

**City Water, Light & Power  
Coal Combustion Residuals Surface Impoundments**

**Annual Groundwater Monitoring and  
Corrective Action Report  
Year Ending December 31, 2022**

**January 2023**



*Prepared for:*  
City Water, Light & Power  
201 E. Lake Shore Drive  
Springfield, Illinois

*Prepared by:*



3300 Ginger Creek Drive, Springfield, IL 62711 | 217.787.2334

ILLINOIS | MISSOURI | INDIANA

**TABLE OF CONTENTS**

---

1. INTRODUCTION ..... 1

2. GROUNDWATER MONITORING PROGRAM..... 4

3. 40 CFR 257.90(e): KEY ACTIONS, PROBLEMS ENCOUNTERED, AND KEY ACTIVITIES FOR 2022 ..... 4

    3.1 Key Actions..... 4

        3.1.1 Assessment Monitoring ..... 4

        3.1.2 Assessment Monitoring Investigation ..... 5

    3.2 Assessment of Corrective Measures..... 5

    3.3 Problems Encountered ..... 6

    3.4 Key Activities for Upcoming Year (2023)..... 6

4. 40 CFR 257.90(e)(1) – (5) ..... 6

5. CONCLUSION..... 7

**FIGURES**

---

- FIGURE 1: SITE LOCATION
- FIGURE 2: SITE DETAILS
- FIGURE 3: ASSESSMENT MONITORING INVESTIGATION

**TABLES**

---

- TABLE 1: 2022 ASSESSMENT MONITORING RESULTS

# 1. INTRODUCTION

---

In accordance with 40 CFR 257.90(e), provided herein is the Annual Groundwater Monitoring and Corrective Action Report for year ending December 31, 2022.

City Water, Light and Power (CWLP) owns and operates two (2) existing coal combustion residual (CCR) surface impoundments. The CWLP CCR surface impoundments are located north and east of the former Lakeside Power Generating Station and Dallman Power Generating Station in the Eastern ½ of Section 12, Township 15 North, Range 5 West, in Springfield, Illinois (see Figure 1). These CCR surface impoundments are identified as the Lakeside Ash Pond and the Dallman Ash Pond (see Figure 2).

The former Lakeside Power Generating Station and Dallman Power Generating Station are situated on the northwestern bank of Lake Springfield in Springfield, Illinois. The Lakeside Ash Pond is immediately north of Spaulding Dam at the northern end of Lake Springfield. The Dallman Ash Pond is immediately northwest of the Lakeside Ash Pond. Placed into service prior to 1958, the Lakeside Ash Pond is primarily a diked embankment. The Lakeside Ash Pond consists of four separate ponds (i.e., three lime softening ponds and a settling pond) totaling approximately 35.0 acres. The Lakeside Ash Pond ceased receiving ash in 2009. The Dallman Ash Pond was placed into service in approximately 1976 and is also a diked embankment. The Dallman Ash Pond is approximately 34.5 acres and ceased receiving ash in 2021.

## **Status of the Groundwater Monitoring and Corrective Action Programs**

Pursuant to 40 CFR 257.90(e)(6), the annual report shall provide an overview of the current status of groundwater monitoring and corrective action programs for the subject CCR unit, to include:

1. 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;

The CWLP facility commenced the 2022 reporting year under the assessment monitoring program requirements of §257.95.

2. 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;

The CWLP facility completed the 2022 reporting year under the assessment monitoring program requirements of §257.95.

3. 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

A statistically significant increase (SSI) is only concluded if both samples, in a series of two, exceeds the calculated upper prediction limit (UPL) or background and maximum concentration level (MCL). The Appendix III constituents that exhibited an SSI are as follows:

<i>Appendix III Parameter</i>	<i>AP-1</i>	<i>AP-2</i>	<i>AP-3</i>	<i>AP-4</i>	<i>AP-5</i>	<i>AP-6</i>	<i>AP-7</i>	<i>RW-3</i>
<i>Boron, total</i>	X	X	X					
<i>Calcium, total</i>	X	X						
<i>Chloride, total</i>	X	X	X			X	X	X
<i>pH</i>	X	X	X					
<i>Sulfate, total</i>	X	X	X					
<i>TDS</i>	X	X	X					X

- b. Provide the date when the assessment monitoring program was initiated for the CCR unit.

The assessment monitoring program for the CCR unit commenced with the First Quarter 2018 (February 2018) groundwater sampling event. Subsequent groundwater monitoring has been completed under the assessment monitoring program.

4. 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;

A statistically significant increase (SSI) is only concluded if both samples in a series of two exceeds the calculated upper prediction limit (UPL) or background) and maximum concentration level (MCL). Exceedances of the groundwater protection standard (0.0724 mg/L) for total arsenic occurred at downgradient groundwater monitoring well RW-3. The concentrations of total arsenic reported for the first and third quarters 2022 were 0.178, and 0.11 mg/L.

Groundwater monitoring wells AP-6 and AP-7 were installed at downgradient locations to characterize the nature and extent of the total arsenic concentrations at well RW-3. Wells AP-6 and AP-7 are located approximately 83 feet and 298 feet downgradient of RW-3. Well AP-7 is located on the north side of Sugar Creek.

The total arsenic concentrations at these downgradient locations have not exceeded the groundwater protection standard for total arsenic with concentrations ranging from non-detect (<0.025 mg/L) to just above the detection limit (0.0468 mg/L). As a result, the downgradient extent of the reported total arsenic exceedance has been characterized.

- b. Provide the date when the assessment of corrective measures was initiated for the CCR unit;

An assessment of corrective measures was initiated in April 2019 for total arsenic SSI at RW-3. Subsequent investigation of the SSI completed as an alternate source demonstration pursuant to §257.95(g)(3)(ii) demonstrated compliance with the groundwater protection standard as the subject concentration was below the detection limit (and groundwater protection limit) during the August 2019 sampling event.

The total arsenic concentration at RW-3 was confirmed to exceed the groundwater protection standard during the August 2020 semi-annual sampling event. Plans for additional assessment monitoring were proposed in late 2020. The assessment included installation and sampling of several wells. As a result of the additional assessment

pursuant to the new State CCR regulation (35 Ill. Adm. Code 845.650(d)(1)), the assessment of corrective measures was restarted in July of 2021.

- c. Provide the date when the public meeting was held for the assessment of corrective measures for the CCR unit; and

CWLP initiated assessment of potential corrective action measures in April of 2019. However, the assessment of corrective measures was halted as the following sampling event demonstrated compliance with the groundwater protection standards. As stated above, the process was restarted in July 2021. A preliminary Assessment of Corrective Measures report was placed on CWLP's public access website on October 25, 2021 for review prior to two public meetings which occurred on December 2, 2021, pursuant to State regulations. Based on the assessment of closure alternatives it has been determined that closure-in-place with a final cover system is most appropriate.

- d. Provide the date when the assessment of corrective measures was completed for the CCR unit.

Both an assessment of corrective measures and a closure analysis were included in the assessment of alternatives application submitted to the Illinois EPA on February 1, 2022 as part of the closure construction permit application prepared pursuant to Section 845.700(c). The application contains a final closure plan in accordance with the application schedule under Section 845.700(h). This permit application is currently under review by the Illinois EPA, The assessment of corrective measures will be complete when the Illinois EPA approves the application via the permitting process pursuant to 35 Ill. Adm. Code 845.

