

Closure Plan
Existing CCR Impoundment
40 CFR 257.102(b)
Revision 3

Asbury Power Plant
21133 Uphill Road
Asbury, Missouri 64832

October 17, 2016
Revised November 16, 2018
Revised January 27, 2021
Revised March 21, 2022

Prepared For:
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A Liberty Utilities Company
602 S. Joplin Avenue
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1.0 INTRODUCTION

257.102 Criteria for conducting the closure or retrofit of CCR units. (a) Closure of a CCR landfill, CCR surface impoundment, or any lateral expansion of a CCR unit must be completed either by leaving the CCR in place and installing a final cover system or through removal of the CCR and decontamination of the CCR unit, as described in paragraphs (b) through (j) of this section. Retrofit of a CCR surface impoundment must be completed in accordance with the requirements in paragraph (k) of this section.

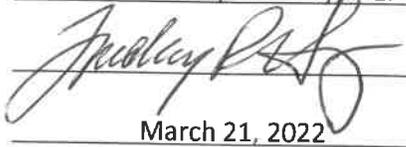
40 CFR 257.102(b) of the Final Rule on Disposal of Coal Combustion Residuals from Electric Utilities (CCR Rule) requires the development of written closure plan for CCR surface impoundments. The Empire District Electric Company's Asbury Power Plant (Asbury) has one CCR Impoundment. The site occupies the north half of Section 17, Township 30 North, and Range 33 West on the Asbury 7.5-Minute Quadrangle Map as seen in **Figure 1**. Asbury anticipates that the impoundment will be closed by leaving CCR in place.

The closure plan has been amended to reflect the latest closure schedule and the chosen final cover system.

2.0 PLAN CERTIFICATION 257.102(b)(4)

The undersigned Professional Engineer (P.E.) is familiar with the requirements of 40 CFR Part 257. The attached CCR closure plan for the existing CCR Impoundment at the Asbury Power Plant has been prepared in accordance with the requirements of 257.102(b), Amended Written Closure Plan for a CCR Surface Impoundment.

Name: Lindsey R. Henry, P.E.

Signature: 

Date: March 21, 2022

Registration Number: E-21592

State: Missouri



3.0 WRITTEN CLOSURE PLAN

257.102(b) Written closure plan—(1) Content of the plan. The owner or operator of a CCR unit must prepare 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. The written closure plan must include, at a minimum, the information specified in paragraphs (b)(1)(i) through (vi) of this section.

This closure plan is being prepared in accordance with 257.102(b) to outline the steps necessary to close the CCR impoundment at the Asbury Power Plant. This plan has been prepared in accordance with generally accepted good engineering practices.

3.1 Narrative

257.102(b)(1)(i) A narrative description of how the CCR unit will be closed in accordance with this section.

The CCR Impoundment that serves the Asbury Power Plant is approximately 116.5 acres. The CCR Impoundment is subdivided into three (3) operational Ponds, identified as the Lower Pond, Upper Pond, and South Pond (**Figure 2**). The Lower Pond, Upper Pond, and South Pond are separated by interior earthen berms, and can be hydraulically separated from one another for operational purposes. At this time it is anticipated that the CCR impoundment will be closed by leaving the CCR in place.

Free liquids will be removed to the extent possible, and the existing CCR materials will be sufficiently stabilized to support the placement of the final fill and final cover system. Any discharge will be through a NPDES permitted outfall. This discharge will be in compliance with the current NPDES permit. The CCR materials will be graded to provide positive drainage of stormwater. A final cover system will be installed to minimize infiltration and erosion. Additional information is presented in Section 3.2 below.

3.2 CCR Left in Place

257.102(b)(1)(iii) If closure of the CCR unit will be accomplished by leaving CCR in place, a description of the final cover system, designed in accordance with paragraph (d) of this section, and the methods and procedures to be used to install the final cover. The closure plan must also discuss how the final cover system will achieve the performance standards specified in paragraph (d) of this section.

The CCR will be placed and graded to provide positive drainage of stormwater. The final cover system will be designed and constructed to meet the criteria in paragraphs 257.102(d)(3)(i). The integrity of the final cover system will be designed to accommodate settling and subsidence. The final cover system for the CCR impoundment must comply with 40 CFR 257.102(d)(3)(i). This regulation states:

The final cover system must be designed and constructed to meet the criteria in paragraphs (d)(3)(i)(A) through (D) of this section. The design of the final cover system must be included in the written closure plan required by paragraph (b) of this section.

(A) The permeability of the final cover system must be less than or equal to the permeability of any bottom liner system or natural subsoils present, or a permeability no greater than 1×10^{-5} cm/sec, whichever is less.

(B) The infiltration of liquids through the closed CCR unit must be minimized by the use of an infiltration layer that contains a minimum of 18 inches of earthen material.

(C) The erosion of the final cover system must be minimized by the use of an erosion layer that contains a minimum of six inches of earthen material that is capable of sustaining native plant growth.

(D) The disruption of the integrity of the final cover system must be minimized through a design that accommodates settling and subsidence.

40 CFR 257.102(d)(3)(ii) outlines the requirements should the facility chose to utilize an alternative final cover system. This regulation states:

The owner or operator may select an alternative final cover system design, provided the alternative final cover system is designed and constructed to meet the criteria in paragraphs (d)(3)(ii)(A) through (C) of this section. The design of the final cover system must be included in the written closure plan required by paragraph (b) of this section.

(A) The design of the final cover system must include an infiltration layer that achieves an equivalent reduction in infiltration as the infiltration layer specified in paragraphs (d)(3)(i)(A) and (B) of this section.

(B) The design of the final cover system must include an erosion layer that provides equivalent protection from wind or water erosion as the erosion layer specified in paragraph (d)(3)(i)(C) of this section.

(C) The disruption of the integrity of the final cover system must be minimized through a design that accommodates settling and subsidence.

In addition 40 CFR 257.102(d)(3)(iii) requires an alternative cover system design to be certified by a professional engineer. This regulation states:

The owner or operator of the CCR unit must obtain a written certification from a qualified professional engineer that the design of the final cover system meets the requirements of this section.

An Alternative Final Cover System Demonstration was completed December 21, 2021 for the Empire District Electric Company's CCR Impoundment at the Asbury Power Plant. The Alternative Final Cover System Demonstration was completed in compliance with 40 CFR 257.102(d)(3)(ii) and certified by a professional engineer in compliance with 40 CFR 257.102(d)(3)(iii) of the EPA CCR Rule. This Demonstration was placed in the facility's operating record.

3.3 Maximum CCR Inventory

257.102(b)(1)(iv) An estimate of the maximum inventory of CCR ever on-site over the active life of the CCR unit.

At present Asbury can only provide a CCR inventory number estimate based upon the total tons of coal burned at the power plant. Various factors including the type of coal burned, were utilized to determine the percentage of ash per ton of coal. The total amount of CCR that could be on site is estimated to be 2,523,500 cubic yards. This estimate is thought to be very conservative. Over the life of the power plant CCR has been sold to other contractors for beneficial use. During the

design process for the closure of the facility additional surveying and volume calculations will be completed.

3.4 Maximum CCR Area

257.102(b)(1)(v) An estimate of the largest area of the CCR unit ever requiring a final cover as required by paragraph (d) of this section at any time during the CCR unit’s active life.

The total area of the CCR Impoundment that serves the Asbury Power Plant is approximately 116.5 acres. The CCR Impoundment will require the placement of a final cover since this area will be closed by leaving the CCR in place.

3.5 Schedule

257.102(b)(1)(vi) A schedule for completing all activities necessary to satisfy the closure criteria in this section, including an estimate of the year in which all closure activities for the CCR unit will be completed. The schedule should provide sufficient information to describe the sequential steps that will be taken to close the CCR unit, including identification of major milestones such as coordinating with and obtaining necessary approvals and permits from other agencies, the dewatering and stabilization phases of CCR surface impoundment closure, or installation of the final cover system, and the estimated timeframes to complete each step or phase of CCR unit closure. When preparing the written closure plan, if the owner or operator of a CCR unit estimates that the time required to complete closure will exceed the timeframes specified in paragraph (f)(1) of this section, the written closure plan must include the site-specific information, factors and considerations that would support any time extension sought under paragraph (f)(2) of this section.

The schedule provided below assumes Closure Initiation on May 11, 2021 with completion of closure by December 31, 2023. Below is a discussion of the milestones required for the closure of the CCR impoundment. These timeframes are initial estimates and may need to be amended based upon unforeseen circumstances.

