Semiannual Progress Report Selection of Remedy – Burlington Generating Station

Burlington Generating Station
Burlington, Iowa

Prepared for:

Alliant Energy

SCS ENGINEERS

25220081.00 | September 13, 2023

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1.0 INTRODUCTION AND PURPOSE

The Semiannual Progress Report for remedy selection at the Interstate Power and Light Company (IPL) Burlington Generating Station (BGS) was prepared to comply with U.S. Environmental Protection Agency (U.S. EPA) regulations regarding the Disposal of Coal Combustion Residuals (CCR) from Electric Utilities [40 CFR 257.50-107], or the "CCR Rule" (Rule). Specifically, the selection of remedy process was initiated to fulfill the requirements of 40 CFR 257.97.

1.1 BACKGROUND

The Assessment of Corrective Measures (ACM) for the four BGS CCR units was completed on September 12, 2019. The ACM was completed in response to the detection of lithium and molybdenum at statistically significant levels (SSLs) above the Groundwater Protection Standard (GPS) in groundwater samples from downgradient monitoring wells. Lithium concentrations exceeded the GPS at the following downgradient compliance monitoring wells: MW-302, MW-303, MW-307, and MW-308. Molybdenum concentrations exceeded the GPS at the following downgradient compliance monitoring wells: MW-302, MW-307, and MW-308. An ACM Addendum was completed on November 24, 2020.

This Semiannual Progress Report summarizes data collected and remedy evaluation progress made since the November 2020 ACM Addendum No. 1, and outlines planned future activities to complete the remedy selection process. This semiannual progress report covers the 6-month period of March 2023 through August 2023.

1.2 SITE INFORMATION AND MAPS

BGS is located along the west bank of the Mississippi River, about 5 miles south of the city of Burlington, in Des Moines County, Iowa (**Figure 1**). The address of the plant is 4282 Sullivan Slough Road, Burlington, Iowa. In addition to the generating station, which after December 31, 2021, uses natural gas instead of coal to fuel electrical generating operations, the property also contains a former coal yard, natural gas-fired combustion turbines, four CCR surface impoundments (Upper Ash Pond, Economizer Pond, Main Ash Pond, and Ash Seal Pond), and one non-CCR surface impoundment (Lower Pond). Coal and the coal-handling equipment in the former coal yard have been removed. Closure construction for the four CCR surface impoundments is currently underway.

The groundwater monitoring system at BGS is a multi-unit system. BGS includes four CCR units:

- BGS Ash Seal Pond (existing CCR surface impoundment)
- BGS Main Ash Pond (existing CCR surface impoundment)
- BGS Economizer Ash Pond (existing CCR surface impoundment)
- BGS Upper Ash Pond (existing CCR surface impoundment)

The closure of the BGS impoundments was discussed in the most recent amendment to the written closure plan (SCS Engineers [SCS], 2023). 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**.

Groundwater flow at the site is generally to the south-southeast, and the groundwater flow direction and water levels fluctuate seasonally due to the proximity to the river. Depth to groundwater as measured in the site monitoring wells varies from less than 1 to 15 feet below ground surface due to

topographic variations across the facility and seasonal variations in water levels. Depth to groundwater during the dewatering activities was significantly greater in many locations.

2.0 SUMMARY OF WORK COMPLETED

Groundwater related work completed to support remedy selection for the BGS CCR units is summarized in Table 1A. Work related to the impoundment closure is summarized in Table 1B. Activities completed within the 6-month period of March 2023 through August 2023 covered by this semiannual report are discussed in more detail below.

2.1 MONITORING NETWORK CHANGES

Changes to the BGS monitoring well network includes extension of casing for MW-306, MW-307, MW-307A, and MW-307B between March 2023 and August 2023. The well extensions were necessary because these four wells are located in an area where placement of the clay cap apron increased the elevation of the surrounding ground surface. The monitoring well locations are shown on Figure 2.

2.2 GROUNDWATER MONITORING

Since the March 2023 semiannual update, groundwater samples were collected during the April 2023 event and an additional sampling event in August 2023.

- The April 2023 monitoring event was part of the routine semiannual assessment monitoring program.

- Due to low groundwater levels during the April 2023 semiannual sampling event caused by CCR surface impoundment dewatering activities, an additional sampling event was conducted in August 2023.

A summary of groundwater samples collected since the initial ACM was issued in September 2019 is provided in Table 2.

2.3 STATISTICAL EVALUATION

Statistical evaluation of sampling results during the period will be covered in the 2023 Annual Groundwater Monitoring and Corrective Action Report due on January 31, 2024.