5. Whether a remedy was selected pursuant to §257.97 during the current annual reporting period, and if so, the date of remedy selection; and

Based on the October 25, 2021 Closure Alternatives Analyses prepared to address the Illinois EPA requirements of 35 Ill. Adm. Code 845, and two public meetings held on December 2, 2021, the selected remedy is closure of the CCR ash ponds-in place by installation of a final cover system.

6. Whether remedial activities were initiated or are ongoing pursuant to §257.98 during the current annual reporting period.

Pursuant to 40 CFR 257.95(g)(5) the surface impoundments shall be closed, which is the long term corrective measures. In accordance with the 35 Ill. Adm. Code 845.660, CWLP has prepared an assessment of corrective measures which includes contaminant transport modeling to evaluate closure-in-place. The model results demonstrate the final cover design will reduce surface water infiltration into the ash resulting in reduction of the liquid head levels within the ash, thereby reducing solute movement beneath the impoundments.

A public meeting was held December 2, 2021 for the assessment of corrective measures for the CCR unit. Documentation of the public meeting was entered into the facility record, dated December 17, 2021. Both of these assessments were submitted to the Illinois EPA on February 1, 2022 as part of the closure construction permit application prepared pursuant to Section 845.700(c), and containing a final closure plan in accordance with the application schedule under Section 845.700(h). This permit application is currently under review by the Illinois EPA.

In April 2019, CWLP submitted a notification of intent to comply with the Alternative Closure Requirements 257.103(a) since no alternative disposal capacity is currently available. Since then, CWLP has shut down Dallman Units 31, 32 and will be shutting down Dallman Unit 33 no later than September 15, 2023. Once these Dallman units are shutdown, all fly and bottom ash will cease being sent to the Dallman Ash pond. Additionally, CWLP will commence with the permanent closure of the Dallman and Lakeside ash impoundments once the Dallman Unit 33 is shutdown and the CWLP water purification plant limesludge ponds are relocated. Construction of the limesludge ponds commenced during the spring of 2022. Completion of the ponds is expected to occur no later than October of 2023.

CWLP has initiated the alternative closure requirements in accordance with 40 CFR 257.103(a)(I). An annual progress report was submitted in May of 2022 updating the status of the impoundments.

CWLP will permanently close the Dallman and Lakeside ash impoundments by grading and capping the ash impoundments. Groundwater monitoring will continue following the requirements outlined in 40 CFR 257 Subpart D or as otherwise required by 35 Ill. Adm. Code 845.

## **2. GROUNDWATER MONITORING PROGRAM**

---

As required by §257.90(b), CWLP prepared and placed into the facility record a Groundwater Monitoring Program for the CCR surface impoundments in October 2017. The current monitoring network includes two upgradient wells (wells AP-4 and AP-5) and six downgradient wells (AP-1, AP-2, AP-3, AP-6, AP-7 and RW-3). The well locations are depicted in Figure 3.

A Groundwater Monitoring System Certification has been provided for the Groundwater Monitoring Program, placed in the site record and uploaded to the facility website - <https://www.cwlp.com/CCRCompliance.aspx>.

The following sections of the report address the annual groundwater monitoring and corrective action report requirements outlined in 40 CFR 257.90(e).

## **3. 40 CFR 257.90(E): KEY ACTIONS, PROBLEMS ENCOUNTERED, AND KEY ACTIVITIES FOR 2022**

---

### **3.1 Key Actions**

The following items identify key actions that occurred in 2022 specifically related to the Groundwater Monitoring Program.

#### **3.1.1 Assessment Monitoring**

In accordance with § 257.95(b), an Assessment Monitoring Program was implemented in February 2018 in response to the statistically significant increase (SSI) over background concentrations for one or more parameters listed in Part 257, Appendix III. Pursuant to §257.95(b), the Assessment Monitoring Program requires groundwater monitoring for all constituents listed in Appendix III and Appendix IV be monitored until detection monitoring

resumes. Notification that an Assessment Monitoring Program had been established occurred in February, 2018. Groundwater protection standards were established for the detected Appendix IV parameters in July, 2018.

Assessment monitoring, which includes both Appendix III and IV List parameters, continued throughout 2022 for all wells in the monitor well network. The monitoring data is provided in Table 1. Appendix III and Appendix IV parameters continue to be monitored in all wells pursuant to §257.95(f).

### **3.1.2 Assessment Monitoring Investigation**

Groundwater samples collected first quarter 2022 (February 16, 2022) and third quarter 2022 (August 23, 2022) exhibited exceedances of the groundwater protection standard for total arsenic at well RW-3. However, assessment well AP-6, located approximately 83 feet downgradient of RW-3, and compliance boundary well AP-7, located approximately 298 feet downgradient of RW-3, exhibited no exceedance of the groundwater protection standard.

Assessment monitoring data collected for the first and third quarter of 2022 are provided in tabular format in Table 1. The table includes the sample dates and identifies the Part 257 Appendix III and Appendix IV parameters.

In accordance with § 257.95(b), an Assessment Monitoring Program was implemented in February 2018 in response to the statistically significant increase (SSI) over background concentrations. Subsequent investigation of the SSI completed as an alternate source demonstration pursuant to §257.95(g)(3)(ii) demonstrated compliance with the groundwater protection standard. As part of the alternate source investigation, two additional wells were added to the monitoring program, AP-6 and AP-7 (see Figure 3). These wells continue to be monitored on a semi-annual basis.

Assessment monitoring shall continue at the CWLP CCR surface impoundments pursuant to §257.95(f).

### **3.2 Assessment of Corrective Measures**

As presented in Section 1, pursuant to 40 CFR 257.95(g)(5) the surface impoundments must either retrofit and/or close, which are the long term corrective measures. The initial assessment of corrective measures (i.e., closure-in-place and closure-by-removal) included contaminant transport modeling to evaluate differing final cover designs. The model results demonstrate final cover designs will reduce surface water infiltration into the ash resulting in reduction of the liquid head levels within the ash, thereby reducing solute movement beneath the impoundments.

CWLP has initiated the alternative closure requirements in accordance with 40 CFR 257.103(a)(1) and has submitted an annual progress report in May of 2022 updating the status of the impoundments.

CWLP will permanently close the Dallman and Lakeside ash impoundments by grading and capping the ash impoundments. Groundwater monitoring will continue following the requirements outlined in 40 CFR 257 Subpart D. Once the ash impoundments are capped, it will take approximately 13 years to achieve the groundwater protection standards.

### 3.3 Problems Encountered

All activities which occurred in 2022 were discussed in Section 3.1 and 3.2 above. No problems were encountered.

### 3.4 Key Activities for Upcoming Year (2023)

Assessment monitoring shall continue at the CWLP CCR surface impoundments pursuant to §257.95(f).

## 4. 40 CFR 257.90(E)(1) – (5)

---

Additional requirements for the Annual Groundwater Monitoring and Corrective Action Report are detailed in 40 CFR 257.90(e)(1)-(5). Each of the requirements is reproduced below along with the response.

- (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.

A map of the key features required above is provided as Figure 2 to this annual report.

- (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 wells were installed or decommissioned from the 40 CFR Part 257 groundwater monitoring system in 2022.

- (3) All data collected as part of the detection or assessment monitoring programs in 2022.

Assessment monitoring data collected for 2022 is provided in Table 1. The table includes the sample dates and identifies the Appendix III and Appendix IV parameters.

- (4) Discussion of any transition between monitoring programs including the dates of the transition and the identification of the constituent(s) that necessitated the initiation of assessment monitoring.

In accordance with §257.95, an Assessment Monitoring Program was implemented in February 2018 in response to the statistically significant increase (SSI) over background levels for one or more parameters listed in 40 CFR Part 257, Appendix III. Assessment monitoring was conducted for wells contained in the groundwater monitoring system in 2022.

