


Consumers Energy Memorandum

To: Operating Record
Environmental Quality & Sustainability Department

From: Harold D. Register, Jr. 
Environmental Quality & Sustainability Department

Date: November 10, 2023

Subject: JC Weadock Bottom Ash Pond
40 CFR 257.102(c) Closure by Removal Certification

CC: Heather Prentice, Risk Management
File, Environmental Quality & Sustainability Department

1.0 INTRODUCTION

CEC prepared a "[Notification of Intent to Initiate Closure](#)" for the JC Weadock Bottom Ash Pond (JCW BAP) on October 12, 2018 to comply with the requirements of §257.102(g). This correspondence was subsequently placed into the operating record per §257.105(i)(7), noticed to the State Director per §257.106(i)(7) and posted to the publicly accessible website per §257.107(i)(7). Prior to the "Notification of Intent to Close," a [Closure Plan](#) (Golder, 2018) per the requirements of §257.102(b)(1)-(2) was developed for the JCW BAP. Compliance documents required pursuant to §257.107 can be publicly accessed at: <https://www.consumersenergy.com/community/sustainability/environment/waste-management/coal-combustion-residuals>

Closure of the JCW BAP was conducted in accordance with §257.102(c), which states:

Closure by removal of CCR. *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 standard established pursuant to § 257.95(h) for constituents listed in appendix IV to this part.*

This technical memorandum has been prepared to document the closure activities at the JCW BAP and provide certification from a qualified professional engineer that closure of the surface impoundment has been successfully completed, per §257.102(f)(3).

2.0 COAL COMBUSTION RESIDUALS (CCR) REMOVAL

In addition to following the closure details in the JCW BAP Closure Plan, removal and documentation procedures implemented for CCR Removal are described in greater detail in the *Consumers Energy J.C. Weadock Generating Facility Bottom Ash Pond Closure Work Plan* (Closure Work Plan) (Golder, 2017) submitted to the Michigan Department of Environmental Quality (MDEQ) on November 29, 2017 and a revised copy in response comments on April 20, 2018. MDEQ concurred with the Closure Work Plan in a letter dated December 20, 2018. The procedures and detail of this Closure Work Plan were necessary for acceptance by state regulators that coal ash, defined as a solid waste by state statute, had in fact been removed

completely from the unit. The Michigan Department of Environment, Great Lakes, and Energy (EGLE, formerly MDEQ) did not require a solid waste operating license for JCW BAP because elements of closure were initiated prior to December 28, 2018.

As described in the Closure Work Plan, the multiple lines of evidence approach used to document CCR removal provided a predictable and reliable means to objectively measure concentrations of CCR based on physical sample properties. CCR removal was documented based on three lines of evidence:

- First line of evidence: comparison of interim excavation termination grades to known elevations of CCR from previous site characterizations and engineering records;
- Second line of evidence: photographic documentation including periodic photographs of CCR removal progression and photographs of excavated areas at random grid nodes; and
- Third line of evidence: quantitative colorimeter analysis at random grid nodes to confirm CCR removal.

This approach took advantage of the clear visible distinction between the color of the CCR and the color of the underlying soil documented in soil borings and during previous removal activities for beneficial reuse and pond cleanout. This visible color difference was confirmed during the CCR removal activities and documented within each of the removal verification reports.

It is noteworthy that in the performance of this work, an alternative third line of evidence was developed for a limited subset of observation nodes. The microscopic quantification of CCR content was utilized when field observations noted that some excavated areas could be influenced by subsurface soils that do not match the site-specific colorimetric curve for JCW BAP. The development and application of this methodology in support of the other lines of evidence is detailed in the supporting documentation.

During February 2020 through July 2020, Fisher Contracting Co. was contracted by CEC to perform excavation activities to remove CCR from the bottom ash pond. Documentation was collected and certified by Golder in *Bottom Ash Pond CCR Removal Documentation Report* (Final CCR Removal Report) (Attachment A) to provide lines of evidence to confirm that CCR was removed per the Closure Work Plan. During CCR removal and documentation, the following tasks were completed:

- The Weadock Bottom Ash Pond was dewatered by actively pumping decant water into internal ditches and ultimately through the site's National Pollutant Discharge Elimination System (NPDES) permitted outfall.
- CCR was removed by excavation until CCR was no longer visually observed on the excavation surfaces.
- Final excavation grades were compared to apparent elevations where CCR was noted in borehole logs from previous site characterizations.
- A 50-foot grid with a total of 237 grid nodes was established across the limits of the Weadock Bottom Ash Pond. An additional 35 grid nodes were established for the expansion of the excavation area to include the removal of the Chemical Treatment Basins.
- Photographic documentation was conducted of the general CCR removal operation.

- Photographic documentation of excavated areas was completed on at least 50 percent of the grid nodes.
- Where silty clay soils were encountered, photographic documentation was augmented by quantitative microscopic analysis to confirm 90 percent removal.
- Quantitative colorimetric analysis was completed on at least 25 percent of the grid nodes (50 percent of the photographed grid nodes). In the event that a colorimetric sample did not pass the criteria, additional excavation was completed within the grid, and a second sample was collected for colorimetric analysis.
- Quantitative microscopic analysis was completed as an alternative to colorimetric analysis where soils on excavated surfaces did not match the site-specific colorimetric curve.

Subsequently, EGLE concurred that bottom ash, which is a regulated solid waste in Michigan, had been removed in accordance with the Closure Work Plan (EGLE, 2020).

