Annual Progress Report – Site-Specific Alternative Deadline to Initiate Closure of CCR Surface Impoundments

Lansing Generating Station
Lansing, Iowa 52151

Prepared for:

Interstate Power and Light Company
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SCS ENGINEERS

25220100.00 | November 29, 2022

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1.0 INTRODUCTION AND PURPOSE

This Annual Progress Report was prepared to document the continued lack of alternative capacity and the progress towards closure of the coal combustion residual (CCR) surface impoundment at the Interstate Power and Light Company (IPL) Lansing Generating Station (LAN). Specifically, this report was prepared to comply with the requirements of 40 CFR 257.103(f)(2)(x) in the U.S. Environmental Protection Agency (USEPA) regulations regarding the Disposal of CCR from Electric Utilities [40 CFR 257.50-107], or the "CCR Rule" (Rule).

2.0 BACKGROUND

2.1 ALTERNATIVE DEADLINE APPLICATION

The LAN Upper Ash Pond at the Lansing Generating Station is an existing unlined CCR impoundment that is subject to the requirements of §257.101(a)(1). In November 2020, IPL submitted an application to demonstrate the absence of alternative capacity for managing CCR and non-CCR wastestreams (Application) and requested USEPA approval to continue disposal of these wastestreams beyond April 11, 2021, as allowed by §257.103(f)(2). The application described IPL's plans to cease placing CCR and non-CCR wastestreams in the CCR surface impoundment (LAN Upper Ash Pond) and complete closure of the unlined CCR surface impoundment by October 17, 2023. IPL will end coal-fired operation of the boiler by December 31, 2022, and cease operations at LAN.

The USEPA has determined that the Application is complete and that the April 11, 2021 deadline to cease receipt of waste in the CCR unit is tolled. USEPA has not taken additional action on the November 2020 demonstration as of the date this annual progress report was issued. IPL has pursued the actions identified in the November 2020 demonstration.

2.2 SITE INFORMATION AND MAPS

LAN is located along the west bank of the Mississippi River, south of the City of Lansing, in Allamakee County, Iowa. The address of the generating station is 2320 Power Plant Drive in Lansing, Iowa (**Figure 1**). The facility includes a coal-fired generating plant, a CCR landfill, the LAN Upper Ash Pond, and a coal stockpile.

2.3 GROUNDWATER

The two CCR units at the facility (LAN Landfill and Upper Ash Pond) are monitored with a multi-unit groundwater monitoring system and are the subject of this Annual Progress Report. A map showing the CCR units and all background (or upgradient) and downgradient monitoring wells with identification numbers for the CCR groundwater monitoring program is provided as **Figure 2**.

In the November 2020 application, IPL provided certification of compliance with all other requirements of the CCR Rule as of the date of application submittal, including the requirement to conduct any necessary corrective action, as required in §257.103(f)(2)(iii). Arsenic has been detected at statistically significant levels (SSLs) above the groundwater protection standard (GPS) in samples from one downgradient monitoring well at LAN. In response to a detection of arsenic at an SSL above the GPS at MW-302 (**Figure 2**), an Assessment of Corrective Measures (ACM) was completed in September 2019, and Addendum No. 1 to the ACM was completed in November 2020. Additional monitoring wells have been installed and sampled as part of the ACM and selection of remedy, and assessment monitoring has continued, in accordance with §257.96(b).

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Based on continued assessment of the nature and extent of arsenic since the previous annual progress report, current data indicates that the source of the arsenic is unrelated to the dry ash landfill and ash pond. This conclusion remains under review, and information related to this finding, including ramifications on the selection of remedy, will be discussed in a forthcoming report. Lines of evidence that indicate the arsenic GPS exceedances are not from the CCR Units include:

- Low arsenic concentrations have repeatedly been reported in laboratory tests of groundwater samples from a monitoring well nest installed between the LAN Upper Ash Pond (MW-307/MW-307A) and the well where arsenic concentrations exceed the GPS (MW-302).

- The arsenic concentration in a sample collected from the LAN Upper Ash Pond outfall was below the arsenic GPS. The outfall sample included the flow from a groundwater interceptor drain installed between the LAN Upper Ash Pond and MW-302.

Lines of evidence that support an alternate source of arsenic GPS exceedances are:

- Anoxic reducing conditions that can result in increased arsenic concentrations are present in a localized area near MW-302.