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

- a. Alternative monitoring frequency certification in accordance with §§257.94(d)(3) and 257.95(c)(3).

No alternative monitoring frequency has been implemented at this time. Therefore, no certification is required.

- b. Any alternate source demonstration completed in response to any statistically significant increases completed during the previous year in accordance with §257.94(e)(2) and §257.95(g)(3)(ii).

No alternate source demonstrations were conducted in 2022.

- c. Assessment of corrective measures completed during the previous year in accordance with §257.96(a).

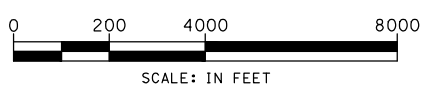
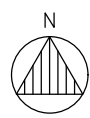
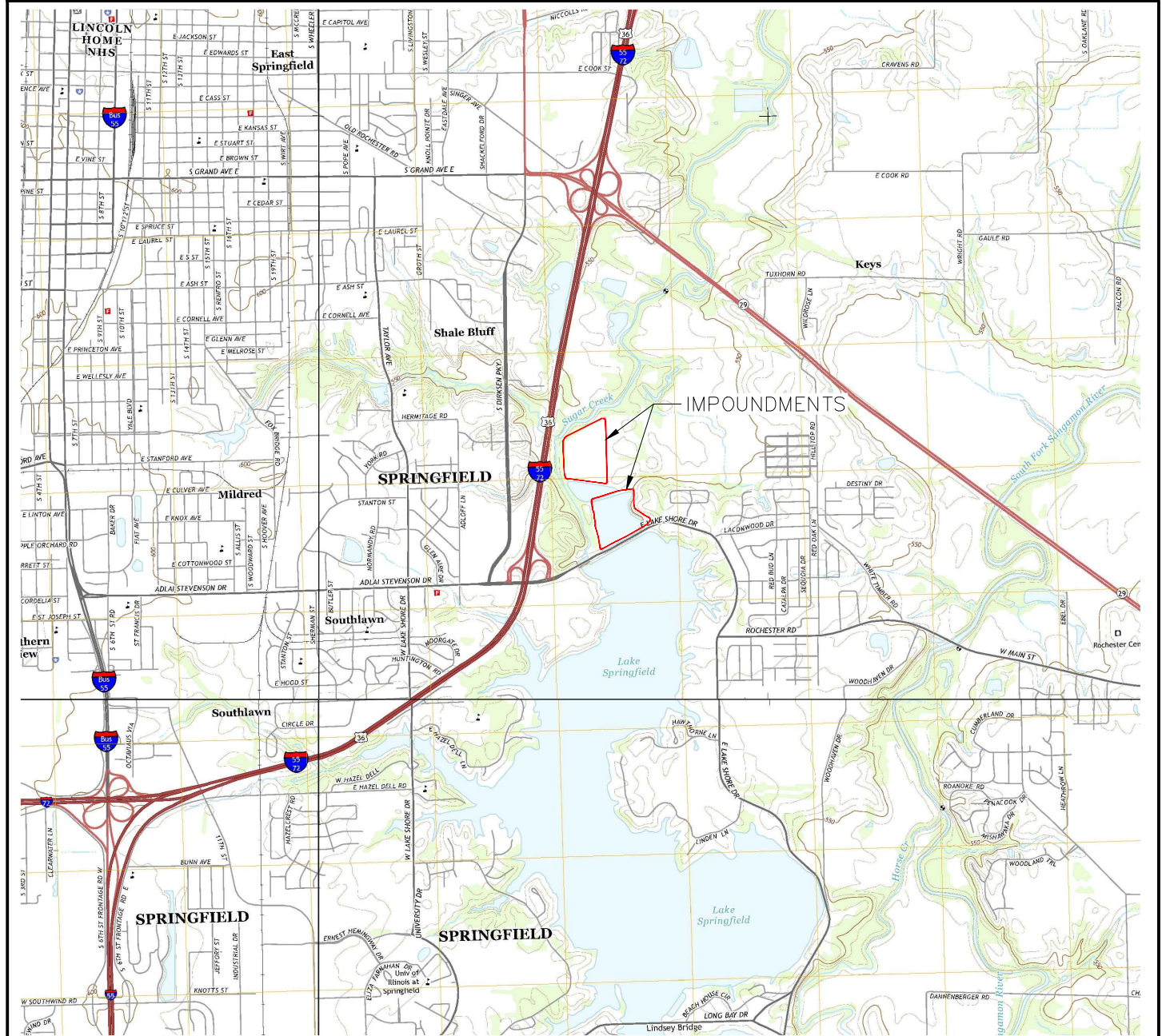
An assessment of corrective measures was drafted in October 2021 and discussed in two public meetings in December 2021 pursuant to requirements of State regulations 35 Ill. Adm. Code 845. Both of these assessments were submitted to the Illinois EPA on February 1, 2022 as part of the closure construction permit application prepared pursuant to Section 845.700(c), and containing a final closure plan in accordance with the application schedule under Section 845.700(h). This permit application is currently under review by the Illinois EPA,

## 5. CONCLUSION

---

This annual groundwater monitoring and corrective action report has been provided in accordance with §257.90(e). The annual report for monitoring year 2023 will be provided by January 31, 2024.

## FIGURES



NOTE:  
BACKGROUND IMAGE COURTESY OF  
UNITED STATES GEOLOGICAL SURVEY.

**ANDREWS  
ENGINEERING**  
3300 GINGER CREEK DRIVE  
SPRINGFIELD, ILLINOIS 62711-7233  
PH (217) 787-2334 WWW.ANDREWS-ENG.COM  
PONTIAC, IL • LOMBARD, IL • INDIANAPOLIS, IN • WARRENTON, MD

