Amended Written Closure Plan

Erickson Power Station – CCR Surface Impoundments

Lansing Board of Water & Light

Delta Township, Michigan

- Rev 0 – August 16, 2019 (NTH*)
- Rev 1 – July 15, 2025

*Original Closure Plan was performed by NTH Consultants, Ltd.

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1 General Information

Erickson Power Station was a 165-megawatt coal-fired, steam turbine power plant owned and operated by Lansing Board of Water & Light (BWL). The plant was located at 3725 South Canal Road, Eaton County, Michigan (**Figure 1**). Erickson Power Station was constructed starting in 1970, was completed in 1973, and ceased operations December 31, 2022. Coal Combustion Residuals (CCR) generated at Erickson were stored in dewatering tanks (hydro-bins) and three CCR impoundments: the Forebay, Retention Basin, and Clear Water Pond (CWP) (

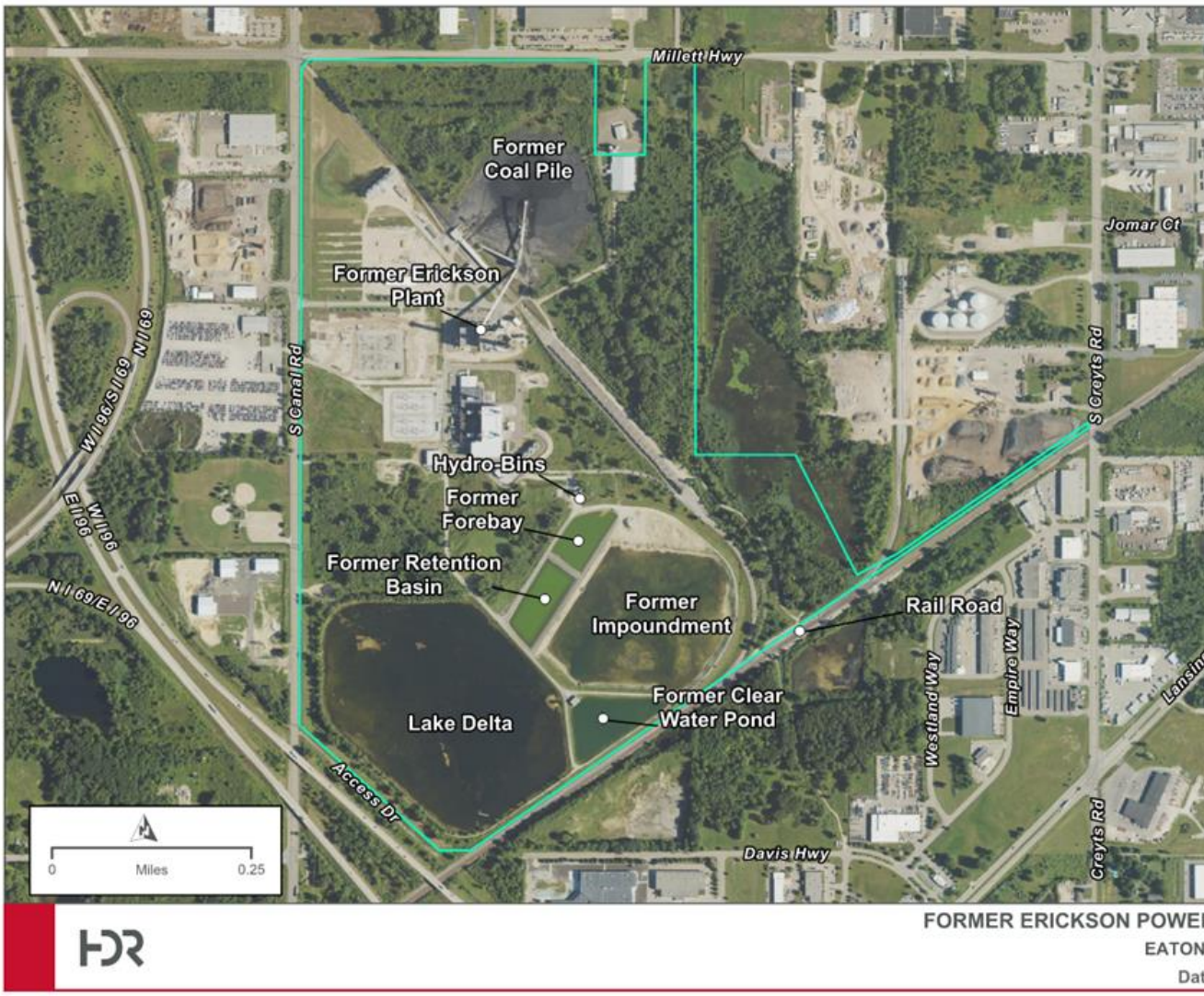


Figure 2).

In October 2015, the United States Environmental Protection Agency (EPA) promulgated the Disposal of Coal Combustion Residuals (CCR) from Electric Utilities; Final Rule (40 Code of Federal Regulations [CFR] §257 and 261) (Federal CCR Rule). In April 2024 EPA announced the pre- publication version of a final rule to revise the closure performance standard at § 257.102(c). Under the revised rule, an owner or operator would be able to close a CCR unit by

completing removal of all CCR from the unit, decontaminating areas affected by releases from the CCR unit, except for groundwater, and completing the groundwater corrective action during post-closure care.

The Forebay, Retention Basin, and CWP are subject to the requirements of the Federal CCR Rule. After startup in 1973, fly ash and bottom ash were discharged into a 33-acre acre impoundment system. From Impoundment the water then flowed hydraulically to the CWP. Water from the CWP was recycled back to the plant via the Pump House for reuse. In 1976, fly ash was diverted to a dry system and sold as byproduct to the cement industry, and only bottom ash was sent to the impoundment. The 33-acre impoundment was physically closed in 2014 (CCR was removed from the impoundment and disposed off-site) and the Forebay and Retention Basin were installed within its footprint, leaving a 28-acre inactive area currently described as the Former Impoundment on

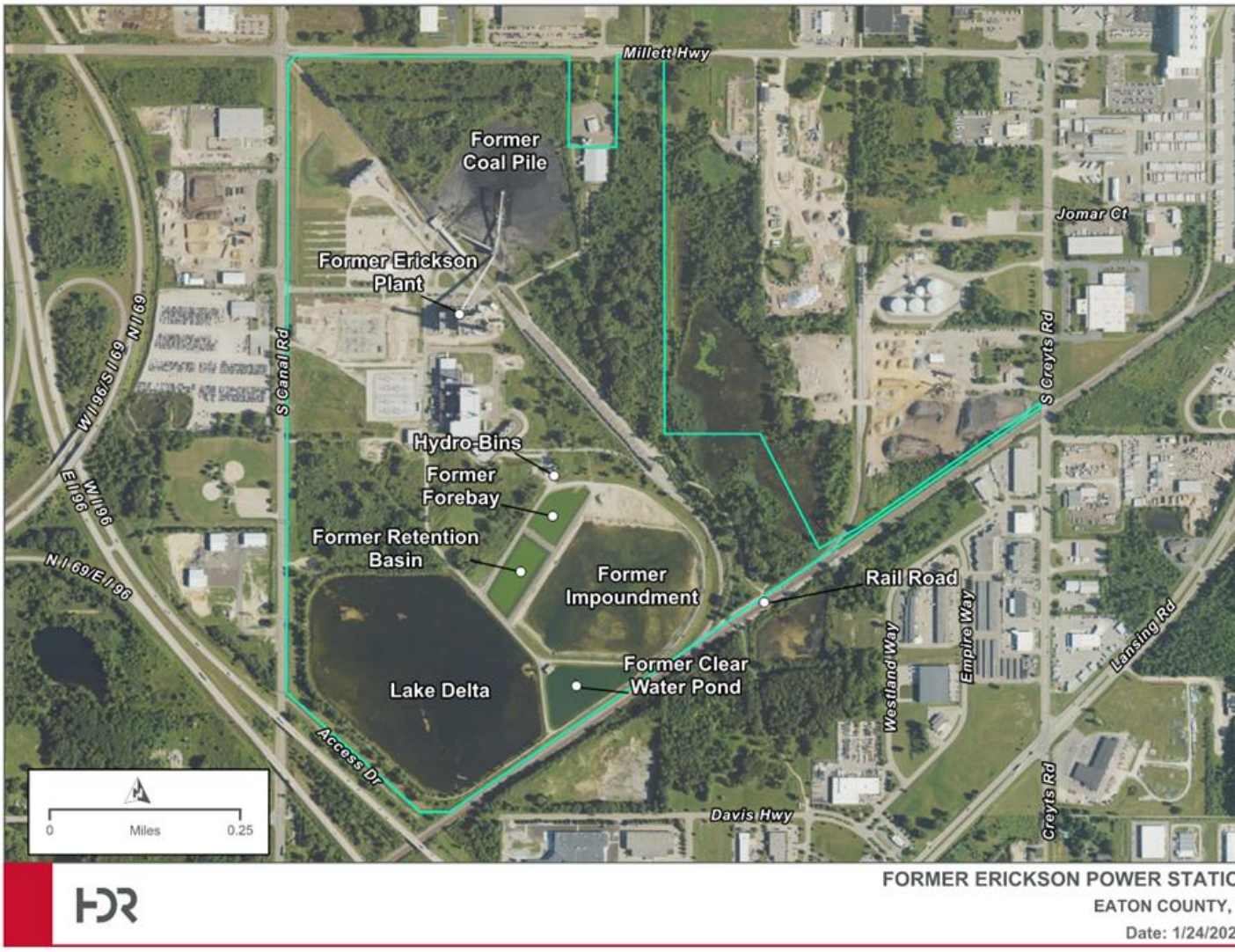


Figure 2. Between 2014 and 2022, bottom ash from the coal-fired boiler was sluiced from the plant to dewatering tanks (hydro-bins). The dewatered bottom ash was trucked to a Type II landfill and the decant water was hydraulically fed through the Forebay, Retention Basin, and

then to the CWP to allow the minimal remaining CCR particles to settle out before returning to the plant via the CWP Pump House for reuse. In addition to the flow from the hydro-bins, the CCR impoundments also received non-CCR wastewater, including flows from the coal pile runoff sump and plant sumps.

The interior embankments and floors of both the Forebay and Retention Basin are lined with a layer of geosynthetic clay overlain with a 40-mil thick flexible polyvinylchloride membrane liner (FML). Each FML is protected with geofabric and a 6- to 12-inch layer of sand. The tops of the embankments that are subject to wave action are protected with an additional layer of geofabric and 6 to 12 inches of stone riprap (MD&E, 2018). The tops of the interior embankments of the CWP are protected with approximately 6 inches of stone riprap. The CWP is lined with compacted clay. There are no regulated outfalls associated with the impoundment system.

Due to the age of the CWP, less historical documentation exists for the liner construction of the CWP. According to the Location Restriction Report, the CWP is “lined with compacted clay” (MD&E, 2018). Water discharged from Erickson Power Station flows directly to the

Figure 1. General Location

Figure 2. Erickson Facilities Map

Forebay and enters through three influent pipes: 1) a 10-inch main extending from the plant sump within Erickson Power Station, 2) a 10-inch main from the Hydro-Bins, and 3) a 6-inch main extending from the Coal-Pile Run-Off Pump House. Water then flows from northeast to southwest across the Forebay where water exits through three 24-inch diameter effluent pipes at the southwest corner of the Forebay, which serves as the spillway for the Forebay, and passes through the dike separating the Forebay and Retention Basin and enters the Retention Basin. Water then flows from northeast to southwest across the Retention Basin where water exits through a 72-inch diameter pre-cast concrete overflow riser pipe at the south corner of the Retention Basin, which serves as the spillway for the Retention Basin. At the bottom of the riser pipe structure lies a 36-inch diameter corrugated plastic pipe (CPP) pipe that directs flow to the CWP. Water was pumped from the CWP back to the plant for reuse.

In accordance with 40 CFR §257.102(b)(1), BWL is required to publish a written closure plan that, *"…describes the steps necessary to close the CCR unit at any point during the active life of the CCR unit consistent with recognized and generally accepted good engineering practices."*

Specific to closure by removal of CCR, 40 CFR §257.102(c) states,

> *"An owner or operator may elect to close a CCR unit by removing and decontaminating all areas affected by releases from the CCR unit. CCR removal and decontamination of the CCR unit are complete when constituent concentrations throughout the CCR unit and any areas affected by releases from the CCR unit have been removed and groundwater monitoring concentrations do not exceed the groundwater protection standards."*

Additionally, the Legacy Coal Combustion Residuals Surface Impoundments and CCR Management Units Final Rule change was finalized and announced in a pre-publication of the final rule on April 25, 2024. This includes a change under 40 CFR §257.102(c)(2) that states,

> *"An owner or operator may close a CCR unit by completing all removal and decontamination activities, except for groundwater corrective action, during the active life of the CCR unit and by completing groundwater corrective action during the post-closure care period"*

BWL intends to close the three CCR impoundments via removal of CCR followed by groundwater corrective action in the post-closure care period and this Closure Plan fulfills the requirements of the Federal CCR Rule.

2 Description of Closure Plan – §257.102(b)(1)(i-iii)

The first step in closure is to prepare a notification of intent to close the impoundments, pursuant to 40 CFR §257.102(g). The three CCR impoundments were closed pursuant to 40 CFR §257.102(c), by removal of CCR wastes, decontaminating all areas affected by CCR

releases and meeting groundwater protection standards. The impoundments are currently in assessment of corrective measures, and as such, were closed after completing multiple phases of work.

The first phase covers removal of visible CCR. CCR removal verification includes photographic documentation and analytical confirmatory soil sampling of the impoundment bottoms and side slopes that demonstrate CCR wastes have been removed, and the remaining soils have been decontaminated.

During the post-closure care period, work will be performed to achieve groundwater protection standards. Because Appendix IV constituents have been detected at statistically significant levels above groundwater protection standards, the groundwater monitoring program has entered into assessment of corrective measures and therefore will require remedial action to achieve groundwater protection standards during the post-closure care period.

Closure work described in this plan will be conducted under the supervision of a registered Professional Engineer who will be responsible for certification of closure. Upon completion of closure activities, a notification of completion of closure will be completed per 40 CFR §257.102(h) and 40 CFR §257.105(i)(8). The notification will document that all requirements and conditions of the Closure Plan were achieved. The report will be signed and sealed by a Michigan registered Professional Engineer.

2.1 Removal of CCR Wastes from the CCR Impoundments or Physical Closure

Liquid and CCR will be removed from the impoundments. The dewatering and CCR removal plans are included in the attached Former Erickson Power Station Forebay, Retention Basin and Clear Water Pond Closure Work Plan (Closure Work Plan) (**Appendix A**). This Closure Work Plan was submitted to and approved by the Michigan Department of Environment, Great Lakes, and Energy (EGLE), Materials Management Division (MMD). The 2015 CCR Rule does not define criteria to demonstrate that remaining soil is clean after removal of CCR but EPA explained in the preamble to the rule that parties are not required to complete removal of all contamination (that is, cleanup to ‘background’). Instead, EPA explained that it must be demonstrated that any contaminants left in the subsoils (i.e., contaminated groundwater left in soils below the former impoundments) will not impact any environmental media including groundwater, surface water, or the atmosphere in excess of Agency-recommended limits or factors. In the 2024 pre-publication final rule, EPA further explained that although there are no soil cleanup standards in the CCR regulations, if the soil beneath the unit is contaminated sufficiently to serve as a secondary source of groundwater contamination, its removal may be required as part of the source control portion of a remedy selected under §257.97. To clarify, contaminated groundwater (groundwater with constituent concentrations triggering corrective action) must be remediated through the corrective action process detailed in §257.96-98. Until post-closure groundwater protections standards are met, a deed notation must be recorded.

The Closure Work Plan in **Appendix A** was created prior to CCR material being removed that outlines the lines of evidence to be used for CCR waste removal confirmation including

visual verification, photographic documentation, and confirmatory soil sampling. The first line of evidence for CCR waste removal verification will be a visual inspection by a Michigan licensed Professional Engineer (PE). The PE will observe the excavation work and inspect each impoundment excavation base and side slopes to certify that CCR waste material is not visually present. Excavation will continue until visual removal has been confirmed by the PE. The second line of evidence will be a comparison of the surveyed excavation termination grade to the design excavation grade, ensuring that the excavated grades meet the design grades. Photographic documentation will be the third line of evidence to be collected based on details defined in the Closure Work Plan. The final (fourth) line of evidence will include sampling and analytical testing of soils to provide chemical validation of CCR waste removal. Soil confirmation samples will be tested for the trace metals listed in Appendix III and IV of the CCR Rule plus additional parameters for State compliance. Results will be statistically compared to cleanup standards: Michigan Cleanup Criteria Requirements for Response Activity (Part 201 Generic Cleanup Criteria and Screening Levels) including Nonresidential Soil Part 201 Generic Cleanup Criteria and Screening Levels for Nonresidential Drinking Water Protection Criteria as well as statewide background soil concentrations and site-specific background soil concentrations. CCR wastes will be removed when constituent concentrations of the surface soils that remain after CCR waste removal meet the cleanup standard as approved by EGLE (Appendix A). Because there are no known releases (including fugitive dust) outside the footprint of the impoundments except for groundwater, there are no areas affected by releases other than the post-closure groundwater corrective action. In addition, the soil verification sampling will be performed so that there are no underlying subsoils that remain as source material or need to be decontaminated.

2.2 Post Closure Groundwater Monitoring and Corrective Action to Meet Groundwater Protection Standards

Additional actions are required beyond source removal (also referred to as “physical closure”) to meet the groundwater requirements of 40 CFR §257.102(c) and will be completed during the post- closure period. The groundwater monitoring program is in assessment monitoring with evaluation of corrective measures. In order to meet the 40 CFR §257.104(c)(3) groundwater requirement for clean closure, the corrective action program must be implemented and remedy completion must be achieved according to 40 CFR §257.98(c). At the time of this Closure Plan revision being published, BWL is in the process of evaluating the feasibility of various groundwater corrective measures that have the potential to remediate the groundwater impacts. BWL intends to select a remedy and begin procurement and design in 2027 and implementation in 2027 to early 2028. Groundwater monitoring will continue in the post-closure period until the criteria in 40 CFR §257.98(c) are met in order to achieve dual compliance with 257.102(c) and 104(c)(3). Any potential seepage water from the bottom of the excavations within the former CCR impoundment footprints prior to backfill is potentially groundwater from the unconfined aquifer and thus will be addressed as part of the selected remedy for groundwater. Inventory Estimate – 257.102(b)(1)(iv)

In accordance with 40 CFR §257.102(b)(1)(iv), an estimate of the maximum inventory of CCR ever on-site over the active life of the CCR impoundments must be provided.