- Anoxic conditions, resulting in potential higher arsenic concentrations, may be caused by the organic material described in the boring log for MW-302. The organic material is absent in other site CCR monitoring wells.

3.0 ALTERNATIVE DISPOSAL CAPACITY ASSESSMENT

The November 2020 application described the following CCR and non-CCR wastestreams produced during plant operations. These wastestreams are wet handled or are wastewaters managed within the on-site CCR surface impoundment.

CCR

The following CCR wastestreams are discussed in the November 2020 application:

- Bottom ash and sluice water
- Fly ash and sluice water – upon startup of Unit 4 only

Fly ash generated at LAN is already managed off site through beneficial use, and IPL intends to continue beneficially using CCR when and where it is appropriate.

Non-CCR

The following non-CCR wastestreams are discussed in the November 2020 application:

- Unit 4 service water for non-contact cooling of auxiliary equipment
- Water treatment area floor drains, reverse osmosis (RO) system reject, and demineralizer regeneration wastes
- Storm water

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It was concluded in the November 2020 application that there is no current on-site or off-site alternative capacity after a review of the on-site and off-site alternative capacity for disposal of the wet-handled CCR and sluice water or non-CCR wastestreams described above. New alternative disposal capacity would be needed to enable IPL to cease discharges of these wastestreams to the CCR surface impoundments. The development of that alternative disposal capacity would require the installation of significant new infrastructure (e.g., new storage and/or treatment facilities, force mains, etc.) to access potential off-site disposal alternatives.

Since submitting the November 2020 application, IPL has focused efforts on how to close the LAN Upper Ash Pond after the cessation of coal-fired operations at LAN on December 31, 2022. An update on the progress IPL has made toward closing the CCR surface impoundment is provided in Section 4.0.

On-site Capacity

The assessment completed for the November 2020 application concluded that no current alternate on-site capacity exists for disposal of the wet-handled CCR and sluice water or non-CCR wastestreams produced at LAN. There has been no change in the availability of alternative on-site capacity at LAN since the previous annual progress report was issued, and the assessment in the November 2020 application remains valid.

Off-site Capacity

The assessment completed for the November 2020 application concluded that no current alternate off-site capacity exists for disposal of the wet-handled CCR and sluice water or non-CCR wastestreams produced at LAN. There has been no change in the availability of alternative off-site capacity at LAN since the previous annual progress report was issued, and the assessment in the November 2020 application remains valid.

4.0 CCR SURFACE IMPOUNDMENT CLOSURE

IPL has made significant progress toward the closure of the CCR surface impoundment at LAN. IPL has completed the following activities since the November 2020 application was submitted to achieve closure of the unlined CCR surface impoundment at LAN by the October 17, 2023 closure deadline in §257.103(f)(2)(iv)(A):

- In August 2021, IPL performed test pits in and around the LAN Upper Ash Pond to evaluate site conditions and CCR behavior during excavation, moisture conditioning, and placement.

- In August and September 2021, IPL performed test fills on the CCR in the LAN Upper Ash Pond. Geotechnical monitoring instruments, including settlement plates and vibrating wire piezometers, were installed in the test fills and underlying CCR. Settlement plate monitoring was conducted through mid-December 2021. Monitoring of the vibrating wire piezometers is ongoing.

- In October 2021, IPL installed four groundwater dewatering pilot-test wells along the west side of the LAN Upper Ash Pond and completed a pump test to evaluate the design of a groundwater dewatering system for the closure of the Upper Ash Pond.

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- In October 2021, IPL also pilot-tested in-situ stabilization of CCR using Portland cement grout within the LAN Upper Ash Pond. The closure of the LAN Upper Ash Pond will utilize in-situ stabilization to improve the shear strength of a select portion of the existing CCR within the pond. The shear strength improvements will facilitate the consolidation and capping of CCR within the LAN Upper Ash Pond.

- In October and November 2021, IPL completed a small-scale test of CCR dredging and dewatering methods at the LAN Upper Ash Pond. Approximately 1,000 cubic yards of CCR was dredged from the northern open water portion of the ash pond into geotextile tubes staged at the south end of the pond to evaluate the method for CCR removal and the CCR moisture conditions in the geotextile tubes over the month following the test dredging.