SITE LOCATION

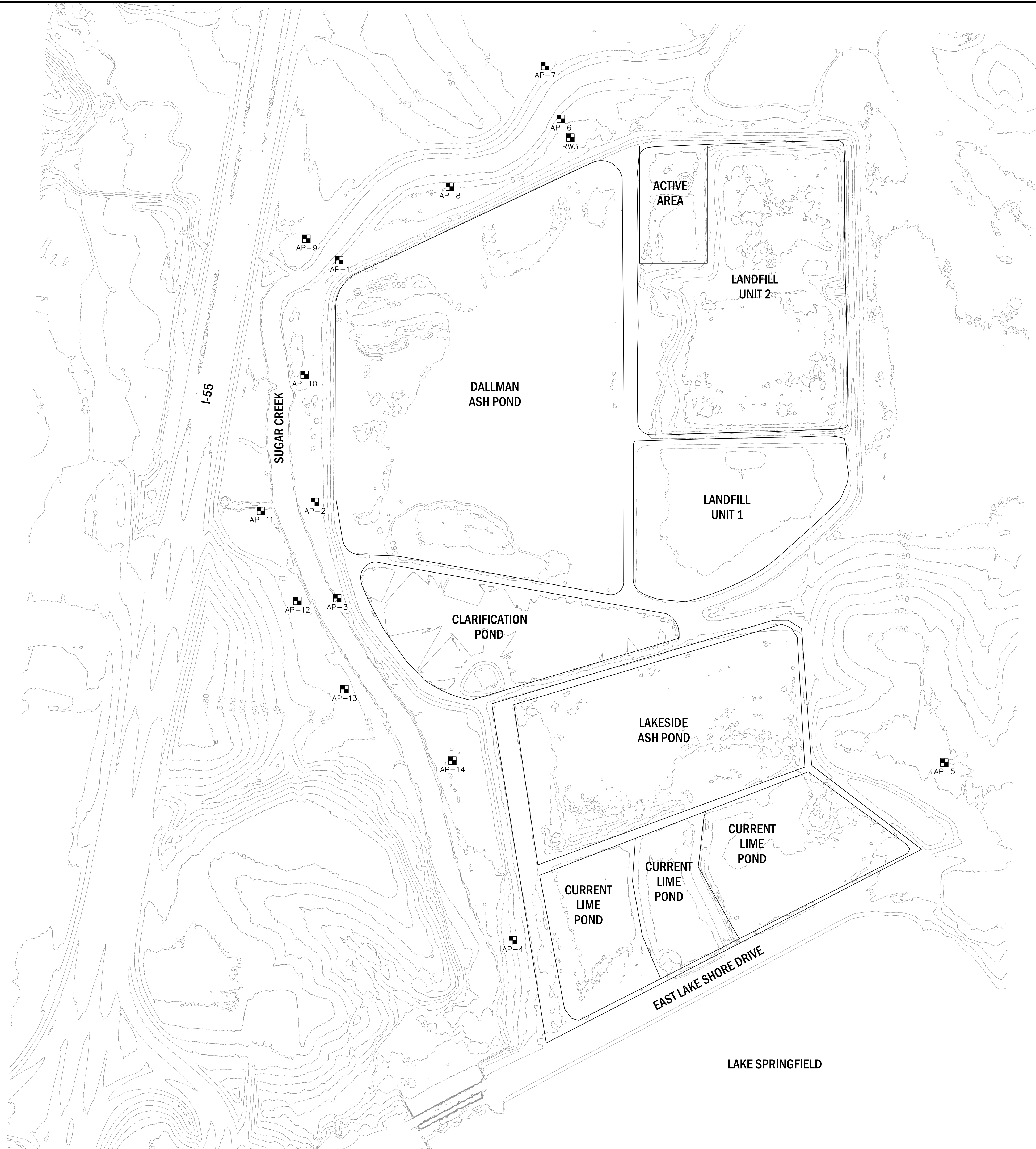
PLANS PREPARED FOR  
CITY, WATER, LIGHT & POWER  
SPRINGFIELD, SANGAMON COUNTY, ILLINOIS

DATE:  
JANUARY 2023

PROJECT ID:  
200387/0026

SHEET NUMBER:  
**FIGURE  
1**

Tab: SITE DETAILS MAP Last Saved: January 24, 2023, by Ben Karpus Plotted: Tuesday, January 24, 2023 10:52:38 AM  
 J:\Springfield CWIP\CWIP\_Ash\_Pond\DWG\2022\PMAPS\Topographic\_Surface\_Maps.dwg