3.0 COMPLIANCE WITH GROUNDWATER PROTECTION STANDARDS

Per §257.102(c), closure of a CCR impoundment is not deemed complete until groundwater monitoring concentrations associated with the unit do not exceed the groundwater protection standards (GWPSs) established pursuant to §257.95(h) for Appendix IV constituents. In the case of JCW BAP, CEC provided [Notification of an Appendix IV Constituent Exceeding Groundwater Protection Standard](#) (GWPS) (CEC, 2019) stating beryllium and lithium had been confirmed detected at statistically significant levels above the standards established pursuant to §257.95(h). An [Assessment of Corrective Measures](#) (TRC, 2019) reviewed five potential alternatives for corrective actions.

As CEC was developing the final remedy, updates on the progress towards selecting the final remedy were prepared and posted on a semiannual basis pursuant to §257.98(a). Continued monitoring and evaluations culminated in the [Remedy Selection](#) (CEC, 2023a) that recognized the source removal by excavation had been successful in removing CCR and that groundwater monitoring reported on an annual basis did not indicate that any other Appendix IV constituents had exceeded their respective GWPSs established pursuant to §257.95(h).

Ultimately, CEC was able to certify that the requirements for satisfying that the final remedy had been completed pursuant to §257.98(c) as follows:

- (1) The owner or operator of the CCR unit demonstrates compliance with the groundwater protection standards established under § 257.95(h) has been achieved at all points within the plume of contamination that lie beyond the groundwater monitoring well system established under § 257.91.
- (2) Compliance with the groundwater protection standards established under § 257.95(h) has been achieved by demonstrating that concentrations of constituents listed in appendix IV to this part have not exceeded the groundwater protection standard(s) for a period of three consecutive years using the statistical procedures and performance standards in § 257.93(f) and (g).
- (3) All actions required to complete the remedy have been satisfied.

Importantly, the Remedy Completion Report (CEC, 2023b) and the [2022 Annual Groundwater Monitoring and Corrective Action Report §257.90\(e\) inclusive of the Semiannual Progress Report §257.97\(a\)](#) (TRC, 2023) documents that beryllium and lithium were the only Appendix IV constituents that exceeded the GWPS established under § 257.95(h). Additionally, these reports establish that beryllium and lithium attained the GWPS and demonstrated that

attainment for a period of three years. Satisfaction of the performance criteria under §257.98(c) also satisfies the closure performance standard under §257.102(c).

4.0 POST-CLOSURE CARE REQUIREMENTS

The post-closure care section in the CCR rule states the following: "An owner or operator of a CCR unit that elects to close a CCR unit by removing CCR as provided by §257.102(c) is not subject to the post-closure care criteria under this section." (§257.104(a)(2)).

5.0 CONCLUSIONS

This technical memorandum presents the summary of documented observations and data collected during the field work completed for the JCW BAP closure as further detailed in:

ATTACHMENT A: Golder Associates, Inc. August 2020. J.C. Weadock Generating Facility Bottom Ash Pond CCR Removal Documentation Report

As of the certification date of this report (see Section 6.0), the JCW BAP will be deemed a closed CCR unit under 40 CFR §257. Accordingly, the CCR unit is not subject to post-closure care requirements or any other requirements under 40 CFR §257 of the CCR rule.

6.0 CLOSURE CERTIFICATION BY QUALIFIED PROFESSIONAL ENGINEER

I hereby certify in accordance with §257.102(f)(3) that the JC Weadock Bottom Ash Pond (JCW BAP) was closed in accordance with the requirements of §257.102(c) of the CCR rule and the written Closure Work Plan as developed under §257.102(b). To the best of my knowledge, information, and belief, the information contained herein is true and correct and this document has been prepared in accordance with generally accepted good engineering practices.



Signature

November 10, 2023

Date of Certification

Harold D. Register, Jr., P.E.
Name

6201056266
Professional Engineer Certification Number



7.0 REFERENCES

Consumers Energy Company. October 2018. Notification of Intent to Initiate Closure of JC Weadock Bottom Ash Pond.

Consumers Energy Company. January 2019. Notification of Appendix IV Constituent Exceeding Groundwater Protection Standard per §257.95(g).

Consumers Energy Company. July 2023a. JC Weadock Bottom Ash Pond Coal Combustion Residual (CCR) Unit 40 CFR 257.97(a) Selection of Remedy Letter Report.

Consumers Energy Company. October 2023b. JC Weadock Bottom Ash Pond Coal Combustion Residual (CCR) 40 CFR 257.98(e) Completion of Remedy Letter Report.

EGLE. December 20, 2018. EGLE Response to Consumers Energy J.C. Weadock Generating Facility Bottom Ash Pond Closure Work Plan.

EGLE. November 30, 2020. Closure Certification, Consumers Weadock Complex (Weadock) Bottom Ash Pond, Bay County, Waste Data System No. 395457.

Golder Associates, Inc. January 2018. J.C. Weadock Generating Facility Bottom Ash Pond Closure Plan Essexville, Michigan Pursuant to 40 CFR 257.102.

Golder Associates, Inc. November 2017. Consumers Energy J.C. Weadock Generating Facility Bottom Ash Pond Closure Work Plan.

TRC Environmental Corporation. Annual Groundwater Monitoring Report JC Weadock Power Plant Bottom Ash Pond CCR Unit, Essexville, Michigan.

TRC Environmental Corporation. September 2019. Assessment of Corrective Measures Consumers Energy Company JC Weadock Bottom Ash Pond and Landfill Coal Combustion Residual Units.

TRC Environmental Corporation. January 2023. 2022 Annual Groundwater Monitoring and Corrective Action Report §257.90(e) inclusive of the Semiannual Progress Report §257.97(a) JC Weadock Bottom Ash Pond and Landfill Coal Combustion Residuals (CCR) Units.