- In November 2021, IPL began incorporating the results of preconstruction testing into the closure design for the landfill and ash pond. Design activities included updating material volumes that will be managed during closure, grading design, geotechnical evaluations, dredging/excavation planning, and water management planning. The design effort is mostly complete.

- In January 2022, IPL developed permit applications for ash pond closure activities based on the pilot tests completed in 2021. The effort is ongoing with the following permits in various stages as described below:

  - Submitted an electronic Notice to Proceed (eNOI) to the Iowa Department of Natural Resources (IDNR) on April 11, 2022, and prepared a Storm Water Pollution Prevention Plan (SWPPP) to obtain coverage under IDNR National Pollutant Discharge Elimination System (NPDES) General Permit No. 2 (GP2) for Storm Water Associated with Land Disturbing Construction Activity. GP2 coverage was granted on May 2, 2022.

  - Ames Construction obtained an Allamakee County Right-of-Way (ROW) Construction permit for work within the Power Plant Drive ROW. The permit was issued by the County on April 19, 2022.

  - Submitted a Temporary and Limited (T&L) Antidegradation request to the IDNR for the addition of the polymers/coagulant used in the dredging and geotube dewatering process on September 14, 2022. The IDNR issued the T&L Antidegradation approval on September 16, 2022.

  - Prepared an IDNR Sanitary Disposal Project Closure Permit application and submitted it on November 29, 2022. IPL anticipates IDNR will issue a Closure Permit by the end of January 2023.

  - Prepared an application for Allamakee County well construction permits for the installation of full-scale groundwater dewatering system wells. IPL anticipates the application will be finalized and submitted to Allamakee County in early December 2022 with the permits received shortly thereafter.

  - Updates to the Water Well Pollution Prevention Plan (WWPPP) for IDNR NPDES General Permit No. 6 (GP6) coverage needed to install and develop the full-scale

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groundwater dewatering system wells are in process. IPL anticipates the WWPPP will be completed and GP6 coverage in place by early December 2022.

- Updates to the Dewatering Pollution Prevention Plan (DwPPP) and a draft eNOI including an Antidegradation request are in process to seek NPDES General Permit No. 9 (GP9) coverage for operation of the full-scale groundwater dewatering system. IPL anticipates submitting the eNOI and Antidegradation request to the IDNR in December 2022.

- A Joint Permit Application for the rehabilitation or installation of new post-closure storm water outfalls is currently in process. IPL anticipates submitting the application to the IDNR and U.S. Army Corps of Engineers (USACE) in December 2022.

- An Allamakee County floodplain permit for minor excavation and storm water outfall installation is in process. IPL anticipates submitting the application to the County in December 2022.

- In February 2022, IPL completed an evaluation of a nearby off-site fill source that will be used during the closure of the Upper Ash Pond. A significant volume of imported soil is required to backfill portions of the ash pond where CCR is removed for closure. The evaluation supports the procurement of a local source of material to support the pond closure. IPL also began evaluating discharge requirements for a full-scale groundwater dewatering system to support the ash pond closure following receipt of pilot-test data from their preconstruction services contractor (also Ames Construction).

- In March 2022, IPL executed a contract for non-CCR wastewater reroute and CCR surface impoundment closure construction with Ames Construction. Ames extended the bridge lift platform construction across the LAN Upper Ash Pond that was initiated during the pre-construction services phase of work. The bridge lift platform bifurcates the LAN Upper Ash Pond to support the installation of an in-situ stabilized (ISS) wall constructed using deep soil mixing to inject Portland cement grout into the CCR.

- In May 2022, Ames Construction mobilized to LAN. They installed erosion control best management practices (BMPs) and began developing infrastructure needed to support pond closure construction. IPL also abandoned MW-20, which was located between the LAN Landfill and LAN Upper Ash Pond.

- In May through June 2022, Ames Construction dewatered the southern end of the LAN Upper Ash Pond. The bottom ash sluice discharge was rerouted to the area of the bridge lift platform to minimize water added to the southern end of the pond. Floating silt curtains were installed to maximize bottom ash settling with the reduced flow path and residence time in the pond.

