10	<0.10	<0.10	<0.10
Selenium, Total	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0062	<0.0050	<0.0050
Thallium, Total	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Radium-Combined	pCi/L	<1	2.2	2.07	<1.0	1.72	<1	<1	2.21
Chloride	mg/L	<5.0	30	48	30	36	<5.0	7.3	<5.0
Fluoride	mg/L	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<0.50	<5.0
pH	SU	6.93	6.73	7.23	6.91	6.67	6.97	6.97	7.08
Solids, Dissolved	mg/L	620	2400	2700	2600	2700	920	300	2000
Sulfate	mg/L	140	870	800	880	740	390	18	640

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 3
Summary of Monitoring Results - September 2018
RWS Type III Landfill
Indianapolis Power and Light Company
Petersburg Generating Station
Petersburg, Indiana
ATC Project No. 170LF00521

Well ID		MW-1	MW-2R	MW-3	MW-4C	MW-10	MW-11	MW-12	MW-13
Microbac Lab ID		L8I0806-01	L8I0802-01	L8I0802-02	L8I0802-03	L8I0806-02	L8I0806-03	L8I0806-04	L8I0806-05
Sample Date		9/12/2018	9/12/2018	9/12/2018	9/12/2018	9/12/2018	9/12/2018	9/12/2018	9/12/2018
Static Water Elevation (ft MSL)		496.51	437.4	440.75	448.83	461.90	482.27	487.31	467.47
Field Parameters									
Temperature	°C	14.25	19.42	19.42	16.08	17.89	18.29	16.33	17.91
Dissolved Oxygen, Field	mg/L	4.34	0.29	0.16	0.11	0.16	5.94	9.40	5.63
Conductivity, Field	µS/cm	688.08	2370.99	2616.14	2329.47	2558.78	982.21	333.14	1958.29
ORP, Field	mV	103.55	-62.19	38.91	81.22	-110.88	164.54	9.40	102.14
pH, Field	Std. Units	6.99	6.81	7.18	6.90	6.90	6.92	6.83	7.00
Analytical Data									
Antimony, Total	mg/L	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0014	<0.0050
Arsenic, Total	mg/L	<0.0012	0.011	<0.0050	<0.0012	0.063	<0.0012	<0.0050	<0.0012
Barium, Total	mg/L	0.049	0.044	0.045	0.029	0.064	0.03	0.026	0.027
Beryllium, Total	mg/L	<0.00065	<0.00065	<0.00065	<0.00065	<0.00065	<0.00065	<0.00065	<0.00065
Boron, Total	mg/L	<0.50	2.3	1.0	4.7	<5.0	1.4	<0.50	2.4
Cadmium, Total	mg/L	<0.00055	<0.00055	<0.00055	<0.00055	<0.00055	<0.00055	<0.00055	<0.00055
Calcium, Total	mg/L	130	430	390	520	<5.0	160	44	580
Cobalt, Total	mg/L	<0.0036	<0.0036	<0.0036	<0.0036	0.0039	<0.0036	<0.0036	<0.0036
Lithium, Total	mg/L	<0.10	0.80	2.6	0.28	<0.10	<0.10	<0.10	<0.10
Molybdenum, Total	mg/L	<0.10	<0.10	0.52	<0.10	<0.10	<0.10	<0.10	<0.10
Selenium, Total	mg/L	<0.00090	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.011
Thallium, Total	mg/L	<0.00060	0.0023	<0.00060	<0.00060	<0.00060	<0.00060	0.0028	<0.0010
Radium-Combined	pCi/L	<1.0	<1.0	<1.0	<1.0	1.19	<1.0	<1.0	<1.0
Chloride	mg/L	7.7	46	74	32	62	2.7	7.6	<5.0
Fluoride	mg/L	<0.60	<0.60	<0.60	<0.60	<0.60	<0.30	<0.60	<0.60
pH	SU	6.78	6.61	7.13	6.73	6.72	6.88	<1.0 E1, H1	7.01
Solids, Dissolved	mg/L	690	2300	2500	2700	2600	930	390	2200
Sulfate	mg/L	110	970	1100	980	830	420	13	990

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 4
Groundwater Protection Standards
RWS Type III Landfill
Indianapolis Power and Light Company
Petersburg Generating Station
Petersburg, Indiana
ATC Project No. 170LF00521

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	6.1343

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: CCR Groundwater Monitoring System

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LEGEND:

- IPL PROPERTY BOUNDARY
- APPROXIMATE LIMITS OF CCR SURFACE IMPOUNDMENT
- RESTRICTED WASTE SITE (RWS) TYPE III LANDFILL BOUNDARY
- PERMITTED EXPANSION AREA BOUNDARY

NOTE:
7.5 MINUTE (1:24,000) USGS QUADRANGLE MAPS
1980 SANDY HOOK, IN
1980 MONROE CITY, IN

KNOX CO
DAVIESS CO
PIKE CO
WHITE RIVER
EAST FORK OF WHITE RIVER
ASH POND C
ASH POND B
ASH POND A
ASH POND A'
ASH POND D
RWS TYPE III AREA
LANDFILL EXPANSION AREA
CONRAIL
PETERSBURG GENERATING STATION
Anderson-Chappell Ch
Cem
Strip Mines
Oil Well
BLACKBURN RD
Arda
Creek
W A S H I N G