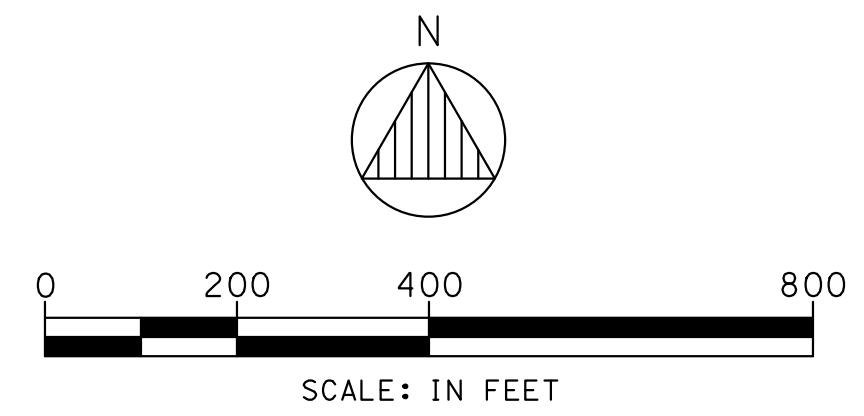


**LEGEND**

■ MONITORING WELL

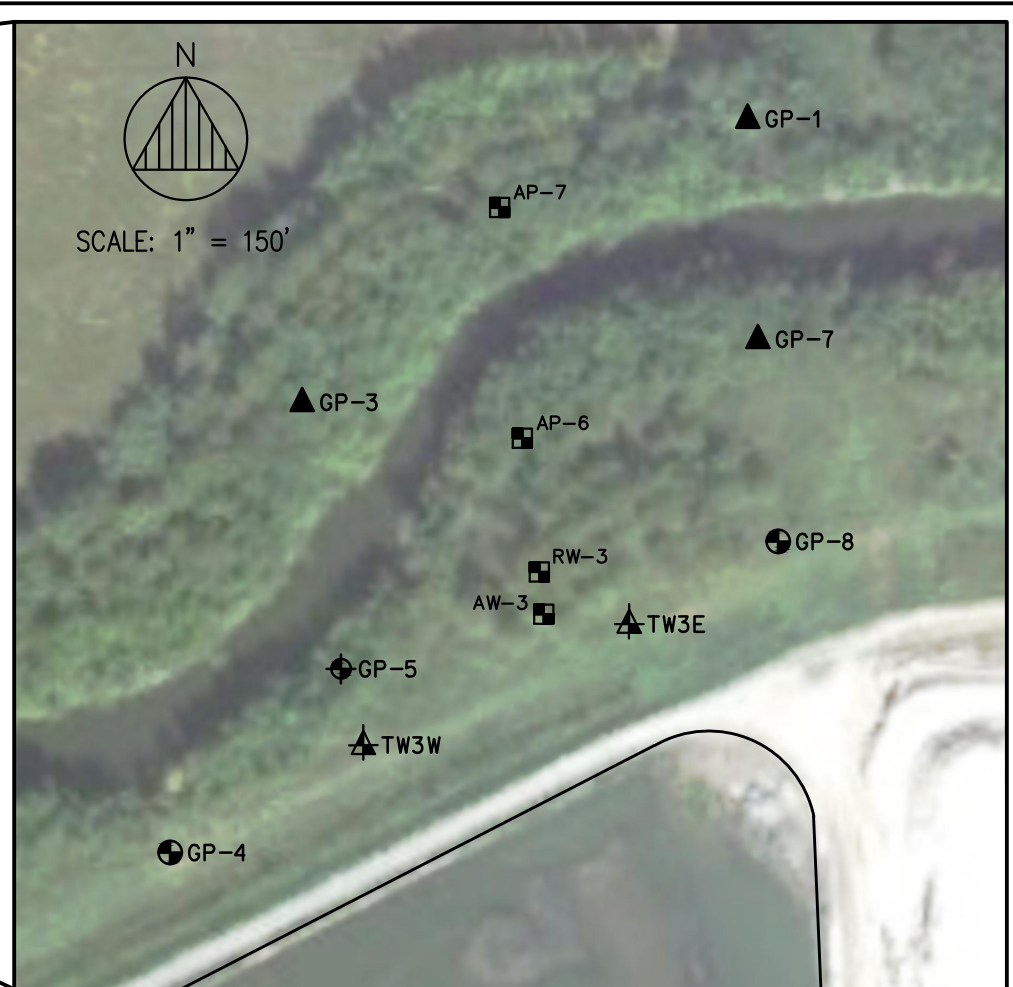
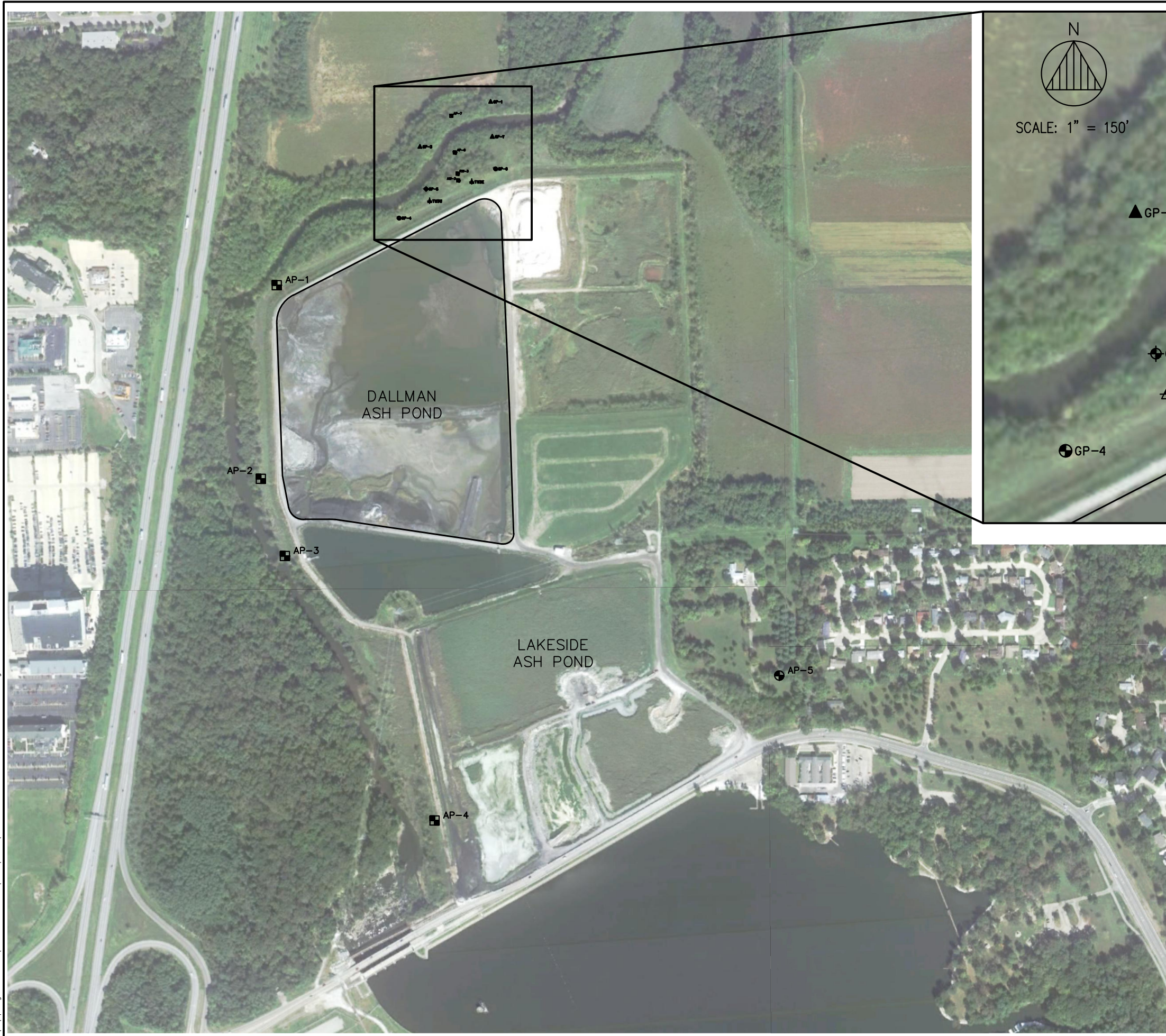
**NOTES**

- LIDAR DATA DERIVED FROM USGS WEBSITE (FLIGHT DATE: OCTOBER 15, 2018).



 <p><b>ANDREWS ENGINEERING</b>          3300 GINGER CREEK DRIVE          SPRINGFIELD, ILLINOIS 62711-7233          PH (217) 787-2334 WWW.ANDREWS-ENG.COM          PONTIAC, IL • LOMBARD, IL • INDIANAPOLIS, IN • WARRENTON, OR</p>		APPROVED BY: BJH DESIGNED BY: MTH DRAWN BY: BCK
SITE DETAILS MAP PREPARED FOR CITY WATER, LIGHT, AND POWER SPRINGFIELD, SANGAMON COUNTY, ILLINOIS		NO. DATE REVISION DESCRIPTION BY
DATE: JANUARY 2023 PROJECT ID: 200387/0003 SHEET NUMBER:		<b>FIG 2</b>

© 2023 Andrews Engineering, Inc.

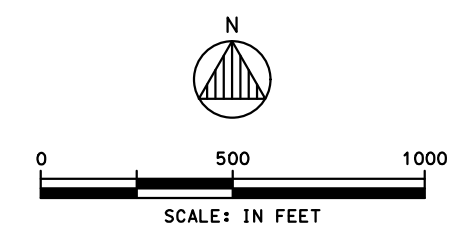


**LEGEND:**

- EXISTING MONITORING WELL LOCATION
- ⊕ GEOPROBE BORING LOCATION
- ▲ TEMPORARY WELL LOCATION (2018)
- ⊕ TEMPORARY WELL LOCATION (MAY 2019)
- ▲ TEMPORARY WELL LOCATION (JULY 2019)

**NOTES**

1. BORINGS GP-6 AND GP-7 CONTAINED TEMPORARY WELLS FROM BOTH THE MAY AND JULY 2019 INVESTIGATION.
2. AW-3 WAS REPLACED BY RW-3.



ASSESSMENT MONITORING INVESTIGATION		APPROVED BY: BJK		DESIGNED BY: BJK	DRAWN BY: MPN	NO.	DATE	REVISION DESCRIPTION	BY
		PREPARED FOR CITY WATER, LIGHT, AND POWER SPRINGFIELD, SANGAMON COUNTY, ILLINOIS		ANDREWS ENGINEERING 3300 GINGER CREEK DRIVE SPRINGFIELD, ILLINOIS 62711-7233 PH (217) 787-2334 WWW.ANDREWS-ENG.COM PONTIAC, IL • LOMBARD, IL • INDIANAPOLIS, IN • WARRENTON, MD		DATE: JANUARY 2023		PROJECT ID: 170306/0001	

## TABLE

**City Water, Light and Power  
Power Plant Ash Impoundment  
2022 Groundwater Analytical Exceedance Data**

Well	Parameter	Units	EPA 40 CFR 257.95(h)(2)(i-iv)	MCL EPA 40 CFR 141	Background AP-4 & AP-5	2/16/2022	8/23/2022
<b>Appendix III</b>							
AP-1	Boron, total	mg/l	na	na	<b>0.787</b>	22.3	22.1
AP-2	Boron, total	mg/l	na	na	<b>0.787</b>	4.68	4.32
AP-3	Boron, total	mg/l	na	na	<b>0.787</b>	15.8	14.8
AP-1	Calcium, total	mg/l	na	na	<b>176.63</b>	245	239
AP-2	Calcium, total	mg/l	na	na	<b>176.63</b>	265	241
AP-1	Chloride, total	mg/l	na	na	<b>24.2</b>	55	44
AP-2	Chloride, total	mg/l	na	na	<b>24.2</b>	36	34
AP-3	Chloride, total	mg/l	na	na	<b>24.2</b>	42	47
AP-6	Chloride, total	mg/l	na	na	<b>24.2</b>	35	25
AP-7	Chloride, total	mg/l	na	na	<b>24.2</b>	64	36
AW-3/RW-3	Chloride, total	mg/l	na	na	<b>24.2</b>	29	31
AP-1	pH (field)	units	na	na	<b>6.76-7.63</b>	6.57	6.65
AP-2	pH (field)	units	na	na	<b>6.76-7.63</b>	6.43	6.45
AP-3	pH (field)	units	na	na	<b>6.76-7.63</b>	6.6	6.6
AP-1	Sulfate, total	mg/l	na	na	<b>84.5</b>	732	753
AP-2	Sulfate, total	mg/l	na	na	<b>84.5</b>	583	545
AP-3	Sulfate, total	mg/l	na	na	<b>84.5</b>	410	384
AP-1	Total Dissolved Solids	mg/l	na	na	<b>597.94</b>	1490	1550
AP-2	Total Dissolved Solids	mg/l	na	na	<b>597.94</b>	1310	1360
AP-3	Total Dissolved Solids	mg/l	na	na	<b>597.94</b>	882	1030
<b>Appendix IV</b>							
AW-3/RW-3	Arsenic, total	mg/l	na	0.01	<b>0.0724</b>	0.178	0.11

Notes:

1. A shaded value indicates an exceedance of the higher of the MCL or the Background. The comparison value that was used is in bold font.

2. The 40 CFR 257 list requires Radium-226 and Radium-228 combined. The established MCL is for the combined parameters. However, these parameters require two separate analysis and have been reported separately by the analytical laboratory. The sum of the values has been provided and compared to the MCL. Background values have been calculated for the individual parameters (Radium-226 = 7.1 pCi/L and Radium-228 = 5.1 pCi/L).

**City Water, Light and Power  
Power Plant Ash Impoundment  
2022 Groundwater Analytical Summary Data**

Well	Parameter	Units	EPA 40 CFR 257.95(h)(2)(i-iv)	MCL EPA 40 CFR 141	Background AP-4 & AP-5	2/16/2022	8/23/2022
<b>Appendix III</b>							
AP-1	Boron, total	mg/l	na	na	<b>0.787</b>	22.3	22.1
AP-2	Boron, total	mg/l	na	na	<b>0.787</b>	4.68	4.32
AP-3	Boron, total	mg/l	na	na	<b>0.787</b>	15.8	14.8
AP-4	Boron, total	mg/l	na	na	<b>0.787</b>	0.0954	0.0927
AP-5	Boron, total	mg/l	na	na	<b>0.787</b>	< 0.02	< 0.02
AP-6	Boron, total	mg/l	na	na	<b>0.787</b>	0.247	0.0716
AP-7	Boron, total	mg/l	na	na	<b>0.787</b>	0.381	0.204
AW-3/RW-3	Boron, total	mg/l	na	na	<b>0.787</b>	0.179	0.177
AP-1	Calcium, total	mg/l	na	na	<b>176.63</b>	245	239
AP-2	Calcium, total	mg/l	na	na	<b>176.63</b>	265	241
AP-3	Calcium, total	mg/l	na	na	<b>176.63</b>	150	157
AP-4	Calcium, total	mg/l	na	na	<b>176.63</b>	123	116
AP-5	Calcium, total	mg/l	na	na	<b>176.63</b>	87.2	102
AP-6	Calcium, total	mg/l	na	na	<b>176.63</b>	69.2	43
AP-7	Calcium, total	mg/l	na	na	<b>176.63</b>	62.9	46.4
AW-3/RW-3	Calcium, total	mg/l	na	na	<b>176.63</b>	72.7	72.3
AP-1	Chloride, total	mg/l	na	na	<b>24.2</b>	55	44
AP-2	Chloride, total	mg/l	na	na	<b>24.2</b>	36	34
AP-3	Chloride, total	mg/l	na	na	<b>24.2</b>	42	47
AP-4	Chloride, total	mg/l	na	na	<b>24.2</b>	12	13
AP-5	Chloride, total	mg/l	na	na	<b>24.2</b>	< 4	6
AP-6	Chloride, total	mg/l	na	na	<b>24.2</b>	35	25
AP-7	Chloride, total	mg/l	na	na	<b>24.2</b>	64	36
AW-3/RW-3	Chloride, total	mg/l	na	na	<b>24.2</b>	29	31
AP-1	Fluoride, total	mg/l	na	<b>4</b>	0.62	0.2	0.2
AP-2	Fluoride, total	mg/l	na	<b>4</b>	0.62	0.24	0.24
AP-3	Fluoride, total	mg/l	na	<b>4</b>	0.62	0.21	0.23
AP-4	Fluoride, total	mg/l	na	<b>4</b>	0.62	0.14	0.15
AP-5	Fluoride, total	mg/l	na	<b>4</b>	0.62	0.33	0.29
AP-6	Fluoride, total	mg/l	na	<b>4</b>	0.62	0.49	0.31
AP-7	Fluoride, total	mg/l	na	<b>4</b>	0.62	0.55	0.37
AW-3/RW-3	Fluoride, total	mg/l	na	<b>4</b>	0.62	0.47	0.48
AP-1	pH (field)	units	na	na	<b>6.76-7.63</b>	6.57	6.65
AP-2	pH (field)	units	na	na	<b>6.76-7.63</b>	6.43	6.45
AP-3	pH (field)	units	na	na	<b>6.76-7.63</b>	6.6	6.6
AP-4	pH (field)	units	na	na	<b>6.76-7.63</b>	6.92	6.89
AP-5	pH (field)	units	na	na	<b>6.76-7.63</b>	7.01	7.16
AP-6	pH (field)	units	na	na	<b>6.76-7.63</b>	7.18	7.2
AP-7	pH (field)	units	na	na	<b>6.76-7.63</b>	7.2	7.12