Statistical evaluation of groundwater quality data during the period covered by this update included a comparison of Appendix IV parameter results to GPSs. In accordance with the Unified Guidance for Statistical Analysis of Groundwater Monitoring Data at Resource Conservation and Recovery Act (RCRA) Facilities (U. S. EPA, 2009), the evaluation of whether a parameter has been detected at an SSL exceeding the GPS is based on a comparison of the lower confidence limit (LCL) for the mean, calculated from the assessment monitoring results, to the GPS. For the wells that were sampled in the April 2023 monitoring event, SSLs above the molybdenum GPS were identified for well MW-307. SSLs above the GPS were identified for wells MW-302, MW-304, MW-307, and MW-308 for lithium. Lowering of the water table and change in groundwater flow directions during the dewatering activities that were ongoing during April sampling event affected the number of wells that could be sampled and the groundwater results.

2.4 ASH POND CLOSURES

Closing the ash ponds is one part of a holistic groundwater remedy at BGS. IPL continues to make significant progress on the engineering, permitting, and construction required to close the ash ponds. Engineering and permitting for the ash pond closures is complete as of this semiannual update. Construction for ash pond closure has been nearly continuous throughout the reporting period.

Key activities completed during the reporting period included:

- Upper Ash Pond Closure
  - All CCR material removed.
  - Groundwater dewatering around the Upper Ash Pond was completed in July 2023 and subsequent dewatering well abandonment was completed in late August through early September 2023.
  - Contact water (runoff from the CCR that collected in the UAP prior to the cover placement) removal was initiated and was completed by the end of August 2023.
  - Restoration activities including post-closure storm water retention and conveyance feature installation and slope armoring were initiated and will continue into the next semiannual reporting period.
- Ash Seal Pond Closure
  - All accessible CCR material removed.
  - Backfilling with general fill was completed.
  - Groundwater dewatering around the Ash Seal Pond was completed in April 2023.
  - Final cover system construction over the remaining CCR within the unit was initiated. The final cover consists of the following:
    - Eighteen-inch-thick infiltration layer constructed of low permeability soil. Placement and testing of the low permeability soil for the infiltration layer in accordance with the Closure Plan and Construction Quality Assurance (CQA) Plan was completed.
    - Six-inch-thick erosion layer construction of topsoil. Topsoil placement for the erosion layer was completed.
  - Restoration activities including post-closure storm water conveyance feature installation, seeding, fertilizing, and mulching were initiated and will continue into the next semiannual reporting period.
- Main Ash Pond Closure
  - CCR placement in the Main Ash Pond closure area was completed.

- Final cover system construction was initiated over the Main Ash Pond closure area. The final cover system is the same as described above for the Ash Seal Pond.
    - Placement and testing of the low permeability soil for the infiltration layer in accordance with the Closure Plan and CQA Plan was completed.
    - Topsoil placement for the erosion layer will continue into the next semiannual reporting period.
- Restoration activities including post-closure storm water conveyance feature installation, seeding, fertilizing, and mulching were initiated and will continue into the next reporting period.

- Economizer Pond Closure
    - CCR placement in the Economizer Pond closure area was completed.
    - Final cover system construction was initiated over the Economizer Pond closure area. The final cover system is the same as that described above for the Ash Seal Pond.
        - Placement and testing of the low permeability soil for the infiltration layer in accordance with the Closure Plan and CQA Plan was initiated and will continue into the next reporting period.
        - Topsoil placement for the erosion layer will continue into the next semiannual reporting period.
    - Restoration activities including post-closure storm water conveyance construction, seeding, fertilizing, and mulching were initiated and will continue into the next reporting period.

A summary of the ash pond closure activities completed during the current reporting period is provided in Table 1B.

2.5 EVALUATION OF CORRECTIVE MEASURE ALTERNATIVES

A qualitative assessment of potential Corrective Measure Alternatives using the selection criteria in 40 CFR 257.97(b) and (c) was provided in the September 2019 ACM and revised in the November 2020 ACM Addendum No. 1.

A multi-phase groundwater treatability study that concluded in the September 2022 reporting period did not identify a suitable media that could feasibly be used as a chemical amendment or as a permeable reactive barrier.

Corrective measure evaluation of the non-reactive permeable barrier was completed in the previous reporting period and concluded that the installation of a continuous barrier at the limits of the CCR units would be significantly constrained by existing electrical generating and transmission infrastructure, including current operational fuel and water supplies. A continuous barrier of adequate depth may not be feasible.