- In June and July 2022, Ames Construction began grading to prepare the LAN Upper Ash Pond - South Pond Closure Area for the installation of a scour protection layer to prevent erosion during dredging discharges into geotextile tubes placed in the South Pond Closure Area. Drainage trenches were constructed and then a 40-mil scour protection geomembrane was installed. Some CCR from the LAN Upper Ash Pond was hauled up to the LAN Landfill, placed, and conditioned.

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- In May through August 2022, Ames Construction installed submersible pumps in two previously installed dewatering wells and began pumping at the west end of the LAN Upper Ash Pond to supply water for ISS wall construction.

- In June through August 2022, Ames Construction installed the ISS wall through the middle of the bridge lift platform. Prior to late July, the water level in the North Pond Closure Area of the Upper Ash Pond was drawn down during ISS work.

- In August 2022, IPL and the closure contractor raised the North Pond water level to facilitate dredging. CCR dredging began in the LAN Upper Ash Pond North Pond Closure Area. The CCR was conveyed into geotextile dewatering tubes located in the prepared scour protection layer area in the South Pond Closure Area. Dredging in the North Pond Closure Area was completed in October 2022.

- In October and November 2022, Ames Construction excavated some CCR from the North Pond Closure Area that could not be accessed by dredging and placed it in the South Ash Pond Closure Area along with some unusable coal from the coal yard. These materials were placed on and around the dewatered geotextile tubes located in the South Pond Closure Area.

Currently, the CCR surface impoundment closures are on track to be completed by October 17, 2023, as planned. IPL plans to close the impoundments as generally described in the Closure Plan for Existing CCR Surface Impoundment, Amendment No. 2, dated November 13, 2020.

5.0 REFERENCES

SCS Engineers, 2020, Application for Site-Specific Alternative Deadline to Initiate Closure of CCR Surface Impoundment – Lansing Generating Station, Lansing, IA: Madison, WI, November 25, 2020.

SCS Engineers, 2021, Semiannual Progress Report, Selection of Remedy – Lansing Generating Station, Lansing, IA: Madison, WI, September 10, 2021.

SCS Engineers, 2021, Annual Progress Report – Site-Specific Alternative Deadline to Initiate Closure of CCR Surface Impoundments – Lansing Generating Station, Lansing, IA: Madison, WI, November 30, 2021.

SCS Engineers, 2022, Semiannual Progress Report, Selection of Remedy – Lansing Generating Station, Lansing, IA: Madison, WI, March 11, 2022.

SCS Engineers, 2022, Semiannual Progress Report, Selection of Remedy – Lansing Generating Station, Lansing, IA: Madison, WI, September 12, 2022.

USEPA, 2020, Federal Register / Vol. 85, No. 168 / Friday, August 28, 2020 / Rules and Regulations, p53516-53566, https://www.govinfo.gov/content/pkg/FR-2020-08-28/pdf/2020-16872.pdf

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Figures

1 Site Location Map
2 Site Plan and Monitoring Well Locations

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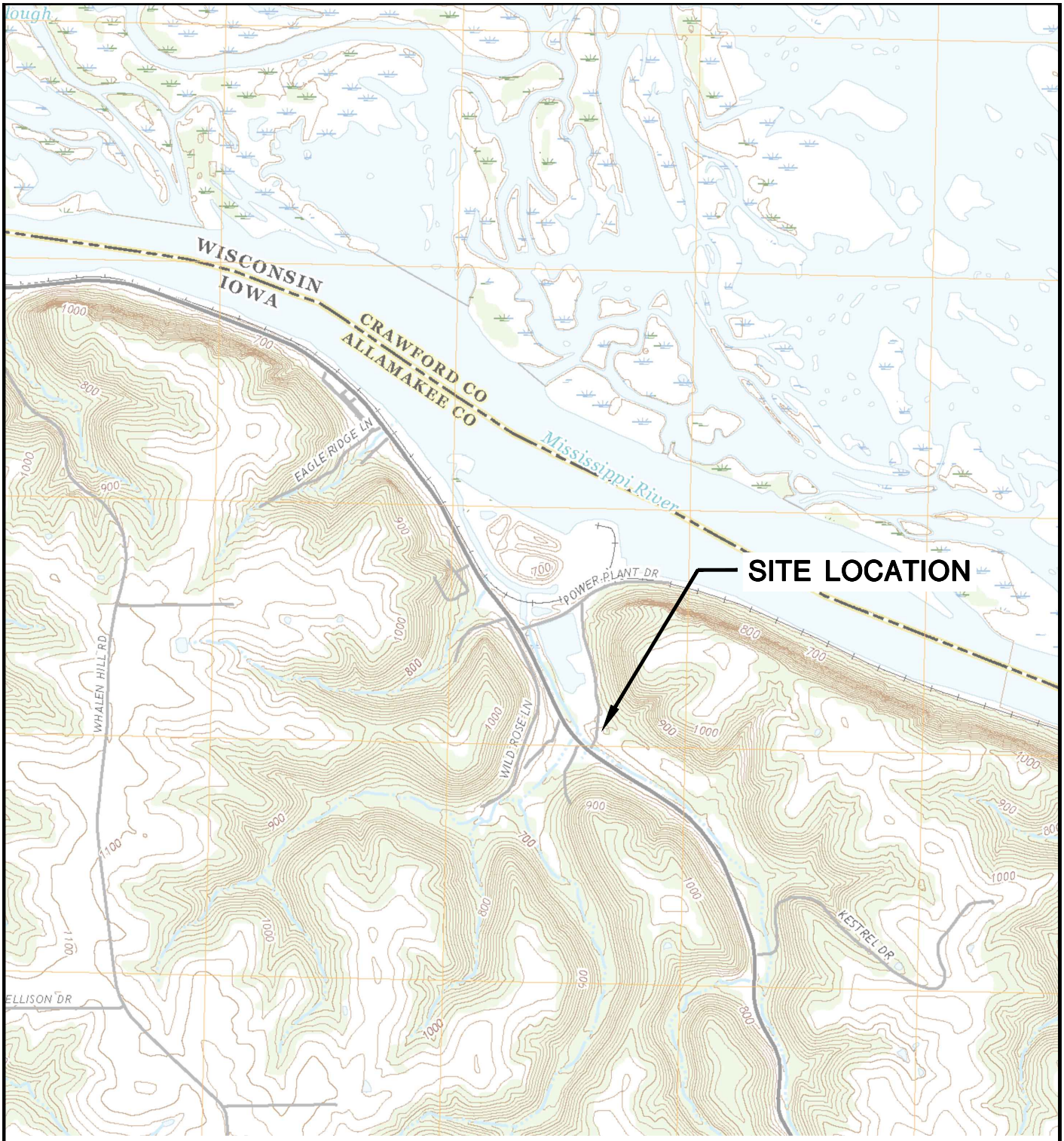

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LANSING QUADRANGLE
IOWA–ALLAMAKEE CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
2018
SCALE: 1" = 2,000'

CLIENT	INTERSTATE POWER AND LIGHT 2320 POWER PLANT DRIVE LANSING, IA 52151–9733	SITE	ALLIANT ENERGY LANSING GENERATING STATION LANSING, IOWA