As described in the Closure Work Plan in **Appendix A**, a bathymetric study was completed in the CCR impoundments to inventory the material in each impoundment. The CCR accumulated in the Forebay was calculated to be 4,784 cubic yards, and 1,598 cubic yards in the Retention Basin. These ponds were not cleaned out over the active life. The CCR accumulated in the CWP was calculated to be 9,925 cubic yards; however, the CWP was likely excavated several times over the active life and bottom ash was trucked to a sanitary landfill. Records of those ash volumes were not available.

The CCR removal excavation depth designs were based on a one-foot over-excavation below the as-built liner elevation of each impoundment. Excavation designs and cross sections are provided in the **Appendix A** Work Plan. The design resulted in approximately 7,020 cubic yards of CCR at the Forebay, 4,950 cubic yards of CCR at the Retention Basin, and 12,300 cubic yards of CCR at the CWP. This is a total of 24,270 cubic yards of CCR removal. There will be an addition 15,710 cubic yards of liner and over-excavation native material removed.

3 Area Requiring Final Cover – §257.102(b)1(v)

Section 257.102(b)(1)(v) is not applicable as the final closure will be accomplished through source removal and meeting the requirements of 40 CFR §257.102(c). Similarly, a deed notice per Section 257.102(h)(i) will be placed on the area until groundwater protection standards are achieved.

4 Schedule of Closure Activities – 257.102(b)1(vi)

Closure of the CCR impoundments will be initiated and completed within the timeframes defined in the Federal CCR Rule at 40 CFR §257.102(e)(1)(ii) and 40 CFR §257.102(f)(1)(ii), respectively. Physical closure will be completed as soon as practical, and no later than 5 years after initiation of closure activities, which were initiated in February 2023. Closure will be complete when the ash is removed, and confirmation sampling is complete. Groundwater protection standards will be achieved during the post-closure period under the Rule. **Table 1** details the schedule of closure and post-closure activities related to this rule.

Table 1. Schedule of Closure Activities

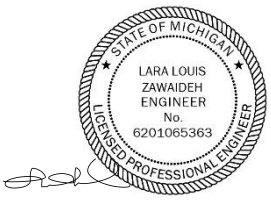
Schedule of Closure Activities	
Plans	**Revised**
Federal Written Closure Plan	August 16, 2019
Federal Amended Written Closure Plan	February 23, 2025
Task	**Finish Date**
Last Receipt of non-CCR and CCR waste	January 3, 2023
Impoundment Physical Closure	February 2023- November 2024
• Dewatering, Groundwater Evaluation	February 2023
• Slope Stability Evaluation	2023
• CCR waste removal and decontamination of liner	2023-2024
• Physical Closure Verification/Sampling	2023-2024
• Post CCR removal ongoing groundwater assessment monitoring	(a)
• Physical Closure Certification(b)	November 8, 2024
• Post Closure Activities– Implementation of Selected Groundwater Remedy	Until GPS achieved

(a) Post CCR removal groundwater sampling will continue until the criteria of 40 CFR §257.98(c) are met in order to achieve compliance with 40 CFR §257.102(c)
(b) EGLE approval of Former Erickson Power Station Forebay, Retention Basin, and Clear Water Impoundments, November 4, 2024. Physical closure means CCR removal and decontamination are complete.

5 Certification

In accordance with §257.102(b)(4), the owner or operator of the CCR unit must obtain a written certification from a qualified professional engineer that the initial and any amendment of the written closure plan meets the requirements of this section.

I, Lara Zawaideh, being a registered Professional Engineer, in accordance with the Michigan State Board of Licensure for Architects, Professional Engineers, and Professional Land Surveyors, do hereby certify to the best of my knowledge, information, and belief, that the information contained in this written Closure Plan dated July 15, 2025, was conducted in accordance with the requirements of 40 CFR §257 is true and correct, and was prepared in accordance with recognized and generally accepted good engineering practices.



Lara Louis Zawaideh
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State of Michigan
Licensed Professional Engineer
Michigan PE License expiration date 02/03/2026

07/15/2025

Appendix A. State Approved Closure Work Plan