Efforts in the current reporting period focused on groundwater collection as possible augmentations of the CCR unit closures and included the following:

- Additional groundwater parameters have been and continue to be collected and analyzed for the purpose of providing additional information that may be needed for the development and evaluation of any groundwater treatment components of the corrective action. These additional parameters include carbonate and bicarbonate alkalinity, and total and dissolved metals (lithium, iron, magnesium, manganese, molybdenum, and sodium).

An updated assessment of the potential Corrective Measure Alternatives using the selection criteria in 40 CFR 257.97(b) and (c) will be provided in the forthcoming Selection of Remedy Report. The updated ACM and Selection of Remedy report will address the holistic groundwater remedy in greater details, including selected actions to supplement the groundwater quality benefits that are anticipated following the pond closures.

2.6 PUBLIC MEETING

In accordance with 40 CFR 257.96(e), IPL held a public meeting to discuss the ACM Addendum No. 2 on June 26, 2023. The meeting was open to interested and affected parties, and, due to the COVID-19 pandemic, was held virtually using an interactive online meeting platform.

3.0 PLANNED ACTIVITIES

Planned activities related to the remedy selection process include the following:

- Continue semiannual assessment monitoring for the existing monitoring well network.
- Update conceptual site model based on recent groundwater sampling results.
- Complete evaluation of remedial options.
- Continue development of MODFLOW numerical model using site specific geometry, geology, steady-state boundary conditions, and material properties. Calibrate the model for hydraulic conductivity and evaluate capture zones and optimal well placement for hydraulic control.
- Calibrate the MODFLOW model using dewatering well recovery data, historical observations of water table elevations, and current water level history matching.
- Collect additional CCR samples to characterize the CCR leaching potential if exposed to groundwater. Perform Synthetic Precipitation Leaching Procedure (SPLP) tests and leach tests on the CCR samples to identify leachable fractions and expected molybdenum and lithium concentrations in groundwater.
- Finalize the Selection of Remedy Report. The ongoing development of the MODFLOW model will be completed are part of remedy implementation.

Planned activities related to the CCR unit closure process include the following:

- Upper Ash Pond
  - Complete slope armoring for future storm water retention pond.

- Main Ash Pond
  - Finish topsoil placement for the final cover erosion layer.
  - Complete storm water conveyance installation.
  - Complete seeding and erosion mat placement.

- Economizer Pond
  - Finish topsoil placement for the final cover erosion layer.
  - Complete seeding and erosion mat placement.

- Complete storm water conveyance structure installation.

- Complete project cleanup/substantial completion.

- Obtain certification by qualified professional engineer that closure was completed in accordance with the Closure Plan per 40 CFR 257.102(f)(3).

- Prepare a notification of closure for the four CCR units per 40 CFR 257.102(h).

- Record deed notations and prepare corresponding notifications for the Ash Seal Pond, Main Ash Pond, and Economizer Pond in accordance with 40 CFR 257.102(i).

- Submit Construction Documentation Report to the Iowa Department of Natural Resources (IDNR).

Tables

Table 1A. Timeline for Completed Groundwater Sampling and Selection of Corrective Action Alternatives Work
Selection of Remedy Update
Burlington Generating Station / SCS Engineers Project #25220081.00

Date	Activity
Work Completed During Previous Reporting Periods	
May 2019	Additional monitoring wells installed to investigate nature and extent (MW-312 and MW-313).
June 2019	Sampled new monitoring wells (MW-312 and MW-313).
September 2019	Completed the Well Documentation Report for the new wells.
September 2019	Completed ACM.
October 2019	Conducted semiannual assessment monitoring event, including second round of sampling for the new wells (MW-312 and MW-313).
January 2020	Completed Statistical Evaluation of October 2019 groundwater monitoring results.
January 2020	Completed 2019 Annual Groundwater Monitoring and Corrective Action Report.
November 2019 to spring 2020	Planning, permitting, and access arrangements for installation of four additional monitoring wells (piezometers) to investigate the vertical extent of impacts.
March 2020	Completed Semiannual Progress Report for Selection of Remedy.
June-July 2020	Additional monitoring wells (piezometers) installed to investigate vertical groundwater flow and groundwater quality.
September 2020	Conducted additional assessment monitoring following piezometer well installation.
September 2020	Completed Semiannual Progress Report for Selection of Remedy.
October 2020	Conducted semiannual assessment monitoring event.
October 2020	Held public ACM meeting.
November 2020	Completed ACM Addendum No. 1.
January 2021	Completed 2020 Annual Groundwater Monitoring and Corrective Action Report.
March 2021	Completed Semiannual Progress Report for Selection of Remedy.
March 2021	Conducted additional assessment monitoring event for select parameters.
March 2021	Conducted surface water sampling at two locations on the Mississippi River. One sample was obtained upriver from the plant and the other was obtained from a downriver location.
April 2021	Alliant Energy provided a notification to the Iowa Department of Natural Resources in accordance with 40 CFR 257.95(g)(2).
May 2021	Installed new piezometers MW-307B and MW-313B. Drilled boring B-302B.
May 2021	Groundwater treatability study initiated with literature-vendor review of reagents.
June - July 2021	Evaluated existing, stored soil and CCR material samples for potential use in the groundwater treatability study.
July 2021	Conducted assessment monitoring events for new wells MW-307B and MW-313B.
August 2021	Completed Well documentation report for the new piezometers MW-307B and MW-313B.
September 2021	Completed Semiannual Progress Report for Selection of Remedy.
September 2021	Conducted ash samples collection from the Main Ash Pond and groundwater sampling at MW-304 and MW-310, in support of the Treatability Study.

Table 1A. Timeline for Completed Groundwater Sampling and Selection of Corrective Action Alternatives Work
Selection of Remedy Update
Burlington Generating Station / SCS Engineers Project #25220081.00

Date	Activity
September 2021 - February 2022	Additional background monitoring well location identification, design, and permitting.
October 2021	Conducted ash samples collection from the Economizer Pond and Main Ash Pond in support of the Treatability Study.
October 2021 - December 2021	Performed batch testing of reagents to evaluate sequestration potential for groundwater treatability study.
December 2021	Ferrous sulfate and FerroBlack Fe+ were selected for further stabilization evaluation based on their performance during the batch testing. FerroBlack Fe+ and ZVI were selected for further treatability study evaluation as potential Permeable Reactive Barrier reagents.
December 2021	Further solidification trials with Portland Cement and TerraBond were terminated because test results showed a potential release of lithium from Portland Cement and a prohibitively high dose of TerraBond was required to achieve solidification.
January 2022	Completed 2021 Annual Groundwater Monitoring and Corrective Action Report.
February 2022	Evaluated groundwater dewatering pump test discharge data (ongoing effort).
February 2022	Received Interim Groundwater Treatability Study Report and approved recommendation to proceed with column studies.
February 2022	Additional assessment monitoring event at monitoring wells MW-307 and MW-313B, and arsenic sample at monitoring well MW-302.
February 2022	Obtained well permit and floodplain development permit for installation of monitoring well MW-314.
February 2022	Performed utility clearance and installed additional background monitoring well MW-314.
March 2022	Completed Semiannual Progress Report for Selection of Remedy.
April 2022	Conducted semiannual assessment monitoring event.
June 2022	Completed Statistical Evaluation of February 2022 groundwater monitoring results.
June 2022	Completed the Well Documentation Report for the new well MW-314.
July 2022	Completed Statistical Evaluation of April 2022 groundwater monitoring results.
July 2022	Finalized Groundwater Treatability Study Report following completion of column studies.
July 2022	Groundwater treatability study initiated with literature-vendor review of reagents.
September 2022	Completed Semiannual Progress Report for the Selection of Remedy.
September 2022	Began the evaluation of ex-situ treatment options for molybdenum and lithium.
October 2022	Completed semiannual assessment monitoring event. Due to ongoing dewatering activities at the site, several shallow wells were dry and could not be sampled.
October 2022	Installed pressure transducers in select monitoring wells in the vicinity of the dewatering wells to record aquifer recovery after the dewatering wells are shut-down in December. The data will be used to calibrate a MODFLOW model to be used for the groundwater extraction and treatment alternative.
November 2022 - February 2023	Preparation of draft Selection of Remedy report.
November 2022	Began development of MODFLOW model to evaluate groundwater extraction scenarios for a pump and treat remedial alternative.