Milestones Required For the Closure of the CCR Impoundment	
Milestone	Date
Written Closure Plan placed on webpage	October 17, 2016
Meet with MDNR to Discuss Specific Closure Requirements	December 2016
Obtain Topographic Mapping for Site	April 2017
Complete Location Restriction Demonstration	October 2018
Retirement of Asbury Power Plant	March 1, 2020
Obtain Updated Topographic Mapping for Site	May 2020
Cease Placing CCR in Impoundment	April 11, 2021
Notification of Intent to Close CCR Surface Impoundment	April 1, 2021
Commence Closure Activities	May 11, 2021
Bid Package to Contractors	April 2022
Notice to Proceed	May 2022
Complete Final Cover Placement	December 31, 2023
Begin Post-Closure Care	January 1, 2024

4.0 NOTIFICATIONS

257.102(b)(2)(iii) The owner or operator has completed the written closure plan when the plan, including the certification required by paragraph (b)(4) of this section, has been placed in the facility's operating record as required by § 257.105(i)(4).

Asbury posted the initial written closure plan to their website within 30 days of October 17, 2016. This original closure plan was amended on October 17, 2016, January 27, 2021, and again on March 21, 2022. The State Director was notified each time of the revision of this plan and subsequent placement on the website.

Asbury will post the amended written closure plan to their website within 30 days. In addition, the State Director will be notified of the completion of this amended plan and subsequent placement on the website.

257.102(g) No later than the date the owner or operator initiates closure of a CCR unit, the owner or operator must prepare a notification of intent to close a CCR unit. The notification must include the certification by a qualified professional engineer or the approval from the Participating State Director or the approval from EPA where EPA is the permitting authority for the design of the final cover system as required by § 257.102(d)(3)(iii), if applicable. The owner or operator has completed the notification when it has been placed in the facility's operating record as required by § 257.105(i)(7).

Asbury prepared a Notification of Intent to Close the CCR Impoundments on April 1, 2021. This certification was prepared by a qualified professional engineer and placed in the facility's operating record as required by § 257.105(i)(7).

5.0 CLOSURE PLAN AMENDMENT

257.102(b)(3) Amendment of a written closure plan.

(i) The owner or operator may amend the initial or any subsequent written closure plan developed pursuant to paragraph (b)(1) of this section at any time.

(ii) The owner or operator must amend the written closure plan whenever: (A) There is a change in the operation of the CCR unit that would substantially affect the written closure plan in effect; or (B) Before or after closure activities have commenced, unanticipated events necessitate a revision of the written closure plan.

(iii) The owner or operator must amend the closure plan at least 60 days prior to a planned change in the operation of the facility or CCR unit, or no later than 60 days after an unanticipated event requires the need to revise an existing written closure plan. If a written closure plan is revised after closure activities have commenced for a CCR unit, the owner or operator must amend the current closure plan no later than 30 days following the triggering event.

The proposed closure plan may be amended as required to provide a revised closure plan or a revised closure schedule. This amended closure plan should be posted to the website and the State Director shall be notified of the placement of the amended closure plan on the website.

The closure plan has been amended to reflect the rule changes included in the following amendments to the CCR Rule: Amendments to the National Minimum Criteria (Phase One, Part One) to the CCR Rule; and A Holistic Approach to Closure Part A: Deadline to Initiate Closure and Enhancing Public Access to Information.

6.0 CERTIFICATION

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.

The original closure plan was certified in Section 2.0 of that report. As required, any amendments to the original closure plan must also be certified by a qualified professional engineer. The amended closure plan has been certified in Section 2.0 of this report. Any further amendments to this amended closure plan must also be certified by a qualified professional engineer.

7.0 AMENDMENTS

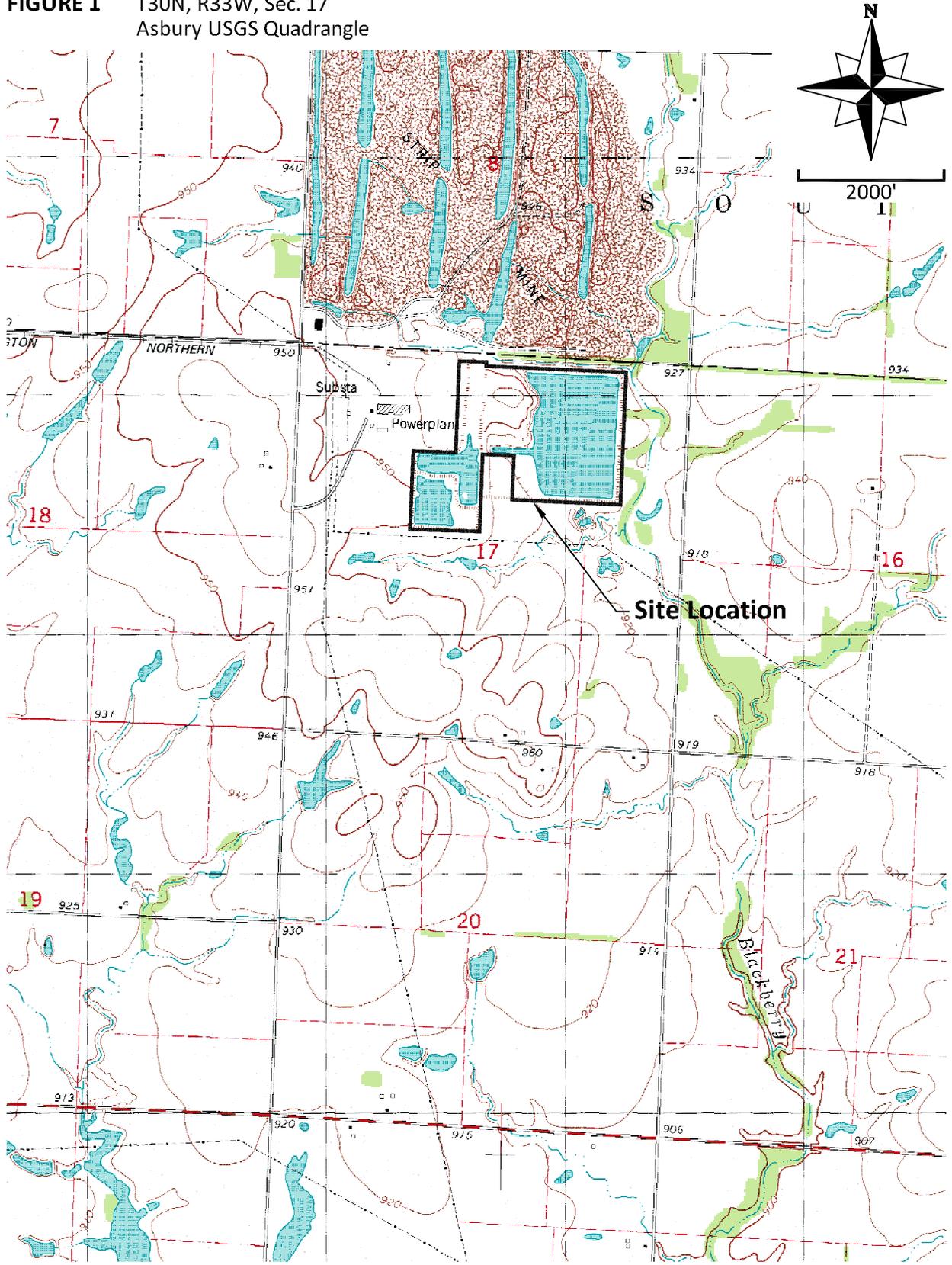
257.102(b)(3)(i) The owner or operator may amend the initial and any subsequent written closure plan developed pursuant to paragraph (b)(1) of this section at any time.