SITE LOCATION MAP

PROJECT NO.	25219070.00	DRAWN BY:	BSS
DRAWN:	11/27/2019	CHECKED BY:	MDB
REVISED:	03/12/2020	APPROVED BY:	TK 02/12/2020

ENGINEER

SCS ENGINEERS
2830 DAIRY DRIVE MADISON, WI 53718–6751
PHONE: (608) 224–2830

FIGURE
1

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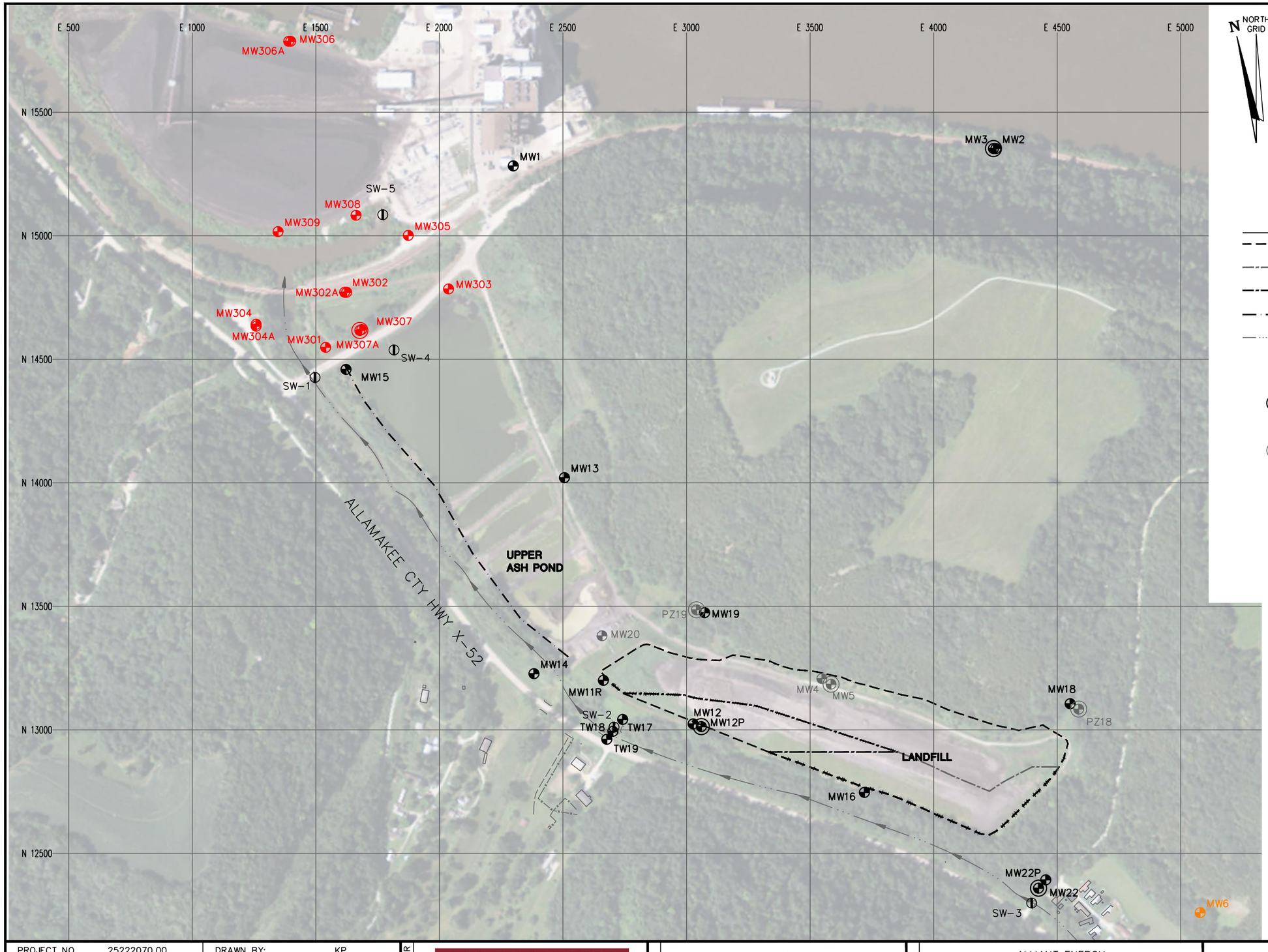

N NORTH GRID

LEGEND

	APPROVED LIMITS OF WASTE
	LIMITS OF PHASE 1 FINAL COVER
	LIMITS OF PHASE 2 FINAL COVER
	SLURRY WALL
	EXISTING STREAM
SW-1	EXISTING STAFF GAUGE
MW17	EXISTING MONITORING WELL
MW12P	EXISTING PIEZOMETER
MW4	ABANDONED MONITORING WELL
MW5	ABANDONED PIEZOMETER
MW301	CCR MONITORING WELL
MW6	CCR BACKGROUND MONITORING WELL

NOTES:

1. MONITORING WELL LOCATIONS ARE APPROXIMATE.
2. MONITORING WELL MW20 WAS ABANDONED ON MAY 5, 2022..

400 0 400

SCALE: 1" = 400'

PROJECT NO.	25222070.00	DRAWN BY:	KP
DRAWN:	05/26/2021	CHECKED BY:	MDB
REVISED:	11/08/2022	APPROVED BY:	EJN, 11/28/2022

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CLIENT: INTERSTATE POWER AND LIGHT
2320 POWER PLANT DRIVE
LANSING, IA 52151-9733

SITE: ALLIANT ENERGY
LANSING POWER STATION
LANSING, IOWA

SITE PLAN AND
MONITORING WELL LOCATIONS

FIGURE
2

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