Table 1A. Timeline for Completed Groundwater Sampling and Selection of Corrective Action Alternatives Work
Selection of Remedy Update
Burlington Generating Station / SCS Engineers Project #25220081.00

Date	Activity
December 2022	Continued development of MODFLOW model. Model domain, surface water bodies, and wetland areas were all digitized into shapefiles and imported into the MODFLOW model. River stage data were located for model calibration. A digital elevation model and three layers were imported into the MODFLOW model.
December 2022	Aquifer recovery data collection was postponed due to the decision to continue dewatering through the winter. Recovery data needed for MODFLOW model calibration will not be available until dewatering is completed.
January 2023	Continued development of MODFLOW model. Encoded the river and stream shapefiles as boundary conditions in MODFLOW and implemented gridding.
January 2023	Completed 2022 Annual Groundwater Monitoring and Corrective Action Report.
Work Completed During Current Reporting Period	
March 2023	Completed Semiannual Progress Report for Selection of Remedy.
March 2023	Continued MODFLOW model development by adding boundaries and rivers/streams. Began building geologic surfaces.
April 2023	Conducted semiannual assessment monitoring event.
May 2023	Extended monitoring well casings for MW-306, MW-307, MW-307A, MW-307B, and MW-308 due to change in grade as part of pond closure project.
June 2023	Evaluated existing dewatering wells for potential re-use as groundwater extraction wells for the groundwater corrective action.
July 2023	Held public meeting.
July 2023	Re-developed wells that had gone dry during dewatering system operations, and collected groundwater levels.
July - August 2023	Abandoned Dewatering Wells.
July - August 2023	Revised draft SOR cross-sections to account for closure related changes to ash, ground surface, and water table.
August 2023	Conducted an additional monitoring event due to unusual results in April 2023, attributed to dewatering activities.
August 2023	Completed April 2023 Groundwater Monitoring Results Letter.

Notes:
*: Spring semiannual sampling events are typically completed in April; the spring 2020 event was delayed due to the COVID-19 pandemic.

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Table 1B. Timeline for Closure Activities Work
Selection of Remedy Update
Burlington Generating Station / SCS Engineers Project #25220081.00

Date	Activity
Work Completed During Previous Reporting Periods	
December 2019/ January 2020	Execute source area and geotechnical field investigation.
June 2020	Completed field work for geotechnical study of impoundments.
November 2020	Submitted application to EPA for a site-specific alternative deadline to initiate ash pond closures.
February 2021	Complete permit level designs for the development of new wastewater treatment pond.
March 2021	Issued a Request for Proposal (RFP) to pond closure contractors to conduct pre-construction services.
March - April 2021	Obtained proposals for closure of the Ash Seal Pond and construction of a new wastewater treatment pond.
April - May 2021	Evaluated proposals for closure of the Ash Seal Pond and construction of a new wastewater treatment pond.
May - July 2021	Obtained permits for closure of the Ash Seal Pond.
June - July 2021	Modified low-volume wastewater treatment approach. Developed preliminary plans for new suspended solids treatment and wastewater reroute.
July 2021	Selected a contractor to provide preconstruction services for ash pond closures.
August 2021	Conducted design reviews and site visits with pond closure preconstruction services contractor. Evaluating permitting needs for preconstruction field testing plans.
October 2021	Performed test pits in and around the four impoundments and the coal yard to evaluate site conditions and CCR behavior during excavation, moisture conditioning, and placement.
October 2021 - December 2021	Installed two groundwater dewatering pilot test wells at the Upper Ash Pond and Ash Seal Pond and completed a pump test at each location to evaluate the design of a groundwater dewatering system for the closure of the Upper Ash Pond and Ash Seal Pond.
November 2021 - February 2022	Incorporated preconstruction testing into impoundment closure design (ongoing effort).
January - August 2022	Developed Upper Ash Pond closure permit applications (ongoing effort).
May - June 2022	Erosion controls installed and graded portion of the coal yard completed. Pumped surface water from Main Ash Pond to the Upper Ash Pond.
June -August 2022	Temporary dewatering wells installed around the Ash Seal Pond and Upper Ash Pond. Grading the C-stone and Bottom Ash Pile in the Main Ash Pond. Regraded Economizer Pond west, south, and north slopes.
July 2022	Vibrating wire piezometers were installed in the Main Ash Pond and Economizer Ash Pond in preparation of CCR consolidation. Monitoring is ongoing.
August 2022	Began excavating CCR from the Ash Seal Pond and placing in Main Ash Pond and Economizer Pond Closure Areas. Began hauling coal/coal impacted material to Main Ash Pond (Ongoing Effort).