**City Water, Light and Power  
Power Plant Ash Impoundment  
2022 Groundwater Analytical Summary Data**

Well	Parameter	Units	EPA 40 CFR 257.95(h)(2)(i-iv)	MCL EPA 40 CFR 141	Background AP-4 & AP-5	2/16/2022	8/23/2022
AW-3/RW-3	pH (field)	units	na	na	<b>6.76-7.63</b>	7.27	7.11
AP-1	Sulfate, total	mg/l	na	na	<b>84.5</b>	732	753
AP-2	Sulfate, total	mg/l	na	na	<b>84.5</b>	583	545
AP-3	Sulfate, total	mg/l	na	na	<b>84.5</b>	410	384
AP-4	Sulfate, total	mg/l	na	na	<b>84.5</b>	< 10	< 10
AP-5	Sulfate, total	mg/l	na	na	<b>84.5</b>	57	66
AP-6	Sulfate, total	mg/l	na	na	<b>84.5</b>	< 10	15
AP-7	Sulfate, total	mg/l	na	na	<b>84.5</b>	< 10	15
AW-3/RW-3	Sulfate, total	mg/l	na	na	<b>84.5</b>	10	< 10
AP-1	Total Dissolved Solids	mg/l	na	na	<b>597.94</b>	1490	1550
AP-2	Total Dissolved Solids	mg/l	na	na	<b>597.94</b>	1310	1360
AP-3	Total Dissolved Solids	mg/l	na	na	<b>597.94</b>	882	1030
AP-4	Total Dissolved Solids	mg/l	na	na	<b>597.94</b>	496	540
AP-5	Total Dissolved Solids	mg/l	na	na	<b>597.94</b>	406	488
AP-6	Total Dissolved Solids	mg/l	na	na	<b>597.94</b>	374	246
AP-7	Total Dissolved Solids	mg/l	na	na	<b>597.94</b>	440	290
AW-3/RW-3	Total Dissolved Solids	mg/l	na	na	<b>597.94</b>	408	428
<b>Appendix IV</b>							
AP-1	Antimony, total	mg/l	na	0.006	<b>0.016</b>	< 0.001	< 0.001
AP-2	Antimony, total	mg/l	na	0.006	<b>0.016</b>	< 0.001	< 0.001
AP-3	Antimony, total	mg/l	na	0.006	<b>0.016</b>	< 0.001	< 0.001
AP-4	Antimony, total	mg/l	na	0.006	<b>0.016</b>	< 0.001	< 0.001
AP-5	Antimony, total	mg/l	na	0.006	<b>0.016</b>	< 0.001	< 0.001
AP-6	Antimony, total	mg/l	na	0.006	<b>0.016</b>	< 0.001	< 0.001
AP-7	Antimony, total	mg/l	na	0.006	<b>0.016</b>	< 0.001	< 0.001
AW-3/RW-3	Antimony, total	mg/l	na	0.006	<b>0.016</b>	< 0.001	< 0.001
AP-1	Arsenic, total	mg/l	na	0.01	<b>0.0724</b>	< 0.025	< 0.025
AP-2	Arsenic, total	mg/l	na	0.01	<b>0.0724</b>	< 0.025	< 0.025
AP-3	Arsenic, total	mg/l	na	0.01	<b>0.0724</b>	< 0.025	< 0.025
AP-4	Arsenic, total	mg/l	na	0.01	<b>0.0724</b>	0.0306	0.0309
AP-5	Arsenic, total	mg/l	na	0.01	<b>0.0724</b>	< 0.025	< 0.025
AP-6	Arsenic, total	mg/l	na	0.01	<b>0.0724</b>	< 0.025	< 0.025
AP-7	Arsenic, total	mg/l	na	0.01	<b>0.0724</b>	< 0.025	0.0376
AW-3/RW-3	Arsenic, total	mg/l	na	0.01	<b>0.0724</b>	0.178	0.11
AP-1	Barium, total	mg/l	na	2	<b>5.24</b>	0.277	0.246
AP-2	Barium, total	mg/l	na	2	<b>5.24</b>	0.0721	0.0751
AP-3	Barium, total	mg/l	na	2	<b>5.24</b>	0.0802	0.0883
AP-4	Barium, total	mg/l	na	2	<b>5.24</b>	0.413	0.392
AP-5	Barium, total	mg/l	na	2	<b>5.24</b>	0.0505	0.0908
AP-6	Barium, total	mg/l	na	2	<b>5.24</b>	0.119	0.066

**City Water, Light and Power  
Power Plant Ash Impoundment  
2022 Groundwater Analytical Summary Data**

Well	Parameter	Units	EPA 40 CFR 257.95(h)(2)(i-iv)	MCL EPA 40 CFR 141	Background AP-4 & AP-5	2/16/2022	8/23/2022
AP-7	Barium, total	mg/l	na	2	<b>5.24</b>	0.125	0.119
AW-3/RW-3	Barium, total	mg/l	na	2	<b>5.24</b>	0.154	0.158
AP-1	Beryllium, total	mg/l	na	0.004	<b>0.0164</b>	< 0.0005	< 0.0005
AP-2	Beryllium, total	mg/l	na	0.004	<b>0.0164</b>	< 0.0005	< 0.0005
AP-3	Beryllium, total	mg/l	na	0.004	<b>0.0164</b>	< 0.0005	< 0.0005
AP-4	Beryllium, total	mg/l	na	0.004	<b>0.0164</b>	< 0.0005	< 0.0005
AP-5	Beryllium, total	mg/l	na	0.004	<b>0.0164</b>	< 0.0005	< 0.0005
AP-6	Beryllium, total	mg/l	na	0.004	<b>0.0164</b>	< 0.0005	< 0.0005
AP-7	Beryllium, total	mg/l	na	0.004	<b>0.0164</b>	< 0.0005	< 0.0005
AW-3/RW-3	Beryllium, total	mg/l	na	0.004	<b>0.0164</b>	< 0.0005	< 0.0005
AP-1	Cadmium, total	mg/l	na	0.005	<b>0.0128</b>	< 0.002	< 0.002
AP-2	Cadmium, total	mg/l	na	0.005	<b>0.0128</b>	< 0.002	< 0.002
AP-3	Cadmium, total	mg/l	na	0.005	<b>0.0128</b>	< 0.002	< 0.002
AP-4	Cadmium, total	mg/l	na	0.005	<b>0.0128</b>	< 0.002	< 0.002
AP-5	Cadmium, total	mg/l	na	0.005	<b>0.0128</b>	< 0.002	< 0.002
AP-6	Cadmium, total	mg/l	na	0.005	<b>0.0128</b>	< 0.002	< 0.002
AP-7	Cadmium, total	mg/l	na	0.005	<b>0.0128</b>	< 0.002	< 0.002
AW-3/RW-3	Cadmium, total	mg/l	na	0.005	<b>0.0128</b>	< 0.002	< 0.002
AP-1	Chromium, total	mg/l	na	0.1	<b>0.811</b>	< 0.005	< 0.005
AP-2	Chromium, total	mg/l	na	0.1	<b>0.811</b>	< 0.005	< 0.005
AP-3	Chromium, total	mg/l	na	0.1	<b>0.811</b>	< 0.005	< 0.005
AP-4	Chromium, total	mg/l	na	0.1	<b>0.811</b>	< 0.005	< 0.005
AP-5	Chromium, total	mg/l	na	0.1	<b>0.811</b>	< 0.005	< 0.005
AP-6	Chromium, total	mg/l	na	0.1	<b>0.811</b>	< 0.005	< 0.005
AP-7	Chromium, total	mg/l	na	0.1	<b>0.811</b>	< 0.005	< 0.005
AW-3/RW-3	Chromium, total	mg/l	na	0.1	<b>0.811</b>	< 0.005	< 0.005
AP-1	Cobalt, total	mg/l	0.006	na	<b>0.297</b>	< 0.005	< 0.005
AP-2	Cobalt, total	mg/l	0.006	na	<b>0.297</b>	0.0102	0.0115
AP-3	Cobalt, total	mg/l	0.006	na	<b>0.297</b>	< 0.005	< 0.005
AP-4	Cobalt, total	mg/l	0.006	na	<b>0.297</b>	< 0.005	< 0.005
AP-5	Cobalt, total	mg/l	0.006	na	<b>0.297</b>	< 0.005	< 0.005
AP-6	Cobalt, total	mg/l	0.006	na	<b>0.297</b>	< 0.005	< 0.005
AP-7	Cobalt, total	mg/l	0.006	na	<b>0.297</b>	< 0.005	< 0.005
AW-3/RW-3	Cobalt, total	mg/l	0.006	na	<b>0.297</b>	< 0.005	< 0.005
AP-1	Lead, total	mg/l	0.015	na	<b>0.638</b>	< 0.015	< 0.015
AP-2	Lead, total	mg/l	0.015	na	<b>0.638</b>	< 0.015	< 0.015
AP-3	Lead, total	mg/l	0.015	na	<b>0.638</b>	< 0.015	< 0.015
AP-4	Lead, total	mg/l	0.015	na	<b>0.638</b>	< 0.015	< 0.015
AP-5	Lead, total	mg/l	0.015	na	<b>0.638</b>	< 0.015	< 0.015
AP-6	Lead, total	mg/l	0.015	na	<b>0.638</b>	< 0.015	< 0.015