Asbury may amend the Closure Plan in the future as provided by 257.102(b)(3)(i). A record of all amendments to the plan will be tracked below:

Closure Plan Amendments			
Revision Number	Date	Revisions	By whom
0	10/17/2016	Initial Issuance	Midwest Environmental Consultants
1	11/16/2018	Update Plan to reflect revisions of Phase One, Part One and the Location Restrictions Issued 10/17/2018	Midwest Environmental Consultants
2	1/15/2021	Retirement of Asbury Power Plant and update to reflect revisions of A Holistic Approach to Closure Part A: Deadline to Initiate Closure and Enhancing Public Access to Information Issued 9/28/2020	Midwest Environmental Consultants
3	3/22/2022	Updated Closure Schedule and the chosen final cover system	Midwest Environmental Consultants

FIGURES

FIGURE 1 T30N, R33W, Sec. 17
Asbury USGS Quadrangle



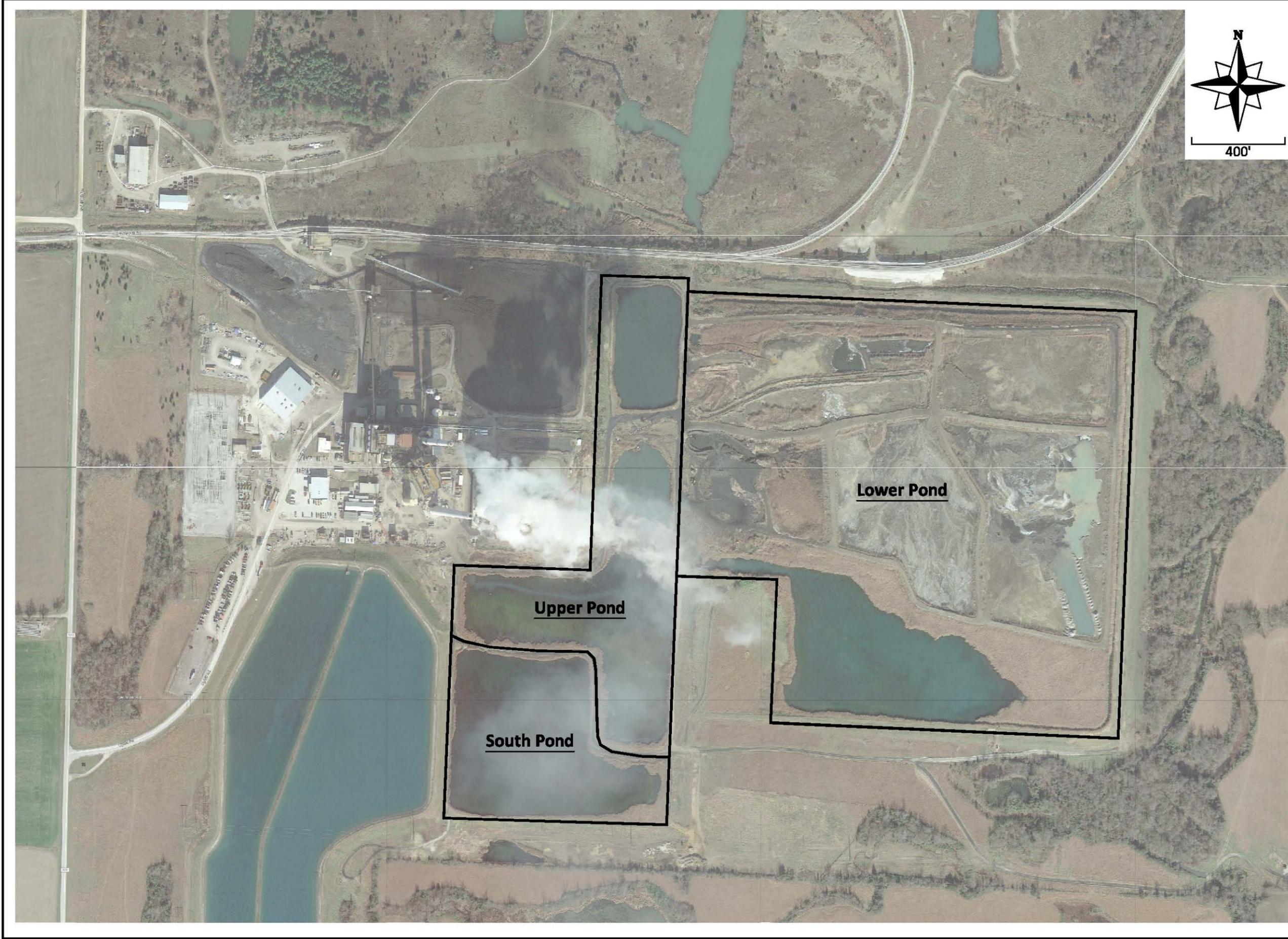


FIGURE 2

January 2021