Table 1B. Timeline for Closure Activities Work
Selection of Remedy Update
Burlington Generating Station / SCS Engineers Project #25220081.00

Date	Activity
September 2022	Received groundwater dewatering discharge permit (Iowa DNR NPDES GP#9) coverage effective 9/1/2022 through 11/30/2022, and began dewatering well pumping for CCR excavation in the Upper Ash Pond.
September 2022	Submitted a Temporary and Limited Antidegradation request to Iowa DNR for approval of the chemical additives proposed for use in the CCR contact water treatment system to be used during CCR excavation activities in 2023.
October 2022	Completed low-volume wastewater and storm water reroute construction.
October 2022	Began dewatering well pumping for CCR excavation in the Ash Seal Pond.
October 2022 - November 2022	Completed CCR removal and geotechnical berm buttress construction between the Economizer Ash Pond and the Upper Ash Pond.
October 2022 - February 2023	Continued removal of CCR from Ash Seal Pond and placing in Main Ash Pond and Economizer Pond Closure Areas.
November 2022	Submitted an Antidegradation Alternatives Analysis for Temporary Dewatering Well Discharge for extended Iowa DNR NPDES GP#9 coverage after 30-day public comment period. Received groundwater dewatering discharge permit (Iowa DNR NPDES GP#9) coverage effective 12/1/2022 through 6/30/2023.
November 2022 - February 2023	Continued dewatering well pumping for CCR excavation in the Upper Ash Pond and the Ash Seal Pond.
November 2022	Issued the annual progress report required by 40 CFR 257.103(f)(2)(x), Annual Progress Report – Site-Specific Alternative Deadline to Initiate Closure of CCR Surface Impoundments
December 2022	Completed removal of coal and coal impacted soil from the coal yard and placed in the Closure Areas.
December 2022	Discharges of non-CCR waste streams to the CCR units ceased on December 5, 2022.
December 2022	Issued updated written closure plan, Closure Plan for Existing CCR Surface Impoundments – Amendment No. 2.
December 2022	Submitted the state sanitary disposal project closure permit application.
February 2023	Evaluated abandonment options for the dewatering wells.
February 2023	Submitted responses to agency review questions on the state sanitary disposal project closure permit application.
February 2023	Received approval of the state sanitary disposal project closure permit.

Table 1B. Timeline for Closure Activities Work
Selection of Remedy Update
Burlington Generating Station / SCS Engineers Project #25220081.00

Date	Activity
Work Completed During Current Reporting Period	
March 2023	Completed CCR removal and began backfilling with general fill in the Ash Seal Pond.
April 2023	Turned off dewatering wells around Ash Seal Pond.
May 2023	Began hauling in and placing low permeability soil in the MAP.
June 2023	Completed removal of CCR from the Upper Ash Pond.
June 2023	Turned off dewatering wells around Upper Ash Pond at the end of the month.
June 2023 - August 2023	Placing topsoil in Main Ash Pond.
July 2023	Began placing low permeability soil in the Economizer Ash Pond and Ash Seal Pond.
July 2023	Completed low permeability cover soil placement and testing in the Ash Seal Pond and Main Ash Pond.
August 2023	Continued low permeability placement in Economizer Ash Pond.
August 2023	Placing topsoil in Economizer Ash Pond.
August 2023	Completed general fill placement in the Ash Seal Pond and completed topsoil placement.
August 2023	Began seeding and installing rolled erosion control product in the Main Ash Pond and Ash Seal Pond.
August 2023	Began installation of storm water conveyance features in Ash Seal Pond, Main Ash Pond, and Economizer Ash Pond.
August 2023	Began dewatering Upper Ash Pond contact water.
August 2023	Completed contact water removal from the Upper Ash Pond.
August 2023 - September 2023	Abandonment of dewatering wells of the Upper Ash Pond completed.

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Table 2. CCR Rule Groundwater Samples Summary - Events Since ACM Submittal
Burlington Generating Station
SCS Engineers Project #25220081.00

	Compliance Wells		Delineation Well	Compliance Wells					Delineation Well		Compliance Wells		Background Well	Delineation Well	Background Well	Delineation Wells				Supplemental Background Well
Sample Dates	MW-301	MW-302	MW-302A	MW-303	MW-304	MW-305	MW-306	MW-307	MW-307A	MW-307B	MW-308	MW-309	MW-310	MW-310A	MW-311	MW-312	MW-313	MW-313A	MW-313B	MW-314
10/10-11/2019	A	A	NI	A	A	A	A	A	NI	NI	A	A	A	NI	A	A	A	NI	NI	NI
6/2-4/2020	A	A	NI	A	A	A	A	A	NI	NI	A	A	A	NI	A	A	A	NI	NI	NI
9/9/2020	--	--	A	--	--	--	--	--	A	NI	--	--	--	A	--	--	--	A	NI	NI
10/14-16/2020	A	A	A	A	A	A	A	A	A	NI	A	A	A	A	A	A	A	A	NI	NI
3/1-3/2021	Add.	Add.	Add.	Add.	Add.	Add.	Add.	Add.	Add.	NI	Add.	Add.	--	Add.	Add.	Add.	Add.	Add.	NI	NI
4/19-20/2021	A	A	A	A	A	A	A	A	A	NI	A	A	A	A	A	A	A	A	NI	NI
7/1/2021	--	--	--	--	--	--	--	--	--	A	--	--	--	--	--	--	--	--	A	NI
10/11-14/2021	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	NI
2/22/2022	--	Add.	--	--	--	--	--	--	--	A	--	--	--	--	--	--	--	--	A	NI
4/4-6/2022	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
10/20/2022*	--	--	A	--	--	--	--	--	A	A	--	--	--	A	--	--	A	A	A	A
4/24-27/2023	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	--[1]
8/1-3/2023	Add.	Add.	Add.	Add.	Add.	Add.	Add.	Add.	Add.	Add.	Add.	Add.	Add.	Add.	Add.	Add.	Add.	Add.	Add.	Add.
Total Samples	9	10	9	9	9	9	9	9	9	7	9	9	8	9	9	9	10	9	7	3

Abbreviations:
A = Assessment Monitoring Program
Add. = Additional Assessment Monitoring Event
NI = Not Installed
-- = Not Sampled

Notes:
*: Several monitoring wells were dry in October 2022 due to dewatering as part of ongoing pond closure work.
(1): MW-314 was not sampled during the April 2023 monitoring event due to flooding in the surrounding area.

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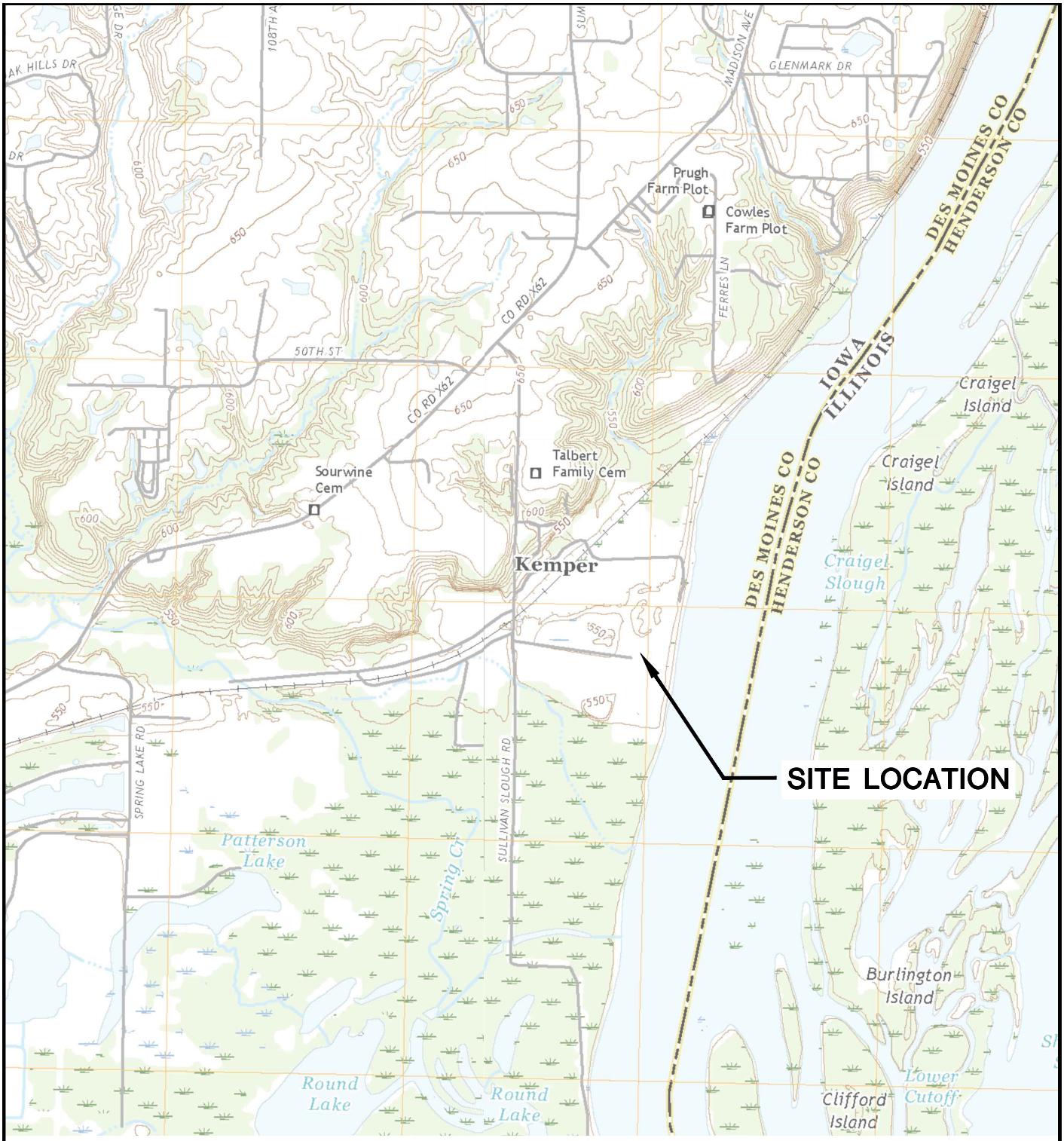
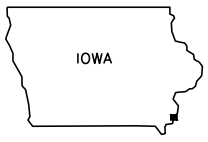
Figures



LOMAX QUADRANGLE
ILLINOIS / IOWA–DES MOINES CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
2018
SCALE: 1" = 2,000'



CLIENT	ALLIANT ENERGY 4902 N. BILTMORE LANE, #1000 MADISON, WI 53718	SITE	ALLIANT ENERGY BURLINGTON GENERATING STATION BURLINGTON, IOWA

SITE LOCATION MAP

PROJECT NO.	25219066.00	DRAWN BY:	BSS
DRAWN:	11/14/2019	CHECKED BY:	MDB
REVISED:	01/14/2020	APPROVED BY:	TK 01/30/2020

ENGINEER

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

FIGURE
1

I:\25219066.00\Drawings\CCR 2019 Annual Report\Site Location Map.dwg, 1/30/2020 3:35:22 PM

LEGEND

- EXISTING CCR RULE MONITORING WELL
- CCR RULE PIEZOMETER
- CCR UNITS

NOTES:

1. MONITORING WELLS MW-303 THROUGH MW-308 WERE INSTALLED BY CASCADE DRILLING, LLP. UNDER THE SUPERVISION OF SCS ENGINEERS ON DECEMBER 15-17, 2015.
2. MONITORING WELLS MW-301, MW-302, AND MW-309 THROUGH MW-311 WERE INSTALLED BY DIRECT PUSH ANALYTICAL SERVICES CORP. UNDER THE SUPERVISION OF SCS ENGINEERS FROM FEBRUARY 29, 2016 TO MARCH 1, 2016.
3. MONITORING WELLS MW-312 AND MW-313 WERE INSTALLED BY ROBERTS ENVIRONMENTAL DRILLING IN MAY 2019.
4. PIEZOMETERS MW-302A, MW-307A, MW-310A, AND MW-311A WERE INSTALLED BY ROBERTS ENVIRONMENTAL DRILLING IN JUNE-JULY 2020.
5. PIEZOMETERS MW-307B AND MW-313B INSTALLED BY CASCADE DRILLING, LLP. UNDER THE SUPERVISION OF SCS ENGINEERS FROM MAY 10-12, 2021.
6. MONITORING WELL MW-314 INSTALLED BY TERRACON CONSULTANTS, INC. UNDER THE SUPERVISION OF SCS ENGINEERS ON FEBRUARY 25, 2022.
7. 2017 AERIAL PHOTOGRAPH SOURCES: GOOGLE EARTH DATED SEPTEMBER 14, 2017.

N

700 0 700

SCALE: 1" = 700'

PROJECT NO.	25221060.00	DRAWN BY:	BSS/KRG/BWM
DRAWN:	09/14/2020	CHECKED BY:	MDB
REVISED:	12/13/2022	APPROVED BY:	TK 1/22/2023

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

CLIENT: ALLIANT ENERGY
4902 N. BILTMORE LANE, #1000
MADISON, WI 53718

SITE: ALLIANT ENERGY
BURLINGTON GENERATING STATION
BURLINGTON, IOWA

SITE PLAN AND MONITORING WELL LOCATIONS

FIGURE 2

\\Mad-fs01\data\Projects\25221160.00\Drawings\SitePlan-Wells-2022-02-25.dwg, 12/13/2022 11:59:38 AM