**City Water, Light and Power  
Power Plant Ash Impoundment  
2022 Groundwater Analytical Summary Data**

Well	Parameter	Units	EPA 40 CFR 257.95(h)(2)(i-iv)	MCL EPA 40 CFR 141	Background AP-4 & AP-5	2/16/2022	8/23/2022
AP-7	Lead, total	mg/l	0.015	na	<b>0.638</b>	< 0.015	< 0.015
AW-3/RW-3	Lead, total	mg/l	0.015	na	<b>0.638</b>	< 0.015	< 0.015
AP-1	Lithium	mg/l	0.04	na	<b>0.05</b>	0.0098	0.0087
AP-2	Lithium	mg/l	0.04	na	<b>0.05</b>	0.0057	0.0055
AP-3	Lithium	mg/l	0.04	na	<b>0.05</b>	0.0053	< 0.005
AP-4	Lithium	mg/l	0.04	na	<b>0.05</b>	0.0092	0.0077
AP-5	Lithium	mg/l	0.04	na	<b>0.05</b>	0.0053	0.0104
AP-6	Lithium	mg/l	0.04	na	<b>0.05</b>	0.0071	< 0.005
AP-7	Lithium	mg/l	0.04	na	<b>0.05</b>	0.009	< 0.005
AW-3/RW-3	Lithium	mg/l	0.04	na	<b>0.05</b>	0.0066	0.0064
AP-1	Mercury, total	mg/l	na	<b>0.002</b>	0.0008	< 0.0002	< 0.0002
AP-2	Mercury, total	mg/l	na	<b>0.002</b>	0.0008	< 0.0002	< 0.0002
AP-3	Mercury, total	mg/l	na	<b>0.002</b>	0.0008	< 0.0002	< 0.0002
AP-4	Mercury, total	mg/l	na	<b>0.002</b>	0.0008	< 0.0002	< 0.0002
AP-5	Mercury, total	mg/l	na	<b>0.002</b>	0.0008	< 0.0002	< 0.0002
AP-6	Mercury, total	mg/l	na	<b>0.002</b>	0.0008	< 0.0002	< 0.0002
AP-7	Mercury, total	mg/l	na	<b>0.002</b>	0.0008	< 0.0002	< 0.0002
AW-3/RW-3	Mercury, total	mg/l	na	<b>0.002</b>	0.0008	< 0.0002	< 0.0002
AP-1	Molybdenum	mg/l	<b>0.1</b>	na	0.025	< 0.01	< 0.01
AP-2	Molybdenum	mg/l	<b>0.1</b>	na	0.025	< 0.01	< 0.01
AP-3	Molybdenum	mg/l	<b>0.1</b>	na	0.025	< 0.01	< 0.01
AP-4	Molybdenum	mg/l	<b>0.1</b>	na	0.025	< 0.01	< 0.01
AP-5	Molybdenum	mg/l	<b>0.1</b>	na	0.025	< 0.01	< 0.01
AP-6	Molybdenum	mg/l	<b>0.1</b>	na	0.025	< 0.01	< 0.01
AP-7	Molybdenum	mg/l	<b>0.1</b>	na	0.025	< 0.01	< 0.01
AW-3/RW-3	Molybdenum	mg/l	<b>0.1</b>	na	0.025	0.0103	< 0.01
AP-1	Radium-226 + Radium-228	pCi/l	na	5	<b>12.2</b>	1.36	< 2
AP-2	Radium-226 + Radium-228	pCi/l	na	5	<b>12.2</b>	< 2	< 2
AP-3	Radium-226 + Radium-228	pCi/l	na	5	<b>12.2</b>	< 2	< 2
AP-4	Radium-226 + Radium-228	pCi/l	na	5	<b>12.2</b>	1.93	< 2
AP-5	Radium-226 + Radium-228	pCi/l	na	5	<b>12.2</b>	< 2	< 2
AP-6	Radium-226 + Radium-228	pCi/l	na	5	<b>12.2</b>	< 2	< 2
AP-7	Radium-226 + Radium-228	pCi/l	na	5	<b>12.2</b>	< 2	< 2
AW-3/RW-3	Radium-226 + Radium-228	pCi/l	na	5	<b>12.2</b>	< 2	< 2
AP-1	Selenium, total	mg/l	na	<b>0.05</b>	0.0079	< 0.001	< 0.001
AP-2	Selenium, total	mg/l	na	<b>0.05</b>	0.0079	< 0.001	< 0.001
AP-3	Selenium, total	mg/l	na	<b>0.05</b>	0.0079	< 0.001	< 0.001
AP-4	Selenium, total	mg/l	na	<b>0.05</b>	0.0079	< 0.001	< 0.001
AP-5	Selenium, total	mg/l	na	<b>0.05</b>	0.0079	< 0.001	< 0.001
AP-6	Selenium, total	mg/l	na	<b>0.05</b>	0.0079	< 0.001	< 0.001

**City Water, Light and Power  
Power Plant Ash Impoundment  
2022 Groundwater Analytical Summary Data**

Well	Parameter	Units	EPA 40 CFR 257.95(h)(2)(i-iv)	MCL EPA 40 CFR 141	Background AP-4 & AP-5	2/16/2022	8/23/2022
AP-7	Selenium, total	mg/l	na	<b>0.05</b>	0.0079	< 0.001	< 0.001
AW-3/RW-3	Selenium, total	mg/l	na	<b>0.05</b>	0.0079	< 0.001	< 0.001
AP-1	Thallium, total	mg/l	na	0.002	<b>0.00556</b>	< 0.002	< 0.002
AP-2	Thallium, total	mg/l	na	0.002	<b>0.00556</b>	< 0.002	< 0.002
AP-3	Thallium, total	mg/l	na	0.002	<b>0.00556</b>	< 0.002	< 0.002
AP-4	Thallium, total	mg/l	na	0.002	<b>0.00556</b>	< 0.002	< 0.002
AP-5	Thallium, total	mg/l	na	0.002	<b>0.00556</b>	< 0.002	< 0.002
AP-6	Thallium, total	mg/l	na	0.002	<b>0.00556</b>	< 0.002	< 0.002
AP-7	Thallium, total	mg/l	na	0.002	<b>0.00556</b>	< 0.002	< 0.002
AW-3/RW-3	Thallium, total	mg/l	na	0.002	<b>0.00556</b>	< 0.002	< 0.002

Notes:

1. A shaded value indicates an exceedance of the higher of the MCL or the Background. The comparison value that was used is in bold font.

2. The 40 CFR 257 list requires Radium-226 and Radium-228 combined. The established MCL is for the combined parameters. However, these parameters require two separate analysis and have been reported separately by the analytical laboratory. The sum of the values has been provided and compared to the MCL. Background values have been calculated for the individual parameters (Radium-226 = 7.1 pCi/L and Radium-228 = 5.1 pCi/L).



# ANDREWS ENGINEERING

## **CORPORATE HEADQUARTERS**

### **SPRINGFIELD OFFICE**

3300 Ginger Creek Drive, Springfield, IL 62711

217.787.2334

### **CHICAGO AREA OFFICE**

420 Eisenhower Lane North, Lombard, IL 60148

630.953.3332

### **INDIANAPOLIS OFFICE**

7486 Shadeland Station Way, Indianapolis, IN 46256

317.595.6492

### **ST. LOUIS OFFICE**

101 East Walton, Suite 201, Warrenton, MO 63383

636.456.6387

### **PONTIAC OFFICE**

215 West Washington Street, Pontiac, IL 61764

815.842.2042

**ANDREWS-ENG.COM**