SCALE: 1" = 1,000'

SITE LOCATION MAP

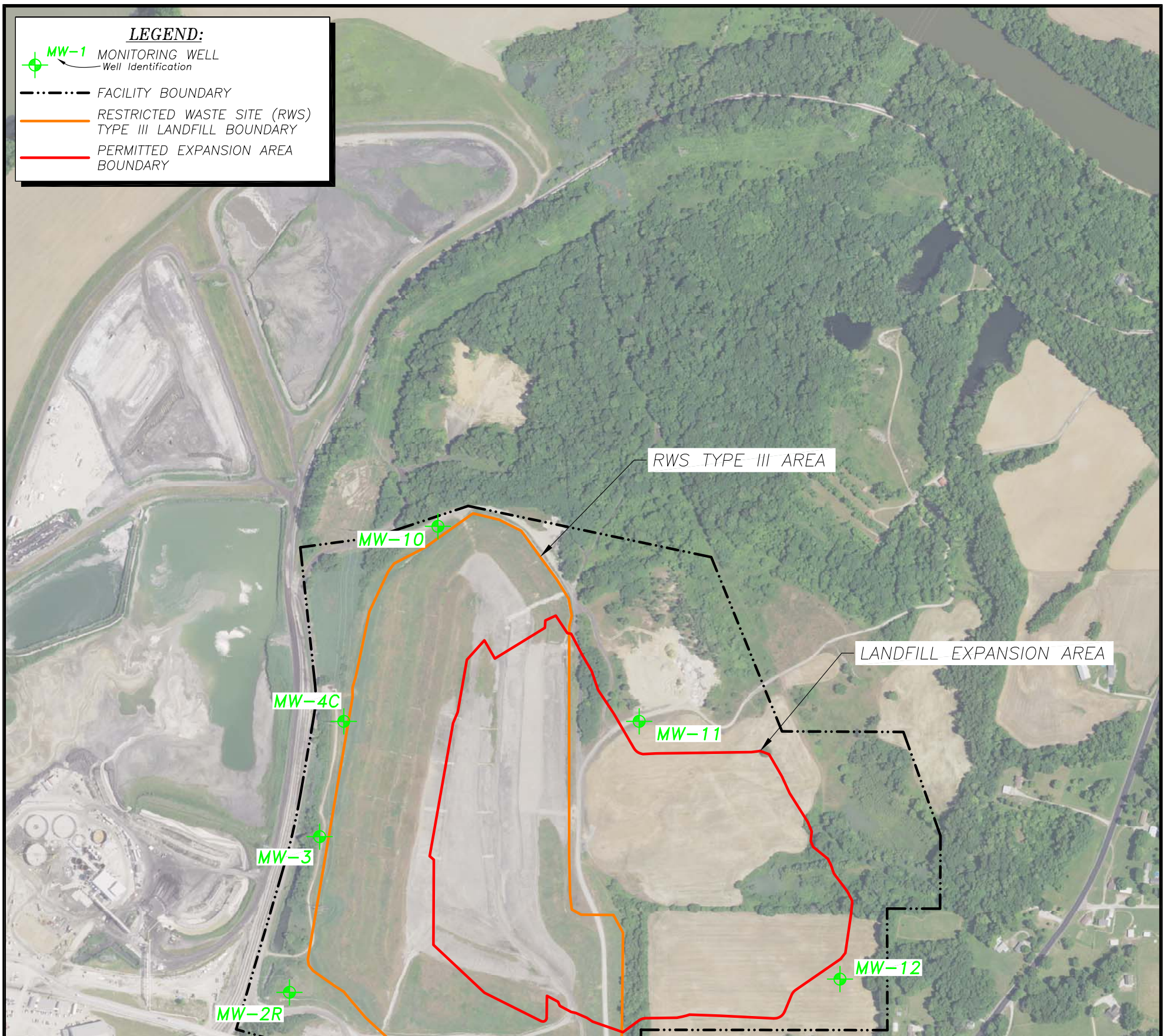
IPL PETERSBURG GENERATING STATION
RWS TYPE III LANDFILL
PETERSBURG, INDIANA

Figure: 1
Scale: AS SHOWN
Date: 12/17

Project Number: 170LF00306
Drawing File: SEE TOP LEFT
Drn. By: RL
Ckd. By: SB
App'd By:
Ckd. Date:

ATC

H:\2017\IPL\170LF00306\170LF00306-CCR GW MONITORING SYSTEM MAP.DWG, 11X17P



CCR GROUNDWATER MONITORING SYSTEM

IPL PETERSBURG GENERATING STATION
RWS TYPE III LANDFILL
PETERSBURG, INDIANA

Figure: 2
Scale: AS SHOWN
Date: 1/18

Project Number: 170LF00306	Drn. By: RL
Drawing File: SEE TOP LEFT	Ckd. By: MB
ATC	App'd By:
	Ckd. Date: