**BEFORE THE ILLINOIS POLLUTION CONTROL BOARD**

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| In the Matter of: | ) | |
| PETITION OF ELECTRIC ENERGY, INC. FOR A FINDING OF INAPPLICABILITY OR, IN THE ALTERNATIVE, AN ADJUSTED STANDARD FROM 35 ILL. ADMIN. CODE PART 845 | ) | AS 2021-005 (Adjusted Standard - Land) |

**NOTICE OF ELECTRONIC FILING**

To: Attached Service List

PLEASE TAKE NOTICE that on February 14, 2022, I electronically filed with the Clerk of the Illinois Pollution Control Board ("Board") the **Comments of Earthjustice, Environmental Law & Policy Center, Prairie Rivers Network, and Sierra Club on Electric Energy, Inc.'s Petition for a Finding of Inapplicability or Adjusted Standard,** copies of which are attached hereto and herewith served upon you.

Dated: February 14, 2022

Respectfully Submitted,

/s/ Jennifer Cassel
Jennifer Cassel
IL Bar No. 6296047
Earthjustice
311 S. Wacker Dr., Suite 1400
Chicago, IL 60606
(312) 500-2198
jcassel@earthjustice.org

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**COMMENTS ON ELECTRIC ENERGY, INC.'S PETITION FOR A FINDING OF INAPPLICABILITY OR ADJUSTED STANDARD**

**Contents**

Earthjustice, the Environmental Law & Policy Center, Prairie Rivers Network, and Sierra Club (collectively, "Environmental Groups"), hereby submit these comments in the above-referenced docket regarding Electric Energy, Inc. ("Petitioner")'s Petition for a Finding of Inapplicability or, in the Alternative, an Adjusted Standard ("Petition" or "Request") from 35 Ill. Admin. Code Part 845 ("Part 845") for its Joppa West Ash Pond ("Joppa West").

## Introduction

The Illinois Pollution Control Board ("Board") should deny Petitioner's Request to exempt Joppa West from the regulations that this Board carefully considered and promulgated in order to protect Illinois' communities and environment from dangerous coal ash pollution.

Joppa West is massive: the coal ash pond spans over 100 acres and holds 3,400,000 cubic yards of coal ash,[1] which is enough to fill New York City's Empire State Building approximately 2.5 times.[2] Joppa West also poses an unreasonable risk to people and the environment. Groundwater sampling suggests that Joppa West is leaking dangerous coal ash constituents, including arsenic and other toxic contaminants, into groundwater.[3]

This Board's prior proceedings regarding Part 845,[4] and the U.S. Environmental Protection Agency ("U.S. EPA")'s recent decisions about the federal Coal Combustion Residuals rule,[5] make clear that Joppa West is an "inactive CCR surface impoundment"[6] and must be regulated as one. Exempting Joppa West from Part 845—whether entirely through a finding of inapplicability or partially through an adjusted standard—would be incompatible with the Coal Ash Pollution Prevention Act ("CAPPA"), would render Illinois' coal ash regulations less protective than the federal CCR rule, and would threaten Illinois' people and the environment. Therefore, the Board should deny Petitioner's Request and the Illinois Environmental Protection Agency ("IEPA")'s Recommendation and instead should require Joppa West to comply with Part 845.

[1] Electric Energy, Inc., Petition for a Finding of Inapplicability or, in the Alternative, an Adjusted Standard from 35 Ill. Admin. Code Part 845, 13, AS 2021-005 (May 11, 2021) ("Petition" or "Request").

[2] Empire State Realty Trust, Empire State Building Fact Sheet, https://www.esbnyc.com/sites/default/files/esb_fact_sheet_final_0.pdf. The volume of the Empire State Building is 37 million cubic feet, which is roughly 1,370,370 cubic yards.

[3] *See, e.g.*, IEPA, Recommendation of the Illinois Environmental Protection Agency regarding Electric Energy's petition for an adjusted standard for Joppa West, 17, AS 2021-005 (Nov. 22, 2021) ("IEPA Recommendation") (discussing that data collected from Joppa West shows "what would be GWPS [groundwater protection standards] exceedances for pH, arsenic, boron, lithium, molybdenum, and selenium at the source well" and "exceedances of antimony, arsenic, boron, lead, cobalt, beryllium, and sulfate" at downgradient wells) (footnote omitted).

[4] Ill. Pollution Control Bd., Opinion and Order, 16, PCB R20-19 (Feb. 4, 2021).

[5] U.S. EPA, Letter re: Duke Energy's Gallagher Generating Station, 1-2 (Jan. 11, 2021) ("Gallagher decision") (attached hereto as Exhibit A).

[6] Environmental Groups' comments respond specifically to Petitioner's argument that Joppa West is not an "inactive CCR surface impoundment." However, according to evidence discussed in IEPA's Recommendation, Joppa West might meet the definition of an "existing CCR surface impoundment." *See* IEPA Recommendation at 23 ("EEI does not provide compelling evidence supporting the aerial findings that [Joppa West] has not received ash or CCR materials since October 15, 2015."). If the Board were to find sufficient evidence to establish that Joppa West is an "existing CCR surface impoundment," Environmental Groups would support that conclusion.

## Background

## I. Procedural Background

Petitioner filed its Request on May 11, 2021, seeking a finding that Joppa West is wholly exempt from Part 845, or alternatively, that Joppa West qualifies for an adjusted standard that exempts it from many of the provisions of Part 845. Specifically, Petitioner's adjusted standard would exempt Joppa West from: closure permitting requirements and certain operating permit requirements (contained in Subpart B); location restrictions (Subpart C); design criteria (Subpart D); operating criteria (Subpart E); certain groundwater monitoring requirements (contained in Subpart F); certain closure and post-closure requirements (contained in Subpart G); and recordkeeping requirements (Subpart H).[7]

IEPA submitted its Recommendation regarding Petitioner's Request on November 22, 2021. IEPA recommends that this Board deny a finding of inapplicability but approve an adjusted standard for Joppa West. IEPA's recommended adjusted standard would exempt Joppa West from many of the same provisions in Part 845 as Petitioner's proposed adjusted standard. However, unlike Petitioner, IEPA recommends that the Board require Petitioner to comply with the recordkeeping requirements in Subpart H and that the Board limit the adjusted standard to six years, during which time Petitioner would be required to conduct certain groundwater sampling, with a possibility of seeking a renewed adjusted standard thereafter.[8] IEPA also makes specific recommendations regarding corrective action and closure alternatives at Joppa West—some of which appear to allow even broader exemptions from Part 845 than what Petitioner requests—as discussed below.

## II. Legal Background

### A. The Federal CCR Rule

After catastrophic failures of coal ash ponds released millions of gallons of toxic sludge at multiple sites and made the dangers of coal ash impossible to ignore, U.S. EPA finally issued the first-ever regulations of coal ash ponds in 2015: the 2015 Coal Combustion Residuals Rule ("the federal CCR rule").[9] The rule established minimum standards for the hundreds of coal ash ponds and landfills throughout the U.S. It set out national minimum criteria for existing and new landfills and surface impoundments, including location restrictions, design requirements, operating requirements, and closure and post-closure requirements. Some of its key protections include semi-annual groundwater monitoring requirements that trigger corrective action obligations at lined impoundments and closure obligations at unlined ones; location restrictions to keep CCR units out of unstable areas, wetlands, faults areas, seismic zones and the groundwater table; structural stability criteria for impoundments; and comprehensive closure and post-closure requirements.

[7] Petition at 27-28.
[8] IEPA Recommendation at 39-40.
[9] U.S. EPA, Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals From Electric Utilities, 80 Fed. Reg. 21,302 (Apr. 17, 2015) ("the federal CCR rule").

In a 2018 decision in *Utility Solid Waste Activities Group v. EPA* ("*USWAG*"), the U.S. Court of Appeals for the D.C. Circuit struck down several portions of the federal CCR rule as inadequately protective. Among other things, the court held that, in light of the well-documented high likelihood of contamination caused by unlined CCR surface impoundments, EPA's decision to allow unlined impoundments to continue operating until contamination was formally confirmed fell short of the directive of the Resource Conservation and Recovery Act ("RCRA") to ensure that CCR disposal poses "no reasonable probability of adverse effects on health or the environment."[10] In light of data in U.S. EPA's record, the court found that delays of several months in addressing leakage were unacceptable.[11] The court explained:

> Leakage from unlined impoundments is typically quicker, more pervasive, and at larger volumes than that from lined impoundments . . . Unlike lined impoundments, in which leaks are usually caused by some localized or specific defect in the liner system than can more readily be identified and corrected, leakage from unlined impoundments is more pervasive and less amenable to any quick, localized fix. [] When an unlined impoundment begins to leak, Coal Residual sludge will flow through the unit and into the environment unrestrained . . . .[12]

Given those threats, the court held that unlined impoundments must be closed as soon as physically possible, regardless of whether proof already exists that they are leaking and regardless of the cost or inconvenience of finding alternate disposal capacity for the CCR.[13]

Following the *USWAG* decision, U.S. EPA issued the "Part A" revision to the federal CCR rule. Part A sets out deadlines for unlined CCR impoundments to cease receipt of CCR and non-CCR wastes, as well as establishes a process for owners/operators of such impoundments to seek an extension to the cease-receipt deadline.[14] In order for U.S. EPA to grant such extensions, owners/operators of CCR surface impoundments must demonstrate that all CCR units—CCR landfills and impoundments—at the site meet the requirements of the federal CCR rule.[15]

On January 11, 2022, U.S. EPA issued its first proposed decisions under the Part A rule.[16] In those decisions, which represent the first time U.S. EPA has clarified the federal CCR rule's requirements in binding decisions, U.S. EPA explained, among other things: (1) A CCR surface impoundment may not be closed in a manner that allows CCR to remain in contact with groundwater; (2) allowing CCR to remain in contact with groundwater does not satisfy the

[10] *Util. Solid Waste Activities Grp. v. EPA*, 901 F.3d 414, 427 (D.C. Cir. 2018) ("*USWAG*"); *see also* 42 U.S.C. § 6944(a).
[11] *USWAG*, 901 F.3d at 429.
[12] *Id*. (internal quotations and citations omitted).
[13] *Id*. at 427-430, 447-449.
[14] U.S. EPA, Hazardous and Solid Waste Management System: Disposal of Coal Combustion Residuals From Electric Utilities; A Holistic Approach to Closure Part A: Deadline To Initiate Closure**,** 85 Fed. Reg. 53,516 (Aug. 28, 2020) ("Part A Rule").
[15] *Id*. at 53,562–53,564; 40 C.F.R. § 257.103(f)(1)(iii), (f)(2)(iii).
[16] *See* U.S. EPA, "EPA Takes Key Steps to Protect Groundwater from Coal Ash Contamination" (Jan. 11, 2022), https://www.epa.gov/newsreleases/epa-takes-key-steps-protect-groundwater-coal-ash-contamination.

remedy selection criteria of the federal CCR rule; and (3) "monitored natural attenuation," or "MNA," will very rarely, if ever, satisfy the remedy selection criteria of the federal CCR rule.[17]

That same day, U.S. EPA also issued several letters to owners of CCR units further clarifying the mandates of the federal CCR rule.[18] One such letter—directed to Duke Energy, concerning CCR units at its Gallagher coal-fired power plant in Indiana—elucidates the scope of the federal CCR rule, explaining that "inactive CCR surface impoundments" covered by the rule include CCR impoundments from which the surface water has drained and which have a soil cover, but which still contain CCR in contact with groundwater.[19]

### B. CAPPA and Part 845

The Illinois General Assembly passed CAPPA to promote a "healthful environment," "meaningful public involvement," and "the responsible disposal and storage of coal combustion residuals, so as to protect public health and to prevent pollution of the environment of this State."[20] The legislature further mandated that CAPPA's provisions "be liberally construed" to carry out CAPPA's purpose,[21] and required the Board to promulgate regulations that are "at least as protective and comprehensive" as the federal CCR rule.[22]

The Board promulgated CAPPA's implementing regulations in Part 845, which sets out definitions for CCR surface impoundments as well as "criteria for determining which CCR surface impoundments do not pose a reasonable probability of adverse effects on health or the environment."[23] Under Part 845, a "CCR surface impoundment" is "a natural topographic depression, man-made excavation or diked area, which is designed to hold an accumulation of CCR and liquids, and the surface impoundment treats, stores, or disposes of CCR."[24] Part 845 further defines an "inactive CCR surface impoundment" as "a CCR surface impoundment in which CCR was placed before but not after October 19, 2015 and still contains CCR on or after October 19, 2015."[25]

[17] *See, e.g.,* U.S. EPA, Proposed Denial of Alternative Closure Deadline for Ottumwa Generating Station, EPA–HQ–OLEM–2021-0593, 56 (Jan. 11, 2022) ("Ottumwa decision") (attached hereto as Exhibit B).
[18] *See* U.S. EPA, "EPA Takes Key Steps to Protect Groundwater from Coal Ash Contamination" (Jan. 11, 2022), https://www.epa.gov/newsreleases/epa-takes-key-steps-protect-groundwater-coal-ash-contamination.
[19] Ex. A, Gallagher decision.
[20] 415 Ill. Comp. Stat. Ann. 5/22.59(a).
[21] *Id.*
[22] *Id.* 5/22.59(g)(1) ("The rules must, at a minimum: (1) be at least as protective and comprehensive as the federal regulations or amendments thereto promulgated by the Administrator of the United States Environmental Protection Agency in Subpart D of 40 CFR 257 governing CCR surface impoundments.").
[23] 35 Ill. Admin. Code § 845.100(a).
[24] *Id*. § 845.120; *see also* 415 Ill. Comp. Stat. Ann. 5/3.143 (defining "CCR surface impoundment" as "a natural topographic depression, man-made excavation, or diked area, which is designed to hold an accumulation of CCR and liquids, and the unit treats, stores, or disposes of CCR").
[25] 35 Ill. Admin. Code. § 845.120.

## Argument

### I. This Board's Regulations and CAPPA Allow for Public Comment in Adjusted Standards Proceedings.

Environmental Groups have the ability to submit comments on Petitioner's Request pursuant to the public participation provisions in the Board's regulations and in CAPPA. Specifically, the Board's regulations for adjusted standards proceedings "must be read in conjunction with" the Board's generally applicable regulations regarding public participation,[26] which "encourage[] public participation" in all proceedings and authorize members of the public to "file written public comments."[27] Although the ability to file public comments is subject to certain requirements and timing restrictions in the Board's regulations,[28] none of those requirements or restrictions apply here.

Moreover, the ability to file public comments in adjusted standards proceedings like this one is consistent with CAPPA's robust public participation requirements. In enacting CAPPA, the Illinois General Assembly found that:

> [M]eaningful participation of State residents, especially vulnerable populations who may be affected by regulatory actions, is critical to ensure that environmental justice considerations are incorporated in the development of, decision-making related to, and implementation of environmental laws and rulemaking that protects and improves the well-being of communities in this State that bear disproportionate burdens imposed by environmental pollution.[29]

To ensure meaningful public participation, the legislature further instructed that CAPPA's implementing regulations "must, at a minimum" include "an opportunity for the submission of public comments" during the coal ash permitting process (among other public participation opportunities).[30] The Board codified those opportunities through a robust set of public participation requirements in Part 845.[31]

Because both CAPPA and Part 845 require meaningful public participation—including public comment—during the process of regulating coal ash impoundments like Joppa West, the public must also have the opportunity to submit comments in adjusted standards proceedings that could *exempt* an impoundment from Illinois' coal ash regulations. Any other result would be incompatible with CAPPA and Part 845.

[26] *Id.* § 104.400(b).
[27] *Id.* §§ 101.110(a), 101.628(c).
[28] *See, e.g.*, *id.* § 101.628(c) (requiring public comments to be filed "within 14 days after the close of the last hearing unless the hearing officer specifies a different date for submission of post-hearing comments" and "no later than 30 days before the decision date").
[29] 415 Ill. Comp. Stat. Ann. 5/22.59(a)(5).
[30] *Id.* 5/22.59(g).
[31] *See, e.g.*, 35 Ill. Admin. Code §§ 845.240, 845.260.

## II. The Board Should Deny Petitioner's Request for a Finding of Inapplicability Because Joppa West is an "Inactive CCR Surface Impoundment" under Part 845.

### A. The Board has already considered and rejected the arguments that Petitioner relies on for its request to exempt Joppa West from Part 845.

The Board should deny Petitioner's Request to exempt Joppa West from Part 845 because Joppa West is an "inactive CCR surface impoundment" under Illinois law and must be regulated accordingly. The Board already considered and rejected Petitioner's arguments to the contrary when it adopted the definition of "inactive CCR surface impoundment" over industry's objections.

Part 845 defines an "inactive CCR surface impoundment" as "a CCR surface impoundment in which CCR was placed before but not after October 19, 2015 and *still contains CCR* on or after October 19, 2015."[32]

When IEPA proposed this definition of "inactive CCR surface impoundment" during the rulemaking process, industry urged the Board to change the definition so that it would only apply to units that "still contain *both* CCR *and liquids*."[33] Industry argued that because CAPPA defines "CCR surface impoundment" (in relevant part) as a unit that "is designed to hold an accumulation of CCR and liquids," an "inactive CCR surface impoundment" must be one that still impounds liquids.[34]

Petitioner now raises this same argument in its Request, claiming that Joppa West is not an "inactive CCR surface impoundment" because it "is not designed to impound water."[35] The Board squarely rejected the argument that an impoundment must still impound water when it codified the same definition of "inactive CCR surface impoundment" that IEPA proposed during the rulemaking process.[36] In so doing, the Board explained that "the definition is consistent with the federal regulations and provides clarity on the unintended consequence of excluding CCR surface impoundments containing CCR that may have leaked or were drained before the cutoff date."[37]

The Board's interpretation of "inactive CCR surface impoundment" is consistent with CAPPA's purpose of promoting a "healthful environment" and "the responsible disposal and storage of [CCR], so as to protect public health and to prevent pollution of the environment of this State."[38] The Board's interpretation is also consistent with the legislature's mandate to interpret CAPPA "liberally"[39]—including its definition of "CCR surface impoundment"—in order to ensure maximum protection of Illinois' communities and waters.

[32] *Id.* § 845.120 (emphasis added).
[33] *See* Dynegy Midwest Generation, LLC, Prehearing Comment, 5-6, PCB R20-19 (Sept. 25, 2020) (emphasis added) (quoting another source).
[34] *See id.* at 5.
[35] Petition at 14-16.
[36] Ill. Pollution Control Bd., Opinion and Order, 16, PCB R20-19 (Feb. 4, 2021).
[37] *Id*.
[38] 415 Ill. Comp. Stat. Ann. 5/22.59(a).
[39] *Id.*

Furthermore, Joppa West must be regulated as an "inactive CCR surface impoundment" under Part 845 in order to comply with CAPPA's mandate that Illinois' coal ash regulatory program be "at least as protective and comprehensive as" the federal CCR rule.[40] At a minimum, this Board must interpret "inactive CCR surface impoundment" in Part 845 to include *at least* those units that are regulated under the federal CCR rule. As discussed below, Joppa West is an "inactive CCR surface impoundment" under the federal CCR rule.

Environmental Groups also agree with arguments that IEPA raises on this issue in its Recommendation. As IEPA explains in its Recommendation at 14-15, the D.C. Circuit's analysis and holdings in *USWAG* are instructive for interpreting the phrase "is designed" in CAPPA's definition as well as Part 845's of "CCR surface impoundment." In *USWAG*, the D.C. Circuit interpreted the phrase "is disposed" as used in RCRA's definition of "open dump," which is defined in relevant part as "any facility or site where solid waste *is disposed* of which is not a sanitary landfill."[41] Industry argued that the phrase "is disposed" means that a site must actively receive new waste in order to meet RCRA's definition of an "open dump."[42] The court squarely rejected industry's argument on grounds that the word "disposed" took the form of a past participle and therefore an "open dump" includes sites where "the act of disposal took place at some prior time."[43] The court concluded that "the waste in inactive impoundments 'is disposed of' at a site no longer receiving new waste in just the same way that it 'is disposed of' in at a site that is still operating." *Id.* at 440.

Like the meaning of "is disposed" in RCRA's definition of "open dump," the meaning of "is designed" in CAPPA's definition as well as Part 845's of "CCR surface impoundment"[44] includes impoundments that were designed at some prior time "to hold an accumulation of CCR and liquids" *even if* the impoundment no longer holds an accumulation of liquids. The Board should reject Petitioner's contrary argument that the phrase "is designed" requires a "present tense design of a unit 'to hold an accumulation of . . . liquids.'"[45]

Environmental Groups also agree with IEPA's position that Part 620 does not bear on the applicability of Part 845.[46] Part 620 has been in place in Illinois for decades, far before CAPPA was enacted. If the Illinois General Assembly believed that Part 620 was adequate to regulate CCR surface impoundments, it would not have directed the Board and IEPA to develop further regulations for those impoundments. Whether an impoundment fits the definition of "CCR surface impoundment" under CAPPA and Part 845 is wholly unrelated to Part 620.

[40] *Id.* 5/22.59(g)(1).
[41] 42 U.S.C. § 6903(14) (emphasis added).
[42] *USWAG*, 901 F.3d at 439.
[43] *Id.* at 440.
[44] "CCR surface impoundment" is "a natural topographic depression, man-made excavation or diked area, which is designed to hold an accumulation of CCR and liquids, and the surface impoundment treats, stores, or disposes of CCR." 35 Ill. Admin. Code § 845.120.
[45] Petition at 19.
[46] IEPA Recommendation at 19 ("Petitioner's assurances of the sufficiency of the current cover and the ability to sufficiently address any groundwater contamination through Part 620 should not be relied upon or considered by the Board in deciding the applicability of Part 845 to the JWAP.").

Because Joppa West is an "inactive CCR surface impoundment" under Part 845, this Board should deny Petitioner's Request for a finding of inapplicability.

### B. U.S. EPA recently confirmed that units like Joppa West are "inactive CCR surface impoundments" under the federal CCR rule.

Joppa West is also an "inactive CCR surface impoundment" under the federal CCR rule, contrary to Petitioner's argument. In a recent decision regarding Duke Energy's Gallagher Station in Indiana, U.S. EPA makes explicit that coal ash ponds like Joppa West meet the definition of an "inactive CCR surface impoundment" under the federal CCR rule.

Part 845 must regulate *at least* the same coal ash ponds that would be regulated under the federal CCR rule because CAPPA requires Illinois' coal ash regulatory program to be "at least as protective and comprehensive" as the federal CCR rule.[47] Illinois' coal ash regulatory program also must be "at least as protective" as the federal CCR rule if it is ever to operate in lieu of the federal rule in Illinois.[48]

As Petitioner points out, the definition of "CCR surface impoundment" in CAPPA is "identical"[49] to the definition in the federal CCR rule. Both define "CCR surface impoundment" as a "natural topographic depression, man-made excavation, or diked area, which is designed to hold an accumulation of CCR and liquids, and the [surface impoundment or unit] treats, stores, or disposes of CCR."[50] The definition of "inactive CCR surface impoundment" is similar under Part 845 and the federal CCR rule, differing only in that Part 845's definition says "still contains CCR" [51] while the federal definition says "still contains *both* CCR *and liquids*."[52]

U.S. EPA recently confirmed that a coal ash unit is "designed to hold an accumulation of CCR and liquids" under the federal CCR rule—and therefore meets the federal definition of a "CCR surface impoundment"—even if the unit does not impound water:

> We understand that you interpret the definition of a CCR surface impoundment to exclude units such as the North Ash Pond, where liquid remains in the unit because the base of the unit intersects with groundwater. You argue that such units do not "hold" liquid because groundwater flows through the unit (instead of staying within the unit). *EPA disagrees with your interpretation. The definition of a CCR surface impoundment does not require that the unit prevent groundwater from flowing through the unit, but merely requires that the unit be "designed to hold an accumulation of CCR and liquid."* 40 C.F.R. § 257.53. Following your interpretation would lead to the incongruous result that impoundments where contaminants can migrate out in the groundwater would not be regulated by the

[47] 415 Ill. Comp. Stat. Ann. 5/22.59(g)(1) ("The rules must, at a minimum: (1) be at least as protective and comprehensive as the federal regulations or amendments thereto promulgated by the Administrator of the United States Environmental Protection Agency in Subpart D of 40 CFR 257 governing CCR surface impoundments.").
[48] *See* 42 U.S.C. § 6945(d)(1)(B) (requiring the EPA Administrator to approve a state's coal ash permitting program if it requires each impoundment in that state to achieve compliance with criteria that is "at least as protective as the criteria" in the federal CCR rule); *see also id.* § 6945(d)(1)(C).
[49] Petition at 4.
[50] *Compare* 35 Ill. Admin. Code § 845.120 *with* 40 C.F.R. § 257.53.
[51] 35 Ill. Admin. Code § 845.120.
[52] 40 C.F.R. § 257.53 (emphasis added).

> CCR Regulations, while those that prevent that type of migration would be regulated.[53]

U.S. EPA further explained that a coal ash unit "still contains both CCR and liquids"—and therefore meets the federal definition of an "*inactive* CCR surface impoundment"—when "its base (or any part of its base) is in contact with groundwater":

> [A]n impoundment "contains" liquid if there is liquid in the impoundment, even if the impoundment does not prevent the liquid from migrating out of the impoundment. This means that if a CCR surface impoundment contains liquid because its base (or any part of its base) is in contact with groundwater, it would meet the definition of an inactive CCR surface impoundment. Under both the regulatory and dictionary definitions of the term, groundwater (or water) falls within the plain meaning of a "liquid."[54]

Applying these interpretations of "CCR surface impoundment" and "inactive CCR surface impoundment," U.S. EPA concluded that an ash pond at the Gallagher Station is subject to regulation under the federal CCR rule because it "is sitting in approximately 20 feet of groundwater."[55] U.S. EPA reached this conclusion despite facts showing that the pond was "removed from service" decades ago, "drained of ponded surface water," and "covered with soil and grass."[56]

U.S. EPA's Gallagher decision makes clear that Joppa West is an "inactive CCR surface impoundment" under the federal CCR rule because, like the ash pond at Gallagher, Joppa West's base is in contact with groundwater. As IEPA discusses in its Recommendation, test pits and borings drilled in Joppa West show that "ash remains below the surface and more than half of the ash volume below the surface is below the static groundwater table." [57] From this and other data, IEPA concludes that Joppa West "is fully saturated with static groundwater recharged directly through the CCR material in [Joppa West], and [Joppa West's] cover is not sufficient to prevent infiltration."[58] As a result—and regardless of the fact that Joppa West stopped receiving ash in the 1970s and has since been capped by soil and clay[59]—Joppa West is subject to regulation as an "inactive CCR surface impoundment" under the federal CCR rule.

Because Joppa West is subject to regulation as an "inactive CCR surface impoundment" under the federal CCR rule, and because Illinois' coal ash regulatory program must be at least as protective and comprehensive as the federal CCR rule, Joppa West must also be an "inactive CCR surface impoundment" subject to regulation under Part 845.

[53] Ex. A, Gallagher decision at 1 (emphasis added).
[54] *Id.* at 2 (internal citation omitted).
[55] *Id.*
[56] *Id.* at 1.
[57] IEPA Recommendation at 27.
[58] *Id.*
[59] Petition at 60.

For these reasons, and those in Section III ("Request for Inapplicability") of IEPA's Recommendation, the Board should reject Petitioner's Request for a finding that Part 845 is "inapplicable" to Joppa West.

## III. The Board Should Deny Petitioner's Request for an Adjusted Standard Because Adjusted Standards From Part 845 are Incompatible with CAPPA, and Because Petitioner Has Not Met Its Burden of Showing That Joppa West is Eligible for an Adjusted Standard.

### A. The Board should deny Petitioner's Request for an adjusted standard because it would be incompatible with both CAPPA and federal law, and accordingly could preclude federal approval of Illinois' coal ash regulatory program.

#### *i. Adjusted standards in general are incompatible with CAPPA and federal law.*

Adjusted standards from Part 845 are incompatible with CAPPA's mandate because they could result in a regulatory regime that is less protective and comprehensive than the federal CCR program. The Illinois General Assembly was clear when it enacted CAPPA that Illinois' coal ash regulations must be "at least as protective and comprehensive as" the federal CCR rule.[60] As a result, Part 845 contains all the same requirements as the federal CCR rule plus additional requirements that go above and beyond the federal rule. Because Part 845 and the federal CCR rule share many of the same requirements, adjusted standards could in many cases exempt a coal ash pond from requirements that are codified in *both* Part 845 *and* the federal CCR rule. The practical result would be to render Part 845 less protective than the federal rule, contrary to CAPPA.

This outcome could have far-reaching implications for Illinois' coal ash regulatory program. IEPA has made clear that it intends to seek authorization from U.S. EPA to operate its own permitting program for Illinois coal ash impoundments.[61] But to operate in lieu of the federal CCR program, Illinois' coal ash regulatory program must be "at least as protective" as the federal CCR rule.[62] U.S. EPA recently underscored this point by directing Georgia—which

[60] 415 Ill. Comp. Stat. Ann. 5/22.59(g)(1) ("The rules must, at a minimum: (1) be at least as protective and comprehensive as the federal regulations or amendments thereto promulgated by the Administrator of the United States Environmental Protection Agency in Subpart D of 40 CFR 257 governing CCR surface impoundments.").
[61] *See, e.g.,* IEPA, Statement of Reasons, 10, PCB R2020-19 (Mar. 30, 2020) ("The third purpose and effect of this proposed rule is to adopt the federal CCR rules in Illinois and obtain federal approval of Illinois' CCR surface impoundment program"); IEPA, Response to Final Post-Hearing Comments, 36, PCB R2020-19 (Nov. 6, 2020) ("Further, the Agency intends to get approval by USEPA to manage CCR surface impoundments in place of Part 257.").
[62] 42 U.S.C. § 6945(d)(1)(B) ("[T]he Administrator . . . shall approve, in whole or in part, a permit program or other system of prior approval and conditions . . . if the Administrator determines that the program or other system requires each coal combustion residuals unit located in the State to achieve compliance with (i) the applicable criteria for coal combustion residuals units under part 257 of title 40, Code of Federal Regulations (or successor regulations promulgated pursuant to sections 6907(a)(3) and 6944(a) of this title); or (ii) such other State criteria that

previously received approval to operate its coal ash program in lieu of the federal CCR rule—to reevaluate its decisions on coal ash permits in light of U.S. EPA's recent Part A decisions.[63] Because adjusted standards from Part 845 in general—and, as explained below, the particular adjusted standards requested and recommended here—could transform Illinois' coal ash program into one that is less protective than the federal CCR program, allowing adjusted standards from Part 845 presents a serious risk that Illinois will not be able to obtain U.S. EPA approval to administer its own coal ash regulatory program in lieu of the federal CCR rule.

Critically, if Part 845 does not displace the federal CCR rule in Illinois, then adjusted standards from Part 845 lose their value anyway: a coal ash pond could be exempt from certain Part 845 requirements after receiving an adjusted standard, but still be required to comply with those requirements under the federal CCR rule. Such an outcome would prove unfavorable to IEPA and the communities affected by these ash ponds. IEPA would still need to dedicate substantial resources to evaluating petitions for adjusted standards and developing its recommendations on those petitions based on site-specific assessments, which can be a time-consuming process, as evidenced by the fact that IEPA has sought multiple extensions in most of the pending proceedings for adjusted standards to Part 845, including this one.[64] At the same time, pond operators would still need to comply with federal CCR rule requirements regardless of any adjusted standard from Part 845, creating two, potentially dramatically different, sets of regulatory requirements for pond operators that could make it more challenging for members of the public to understand if a site is complying with required protections.

For all of these reasons, the Board should conclude that adjusted standards from Part 845 are, with possible rare exception,[65] impermissible because they are incompatible with CAPPA's

the Administrator, after consultation with the State, determines to be *at least as protective as* the criteria described in clause (i).") (emphasis added); *id.* § 6945(d)(1)(C) ("The Administrator shall approve under subparagraph (B)(ii) a State permit program or other system of prior approval and conditions that allows a State to include technical standards for individual permits or conditions of approval that differ from the criteria under part 257 of title 40, Code of Federal Regulations (or successor regulations promulgated pursuant to sections 6907(a)(3) and 6944(a) of this title) if, based on site-specific conditions, the Administrator determines that the technical standards established pursuant to a State permit program or other system are *at least as protective as* the criteria under that part.") (emphasis added).

[63] U.S. EPA, Letter re: Georgia Coal Combustion Residuals Permit Program, 1 (Jan. 11, 2022) (requesting that Georgia's Environmental Protection Division "review its pending and issued CCR permits to determine whether the permits are consistent with" recent Part A decisions from U.S. EPA) ("Georgia letter") (attached hereto as Exhibit C).

[64] Pursuant to the Board's regulations, IEPA was required to file its recommendation on Petitioner's Request by June 25, 2021. *See, e.g.*, IEPA, Motion for Extension of Time, 3, AS 2021-005 (May 21, 2021). After requesting extensions on May 21 and September 22, IEPA's recommendation deadline was extended to November 22, 2021. There has been a similar pattern in the other pending proceedings for adjusted standards. For example, at IEPA's request, IEPA's recommendation deadline has been extended from June 25, 2021 to: May 23, 2022 in the proceeding regarding CCR impoundments at Midwest Generation's Waukegan station (AS 2021-003); February 15, 2022 in the proceeding regarding CCR impoundments at Southern Illinois Power Cooperative's Marion station (AS 2021-006); and March 24, 2022 in the proceeding regarding CCR impoundments at Ameren's Meredosia station (AS 2021-008).

[65] An adjusted standard could potentially be consistent with CAPPA if, and only if, it deviated from Part 845 in a manner that remains "at least as protective and comprehensive" as the federal requirements. As discussed herein, that is not the case here.

mandate that Illinois' coal ash regulatory program be at least as protective and comprehensive as the federal CCR rule.

*ii. The particular adjusted standards that Petitioner seeks and IEPA recommends for Joppa West are incompatible with CAPPA.*

Even if this Board declines to conclude that adjusted standards from Part 845 should not be available, this Board should still deny the specific adjusted standards that Petitioner requests and IEPA recommends because neither satisfy the federal CCR rule; therefore, both are inconsistent with CAPPA. CAPPA requires that standards for CCR surface impoundments in Illinois be at least as protective and comprehensive as the federal CCR rule. Joppa West is an Illinois CCR surface impoundment subject to the federal CCR rule's requirements for "inactive CCR surface impoundments." Because the adjusted standards at issue in this proceeding would render the standards applicable to Joppa West *less* protective than the federal CCR rule's requirements for "inactive CCR surface impoundments," the adjusted standards cannot satisfy CAPPA.

IEPA itself has recently recommended that this Board deny an adjusted standard from Part 845 because the adjusted standard would be inconsistent with the federal CCR rule. In its February 4, 2022 recommendation on Midwest Generation's adjusted standard petition for Pond 2 at the Joliet 29 station, IEPA argues that the Board should deny the adjusted standard in part because it "is not consistent" with the federal CCR rule and "would not be as protective as" the federal rule.[66] Like the adjusted standard that Midwest Generation has requested for Joliet 29, both the adjusted standard that Petitioner requests and the adjusted standard that IEPA recommends for Joppa West are "not consistent with" or "as protective as" the federal CCR rule. Accordingly, both are incompatible with CAPPA.

Furthermore, because the adjusted standards do not satisfy the federal CCR rule, they also risk precluding federal approval of Illinois' coal ash regulatory program. As explained *supra*, Illinois' coal ash regulatory program must be "at least as protective" as the federal CCR rule if it is to operate in lieu of the federal CCR rule in Illinois.[67] U.S. EPA's recent letter to Georgia—which directs Georgia to reevaluate certain CCR permits in light of the recent Part A decisions—indicates that U.S. EPA expects federally-approved programs to ensure *site-specific* compliance with all federal CCR rule requirements. Indeed, Congress directed U.S. EPA to

[66] IEPA, Recommendation of the Illinois Environmental Protection Agency regarding Midwest Generation's petition for an adjusted standard for Pond 2 at Joliet 29 Station, 28, 31, AS 2021-001 (Feb. 4, 2022).

[67] 42 U.S.C. § 6945(d)(1)(B) ("[T]he Administrator . . . shall approve, in whole or in part, a permit program or other system of prior approval and conditions . . . if the Administrator determines that the program or other system requires each coal combustion residuals unit located in the State to achieve compliance with (i) the applicable criteria for coal combustion residuals units under part 257 of title 40, Code of Federal Regulations (or successor regulations promulgated pursuant to sections 6907(a)(3) and 6944(a) of this title); or (ii) such other State criteria that the Administrator, after consultation with the State, determines to be *at least as protective as* the criteria described in clause (i).") (emphasis added); *id.* § 6945(d)(1)(C) ("The Administrator shall approve under subparagraph (B)(ii) a State permit program or other system of prior approval and conditions that allows a State to include technical standards for individual permits or conditions of approval that differ from the criteria under part 257 of title 40, Code of Federal Regulations (or successor regulations promulgated pursuant to sections 6907(a)(3) and 6944(a) of this title) if, based on site-specific conditions, the Administrator determines that the technical standards established pursuant to a State permit program or other system are *at least as protective as* the criteria under that part.") (emphasis added).

evaluate site-specific compliance as part of its review of state CCR programs.[68] Because the adjusted standards at issue in this proceeding are not as protective as the federal CCR rule, granting either would put federal approval of Illinois's CCR program in jeopardy.

The adjusted standards that Petitioner requests and IEPA recommends would violate the federal CCR rule—and therefore would also be incompatible with CAPPA—in each of the following ways.

1. Impermissible assessment and selection of corrective action

Monitored Natural Attenuation

Monitored Natural Attenuation ("MNA") is a purported clean-up method that takes a "do-nothing" approach to addressing coal ash pollution.

U.S. EPA recently made clear that MNA very rarely, if ever, is an adequate corrective measure under the federal CCR rule, and is never appropriate if it relies on the dilution or dispersion of pollution in surface waters.

In its CCR Rule Part A decision concerning coal ash impoundments at Clifty Creek Power Station in Indiana, U.S. EPA explained that "MNA through dilution and dispersion does not meet the requirements in 40 C.F.R. § 257.97(b)(4) and is not appropriate for consideration as a primary corrective measure."[69] U.S. EPA explained further that:

> Dispersion or dilution serves to expand the area of contamination, albeit at lower concentrations. This spread of groundwater contamination is precisely the type of environmental impact the CCR corrective action program was developed to address. Because dilution and dispersion do not degrade the contaminants or change them to a less toxic form and do not remove them from the environment, MNA through dilution and dispersion fails to comply with 40 C.F.R. § 257.97(b)(4) and may not be protective of human health and the environment as required by 40 C.F.R. § 257.97(b)(1).[70]

U.S. EPA also discussed the general inadequacy of MNA in its Part A decision concerning the Ottumwa Generating Station in Iowa, stating that, even if an owner or operator could show that CCR contaminants would irreversibly bind to soil particles and thereby be forever removed from groundwater, MNA "would not be assessed favorably . . . with respect to 40 C.F.R. § 257.97(b)(4), which requires that remedies 'remove from the *environment* as much of the contaminated material that was released from the CCR unit as is feasible.'"[71]

In order for MNA to be an adequate corrective action under the federal CCR rule, U.S. EPA requires pond operators to analyze "site-specific data and characteristics that control and

[68] *See id.* § 6945(d)(1)(D)(ii)(I) (requiring the EPA Administrator to find a deficiency in state programs if they fail to "continue[] to ensure that *each coal combustion residuals unit* located in the State achieves compliance with" criteria that is "at least as protective as" the federal CCR rule) (emphasis added); *id.* § 6945(d)(1)(B)(ii).
[69] U.S. EPA, Proposed Denial of Alternative Closure Deadline for Clifty Creek Power Station, EPA–HQ–OLEM–2021-0587, 54 (Jan. 11, 2022) ("Clifty Creek decision") (attached hereto as Exhibit D).
[70] *Id.* at 65.
[71] Ex. B, Ottumwa decision at 56 (emphasis added).

sustain naturally occurring attenuation."[72] For example, an operator must know "what specific mechanism (e.g., what type of sorption or reduction and oxidation reaction) is responsible for the attenuation of inorganics so that the stability of the mechanism can be evaluated," and must also be able to demonstrate the "irreversibility" of MNA.[73]

IEPA's Recommendation for Joppa West does not satisfy these requirements regarding MNA. Notably, Petitioner's Request does not seek a finding that MNA is an adequate corrective measure at Joppa West and would still require compliance with 35 Ill. Admin. Code 845.660,[74] which in turn requires the completion of an Assessment of Corrective Measures. Nevertheless, IEPA recommends an adjusted standard that selects MNA as the corrective action for Joppa West during at least a six-year period and possibly longer.[75]

IEPA's Recommendation, and the possibility that MNA would serve as the corrective action at Joppa West, is wholly incompatible with U.S. EPA's position on MNA. MNA at Joppa West would take place through dilution and dispersion, which U.S. EPA made clear does not meet the requirements of the federal CCR rule.

Absent the detailed and challenging demonstration required by U.S. EPA (which has not been made here), selecting MNA as the corrective action at Joppa West violates the federal CCR rule and therefore does not satisfy CAPPA's mandate that rules for Illinois CCR surface impoundments be at least as protective and comprehensive as the federal CCR rule. The Board should deny any adjusted standard that would allow Petitioner to select MNA as the corrective action at Joppa West.

Removal of coal ash as a corrective action

U.S. EPA recently made clear that the federal CCR rule requires Petitioner to assess the removal of coal ash from groundwater more favorably than any other potential corrective actions at Joppa West. Illinois must require the same of Petitioner in order to comply with CAPPA's mandate that Illinois' rules be at least as protective and comprehensive as the federal rule.

In its Part A decision for the Ottumwa Generating Station, U.S. EPA explained: "Source control alternatives that will remove CCR from groundwater . . . must be assessed more favorably than alternatives that fail to do so . . . with respect to performance, reliability, and control of exposure to residual contamination (i.e., CCR left in the ground)."[76]

Because Joppa West is holding coal ash in groundwater, *supra* at 11, Petitioner must assess removal more favorably than other corrective action alternatives, such as MNA. However,

[72] *Id.* at 57.
[73] *Id.* at 57-58.
[74] Petition at 28.
[75] IEPA Recommendation at 40 ("The Agency will consider monitored natural attenuation to be Petitioner's corrective action required under Sections 845.670 and 845.680 throughout the six-year adjusted standard."), *id.* ("If Petitioner makes sufficient demonstration that the current cover system and monitored natural attenuation will achieve compliance with the GWPS [groundwater protection standards] in Section 845.600 within a thirty-year period after completion of the six-year adjusted standard, as determined by the Board, Illinois EPA is amenable to a renewed adjusted standard acknowledging that the unit is 'closed' requiring the initiation of post-closure care in accordance with Section 845.780 and the continuance of groundwater monitoring until the GWPS are met.").
[76] Ex. B, Ottumwa decision at 60 (internal citations omitted).

neither Petitioner's nor IEPA's adjusted standard requires Petitioner to assess removing coal ash from groundwater at Joppa West. Petitioner's adjusted standard purportedly requires an assessment of corrective measures that complies with 35 Ill. Admin. Code §§ 845.660-70, which in turn requires Petitioner to analyze the effectiveness of removing coal ash from groundwater at Joppa West. However, Petitioner also seeks an exemption from most of the closure requirements in Subpart G of Part 845 and requests that it not be required to consider removing coal ash from Joppa West as part of its closure alternatives analysis[77]—indicating that Petitioner would not evaluate removal as a corrective action.

Similarly, IEPA's Recommendation could allow Petitioner to avoid *ever* assessing the removal of coal ash from groundwater at Joppa West. IEPA's Recommendation does not require Petitioner to analyze any corrective measures other than MNA,[78] and depending upon the results of Petitioner's six years of data collection, does not require Petitioner to perform a closure alternatives analysis under Subpart G.[79] IEPA's Recommendation thus would be inconsistent with, and less protective than, both the federal CCR rule's corrective action requirements as well as the rule's closure requirements, which—as explained below—bar continued contact between coal ash and water after closure.

Because the adjusted standards that Petitioner requests and IEPA recommends do not require Petitioner to assess removing coal ash from groundwater at Joppa West more favorably than other potential corrective measures, they are inconsistent with CAPPA's mandate that Illinois' coal ash regulatory program be at least as protective as the federal CCR rule and should be denied.

[77] *See, e.g.*, Petition at 28 (requesting exemptions from most of Subpart G), 30-31 (discussing costs and purported "environmental harm" of requiring "closure" at Joppa West that would involve digging or removing vegetation on top of Joppa West), 35-37 (explaining why Petitioner should not be required to consider removing the coal ash from Joppa West).

[78] *Id.* at 40 (stating that "the groundwater sampling and resulting evaluation completed pursuant to the conditional adjusted standard [allowing MNA] will serve as Petitioner's assessment of corrective measures required under Section 845.660. The Agency will consider monitored natural attenuation to be Petitioner's corrective action required under Sections 845.670 and 845.680 throughout the six-year adjusted standard").

[79] *Id.* ("If Petitioner makes sufficient demonstration that the current cover system and monitored natural attenuation will achieve compliance with the GWPS [groundwater protection standards] in Section 845.600 within a thirty-year period after completion of the six-year adjusted standard, as determined by the Board, Illinois EPA is amenable to a renewed adjusted standard acknowledging that the unit is 'closed' requiring the initiation of post-closure care in accordance with Section 845.780 and the continuance of groundwater monitoring until the GWPS are met.").

Delay in assessing and commencing corrective action

The federal CCR rule requires Petitioner to take corrective action at Joppa West far faster than the timeline set forth in IEPA's Recommendation. Under the federal CCR rule, Petitioner was required to:

- Collect a minimum of eight independent groundwater samples from each background well and each downgradient well at Joppa West, for all CCR constituents, by October 2017;[80]
- Monitor groundwater at Joppa West semi-annually after October 2017;[81]
- Establish an assessment monitoring program by January 2018 if the October 2017 sampling showed a "statistically significant increase" over background concentrations;[82]
- Sample and analyze the groundwater at Joppa West for a subset of CCR constituents by April 2018, and within 90 days after obtaining those results (roughly by July 2018), resample those same wells to determine whether there are exceedances of groundwater protection standards;[83] and
- If those resampling results showed an exceedance, initiate an assessment of corrective measures within 90 days of obtaining those results—roughly October 2018.[84]

Furthermore, once groundwater sampling reveals that corrective action is required at an impoundment like Joppa West, owners or operators like Petitioner must act quickly to select a corrective action. U.S. EPA recently emphasized this point in its Part A decision concerning the Clifty Creek Station:

> [O]nce corrective action is triggered a facility has 180 days to complete the ACM [Assessment of Corrective Measures]. At that point the obligation to select a remedy is triggered. In other words, once the 180 days to complete the ACM have passed, a facility must select a remedy "as soon as feasible." As previously explained, EPA interprets the term "feasible" to mean ''capable of being done or carried out'' and ''possible to do and likely to be successful''. As a practical matter, this means that a facility must be able to show progress toward selecting a remedy once the 180 days have passed or demonstrate why it was not feasible to have done so.[85]

In sum, the federal CCR rule requires Petitioner to collect and analyze extensive groundwater samples from Joppa West, and to begin assessing corrective measures for Joppa West, within *three years* of the rule's effective date. If pollution is found in excess of groundwater protection standards, the federal rule requires Petitioner to select a corrective action "as soon as feasible."

[80] 40 C.F.R. § 257.94(b).
[81] *Id.*
[82] *Id.* § 257.94(e)(1).
[83] *Id.* § 257.95(b), (d), (g).
[84] *Id.* § 257.95(g)(3)(i).
[85] Ex. D, Clifty Creek decision at 67-68 (internal citations and footnotes omitted).

By contrast, IEPA's Recommendation would require Petitioner to collect *five years* of data before even assessing corrective measures or closure alternatives for Joppa West.[86] This would put Joppa West nearly *ten years* behind the schedule set forth in the federal CCR rule, subjecting Illinois' communities and groundwater resources to an unreasonable risk in the meantime.

Because Joppa West is already far behind the federal CCR rule's regulatory schedule, this Board should reject any adjusted standard that does not require Petitioner to assess corrective measures and closures alternatives at Joppa West as soon as possible. Consistent with the timeline set forth in the federal CCR rule, Petitioner should be allowed three years *at most* to collect the requisite groundwater data from Joppa West. Any other timeline is incompatible with CAPPA's mandate that rules for Illinois CCR surface impoundments be at least as protective as the federal CCR rule.

Presence of groundwater receptors

As both U.S. EPA and IEPA have explained, the presence or absence of groundwater receptors does not bear on the selection of a corrective action at Joppa West.[87] Therefore, this Board should reject any argument from Petitioner that the purported absence of groundwater receptors near Joppa West[88] is relevant to the selection of a corrective action.

2. Impermissible closure

Both Part 845 and the federal CCR rule require Petitioner to eliminate "free liquids" from Joppa West before closing by capping the coal ash in place.[89] U.S. EPA recently clarified that the definition of "free liquids" in the federal CCR rule includes groundwater, and therefore, operators of impoundments like Joppa West must demonstrate that groundwater has been eliminated from the impoundment before closing by capping in place:

> [I]f EPA is correct that the base of the OGS [Ottumwa Generating Station] Ash Pond intersects with groundwater, the closure plan would need to have discussed the engineering measures taken to ensure that the groundwater *had been removed* from the unit prior to the start of installing the final cover system, as required by 40 C.F.R. § 257.102(d)(2)(i). This provision applies both to the freestanding liquid in the impoundment and to all separable porewater in the impoundment, whether the porewater was derived from sluiced water or groundwater that intersects the impoundment.[90]

[86] IEPA Recommendation at 39-40.
[87] Ex. B, Ottumwa decision at 62 ("Alternatives that are likely to prevent future releases can be distinguished from those that are not and assessed accordingly. The requirement to assess their relative performance under this criterion is not negated by an unsubstantiated claim that no receptors are or will be impacted by the release. The presence or absence of immediate receptors is not a valid criterion for remedy selection."); IEPA Recommendation at 34-35 ("There may not be any current groundwater receptors, but it cannot be assumed that a potential future owner will not want to use the available groundwater resource.").
[88] Petition at 32-33.
[89] 35 Ill. Admin. Code § 845.750; 40 C.F.R. § 257.102(d)(2)(i).
[90] Ex. B, Ottumwa decision at 41-42 (emphasis added); *see also* Ex. D, Clifty Creek decision at 39-40.

Because CAPPA requires rules for Illinois CCR surface impoundments to be at least as protective and comprehensive as the federal CCR rule, any adjusted standard that would not require Petitioner to demonstrate that it can and will eliminate groundwater from Joppa West before closing in place would not satisfy CAPPA.

However, neither Petitioner's nor IEPA's adjusted standard requires Petitioner to eliminate groundwater from Joppa West before closing by capping the coal ash in place. Petitioner's adjusted standard would exempt Joppa West from the section of Part 845 that requires the elimination of "free liquids" prior to closure in place.[91] Petitioner further requests that Joppa West be allowed to close by "keeping its current cover system in place without having to reclose through removal of CCR or installation of a new final cover system."[92] Nothing in Petitioner's Request contemplates removing the groundwater from Joppa West prior to closure.

The same is true of IEPA's Recommendation. Depending upon the results of Petitioner's six years of data collection, IEPA is "amenable" to considering Joppa West "closed" after taking no corrective action beyond MNA, or through "an alternative closure method which could consist of (a) an alternative cover system that includes options not otherwise contemplated by Part 845, if the long-term efficacy and durability of the alternative cover system is maintained or (b) a combination of an alternative cover system and corrective action beyond MNA."[93] IEPA's Recommendation does not require Petitioner to eliminate free liquids, including groundwater, from Joppa West before capping the coal ash in place.

Because neither Petitioner's nor IEPA's adjusted standard requires Petitioner to eliminate groundwater from Joppa West before closing by capping the coal ash in place, it is inconsistent with CAPPA's mandate that rules for Illinois CCR surface impoundments be at least as protective as the federal CCR rule. Accordingly, they should be denied. [94]

3. Impermissible consideration of cost

Costs may not be considered when selecting a corrective action or closure method under the federal CCR rule. Therefore, to be consistent with CAPPA's mandate, costs also may not be considered when selecting a corrective action or closure method for Joppa West.

As the D.C. Circuit explained in *USWAG*, considering costs when selecting a closure method "would appear to violate RCRA's statutory mandate and run afoul of Supreme Court precedent."[95] Because, "[u]nder any reasonable reading of RCRA, there is no textual commitment of authority to EPA to consider costs in the open-dump standards," costs also

[91] Petition at 28.
[92] *Id.* at 39.
[93] IEPA Recommendation at 40-41.
[94] The exception to the requirement to obtain a closure construction permit and other closure-related reports under Part 845, set out at 415 ILCS 5/22.59(e) and 35 Ill. Admin. Code § 845.100(i), does not apply to Joppa West. Those exceptions require an IEPA-approved closure, and Joppa West did not receive any IEPA approval when it ceased being used in the 1970s. *See, e.g.*, IEPA Recommendation at 20 ("No permits are on record showing approval of closure of the [Joppa] West Ash Pond.").
[95] *USWAG*, 901 F.3d at 449.

cannot be considered when selecting a corrective action.[96] This Board cited the D.C. Circuit's analysis on this issue when it rejected industry's request to make cost a relevant consideration in the closure analysis section of Part 845.[97]

Despite this prohibition against considering costs, Petitioner would have this Board consider the cost of different corrective measures and closure alternatives,[98] and IEPA's Recommendation appears to validate Petitioner's request.[99]

Environmental Groups recognize that the Board's generally applicable regulations require a petition for an adjusted standard to include a discussion of cost.[100] However, if costs are considered relevant in a petition for an adjusted standard *from Part 845 specifically*, then Illinois' coal ash regulatory program fails to be "at least as protective as" the federal CCR program. Such a result is contrary to CAPPA and could preclude federal authorization of Illinois' coal ash program, *supra*. Accordingly, any adjusted standard that allows for the consideration of costs should be denied.

4. Inadequate public participation

IEPA's Recommendation also precludes meaningful public participation in permitting decisions concerning Joppa West. As a result, IEPA's Recommendation is incompatible with both CAPPA and the federal CCR rule, which encourage robust public participation in such decisions, *supra*.

IEPA's Recommendation outlines two ways in which Joppa West could satisfy Part 845's closure requirements: (1) demonstrate that MNA at Joppa West will achieve compliance with groundwater protection standards within a 30-year period and Joppa West will automatically be considered "closed;" or (2) obtain this Board's approval for an "alternative closure system."[101] The first option would entirely prevent the public from weighing in on a closure plan for Joppa West, except to the extent that members of the public submit comments in this proceeding. The second option would preclude *meaningful* public participation by allowing the public to weigh in on a closure plan for Joppa West *only after* this Board has already given the plan its stamp of approval. Although this second option would require Petitioner to apply for a construction permit and to include a closure alternative analysis in that application, any comments filed during that application process would be rendered meaningless, as the outcome of the permitting proceeding would be pre-determined by the Board's prior approval of that closure system.

[96] *Id*. at 448; *see also* Ex. D, Clifty Creek decision at 61 ("[U]sing a step-by-step tiered analysis approach to screen sites for MNA for the purposes of cost-effectiveness would be inappropriate for CCR corrective action given the prohibition against consideration of costs and the deadline in 40 CFR § 257.96(a) to complete the [assessment of corrective measures].").
[97] Ill. Pollution Control Bd., Opinion and Order, 93, PCB R20-19 (Feb. 4, 2021) ("In USWAG, the court relied on the US Supreme Court to determine that the RCRA regulations do not 'show a textual commitment of authority to the [US]EPA to consider costs' and therefore RCRA does not authorize the EPA to consider costs. Therefore, the Board finds that additional language is unnecessary and declines to accept Dynegy's addition to Section 845.710(b)(3).") (internal citations omitted).
[98] *See, e.g.*, Petition at 36 (discussing the cost of removing coal ash from Joppa West).
[99] IEPA Recommendation at 32-33.
[100] 35 Ill. Admin. Code § 104.406(e).
[101] IEPA Recommendation at 39-41.

For all the foregoing reasons, the adjusted standards that Petitioner requests and that IEPA recommends for Joppa West are incompatible with CAPPA's mandate that Illinois' coal ash regulatory program be at least as protective as the federal CCR rule, and should be denied.

### B. The Board should deny Petitioner's Request because Petitioner has not met its burden of showing that Joppa West is eligible for an adjusted standard under Illinois law.

Finally, the Board should deny Petitioner's Request for an adjusted standard for Joppa West because Petitioner has failed to satisfy the criteria for an adjusted standard under Illinois law.

"The burden of proof in an adjusted standard proceeding is on the petitioner."[102] To satisfy its burden of proof, Petitioner must "justify" an adjusted standard consistent with 415 Ill. Comp. Stat. Ann. Sections 5/27(a) and 5/28/1(a),[103] which require Petitioner to prove that:

> 1) factors relating to that petitioner are substantially and significantly different from the factors relied upon by the Board in adopting the general regulation applicable to that petitioner; 2) the existence of those factors justifies an adjusted standard; 3) the requested standard will not result in environmental or health effects substantially and significantly more adverse than the effects considered by the Board in adopting the rule of general applicability; *and* 4) the adjusted standard is consistent with any applicable federal law.[104]

Petitioner has failed to meet its burden of proof on each of these factors.

#### *i. Joppa West is not "substantially and significantly different" from other coal ash ponds that the Board regulated under Part 845.*

Joppa West is not "substantially and significantly different" from other coal ash ponds that this Board regulated under Part 845. IEPA itself concedes this point: "The factors relating to [Joppa West] have not been proven substantially and significantly different from the factors relied upon by the Board in adopting the regulation applicable to [Joppa West]."[105] This alone compels denial of the adjusted standard.

None of Petitioner's contrary arguments have merit. Petitioner first argues that Joppa West is different from other ponds because it is not regulated under the federal CCR rule, and thus, Petitioner has had less time to bring Joppa West into compliance with Part 845. As an initial matter, Petitioner is wrong that Joppa West is not regulated under the federal CCR rule, *supra.* Moreover, Petitioner's decision to delay bringing Joppa West into compliance with the federal CCR rule does not make the pond itself "substantially and significantly different" from other ponds regulated under Part 845. Joppa West, like other ponds regulated under Part 845, holds millions of cubic yards of coal ash that is at least partially sitting in groundwater, where it poses an unreasonable risk to Illinois' communities and environment. Petitioner should not be rewarded with an adjusted standard for its wait-and-see approach to regulatory compliance while

[102] 35 Ill. Admin. Code § 104.426.
[103] *Id.* §§ 104.426(a), 104.428(a).
[104] *Id.* § 104.426(a) (emphasis added).
[105] IEPA Recommendation at 37.

other operators worked to bring their ponds into compliance long before 2022, in accordance with the timelines set out in the federal CCR rule.

Joppa West's other characteristics—old, covered by trees, and costly to close by removal—also do not render Joppa West "substantially and significantly different" from other ponds regulated under Part 845. Critically, older ponds continue to pose the same risks of groundwater contamination as ponds that stopped receiving coal ash more recently.[106] U.S. EPA has made clear that older ponds like Joppa West are subject to regulation under the federal CCR rule, regardless of when they stopped receiving coal ash.[107] In addition, both U.S. EPA and this Board have recognized that vegetation and wildlife may be present on or near coal ash impoundments. That fact was immaterial to U.S. EPA's decision to regulate the Gallagher Station as an inactive CCR surface impoundment under the federal CCR rule,[108] and this Board's regulations already account for the need to evaluate impacts to wildlife in decisions about corrective action and closure.[109] The cost of removing coal ash from Joppa West also does not make the pond unique from others regulated under Part 845. Even if this Board could consider costs—it may not—the cost of corrective actions and closure alternatives will necessarily vary by site.

Because Petitioner has failed to show that factors at Joppa West make it "substantially and significantly different" from other ponds regulated under Part 845, Petitioner has failed to meet its burden of proving that an adjusted standard is "justified" for Joppa West.

*ii. Joppa West poses an unreasonable risk of adverse environmental and health effects.*

The adjusted standard that Petitioner requests allows Joppa West to continue to pose an unreasonable risk of adverse environmental and health effects.

Part 845 *in its entirety* "establishes criteria for determining which CCR surface impoundments do not pose a reasonable probability of adverse effects on health or the environment."[110] In other words, Part 845 sets the floor for the regulatory requirements that are necessary to ensure that coal ash ponds like Joppa West do not post an unreasonable risk to health or the environment. Exempting Joppa West from some of Part 845's requirements therefore would exempt the pond from requirements that this Board already determined were necessary to protect against adverse health and environmental effects.

Similarly, the federal CCR rule sets out the criteria that must be met in order for a CCR surface impoundment not to pose a "reasonable probability of adverse effects on health or the environment . . . ."[111] Accordingly, anything short of full compliance with those standards means

[106] *See, e.g.*, Ill. Pollution Control Bd., Interim Opinion and Order, 92, PCB 2013-15 (June 20, 2019) (finding that coal ash in the "Old Pond" at Midwest Generation's Waukegan Station caused groundwater contamination).
[107] Ex. A, Gallagher decision at 1.
[108] *Id.*
[109] *See, e.g.*, 35 Ill. Admin. Code § 845.670(d) (requiring the selected corrective action to "[b]e protective of human health and the environment" and "[r]emove from the environment as much of the contaminated material that was released from the CCR surface impoundment as is feasible, taking into account factors such as avoiding inappropriate disturbance of sensitive ecosystems").
[110] *Id.* § 845.100(a).
[111] 42 U.S.C. § 6944(a); *USWAG*, 901 F.3d at 420.

that, by definition, Joppa West *does* pose a reasonable probability of adverse effects on health or the environment.

Moreover, the record shows that Joppa West is already causing groundwater contamination. Petitioner itself concedes that Joppa West is causing groundwater exceedances of boron and sulfate.[112] This Board has previously found that groundwater exceedances of boron and sulfate amount to "environmental harm"[113] and also violate Section 12(a) of the Illinois Environmental Protection Act.[114] Regarding the latter, the Board has said: "To find that a respondent violated Section 12(a) of the Act, the Board must find that a respondent discharged or threatened to discharge a contaminant that is likely to render waters harmful, detrimental, or injurious to public health."[115] Thus, exceedances of boron and sulfate are "likely to render waters harmful, detrimental, or injurious to public health."

IEPA's Recommendation identifies further evidence of groundwater contamination. According to IEPA, Petitioner's groundwater sampling shows "what would be GWPS [groundwater protection standards] exceedances for pH, arsenic, boron, lithium, molybdenum, and selenium at the source well."[116] In addition, "[c]obalt, lead, beryllium, antimony, and sulfate occur downgradient of the source well which may be indicating that leaching of the aforementioned metals and general chemistry parameters is occurring."[117]

This evidence of groundwater contamination strongly suggests that leaving millions of cubic yards of coal ash in an unlined pit that is at least partially saturated with groundwater—which is what Petitioner's and IEPA's adjusted standards call for—will, if permitted, continue to pose an unreasonable risk to health and the environment and thereby undermine the purpose of Part 845. At best, Petitioner has failed to meet its burden of proving that an adjusted standard for Joppa West would "not result in environmental or health effects substantially and significantly more adverse than the effects considered by the Board" in adopting Part 845. As IEPA has explained, Petitioner has failed to adequately assess groundwater contamination at the site.[118]

[112] Petition at 17-18.
[113] *See, e.g.*, Ill. Pollution Control Bd., Order on Motion to Stay, 6, PCB 2013-15 (Apr. 16, 2020) (denying Midwest Generation's motion to stay proceedings due in part to "ongoing environmental harm" from groundwater exceedances of boron and sulfate, among other contaminants).
[114] *See, e.g.*, Ill. Pollution Control Bd., Interim Opinion and Order, 77-78, 80, PCB 2013-15 (June 20, 2019) (explaining that concentrations of boron and sulfate in excess of groundwater protection standards at several of Midwest Generation's stations amounted to a violation of Section 12(a) of the Illinois Environmental Protection Act); *see also id.* at 85 ("The Board thus, finds that MWG [Midwest Generation] violated Article 12(a), because it caused, threatened or allowed the discharge of contaminants into the groundwater at all four Stations, so as to cause or tend to cause water pollution in Illinois, either alone or in combination with matter from other sources.") (internal citations omitted).
[115] *Id.* at 77.
[116] IEPA Recommendation at 17 (footnote omitted).
[117] *Id.* at 32.
[118] *Id.* at 18 ("In sum, the source material within the JWAP [Joppa West Ash Pond] has not been fully characterized for potential sources of exceedances of GWPS [groundwater protection standards], nor has it been fully investigated for geochemical reactions that produce the downgradient exceedances of antimony, cobalt, lead, sulfate, and beryllium."), 32 ("At best, the JWAP [Joppa West Ash Pond] CCR surface impoundment has not been fully characterized to understand where the cobalt, lead, beryllium, antimony and sulfate are originating."), 35 ("Groundwater has not been fully investigated at this time to substantiate the conclusions of the [Human Health Risk Assessment] or compliance with regulatory limits presented in the Petition.")

Petitioner's claim that "there are no potential groundwater receptors in the vicinity of Joppa West" does not change this fact.[119]

Any purported ecological or health harms that would result from removing coal ash from Joppa West could be mitigated or eliminated during the permitting process and development of correction action. Because the negative impacts could be avoided or mitigated, they do not "justify" an adjusted standard. Moreover, any potential negative impacts from the closure process must be balanced against the adverse impacts that would result from allowing groundwater contamination to continue at Joppa West.

Because Petitioner has failed to meet its burden of proof on this factor, it has failed to show that an adjusted standard is justified for Joppa West.

*iii. The adjusted standard is inconsistent with federal law.*

Finally, Petitioner cannot meet its burden of proving that the adjusted standard it requests for Joppa West is compatible with federal law. Petitioner's sole evidence on this factor is its claim that "Joppa West is not regulated under the Federal CCR Rule."[120] Petitioner is wrong: as discussed in detail above, U.S. EPA recently made clear that Joppa West is subject to regulation under the federal CCR rule as an "inactive CCR surface impoundment." Therefore, Petitioner's adjusted standard—which seeks to exempt Joppa West from requirements under Part 845 that are also requirements under the federal CCR rule—is inconsistent with federal law.

## Conclusion

For the foregoing reasons, Environmental Groups respectfully request that this Board deny Petitioner's request for a finding of inapplicability as well as its alternative request for an adjusted standard for Joppa West.

Dated: February 14, 2022

Respectfully Submitted,

/s/ Lauren Piette
Lauren Piette
IL Bar No. 6330290
Earthjustice
311 S. Wacker Dr., Suite 1400
Chicago, IL 60606
(312) 500-2193
lpiette@earthjustice.org

/s/ Jennifer Cassel
Jennifer Cassel

[119] *See, e.g.*, *id.* at 34-35 ("There may not be any current groundwater receptors, but it cannot be assumed that a potential future owner will not want to use the available groundwater resource."); Ex. B, Ottumwa decision at 62 ("The requirement to assess their relative performance under this criterion is not negated by an unsubstantiated claim that no receptors are or will be impacted by the release. The presence or absence of immediate receptors is not a valid criterion for remedy selection.").

[120] Petition at 35.

IL Bar No. 6296047
Earthjustice
311 S. Wacker Dr., Suite 1400
Chicago, IL 60606
(312) 500-2198
jcassel@earthjustice.org

/s/ Mychal Ozaeta
Mychal Ozaeta
ARDC No. 6331185
Earthjustice
707 Wilshire Blvd., Suite 4300
Los Angeles, CA 90017
(213) 766-1069
mozaeta@earthjustice.org

*On behalf of Earthjustice*

/s/ Faith E. Bugel
Faith E. Bugel
ARDC No. 6255685
1004 Mohawk Rd.
Wilmette, IL 60091
(312) 282-9119
fbugel@gmail.com

*Attorney for Sierra Club*

/s/ Kiana Courtney
Kiana Courtney
ARDC No. 6334333
Environmental Law & Policy Center
35 E. Wacker Dr., Suite 1600
Chicago, Illinois 60601
(312) 795-3712
kcourtney@elpc.org

/s/ Tanmay Shukla
Tanmay Shukla
IL. Bar No. 6336759
Environmental Law & Policy Center
35 E. Wacker Dr., Suite 1600
Chicago, Illinois 60601
(617) 866-7390
tshukla@elpc.org

*Attorneys for Environmental Law & Policy Center*

/s/ Andrew Rehn
Andrew Rehn
Water Resources Engineer
Prairie Rivers Network
1605 S State St., Suite 1
Champaign, IL 61820
(217) 344-2371, ext. 208
arehn@prairierivers.org

**CERTIFICATE OF SERVICE**

The undersigned, Jennifer Cassel, an attorney, certifies that I have served by email the Clerk and by email the individuals with email addresses named on the Service List provided on the Board's website, *available at* https://pcb.illinois.gov/Cases/GetCaseDetailsById?caseId=17036, a true and correct copy of the **Comments of Earthjustice, Environmental Law & Policy Center, Prairie Rivers Network, and Sierra Club on Electric Energy, Inc.'s Petition for a Finding of Inapplicability or Adjusted Standard**, before 5 p.m. Central Time on February 14, 2022. The number of pages in the email transmission is 191 pages.

Dated: February 14, 2022

Respectfully Submitted,

/s/ Jennifer Cassel

Jennifer Cassel (IL Bar No. 6296047)
Earthjustice
311 S. Wacker Dr., Suite 1400
Chicago, IL 60606
(312) 500-2198
jcassel@earthjustice.org

| **SERVICE LIST** | |
|---|---|
| Don Brown<br>Clerk of the Board<br>Don.brown@illinois.gov<br>Carol Webb<br>Hearing Officer<br>Carol.Webb@illinois.gov<br>Illinois Pollution Control Board<br>James R. Thompson Center<br>Suite 11-500<br>100 West Randolph St.<br>Chicago, Illinois 60601 | Christine M. Zeivel<br>Assistant Counsel<br>Christine.Zeivel@illinois.gov<br>Stefanie N. Diers<br>Assistant Counsel<br>Stefanie.Diers@illinois.gov<br>Illinois Environmental Protection Agency<br>1021 North Grand Ave. East<br>P.O. Box 19276<br>Springfield, IL 62794-9276 |
| Joshua R. More<br>jmore@schiffhardin.com<br>Bina Joshi<br>bjoshi@schiffhardin.com<br>Sarah L. Lode<br>slode@schiffhardin.com<br>Schiff Hardin, LLP<br>233 South Wacker Dr., Suite 6600<br>Chicago, IL 60606-6473 | |

# Exhibit A

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 5

77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

REPLY TO THE ATTENTION OF:
L-17J

Mr. Owen R. Schwartz
Duke Energy
1000 East Main Street
Plainfield, Indiana 46168

Dear Mr. Schwartz,

This letter provides written confirmation of the discussion between the Environmental Protection Agency (EPA) and Duke Energy Gallagher staff during our conference calls on August 27 and September 17, 2021 regarding the history of the site and the closure of Coal Combustion Residuals (CCR) surface impoundments at Duke Energy's Gallagher Generating Station in New Albany, Indiana. This letter also serves to notify you that, based on the information provided in those telephone conversations, EPA has concluded that the North Ash Pond and the Primary Pond Ash Fill Area are subject to the requirements of 40 C.F.R. Part 257 Subpart D ("the CCR Regulations").

On the August 27 conference call, Duke Energy stated that two impoundments (i.e., North Ash Pond, Primary Pond Ash Fill Area) were removed from service, drained of ponded surface water, and subsequently covered with soil and grass in 1989. Further, EPA's understanding is that Duke has taken no engineering measures to remove any of the groundwater from either unit and both of these unlined units are sitting in approximately 20 feet of groundwater.

As an initial matter, we disagree with Duke Energy's argument that neither of these units are CCR surface impoundments within the meaning of the CCR Regulations. We understand that you interpret the definition of a CCR surface impoundment to exclude units such as the North Ash Pond, where liquid remains in the unit because the base of the unit intersects with groundwater. You argue that such units do not "hold" liquid because groundwater flows through the unit (instead of staying within the unit). EPA disagrees with your interpretation. The definition of a CCR surface impoundment does not require that the unit prevent groundwater from flowing through the unit, but merely requires that the unit be "designed to hold an accumulation of CCR and liquid." 40 C.F.R. § 257.53. Following your interpretation would lead to the incongruous result that impoundments where contaminants can migrate out in the groundwater would not be regulated by the CCR Regulations, while those that prevent that type of migration would be regulated.

**Primary Pond Ash Fill Area**

The Primary Pond Ash Fill Area is not an existing CCR surface impoundment because (to EPA's knowledge) it has not received CCR after October 19, 2015. However, because it still contains CCR and liquids, it meets the definition of an inactive CCR surface impoundment. An inactive CCR surface impoundment is one "that no longer receives CCR on or after October 19, 2015 and still contains both CCR and liquids on or after October 19, 2015." EPA interprets the word "contains" to mean "to have or hold (someone or something) within" based on the ordinary meaning of the word. (e.g., Oxford English Dictionary, Merriam-Webster). Accordingly, an impoundment "contains" liquid if there is liquid in the impoundment, even if the impoundment does not prevent the liquid from migrating out of the impoundment. This means that if a CCR surface impoundment contains liquid because its base (or any part of its base) is in contact with groundwater, it would meet the definition of an inactive CCR surface impoundment. Under both the regulatory and dictionary definitions of the term, groundwater (or water) falls within the plain meaning of a "liquid." See 40 C.F.R. 257.53. Therefore, because the Primary Pond Ash Fill Area is sitting in approximately 20 feet of groundwater, it holds or contains liquids and is an inactive surface impoundment.

As an inactive CCR surface impoundment, the Primary Pond Ash Fill Area is regulated pursuant to 40 C.F.R. § 257.50(c), which specifies that "[t]his subpart also applies to inactive CCR surface impoundments at active electric utilities or independent power producers, regardless of the fuel currently used at the facility to produce electricity."

**North Ash Pond**

On the September call, Duke Energy confirmed that the North Ash Pond has received CCR after the October 19, 2015 effective date of the CCR Rule. Therefore, that pond meets the definition of an existing CCR surface impoundment. An existing CCR surface impoundment is one that "receives CCR both before and after October 19, 2015." 40 C.F.R. § 257.53. Accordingly, the North Ash Pond falls within the ambit of 40 C.F.R. § 257.50(b), which specifies that "[t]his subpart applies to owners and operators of…existing CCR surface impoundments…that dispose or otherwise engage in solid waste management of CCR." Even if the North Ash Pond had not received CCR after October 19, 2015, it would be an inactive CCR surface impoundment for the same reasons that the Primary Pond Ash Fill Area is an inactive CCR surface impoundment and would fall within the ambit of 40 C.F.R. § 257.50(c).

**Applicability of the Closure Requirements to these Impoundments**

For the reasons set out in the discussion above, the North Ash Pond and Primary Pond Ash Fill Area are regulated under 40 C.F.R. Part 257 Subpart D and Duke Energy will need to take action to bring these ponds into compliance by meeting all the requirements of the regulations. Significant among these is the requirement to close, because the North Ash Pond and the Primary Pond Ash Fill Area are unlined CCR surface impoundments. See, 40 C.F.R. § 257.101(a).

The applicable closure regulations are those that address closing with waste in place (assuming EPA's understanding is correct that Duke Energy's plan is to close both impoundments with waste in place). The Part 257 requirements applicable to impoundments closing with waste in place include general performance standards and specific technical standards that set forth individual engineering requirements related to the drainage and stabilization of the waste and to the final cover system. The general performance standards and the technical standards complement each other, and both must be met at every site. The general performance standards

under 40 C.F.R. § 257.102(d)(1) require that the owner or operator of a CCR unit "ensure that, at a minimum, the CCR unit is closed in a manner that will: (i) Control, minimize or eliminate, to the maximum extent feasible, post-closure infiltration of liquids into the waste and releases of CCR, leachate, or contaminated run-off to the ground or surface waters or to the atmosphere; and (ii) Preclude the probability of future impoundment of water, sediment, or slurry." The specific technical standards related to the drainage of the waste in the unit require that "free liquids must be eliminated by removing liquid wastes or solidifying the remaining wastes and waste residues" prior to installing the final cover system. 40 C.F.R. § 257.102(d)(2)(i).

If Duke Energy plans to close with waste in place and the base of the impoundment does, in fact, intersect with groundwater, Duke Energy will need to implement engineering measures to remove groundwater from the unit prior to the start of installing the final cover system, as required by 40 C.F.R. § 257.102(d)(2)(i). This provision applies both to the free-standing liquid in the impoundment and to all separable porewater in the impoundment, whether the porewater was derived from sluiced water or groundwater that intersects the impoundment. The definition of free liquids in 40 C.F.R. § 257.53 encompasses all "liquids that readily separate from the solid portion of a waste under ambient temperature and pressure," regardless of whether the source of the liquids is from sluiced water or groundwater. The regulation does not differentiate between the sources of the liquid in the impoundment (e.g., surface water infiltration, sluice water intentionally added, groundwater intrusion). Furthermore, the performance standard at 40 C.F.R. § 257.102(d)(2)(i) was modeled on the regulations that apply to interim status hazardous waste surface impoundments, which are codified at 40 C.F.R. § 265.228(a)(2)(i). Guidance on these interim status regulations clarifies that these regulations require both the removal of free-standing liquids in the impoundment as well as sediment dewatering. See US EPA publication titled "Closure of Hazardous Waste Surface Impoundments," publication number SW-873, September 1982.

Similarly, Duke Energy will need to ensure that the impoundments are closed in a manner that will "control, minimize or eliminate, to the maximum extent feasible, post-closure infiltration of liquids into the waste and releases of CCR, leachate, or contaminated run-off to the ground or surface waters or to the atmosphere." 40 C.F.R. § 257.102(d)(1). EPA views the word "infiltration" as a general term that refers to any kind of movement of liquids into a CCR unit. That would include, for example, any liquid passing into or through the CCR unit by filtering or permeating from any direction, including the sides and bottom of the unit. This is consistent with the plain meaning of the term. For example, Merriam-Webster defines infiltration to mean "to pass into or through (a substance) by filtering or permeating" or "to cause (something, such as a liquid) to permeate something by penetrating its pores or interstices." Neither definition limits the source or direction by which the infiltration occurs. In situations where the groundwater intersects the CCR unit, water may infiltrate into the unit from the sides and/or bottom of the unit because the base of the unit is below the water table. This contact between the waste and groundwater provides a potential for waste constituents to be dissolved and to migrate out of (or away from) the closed unit that is similar to infiltration from above. In this case, the performance standard requires the facility to take measures, such as engineering controls that will "control, minimize, or eliminate, to the maximum extent feasible, post-closure infiltration of liquids into the waste" as well as "post-closure releases to the groundwater" from the sides and bottom of the unit.

Finally, because the North Ash Pond and the Primary Pond Ash Fill Area must close pursuant to 40 C.F.R. § 257.101(a), any further receipt of CCR into those units is prohibited. EPA also made this clear in the preamble to the March 15, 2018 proposed rule (83 FR 11605) where EPA stated:

> The current CCR rules require that certain units must close for cause, as laid forth in § 257.101(a)–(c). As written, the regulation expressly prohibits ‘‘placing CCR’’ in any units required to close for-cause pursuant to § 257.101….Note that the rule does not distinguish between placement that might be considered beneficial use and placement that might be considered disposal. All further placement of CCR into the unit is prohibited once the provisions of § 257.101 are triggered.

If you have any questions about the information provided in this letter or if you have additional information that you would like EPA to consider, you may contact Angela Mullins at mullins.angela@epa.gov. Alternatively, Duke Energy counsel can contact Laurel Celeste at celeste.laurel@epa.gov in EPA's Office of General Counsel for any questions on the Agency's position set forth in the letter.

Sincerely,

Edward Nam
Director
Land, Chemicals and Redevelopment Division

cc: Peggy Dorsey,
Assistant Commissioner
Office of Land Quality
Indiana Department of Environmental Management

# Exhibit B

**PROPOSED DECISION**

Proposed Denial of Alternative Closure Deadline for Ottumwa Generating Station

**SUMMARY:**

The Environmental Protection Agency (EPA) is proposing to deny the Demonstration submitted by Interstate Power and Light Company (IPL), for a coal combustion residuals (CCR) surface impoundment, the Ottumwa Generating Station (OGS) Ash Pond, located at the OGS near Ottumwa, Iowa. IPL submitted a Demonstration to EPA for approval seeking an extension pursuant to 40 C.F.R § 257.103(f)(1) to allow the impoundment to continue to receive CCR and non-CCR wastestreams after April 11, 2021. In the Demonstration, IPL requested an alternative closure deadline of December 31, 2022, for the OGS Ash Pond. EPA is proposing to deny the request for an extension based on a proposed determination that the Demonstration does not meet the requirements of § 257.103(f)(1) and a proposed determination that Ottumwa Generating Station has failed to demonstrate that the facility is in compliance with the requirements of 40 C.F.R. § 257 Subpart D.

**DATES:** *Comments.* Comments must be received on or before February 23, 2022.

**ADDRESSES AND PUBLIC PARTICIPATION:** The EPA has established a docket for this notice under Docket ID No. EPA-HQ-OLEM-2021-0593. EPA established a docket for the August 28, 2020, CCR Part A final rule under Docket ID No. EPA-HQ-OLEM-2019-0172. All documents in the docket are listed in the https://www.regulations.gov index. Publicly available docket materials are available either electronically at https://www.regulations.gov or in hard copy at the EPA Docket Center. The Public Reading Room is open from 8:30 a.m. to 4:30 p.m., Monday through Friday, excluding holidays. The telephone number for the Public Reading

Room is (202) 566-1744, and the telephone number for the EPA Docket Center is (202) 566-1742. You may send comments, identified by Docket ID. No. EPA-HQ-OLEM-2021-0593, by any of the following methods:

- Federal e-Rulemaking Portal: https://www.regulations.gov/ (our preferred method). Follow the online instructions for submitting comments.
- Mail: U.S. Environmental Protection Agency, EPA Docket Center, Office of Land and Emergency Management, Docket ID No. EPA-HQ-OLEM-2021-0593, Mail Code 28221T, 1200 Pennsylvania Avenue NW, Washington, DC 20460.
- Hand Delivery or Courier (by scheduled appointment only): EPA Docket Center, WJC West Building, Room 3334, 1301 Constitution Avenue NW, Washington, DC 20004. The Docket Center's hours of operations are 8:30 a.m. – 4:30 p.m., Monday – Friday (except Federal Holidays).

Instructions: All submissions received must include the Docket ID No. for this rulemaking. Comments received may be posted without change to https://www.regulations.gov/, including any personal information provided. Once submitted, comments cannot be edited or removed from the docket. The EPA may publish any comment received to its public docket. Do not submit electronically any information you consider to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Multimedia submissions (audio, video, etc.) must be accompanied by a written comment. The written comment is considered the official comment and should include discussion of all points you wish to make. The EPA will generally not consider comments or comment contents located outside of the primary submission (i.e. on the web, cloud, or other file sharing system). For additional submission methods, the full EPA public comment policy, information about CBI or multimedia

submissions, and general guidance on making effective comments, please visit https://www.epa.gov/dockets/commenting-epa-dockets.

Due to public health concerns related to COVID-19, the EPA Docket Center and Reading Room are open to the public by appointment only. Our Docket Center staff also continues to provide remote customer service via email, phone, and webform. Hand deliveries or couriers will be received by scheduled appointment only. For further information and updates on EPA Docket Center services, please visit us online at https://www.epa.gov/dockets.

The EPA continues to carefully and continuously monitor information from the Centers for Disease Control and Prevention (CDC), local area health departments, and our Federal partners so that we can respond rapidly as conditions change regarding COVID-19.

**FOR FURTHER INFORMATION CONTACT**: For information concerning this proposed decision, contact:

- Lydia Anderson, Office of Resource Conservation and Recovery, Materials Recovery and Waste Management Division, Environmental Protection Agency, 1200 Pennsylvania Avenue NW, MC: 5304T, Washington, DC 20460; telephone number: (202) 566-0523; email address: Anderson.Lydia@epa.gov, and/or
- Kirsten Hillyer, Office of Resource Conservation and Recovery, Materials Recovery and Waste Management Division, Environmental Protection Agency, 1200 Pennsylvania Avenue NW, MC: 5304T, Washington, DC 20460; telephone number: (202) 566-0542; email address: Hillyer.Kirsten@epa.gov.
- For more information on this rulemaking please visit https://www.epa.gov/coalash.

**SUPPLEMENTARY INFORMATION:**

**Table of Contents**



**List of Acronyms**

ACM – Assessment of Corrective Measures

ASD – Alternate Source Demonstration

CBI – Confidential Business Information

CCR – Coal Combustion Residuals

C.F.R. – Code of Federal Regulations

ELG – Effluent Limit Guidelines

EPA – Environmental Protection Agency

FGD – Flue gas desulfurization

GWMCA – Groundwater Monitoring Corrective Action

IDNR – Iowa Department of Natural Resources

IPL – Interstate Power and Light Company

LVWTP – Low Volume Wastewater Treatment Pond

MGD – Million gallons per day

MISO – Midcontinent Independent System Operator, Inc.

MNA – Monitored Natural Attenuation

mV – millivolts

MW – megawatts

NPDES – National pollutant discharge elimination system

OGS – Ottumwa Generating Station

OML – Ottumwa Midland Landfill

P.E. – Professional Engineer

PEM – palustrine emergent wetlands

POTW – Publicly Owned Treatment Works

PUB – palustrine unconsolidated bottom wetlands

RTO – Regional Transmission Organization

RCRA – Resource Conservation and Recovery Act

S&L – Sargent and Lundy

SSL – Statically significant level

ZLD – Ottumwa Zero Liquid Discharge Pond

## I. General Information

*A. What decision is the agency making?*

The Environmental Protection Agency (EPA) is proposing to deny the Demonstration submitted by Interstate Power and Light Company (IPL) for a coal combustion residuals (CCR) surface impoundment, the Ottumwa Generating Station (OGS) Ash Pond, located at the OGS

near Ottumwa, Iowa. IPL submitted a Demonstration to EPA for approval seeking an extension pursuant to 40 C.F.R § 257.103(f)(1) to allow the OGS Ash Pond surface impoundment to continue to receive CCR and non-CCR wastestreams after April 11, 2021. EPA is proposing that IPL cease receipt of waste into the CCR surface impoundment no later than 135 days from the date of EPA's final decision.

*B. What is the agency's authority for taking this decision?*

This proposal is being issued pursuant to the authority in 40 C.F.R. § 257.103(f).

## II. Background

*A. Part A Final Rule*

In April 2015, EPA issued its first set of regulations establishing requirements for CCR surface impoundments and landfills. (Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals From Electric Utilities,80 FR 21301) (the "CCR Rule"). In 2020, EPA issued the CCR A Holistic Approach to Closure Part A: Deadline to Initiate Closure rule (85 FR 53516 (Aug. 28, 2020)) (the "Part A Rule"). The Part A Rule established April 11, 2021, as the date that electric utilities must cease placing waste into all unlined CCR surface impoundments. The Part A Rule also revised the alternative closure provisions of the CCR Rule (40 C.F.R. § 257.103) by allowing owners or operators to request an extension to continue to receive both CCR and non-CCR wastestreams in an unlined CCR surface impoundment after April 11, 2021 provided that certain criteria are met. EPA established two site-specific alternatives to initiate closure of CCR surface impoundments (40 C.F.R. § 257.103(f)), commonly known as extensions to the date to cease receipt of waste: (1) development of alternative capacity by the April 11, 2021 deadline is technically infeasible (40 C.F.R. §

257.103(f)(1)), and (2) permanent cessation of a coal-fired boiler(s) by a date certain (40 C.F.R. § 257.103(f)(2)).

The first site-specific alternative to initiate closure of CCR surface impoundments is *Development of Alternative Capacity is Technically Infeasible* (40 C.F.R. § 257.103(f)(1)). Under this alternative, an owner or operator may submit a demonstration seeking EPA approval to continue using its unlined surface impoundment for the specific amount of time needed to develop alternative disposal capacity for its CCR and non-CCR wastestreams. The demonstration must meet the requirements at 40 C.F.R. § 257.103(f)(1). To have an alternative deadline approved, the regulation requires the facility to demonstrate that: (1) no alternative disposal capacity is currently available on- or off-site of the facility; (2) the CCR and/or non-CCR waste stream must continue to be managed in that CCR surface impoundment because it was technically infeasible to complete the measures necessary to obtain alternative disposal capacity either on or off-site at the facility by April 11, 2021; and (3) the facility is in compliance with all the requirements of 40 C.F.R. subpart D. 40 C.F.R. § 257.103(f)(1)(i)-(iii). To support the requested alternative deadline, the facility must submit detailed information demonstrating that the amount of time requested is the fastest technically feasible time to complete development of alternative disposal capacity. 40 C.F.R. § 257.103(f)(1)(iv)(A).

The second site-specific alternative to initiate closure of CCR surface impoundments is for the owner or operator to demonstrate that it will permanently cease operation of coal-fired boilers at the facility. *Permanent Cessation of Coal-Fired Boiler(s) by a Date Certain*, (40 C.F.R. § 257.103(f)(2)). Under this alternative an owner or operator may submit a demonstration seeking EPA approval to continue using an unlined CCR surface impoundment in the interim period prior to permanently stopping operation of coal-fired boiler(s) at the facility. The

demonstration must meet the requirements at 40 C.F.R. § 257.103(f)(2). The owner or operator must show that (1) the facility will cease operation of coal-fired boiler(s) and complete closure of the CCR surface impoundment(s) by the specified deadlines (no later than October 17, 2023 for impoundments 40 acres or smaller and no later than October 17, 2028 for impoundments larger than 40 acres); and (2) in the interim period prior to the closure of the coal-fired boiler, the facility must continue to use the CCR surface impoundment due to the absence of alternative disposal capacity both on-site or off-site. *Id*. Unlike the requirements for the first alternative, the owner or operator does not need to develop alternative disposal capacity. The regulations require a demonstration that: (1) no alternative disposal capacity is available on or off-site of the facility; (2) the risks from continued use of the impoundment have been adequately mitigated; (3) the facility is in compliance with all other requirements of 40 C.F.R. part 257 subpart D; and (4) closure of both the impoundment and the coal-fired boiler(s) will be completed in the allowed time. 40 C.F.R. § 257.103(f)(2)(i)-(iv).

*B. Ottumwa Generating Station*

On November 30, 2020, the Interstate Power and Light Company submitted a Demonstration (referred to as the "Demonstration" in this document) pursuant to 40 C.F.R. § 257.103(f)(1) requesting additional time to develop alternative capacity to manage CCR and non-CCR wastestreams at OGS near Ottumwa, Iowa. IPL, a subsidiary of Alliant Energy, is the co-owner and operator of the OGS. The other co-owner is MidAmerican Energy Company. The Demonstration submitted by IPL seeks approval of an alternative site-specific deadline to initiate closure of its OGS Ash Pond. Specifically, IPL requests an alternative deadline of December 31, 2022, by which date IPL would cease routing all CCR and non-CCR wastestreams to the OGS Ash Pond and initiate closure of the impoundment. IPL plans to obtain alternative capacity to the

Ottumwa Ash Pond by (1) converting wet handling systems to dry handling systems for certain boiler ash; (2) constructing a new non-CCR wastestream basin for non-CCR flows; and (3) rerouting at least one non-CCR wastestream to a new Iowa Department of Natural Resources (IDNR)–permitted outfall.

To assist the readers' review, EPA provides additional details below on the Ottumwa facility, including information on the generation capacity of the Ottumwa Generating Station, information on its CCR surface impoundments, and information on other non-CCR impoundments. This summary is based on information extracted from the Demonstration.

*1. Coal-fired boilers and generation capacity.*

The Demonstration states that Ottumwa Generating Station operates one coal-fired unit with a total generation capacity of 726 megawatts (MW).

*2. CCR units and CCR wastestreams.*

The Demonstration identifies two CCR units at OGS that are subject to the federal CCR regulations. One unit is a surface impoundment named the Ottumwa Generating Station Ash Pond (and also referred to as the "Surface Impoundment" in the Demonstration and hereafter in this document as the "OGS Ash Pond"). The OGS Ash Pond is the CCR unit for which an alternative deadline is sought. The Demonstration states that the approximate surface area of the OGS Ash Pond is 39 acres. The other unit is an inactive, unlined CCR surface impoundment of approximately 19 acres called the Ottumwa Zero Liquid Discharge Pond (ZLD Pond). According to the Demonstration, the ZLD has not received waste since October 2015, however, it contains water and CCR materials. IPL intends to close the ZLD by removal of CCR. Basic information about the OGS CCR units is summarized below in **Table 1.**

The OGS Ash Pond is an unlined CCR surface impoundment and subject to closure pursuant to 40 C.F.R. § 257.101(a)(1). This provision provides that IPL must cease placing CCR and non-CCR wastestreams into the unit and either retrofit or close it as soon as technically feasible, but not later than April 11, 2021. IPL intends to close the OGS Ash Pond by capping CCR materials in place. The Demonstration states that the OGS Ash Pond and ZLD are in compliance with the CCR Rule.

IPL is requesting an alternative site-specific deadline of December 31, 2022, to cease receipt of CCR and non-CCR wastestreams to the OGS Ash Pond. According to the Demonstration, the basis for this request is the infeasibility of developing alternative capacity by April 11, 2021. According to the Demonstration IPL's approach to developing alternative capacity must facilitate the management of the plant's CCR and non-CCR wastestreams throughout construction in a way that allows the plant to meet the National Pollutant Discharge Elimination System (NPDES) discharge limits.

According to the Demonstration, during its past operation IPL sluiced bottom ash and economizer ash generated at OGS to its on-site Ash Pond. The Demonstration explains that, as of November 30, 2020 (the date IPL submitted the Demonstration to EPA), IPL was in an outage (initiated in September 2020) of its OGS boiler unit for the purpose of installing the dry ash handling system. According to the Demonstration, the result of the outage would be the elimination of continuous flows of bottom ash transport water to the OGS Ash Pond. It is expected therefore that the sluicing of CCR to the OGS Ash Pond ceased in September 2020. The Demonstration also explains that the dry bottom ash handling conversion for the boiler unit would be completed in December 2020.

Even though IPL will no longer manage actively generated wastestreams in the OGS Ash Pond, it intends to place CCR in the OGS Ash Pond after April 11, 2021. The following quote is from Section 2.1.1 of the Demonstration (EPA inserted "OGS Ash Pond" in brackets for clarity):

> "IPL is currently completing installation of a dry bottom ash handling system and no longer discharges bottom ash to the Surface Impoundment [OGS Ash Pond]. There are currently no other CCR wastestreams to the Surface Impoundment [OGS Ash Pond]. However, the Surface Impoundment [OGS Ash Pond] will receive CCR material from the ZLD Pond when it is closed by removal of CCR and repurposed as a new lined wastewater treatment basin."

This means that IPL intends to dispose of at least one CCR wastestream in the OGS Ash Pond after April 11, 2021: the CCR materials stored in the ZLD. Additionally, based on the closure plan, it appears IPL is planning to place the contents of the hydrated fly ash stockpile in the OGS Ash Pond after April 11, 2021 (further discussed below).

IPL also owns and operates a nearby off-site CCR landfill, the Ottumwa Midland Landfill (OML). Section 3.0 of the Demonstration states that this unit is about 12 miles away from OGS but Appendix A of the Demonstration states that approximately 5 miles separates the OML from OGS. One wastestream that the OML receives is the portion of precipitator fly ash from the station's flue gas desulfurization (FGD) control process that is not collected by the electrostatic precipitators. After being collected in a bag house, this precipitator fly ash is disposed of in the landfill. Because this landfill is off-site, IPL was not required to demonstrate that it is in compliance with the CCR Rule to be approved for its alternative closure provision request for the OGS Ash Pond.

In addition to CCR surface impoundments, OGS has what appears to be an inactive[1] on-site CCR pile, the hydrated fly ash stockpile. IPL did not discuss this pile in the Demonstration narrative; EPA's information about this pile is based on the Agency's review of the Updated Closure Plan (November 2020) and the attachments submitted with the Demonstration. The hydrated fly ash stockpile is located along the western boundary of the ZLD. Appendix C8 of the Demonstration provides a general overview of the history of this pile and several details regarding its normal operation. Before October 2015, the hydrated fly ash stockpile received the generated precipitator fly ash after it had been processed by OGS's fly ash reclamation processing area. The result of this process was a "very hard, cement-like material" that was stored on-site or transported off-site. According to IPL's Updated Closure Plan, the hydrated fly ash stockpile currently contains approximately 440,000 cubic yards of material.

The Demonstration states that OGS recycles the outflow (effluent) from the OGS Ash Pond throughout the plant or discharges it through permitted outfalls. IPL provided an existing water balance diagram in Appendix A of the Demonstration.

*3. Non-CCR units and non-CCR wastestreams*

According to the Demonstration, there is one existing non-CCR surface impoundment on-site at OGS, the Coal Pile Runoff Pond. This is a small pond located on the northern border of the ZLD and the hydrated fly ash stockpile. The current NPDES permit suggests that this pond has an outfall that discharges the effluent from this pond to a tributary of the Des Moines River. Appendix C8 of the Demonstration indicates that, occasionally, excess stormwater runoff from the Coal Pile Runoff Pond is routed to the ZLD via a culvert which connects the two ponds.

[1] The Demonstration states that the hydrated fly ash stockpile has not received waste after October 19, 2015. See Appendix C8, section 2

A non-CCR Pond at OGS, which will be called a Low Volume Wastewater Treatment Pond (LVWTP), will be constructed to treat the non-CCR wastestreams that are currently routed to the OGS Ash Pond. The LVWTP will be constructed in the footprint of the existing ZLD after it has been closed by removal of CCR. The approximately 165,000 cubic yards[2] of CCR material in the ZLD Pond will be excavated and consolidated in the OGS Ash Pond. Once the ZLD Pond is dewatered and dredged and the subgrade and earthwork are complete, it will receive a new liner system and be repurposed as the LVWTP. IPL explained that once installation of the dry handling system is complete, construction of the LVWTP is complete and ready to receive waste, and the remaining non-CCR flows are rerouted to the LVWTP, the OGS Ash Pond will cease receipt of all waste.

IPL explained that the facility's generated non-CCR wastestreams must continue to be managed in the OGS Ash Pond until the projected, new non-CCR basin, the LVWTP, can receive them. According to the visual timeline included in Appendix B of the Demonstration, the piping reroutes to the new LVWTP are scheduled to be completed by November 4, 2022. The OGS Ash Pond would cease receiving waste and begin closure on December 31, 2022.

The Demonstration identifies over ten non-CCR flows that are currently managed in the OGS Ash Pond (summarized below in **Table 1**). The OGS Ash Pond receives a total of approximately 1.54 million gallons per day (MGD) of commingled non-CCR waste. From the OGS Ash Pond, the facility's commingled wastestreams are recycled for reuse in the plant or discharged through the facility's NPDES Outfall 001.

**Table 1. Summary of on-site impoundments and affected wastestreams**

| CCR Units | Unit | Type | Area (acres) | Capacity (million gallons) | Affected Unit? |
|---|---|---|---|---|---|

[2] Updated Closure Plan, November 2020, Appendix A, Section 4, Table 1

| | | | | | |
|---|---|---|---|---|---|
| | Zero Liquid Discharge Pond | Impoundment | 19 | Unspecified | Yes, inactive |
| | Surface Impoundment (OGS Ash Pond) | Impoundment | 39 | Unspecified | Yes |

| | | | |
|---|---|---|---|
| **Non-CCR Impoundments** | Coal pile runoff pond-surface area and capacity unspecified | | |
| **Affected Wastestreams-** currently handled or projected to be handled in OGS Ash Pond | **Type** | **Description** | **Generation Rate (MGD)** |
| | CCR | CCR materials excavated from ZLD | Approx. 165,000 cubic yards total [CP] |
| | | Hydrated fly ash stockpile [CP] | Approx. 440,000 cubic yards total [CP] |
| | Non-CCR | Clarifier Sludge | 0.0936 |
| | | Cooling Tower Blowdown | 0.641 |
| | | Ultrafilter Backwash | 0.026 |
| | | Gravity Filter Backwash | 0.132 |
| | | Reverse Osmosis Reject | 0.161 |
| | | Condensate Polisher Wastewater | 0.0058 |
| | | Boiler Blowdown | 0.183 |
| | | Misc. Oily Plant Drains | 0.194 |
| | | Misc. Plant Drains (intermittent) | < 0.072 |
| | | Stormwater | 1.44 |
| | | Air Heater Wash Water | Intermittent |
| | | Water currently impounded in ZLD | Volume contained in ZLD is unknown |
| | | On-site Sewage Treatment Wastestreams | 0.004 |

CP= Information extracted from IPL's Updated Closure Plan (November 2020)

Based on information in the OGS NPDES permit (Iowa NPDES #9000101, amended on August 1, 2020), it appears there is at least one additional non-CCR wastestream that the OGS Ash Pond receives that was not included in the Demonstration. It appears that the "combustion residual landfill leachate" wastestream discharges via Outfall 001 from the OGS Ash Pond. The Demonstration and its attachments do not provide discussion of this wastestream or any technical information about it, such as rate of generation.

When it is completed, IPL plans to handle all its non-CCR flows in the LVWTP, except for the cooling tower blowdown and the air heater wash. IPL plans to seek a permit for a new

Outfall 007 that will discharge into the Des Moines River and reroute the cooling tower blowdown wastestream directly to this new outfall. The air heater wash is generated intermittently, only during outages. For any outages after April 11, 2021, IPL stated in the Demonstration that it plans to collect this wastestream and process it through temporary treatment before discharging to Outfall 001. It appears that IPL plans to manage this wastestream in the LVWTP once it is operational.

**III. EPA Analysis of Demonstration**

EPA has determined that the Demonstration IPL submitted pursuant to 40 C.F.R § 257.103(f)(1) for the CCR surface impoundment, the OGS Ash Pond, at the Ottumwa Generating Station was complete. While EPA did determine the Demonstration to be complete, EPA is proposing to deny the extension request based on a proposed determination that the OGS has not demonstrated that it is in compliance with all the requirements of 40 C.F.R. part 257 subpart D. This is based on concerns with the groundwater monitoring at the facility, with the corrective measures assessment, and because it appears that the OGS Ash Pond will not meet the closure performance standards for CCR surface impoundments. EPA is proposing that IPL cease placement of all CCR and non-CCR wastestreams into the OGS Ash Pond no later than 135 days from the date of EPA's final decision.

*A. Evaluation of IPL's Claim of No Alternative Disposal Capacity On- or Off-Site*

To obtain an extension of the cease receipt of waste deadline, the owner or operator must demonstrate that there is no alternative disposal capacity available on- or off-site. 40 C.F.R. § 257.103(f)(1)(iv)(A). As part of this, facilities must evaluate all potentially available disposal options to determine whether any are technically feasible. 40 C.F.R. § 257.103(f)(1)(i). The owner or operator must also evaluate the site-specific conditions that affected the options

considered. 40 C.F.R. § 257.103(f)(1)(iv)(A)(*1*)(*i*). Additionally, the regulations prohibit the owner or operator from relying on an increase of cost or inconvenience of existing capacity as a basis for meeting this criterion. 40 C.F.R. § 257.103(f)(1)(i).

The Demonstration must substantiate the absence of alternative capacity for each wastestream that the facility is requesting to continue placing in the CCR surface impoundment beyond April 11, 2021. 40 C.F.R. § 257.103(f)(1)(iv)(A)(*1*). As soon as alternative capacity is available for any wastestream, the owner or operator must use that capacity instead of the unlined CCR surface impoundment. 40 C.F.R. § 257.103(f)(1)(v). This means that, if there is a technically feasible option to reroute any of the wastestreams away from the surface impoundment, the owner or operator must do so. 40 C.F.R. § 257.103(f)(1)(ii), (v). In the CCR Part A Rule preamble, EPA acknowledged that some of these wastestreams are very large and will be challenging to relocate, especially for those that are sluiced. However, the smaller volume wastestreams have the potential to be rerouted to temporary storage tanks. In such cases, the owner or operator must evaluate this option, and, if it is determined to be technically feasible, must implement it. 85 Fed. Reg. 53,541.

*1. Lack of Alternative On- or Off-site Capacity for CCR wastestreams.*

*CCR within the ZLD Pond*

According to the Demonstration, IPL intends to remove the CCR from the ZLD Pond and place them in the OGS Ash Pond after April 11, 2021. The Demonstration included no analysis of the off-site or on-site alternatives available for disposing of these wastes, as required by 40 C.F.R. § 257.103(f)(1)(iv)(A)(*1*).

Further, it appears that alternative capacity may exist for this wastestream. Specifically, the off-site OML is a potential disposal option for the CCR and subgrade material that will be

excavated from the ZLD Pond. The OML is a CCR unit that has previously received at least some of the OGS's precipitator fly ash. IPL did not consider this option. IPL was required to provide a written narrative of the alternative capacity options available on- and off-site for the planned placement of any CCR in the OGS Ash Pond that will occur after April 11, 2021. 40 C.F.R. § 257.103(f)(1)(iv)(A)(1). Accordingly, EPA is proposing to determine that IPL has not met the criteria in 40 C.F.R. § 257.103(f)(1)(i) and (ii)(A).

*Hydrated Fly Ash Stockpile*

Based on information in IPL's Updated Closure Plan, it appears that the company plans to place the contents of the hydrated fly ash stockpile in the OGS Ash Pond after April 11, 2021. This wastestream is not mentioned in the Demonstration. It appears that IPL intends to use the hydrated fly ash as part of its plan to close the OGS Ash Pond by capping with "waste in place." For further discussion, see Section E. Compliance Documentation. If IPL intends to place this wastestream in the OGS Ash Pond, then it is a CCR wastestream for which IPL was required to provide an analysis of the potential on-site and off-site alternatives. 40 C.F.R. § 257.103(f)(1)(iv)(A)(1).

Additionally, it appears that alternative disposal capacity may exist for the hydrated fly ash because Appendix C8 of the Demonstration explains that the hydrated fly ash was typically transported off-site during past operations. IPL did not justify why the OML or the other previously used off-site disposal alternative capacities are not available to receive the hydrated fly ash.

For these reasons, EPA is proposing to determine that IPL has not demonstrated that there is no existing on- or off-site capacity for the hydrated fly ash, as required by 40 C.F.R. § 257.103(f)(1)(i) and (ii)(A).

*2. Lack of Alternative On-site Capacity: Non-CCR wastestreams*

IPL concluded that there is no alternative capacity available on-site for any of the non-CCR wastestreams currently managed in the OGS Ash Pond. EPA is proposing to conclude that IPL has sufficiently justified this determination for three non-CCR wastestreams but that it has not adequately justified this determination for nine of its non-CCR wastestreams.

Three of the non-CCR wastestreams currently managed in the OGS Ash Pond are of high solids content: the clarifier sludge, the reverse osmosis reject, and the ultrafilter backwash. IPL stated in Table 2-1 of the Demonstration that these wastestreams cannot be directly discharged and require treatment in the OGS Ash Pond until they can be routed to the future LVWTP Additionally, IPL sized its future LVWTP to achieve the necessary solids settling to meet NPDES discharge limits. EPA is proposing to agree with IPL that these wastestreams cannot be directly discharged and require a large impoundment to achieve the necessary gravitational solids settling. Until the future 19-acre LVWTP is available to receive the flows, EPA is proposing to determine that there is no existing alternative on-site capacity for these three wastestreams.

However, for eight of the non-CCR wastestreams currently treated in the OGS Ash Pond (i.e., cooling tower blowdown, gravity filter backwash, condensate polisher wastewater, boiler blowdown, misc. oily plant drains, misc. plant drains, stormwater, and on-site sewage treatment wastewaters), Table 2-1 provides the following explanation: “There is currently no infrastructure on-site to discharge this wastestream directly or manage at another location on site.” And as noted earlier, IPL included no discussion of the “combustion residual landfill leachate” wastestream that is currently discharged via Outfall 001 from the OGS Ash Pond. To demonstrate that there is no alternative disposal capacity available on- or off-site, IPL was

required to evaluate all potentially available disposal options to determine whether any are technically feasible. 40 C.F.R. § 257.103(f)(1)(i).

Further, IPL failed to adequately address potential alternatives that exist on-site. The Coal Pile Runoff Pond is an existing on-site non-CCR surface impoundment. IPL states in the Demonstration[3] that the Coal Pile Runoff Pond is not large enough to treat the facility's non-CCR wastestreams; however, IPL did not provide technical supporting details, such as the pond capacity. The Demonstration also provides no analysis of whether the Coal Pile Runoff Pond could treat individual non-CCR wastestreams, which does not meet the requirements of 40 C.F.R. §§ 257.103(f)(1)(iv)(A)(*1*); (v). Considering that IPL plans to reroute at least one wastestream (cooling tower blowdown) directly to an outfall, it appears that intensive solids settling is not needed for some non-CCR wastestreams.

EPA is also proposing to conclude that IPL did not demonstrate that it was technically infeasible to provide alternative on-site capacity for the cooling tower blowdown before April 11, 2021. In Table 2-1, IPL states, "This wastestream [cooling tower blowdown] will be routed and pumped around the LVWTP to a new Outfall 007 to the Des Moines River. The infrastructure not currently available to discharge this wastestream directly or manage at another location on site and the site discharge permit must be modified before this could occur." IPL stated that it expects the approval of the new permitted Outfall 007 by spring 2022[4] and it anticipates completing the reroute of the cooling tower blowdown to this outfall by October 2022.[5] However, IPL failed to explain why these activities could not have been completed prior to April 11, 2021. And as discussed below in *Section D. Justification of Time Requested*, IPL

[3] Section 2.1.3
[4] Demonstration, section 2.3
[5] Demonstration, Table 2-1

failed to provide a detailed schedule of the time needed to complete this process in the Demonstration. Accordingly, EPA is proposing to determine that IPL has not demonstrated that it was technically infeasible to divert this wastestream before April 11, 2021, and therefore has not demonstrated that there is no existing on-site capacity, as required by 40 C.F.R. §§ 257.103(f)(1)(iv)(A)(*1*); (v).

IPL considered implementing temporary storage as alternative capacity for the OGS non-CCR wastestreams. IPL concluded that there is not sufficient footprint within the OGS property boundary to accommodate temporary storage for the combined volume of the facility's non-CCR wastestreams. Figure 2 in Appendix A of the Demonstration shows an aerial map of the site, including the existing OGS, the surrounding floodplains, and sensitive drainage areas that could be impacted by construction. IPL estimated that 140 frac tanks per day would be needed to manage the combined volume of the facility's non-CCR wastestreams. EPA has reviewed the information provided and is proposing to conclude that there is not sufficient available footprint on-site at OGS to implement temporary storage to treat and store the combined volume of the facility's non-CCR flows.

However, IPL did not consider whether there is enough available footprint on-site to implement a temporary storage solution for one or more of the other, smaller OGS wastestreams. OGS produces four non-CCR wastestreams that are small (of generation rates of 2,600 gal/day or less). These are the ultrafilter backwash, condensate polisher wastewater, miscellaneous plant drains, and on-site sewage treatment. IPL estimated that the ultrafilter backwash could be stored in approximately two frac tanks per day, the condensate polisher could be stored in one frac tank per day, the miscellaneous plant drains in four frac tanks per day, and the on-site sewage in one frac tanks per day, respectively. These would have a significantly lower footprint than would be

required to store the total volume of non-CCR wastestreams. However based on the available information, EPA cannot determine how many frac tanks could be stored on-site at OGS.

In sum, IPL did not evaluate existing on-site alternative capacity options for each wastestream, as required by 40 C.F.R. § 257.103(f)(1)(iv)(A)(*1*). For this reason, EPA is proposing to conclude that IPL has not adequately justified that there is no existing alternative capacity on-site for its non-CCR wastestreams

*3. Lack of Alternative Off-site Capacity: Non-CCR wastestreams*

IPL concluded that off-site disposal of the OGS non-CCR wastestreams is not technically feasible. The reasons presented in support of IPL's conclusion that there is no off-site capacity for its non-CCR wastestreams are (1) the challenges associated with transporting large volumes of wastestreams off-site and (2) that there is no known publicly owned treatment works (POTW) that could receive the wastestreams. EPA is proposing to conclude that IPL has failed to demonstrate that transportation of each wastestream is technically infeasible because IPL did not provide evidence that off-site alternative capacity is not available for each individual wastestream.

*Transporting Wastestreams Off-site*

IPL explained that there is no existing infrastructure that could transport its combined non-CCR wastestreams to an off-site treatment facility and that constructing this infrastructure would further delay the final receipt of waste to the OGS Ash Pond. *See section 2.1.5 of the Demonstration.* IPL determined that off-site transport by trucking is infeasible for the combined volume of its wastestreams because of several factors, including the large number of frac tanks required for temporary storage, significant daily tanker truck traffic, potential safety and noise

impacts, and greenhouse gas emissions. IPL estimated that at least 300 trucks per day would be required to transport the total non-CCR wastestream volume off-site.

However, IPL did not evaluate whether trucking individual wastestreams to an off-site disposal facility is technically feasible. The failure to evaluate the potential for each individual wastestream to be sent off-site for disposal alone would be a basis for denial. As stated in the Part A final rule preamble, "[T]he final rule requires owners and operators to cease using the CCR surface impoundment as soon as feasible, to document the lack of both on and off-site capacity for each individual wastestream, and expressly requires that as capacity for an individual wastestream becomes available, owners or operators are required to use that capacity…" (85 FR 53541). See, 40 C.F.R. §§ 257.101(a)(1); 257.103(f)(1)(iv)(A)(1); (v).

In addition, IPL provided an estimate of the number of frac tanks and trucks that would be required to transport each of its wastestreams off-site. See section 2.1.2 of the Demonstration. Using these estimates it appears that there are a few wastestreams that based on volume alone could potentially have been trucked to an off-site POTW. IPL found that off-site transportation for the following wastestreams would require at most ten trucks per wastestream per day:

- Ultrafilter backwash: two frac tanks on-site and four daily trucks
- Condensate polisher wastewater: one frac tank on-site and one daily truck
- Miscellaneous plant drains: four frac tanks and ten daily tanker trucks
- On-site sewage: one frac tank on-site and one daily tanker truck

EPA considers it reasonable for a facility to divert a wastestream using ten or fewer trucks per day. Accordingly, EPA is proposing to conclude that IPL has not met 40 C.F.R. § 257.103(f)(1)(iv)(A)(1).

*Lack of POTW*

IPL stated in the Demonstration that it has, "not yet identified a publicly owned treatment works (POTW) or alternate wastewater treatment facility that will accept these wastestreams." However, the Demonstration provides no evidence that IPL attempted to find a POTW that could accept any of the individual wastestreams. Such an analysis fails to meet the requirements of 40 C.F.R. § 257.103(f)(1)(iv)(A)(1).

Further, it appears that there are POTWs that could accept some of the individual wastestreams. As part of analyzing the Demonstration, EPA evaluated facilities within a 50-mile radius of OGS that could potentially receive at least some of the OGS non-CCR wastestreams. Using the IDNR's publicly available database, EPA identified 170 domestic and industrial wastewater facilities within a 50-mile radius of OGS. One hundred of the facilities within the 50-mile radius are reported to have an average wet weather flow rate (proxy for peak flow rate) of less than 0.1 MGD. Based on flowrate, it may be possible for these 100 facilities to receive OGS's smaller wastestreams: the ultrafilter backwash, condensate polisher wastewater, miscellaneous plant drains, and on-site sewage treatment wastestreams. Further, several of these facilities appear to be designed to treat domestic wastewater and appear suitable to treat (at least) the sewage treatment wastestream from OGS.

According to the IDNR's publicly available database, eight facilities within a 50-mile radius of OGS are reported to have an average wet weather flow of more than 3 MGD. Based on flowrate, these are off-site capacity options that could potentially receive at least some of the OGS wastestreams. The Demonstration does not provide the required assessment of whether these facilities could treat some or all of the non-CCR wastestreams from OGS.

Additionally, Google Earth satellite images suggest that there are two impoundments located around the OML, which is located off-site within 12 miles of the plant. The written narrative provided in the Demonstration does not mention these impoundments or provide details such as their capacity or possible liner system. Figure 4 of the OML 2020 Annual Groundwater Monitoring and Corrective Action (GWMCA) report[6] labels a pond immediately to the west as, "Temporary Contact Water Basin No 1/2." Figure 4 also labels a pond immediately to the south of the OML, "Existing Sedimentation Basin No. 1." In its review of the Demonstration and OGS compliance documents, EPA could not discover further information about these ponds, such as their capacity, influent wastestreams, and the possible existence of a liner system. The Demonstration did not consider these ponds as potential alternative off-site capacity for the OGS non-CCR wastestreams.

In sum, EPA is proposing to conclude that IPL did not demonstrate that there is no off-site capacity for its non-CCR wastestreams because it did not evaluate existing potential alternative capacity options and provided no evidence that it attempted to find off-site alternative capacity for its individual wastestreams. EPA is also proposing to conclude there may be existing off-site capacity for at least some of the non-CCR wastestreams because (1) there are potential off-site facilities that IPL did not consider and (2) the number of frac tanks and tanker trucks required to transport the facility's smallest non-CCR wastestreams is not prohibitive.

*B. Evaluation of IPL's Analysis of Adverse Impacts to Plant Operations*

In the Part A Rule, EPA stated that it is important for the facility to include an analysis of the adverse impacts to the operation of the power plant if the CCR surface impoundment could

[6] 2020 Annual GWMCA Report, Ottumwa Midland Landfill, Figure 4 "Potentiometric Surface Map October 5-6, 2020"

not be used after April 11, 2021. EPA stated that this is an important factor in determining whether the disposal capacity of the CCR surface impoundment in question is truly needed by the facility. EPA required that a facility provide analysis of the adverse impacts that would occur to plant operations if the CCR surface impoundment in question were no longer available. 40 C.F.R. § 257.103(f)(1)(iv)(A)(*1*)(*ii*). EPA is proposing to find that there would be adverse impacts to the power plant if the CCR impoundment could not be used after April 11, 2021.

IPL states in the Demonstration that "to continue to operate, generate electricity, and comply with both the CCR Rule and the IDNR permit conditions, OGS must continue to use the Surface Impoundment for treatment of non-CCR wastestreams until alternate disposal capacity can be developed." It further explains that if the OGS Ash Pond were unable to receive the facility's non-CCR wastestreams before construction of the LVWTP is complete, OGS would have to cease generating power.

EPA is proposing to determine that if IPL were unable to continue using the OGS Ash Pond, and if no other on- or off-site alternative capacity were available, there would be adverse impacts on IPL's ability to run the associated boiler(s) such that a planned temporary outage would likely be required. But as discussed in Unit IV, EPA disagrees that there will be any broader impacts of such an outage.

*C. Evaluation of IPL's Site-Specific Analysis for the Alternative Capacity Selected*

To support the alternative deadline requested in the demonstration, the facility must submit a workplan that contains a detailed explanation and justification for the amount of time requested. 40 C.F.R. § 257.103(f)(1)(iv)(A). The written workplan narrative must describe each option that was considered for the new alternative capacity selected, the time frame under which each potential capacity could be implemented, and why the facility selected the option that it did.

*Id*. 40 C.F.R. § 257.103(f)(1)(iv)(A)(*1*). The discussion must include an in-depth analysis of the site and any site-specific conditions that led to the decision to implement the selected alternative capacity. 40 C.F.R. § 257.103(f)(1)(iv)(A)(*1*)(*i*).

In this section, EPA explains why it is proposing to agree with IPL's determination that certain alternate capacity options were not feasible or would further delay the OGS Ash Pond's final receipt of waste and summarizes the option selected by IPL.

IPL reviewed the alternative capacity options in the Part A final rule and conducted an analysis of their feasibility at Ottumwa Generating Station. See Table 2-2 of the Demonstration. IPL used the average development time[7] for each technology listed in the Part A final rule and discussed whether implementing each alternative would be feasible at OGS. The following alternative capacity options were evaluated: conversion to dry handling, non-CCR wastewater basin, wastewater treatment facility, new CCR surface impoundment, retrofit of a CCR surface impoundment, multiple technology system, and a temporary treatment system. IPL projected to complete its dry ash handling system by December 2020, therefore the technologies that IPL evaluated are related to obtaining alternative capacity for the OGS's non-CCR flows.

IPL did not elect to build a wastewater treatment plant. Table 2-2 of the Demonstration indicates that this technology is feasible at OGS, however IPL stated that designing and permitting the new facility would add an additional six months to what it has currently projected. IPL did not choose to construct a new CCR surface impoundment because there is insufficient footprint readily available for development and this option would not alone facilitate compliance

[7] 85 Fed. Reg at 53543

with the Effluent Limitation Guidelines (ELG). As discussed below in this section, IPL provided evidence that it does not have this land available on-site.

IPL justified its decision to implement its chosen alternative capacity because it will facilitate compliance with the ELG regulations. Because the direct discharge of bottom ash will not be allowed, IPL chose to convert its ash handling systems from wet to dry. At the time of the Demonstration submittal, IPL had projected to complete its dry handling conversion by December 2020. IPL stated that as of September 2020, it ceased sluicing all ash to the OGS Ash Pond. Therefore, at the time of the publication of this proposal, it is expected that this conversion has been completed and that all regularly generated CCR flows to the OGS Ash Pond have ceased.

IPL elected to construct a non-CCR basin to handle the facility's non-CCR flows in the future. It justified its decision to construct the LVWTP in the footprint of the existing ZLD because of the lack of available space at OGS. There is land outside OGS but within the plant boundary, but IPL explained that there is not sufficient available footprint on which to build a basin large enough to manage OGS's non-CCR wastestreams. Further, IPL discussed the permitting challenges that would extend the timeline of developing this land. IPL explained that the sizing of the LVWTP was calculated to provide adequate residence time for the solids settling of its wastestreams and volume storage for stormwater runoff surges. To provide adequate residence time, IPL stated that the LVWTP will have a capacity of 18 million gallons and a surface area of 19 acres.

Figure 2 in Appendix A of the Demonstration illustrates the on-site constraints that limit the possibility of developing new infrastructure at OGS, including the Des Moines River, Middle Avery Creek, floodplains, wetlands, and existing infrastructure. IPL explained that it does own

land outside the developed portion of the site on the south side of Middle Avery Creek, but that construction of a 19-acre non-CCR basin might detrimentally impact U.S. waters, so it does not consider this area to be suitable for new infrastructure. IPL explained that development of this area would involve clearing of forested areas, changes in wetland function, acquisition of water rights, and destroying habitat that may be occupied by protected bat species.

IPL has released its construction contracts for bid for the new LVWTP and closure of the OGS Surface Impoundment in October 2020 (and it was expected to be awarded in March 2021). EPA is proposing to conclude that IPL has sufficiently justified its chosen alternative.

*D. Evaluation of IPL's Justification for Time Requested*

Facilities must justify the amount of time requested in the demonstration as the fastest technically feasible time to develop the selected alternative disposal capacity. 40 C.F.R. § 257.103(f)(1)(iv)(A)(*1*)(*iii*). The workplan must contain a visual timeline and narrative discussion to justify the time request. 40 C.F.R. § 257.103(f)(1)(iv)(A)(*3*). The visual timeline must clearly indicate how each phase and the steps within that phase interact with or are dependent on each other and the other phases. Additionally, any possible overlap of the steps and phases that can be completed concurrently must be included. This visual timeline must show the total time needed to obtain the alternative capacity and how long each phase and step is expected to take. The detailed narrative of the schedule must discuss all the necessary phases and steps in the workplan, in addition to the overall time frame that will be required to obtain capacity and cease receipt of waste. The discussion must include (1) why the length of time for each phase and step is needed, (2) why each phase and step must happen in the order it is occurring, (3) a discussion of the tasks that occur during the specific step, and (4) the tasks that occur during each of the steps within the phase. 40 C.F.R. § 257.103(f)(1)(iv)(A)(*3*). This overall discussion of the

schedule assists EPA in understanding whether the time requested is warranted. Finally, facilities must include a narrative on the progress made towards the development of alternative capacity s of the time the demonstration was compiled. 40 C.F.R. § 257.103(f)(1)(iv)(A)(*4*). This section of the Demonstration is intended to show the progress and efforts the facility has undertaken to work towards ceasing placement of waste in the CCR surface impoundment and to determine whether the submitted schedule for obtaining alternative capacity was adequately justified at the time of submission.

IPL requested a date of December 31, 2022, to cease receipt of all waste to its OGS Ash Pond. IPL's visual timeline and accompanying written Demonstration narrative present its plan to complete the closure of the ZLD and the construction of its new non-CCR basin, the LVWTP. The visual timeline (Appendix B of the Demonstration) was included with the Demonstration submittal. The presented information indicates the construction of the LVWTP is on a track that will allow the OGS Ash Pond to cease receipt of waste.

IPL concludes that the presented plans are the "fastest technically feasible" to achieve compliance at OGS. However, EPA's evaluation indicates that (1) the requested date to cease receipt of waste is not the fastest technically feasible, and (2) the presented workplan does not provide the sequence of steps required to reroute the cooling tower blowdown. For these reasons, EPA is proposing to determine that IPL has not met the standards in 40 C.F.R. § 257.103(f)(1)(A)(1)(iii) and 257.103(f)(1)(A)(2).

IPL's construction schedule projects a 50-hour work week with weekend work allowed as needed to make up time for weather delays. IPL assumes minimal construction activities will be possible in the winter. IPL included the following reasons that could postpone construction of the LVWTP: weather delays in dewatering and removal of CCR, contractor efficiency, changes to

the amount of CCR that is required to be removed, and COVID-19 pandemic impacts. IPL stated that it did not include time in its schedule for these potential delays. *See section 2.3 of the Demonstration and the visual timeline in Appendix B.*

EPA's analysis of the presented information indicates that if IPL would have initiated dewatering of the ZLD earlier, it would have been possible to complete construction of the LVWTP at least two and a half months sooner than it has projected. EPA also identified that IPL could save between two and three weeks by concurrently excavating CCR from the ZLD while executing the subgrade preparation activity. Additionally, the Agency could not identify why IPL requested December 31, 2022, as the OGS Ash Pond's final receipt of waste, considering that November 4, 2022, is when it has projected to complete rerouting the non-CCR wastestreams to the new LVWTP. In total, it appears that it IPL could cease receipt of waste to the OGS Ash Pond around five months sooner than it has planned. Readers may reference the visual timeline in Appendix B and the written narrative in 2.1.8 and 2.3 of the Demonstration.

At the time when the Demonstration was submitted, IPL's plan was to award the contract for dewatering the ZLD and constructing the LVWTP by March 1, 2021 (visual timeline activity ID 24). However, the chosen contractor will not mobilize the site until May 3, 2021 (activity ID 29). The first critical task the contractor needs to perform is dewatering the ZLD. This must be done before it can excavate and relocate ash from the ZLD Pond to the OGS Ash Pond. IPL plans to dewater the ZLD by pumping the liquids currently stored in the ZLD into the Ash Pond using diesel dewatering pumps. These pumps are readily available and do not require specialized personnel to operate. IPL did not justify why it did not start dewatering even before the LVWTP contract was awarded. If IPL themselves had dewatered with sufficient time before the LVWTP contract was awarded, it may have been possible for the contractor to begin excavating the ash

by the second quarter of 2021. Regardless, EPA could not determine why IPL's contractor is not projected to start dewatering sooner than May 31, 2021 (activity ID 31). The contractor is not scheduled to perform any duties in between the award of the contract and mobilization of the site. Therefore, EPA believes it may have been possible for the contractor to mobilize the site soon after award of the contract; dewatering potentially could have begun by March 15, 2021, which is two and half months earlier than planned.

Additionally, IPL did not explain why it could not execute activity IDs 36 and 37 concurrently with activity ID 35. In a pond the size of the ZLD (19 acres), overlapping these activities most likely is feasible, and would save two to three weeks.

Finally, IPL has projected that it can complete the activity of rerouting OGS's non-CCR wastestreams to the LVWTP by November 4, 2022 (activity ID 41 on the visual timeline). A final date of December 31, 2022, to cease receipt of waste therefore has not been justified. The only activity that the December 31, 2022 date is associated with on the visual timeline is activity ID 44, "Initiate closure of OGS Ash Pond." IPL did not justify why the time from November 4 to December 31, 2022, is needed to complete the measures necessary to cease receipt of waste to the OGS Ash Pond.

In sum, IPL did not justify why the contractor cannot begin to mobilize the site before May 3, 2021. If the contractor would have started dewatering on March 15, 2021, and ZLD excavation and subgrade were executed concurrently, it appears that IPL could have saved around three months. Considering that IPL has projected that excavation will extend 45 days into Season 2, saving these three months might have allowed IPL to begin liner installation in the second construction season. The Agency also believes IPL itself could have initiated dewatering before the contract was awarded, which likely would have allowed the contractor to begin

excavating the CCR as soon as the second quarter of 2021. Notwithstanding, if IPL overlaps subgrade and excavation activities in the ZLD, it should be possible to cease receipt of waste by October 13, 2022, which is approximately two and a half months sooner than IPL's requested date of December 31, 2022.

*Date to divert cooling tower blowdown from OGS Ash Pond*

The cooling tower blowdown is unique among the OGS non-CCR wastestreams in that, in the future, it will not be managed in the LVWTP. IPL intends to route and pump this wastestream around the projected LVWTP to a new Outfall 007, which would discharge into the Des Moines River. IPL plans that Outfall 007 will also be the outfall through which the LVWTP discharges. IPL anticipates that it can complete this reroute by October 2022. EPA could not evaluate whether October 2022 is the fastest technically feasible to complete the measures necessary for the OGS Ash Pond to cease receipt of the cooling tower blowdown because IPL's workplan did not provide activities and the associated schedule for this task, other than the expected approval date of its application with IDNR for permitting Outfall 007 (expected by no later than spring 2022).[8] EPA was therefore unable to evaluate whether IPL's requested date of October 2022 is justifiable because of the lack of detail provided. IPL's ability to achieve its projected date to cease receipt of waste is contingent, for example, on the approval of the permit for Outfall 007. To be approved for an alternate closure provision, IPL was required by 40 C.F.R. § 257.103(f)(1)(A)(*2*) to provide a detailed schedule of the fastest technically feasible time to complete the measures necessary for alternative capacity to be available. EPA is proposing to determine that the IPL's Demonstration does not meet this requirement.

[8] Demonstration, section 2.3

In conclusion, the presented work plan does not appear to be the fastest technically feasible for the OGS Ash Pond to cease receipt of waste because it appears the LVWTP could be operational nearly 5 months sooner than IPL's requested date. Additionally, no detailed workplan is provided for the steps required to achieve alternative capacity for the cooling tower blowdown. For these reasons, EPA is proposing to determine that IPL has not met the requirements of 40 C.F.R. § 257.103(f)(1)(A)(*2*).

The date on which the OGS Ash Pond ceases receipt of waste of the cooling tower blowdown poses a potential environmental impact. The cooling tower blowdown is a large wastestream of 0.641 MGD on average. The greater the volume of water the OGS Ash Pond receives, the higher the pond water level is, and the more water pressure (hydraulic head) will push down on the unit's base. Greater water pressure increases the risk of CCR constituents migrating downward into the groundwater. Considering that the OGS Ash Pond has triggered corrective action and is unlined, this risk presents greater concern.

*1. Narrative of progress towards obtaining alternative capacity*

In section 2.1.6 of the Demonstration, IPL described the efforts it has undertaken to develop alternative capacity to come into compliance with the CCR Rule. Sargent and Lundy (S&L) investigated alternative capacity technology options for IPL in 2016. After this study was completed, IPL chose to replace its wet ash sluicing system with a dry ash handling system. IPL hired Burns & McDonnell to "develop a design basis for the treatment of non-CCR wastestreams. The design basis for the treatment system included a new lined LVWTP, constructed within the footprint of the existing ZLD Pond, to treat non-CCR wastestreams generated at OGS..." IPL stated that its current NPDES permit requires that OGS cease the discharge of ash transport water by June 1, 2022.

IPL stated that construction of its ash handling system began in the fall of 2018, ultimately allowing the plant to cease sluicing bottom ash in September 2020. Thus, it is expected that, as of September 2020, IPL no longer sluiced actively generated CCR wastestreams to its OGS Ash Pond.

IPL stated that in October 2020 it released the construction contract for the LVWTP and closure of the OGS Ash Pond. IPL expects that it will award the contract in March 2021. IPL stated that it has completed the design of the LVWTP and that it is in the process of permitting the construction of the LVWTP and the closure of the OGS Ash Pond (through the IDNR). There are currently no wastestreams going to the ZLD and IPL stated that it expects the contractor can begin dewatering this CCR unit in the second quarter of 2021.

*E. Compliance Documentation*

The Part A Rule requires that a facility must be in compliance with all the requirements in 40 C.F.R. part 257 subpart D in order to be approved for an extension to the cease receipt of waste deadline. 40 C.F.R. § 257.103(f)(1)(iii). Various compliance documentation must be submitted with the demonstration for the entire facility, not just for the CCR surface impoundment in question. 40 C.F.R. § 257.103(f)(1)(iv)(B). Additionally, EPA evaluated the information presented in the narrative relating to the closure or retrofit of the impoundment and the development of the new alternative disposal capacities to ensure compliance with the CCR regulations.

The first group of compliance documents required to be included in the Demonstration are related to documentation of the facility's current compliance with the requirements governing groundwater monitoring systems. The Agency required copies of the following documents: (1) Map(s) of groundwater monitoring well locations (these maps should identify the CCR units as

well); (2) Well construction diagrams and drilling logs for all groundwater monitoring wells; (3) Maps that characterize the direction of groundwater flow accounting for seasonal variation; (4) Constituent concentrations, summarized in table form, at each groundwater monitoring well monitored during each sampling event; and (5) Description of site hydrogeology including stratigraphic cross-sections. 40 C.F.R. § 257.103(f)(1)(iv)(B)(*2*)-(*4*).

The second group of documents EPA required was the facility's corrective action documentation, if applicable, and the structural stability assessments. A facility must submit the following documentation: the corrective measures assessment required at 40 C.F.R. § 257.96, progress reports on remedy selection and design; the report of final remedy selection required at 40 C.F.R. § 257.97(a); the most recent structural stability assessment required at 40 C.F.R. § 257.73(d), and the most recent safety factor assessment required at 40 C.F.R. § 257.73(e). 40 C.F.R. § 257.103(f)(1)(iv)(B)(*5*) through (*8*).

*1. CCR Pile*

*The CCR Rule prohibits placing CCR in a unit that is required to close; considering this placement a "beneficial use" is irrelevant*

Based on information provided in IPL's Updated Closure Plan, it appears that IPL intends to place CCR materials in the OGS Ash Pond during closure. IPL considers this placement a "beneficial use" of CCR. The following quote from IPL's Updated Closure Plan is an overview of the steps that will be taken to close the OGS Ash Pond by capping with "waste in place:"

*"Bottom Ash [BA] Pond:*

- Dewatering of BA Pond (following completion of bottom ash handling system and diversion of low volume wastewater flows to LVWTP),
- Fly ash stockpile is to be used as beneficial use and CCR removed from ZLD Pond as fill in BA Pond,

- CCR material will be spread throughout the footprint of the BA Pond,
- Grading of CCR material to final slopes for drainage,
- Installation of cover system materials,
- Installation of drainage control features and,
- Implementing required groundwater monitoring program."

In the preamble to EPA's March 15, 2018 Phase 1 Proposed Amendments[9] to the CCR Rule EPA discusses the use of CCR in closure in units that are required to close:

> "The current CCR rules require that certain units must close for cause, as laid forth in § 257.101(a)–(c). As written, the regulation expressly prohibits ''placing CCR'' in any units required to close for-cause pursuant to § 257.101…. Note that the rule does not distinguish between placement that might be considered beneficial use and placement that might be considered disposal. All further placement of CCR into the unit is prohibited once the provisions of § 257.101 are triggered."

IPL's claim that the placement of CCR in the OGS Ash Pond is a beneficial use is irrelevant because the regulation does not distinguish between placement that might be considered beneficial use and placement that might be considered disposal for units that are required to close.[10] Therefore, EPA is proposing to conclude that IPL's Closure Plan is not compliant with 40 C.F.R. § 257.101(a), and that consequently, IPL has failed to meet the requirement to develop an adequate closure plan. 40 C.F.R. § 257.102(b).

*2. Closure of OGS Ash Pond*

The regulations provide two options for closing a CCR unit: closure by removal and closure with waste in place. 40 C.F.R. § 257.102(a). Both options establish specific performance standards. 40 C.F.R. § 257.102(c)-(d). IPL intends to close the OGS Ash Pond by closing with

[9] 83 FR 11605

[10] Even though it is not relevant for purposes of determining compliance with 40 C.F.R. § 257.101(a), EPA notes that IPL has not documented that the proposed activity meets the definition of a beneficial use at 40 C.F.R. § 257. 53.

waste in place. EPA evaluated the information provided in the Demonstration, as well as in the written closure plans and other documents posted on IPL's publicly accessible CCR website for the OGS Ash Pond. After review of this information, EPA is proposing to determine that IPL has not documented how the closure performance standards will be achieved. There are no details in the closure plan posted on IPL's CCR website or any other document provided as part of the Demonstration that will allow EPA to determine that the closure performance standards will be met, in light of site conditions, at the impoundment. Therefore, EPA is proposing to conclude that IPL has not adequately demonstrated compliance with the closure regulations at 40 C.F.R. §§ 257.102(b) and (d), as required by 40 C.F.R. § 257.103(f)(1)(iii).

EPA reviewed available information to determine whether any portion of the OGS Ash Pond is in contact with groundwater and, if so, whether IPL has explained how the closure performance standards will be achieved for the impoundment. EPA also considered information in the Demonstration and its appendices, as well as the History of Construction, the 2020 Closure Plan, the Location Restriction Compliance Demonstration (October 2020), and the 2019 Annual GWMCA Report. After reviewing this information, EPA is preliminarily determining that the OGS Ash Pond is in contact with groundwater.

*(a) Intersection between OGS Ash Pond and Groundwater*

The following information corroborates the conclusion that the CCR in the OGS Ash Pond intersects with groundwater. First, groundwater elevations have been measured above the bottom of the OGS Ash Pond, at levels high enough to intersect with the CCR in the impoundment. Second, although clay is present beneath the unit, it is unlikely to act as a confining layer that would prevent groundwater from rising to the level of the CCR. Thus, there is a possible means of hydraulic connectivity between the ash in the unit and the uppermost

aquifer. Third, characterizations of on-site wetlands indicate that there is a high water table in the vicinity of the OGS Ash Pond.

First, groundwater elevations have been measured above the base of the OGS Ash Pond and therefore, unless prevented by a constructed or natural barrier, groundwater could rise to the level of the ash. IPL's compliance documents indicate that the elevation of the base of the OGS Ash Pond ranges from about 656 feet to 675 feet. Groundwater flow maps included in the Demonstration indicate that the groundwater elevations measured across the OGS Ash Pond range from about 655 feet to 675 feet.[11] Additionally, in April 2019, the groundwater elevation in MW-304 was measured at 659 feet and the groundwater elevation in MW-305 was measured at 664 feet.[12] Because these elevations are higher than the base of the unit, these data indicate that, at least in some areas, ash is likely saturated with groundwater. These data also suggest that there is a high water table beneath the unit. This is consistent with Geologic Cross-Section A-A' provided in Appendix C6 to the Demonstration, which depicts the elevation of the base of the Ash Pond at about 656 feet and the groundwater potentiometric surface across the impoundment at about 664 feet.

Second, although clay is present beneath the unit, site-specific data indicate that it is unlikely to act as a confining layer that would prevent groundwater from rising to the level of the CCR. Based on the boring logs, the natural clay layer is not continuous in and around the OGS Ash Pond. The site boring logs indicate that clay does exist beneath the unit in some places around the unit. However, it is not present in MW-301 and MW-303.[13] Additionally, sieve analysis results show that boring 20, which is within the footprint of the OGS Ash Pond, is

[11] Demonstration, Appendix C3, Figures 1-4
[12] 2019 Annual GWMCA Report, January 2020, Appendix A1
[13] Demonstration, Appendix C6, Appendix B, Table F-1

comprised of 95% sand and 5% silt and clay.[14] These data suggest that the clay layer is not present in all locations in and around the OGS Ash Pond. If the clay layer is not continuous in the vicinity of the OGS Ash Pond, it cannot act as a confining layer that would prevent groundwater from rising to the level of the ash. Additionally, site data indicate that where it is present, the clay layer is thin. Figure 4, Geologic Cross Section A-A' indicates that the clay layer beneath the bottom of the ash pond is less than a foot thick.[15] This suggests that the clay beneath the CCR unit, if present, is thin and not likely to prevent groundwater from rising to the level of the ash.

Third, characterizations of the wetlands on-site in the October 2020 Location Restrictions Compliance Demonstration indicate that there is a high water table and saturated bottom ash within and surrounding the OGS Ash Pond unit boundary. The OGS Ash Pond is underlain by palustrine emergent wetlands (PEM) and palustrine unconsolidated bottom (PUB) wetlands.[16] The report describes the hydrology of the PEM wetlands as, "standing water, a high water table, saturation…" The underlying material (substrate) of the PUB wetland is described as, "bottom ash or silt." The presence of these wetlands has been documented within the boundary of the OGS Ash Pond and the surrounding area.[17]

The presence of a high water table within and around the OGS Ash Pond is consistent with field observations.[18] Three sampling points within the OGS Ash Pond (SP-7, SP-13, SP-20) and two points near the unit boundary (SP-1, SP-16) found a high water table and soil saturation

[14] History of Construction, September 2016, Appendix D
[15] Assessment of Corrective Measures, September 2019, Figure 4, Geologic Cross-section A-A'
[16] Location Restriction Compliance Demonstration, October 2020, Appendix A, Appendix A, Figure A-4
[17] Location Restriction Compliance Demonstration, October 2020, Appendix A, Table 1 and Figure A-4.
[18] Location Restriction Compliance Demonstration, October 2020, Appendices A and B

at a depth of between 3 and 8 inches. Additionally, bottom ash is an underlying material of the PUB wetland, indicating that some of the bottom ash is saturated.

For these reasons, it appears that the high groundwater levels measured in wells surrounding the Ash Pond represent a high water table and that some CCR in the unit is in contact with groundwater.

*(b) Compliance with the Closure Performance Standard*

EPA evaluated the Demonstration and closure-related information on IPL's CCR website to determine whether IPL has adequately explained how the closure performance standards will be achieved during closure of the OGS Ash Pond in light of the evidence that at least a portion of the impoundment appears to be in contact with groundwater. EPA's preliminary determination is that the explanation is inadequate. EPA is therefore proposing to determine that IPL has failed to meet the requirement to develop an adequate closure plan and to demonstrate that the performance standards will be achieved during closure of the OGS Ash Pond. 40 C.F.R. § 257.102(b), (d)(1)-(2).

The CCR closure requirements applicable to impoundments closing with waste in place include general performance standards and specific technical standards that set forth individual engineering requirements related to the drainage and stabilization of the waste and to the final cover system. The general performance standards and the technical standards complement each other, and both must be met at every site. 40 C.F.R. § 257.102(d). The general performance standards under 40 C.F.R. § 257.102(d)(1) require that the owner or operator of a CCR unit "ensure that, at a minimum, the CCR unit is closed in a manner that will: (i) Control, minimize or eliminate, to the maximum extent feasible, post-closure infiltration of liquids into the waste and releases of CCR, leachate, or contaminated run-off to the ground or surface waters or to the

atmosphere; and (ii) Preclude the probability of future impoundment of water, sediment, or slurry." The specific technical standards related to the drainage of the waste in the unit require that "free liquids must be eliminated by removing liquid wastes or solidifying the remaining wastes and waste residues" prior to installing the final cover system. 40 C.F.R. § 257.102(d)(2)(i). Finally, the regulations require facilities to develop a written closure plan that describes the steps necessary to close the CCR unit, consistent with recognized and generally accepted good engineering practices. 40 C.F.R. § 257.102(b)(1). The plan must also include a written narrative describing how the unit will be closed in accordance with the section, or in other words how the closure will meet the performance standards in the regulation. 40 C.F.R. § 257.102(b)(1)(i).

Neither the closure plan posted on IPL's website nor the Demonstration describe the steps that will be taken to close the unit consistent with generally recognized good engineering practices, as required by 40 C.F.R. § 257.102(b). Nor do either document that the closure of the OGS Ash Pond meets the requirements of 40 C.F.R. § 257.102. For example, the Demonstration provides insufficient details on how free liquids were to be eliminated from the OGS Ash Pond and the November 2020 closure plan for the OGS Ash Pond only states that the impoundment will be dewatered.[19] Such a summary discussion does not meet the requirements for a closure plan as laid out in 40 C.F.R. § 257.102(b). And if EPA is correct that the base of the OGS Ash Pond intersects with groundwater, the closure plan would need to have discussed the engineering measures taken to ensure that the groundwater had been removed from the unit prior to the start of installing the final cover system, as required by 40 C.F.R. § 257.102(d)(2)(i). This provision applies both to the freestanding liquid in the impoundment and to all separable porewater in the

[19] "Closure Plan for CCR Surface Impoundments – Amendment No. 1." November 16, 2020. Page 2-1.

impoundment, whether the porewater was derived from sluiced water or groundwater that intersects the impoundment. The definition of free liquids in 40 C.F.R. § 257.53 encompasses all "liquids that readily separate from the solid portion of a waste under ambient temperature and pressure," regardless of whether the source of the liquids is from sluiced water or groundwater.

Similarly, neither the Demonstration nor the closure plan document how the OGS Ash Pond will be closed in a manner that will "control, minimize or eliminate, to the maximum extent feasible, post-closure infiltration of liquids into the waste and releases of CCR, leachate, or contaminated run-off to the ground or surface waters or to the atmosphere." 40 C.F.R. § 257.102(d)(1). EPA views the word "infiltration" as a general term that refers to any kind of movement of liquids into a CCR unit. That would include, for example, any liquid passing into or through the CCR unit by filtering or permeating from any direction, including the sides and bottom of the unit. This is consistent with the plain meaning of the term. For example, Merriam-Webster defines infiltration to mean "to pass into or through (a substance) by filtering or permeating" or "to cause (something, such as a liquid) to permeate something by penetrating its pores or interstices." Neither definition limits the source or direction by which the infiltration occurs. In situations where the groundwater intersects the CCR unit, water may infiltrate into the unit from the sides and/or bottom of the unit because the base of the unit is below the water table. In this scenario, the CCR will be in continuous contact with water. This contact between the waste and groundwater provides a similar potential for waste constituents to be dissolved and to migrate out of (or away from) the closed unit. In this case, the performance standard requires the facility to take measures, such as engineering controls that will "control, minimize, or eliminate, to the maximum extent feasible, post-closure infiltration of liquids into the waste" as well as "post-closure releases to the groundwater" from the sides and bottom of the unit. The

Demonstration does not discuss how this performance standard will be achieved for the OGS Ash Pond and the November 2020 closure plan for the impoundment only addresses the permeability characteristics of the final cover system with respect to this performance standard.[20]

In summary, EPA cannot determine based on information available whether the closure performance standards for the OGS Ash Pond will be met. This is a violation of 40 C.F.R. § 257.102(b), which requires facilities to develop a written closure plan that documents the steps that will be taken to complete closure and to ensure the performance standards are met. It may also demonstrate that IPL has failed to comply with the performance standards for closure with waste in place in 40 C.F.R. § 257.102(d). EPA is therefore proposing to determine that IPL has failed to comply with 40 C.F.R. § 257.102(b), and that IPL has not demonstrated compliance with the performance standards applicable to the closure of the OGS Ash Pond in 40 C.F.R. § 257.102(d)(1) and (2).

*3. Groundwater monitoring compliance*

The regulations require facilities to submit several groundwater monitoring compliance documents as part of their Demonstration so that EPA can thoroughly evaluate the groundwater monitoring network and the site hydrogeology for every CCR unit at the facility. EPA evaluated the documentation provided in the Demonstration and reviewed the 2017 through 2019 Annual GWMCA Reports and the September 2016 History of Construction for the OGS Ash Pond and for the ZLD Pond.

EPA is proposing to determine that the groundwater monitoring system at the downgradient boundary of the ZLD Pond does not meet the requirements of 40 C.F.R. § 257.91(a)(2), and that the Professional Engineer (P.E.) certification for the ZLD Pond

[20] *Id*. Page 3-1.

groundwater monitoring system fails to meet the requirements of 40 C.F.R. § 257.91(f). EPA is also proposing to determine that the Annual GWMCA Reports do not contain all information required by 40 C.F.R. § 257.90(e)(3), including groundwater elevation measurements, flow rate and direction, and statistical analyses. Finally, EPA is proposing to determine that the Alternative Source Demonstration (ASD) fails to meet the requirements of 40 C.F.R. § 257.95(g)(3)(ii).

*(a) Characterization of Downgradient Groundwater and P.E. Certification*

40 C.F.R. § 257.91(a)(2) requires that a groundwater monitoring system be installed at the downgradient waste boundary that ensures detection of contamination, and that all potential contaminant pathways be monitored. The number, spacing, and depth of groundwater monitoring systems must be determined based upon site-specific technical information listed in 40 C.F.R. § 257.91(b). EPA is proposing to determine that the groundwater monitoring system at the ZLD Pond fails to monitor all potential pathways at the downgradient waste boundary, and that the number and spacing of wells is not supported by site-specific data. Additionally, EPA is proposing to determine that the P.E. certification obtained to comply with 40 C.F.R. § 257.91(f) fails to meet those requirements because it does not provide the basis for determining that one upgradient and three downgradient wells are sufficient to meet the requirements of 40 C.F.R. § 257.91.

Groundwater flow direction across the ZLD Pond is depicted as generally west to east, becoming slightly radial outward to the river at the downgradient boundary of the unit. The northeastern boundary is identified as downgradient. The ZLD Pond groundwater monitoring system consists of one upgradient background well (MW-301, the same well used for the OGS Ash Pond) and three downgradient wells (MW-307, MW-308 and MW-309).

EPA is proposing to determine that three downgradient wells are not sufficient to meet the requirements of 40 C.F.R. § 257.91(a)(2) at the ZLD Pond. It appears the downgradient boundary of the ZLD Pond is more than 2,000 feet in length. The groundwater monitoring wells located on the downgradient boundary are not evenly spaced; the distance between MW-308 and MW-309 appears to be approximately 1,000 feet. Even if it is determined that subsurface geology and groundwater flow conditions are extremely consistent, for the reasons discussed below, EPA is proposing to determine that IPL failed to demonstrate that the number and spacing of wells at the downgradient boundary of the ZLD Pond are sufficient to monitor all potential contaminant pathways in accordance with 40 C.F.R. § 257.91(a)(2).

The following explanation is provided in the groundwater system P.E. certification to support the determination that that the system meets the requirements of 40 C.F.R. § 257.91:

> "The minimum number of monitoring wells is appropriate at the OGS ZLDP for the following reasons:
>
> • Groundwater flow in the uppermost aquifer at the downgradient margin of the ZLDP is generally to the northeast.
>
> • Site geology is consistent along the downgradient edge of the ZLDP, based on the boring logs for the three downgradient wells.
>
> • The three downgradient monitoring wells are sufficient to reflect groundwater quality at the downgradient margin of the ZLDP."

A P.E. certification for a groundwater monitoring system with only one upgradient and three downgradient wells must explain how it meets requirements of 40 C.F.R. § 257.91. 40 C.F.R. § 257.91(f). EPA considers the above explanation to be insufficient for multiple reasons. First, it does not consider the size of the ZLD Pond, the length of the downgradient boundary, or any information about construction of the ZLD Pond (e.g., lined or unlined). It does not consider any of the site-specific data required under 40 C.F.R. § 257.91(b) (e.g., groundwater flow rate, hydraulic conductivities, geologic unit and fill materials, stratigraphy, or porosities and effective

porosities), except for noting the general direction of groundwater flow. These criteria are required to be considered in design of a groundwater monitoring system. 40 C.F.R. § 257.91(b).

Second, it does not discuss any specific requirements of 40 C.F.R. § 257.91, such as the requirement to accurately characterize the quality of groundwater passing the waste boundary of the unit and monitor all potential contaminant pathways. 40 C.F.R. §§ 257.91(a)(2), (c)(2). The P.E. certification for the ZLD Pond says only that three wells will "reflect groundwater quality at the downgradient margin." The basis for this determination is not provided in the P.E. certification, nor is any basis for the conclusion that all potential contaminant pathways are monitored. Therefore, this P.E. certification lacks the explanation required by 40 C.F.R. § 257.91(f).

Third, the conclusion in the P.E. certification that site geology is consistent along the downgradient edge of the ZLD Pond is not supported by site-specific data. To support this certification, well construction diagrams and boring information are provided in the Demonstration for three wells: MW-307, MW-308, and MW-309.[21] Three borings are not sufficient information to draw conclusions about the subsurface geology along a unit boundary that is 2,000 feet long. Even if it were true that geology is consistent along the downgradient boundary, this fact would not support the determination that three downgradient wells are sufficient to meet the performance standard in 40 C.F.R. § 257.91(a)(2), including to monitor all potential contaminant pathways along the 2,000-foot downgradient ZLD Pond boundary.

*(b) Annual GWMCA Reports*

[21] Demonstration, PDF p. 108

40 C.F.R § 257.90(e)(3) requires that the Annual GWMCA Report contain "all the monitoring data obtained under [40 C.F.R.] §§ 257.90 through 257.98." 40 C.F.R. § 257.93(e) requires the measurement of groundwater elevation in each well, each time it is sampled. It also requires calculation of groundwater flow rate and direction during each sampling event. While groundwater flow maps were provided in the Demonstration for data collected during sampling events in 2019 and 2020, the required information was not included in any Annual Groundwater Reports for those years or years prior. EPA is proposing to determine that the 2017 through 2019 Annual GWMCA Reports for all CCR units failed to meet this requirement.

Additionally, IPL has not provided statistical analyses or any detailed discussion of the statistical analyses (e.g., statistical method applied, confidence levels, normality test results) in the Annual GWMCA Reports for either the OGS Ash Pond or the ZLD Pond. As a result, these reports fail to include all the monitoring data obtained under 40 C.F.R. §§ 257.90 through 257.98 as required by 40 C.F.R. § 257.90(e)(3). It is IPL's responsibility to demonstrate that it is in compliance with the regulations, and the failure to provide this information in the Annual GWMCA Reports prevents EPA, the state, or other stakeholders from evaluating compliance. EPA cannot determine whether the approach used by IPL complied with the requirements of 40 C.F.R. §§ 257.93 and 257.95 because the statistical analysis conducted is not included in the Annual GWMCA Reports.

*(c) Alternative Source Demonstration (ASD)*

If it is determined that there was a statistically significant level (SSL) above a groundwater protection standard for one or more of the constituents in Appendix IV to 40 C.F.R. part 257 at a monitoring well at the downgradient waste boundary, there is an opportunity to complete an ASD to show that a source other than the unit was the cause of the SSL. 40 C.F.R. §

257.95(g)(3). If a successful ASD for an SSL is not completed within 90 days, an assessment of corrective measures must be initiated. A successful ASD will demonstrate that a source other than the CCR unit is responsible for the SSL. In order to rebut the site-specific monitoring data and analysis that resulted in an SSL, an ASD requires conclusions that are supported by site-specific facts and analytical data. Merely speculative or theoretical bases for the conclusions are insufficient.

At the ZLD Pond, cobalt was detected at MW-307 at an SSL above the groundwater protection standard in December 2019, February 2020, and April 2020. An ASD was completed in October 2020 and concluded that the OGS Ash Pond was the source of the cobalt SSLs. The reasons provided for this conclusion include groundwater flow direction, spatial distribution of detected cobalt concentrations, and types of wastes historically discharged to the Ash Pond and the ZLD Pond. EPA is proposing to determine that IPL failed to conduct an ASD for SSLs detected in December 2019 and February 2020 within the deadline in 40 C.F.R. § 257.95(g)(3)(i) and is therefore subject to corrective action requirements at the ZLD Pond and has failed to complete an Assessment of Corrective Measures (ACM). EPA is also proposing to determine that the ASD ultimately conducted for cobalt SSLs at the ZLD Pond failed to meet the requirement of 40 C.F.R. § 257.95(g)(3)(ii).

Laboratory analysis for the groundwater sampling event in December 2019 were reported to IPL on December 23, 2019. Statistical analysis of the results to determine whether an SSL occurred was required within 90 days, or no later than March 23, 2020, in accordance with 40 C.F.R. § 257.93(h)(2). If the statistical analysis was completed on the last day allowed by the regulations, IPL would have been required to complete an ASD or initiate an ACM within 90 days, no later than June 21, 2020, in accordance with 40 C.F.R. § 257.95(g)(3). No ASD was

conducted by that date to demonstrate the SSL from the December 2019 were from a source other than the ZLD Pond. 40 C.F.R. § 257.96(a) allows 90 days to complete an ACM, which would result in a deadline of September 19, 2020; however, no ACM was completed for the ZLD Pond. Thus, EPA is proposing to determine that the ZLD Pond is subject to corrective action requirements and has failed to complete an ACM for this unit in accordance with 40 C.F.R. §§ 257.95(g)(3) and 257.96(a).

Ultimately, an ASD was completed on October 12, 2020, to address SSLs that occurred in December 2019, February 2020, and April 2020. The ASD claims that, while MW-307 is downgradient from a small portion of the ZLD Pond, it is primarily downgradient from a portion of the OGS Ash Pond. The ASD states that Figure 3[22] depicts MW-307 as downgradient from OGS Ash Pond monitoring wells MW-305 and MW-306, where cobalt has also been detected at SSLs. In fact, Figure 3 does not depict MW-307 as primarily downgradient from the Ash Pond instead of the ZLD Pond. Figure 3 also does not depict MW-307 as downgradient from MW-305, based on depicted groundwater flow direction. It does depict MW-307 as downgradient of MW-306, with a portion of the ZLD Pond between them. However, cobalt detections at MW-307 from December 2019 through April 2020 ranged from 10 to 20 µg/L. This is higher than the cobalt detections at MW-306 during this time, which ranged from 5.5 to 6.2 µg/L. Therefore, cobalt levels at MW-306 could not have been the primary cause of the SSL at MW-307. The ASD does not discuss contributions among different sources of contamination. It appears cobalt levels at MW-307 were high enough that an SSL would have been detected, demonstrating a release from the ZLD Pond, regardless of any contribution from MW-306.

[22] Demonstration, Appendix C, PDF p. 436

The ASD further contends that a lack of cobalt SSLs from other downgradient monitoring wells at the ZLD Pond is evidence that the SSL detected in MW-307 must come from an alternative source and not the ZLD Pond. This is not evidence of an alternative source. Wells located at the downgradient boundary monitor different contaminant pathways and there is no reason to believe the results at one downgradient well necessarily predict the results in a different downgradient well. Moreover, the regulations require that corrective action must be conducted when an SSL is detected at a single downgradient well. 40 C.F.R. § 257.95(g).

Finally, the ASD claims that historical use of the CCR units indicate that a cobalt exceedance is more likely to come from the Ash Pond than the ZLD Pond due to the types of waste streams disposed in each unit and the cobalt content of those waste streams. No data or information are provided to substantiate which waste streams were disposed of in which CCR unit, or the chemicals contained in those waste streams. Even if that information had been provided and the cobalt contained in each unit could be theoretically calculated, and potential cobalt releases calculated, this theoretical information would not be sufficient to rebut the site-specific monitoring data and analysis that resulted in detection of an SSL.

EPA is proposing to determine that the ASD conducted for the ZLD Pond did not demonstrate the SSL of cobalt at MW-307 was from an alternative source, because the lines of evidence provided are not sufficient to support the ASD. Because of this, and because the December 2019 SSL triggered corrective action requirements before an ASD was completed, EPA is also proposing to determine that corrective action requirements apply to the ZLD Pond. The Demonstration indicates that the ZLD Pond was scheduled to begin closure in spring 2021. However, this does not relieve IPL of the obligation to characterize the nature and extent of the

release and site conditions, sufficient to assess corrective measures that may be needed to comply with 40 C.F.R. § 257.97.

*4. Corrective action compliance*

Cobalt was detected at SSLs at MW-306 in April and October 2019, and in April, June, and October 2020. For this reason, IPL is subject to corrective action requirements at the OGS Ash Pond. An ACM was completed in September 2019, a public meeting was held in June 2020 and a Remedy Selection Report was completed in September 2020. However, the ACM was revised in November 2020, because "[n]ew information was received following issuance of the Selection of Remedy report, resulting in this addendum to the ACM (Addendum No. 1)."[23] This was included as Appendix C to the Demonstration. The Addendum No. 1 to the ACM ("revised ACM") states that another public meeting will be held, and a revised Remedy Selection Report will be issued. The Agency has reviewed the revised ACM for the purposes of this compliance review.

EPA is proposing to determine that IPL has failed to comply with several corrective action requirements at the OGS Ash Pond. First, characterization of the release and of relevant site conditions that may affect the remedy ultimately selected is insufficient to support an ACM, as required by 40 C.F.R. § 257.95(g) and 40 C.F.R. § 257.96(a). Second, the assessment that was conducted does not consider all of the criteria in 40 C.F.R. § 257.96(c). Third, portions of the assessment contain inaccurate statements, lack supporting data, or apply assessment criteria inconsistently. This results in an assessment that does not seem to accurately reflect the corrective measure's "effectiveness in meeting all of the requirements and objectives" in 40

[23] Revised ACM, p. iii

C.F.R. § 257.97(b), as required by 40 C.F.R. § 257.96(c). Finally, the discussion of schedule in section 4 of the revised ACM is inaccurate and conflicts with information in other parts of the report.

*(a) Characterization of the release and relevant site conditions*

The ACM must include site-specific data to characterize the nature and extent of the release and any relevant site conditions that may ultimately affect the remedy selected. 40 C.F.R. § 257.95(g)(1). The characterization must be sufficient to support a complete and accurate assessment of the corrective measures necessary to effectively clean up releases from the CCR unit. Id. See also, 40 C.F.R. § 257.96 (a), (c). This characterization requires gathering of data, laterally and vertically, to quantify the levels at which constituents are present, quantifying the estimated mass of the release and installing at least one well at the facility boundary in the direction of contaminant migration. Id.

Cobalt has been detected at an SSL at MW-305, which indicates a release has occurred from the OGS Ash Pond. Additional wells were installed to characterize the release laterally (MW-310, MW-311) and vertically (MW-305A, MW-310A, MW-311A). However, based on depicted flow direction, MW-310 and MW-310A do not appear to be directly in a groundwater flow path downgradient from MW-305, and are only likely to monitor a small fraction of any contamination flowing downgradient from MW-305.[24] MW-311 and MW-311A are even farther away and less directly downgradient; they are also separated from the CCR units by Middle Avery Creek, which could influence groundwater flow direction or create a groundwater flow divide. There are no groundwater elevation data to characterize groundwater flow direction

[24] Demonstration, Addendum No. 1, Figures 5 and 6.

between MW-311/MW-311A and the ash pond, so the influence of Middle Avery Creek on groundwater flow direction is unknown. Wells MW-311 and MW-311A are not placed in locations that are effective to adequately characterize groundwater downgradient from MW-305, because the groundwater flow direction depicted does not indicate there is a flow path from MW-305 to MW-311 and MW-311A. Two additional wells are planned to be installed between MW-305 and MW-310, at 400-foot spacing, to improve lateral characterization of the release and site conditions in this area; these wells are needed to characterize the nature and extent of the release.

The revised ACM does not contain data to characterize relevant site conditions that may ultimately affect the remedy selected, in accordance with 40 C.F.R. § 257.95(g)(1), but it does identify such data yet to be gathered and explains how that data will be used to assess corrective measures. These include geochemical parameters obtained through field measurements (e.g., specific electrical conductance, turbidity, ferrous iron and sulfide) as well as laboratory analyses (e.g., alkalinity, chlorides, sulfates, and filtered geochemical parameters) that will provide a better understanding of groundwater chemistry affecting cobalt. Samples of saturated sand from within the plume will be collected for analysis of iron and manganese, as well as for cobalt to determine whether adsorption of cobalt is occurring and assess the potential for its adsorption in the aquifer matrix.[25] The revised ACM also details plans to analyze groundwater samples filtered at different filter sizes, as well as to analyze the filtrate. This will provide a better understanding of the nature of the cobalt released and identify whether chemicals are present in the aquifer that could react with it to result in compounds that will remain immobilized in the sand, unable to

[25] Revised ACM, pp. 7-8

travel in groundwater to downstream receptors. EPA believes this investigation is appropriate to characterize site conditions that may affect the remedy ultimately selected.

Section 3.3.1 of the ACM states that lithium and fluoride were detected above groundwater protection standards at new groundwater monitoring wells (MW-310, MW-310A, and MW-311) installed in accordance with 40 C.F.R. § 257.95(g) (i.e., nature and extent wells). The ACM states that these values have not yet been determined to be statistically significant. However, statistical analyses of the results from nature and extent wells are not required to characterize the release. The references in 40 C.F.R. § 257.95(g)(1)(iii) and (iv) to 40 C.F.R. § 257.95(d)(1) regarding the number of samples required during each semiannual sampling event only apply to groundwater monitoring wells installed in accordance with 40 C.F.R. § 257.91, not nature and extent wells. An SSL in assessment monitoring serves as statistical confirmation that a release from the CCR unit has occurred; reconfirming this at each downgradient monitoring point monitored within the groundwater contamination plume would unnecessarily delay the corrective action process. Therefore, statistical analysis for Appendix IV constituents in the characterization of the nature and extent of the release is not required or necessary. Additionally, it would not likely be feasible within the time frame allowed by the CCR regulations to complete the ACM.

Finally, the revised ACM evaluates the stability of the cobalt plume using a Mann-Kendall trend test. The stability of a contaminant plume must be demonstrated by site-specific data. Modeling may complement site-specific data, but it cannot replace it. The revised ACM goes on to say that additional investigation is warranted to increase the understanding of

contributing factors to attenuation and to provide the basis for a long-term corrective action monitoring program[26].

EPA expects that the data planned to be gathered, discussed previously, should be sufficient to support assessment of the alternatives according to the criteria in 40 C.F.R. § 257.96(c). However, the data are required to be included in the ACM and considered in the assessment of corrective measures. 40 C.F.R. §§ 257.95(g)(1), 257.96 (a), (c). Because it is not, the ACM fails to comply with these requirements.

*(b) Assessment criteria*

The revised ACM assesses the ability of alternatives to meet the requirements in 40 C.F.R. § 257.97(b) according to criteria in 40 C.F.R. § 257.97(c), rather than 40 C.F.R. § 257.96(c). Although these criteria are similar, the assessment[27] lacks an evaluation of cross-media impacts of the alternatives, as required by 40 C.F.R. § 257.97(c)(1).

*(c) Quality of assessment*

The revised ACM contains conclusions that are unsupported by data, that result from inconsistent application of the criteria, or that are based on inaccurate statements. These portions of the assessment do not seem to accurately reflect the control measure's "effectiveness in meeting all of the requirements and objectives" in 40 C.F.R. § 257.97(b) based on information in the ACM. Conclusions without supporting data do not constitute an analysis of this effectiveness. Further, inaccurate assessments in an ACM can ultimately result in selection of a remedy that will not meet the requirements of 40 C.F.R. § 257.97(b).

[26] Revised ACM, p. 7
[27] Revised ACM, section 6.2 through 6.7 and Table 5

*(i) Lack of data to support conclusions about monitored natural attenuation (MNA)*

MNA refers to reliance on natural attenuation processes to achieve corrective action objectives within a time frame that is reasonable compared to that offered by other, more active methods. The "natural attenuation processes" at work in such a remediation approach generally include a variety of physical, chemical, or biological processes that, under favorable conditions, act without human intervention to reduce the mass, toxicity, mobility, volume, or concentration of contaminants in soil or groundwater.[28]

Mass reduction through degradation generally is not a viable process for most inorganic contaminants in groundwater, except for radioactive decay. Constituents in Appendix IV to part 257 are atoms, and atoms do not break down or degrade through any naturally occurring process unless they are radioactive. Thus, while MNA can reduce the aqueous concentration or mobility of inorganic contaminants in groundwater if immobilization occurs through adsorption or absorption to subsurface soils, it does not remove the contaminants from the environment. MNA, therefore, would not be assessed favorably in either the ACM or any remedy selection report with respect to 40 C.F.R. § 257.97(b)(4), which requires that remedies "remove from the environment as much of the contaminated material that was released from the CCR unit as is feasible."

Inorganic contaminants persist in the subsurface because, except for radioactive decay, they are not degraded by the other natural attenuation processes.[29] However, inorganic contaminants may exist in forms that have low mobility, toxicity, or bioavailability such that

[28] "Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action and Underground Storage Tank Sites," April 1999, p. 3

[29] This is in contrast to organic compounds, comprised of multiple elements, which may react or degrade to its constituent elements or to form other, less harmful compounds.

they pose a relatively low level of risk. Therefore, natural attenuation of inorganic contaminants is most applicable to sites where immobilization is demonstrated to be in effect and the process/mechanism is irreversible.[30] In this way, MNA can reduce the aqueous concentration or mobility of inorganic contaminants in groundwater if immobilization occurs through adsorption or absorption to subsurface soils. Immobilization that is not permanent would require ongoing monitoring in accordance with 40 C.F.R. § 257.98(a)(1) as long as immobilized constituents remain in the aquifer matrix.

Dilution and dispersion reduce concentrations through dispersal of contaminant mass rather than destruction or immobilization of contaminant mass.[31] Consequently, these mechanisms do not meet the requirement at 40 C.F.R. § 257.97(b)(4) to remove from the environment as much of the contaminated material as is feasible, and they may not meet the requirement at 40 C.F.R. § 257.97(b)(1) to be protective of human health and the environment. Note that this is consistent with EPA's long-standing policy that dilution and dispersion are generally not appropriate as primary MNA mechanisms.[32]

In order to conduct the assessment required by 40 C.F.R. § 257.96(c), evaluation of MNA as a corrective measure requires analysis of site-specific data and characteristics that control and sustain naturally occurring attenuation. "It is necessary to know what specific mechanism (e.g., what type of sorption or reduction and oxidation reaction) is responsible for the attenuation of inorganics so that the stability of the mechanism can be evaluated. [...] Changes in a

[30] "Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action and Underground Storage Tank Sites," April 1999, p. 9
[31] "Use of Monitored Natural Attenuation for Inorganic Contaminants in Groundwater at Superfund Sites," August 2015, p. 14
[32] "Use of Monitored Natural Attenuation for Inorganic Contaminants in Groundwater at Superfund Sites," August 2015, p. 14

contaminant's concentration, pH, oxidation and reduction potential (ORP), and chemical speciation may reduce a contaminant's stability at a site and release it into the environment."[33] Determining the existence, and demonstrating the irreversibility, of MNA mechanisms is necessary to evaluate the performance, reliability, ease of implementation, and the time required to begin and complete the remedy. See 40 C.F.R. § 257.96 (c)(1) and (c)(2). This information would ultimately be necessary to show that MNA meets the requirements of 40 C.F.R. § 257.97(b).

MNA is included in alternatives 2 through 5 of the revised ACM. The assessment of MNA is based on possible immobilization of cobalt through adsorption onto sand in the aquifer. As discussed above, the ACM does not include site-specific evidence that supports a conclusion that cobalt is adsorbing to the aquifer matrix at this site. In the absence of such data, MNA through immobilization should necessarily be assessed poorly with respect to certain criteria (e.g., performance, reliability.)

The revised ACM does not contain sufficient site-specific evidence to support the assessment on MNA through immobilization. The revised ACM[34] cites as evidence the fact that if cobalt were not attenuated, it would be detected in MW-310, based on the rate of groundwater movement from the OGS Ash Pond to well MW-310 and the approximate 40-year operational history of the OGS Ash Pond. The revised ACM claims that the significant decrease in cobalt concentration from MW-305 to MW-310 supports the conclusion that attenuation is occurring.

[33] "Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action and Underground Storage Tank Sites," April 1999, p. 8
[34] Revised ACM, p. 6 and p. 1 of Appendix C

The revised ACM also notes that dilution by mixing with an upward flow of deep groundwater at MW-310 may be a factor in the decrease of cobalt concentrations beyond MW-305.

Even if it were correct to assume that the OGS Ash Pond has been leaking since it began operation, this analysis does not support a favorable assessment of MNA. As discussed previously, MW-310 does not appear to be located on a groundwater flow path directly downgradient of MW-305, and so it may not be properly placed to delineate the release of cobalt. Additional wells are needed. This fact, combined with the possibility that some of the reduction in cobalt results from dilution due to an upward vertical groundwater flow gradient[35] and a lack of site-specific data to support the discussion of MNA through immobilization,[36] means it is not clear whether any decrease in cobalt concentration is due to immobilization, dilution and dispersion, or poor characterization of the release.

Appendix C of the revised ACM contains discussion of MNA that is not based on site-specific data. For example, a literature value for the typical ionic state of cobalt found in nature (2+) is noted, and it is explained that in this state, cobalt could react and precipitate in conditions with oxidation reduction potential between -100 and -400 millivolts (mV). The monitoring data presented[37] indicate these conditions have only been detected at MW-304. Additionally, it is not reasonable to assume that conditions at a CCR unit with a detected release are the same as naturally occurring conditions, because released constituents may cause chemical reactions to occur that change groundwater chemistry. In another example, the discussion of hydrogeology[38]

[35] Revised ACM, p. 7
[36] Revised ACM, Appendix C
[37] Demonstration, Appendix C, Table 2
[38] Demonstration, Appendix C, p. 1

relies on estimated groundwater flow rates based on porosity, rather than the calculated groundwater flow rates based on site-specific measurements required by 40 C.F.R. § 257.93(c).

To assess MNA, attenuation mechanisms (i.e., immobilization vs. dilution and dispersion) must be identified in order to assess ability to meet the requirements of 40 C.F.R. § 257.97(b). Different mechanisms would be assessed differently according to criteria in 40 C.F.R. § 257.96(c). For example, dilution and dispersion would be assessed poorly with respect to cross-media impacts, because it would result in migration of the release to the Des Moines River. For these reasons, decreasing concentration between MW-305 and MW-310 is not, by itself, sufficient data to support a favorable assessment of MNA.

*(ii) Inconsistent application of criteria*

As discussed in Section E.2 of this document, EPA has preliminarily determined that the base of the OGS Ash Pond at least partially intersects with groundwater; therefore, EPA preliminarily concludes that lateral migration of the groundwater into the ash, in addition to the vertical migration from precipitation, is occurring.[39] This infiltration allows contaminants in the CCR to leach into the groundwater, causing releases from the unit. Despite this, all alternatives that include on-site disposal are assessed generally the same, regardless whether the CCR remains in contact with groundwater. Source control alternatives that will remove CCR from groundwater (alternatives 4, 5) must be assessed more favorably than alternatives that fail to do so (alternatives 1, 2, 3, 6, 7, 8) with respect to performance, reliability, and control of exposure to residual contamination (i.e., CCR left in the ground). 40 C.F.R. § 257.96(c)(1), 40 C.F.R. § 257.97(c)(1)(ii).

[39] Revised ACM, Figure 3.

The assessment in Table 5 of the revised ACM attributes equal reduction of risks under criteria in 40 C.F.R. § 257.97(c)(1)(i) to alternatives 2, 3, and 4. However, alternative 4 achieves a significantly greater reduction of risk by removing CCR from the aquifer and placing it in a lined disposal unit above the aquifer, compared to alternatives 2 and 3, which allow CCR to remain in contact with groundwater in an unlined disposal unit. Therefore, alternative 4 must be assessed more favorably than alternatives 2 and 3 under this criterion. Additionally, alternative 7 is assessed less favorably than alternative 2 because it is claimed that a pump-and-treat system brings contaminated groundwater to the surface, increasing the potential for exposure.[40] This assessment underestimates the risk reduction achieved by alternative 7 for two reasons. First, consolidation of CCR prior to closure reduces the footprint of CCR in the water table, making alternative 7 at least slightly more protective. Second, it ignores the risk reduction achieved by the groundwater pump-and-treat system when it removes cobalt from the environment. Since cobalt does not degrade naturally, as explained above, this removal prevents its migration to the river and ultimately to downgradient receptors. Alternative 7 should be assessed more favorably than alternative 2 under this criterion.

Alternatives with significantly different source control approaches were assessed similarly in Table 5 with respect to criteria in 40 C.F.R. § 257.97(c)(1)(ii), "The long- and short-term effectiveness and protectiveness of the potential remedy(s), along with the degree of certainty that the remedy will prove successful based on consideration of…Magnitude of residual risks in terms of likelihood of further releases due to CCR remaining following implementation of a remedy…" The assessment in Table 5 appears to be based upon the assumption that because no receptors have been identified, there is no risk from continued releases of inorganic metals to

[40] See revised ACM Table 5, 40 C.F.R. § 257.97(c)(1)(i).

the aquifer and ultimately to the Des Moines River, so all alternatives are equivalent. As discussed previously, the release has not been sufficiently characterized and the impacts of contaminated groundwater on the Des Moines River have not been characterized. Also, cobalt will persist in the environment because it will not degrade. Alternatives that are likely to prevent future releases can be distinguished from those that are not and assessed accordingly. The requirement to assess their relative performance under this criterion is not negated by an unsubstantiated claim that no receptors are or will be impacted by the release. The presence or absence of immediate receptors is not a valid criterion for remedy selection.

Performance of corrective measures based on their potential need for replacement, the criterion in 40 C.F.R. § 257.97(c)(1)(viii), is not assessed consistently across alternatives and the assessments are unsupported or contradicted by information in the ACM. All alternatives except 1 and 5 are assessed similarly, despite significant differences. Barrier walls and groundwater extraction and treatment are proven technologies, therefore, alternatives 7 and 8 should be assessed significantly more favorably than alternatives 2 through 4, for which there is a lack of supporting data to demonstrate that MNA is occurring at this site for cobalt. This makes MNA an unproven technology at this site for cobalt.

The assessment of expected operational reliability of alternatives 2 through 5 according to 40 C.F.R. § 257.97(c)(3)(ii) is unsupported by data or analysis. The reliability of alternatives 2 through 5, which include MNA as a primary element, must be assessed less favorably than for approaches that are known to be reliable. This is because no data or analysis is provided to demonstrate immobilization mechanisms are occurring for cobalt at the site or how permanent they may be. While the reliability of the source control portion of alternative 7 may be low to moderate, given the uncertainty about whether CCR will remain in the water table, a properly

maintained and operated pump-and-treat system is a reliable technology compared to unconfirmed MNA through immobilization. The relative assessments must reflect that.

*(iii) Inaccurate statements*

The ACM contains inaccurate statements that affect conclusions regarding the effectiveness of corrective measures. For example, the discussion of alternatives in Section 5 states, "With the exception of the No Action alternative, each of the corrective measure alternatives meet the requirements in 40 C.F.R. § 257.97(b)(1) through (5) based on the information available at the current time." This statement is inconsistent with facts presented in other sections of the ACM. For example, alternative 2 would leave CCR in continued contact with groundwater,[41] allowing constituents to continue to leach from the CCR into groundwater. This would not control the source of the release(s) to reduce or eliminate, to the maximum extent feasible, further releases, as required by 40 C.F.R. § 257.97(b)(3).

In another example, the assessment of alternative 8 in Table 5 incorrectly identifies the requirement in 40 C.F.R. § 257.97(b)(4) as "not applicable." Section 3.3.2 of the revised ACM explains that "No releases of CCR have been identified from the OGS ash pond." In fact, the SSLs of cobalt are evidence of a release from the OGS Ash Pond, therefore, the requirement in 40 C.F.R. § 257.97(b)(4) is applicable. This is particularly relevant for alternative 8, because a barrier wall would not typically remove contamination from the environment, it would only serve to keep contamination from migrating beyond the property.

Because the revised ACM contains conclusions that result from inconsistent application of the criteria, that are based on inaccurate statements, and that are unsupported by data about

[41] Revised ACM, Figure 3

MNA, EPA is proposing that IPL has failed to comply with the requirements in 40 C.F.R. § 257.96. The revised ACM does not assess the corrective measures in a manner that provides an appropriate basis to select a remedy. The assessment of control measures must be based on accurate characterization of the requirements of 40 C.F.R. § 257.97 and consistent application of, at a minimum, the criteria in 40 C.F.R. § 257.96(c) to all control measures. The assessment of all control measures, including MNA, must be based on site-specific data that support conclusions about their performance.

## IV. Proposed Date to Cease Receipt of Waste

EPA is proposing that Ottumwa must cease receipt of waste within 135 days of the date of the Agency's final decision establishing the revised deadline (i.e., the date on which the decision is signed). EPA is further proposing that, under certain circumstances described below, EPA could authorize additional time for Ottumwa to continue to use the impoundment to the extent necessary to address demonstrated grid reliability issues, if any, provided that Ottumwa submits a planned outage or suspension request to Midcontinent Independent System Operator, Inc.(MISO) within 15 days of the date of EPA's final decision and Ottumwa provides the MISO request to reschedule the planned outage or suspension and the formal reliability assessment upon which it is based to EPA within 10 days of receiving them.

The regulations state that when EPA denies an application for an extension, the final decision will include the facility's deadline to cease receipt of waste, but they do not provide direction on what the new deadline should be. 40 C.F.R. § 257.103(f)(3). EPA is proposing to set a new deadline for Ottumwa to cease receipt of waste that would be 135 days from the date of the final decision on Ottumwa's Demonstration. This would provide Ottumwa the same amount of time that would have been available to the facility had EPA issued a denial immediately upon

the regulatory deadline for receipt of the Demonstration (i.e., from November 30, 2020, to April 11, 2021, the regulatory deadline to cease receipt of waste). This amount of time thus puts the facility in the same place it would have been had EPA immediately acted on the Demonstration and therefore adequately accounts for any equitable reliance interest Ottumwa may have had after submitting its Demonstration. Moreover, as discussed further below, this date should provide Ottumwa with adequate time to coordinate with MISO for any outage or suspension of the coal-fired boiler that may be necessary.

Given that this proposed deadline (135 days from the date of EPA's final decision) is sooner than the deadline requested by Ottumwa, it is likely that the coal-fired boiler associated with the CCR unit will temporarily need to stop producing waste (and therefore power) until either construction of an alternative disposal option is completed and commercially operational or some other arrangements are made to manage its CCR and/or non-CCR wastestreams.

In Ottumwa's Demonstration it is noted that "to continue to operate, generate electricity, and comply with both the CCR Rule and the IDNR permit conditions, OGS must continue to use the Surface Impoundment for treatment of non-CCR wastestreams until alternate disposal capacity can be developed." It further explains that if the OGS Ash Pond were unable to receive the facility's non-CCR wastestreams before construction of the LVWTP is complete, OGS would have to cease generating power. EPA does not have independent evidence showing that the temporary outage of the coal-fired boiler at this facility would affect the reliability of the grid.

This facility operates as part of the MISO system. MISO is a regional transmission organization (RTO) that is part of the Eastern Interconnection grid. MISO currently has excess generating capacity, and consequently, an adequate reserve margin. A reserve margin is a

measure of the system's generating capability above the amount required to meet the system's peak load.[42] MISO's target reserve margin[43] for the region for 2021 is 18.3%.[44] The anticipated reserve margin for 2021 is projected to be 21.6%.

The exceedance of MISO's existing target reserve margin, combined with scheduled new capacity coming online into the market and the ability to purchase electricity from facilities outside MISO, suggests that the temporary outage at Ottumwa Generating Station would not adversely affect resource adequacy requirements. EPA has not seen any information to indicate that an extended planned outage or suspension at Ottumwa Generating Station would trigger local reliability violations.[45] Additionally, especially with the advance notice, there are a wide array of tools available to utilities, system operators, and state and federal regulators to address situations where the outage or suspension of a generating unit might otherwise affect local electric reliability conditions.

Nonetheless, EPA is sensitive to the importance of maintaining enough electricity generating capacity to meet the region's energy needs, including meeting specific, localized issues. EPA understands that it is possible that in some instances temporarily taking any large generating units (including coal-fired units) offline could have an adverse, localized impact on

[42] Reserve margin is defined as the difference between total dependable capacity and annual system peak load (net internal demand) divided by annual system peak load.

[43] The target reserve margin, also known as the Installed Reserve Margin or the Reference Reserve Margin, is the "metric…used by system planners to quantify the amount of reserve capacity in the system above the forecasted peak demand that is needed to ensure sufficient supply to meet peak loads." The term used to describe this metric varies by assessment area. North American Electric Reliability Corporation, Summer 2021 Reliability Assessment, page 41, https://www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/NERC%20SRA%202021.pdf.

[44] North American Electric Reliability Corporation, Summer 2021 Reliability Assessment, page 42 (where "Reference" Reserve Margin Level refers to MISO's Installed Reserve Margin), https://www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/NERC%20SRA%202021.pdf.

[45] A local reliability violation might occur, for example, if transmission line constraints limit the amount of power that can get to an area from plants outside that area.

electric reliability (e.g., voltage support, local resource adequacy), although Ottumwa has presented no evidence that such is the case with this facility.

If a generating asset were needed for local reliability requirements, the grid operator (e.g., MISO) might request the generator to reschedule the planned outage or suspension and offer a suggested alternative schedule. In such instances, the owners/operators of the generating unit could find themselves in the position of either operating in noncompliance with the Resource Conservation and Recovery Act (RCRA) or halting operations and thereby potentially causing adverse reliability conditions.

EPA is obligated to ensure compliance with RCRA to protect human health and the environment. Where there is a conflict between timely compliance and electric reliability, EPA intends to carefully exercise its authorities to ensure compliance with RCRA while taking into account any genuine, demonstrated risks to grid reliability identified through the process established by MISO that governs owner/operator requests for planned outages and/or suspension requests.[46] Accordingly, EPA is proposing to rely on established processes and authorities used by MISO to determine whether a planned outage or suspension necessary to meet the new deadline would cause a demonstrated reliability issue.

MISO is responsible for coordinating and approving requests for planned outages of generation and transmission facilities, as necessary, for the reliable operation of the MISO RTO.[47] In MISO, power plants are normally to submit a request at least 120 days in advance of a planned outage or 26 weeks in advance of a planned suspension to allow MISO to evaluate

[46] See, e.g., MISO Tariff, Module C, Energy and Operating Reserve Markets, Effective On: November 19, 2013 (Sections 38.2.5 and 38.2.7), available for download at https://www.misoenergy.org/legal/tariff/.
[47] See, MISO Outage Operations Business Practices Manual, BPM-008-r19, Effective Date: September 21, 2021, page 14, available for download at https://www.misoenergy.org/legal/business-practice-manuals/.

whether the resource is needed to maintain grid reliability, among other scheduling considerations. MISO will request the event be rescheduled if it determines that the planned outage or suspension would adversely affect reliability. If MISO approves a planned outage or suspension request, the outage may proceed and there would be no reason to expect that the outage would affect reliability. However, if a request would cause reliability issues, MISO will work with the generation owner to implement appropriate solutions. The MISO member may also request MISO's assistance in scheduling a planned outage.

MISO may rely on different bases in determining whether to request the generating facility to reschedule a planned outage. For example, a reschedule request may be issued because of timing considerations taking into account previously approved planned outage requests, in which case EPA would expect the plant owner to work with MISO to plan an outage schedule that can be approved by MISO and also satisfies the plant owner's RCRA obligations, without regard to any cost implications (e.g., in meeting any contractual obligations with third parties) that may result for the plant owner under a revised proposed outage schedule.

Alternatively, however, in some cases, MISO might determine that the planned outage or suspension could not occur without triggering operational reliability violations. In such cases, the system operator might determine that the generating unit would need to remain in operation until remedies are implemented. As set forth above, Ottumwa has presented no evidence that such is the case with this facility.

For Ottumwa, EPA is proposing to rely on MISO's procedures for reviewing planned maintenance outage and similar requests. Accordingly, EPA is proposing that, if MISO approves Ottumwa's request, EPA would not grant any further extension of the deadline to cease receipt of waste (i.e., the deadline would be 135 days from the date of EPA's final decision). If, however,

MISO requests that Ottumwa move its planned outage or requires alternative solutions to be implemented prior to an outage or suspension that exceeds the compliance timeline allowable under RCRA based on a technical demonstration of operational reliability issues, EPA is proposing that, based on its review of that decision and its bases, EPA could grant a further CCR extension (i.e., beyond 135 days from the date of EPA's final decision).

EPA is further proposing that such a request could only be granted if it were supported by the results of the formal reliability assessment(s) conducted by MISO that established that the temporary outage of the boiler during the period needed to complete construction of alternative disposal capacity would have an adverse impact on reliability. In such a case EPA is proposing that, without additional notice and comment, it could authorize continued use of the impoundment for either the amount of time provided in an alternative schedule proposed by MISO or the amount of time EPA determines is needed to complete construction of alternative disposal capacity based on its review of the Demonstration, whichever is shorter. EPA is further proposing that a request from MISO to move a requested outage or delay a suspension until other solutions are in place without a finding of technical infeasibility for demonstrated reliability concerns would not support EPA's approval of an extension of the date to cease receipt of waste because any concern about outage schedules and their implications for plant economics could be resolved without an extension of RCRA compliance deadlines (e.g., through provision of replacement power and/or capacity; rearranging plant maintenance schedules; reconfiguration of equipment).

To obtain an extension, EPA is proposing that Ottumwa must submit a request for an outage or suspension to MISO within 15 days of the date of EPA's final decision. To avoid the need for serial requests and submissions to MISO, EPA is proposing to require Ottumwa to

contact MISO and request assistance in scheduling the planned outage so that Ottumwa and MISO can determine the shortest period of time during an overall planned outage or suspension period in which the generating unit must be online to avoid a reliability violation. EPA expects that the plant owner and MISO would plan the outage(s) and return-to-service periods – and any other needed accommodations – in ways that minimize the period of actual plant operations.

Finally, to obtain an extension from EPA, Ottumwa must submit a copy of the request to MISO and the MISO determination (including the formal reliability assessment) to EPA within 10 days of receiving the response from MISO. EPA would review the request and, without further notice and comment, issue a decision.

One hundred and thirty-five days should normally provide adequate time to schedule a planned outage of a generating unit in coordination with MISO. According to the MISO Tariff, section 38.2.5 (at PDF page 628), the normal process for obtaining approval for a planned outage occurs within three months.[48] If a suspension is necessary, EPA expects the facility to work with MISO during the 135 days to try to obtain a decision. If the facility is unable to obtain a decision before the end of this period, upon a showing that the facility submitted a timely request to MISO, EPA would grant the additional time necessary for MISO to reach a decision. However, EPA solicits comment on whether 135 days from the date of the final decision provides sufficient time to accommodate the normal process of obtaining approval for a planned outage.

## V. Conclusion

In conclusion EPA is proposing to deny IPL's request for an alternative compliance date for the OGS Ash Pond surface impoundment, located at the Ottumwa Generating Station near

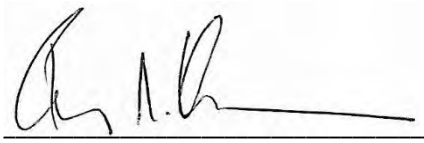
[48] MISO Tariff, Effective On: November 19, 2013, available for download at https://www.misoenergy.org/legal/tariff/.

Ottumwa, Iowa. EPA is proposing to deny the extension request because IPL has not demonstrated that the facility is in compliance with all the requirements of 257 subpart D, based on concerns with the groundwater monitoring at the facility, with the facility's corrective action, and with the facility's closure plans. EPA is proposing that IPL cease receipt of waste and initiate closure no later than 135 days from the date of EPA's final decision.

Finally, due to the nature of the noncompliance EPA has preliminarily identified at IPL, EPA is proposing to issue a denial rather than a conditional approval. As discussed in greater detail in the proposed H.L. Spurlock Power Station decision, EPA is proposing that a conditional approval may be appropriate in situations where the actions necessary to bring the facility into compliance are straightforward and the facility could take the actions well before its requested deadline (or the alternative deadline that EPA has determined to be warranted). But in the case of IPL, the noncompliance EPA has identified involves more complicated technical issues, where the specific actions necessary to come into compliance cannot be easily identified and/or cannot be implemented quickly. Specifically, if EPA is correct that the base of the OGS Ash Pond intersects with groundwater, the determination of whether the closure of these units meets the performance standards in 40 C.F.R. § 257.102(d) is highly technical and extremely complicated. As explained in unit III.E.2, IPL provided insufficient information for EPA identify specific actions that would need to be taken at the site. Nor could EPA conclude that IPL could implement the necessary measures before its requested deadline. Finally, EPA continues to believe that where there is affirmative evidence of harm at the site, such as where a facility has delayed corrective action, EPA cannot grant additional time for the impoundment to operate without some evidence that these risks are mitigated.

## VI. Effective Date

EPA is proposing to establish an effective date for the final decision on IPL's demonstration of 135 days after the date of the final decision (i.e., the date that the final decision is signed). EPA is proposing to align the effective date with the new deadline that EPA is proposing to establish for IPL to cease receipt of waste. EPA is doing so for all of the reasons discussed as the basis for proposing to establish the new deadline to cease receipt of waste discussed in Section IV of this document.



January 11, 2022
Date

Barry N. Breen
Acting Assistant Administrator

# Exhibit C

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

January 11, 2022

OFFICE OF
LAND AND EMERGENCY
MANAGEMENT

Mr. Richard E. Dunn
Director
Georgia Environmental Protection Division
2 Martin Luther King, Jr. Drive
Suite 1456, East Tower
Atlanta, Georgia 30334

Re: Georgia Coal Combustion Residuals Permit Program

Dear Mr. Dunn:

Thank you for meeting with us yesterday in advance of the announcement about the actions the Agency is taking to advance EPA's commitment to protecting groundwater from CCR contamination. Today, the U.S. Environmental Protection Agency (EPA) explained portions of the CCR regulations regarding the closure performance standards at 40 Code of Federal Regulations (CFR) § 257.102(d) applicable to CCR surface impoundments and landfills. Specifically, EPA explained how these performance standards apply in situations where waste in the closing CCR unit is in contact with groundwater. You can find our explanation in EPA's proposed denial notice of Gavin Power LLC's extension request pursuant to 40 C.F.R. § 257.103(f)(1). The closure discussion is in Section III.E.1 of the proposed decision, which can be found at *https://www.epa.gov/coalash/coal-combustion-residuals-ccr-part-implementation.*

We appreciate the continued dialogue between EPA's CCR Program and the Georgia Environmental Protection Division (EPD) to continue to work together on these issues. For example, on June 3, 2021, EPA and EPD met to discuss the closure-in-place performance standards codified in the CCR regulations. The primary topic of discussion was to hear from EPD how they were interpreting and applying the closure performance standards in the permitting of CCR facilities/units in Georgia.

Giving consideration to the closure discussion provided in the proposed action for Gavin Power LLC, EPA is requesting that EPD review its pending and issued CCR permits to determine whether the permits are consistent with this explanation and whether they need to be modified or reissued. We understand that EPD may need some time to complete this review. EPA is proposing to meet the week of January 24, 2022 to discuss the results of your review and we will reach out to you to confirm the details of the virtual meeting.

EPA is committed to working with EPD to ensure that CCR permits address all applicable requirements and are consistent with the federally approved Georgia CCR Permit Program. If you have any questions or wish to discuss this further, please contact Richard Huggins of my

staff, in EPA's Office of Resource Conservation and Recovery at Huggins.Richard@epa.gov or at (202) 566-0543.

Sincerely,

Carolyn Hoskinson, Director
Office of Resource Conservation and Recovery

cc: Mr. John Eunice
Deputy Director, Georgia Department of Natural Resources
Mr. Chuck Mueller
Branch Chief, Georgia Department of Natural Resources
Mr. William Cook
Program Manager, Georgia Department of Natural Resource
Mr. Casey Katims
Deputy Associate Administrator for Intergovernmental Relations, EPA
Mr. Daniel Blackman
Regional Administrator, EPA Region 4
Mr. John Blevins
Associate Regional Administrator, EPA Region 4
Mr. Cesar Zapata
Director, Land Chemicals and Redevelopment Division, EPA Region 4
Mr. Ramon Torres
Deputy Director, Land Chemicals and Redevelopment Division, EPA Region 4
Ms. Meredith Anderson
Branch Chief, EPA Region 4
Ms. Carol Kemker
Director, Enforcement and Compliance Assurance Division, EPA Region 4
Ms. Dee Rodgers-Smith
Section Chief, Land Chemicals and Redevelopment Division, EPA Region 4
Mr. David Egetter
Section Chief, Land Chemicals and Redevelopment Division, EPA Region 4
Mr. Andy Crossland
Director, Materials Recovery and Waste Management Division, Office of Resource Conservation and Recovery
Mr. Richard Huggins
Chief, Energy Recovery and Waste Disposal Branch, Office of Resource Conservation and Recovery

# Exhibit D

**PROPOSED DECISION**

Proposed Denial of Alternative Closure Deadline for Clifty Creek Power Station

**SUMMARY:**

Indiana-Kentucky Electric Corporation (IKEC) submitted a demonstration (referred to as the "Demonstration" in this document) to the Environmental Protection Agency (EPA) seeking an extension pursuant to 40 C.F.R § 257.103(f)(1) to allow two coal combustion residuals (CCR) surface impoundments, the West Boiler Slag Pond (WBSP) and the Landfill Runoff Collection Pond (LRCP), to continue to receive CCR and non-CCR wastestreams after April 11, 2021, at the Clifty Creek Power Station in Madison, Indiana. EPA is proposing to deny this extension request. In the Demonstration, IKEC requested an alternative closure deadline of December 5, 2022, for the WBSP and April 25, 2023, for the LRCP. EPA is proposing to deny the request for an extension based on a proposed determination that Clifty Creek Power Station has failed to demonstrate that there is no off-site capacity available for one of the wastestreams and that the facility is in compliance with the requirements of 40 C.F.R. 257 subpart D, as required in 40 C.F.R. § 257.103(f)(1)(iii).

**DATES:** *Comments.* Comments must be received on or before February 23, 2022.

**ADDRESSES AND PUBLIC PARTICIPATION:** The EPA has established a docket for this notice under Docket ID No. EPA-HQ-OLEM-2021-0587. EPA established a docket for the August 28, 2020, CCR Part A Rule under Docket ID No. EPA-HQ-OLEM-2019-0172. All documents in the docket are listed in the https://www.regulations.gov index. Publicly available docket materials are available either electronically at https://www.regulations.gov or in hard copy at the EPA Docket Center. The Public Reading Room is open from 8:30 a.m. to 4:30 p.m.,

Monday through Friday, excluding holidays. The telephone number for the Public Reading Room is (202) 566-1744, and the telephone number for the EPA Docket Center is (202) 566-1742. You may send comments, identified by Docket ID. No. EPA-HQ-OLEM-2021-0587, by any of the following methods:

- Federal e-Rulemaking Portal: https://www.regulations.gov/ (our preferred method). Follow the online instructions for submitting comments.
- Mail: U.S. Environmental Protection Agency, EPA Docket Center, Office of Land and Emergency Management, Docket ID No. EPA-HQ-OLEM-2021-0587, Mail Code 28221T, 1200 Pennsylvania Avenue NW, Washington, DC 20460.
- Hand Delivery or Courier (by scheduled appointment only): EPA Docket Center, WJC West Building, Room 3334, 1301 Constitution Avenue NW, Washington, DC 20004. The Docket Center's hours of operations are 8:30 a.m. – 4:30 p.m., Monday – Friday (except Federal Holidays).

*Instructions*: All submissions received must include the Docket ID No. for this action. Comments received may be posted without change to https://www.regulations.gov/, including any personal information provided. Once submitted, comments cannot be edited or removed from the docket. The EPA may publish any comment received to its public docket. Do not submit electronically any information you consider to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Multimedia submissions (audio, video, etc.) must be accompanied by a written comment. The written comment is considered the official comment and should include discussion of all points you wish to make. The EPA will generally not consider comments or comment contents located outside of the primary submission (i.e., on the web, cloud, or other file sharing system). For additional

submission methods, the full EPA public comment policy, information about CBI or multimedia submissions, and general guidance on making effective comments, please visit https://www.epa.gov/dockets/commenting-epa-dockets.

Due to public health concerns related to COVID-19, the EPA Docket Center and Reading Room are open to the public by appointment only. Our Docket Center staff also continues to provide remote customer service via email, phone, and webform. Hand deliveries or couriers will be received by scheduled appointment only. For further information and updates on EPA Docket Center services, please visit us online at https://www.epa.gov/dockets.

The EPA continues to carefully and continuously monitor information from the Centers for Disease Control and Prevention (CDC), local area health departments, and our Federal partners so that we can respond rapidly as conditions change regarding COVID-19.

**FOR FURTHER INFORMATION CONTACT**: For information concerning this proposed decision, contact:

- Kirsten Hillyer, Office of Resource Conservation and Recovery, Materials Recovery and Waste Management Division, Environmental Protection Agency, 1200 Pennsylvania Avenue NW, MC: 5304T, Washington, DC 20460; telephone number: (202) 566-0542; email address: Hillyer.Kirsten@epa.gov.
- Frank Behan, Office of Resource Conservation and Recovery, Materials Recovery and Waste Management Division, Environmental Protection Agency, 1200 Pennsylvania Avenue NW, MC: 5304T, Washington, DC 20460; telephone number: (202) 566-0531; email address: Behan.Frank@epa.gov.
- For more information on coal ash regulations, please visit https://www.epa.gov/coalash.

**SUPPLEMENTARY INFORMATION:**

**Table of Contents**



**List of Acronyms**

ACM – Assessment of Corrective Measures

ASD – alternate source demonstration

bgs – below ground surface

BMcD – Burns & McDonnell

BSHS – boiler slag handling system

CBI – Confidential Business Information

CCR – coal combustion residuals

C.F.R. – Code of Federal Regulations

CY – cubic yards

ELGs – Effluent Limit Guidelines and Standards for the Steam Electric Power Generating Point Source Category

EPA – Environmental Protection Agency

FERC – Federal Energy Regulatory Commission

FGD – flue gas desulfurization

ft amsl – feet above mean sea level

GWMCA – groundwater monitoring corrective action

ICPA – Inter-Company Power Agreement

IDEM – Indiana Department of Environmental Management

IKEC – Indiana Kentucky Electric Corporation

LRCP – Landfill Runoff Collection Pond

LVWTS – low volume wastewater treatment system

MGD – million gallons per day

MNA – monitored natural attenuation

MW – megawatts

mV - millivolts

NPDES – National Pollutant Discharge Elimination System

ORP – oxidation reduction potential

OVEC – Ohio Valley Electric Corporation

PJM – PJM Interconnection LLC

PRBs – permeable reactive barriers

PSD – prevention of significant deterioration

POTW – publicly owned treatment works

RTO – Regional Transmission Organization

SSI - statistically significant increase

SSL – statistically significant level

WBSP – West Boiler Slag Pond

## I. General Information

*A. What decision is the agency making?*

The EPA is proposing to deny the extension request submitted by IKEC for two CCR surface impoundments, the WBSP and the LRCP, located at the Clifty Creek Power Station in

Madison, Indiana. IKEC submitted a demonstration to EPA seeking an extension pursuant to 40 C.F.R § 257.103(f)(1) to allow the two impoundments to continue to receive CCR and non-CCR wastestreams after April 11, 2021. EPA is proposing that IKEC cease receipt of waste into the two CCR surface impoundments no later than 135 days after EPA issues a final decision.

*B. What is the agency's authority for making this decision?*

This proposal is being issued pursuant to the authority in 40 C.F.R. § 257.103(f).

## II. Background

*A. Part A Final Rule*

In April 2015, EPA issued its first set of regulations establishing requirements for CCR surface impoundments and landfills (Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals From Electric Utilities,80 FR 21301) (the "CCR Rule"). In 2020, EPA issued the CCR A Holistic Approach to Closure Part A: Deadline to Initiate Closure rule (85 FR 53516 (Aug. 28, 2020)) (the "Part A Rule"). The Part A Rule established April 11, 2021, as the date that electric utilities must cease placing waste into all unlined CCR surface impoundments. The Part A Rule also revised the alternative closure provisions of the CCR rule (40 C.F.R. § 257.103) by allowing owners or operators to request an extension to continue to receive both CCR and non-CCR wastestreams in an unlined CCR surface impoundment after April 11, 2021, provided that certain criteria are met. EPA established two site-specific alternatives to initiate closure of CCR surface impoundments (40 C.F.R. § 257.103(f)), commonly known as extensions to the date to cease receipt of waste: 1) development of alternative capacity by the April 11, 2021 deadline is technically infeasible (40 C.F.R. § 257.103(f)(1)), and 2) permanent cessation of a coal-fired boiler(s) by a date certain (40 C.F.R. § 257.103(f)(2)).

The first site-specific alternative to initiate closure of CCR surface impoundments is *Development of Alternative Capacity is Technically Infeasible* (40 C.F.R. § 257.103(f)(1)). Under this alternative, an owner or operator may submit a demonstration seeking EPA approval to continue using its unlined surface impoundment for the specific amount of time needed to develop alternative disposal capacity for its CCR and non-CCR wastestreams. The demonstration must meet the requirements at 40 C.F.R. § 257.103(f)(1). To have an alternative deadline approved, the regulation requires the facility to demonstrate that: 1) no alternative disposal capacity is currently available on or off-site of the facility; 2) the CCR and/or non-CCR waste stream must continue to be managed in that CCR surface impoundment because it was technically infeasible to complete the measures necessary to obtain alternative disposal capacity either on or off-site at the facility by April 11, 2021; and 3) the facility is in compliance with all the requirements of 40 C.F.R. subpart D. 40 C.F.R. §§ 257.103(f)(1)(i)-(iii). To support the requested alternative deadline, the facility must submit detailed information demonstrating that the amount of time requested is the fastest technically feasible time to complete development of alternative disposal capacity. 40 C.F.R. § 257.103(f)(1)(iv)(A).

The second site-specific alternative to initiate closure of CCR surface impoundments is for the owner or operator to demonstrate that it will permanently cease operation of the coal-fired boilers at the facility. *Permanent Cessation of Coal-Fired Boiler(s) by a Date Certain*, (40 C.F.R. § 257.103(f)(2)). Under this alternative, an owner or operator may submit a demonstration seeking EPA approval to continue using an unlined CCR surface impoundment in the interim period prior to permanently stopping operation of coal-fired boiler(s) at the facility. The demonstration must meet the requirements at 40 C.F.R. § 257.103(f)(2). The owner or operator must show that 1) the facility will cease operation of coal-fired boiler(s) and complete

closure of the CCR surface impoundment(s) by the specified deadlines (no later than October 17, 2023 for impoundments 40 acres, or smaller and no later than October 17, 2028 for impoundments larger than 40 acres); and 2) in the interim period prior to the closure of the coal-fired boiler, the facility must continue to use the CCR surface impoundment due to the absence of alternative disposal capacity both on-site or off-site. *Id*. Unlike the requirements for the first alternative, the owner or operator does not need to develop alternative disposal capacity. The regulations require a demonstration that: 1) no alternative disposal capacity is available on or off-site of the facility; 2) the risks from continued use of the impoundment have been adequately mitigated; 3) the facility is in compliance with all other requirements of 40 C.F.R. part 257 subpart D; and 4) closure of both the impoundment and the coal-fired boiler(s) will be completed in the allowed time. 40 C.F.R. § 257.103(f)(2)(i)-(iv).

*B. Clifty Creek Power Station*

On November 30, 2020, the Indiana-Kentucky Electric Corporation (IKEC) submitted a Demonstration pursuant to 40 C.F.R. § 257.103(f)(1) (the first alternative) requesting additional time to develop alternative capacity to manage CCR and non-CCR wastestreams at the Clifty Creek Power Station in Madison, Indiana. IKEC is the owner and operator of the Clifty Creek Power Station.

In the Demonstration, IKEC requests an alternative deadline of December 5, 2022, for the WBSP and April 25, 2023 for the LRCP, by which dates IKEC would cease routing all CCR and non-CCR wastestreams to, and initiate closure of, these impoundments.

As described in the Demonstration, IKEC intends to obtain alternative disposal capacity to the Clifty Creek WBSP CCR surface impoundment by: 1) converting its wet handling systems to a concrete settling tank system; and 2) constructing a new composite lined non-CCR low

volume wastewater treatment system (LVWTS) within the existing footprint of the WBSP. IKEC intends to obtain alternative disposal capacity for the LRCP by constructing a series of composite lined non-CCR wastewater basins within the footprint of the LRCP.

The EPA is providing additional details on the Clifty Creek facility below, including information on the generation capacity of the Clifty Creek Power Station, information on its CCR surface impoundments and landfills, and information on other non-CCR impoundments. This summary is based on information provided in the Demonstration.

*1. Coal-fired boilers and generation capacity.*

The Demonstration states that Clifty Creek operates six coal-fired generating units with a combined generation capacity of 1,304 net MW.

*2. CCR units and CCR wastestreams.*

IKEC currently operates three CCR units at Clifty Creek that are subject to the federal CCR regulations. The facility consists of two CCR surface impoundments, the WBSP and the LRCP, and one CCR landfill. The Demonstration states that the approximate surface area of the WBSP is 75 acres and the LRCP is 40 acres. However, previous reports have described the acreage of the LRCP as approximately 91 acres.[1]

The WBSP is an unlined CCR surface impoundment and subject to closure pursuant to 40 C.F.R. § 257.101(a)(1). This provision provides that IKEC must cease placing CCR and non-CCR wastestreams into the unit and either retrofit or initiate closure as soon as technically feasible, but not later than April 11, 2021. The Demonstration contains a certification that the

[1] Section 3 of the 2017 Annual GWMCA Report describes the LRCP as 91 acres.

Clifty Creek's surface impoundments are in compliance with all location restrictions specified in 40 C.F.R. §§ 257.60 through 257.64.

According to the Demonstration, the primary factor affecting the capacity development schedule at the Clifty Creek Power Station is the need to manage CCR and non-CCR wastestreams throughout construction of the LVWTS in a way that allows the plant to continue to meet the National Pollutant Discharge Elimination System (NPDES) discharge limits. IKEC states that it cannot cease the flow of CCR and non-CCR wastestreams and initiate closure of the WBSP until the concrete settling tank construction is complete, the new lined LVWTS is constructed within the footprint of the WBSP, and the non-CCR wastestreams are rerouted to the new lined LVWTS. The Demonstration explains that a tuning period is planned following construction of the new WBSP tank, and LRCP wastewater treatment system and certain system upsets may necessitate use of the Clifty Creek CCR surface impoundments for boiler slag and landfill runoff collection wastestreams during such events. According to the visual timeline included in the demonstration, these activities are scheduled to be completed by April 25, 2023.

The Demonstration identifies one CCR landfill at Clifty Creek. The landfill is approximately 40 acres in size; the landfill stormwater runoff and leachate management systems will be a part of the LRCP wastewater treatment system once it is operational.

## III. EPA Analysis of Demonstration

The EPA has determined that the Demonstration IKEC submitted pursuant to 40 C.F.R § 257.103(f)(1) for the two CCR surface impoundments at the Clifty Creek Power Station was complete. EPA is proposing to deny the extension request for a number of reasons. EPA is proposing to deny the extension request with respect to a wastestream (drainage from the fly ash silo and the boiler building) because IKEC failed to adequately demonstrate that there is no off-

site capacity for this wastestream. EPA is also proposing to deny the extension request because IKEC has not demonstrated that the facility is in compliance with all the requirements of 40 C.F.R. part 257, subpart D. This is based on a failure to meet groundwater monitoring requirements at the facility, failure to meet corrective action requirements, failure of the plans to construct a concrete settling tank to obtain alternative capacity to meet the design requirements in the CCR regulations, and failure to prepare closure plans for the WBSP and LRCP that will ensure closure activities will meet the closure performance standards in the CCR regulations. Therefore, EPA is proposing that the extension request be denied.

EPA is proposing for IKEC to cease placement of all CCR and non-CCR wastestreams into the WBSP and LRCP no later than 135 days from the issuance of EPA's final decision discussed in Unit IV.

*A. Evaluation of IKEC's Claim of No Alternative Disposal Capacity On or Off-Site*

To obtain an extension of the cease receipt of waste deadline, the owner or operator must demonstrate that there is no alternative disposal capacity available on or off-site. 40 C.F.R. § 257.103(f)(1)(iv)(A). As part of this, facilities must evaluate all potentially available disposal options to determine whether any are technically feasible. 40 C.F.R. § 257.103(f)(1)(i). The owner or operator must also evaluate the site-specific conditions that affected the options considered. 40 C.F.R. § 257.103(f)(1)(iv)(A)(*1*)(*i*). Additionally, the regulations prohibit the owner or operator from relying on an increase of cost or inconvenience of existing capacity as a basis for meeting this criterion. 40 C.F.R. § 257.103(f)(1)(i).

The Demonstration must substantiate the absence of alternative capacity for each wastestream that the facility is requesting to continue placing in the CCR surface impoundment beyond April 11, 2021. 40 C.F.R. § 257.103(f)(1)(iv)(A)(*1*). As soon as alternative capacity is

available for any wastestream, the owner or operator must use that capacity instead of the unlined CCR surface impoundment. 40 C.F.R. § 257.103(f)(1)(v). This means that if there is a technically feasible option to reroute any of the wastestreams away from the surface impoundment, the owner or operator must do so. 40 C.F.R. § 257.103(f)(1)(ii), (v). In the CCR Part A Rule preamble, EPA acknowledged that some of these wastestreams are very large and will be challenging to relocate, especially for those that are sluiced. However, the smaller volume wastestreams have the potential to be rerouted to temporary storage tanks. In such cases, the owner or operator must evaluate this option, and, if it is determined to be technically feasible, must implement it. 85 Fed. Reg. 53,541.

IKEC stated it requires the use of both the LRCP and the WBSP after April 11, 2021, due to the wastestreams that each of them handles. The LRCP is used to manage the stormwater from the western portion of IKEC's landfill and from off-site watershed. The WBSP receives boiler slag, boiler room sump, air heater wash flows, flue gas desulfurization (FGD) wastewater from the treatment system, coal yard sump flows, drainage from the fly ash silo and blower building, FGD waste sump, stormwater runoff, and leachate from the eastern portion of IKEC's landfill. Due to the number and the volume of the flows of the wastestreams that are currently managed in the WBSP, IKEC stated that it was unable to cease these flows prior to April 11, 2021.

*1. Lack of Alternative On-site Capacity*

IKEC concluded that there was no additional capacity available on-site for any of the wastestreams currently managed in the LRCP or the WBSP. EPA is proposing to agree with this conclusion.

The LRCP receives only stormwater runoff from the western portion of the landfill, as well as stormwater flow from more than 500 acres of watershed. According to the

Demonstration, the average amount of stormwater the LRCP receives is 0.796 million gallons per day (MGD) with an estimated 6.18 MGD for a 10-year, 24-hour storm. There is currently no other disposal unit on-site with sufficient capacity to handle the stormwater. Due to the size of this wastestream, the high variability with which it occurs, and the lack of other existing capacity, EPA agrees that IKEC could not reroute the stormwater to a different location on-site. EPA also agrees that temporary storage tanks would not work for these wastestreams due to the potentially large volumes of the waste and the area of the watershed runoff that cannot be captured in a tank.

The WBSP currently manages one CCR wastestream, boiler slag, and a variety of non-CCR wastestreams. The boiler slag is sluiced using boiler slag transport water to the WBSP at an average flowrate of 2.9 MGD. The WBSP manages a variety of non-CCR wastestreams with the following average flows: boiler room sump (7.98 MGD), air heater wash flows (N/A, outage flow only), FGD wastewater treatment system (0.37 MGD), coal yard sump (0.04 MGD), drainage from fly ash silo and blower building (0.10 MGD), FGD waste sump (0.03 MGD), and stormwater runoff and leachate from east portion of landfill (0.14 MGD). IKEC stated the only disposal capacity currently available on-site with sufficient capacity to manage the combined wastestreams is the WBSP and that IKEC lacks the space to install a temporary settling tank on the property for the boiler slag and the non-CCR wastestreams. IKEC stated that if it were to use a temporary solution to allow the WBSP to be removed from service, it would require 550 frac tanks per day to manage the volume of waste (not including stormwater contributions). The Demonstration also stated that it would require significant site development for containment measures and that the attendant interconnecting piping would pose an unacceptable amount of potential leaks. Additionally, IKEC stated that due to the solids content, five of these frac tanks

would need to be replaced daily. EPA is proposing to determine that these are reasonable conclusions, and that they appear to be supported by the documentation submitted with the Demonstration; therefore, EPA proposes to find that there is no available on-site capacity to accept the WBSP wastestreams.

*2. Lack of Off-site Alternative Capacity*

IKEC concluded that off-site alternative capacity was not a technically feasible option for the CCR or non-CCR wastestreams generated at Clifty Creek. EPA is proposing to disagree with that conclusion, on the grounds that IKEC failed to adequately demonstrate that off-site alternative capacity is not available for each wastestream.

IKEC stated that it is not feasible to provide off-site treatment or disposal of the large volume of non-CCR wastestreams currently routed to the WBSP and LRCP. Off-site disposal of these sluiced CCR and non-CCR wastestreams would require both on-site temporary storage and significant daily tanker traffic. The LRCP and the WBSP currently only receive wet generated wastestreams ranging in volume from 0.04 to 7.8 MGD. Because the wastestreams are wet generated, IKEC evaluated the feasibility of trucking the wastestreams off-site. IKEC provided the daily tanker trucks requirements (assuming 7,500 gallon capacity per truck) for each CCR and non-CCR wastestream (Table 1).

Table 1: CCR and non-CCR wastestreams and daily trucks required

| Wastestream | Flowrate (MGD) | Trucks per day (approximate) | Notes |
|---|---|---|---|
| Boiler slag sluice to WBSP | 2.90 | 380 | If a POTW[2] could be identified |
| Boiler room sump flows to WBSP | 7.95 | 1,060 | |

[2] POTW – publicly owned treatment works

| | | | |
|---|---|---|---|
| FGD wastewater treatment system flows to WBSP | 0.37 | 50 | |
| Coal yard sump flows to WBSP | 0.04 – 5.60 | 5 increasing to 740 during rain events | |
| Drainage from fly ash silo and blower building | 0.10 | 13 | |
| Stormwater runoff leachate from east portion of landfill to WBSP | 0.14 – 1.94 | 18 increasing to 250 during rain events | |
| Landfill leachate and stormwater runoff from west portion of landfill to LRCP | 0.796 – 6.18 | 106 increasing to 820 during rain events | |

As seen in the table, the number of trucks required per day per wastestream varied from 5 to 1,060. IKEC stated that the significant daily tanker truck traffic (over 1,600 trucks and over 3,300 during rain events) for off-site disposal would result in increased potential for safety and noise impacts and further increases to fugitive dust, greenhouse gas emissions and carbon footprint that may require a Prevention of Significant Deterioration (PSD) permit and modification under the Clean Air Act Permit Program if the calculated increases in emissions are over the PSD limits. IKEC additionally stated that the increased truck traffic would be challenging to plan for and reliably perform at Clifty Creek, regardless of whether suitable disposal locations can be identified. IKEC stated that in order to truck the wastestreams off-site they would also need temporary storage tanks and a POTW to accept the wastestreams. IKEC further stated that setting up contractual arrangements for a local POTW to accept the wastewater would prove to be difficult because they also have to meet NPDES discharge limits. Additionally, the temporary wet storage needed to accommodate off-site disposal would require

reconfiguration, design, installation, and associated environmental permitting that would extend the overall compliance schedule. IKEC stated that the NPDES outfall permit would need to be modified for the WBSP due to eliminating the flows to the surface impoundment if the wastestreams were to be trucked off-site. Therefore, IKEC determined that diverting the wastestreams off-site is not possible and they all need to continue to be managed on-site.

It is EPA's understanding of the Demonstration that IKEC evaluated the off-site disposal capacity options for all the wastestreams together rather than evaluating the potential for each individual wastestream to be sent off-site for disposal. This alone would be a basis for denial. As stated in the Part A final rule preamble, "[T]he final rule requires owners and operators to cease using the CCR surface impoundment as soon as feasible, to document the lack of both on and off-site capacity for each individual wastestream, and expressly requires that as capacity for an individual wastestream becomes available, owners or operators are required to use that capacity…" (85 FR 53541). See, 40 CFR 257.101(a)(1); 257.103(f)(1)(iv)(A)(1); (v). IKEC also provided no evidence that it attempted to find a POTW that could accept any of the individual wastestreams. Based on this, EPA is proposing to find that IKEC did not properly evaluate the possibility of trucking each individual wastestream off-site (such as the fly ash silo and boiler building flows) to a POTW.

There are a few wastestreams that based on volume alone could theoretically be diverted to an off-site POTW. With regard to the coal yard sump flows, EPA considers it is reasonable for a facility to divert a wastestream off-site using five trucks per day. However, during a rain event, 740 trucks per day would be required to divert the waste off-site; EPA considers this to be unreasonable. This would require approximately 32 trucks per hour for 24 hours per day. For the drainage from the fly ash silo and boiler building, EPA believes it is also reasonable that this

wastestream could in theory be diverted off-site, based on IKEC's estimate that it would take 13 trucks per day. EPA also considers that the FGD wastewater treatment system flows could also potentially be diverted off-site, based on the estimates that it would take roughly 2 trucks per hour. As part of analyzing the Demonstration, EPA evaluated facilities in a 50-mile radius of Clifty Creek to which the wastestreams could potentially be diverted. EPA found 30 facilities with an industrial wastewater permit. IKEC failed to demonstrate that none of these facilities could accept any individual wastestream. EPA was unable to independently confirm that no off-site location could accept these wastestreams because the Demonstration contained no information on the chemical compositions of the wastestreams and the processing capabilities of the facilities. Finally, IKEC provided no documentation substantiating the claim that every individual wastestream must continue to be managed in the impoundments to ensure compliance with its NPDES permit.

Based on the above, EPA is proposing to conclude that IKEC did not provide sufficient evidence that each of its different wastestreams needs to continue to be managed in the CCR surface impoundments. Nor did IKEC provide sufficient evidence that an off-site facility is not available to process all of its wastestreams. EPA cannot confirm IKEC’s conclusion that it is infeasible to manage its wastestreams off-site. Therefore, EPA is proposing to determine that IKEC has failed to demonstrate that there is no capacity available off-site for its wastestreams.

*B. Evaluation of IKEC’s Analysis of Adverse Impacts to Plant Operations*

In the Part A Rule, EPA stated that it is important for the facility to include an analysis of the adverse impacts to the operation of the power plant if the CCR surface impoundment could not be used after April 11, 2021. EPA stated that this is an important factor in determining whether the disposal capacity of the CCR surface impoundment in question is truly needed by

the facility. EPA required that a facility provide analysis of the adverse impacts that would occur to plant operations if the CCR surface impoundment in question were no longer available. 40 C.F.R. § 257.103(f)(1)(iv)(A)(*1*)(*ii*). EPA is proposing to find that there would be adverse impacts to the power plant if the CCR impoundment could not be used after April 11, 2021.

In the Demonstration, IKEC stated that it sells the entire generating capacity to its parent company Ohio Valley Electric Corporation (OVEC) at cost under the Federal Energy Regulatory Commission (FERC) approved OVEC-IKEC Power Agreement, and such capacity is exclusively committed and available to OVEC's owners or their affiliates (the Sponsoring Companies) under the terms of the FERC-approved Inter-Company Power Agreement (ICPA). Under the ICPA, the Sponsoring Companies are responsible for their share of OVEC's costs and expenses, including for debt and other long-term obligations. This agreement went into effect on August 11, 2011 and extends through June 30, 2040. OVEC is a member of the PJM Interconnection LLC (PJM) Regional Transmission Organization (RTO).

IKEC additionally stated that the CCR impoundments at Clifty Creek are the primary component of the existing wastewater treatment systems. According to the Demonstration, if the facility were to be forced to stop using the CCR surface impoundments, the Clifty Creek Power Station would be forced to cease operation. Therefore, the Sponsoring Companies would not receive their allocation of the electric capacity and energy from Clifty Creek to supply electricity to their retail public utility and electric power cooperative customers in Indiana and many neighboring states. IKEC further stated in the Demonstration that a cessation of operations at the Clifty Creek Power Station could cause increased and accelerated costs to OVEC and IKEC, including accelerated costs of demolition and decommissioning of the Clifty Creek Power Station. In addition, IKEC stated that an unplanned loss of such generating capacity might

negatively impact grid stability and power markets in the PJM and surrounding regions. IKEC then concluded that in order to continue to operate, generate electricity, and ultimately comply with the CCR rule, the ELGs, and the facility's NPDES permit conditions, the Clifty Creek Power Station must continue to use both the WBSP and the LRCP.

EPA proposes to find that if Clifty Creek were unable to continue using the CCR surface impoundments, and if no other on or off-site alternative capacity is available, there would be adverse impacts on the ability to run the associated boiler(s) such that a planned temporary outage would likely be required. As discussed in Unit IV, EPA disagrees with IKEC's claims regarding the broader impact of such an outage.

*C. Evaluation of IKEC's Site-Specific Analysis for the Alternative Capacity Selected*

To support the alternative deadline requested in the demonstration, the facility must submit a workplan that contains a detailed explanation and justification for the amount of time requested. 40 C.F.R. § 257.103(f)(1)(iv)(A). The written workplan narrative must describe each option that was considered for the new alternative capacity selected, the time frame under which each potential capacity could be implemented, and why the facility selected the option that it did. *Id*. 40 C.F.R. § 257.103(f)(1)(iv)(A)(*1*). The discussion must include an in-depth analysis of the site and any site-specific conditions that led to the decision to implement the selected alternative capacity. 40 C.F.R. § 257.103(f)(1)(iv)(A)(*1*)(*i*).

In this section, EPA explains why it is proposing to agree with IKEC's determination that certain alternate capacity options were not feasible and summarizes the option selected by IKEC.

*1. Review of Alternative Capacity Options*

IKEC reviewed the various alternative capacity options EPA used in developing the Part A Rule and conducted an analysis of their feasibility at Clifty Creek. *See Table 2-4 of the Demonstration*. In this table IKEC used the average development time EPA calculated for each of the alternative capacity options (see 85 FR 53534) and discussed whether each alternative would be feasible at the site. IKEC determined that two methods were not technically feasible at Clifty Creek: a new surface impoundment and a temporary treatment system. EPA is proposing to agree with this determination.

IKEC determined that a new surface impoundment was not possible due to real estate constraints. Clifty Creek Power Station is bound by the Ohio River to the south, Crooked Creek and a golf course to the east, Indiana Highway 56 to the north, and farmland and residential areas to the west. The site is also bisected by Clifty Creek and a limestone ridge known as the Devil's Backbone. Figure 3 in Appendix A of the Demonstration provided additional detail of the existing site conditions, including the property boundaries, floodplain limits, and topography, as well as the proposed settling tank, LVWTS, and landfill pond footprints. IKEC stated that it is also not possible to construct a new lined LVWTS with associated piping, chemical feed, and power supply that is large enough to receive non-CCR wastestreams and be outside the existing WBSP footprint. Additionally, by constructing the new, lined LVWTS within the existing footprint of the WBSP, IKEC asserted that the Clifty Creek Station would avoid impacts to waters of the United States and other natural resources in the Clifty Creek watershed as part of this project.

IKEC determined a temporary treatment system would also not be technically feasible because Clifty Creek could not build a system that could handle a flowrate of 9.6 MGD.

Additionally, Clifty Creek lacks the real estate space to build such a system, as explained previously.

IKEC determined that retrofitting the CCR impoundments was technically feasible but did not select this option. IKEC stated that retrofitting would extend the compliance schedule for the WBSP, although IKEC did not provide information on how much additional time would be needed in order to retrofit. According to the Demonstration, the additional time would be needed to completely remove all the CCR from the impoundment while continuing to use the area for disposal of both CCR and non-CCR wastestreams.

Ultimately IKEC determined that the best option is a multiple technology system composed of a concrete settling tank system and wastewater treatment system for its boiler slag and a series of non-CCR wastewater basins, along with a wastewater treatment system.

EPA is proposing to conclude that IKEC adequately evaluated their site-specific limitations. Based on the review of the maps provided by IKEC, it appears that the facility has insufficient space to build outside of the existing CCR surface impoundment footprints. EPA reviewed satellite images and the figures provided in the Demonstration and these show that there is very limited undeveloped real estate currently available on the facility's property.

*2. Detailed description of selected alternatives*

The detailed descriptions below have been excerpted from the Demonstration.

*(a) Alternative Disposal Capacities for the WBSP*

The new solid waste management units that are being constructed within the footprint of the WBSP are a concrete settling tank (also referred to as the Boiler Slag Handling System (BSHS)) and the LVWTS. Prior to the start of construction, IKEC will reroute the wastestreams

to the southern portion of the WBSP. Once wastestreams are rerouted, it will begin to dewater the northern areas of the WBSP where the new disposal capacities will be constructed.

The concrete settling tank will consist of three chambers that are sized to settle boiler slag material and mill rejects from the sluice water. Overflow from the chambers will collect in a recycle tank for recirculation back through the boiler slag sluicing system. The system will operate with sluice water being directed to one of the chambers, with the second chamber being dewatered and cleaned of boiler slag material, and the third chamber in waiting to receive sluice flows or upset flows if needed.

The concrete settling tank will be constructed over CCR material. The footprint of the tank will be preloaded prior to installing the concrete structure to consolidate the material and reduce the potential for differential settlement and the resulting cracking of the tank. The pre-loading (aka surcharge loading) is to consolidate the CCR material and subgrade soils in the area. The schedule is based on the contractor placing approximately 140,000 cubic yards (CY) of CCR material as part of the surcharge effort. After the surcharge material is placed, it will remain for about two months. The contractor will then excavate approximately 75,000 CY of the surcharge material as required to support the new concrete settling tank foundation structure. The contractor will then construct the concrete settling tank and recycle tank floor and walls along with supporting system foundations. The contractor will then backfill the settling tank after the walls are complete. Following this, the contractor will install the stack out slab area. Lastly the contractors will install the mechanical and electrical systems and equipment needed for the tank. During the construction of the tank, the contractor will also begin working on the construction of the LVWTS.

The tank is being designed to meet ACI 350-06 requirements for water-retaining concrete structures with normal environmental exposure (exposure to liquids with a pH greater than 5, or exposure to sulfate solutions 1,000 ppm or less).

The LVWTS is a series of basins that are designed to manage the non-CCR wastestreams. The north basin (i.e., primary basin) is currently sized to handle 4 million gallons of air heater wash with additional storage for a 50-year, 24-hour storm event and 2 feet of dead storage for solids accumulation. The south basin (i.e., secondary basin) is sized to provide 24 hours of retention time at the average daily flow rate. The LVWTS will discharge to the Ohio River through a new NPDES outfall. The two basins will operate in series except during air heater wash events where wash water will be directed to the primary basin and all other flows will be directed to the secondary basin. The LVWTS will also be constructed over CCR material in order to minimize the overall compliance schedule by limiting the amount of borrow material required to complete the project and to balance cut and fill within the existing basin. The contractor will regrade approximately 350,000 CY of CCR material in the construction area for the LVWTS. Furthermore, removing all the CCR material from the WBSP and constructing a new, lined LVWTS is not feasible while all the CCR and non-CCR wastestreams continue to be routed to the unit. The LVWTS will receive a composite liner system. The footprint of the new LVWTS will be graded and stabilized prior to installing the liner system. In addition to providing containment for the wastestreams discharged to the new LVWTS, the composite liner will also act as a cover system over underlying CCR materials that remain. The composite liner system will likely consist of a geosynthetic clay liner, 60 mil HDPE, geotextile, and 12 inches of suitable fill material. Additionally, 18 inches of riprap will be placed on the pond slopes and a

minimum of 6-inches of concrete will be placed over the bottom of the primary basin to facilitate cleanout.

*(b) Alternative Disposal Capacities for the LRCP*.

IKEC is planning on constructing new non-CCR wastewater basins to manage the landfill leachate and stormwater. The detailed engineering for the new capacities to be built in the LRCP will be conducted while the construction in the WBSP is happening. As stated in the Demonstration, the steps that will happen to construct new capacity are as follows:

- Grading in a new stormwater ditch to divert off-site runoff around the LRCP to a new stormwater outfall south of the LRCP (approximately 140,000 CY of cut/fill).
- Dredging material from the proposed footprint of the new lined leachate and stormwater treatment systems (approximately 190,000 CY).
- Installing a new berm (approximately 69,000 CY of cut/fill) for the west leachate collection pond upstream of the leachate and stormwater treatments systems. The collection pond (5.8 acres) will accept landfill flows during construction of the treatment systems and will receive a composite liner system consisting of a geosynthetic drainage layer, GCL, flexible membrane liner geotextile, and 12-inch protective cover layer. The collection pond will eventually overflow to the treatment pond.
- Installing a new berm (approximately 60,000 CY of cut/fill) within the footprint of the dredged area for the sediment pond. The sediment pond (6.6 acres) will also receive a composite liner system as described for the leachate collection pond. The sediment pond will overflow to a ditch, which will tie into Outfall 001. The ditch will be constructed in the LRCP closure area and capped with the LRCP cover system.

- Installing a new berm (approximately 28,000 CY of cut/fill) within the footprint of the dredged area for the leachate treatment pond. The treatment pond (2.1 acres) will overflow to the sediment pond and will also receive a composite liner system.
- Installing a new leachate collection pond (2.0 acres) on the east side of the landfill. The new perimeter berm will require approximately 18,000 CY of cut/fill and will also receive a composite liner system. The east leachate collection pond will have the capability to overflow via an internal outfall to stormwater ditches that will be incorporated into the WBSP closure design.
- Once the landfill ponds are in place, the remaining LRCP area may be closed. IKEC will continue to work so as to expedite the ultimate closure of the LRCP and will provide regular updates per the requirements of the CCR Rule.

*D. Evaluation of IKEC's Justification for Time Requested*

Facilities must justify the amount of time requested in the demonstration as the fastest technically feasible time to develop the selected alternative disposal capacity. 40 C.F.R. § 257.103(f)(1)(iv)(A)(*1*)(*iii*). The workplan must contain a visual timeline and narrative discussion to justify the time request. 40 C.F.R. § 257.103(f)(1)(iv)(A)(*3*). The visual timeline must clearly indicate how each phase and the steps within that phase interact with or are dependent on each other and the other phases. Additionally, any possible overlap of the steps and phases that can be completed concurrently must be included. This visual timeline must show the total time needed to obtain the alternative capacity and how long each phase and step is expected to take. The detailed narrative of the schedule must discuss all the necessary phases and steps in the workplan, in addition to the overall time frame that will be required to obtain capacity and cease receipt of waste. The discussion must include: 1) why the length of time for each phase and

step is needed, 2) why each phase and step must happen in the order it is occurring, 3) a discussion of the tasks that occur during the specific step, and 4) the tasks that occur during each of the steps within the phase. 40 C.F.R. § 257.103(f)(1)(iv)(A)(*3*). This overall discussion of the schedule assists EPA in understanding whether the time requested is warranted. Finally, facilities must include a narrative on the progress made towards the development of alternative capacity as of the time the demonstration was compiled. 40 C.F.R. § 257.103(f)(1)(iv)(A)(*4*). This section of the Demonstration is intended to show the progress and efforts the facility has undertaken to work towards ceasing placement of waste in the CCR surface impoundment and to determine whether the submitted schedule for obtaining alternative capacity was adequately justified at the time of submission.

IKEC requested an alternative deadline of December 5, 2022, for the WBSP and April 25, 2023, for the LRCP. IKEC stated the primary driver of the time requested is that it will need to continue to manage the wastestreams within the WBSP and the LRCP, while constructing the new systems within the footprints of these two CCR surface impoundments and operating in such a way that will allow Clifty Creek to meet the NPDES discharge limits. IKEC believes the requested alternative closure deadlines are the fastest "technically feasible" as that term is defined at 40 C.F.R § 257.53. EPA proposes to find that these deadlines are the fastest technically feasible for the plans presented.

IKEC began by working with Burns McDonnell (BMcD) on the initial engineering and design for the project to put out for subcontracts and to submit permit applications to the Indiana Department of Environmental Management (IDEM). IKEC stated it will need to secure both modifications to its existing NPDES permit and new permits prior to installing the concrete settling tanks, the LVWTS and the associated non-CCR wastestream piping reroutes, and

chemical feed systems, as well as securing permits for the WBSP closure. IKEC allowed six months for permitting to happen concurrently with other tasks. However, the permit modifications must be completed before the construction associated with the concrete settling tanks, WBSP closure, and the new LVWTS. Since submission of the Demonstration, EPA has spoken with IDEM about the permits for the closure plans. On May 17, 2021 IDEM approved the Phase I Closure Plan for the WBSP. IKEC filed for a petition for review of this approval on June 1, 2021. EPA is unaware if IDEM has received the Phase II Closure Plan for the WBSP. IDEM is actively working with IKEC to reach an agreement on the Phase I Closure Plan.

In the Demonstration, IKEC stated that it has made considerable progress in obtaining alternative capacity. IKEC, Stantec (an engineering consultant), and BMcD have gone through multiple iterations of the project and cost estimating of the best compliance solution for the plant. BMcD and IKEC have completed the project scope and cost estimate development efforts, have selected a preferred compliance solution for the plant, and are finalizing the contracting approach. IKEC has also completed water sampling efforts and preliminary design for the BSHS, laser scans have been completed in the boiler areas, and the BSHS geotechnical investigation. IKEC additionally stated that it did not have a closure trigger for the WBSP prior to the finalization of the Part A Rule. The LRCP did trigger closure due to the detection of a statistically significant level (SSL) of a constituent in Appendix IV to 40 C.F.R. part 257 above a groundwater protection standard. IKEC also stated in the Demonstration that it paused its CCR/ELG compliance strategy until the final rules were published to know the full extent of the impact of these rules.

EPA compared these statements in the narrative of the Demonstration to the visual timeline. The visual timeline shows that the Budgetary and Front-end Engineering Design

(FEED) Study lasted from May 26, 2020, until November 16, 2020. Most of this time was used to conduct the initial geotechnical investigation (80 days). However, the timeline does not show the multiple iterations of the planning, designing, and cost estimating efforts of the new capacity that was indicated in the narrative. Therefore, IKEC likely started planning earlier than shown on the visual timeline.

Based on all the above, EPA proposes to find that the construction time frames for the plans are reasonable. Given the chosen methods for obtaining alternative capacity for the wastestreams, the time frames requested appear to be the fastest "technically feasible." Several of the tasks are happening concurrently and little to no time is wasted by waiting for the next step to occur. Therefore, EPA is proposing to find that the requested deadlines of December 5, 2022, and April 25, 2023, for the WBSP and LRCP respectively, are the fastest technically feasible for the development plans presented.

*E. Evaluation of IKEC's Compliance Documentation*

The Part A Rule requires that a facility must be in compliance with all the requirements in 40 C.F.R. part 257, subpart D in order to be approved for an extension to the cease receipt of waste deadline. 40 C.F.R. § 257.103(f)(1)(iii). Various compliance documentation must be submitted with the demonstration for the entire facility, not just for the CCR surface impoundment in question. 40 C.F.R. § 257.103(f)(1)(iv)(B). Additionally, EPA evaluated the information presented in the narrative relating to the closure or retrofit of the impoundment and the development of the new alternative disposal capacities to ensure compliance with the CCR regulations.

The first group of compliance documents required to be included in the Demonstration are related to documentation of the facility's current compliance with the requirements governing

groundwater monitoring systems. The Agency required copies of the following documents: 1) map(s) of groundwater monitoring well locations (these maps should identify the CCR units as well); 2) well construction diagrams and drilling logs for all groundwater monitoring wells; 3) maps that characterize the direction of groundwater flow accounting for seasonal variation; 4) constituent concentrations, summarized in table form, at each groundwater monitoring well monitored during each sampling event; and 5) description of site hydrogeology including stratigraphic cross-sections. 40 C.F.R. §§ 257.103(f)(1)(iv)(B)(*2*)-(*4*).

The second group of documents EPA required was the facility's corrective action documentation, if applicable, and the structural stability assessments. A facility must submit the following documentation: the corrective measures assessment required at 40 C.F.R. § 257.96, progress reports on remedy selection and design; the report of final remedy selection required at 40 C.F.R. § 257.97(a); the most recent structural stability assessment required at 40 C.F.R. § 257.73(d), and the most recent safety factor assessment required at 40 C.F.R. § 257.73(e). 40 C.F.R. §§ 257.103(f)(1)(iv)(B)(*5*) through (*8*).

*1. Construction of New Units*

EPA has preliminarily identified several areas in which IKEC's proposal for constructing alternative capacity appear not to comply with the CCR regulations, including those applicable to the construction of new CCR surface impoundments. EPA is proposing to determine that IKEC has failed to demonstrate compliance with 40 C.F.R. § 257.103(f)(1)(viii).

*(a) Construction of new CCR surface impoundments.* The concrete settling tanks that IKEC plans to build appear to be a CCR surface impoundment, but IKEC has not demonstrated that the tanks meet the requirements for constructing a new CCR surface impoundment found at 40 C.F.R. § 257.72. 40 C.F.R. § 257.103(f)(1) provides that in order to be approved, a facility

must demonstrate compliance with all of the requirements of that subsection. One of those requirements is that a facility must maintain compliance with all of subpart D. 40 C.F.R. § 257.103(f)(1)(viii). Based on the plans for construction of the alternative disposal capacity that, among other things, fails to include a composite liner in contravention of 40 C.F.R. § 257.72, EPA is proposing that IKEC has failed to meet this requirement. EPA will not approve a request for an extension that would subsequently be automatically revoked by operation of the regulation (e.g., during the tuning period).

The CCR regulations at 40 C.F.R. § 257.53 define a CCR surface impoundment as "a man-made excavation, or diked area, which is designed to hold an accumulation of CCR and liquids, and the unit treats, stores, or disposes of CCR." Based on the information contained in the narrative, the proposed concrete settling tanks would appear to fall squarely within this definition.

In the narrative of the Demonstration, IKEC stated that

> "The contractor will dewater the north portion of the WBSP and place CCR material within the footprint of the concrete settling tank as required to support preparation of the subgrade. This area requires pre-loading (i.e. surcharge loading) to consolidate the CCR material and subgrade soils in the area. …The schedule duration is based on the contractor placing approximately 140,000 CY of CCR material as part of the surcharge loading effort. …The contractor will then excavate approximately 75,000 CY of the surcharge material to support the new concrete settling tank foundation construction. The contractor will construct the concrete settling tank and recycle tank floor and walls along with supporting system foundations. …The contractor will backfill the settling tank after the walls are complete."[3,4] See page 2-21 and 22 of the Demonstration.

[3] Although the Demonstration does not specify the CCR that will be used, EPA assumes that it will be CCR already in the WBSP. 40 C.F.R. § 257.101(a).
[4] IKEC stated this in the Demonstration submitted to EPA on November 30, 2020.

Based on this description and the accompanying diagrams, EPA interprets this to mean that the tank is partially below grade and surrounded by CCR material. In other words, this would be a man-made depression. In addition, the concrete settling tank will contain both boiler slag (a "CCR" under the definition in 40 C.F.R. § 257.53) and water. Finally, according to the Demonstration, the concrete settling tanks will be used to treat or store the boiler slag sluice water to remove the solids prior to flowing to the LVWTS. See page 2-15 of the Demonstration ("The concrete settling tanks will consist of three chambers, as shown in Figure 2 in Appendix A, which are sized to settle boiler slag material and mill rejects from the sluice water. Overflow from the chambers will collect in a recycle tank for recirculation back through the boiler slag sluicing system"). The conclusion that treatment is occurring is consistent with EPA's general view that concrete settling tanks are wastewater treatment systems. See, 85 FR 53526.

As a new CCR surface impoundment, the unit must comply with 40 C.F.R. § 257.72, which requires the installation of a composite liner as specified in the regulation. There is no discussion in the narrative of any plans to install such a liner beneath the concrete settling tanks. Further, the unit will need to comply with the groundwater monitoring requirements at 40 C.F.R. §§ 257.90-257.95. Of particular importance here would be the need to comply with the requirements of 40 C.F.R. § 257.91 relating to the placement and design of the groundwater monitoring system. Because the concrete basin would be constructed within a smaller footprint within the larger WBSP, reliance on the existing downgradient monitoring wells may not comply with the requirement that downgradient wells be placed at the current waste boundary. 40 C.F.R. § 257.91(a)(2). Based on the information provided, EPA cannot determine whether the design complies with these requirements. Moreover, it appears that under the current design, CCR from the closed WBSP would remain under the new basin; if this is accurate, it is not apparent how

the wells could be properly placed and constructed to avoid contamination from CCR consistent with 40 C.F.R. § 257.91(e).

*2. Closure of WBSP and LRCP*

The regulations provide two options for closing a CCR unit: closure by removal and closure with waste in place. 40 C.F.R. § 257.102(a). Both options establish specific performance standards. 40 C.F.R. § 257.102(c)-(d). IKEC intends to close both the WBSP and the LRCP by closing with waste in place. Based on the available information, EPA is proposing to determine that IKEC has not adequately demonstrated compliance with the closure regulations at 40 C.F.R. § 257.102(b) and (d), as required by 40 C.F.R. § 257.103(f)(1)(iii).

EPA evaluated the information provided in the Demonstration, as well as in the written closure plans and other documents posted on IKEC's publicly accessible CCR website for the WBSP and the LRCP. After review of this information, EPA is proposing to determine that IKEC has not documented how the closure performance standards will be achieved. There are no details in the closure plan posted on IKEC's CCR website or any other document provided as part of the Demonstration that will allow EPA to determine that the closure performance standards will be met, in light of site conditions, at the impoundments. Therefore, EPA is proposing that IKEC has not adequately demonstrated compliance with the closure regulations at 40 C.F.R. § 257.102(b) and (d), as required by 40 C.F.R. § 257.103(f)(1)(iii).

*(a) Final Cover System of the WBSP and LRCP.* IKEC did not provide enough detail in the Demonstration for EPA to determine whether the closure of these units will meet all the closure performance standards at 40 C.F.R. § 257.102(d). However, based on the information presented in the narrative, it appears that IKEC does not meet the closure performance standards in 40 C.F.R. § 257.102(d)(1)(ii) and (iii): "The owner or operator … must ensure that, at a

minimum, the CCR unit is closed in a manner that will: … (ii) Preclude the probability of future impoundment of water, sediment, or slurry; [and] (iii) Include measures that provide for major slope stability to prevent the sloughing or movement of the final cover system during the closure and post-closure care period." The designs submitted in the Demonstration for the concrete settling tank, the LVWTS, and the landfill runoff/leachate management ponds show that they are being built into the existing CCR in the closed units and will impound water on the final cover system of the closed WBSP and the LRCP. EPA is therefore proposing to find that the inclusion of the above plans for closure is inconsistent with the plain language of the requirement that to obtain approval, a facility must demonstrate that it will maintain compliance with all the requirements of subpart D. 40 C.F.R. § 257.103(f)(1)(viii).

Similarly, it is not clear from the narrative whether the final cover system for either the WBSP or the LRCP would meet the standards in 40 C.F.R. § 257.102(d)(3). First, IKEC failed to include any information on the final cover system for the entire WBSP. The only mention of a final cover system for the WBSP is in relation to the ditches used to convey flows from the LVWTS and portions of the closed pond to a new outfall structure. According to the narrative, the composite liner system of the new LVWTS is intended to also act as a cover system over the underlying CCR materials that remain. Based on the absence of any discussion, it appears that there will be no separate cover system between the concrete settling tanks and the CCR that will be left in place below it. EPA infers from this that IKEC intends for the concrete settling tanks to serve as the final cover system for this portion of the WBSP.

IKEC also failed to provide any information on the final cover system for the LRCP. According to the narrative, IKEC plans to install a composite liner system under the new landfill leachate ponds; although the narrative fails to specify this to be the case, EPA assumes the intent

is to have the composite liner system serve as the cover for this portion of the LRCP, similar to the plan for the WBSP.

The regulations require that any CCR that is left in place have a final cover system that meets the performance standard in 40 C.F.R. § 257.102(d)(3). The narrative should therefore have included a discussion of the final cover system for the entire WBSP and LRCP.

Second, as noted above, the liner system will not cover the entire surface area of the WBSP and potentially the LRCP. Under the current plan for the WBSP, the entire concrete settling tank system will not contain a composite liner. But the narrative contains no explanation of how this settling tank system, which will be sitting on top of compacted CCR within the footprint of the unit, meets the standards of 40 C.F.R. § 257.102(d)(3). The regulations provide that, "if a CCR unit is closed by leaving CCR in place, the owner or operator must install a final cover system that is designed to minimize infiltration and erosion, and at a minimum, meets the requirements of paragraph (d)(3)(i) of this section, or the requirements of the alternative final cover system specified in paragraph (d)(3)(ii) of this section." 40 C.F.R. § 257.102(d)(3).

Finally, even if IKEC is correct that the composite liner system it intends to install over certain portions of the WBSP and LRCP will meet the performance standards of an alternative cover system under 40 C.F.R. § 257.102(d)(3)(ii), it is not clear that would be sufficient to ensure compliance with the closure standards as a whole. As explained earlier, EPA considers the concrete settling tank to be a CCR surface impoundment that requires a composite liner system. In order to construct a new impoundment on top of a closed impoundment, a facility would need to comply with both the liner requirements in 40 C.F.R. § 257.72 and the closure requirements in 40 C.F.R. § 257.102(d). To ensure the performance standard in both regulations are met, IKEC would need to complete the final cover system first and then build the liner

system above the final cover in a manner that does not disturb or negatively impact the final cover. In addition, EPA is concerned that if the basins that will comprise the LVWTS were to leak, the waste waters would collect on the top of the final cover system, that is, will impound water on top of the cover system in contravention of 40 C.F.R. § 257.102(d)(1)(ii).

Assuming EPA has properly understood IKEC's plans, there are some potential options that might address the compliance concerns. For example, one option would be to construct the new systems fully above the final closure grade of the CCR surface impoundments and have double containment with leak detection systems to prevent damage and impoundment of liquid on the final cover systems. A second potential option would be to close the units by removal prior to constructing the new systems, a process also known as retrofitting.

*(b) Intersection between WBSP and Groundwater*

EPA reviewed the History of Construction (October 20216), the Dam and Dike Annual Inspection Report (2019), the CCR Location Restrictions, and the 2019 Annual Groundwater Monitoring and Corrective Action (GWMCA) Report from IKEC's publicly accessible CCR compliance website to determine whether the base of the WBSP intersects with groundwater. The following information indicates that, at a minimum, a portion of the CCR in the WBSP is saturated with groundwater.

According to the History of Construction the bottom elevation of the WBSP is at 433.0 feet above mean sea level (ft amsl).[5] The 2019 Dam and Dike Annual Inspection Report states that at present conditions the elevation of CCR is 433 ft amsl and the depth of CCR is 7.5 ft.[6] EPA then used these two numbers to calculate the lower extent of the base elevation of the

[5] Clifty Creek WBSP – History of Construction (October 2016) page 3
[6] 2019 – Clifty Creek Dam and Dike Inspection Report. Page 11

WBSP to be 425.5 ft amsl. Therefore, EPA has concluded that the lower extent of base elevation of the WBSP is between 425.5 and 433 ft amsl.

EPA then reviewed the WBSP piezometer data, and the groundwater elevations summarized in the Annual GWMCA Report to determine the maximum elevation of the groundwater and compare those elevations to the elevation of the base of the WBSP. The piezometer data from Figure 2 (West Boiler Slag Pond Piezometers Measurements) of the 2019 Dam and Dike Inspection Report[7],[8] show the static groundwater level elevations ranged between approximately 425 ft and 450 ft amsl. Furthermore, this 2019 report shows that maximum readings at each of the four piezometer locations exceeded the lower extent of the base elevation of the WBSP. Table A-3 of the 2019 Annual GWMCA Report[9] shows groundwater elevations range between 419.4 and 470.1 ft amsl for monitoring wells at the waste boundary of the WBSP. Additionally, the CCR Location Restrictions report [10] for the WBSP states that the top of the uppermost aquifer ranges from 397.3 to 453.8 ft amsl for monitoring wells at the waste boundary of the WBSP.

The groundwater elevation is consistently higher than 433 ft amsl, which is the highest reported point of the lower extent base elevation of the WBSP. As a consequence, EPA is proposing to conclude that at least a portion of the CCR within the WBSP is in contact with groundwater, and that there is a hydraulic connection between the uppermost aquifer and the CCR located with the WBSP.

*(c) Intersection between LRCP and Groundwater*

[7] Three piezometers are located at the crest of the constructed dike and one piezometer is located near the toe of the constructed dike of the WBSP.
[8] 2019 – Clifty Creek Dam and Dike Inspection Report. Page 21
[9] 2019 Clifty Creek CCR Annual Groundwater Monitoring and Corrective Action Report. Page 38
[10] CCR Location Restrictions – Clifty Creek West Boiler Slag Pond – October 17, 2018

EPA reviewed the History of Construction (October 2016), the Dam and Dike Annual Inspection Report (2019), the CCR Location Restrictions, and the 2019 Annual GWMCA Report from IKEC's publicly accessible CCR compliance website to determine whether the base of the LRCP intersects with groundwater. The following information indicates that, at a minimum, a portion of the CCR in the LRCP is saturated with groundwater.

According to the History of Construction the maximum pool elevation is 501.4 ft amsl and the maximum depth of CCR material is 60 feet.[11] Using these two numbers, EPA calculated that the elevation of the base of the LRCP unit could be located at 441.4 ft amsl. By contrast, the 2019 Dam and Dike Annual Inspection Report states that the elevation of CCR is 475 ft amsl and the depth of CCR is 45 feet[12]. EPA then used these two numbers to calculate the bottom elevation of the LRCP to be 430 ft amsl. Based on these reports it appears that the lower extent of the base elevation of the LRCP is between 430 and 440 ft amsl.

EPA then reviewed the LRCP piezometer data, and the groundwater elevations summarized in the Annual GWMCA Report to determine the maximum elevation of the groundwater and compare those elevations to the elevation of the base of the LRCP. The piezometer data from Figure 4 (Landfill Runoff Collection Pond Piezometers Measurements) of the 2019 Dam and Dike Annual Inspection Report[13] show the static groundwater level elevations to be consistently above 440 ft. Table A-2 of the 2019 Annual GWMCA Report shows groundwater elevations that are greater than 440 ft.[14] Additionally, the CCR Location Restrictions report for the LRCP states "Based on an August 2016 Monitoring Well Installation Report, groundwater elevations measured during these gauging events ranged from

[11] Clifty Creek LRCP – History of Construction (October 2016) page 5
[12] 2019 – Clifty Creek Dam and Dike Inspection Report. Page 13
[13] 2019 – Clifty Creek Dam and Dike Inspection Report. Page 19
[14] 2019 Clifty Creek CCR Annual Groundwater Monitoring and Corrective Action Report. Page 38

approximately 429 to 497 feet above mean sea level (ft amsl) and ranged from approximately 437 to 452 ft amsl at three monitoring wells located southwest…"[15].

These data show that the groundwater elevations are consistently higher than 440 ft, which is the highest estimated base elevation of the LRCP. Accordingly, it appears that at least a portion of the CCR within the LRCP is in contact with groundwater. EPA is therefore proposing to determine that there is a hydraulic connection between the uppermost aquifer and the CCR located within the LRCP.

*(d) Closure in Place Performance Standards.*

EPA evaluated the Demonstration and closure-related information on IKEC's CCR website to determine whether IKEC adequately explained how the closure performance standards will be achieved during closure of the WBSP and LRCP in light of the evidence that at least a portion of each CCR surface impoundment appears to be in contact with groundwater. EPA's preliminary determination is that the explanation is inadequate. EPA is therefore proposing to determine that IKEC has failed to meet the requirement to develop an adequate closure plan and to demonstrate that the performance standards will be achieved during closure of the WBSP and the LRCP. 40 C.F.R. §§ 257.102(b), (d)(1)-(2).

The CCR closure requirements applicable to impoundments closing with waste in place include general performance standards and specific technical standards that set forth individual engineering requirements related to the drainage and stabilization of the waste and to the final cover system. The general performance standards and the technical standards complement each other, and both must be met at every site. The general performance standards under 40 C.F.R. § 257.102(d)(1) require that the owner or operator of a CCR unit "ensure that, at a minimum, the

[15] CCR Location Restrictions – Clifty Creek Landfill Runoff Collection Pond – October 17, 2018. Page 11

CCR unit is closed in a manner that will: (i) Control, minimize or eliminate, to the maximum extent feasible, post-closure infiltration of liquids into the waste and releases of CCR, leachate, or contaminated run-off to the ground or surface waters or to the atmosphere; and (ii) Preclude the probability of future impoundment of water, sediment, or slurry." The specific technical standards related to the drainage of the waste in the unit require that "free liquids must be eliminated by removing liquid wastes or solidifying the remaining wastes and waste residues" prior to installing the final cover system. 40 C.F.R. § 257.102(d)(2)(i). Finally, the regulations require facilities to develop a written closure plan that describes the steps necessary to close the CCR unit, consistent with recognized and generally accepted good engineering practices. 40 C.F.R. § 257.102(b)(1). The plan must also include a written narrative describing how the unit will be closed in accordance with the section, or in other words, how the closure will meet the performance standards in the regulation. 40 C.F.R. § 257.102(b)(1)(i).

Neither the closure plans posted on IKEC's website nor the Demonstration describe the steps that will be taken to close the CCR units consistent with generally recognized good engineering practices, as required by 40 C.F.R. § 257.102(b). Nor does either document that the closure of the WBSP or the LRCP meets the requirements of 40 C.F.R. § 257.102. For example, the Demonstration provides insufficient details on how free liquids were to be eliminated from either the WBSP and the LRCP, and the October 2016 closure plan for both the WBSP and the LRCP only states that "Free liquid will be removed as part of the final closure of the CCR unit."[16,17] Such a discussion does not meet requirements for a closure plan as laid out in 40 C.F.R. § 257.102(b). And if EPA is correct that the base of the CCR surface impoundments

[16] "Closure Plan, CFR 257.102(b), Landfill Run-off Collection Pond, Clifty Creek Station, Madison, Indiana" October 2016. Page 3.
[17] "Closure Plan, CFR 257.102(b), West Boiler Slag Pond, Clifty Creek Station, Madison, Indiana" October 2016. Page 3.

intersects with groundwater, the closure plans would need to have discussed the engineering measures taken to ensure that the groundwater had been removed from the units prior to the start of installing the final cover system, as required by 40 C.F.R. § 257.102(d)(2)(i). This provision applies both to the freestanding liquid in the impoundment and to all separable porewater in the impoundment, whether the porewater was derived from sluiced water or groundwater that intersects the impoundment. The definition of free liquids in 40 C.F.R. § 257.53 encompasses all "liquids that readily separate from the solid portion of a waste under ambient temperature and pressure," regardless of whether the source of the liquids is from sluiced water or groundwater.

Similarly, neither the Demonstration nor the closure plans document how the WBSP and the LRCP will be closed in a manner that will "control, minimize or eliminate, to the maximum extent feasible, post-closure infiltration of liquids into the waste and releases of CCR, leachate, or contaminated run-off to the ground or surface waters or to the atmosphere." 40 C.F.R. § 257.102(d)(1). EPA views the word "infiltration" as a general term that refers to any kind of movement of liquids into a CCR unit. That would include, for example, any liquid passing into or through the CCR unit by filtering or permeating from any direction, including the top, sides, and bottom of the unit. This is consistent with the plain meaning of the term. For example, Merriam-Webster defines infiltration to mean "to pass into or through (a substance) by filtering or permeating" or "to cause (something, such as a liquid) to permeate something by penetrating its pores or interstices." Neither definition limits the source or direction by which the infiltration occurs. In situations where the groundwater intersects the CCR unit, water may infiltrate into the unit from the sides and/or bottom of the unit because the base of the unit is below the water table. In this scenario, the CCR will be in continuous contact with water. This contact between the waste and groundwater provides a potential for waste constituents to be dissolved and to migrate

out of (or away from) the closed units. In this case, the performance standard requires the facility to take measures, such as engineering controls that will "control, minimize, or eliminate, to the maximum extent feasible, post-closure infiltration of liquids into the waste" as well as "post-closure releases to the groundwater" from the sides and bottom of the unit. The Demonstration does not discuss how this performance standard will be achieved for the WBSP and the LRCP, and the October 2016 closure plans for the WBSP and the LRCP states "Post-closure infiltration of liquids into the waste will be controlled through the design of the site grading plan, construction of an engineered cap system, and establishment of stormwater management system in accordance with engineering practices".[18]

In summary, based on available information, EPA cannot determine whether the closure performance standards will be met. This is a violation of 40 C.F.R. § 257.102(b), which requires facilities to develop a written closure plan that documents the steps that will be taken to complete closure and to ensure the performance standards are met. It may also demonstrate that IKEC has failed to comply with the performance standards for closure with waste in place in 40 C.F.R. § 257.102(d). EPA is therefore proposing to determine that IKEC has failed to comply with 40 C.F.R. § 257.102(b), and that IKEC has not demonstrated compliance with the performance standards applicable to the closure of the WBSP and LRCP in 40 C.F.R. § 257.102(d)(1)-(2). EPA is also proposing to find that LKEC's plans for closure are inconsistent with the plain language of the requirement that to obtain approval, a facility must demonstrate that it will maintain compliance with all the requirements of subpart D. 40 C.F.R. § 257.103(f)(1)(viii).

[18] *Id*. Page 2.

*3. Groundwater Monitoring Compliance*

The regulations require facilities to submit several groundwater monitoring compliance documents as part of their demonstrations so that EPA can thoroughly evaluate the groundwater monitoring network and the site hydrogeology for every CCR unit at the facility. EPA evaluated the documentation IKEC provided in the Demonstration for Clifty Creek and reviewed the 2017 through 2019 Annual GWMCA Reports. EPA is proposing to determine that the groundwater monitoring systems are inadequate for multiple reasons and therefore do not adequately demonstrate compliance with the regulations. First, groundwater flow characterization is inadequate because there are an insufficient number of groundwater elevation data points surrounding the CCR units to demonstrate groundwater flow direction. Second, an entire downgradient boundary of the multiunit system is unmonitored. Third, the placement of upgradient wells at both the LRCP and the WBSP and the placement of downgradient wells at the LRCP do not comply with 40 C.F.R. § 257.91. Fourth, two background wells appear to be contaminated by CCR and do not accurately represent background groundwater quality for the multiunit system or the WBSP.

Additionally, EPA is proposing to determine that the Alternative Source Demonstrations (ASDs) in the 2019 Annual GWMCA Report fail to meet the requirements of 40 C.F.R. § 257.95(g)(3)(ii) and the Annual GWMCA Reports do not contain all information required by 40 C.F.R. § 257.90(e)(3), including statistical analyses, laboratory analytical reports, and the status of monitoring wells CF-15-01, CF-15-02 and CF-15-03. Finally, EPA is concerned that visual representation of information in the Demonstration is unclear and should be improved in future submittals.

*(a) Characterizing Groundwater Quality*

The CCR regulations require facilities to install a groundwater monitoring system that will "accurately represent the quality of background groundwater that has not been affected by leakage from a CCR unit…" and "accurately represent the quality of groundwater passing the waste boundary of the CCR unit." 40 C.F.R. §§ 257.91(a)(1) and (a)(2). In order to design a system that will accurately characterize background groundwater quality upgradient of a CCR unit, as well as at the downgradient waste unit boundary, it is necessary to characterize groundwater flow direction.

A groundwater divide functions as a geologic divide that separates groundwater. Groundwater flows on either side of the divide are independent (e.g., could flow in different directions). As a consequence, independent datasets are required from each side of the divide to accurately characterize groundwater flow conditions (e.g., flow direction and rate). The maps in the Demonstration and the Annual GWMCA Reports depict a groundwater divide separating the multiunit system on the north-northwest side of the property from the WBSP at the south-southeast side of the property.[19] There is insufficient groundwater elevation data to characterize groundwater flow direction at the multiunit system on the northwest side of the groundwater divide.

The Type I Landfill and LRCP occupy a combined 200-acre footprint and are monitored using a single, multiunit groundwater monitoring system. Groundwater flow conditions are not adequately characterized around the multiunit system boundary. To determine upgradient and downgradient directions and the overall groundwater flow, groundwater elevations must be known around the entire unit boundary. But flow direction cannot be determined around the entire multiunit system boundary because there are no monitoring points along the northwestern

[19] 2017 Annual GWMCA Report Figures B-1 through B-6

and southeastern boundaries of the system, which each span approximately a mile in length, where groundwater elevation data are reported.

*(i) Characterization of Groundwater Quality at the Downgradient Waste Unit Boundary*

EPA is proposing to determine that IKEC has failed to comply with the requirements of 40 C.F.R. § 257.91(a)(2) to install wells and conduct sampling that accurately represents the quality of groundwater passing the downgradient waste unit boundary and to monitor all potential contaminant pathways.

In 2016, the multiunit groundwater monitoring system included three background wells and six downgradient wells, three of which are located southwest of the multiunit system and three of which (CF-15-01, CF-15-02, and CF-15-03) are located northeast of it.[20] The 2017 Annual GWMCA Report shows a second groundwater divide at the multiunit system: groundwater flow is depicted to the northeast at the northeastern end of the multiunit system and in the opposite direction, to the southwest, at the southwestern end.[21] This means the northeast boundary of the multiunit system is a downgradient boundary. However, sampling at CF-15-01, CF-15-02, and CF-15-03 were not reported after November 2016. By failing to monitor the northeastern boundary of the multiunit system, IKEC has not met the requirements to characterize downgradient groundwater quality.

Additionally, information provided in the ASDs indicate that the multiunit system is inadequate to monitor multiple units. The ASDs include the statement that, “it would take 120 years for groundwater flowing beneath the Type I Landfill to reach the CCR monitoring wells.” In other words, downgradient monitoring wells CF-15-07, CF-15-08 and CF-15-09 do not characterize the quality of groundwater passing the waste unit boundary of the Type I Landfill.

[20] 2017 Annual GWMCA Report p.5
[21] Demonstration, Figure 6

Accordingly, EPA is proposing to determine that this multiunit system fails to accurately characterize groundwater quality at the downgradient boundary of the Type I Landfill as required by 40 C.F.R. § 257.91(a) because the wells are too far away.

*(ii) Characterization of background*

In general, background monitoring wells must be placed hydraulically upgradient of the CCR unit. Alternatively, a determination of background groundwater quality may utilize samples from wells that are not hydraulically upgradient of the CCR unit where, "(i) Hydrogeologic conditions do not allow the owner or operator of the CCR unit to determine what wells are hydraulically upgradient; or (ii) Sampling at other wells will provide an indication of background groundwater quality that is as representative or more representative than that provided by the upgradient wells…" 40 C.F.R. § 257.91(a)(1).

Section 4.2.1 of the Demonstration states, "Due to the geologic setting of the Type I Landfill and LRCP, there were no suitable upgradient groundwater monitoring locations and upgradient monitoring wells were not installed." The Demonstration and the 2018 and 2019 Annual GWMCA Reports contained no groundwater elevation measurements or groundwater flow direction information around the west, north, or northeast boundary of the multiunit system to support this claim.

Background wells CF-15-04, CF-15-05, and CF-15-06 are located southeast of the center of the multiunit system. They are identified as background wells in the Annual GWMCA Reports. In 2018, two wells were added to the multiunit groundwater monitoring system as background wells. These wells, WBSP-15-01 and WBSP-15-02, are located on the other side of the Devil's Backbone groundwater divide from the multiunit groundwater monitoring system. This means the groundwater monitored in them does not flow to the multiunit system and is in a

groundwater formation that is distinct from the groundwater at the multiunit system. No information is provided that explains how groundwater from these wells is representative of background groundwater quality for the multiunit system, in accordance with the performance standard in 40 C.F.R. § 257.91(a)(1).

The boring logs for background wells WBSP-15-02 and WBSP-15-03[22] show they were both installed through CCR and are contaminated by CCR. 40 C.F.R. § 257.91(a)(1) requires that groundwater monitoring wells be installed to yield groundwater samples that will accurately represent the quality of background groundwater that has not been affected by a CCR unit. The boring logs of these wells indicate that boiler slag is present throughout the well borings; the Demonstration indicates both systems utilize these wells as background wells. EPA is proposing to conclude that wells WBSP-15-02 and WBSP-15-03 are contaminated by CCR and therefore fail to meet the performance standard at 40 C.F.R. § 257.91(a)(1). For this reason, these wells cannot be used as background wells at either the multiunit system or the WBSP.

A further concern is the use of these contaminated wells to conduct the analyses required by 40 C.F.R. § 257.93(h). This provision requires the facility to determine whether there has been a statistically significant increase (SSI) above background levels for each constituent in Appendix III to 40 C.F.R. Part 257, by comparing downgradient concentrations to concentrations in the background wells. Detection of concentrations of the constituents at SSIs serves as evidence that a CCR unit is leaking. Use of monitoring data from contaminated wells in the statistical background dataset for the both the WBSP and the multiunit system may have inflated the statistical background limits used for these comparisons. As a consequence, concentrations detected in the downgradient wells may be compared to an inaccurately high background level,

[22] Demonstration, Appendix B, PDF pp. 76-80.

potentially masking detection of SSIs. EPA cannot determine at this time whether additional SSIs would have been detected if background groundwater quality had been properly characterized using wells that are not impacted by CCR, but it is possible that appropriate background characterization could have resulted in additional SSIs or SSLs above a groundwater protection standard, resulting in assessment monitoring requirements for the WBSP or additional corrective action requirements for the LRCP.

*(b) Alternative Source Demonstrations (ASDs)*

If it is determined that there was an SSI over background levels for one or more of the constituents in Appendix III to 40 CFR part 257 at a monitoring well at the downgradient waste boundary, there is an opportunity to complete an ASD to show that a source other than the unit was the cause of the SSI. 40 C.F.R. § 257.94(e)(2). If a successful ASD for an SSI is not completed within 90 days, an assessment monitoring program must be initiated. A successful ASD will demonstrate that a source other than the CCR unit is responsible for the SSI. In order to rebut the site-specific monitoring data and analysis that resulted in an SSI, an ASD requires conclusions that are supported by site-specific facts and analytical data. Merely speculative or theoretical bases for the conclusions are insufficient.

ASDs have been conducted at the multiunit system for SSIs of multiple constituents. EPA is proposing to determine that the ASDs do not provide sufficient evidence that an alternative source exists and is the cause of the SSIs and SSLs, and that the conclusions of the ASDs demonstrate failure of the multiunit system to comply with the performance standard in 40 C.F.R. § 257.91(d). Additionally, IKEC has inappropriately concluded in the ASDs that different CCR units monitored by the same multiunit groundwater monitoring system could be in different

monitoring programs – one in detection monitoring and the other in assessment monitoring – at the same time.

In 2018, SSIs above background levels were identified for pH and boron at the multiunit system. IKEC concluded in an ASD that the SSIs for pH resulted from a source other than the multiunit system (i.e., a faulty pH meter). EPA does not dispute this ASD. In response to the SSIs for boron, IKEC both prepared ASDs and initiated an assessment monitoring program at the multiunit system.[23] All of the ASDs contain the following lines of evidence: historic ash placed below the LRCP is a known source of boron and is hydraulically connected to CF-15-09; boron had been detected near well CF-15-09 seventeen years before operation of the LRCP began; and the long travel time between the Type I Landfill and the southwest border of the multiunit groundwater monitoring systems means detections in CF-15-09 could not have come from the Type I Landfill.

In order to rebut the site-specific monitoring data and analysis that resulted in an SSI, an ASD must be supported by site-specific facts and analytical data. No direct evidence is provided to support a hydraulic connection between CF-15-09 and old historic ash, or that such a connection is sufficiently strong that the LRCP did not contribute to the boron SSIs. Historic data about boron detections may be relevant; however, its relevance raises questions about the ability of CF-15-09 to characterize groundwater quality at the downgradient unit boundary of the LRCP. EPA believes the data presented is not sufficient to support an ASD for the SSIs for boron. However, IKEC initiated assessment monitoring in 2018 for the LRCP, so a determination that the ASDs are invalid would not require further action at the LRCP. Once sampling data are

[23] 2019 Annual GWMCA Report, p. 3

available from a compliant groundwater monitoring system at the Type I Landfill, IKEC will be able to determine whether corrective action is required at the Type I Landfill.

Appendix E to the 2019 Annual GWMCA Report states, "Based on a successful Alternate Source Demonstration (ASD) (AGES 2019), OVEC determined that the Type I Landfill was not the source of the Boron. Therefore, the Type I Landfill returned to Detection Monitoring in January 2019. As an alternate source for Boron at the LRCP could not be established, the LRCP remains in Assessment Monitoring."

Multiunit groundwater monitoring systems are subject to the same performance criteria in 40 C.F.R. §§ 257.91(a) through (c) as groundwater monitoring systems for individual CCR units. Under 40 C.F.R. § 257.91(d), a multiunit system is a single groundwater monitoring system that monitors a combination of more than one CCR unit. Where a facility has chosen to install a multiunit groundwater monitoring system, the detection of SSIs trigger assessment monitoring for all CCR units covered by that system. 40 C.F.R. §§ 257.91(d), 257. 94(e). Similarly, the detection of SSLs would trigger corrective action for all its CCR units covered by that system. 40 C.F.R. §§ 257.91(d), 257. 95(g).

*(c) Completeness of Reports and Clarity of Visual Representation of Data*

IKEC has not provided laboratory analytical reports, statistical analyses, or any detailed discussion of the statistical analyses (e.g., statistical method applied, confidence levels, normality test results) in the Annual GWMCA Reports. As a result, these reports fail to include all the monitoring data obtained under 40 C.F.R. §§ 257.90 through 257.98 as required by 40 CFR § 257.90(e)(3).

The purpose of the Annual GWMCA Report is to provide the most recently obtained groundwater monitoring and corrective action information as well as to allow review for

compliance with the requirements. The groundwater monitoring provisions in 40 CFR §§ 257.90 through 257.95 include numerous requirements (e.g., standards for lowest achievable quantitation limits, requirements to analyze unfiltered groundwater samples for total recoverable metals, and performance standards for various statistical methods). It is IKEC's responsibility to demonstrate that they are in compliance with the regulations, and the failure to provide this information in the Annual GWMCA Reports prevents EPA, states, or other stakeholders from evaluating compliance. For example, in Table 3-4 of the 2018 Annual GWMCA Report, it is noted that SSLs were detected in assessment monitoring but were not confirmed by resampling. The CCR regulations do not provide for resampling to confirm SSLs; however, certain statistical methods may inherently include resampling procedures. EPA cannot determine whether the approach used by IKEC complied with the requirements of 40 C.F.R. §§ 257.93 and 257.95 because the statistical analysis conducted is not included in the Annual GWMCA Reports.

Additionally, while the Demonstration has been determined to be complete, visual representation of data has been prepared in a way that makes it difficult to review and assess for compliance. For example, maps are cropped so closely that they are difficult to interpret – the multiunit groundwater monitoring system is not shown in its entirety on any map that also depicts its monitoring wells. Upgradient monitoring wells are not distinguished from downgradient wells and may not be depicted on the same map. Groundwater flow direction arrows are sometimes depicted with no information regarding the sampling data (i.e., date, groundwater elevation measurement locations and contours) that provided the basis for the arrows. Future submittals should include visual representation of data that provide relevant data with appropriate context to be easily reviewed.

As discussed previously, information about monitoring wells CF-15-01, CF-15-02, and CF-15-03 in the multiunit system were not included in the 2018 or 2019 Annual GWMCA Reports. EPA is unable to determine whether the missing information in the reports pertains to sampling data or problems encountered with these wells during sampling events, as would be required by 40 C.F.R. § 257.90(e)(3), or whether it pertains to their removal and decommissioning, as would be required by 40 C.F.R. § 257.90(e)(2). In any case, the 2018 and 2019 Annual GWMCA Reports are missing information required by 40 C.F.R. § 257.90(e) with respect to these wells.

*4. Corrective Action Compliance*

When groundwater assessment monitoring shows SSLs of any constituent and an alternative source is not identified within 90 days, a facility must undertake several corrective action steps, including conducting an Assessment of Corrective Measures (ACM) and selecting a remedy to address the release. 40 CFR §§ 257.96 through 98. Molybdenum was detected at SSLs during the October 2018[24] assessment monitoring event at the multiunit system. At well CF-15-08, detected levels of molybdenum exceeded the groundwater protection standard of 100 µg/L in October 2018 at 524 µg/L and December 2018 at 429 µg/L. IKEC is therefore subject to corrective action requirements for the LRCP. EPA has reviewed the ACM included as Appendix E5 to the Demonstration, which is a revised ACM dated November 2020.

EPA is proposing to determine that IKEC has failed to comply with several corrective action requirements. It appears that there are not enough wells installed to characterize the release from the LRCP, and IKEC appears to have failed to estimate the mass of the release and to install a monitoring well at the downgradient facility boundary as required by 40 C.F.R. §§

[24] 2018 Annual GWMCA Report, Table 3-4

257.95(g)(1)(i)-(iii). Further, EPA is proposing to determine that the ACM fails to meet all the requirements in 40 C.F.R. 257.96(c). Finally, EPA is proposing to determine that IKEC has failed to select a remedy "as soon as feasible." 40 C.F.R. § 257.97(a).

*(a) Characterization of the Release and Site Conditions*

Under 40 C.F.R. § 257.95(g)(1), IKEC is required to characterize the nature and extent of the release and any relevant site conditions that may ultimately affect the remedy selected. The characterization must be sufficient to support a complete and accurate assessment of the corrective measures necessary pursuant to 40 C.F.R. §§ 257.96 and 257.97 to effectively clean up all releases from the CCR unit. The requirement to characterize the release includes gathering data to quantify the levels at which constituents are present, quantifying the estimated mass of the release, and installing at least one well at the facility boundary in the direction of contaminant migration. 40 C.F.R. §§ 257.95(g)(1)(i)-(iv). All this work must be completed within 180 days of detecting an SSL of a constituent in Appendix IV to 40 C.F.R. part 257 (such as molybdenum), unless a 60-day extension is warranted. 40 C.F.R. § 257.96(a). Based on the information contained in the ACM, IKEC appears to have met none of these requirements.

The ACM does not indicate that IKEC has placed a well downgradient of the unit at the facility boundary to determine whether contaminants have migrated off-site, as required by 40 C.F.R. § 257.95(g)(1)(iii), and EPA is unable to determine if this requirement has been met based on the Demonstration. Additionally, in the ACM, the bullets that list the objectives of site characterization in Section 5.0 omit the requirement in 40 C.F.R. § 257.95(g)(1)(ii) to estimate the mass of the release, and this information is subsequently missing from the characterization. The ACM also does not discuss efforts to collect data on the levels of constituents in Appendix

IV to 40 C.F.R. part 257 that are present in the material released, as required by 40 C.F.R. § 257.95(g)(1)(ii).

In October 2018 and December 2018, four additional groundwater monitoring wells were installed downgradient of the LRCP to gather additional data about where contamination had migrated beyond the downgradient waste unit boundary. EPA believes that additional wells may be needed to laterally characterize the nature and extent of the release, particularly because monitoring well CF-19-14 does not seem to be downgradient from the release. Two wells were installed in the shallow aquifer, CF-19-14 and CF-19-15, and two wells were installed in the deeper aquifer, CF-19-08D and CF-19-15D.[25] These wells were first sampled for groundwater quality in March 2019. Also, in March 2019, groundwater elevation measurements were taken at a subset of wells at the facility, all located south of the LRCP. Because groundwater can flow in multiple directions around the unit, the limited number of groundwater elevation measurements resulted in a limited understanding of groundwater flow direction. EPA is proposing to determine that the groundwater flow characterization does not support the conclusion that CF-19-14 is downgradient of CF-19-08, where the molybdenum SSLs were detected. Therefore, EPA believes that CF-19-14 may not be an appropriate well to laterally characterize the nature and extent of the release, in accordance with 40 C.F.R. § 257.95(g)(1).

Section 7.1 of the ACM identified several gaps in data needed to assess corrective measures: 1) development of a model to assess natural attenuation after closure of the LRCP, 2) ongoing sampling to evaluate trends in molybdenum concentrations to support the modeling effort, 3) additional hydraulic testing to support the modeling effort, and 4) additional

[25] 2020 Annual GWMCA Report Figure 1.

groundwater elevation measurements to support the modeling effort. IKEC has not provided any explanation why these data are needed to select a remedy. However, the data gaps identified appear to focus only on data to conduct groundwater modeling to analyze potential impacts of LRCP closure (i.e., source control) on groundwater concentrations and attenuation of molybdenum (i.e., the facility's preferred remedy, monitored natural attenuation (MNA)). Specifically, these data would focus solely on contaminant concentrations and whether the contaminant plume is stable.

Plume stability is one aspect of the characterization of the nature and extent of the release; it may occur due to dilution and dispersion or it may be due to an attenuation mechanism such as immobilization. No additional geochemical data or data on the presence of chemical states of molybdenum within the aquifer matrix are included in the data gaps identified. These additional chemical data are needed to assess immobilization attenuation mechanisms. Without the chemical data, the primary reason to study plume stabilization would be to assess MNA through dilution and dispersion. As discussed below, MNA through dilution and dispersion does not meet the requirements in 40 C.F.R. § 257.97(b)(4) and is not appropriate for consideration as a primary corrective measure.

Table 6-2 in the ACM indicates that bench-scale treatability testing was needed to fully evaluate certain corrective measures for molybdenum. It is not explained why the bench scale treatability testing could not have been completed and the results included in the ACM. Additionally, no progress on this study is indicated in a Semi-Annual Remedy Selection Progress Report. EPA is proposing to determine that failure to conduct the bench-scale treatability test is a failure to comply with the requirement in 40 CFR § 257.95(g)(1) to characterize the release and

site conditions sufficiently "to support a complete and accurate assessment of the corrective measures that may affect the remedy ultimately selected."

*(b) Assessment of Corrective Measures*

An assessment of corrective measures that will "prevent further releases, remediate any releases, and restore affected areas to original conditions" is required. 40 C.F.R. § 257.96. Section 257.96(c) requires an analysis of the effectiveness of potential corrective measures at meeting all requirements and objectives of the remedy required by 40 C.F.R. § 257.97, and that the analysis address at least the criteria listed in 40 C.F.R. § 257.96(c)(1) through (c)(3).

The ACM contains an assessment of the effectiveness of control measures in the narrative in section 6.4. High-level conclusions of the assessment are presented for source control measures in Table 6-1 and for groundwater control measures in Table 6-2. EPA is proposing to determine the ACM does not satisfy the requirements of 40 C.F.R. § 257.96.

The ACM contains conclusions about certain control measures without providing discussion or data to support the conclusions. Some control measures are included that fail to meet other requirements of the CCR Regulations (e.g., closure performance standard in 40 C.F.R. § 257.102(d)(3)), making their inclusion inappropriate. Additionally, some assessments do not seem to accurately reflect the control measure's "effectiveness in meeting all of the requirements and objectives" in 40 CFR § 257.97(b) based on discussions elsewhere in the ACM. IKEC dismisses a number of potential remedies in Table 6-2, but the conclusions in the table are not supported with data or analysis in either the table or the narrative of the report. Finally, there are several internal inconsistencies in the ACM.

Conclusions without a supporting assessment or data do not constitute "an analysis of the effectiveness of potential control measures." Further, inaccurate assessments in an ACM can ultimately result in selection of a remedy that will not meet the requirements of 40 C.F.R. § 257.97(b).

*(i) Assessment of Source Control Corrective Measures*

Among other things, remedies must control the source of releases to reduce or eliminate, to the maximum extent feasible, further releases of Appendix IV constituents. 40 C.F.R. § 257.97(b)(3). Three alternatives to achieve this source control are considered in the ACM: dewatering of the pond, an engineered cover system, and excavation of ash. See Table 6-1. Alternative 1 – dewatering the pond – is a necessary step that must be taken to implement either alternative 2 or 3 and should have been included as an element of those alternatives. It does not independently meet the closure requirements for a surface impoundment closing with waste in place in 40 CFR § 257.102(d)(3). Because there is no way for IKEC to comply with the closure requirements in 40 C.F.R. § 257.102 and dewater the pond without then continuing to close the unit by installing an engineered cover system or excavating the ash from the pond, source control Alternative 1 should not have been included in the assessment as an independent source control measure.

*(ii) Assessment of Groundwater Control Measures*

To meet the requirement in 40 CFR § 257.96(c), the ACM identified the following corrective measures to address molybdenum in groundwater: 1) three in-situ treatment measures (groundwater migration barriers; permeable reactive barriers (PRBs); in-situ chemical stabilization); 2) ex-situ groundwater treatment (pump and treat) through a vertical well system,

horizontal well system, or a trenching system (treatment technologies considered to be used in conjunction with an ex-situ system were filtration, ion exchange, and adsorbents); and 3) MNA. The technologies are listed in Table 6-2 and are discussed in section 6.4 of the narrative. EPA has preliminarily identified significant noncompliance issues with the assessment of each of these measures.

*(A) In-Situ Treatment (migration barriers, PRBs, in-situ chemical stabilization)*

Section 6.4.1.1 of the ACM presents conclusions on the performance of multiple in-situ control measures in general terms, without any supporting explanation: "Although migration barriers, PRBs, and in-situ chemical stabilization are proven technologies, conditions at the LRCP would limit the performance of each of these approaches."[26] The potential effectiveness of migration barriers is described as viable, but it is noted that performance could be impacted by periodic flooding from the Ohio River. In Table 6-2 of the ACM, performance of the in-situ measures is assessed as "low" and for MNA it is assessed as "high." Section 6.4.1.1 states that periodic flooding could impact any in-situ technology considered but does not cite impacts of flooding on MNA or explain why the performance of MNA would not be impacted.

Reliability (one of the required factors in 40 CFR § 257.96(c)) is assessed in section 6.4.2.1. This section notes that PRBs are typically a reliable technology but concludes that reliability is only "medium," because maintaining adequate reagent concentrations at depth over time in PRBs is challenging. In essence, IKEC has downgraded the reliability of this technology based on factors that are not appropriately considered under this criterion.

[26] ACM, p. 17

The requirement is to assess the reliability inherent to the technology itself and to consider site-specific circumstances that affect that reliability. 40 C.F.R. § 257.96(c)(1). Any active treatment technology could perform poorly with inadequate maintenance or poor design. Any identified, credible reliability issues should be based on site-specific circumstances that present particular challenges that would hamper proper design and implementation and affect reliability (e.g., fluctuations in groundwater flow direction or lack of accessible confining layer into which to tie the PRBs). No such site-specific circumstances are discussed. This lack of explanation does not comply with 40 C.F.R. § 257.96(c), which specifies that the assessment of control measures "must include an *analysis* of the effectiveness of potential corrective measures" (emphasis added) according to the listed criteria. Mere unsupported conclusions cannot meet this standard.

The ease of implementation (another required criterion in 40 C.F.R. § 257.96(c)) of all three of the in-situ groundwater remedial technologies is assessed together as "low" in section 6.4.3.1. The assessment is that they would be difficult "due to the significant amount of time, effort and disturbance required at the LRCP…" While one site-specific issue (construction to the 40-foot depth to a confining layer) supports the low assessment for migration barriers and PRBs, no site-specific factors are discussed for in-situ chemical stabilization. The ACM does not explain why any particularly difficult construction would be required for in-situ chemical stabilization and provides no other explanation for its low assessment. The last sentence of this section notes that ease of implementation may "…require less time and effort…" for in-situ chemical stabilization than for a migration barrier or PRBs. However, this conflicts with the conclusions in Table 6-2, which assesses those three technologies equally with respect to ease of implementation (i.e., low).

EPA expects that an assessment of ease of implementation will include discussion of site-specific circumstances that may impact the ability to implement the remedy, rather than the time and effort required to do so, which seem to amount to consideration of cost (except for time discussed in the context of 40 C.F.R 40 § 257.96(c)(2)). As an example, the ability to implement a corrective measure could be affected by topographic features (e.g., a forest or a wetland) that would preclude or make difficult proper placement of injection wells needed for in-situ chemical stabilization. The ACM failed to provide this supporting analysis.

*(B) Ex-situ Treatment*

The assessment of ex-situ treatment alternatives to address groundwater contamination also lacks any supporting detail and analysis. Section 6.4.1.2 of the ACM assesses ex-situ groundwater treatment with extraction through vertical wells most favorably of any ex-situ control measure, and of any groundwater control measure. EPA's review identified some logical inconsistencies, although each criterion in 40 C.F.R. § 257.96(c) was included.

In section 6.4.1.2, the ACM states that iron content in the groundwater would affect the performance of either horizontal or vertical extraction wells, but no data on iron content of groundwater at the site is cited or otherwise provided.

The ACM also inaccurately concludes the expected performance of trench systems is "high." This is not supported by the data in the ACM, because trenches are most often used in a shallow unit. The aquifer at issue is between 15 to 40 feet below ground surface (bgs), which represents the practical limitation of the depth at which trenching systems can be used to extract groundwater. The assessment of the performance of trenching systems as high is also

inconsistent with section 6.4.1.2, which states that, "Although these depths are not ideal for a trench, they do not preclude the use of a trench at the LRCP."

In section 6.4.5.2, the potential for cross-media impacts from ex-situ groundwater corrective measures is assessed with just the following sentence: "Well and trench systems pose a moderate risk of cross-media impacts." No additional discussion or information is provided. In addition to lacking supporting data and analysis, the conclusion of the assessment (i.e., "medium," in Table 6-2) is inconsistent with the assessment's conclusion that the risk of cross-media impacts from MNA is low, because the cross-media impacts from MNA are expected to be significantly greater than those from ex-situ treatment of groundwater. As discussed later in this document, the only mechanism identified for MNA at this site is dispersion and dilution; in essence, this amounts to cross-media transfer of contamination from groundwater to surface water at this location.

*(C) Monitored Natural Attenuation (MNA)*

MNA refers to reliance on natural attenuation processes to achieve corrective action objectives within a time frame that is reasonable compared to that offered by other, more active methods. The "natural attenuation processes" at work in such a remediation approach generally include a variety of physical, chemical, or biological processes that, under favorable conditions, act without human intervention to reduce the mass, toxicity, mobility, volume, or concentration of contaminants in soil or groundwater.[27]

EPA is proposing to determine that MNA in the ACM fails to meet the requirements of 40 C.F.R. § 257.97. Specifically, MNA through dispersion and dilution as a primary mechanism

[27] "Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action and Underground Storage Tank Sites," April 1999, p. 3

at this site fails to be protective of human health and the environment and remove from the environment as much of the released contaminated material as feasible as required under 40 C.F.R. §§ 257.97(b)(1) and (4). Additionally, the assessment of MNA is skewed because IKEC considered different MNA mechanisms under each 40 C.F.R. § 257.96(c) criterion, only considering the highest performing mechanism, even in cases where there was no evidence the mechanism could occur at the site. Finally, the ACM contains no data to support the occurrence of immobilization of molybdenum at Clifty Creek.

*(1) MNA Guidance in other EPA cleanup programs*

EPA has extensive experience with MNA in environmental cleanup programs. Based on that experience, EPA considers the scientific principles of chemical and physical behavior of constituents in such guidance to be relevant to corrective action at CCR units. EPA believes that the 2015 "Use of Monitored Natural Attenuation for Inorganic Contaminants in Groundwater at Superfund Sites" ("2015 MNA Guidance") contains relevant information, because the regulated constituents are inorganic contaminants and the focus of the CCR corrective action program is on groundwater cleanup. While scientific aspects of the 2015 MNA Guidance (e.g., the behavior of inorganic contaminants in the environment or the ways in which specific MNA mechanisms work) are relevant, EPA acknowledges that policy aspects of the 2015 MNA Guidance may not be relevant. As an example, using a step-by-step tiered analysis approach to screen sites for MNA for the purposes of cost-effectiveness[28] would be inappropriate[29] for CCR corrective action given the prohibition against consideration of costs and the deadline in 40 CFR § 257.96(a) to complete the ACM.

[28] "Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action and Underground Storage Tank Sites," April 1999, pp. 4-5
[29] USWAG decision, section IV.B.4

Mass reduction through degradation generally is not a viable process for most inorganic contaminants in groundwater, except for radioactive decay. Constituents in Appendix IV to 40 C.F.R. part 257 are atoms, and atoms do not break down or degrade through any naturally occurring process unless they are radioactive. Thus, while MNA can reduce the concentration or mobility of inorganic contaminants in groundwater if immobilization occurs through adsorption or absorption to subsurface soils, it does not remove the contaminants from the environment. MNA, therefore, would not perform well with respect to the requirement in 40 C.F.R. § 257.97(b)(4), which requires that remedies "remove from the environment as much of the contaminated material that was released from the CCR unit as is feasible."

Inorganic contaminants persist in the subsurface because, except for radioactive decay, they are not degraded by the other natural attenuation processes.[30] Often, however, inorganic contaminants may exist in forms that have low mobility, toxicity, or bioavailability such that they pose a relatively low level of risk. Therefore, natural attenuation of inorganic contaminants is most applicable to sites where immobilization is demonstrated to be in effect and the process/mechanism is irreversible.[31] Immobilization that is not permanent would require ongoing monitoring in accordance with 40 C.F.R. § 257.98(a)(1) as long as immobilized constituents remain in the aquifer matrix.

Dilution and dispersion reduce concentrations through dispersal of contaminant mass rather than destruction or immobilization of contaminant mass.[32] Consequently, these

[30] This is in contrast to organic compounds, comprised of multiple elements, which may react or degrade to their constituent elements or form other, less harmful compounds.
[31] "Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action and Underground Storage Tank Sites," April 1999, p. 9
[32] "Use of Monitored Natural Attenuation for Inorganic Contaminants in Groundwater at Superfund Sites," August 2015, p. 14

mechanisms do not meet the requirement at 40 C.F.R. § 257.97(b)(4) to remove from the environment as much of the contaminated material as is feasible, and they may not meet the requirement at 40 C.F.R. § 257.97(b)(1) to be protective of human health and the environment. Note that this is also consistent with EPA's long-standing policy that dilution and dispersion are generally not appropriate as primary MNA mechanisms.[33]

In order to conduct the assessment required by 40 C.F.R. § 257.96(c), evaluation of MNA as a corrective measure requires analysis of site-specific data and characteristics that control and sustain naturally occurring attenuation. "It is necessary to know what specific mechanism (e.g., what type of sorption or reduction and oxidation reaction) is responsible for the attenuation of inorganics so that the stability of the mechanism can be evaluated. [...] Changes in a contaminant's concentration, pH, oxidation and reduction potential (ORP), and chemical speciation may reduce a contaminant's stability at a site and release it into the environment."[34] Determining the existence, and demonstrating the irreversibility, of MNA mechanisms is necessary to evaluate the performance, reliability, ease of implementation, and the time required to begin and complete the remedy. 40 C.F.R. §§ 257.96 (c)(1) and (c)(2). This information would ultimately be necessary to show that MNA meets the requirements of 40 C.F.R. § 257.97(b).

*(2) Assessment of MNA in the ACM*

The ACM has conflated the assessment of MNA through dilution and dispersion with MNA through immobilization. While MNA through dilution and dispersion performs well with respect to certain criteria (e.g., reliability), it fails to perform well according to other criteria

[33] "Use of Monitored Natural Attenuation for Inorganic Contaminants in Groundwater at Superfund Sites," August 2015, p. 14
[34] "Use of Monitored Natural Attenuation at Superfund, RCRA Corrective Action and Underground Storage Tank Sites," April 1999, p. 8

(e.g., cross-media impacts) or to remove sufficient contaminated material from the environment as required under 40 C.F.R. § 257.97(b)(4). Consequently, its consideration as a primary remedy is inappropriate. By contrast, MNA through immobilization may be assessed favorably with respect to some criteria (e.g., ease of implementation), but the ACM provides no evidence this mechanism is occurring at this site for molybdenum. In the absence of such data, MNA through immobilization should necessarily be assessed poorly with respect to other criteria (e.g., performance, reliability). By considering the mechanism that assesses higher under each criterion, the ACM has skewed the assessment of MNA more favorably than is allowed by the regulation and supported by site-specific data.

Section 6.4.1.1 of the ACM assesses the performance of MNA. The ACM identifies three MNA mechanisms that could affect molybdenum (adsorption, precipitation, and dispersion). The ACM presents limited data obtained from three wells during 2018 for pH and ORP, which impact the likelihood of inorganic metals to precipitate and absorb or adsorb onto subsurface soils. The data indicate that, during 2018, pH at these wells was relatively stable (6.5 to 7.5 standard units), which would only weakly support adsorption/precipitation, and that ORP varied (-50.4 mV to 335 mV), which indicates fluctuation in favorability of MNA. The pH data gathered at other wells and during other detection and assessment monitoring events are not included in the discussion. The ACM states that dispersion would likely be a major factor in MNA, given periodic flood events and groundwater flow reversals.

MNA is assessed in section 6.4.2.1 as reliable, and the reason provided is that MNA relies on natural processes. This is not a logical conclusion, because when natural conditions vary, natural processes vary. This is acknowledged in the same paragraph, when it is noted that geochemical changes in the groundwater may affect the performance of MNA. “Geochemical

changes in groundwater could significantly impact the effectiveness of MNA, which could lead to the need to implement other remedial measures at the LRCP." [35] Geochemical changes have been documented, specifically ORP varied (-50.4 mV to 335 mV) during 2018 at the three wells. Therefore, assessment of MNA through adsorption or precipitation mechanisms as reliable is inconsistent with the site-specific data.

MNA through dispersion or dilution can be reliable, but it should not have been assessed favorably with respect to performance at achieving requirements in 40 C.F.R. § 257.97(b). As noted above, the constituents in Appendix IV to part 257 (i.e., molybdenum) are atoms, and atoms do not degrade in nature. Dispersion or dilution serves to expand the area of contamination, albeit at lower concentrations. This spread of groundwater contamination is precisely the type of environmental impact the CCR corrective action program was developed to address. Because dilution and dispersion do not degrade the contaminants or change them to a less toxic form and do not remove them from the environment, MNA through dilution and dispersion fails to comply with 40 C.F.R. § 257.97(b)(4) and may not be protective of human health and the environment as required by 40 C.F.R. § 257.97(b)(1).

The ease of implementation of MNA is assessed in section 6.4.3.1 as the easiest of all the technologies, primarily because IKEC believes there is a sufficient number of monitoring wells at the LRCP. While MNA is a relatively easy remedy to implement, EPA is proposing to conclude that the existing well network is insufficient to monitor performance of an MNA remedy. If MNA were to be selected as part of a remedy, monitoring groundwater chemistry throughout the plume where attenuation is occurring would be required to comply with 40 C.F.R.

[35] ACM p. 19

§ 257.98(a)(1). See also the 2015 MNA guidance.[36] The four additional wells installed in 2018 do not provide a sufficient system to laterally and vertically determine the extent of the plume, nor to monitor within the plume the variations in geochemistry noted throughout the ACM that may impact the effectiveness of attenuation processes. Additional wells would be required, particularly wells that are screened deeper in the aquifer at CF-15-09 and placed laterally between CF-19-14 and CF-19-15.

Section 6.4.5.1 states that "MNA poses no significant cross-media impact potential," and Table 6-2 therefore assesses the cross-media impacts of MNA as low. These conclusions are contradicted by other statements in the ACM, including the statement in section 6.4.1.1 that dispersion would likely be a major factor in MNA. Dispersion at the site results in migration of contamination in groundwater to the Ohio River (surface water). Impacts from groundwater to surface water are cross-media impacts[37] and MNA through dispersion has the highest cross-media impact of all groundwater corrective measures considered.

40 C.F.R. § 257.96(c)(1) also requires assessment of how well control measures will control exposure to residual contamination. Instead, the ACM assesses potential impacts from exposure to residual contamination. See Table 6-2 and section 6.4.6.1, where MNA is assessed as low. This conclusion is unsupported by data or analysis.

EPA is proposing to conclude that IKEC has failed to demonstrate that the facility is in compliance with the requirements of 40 C.F.R. § 257.96 to complete an ACM for the units in the multiunit groundwater monitoring system. This finding is primarily based upon failure to assess

[36] 2015 MNA Guidance p.33
[37] "Municipal Solid Waste Landfill Criteria–Technical Manual: Chapter 5, Subpart E–Ground-Water Monitoring and Corrective Action," p. 296

corrective measures in compliance with the required criteria in 40 C.F.R. § 257.96(c) using site-specific data gathered in the characterization required by 40 C.F.R. § 257.95(g)(1).

*(iii) Failure to select a remedy as soon as feasible*

EPA is proposing to determine that IKEC has not selected a remedy as soon as feasible, as required by 40 C.F.R. § 257.97(a). First, although EPA disagrees that the data identified in section 7.1 of the ACM are necessary prerequisites to selection of a remedy, and that the data identified in table 6-2 of the ACM could not have been gathered prior to completion of the ACM, the more relevant point is that IKEC appears to have made no attempt to gather these data because the ACM was completed in September 2019. Second, because the ACM identified corrective measures that would meet the standards in 40 C.F.R. § 257.97(b), it was feasible to select a remedy as soon as December 2019. Finally, IKEC has stated an intention to delay selection of a remedy until after closure of the LRCP, which is inconsistent with 40 C.F.R. § 257.97(a).

The CCR regulations require that a facility must select a remedy that is based on the results of the ACM and that meets the standards in 40 C.F.R. § 257.97(b) "as soon as feasible." 40 C.F.R. § 257.97(a). The regulations applicable to corrective action establish a series of time frames that typically operate consecutively. Relevant here, once corrective action is triggered a facility has 180 days to complete the ACM.[38] At that point the obligation to select a remedy is triggered.[39] See, 40 C.F.R. §§ 257.95(g), 257.96(a), 257.97(a). In other words, once the 180 days to complete the ACM have passed, a facility must select a remedy "as soon as feasible." As

[38] 40 C.F.R. § 257.96(a) allows for a demonstration that additional time is needed, up to 60 days, to complete the ACM.
[39] The remedy selection process begins with a public meeting to discuss findings of the ACM and at least 30 days to address public input received, in accordance with 40 C.F.R. § 257.96(e).

previously explained, EPA interprets the term "feasible" to mean ''capable of being done or carried out'' (Merriam website (https://www.merriam-webster.com/dictionary/feasible)) and ''possible to do and likely to be successful'' (Cambridge English Dictionary https://dictionary.cambridge.org/us/dictionary/english/feasible)). 85 Fed Reg. 53542. As a practical matter, this means that a facility must be able to show progress toward selecting a remedy once the 180 days have passed or demonstrate why it was not feasible to have done so. Based on the documentation provided, EPA is proposing to determine that it was feasible to have selected a remedy that met the standards in 40 C.F.R. § 257.97(b) as early as December 2019 and that IKEC failed to comply with this requirement.

The Demonstration states that the ACM was completed in September 2019. A public meeting to discuss the contents of the ACM in accordance with 40 C.F.R § 257.96(e) was held in November 2019.[40] As of November 30, 2020, IKEC still had not selected a remedy.

Section 7.1 of the ACM identified several data gaps: 1) development of a model to assess natural attenuation after closure of the LRCP, 2) ongoing sampling to evaluate trends in molybdenum concentrations to support the modeling effort, 3) additional hydraulic testing to support the modeling effort, and 4) additional groundwater elevation measurements to support the modeling effort. IKEC has not provided any explanation why these data are needed to select a remedy. As discussed previously, the data gaps identified in section 7.1 seem to focus on data to further assess MNA after closure of the LRCP, specifically MNA through dispersion. MNA through dispersion does not comply with the requirements in 40 C.F.R. § 257.97(b)(4), and it may not comply with requirements in 40 C.F.R. § 257.97(b)(1). Because MNA through

[40] Demonstration p. 3-3

dispersion is not a compliant, primary remedy, EPA believes it was feasible to select a remedy prior to gathering the data identified in section 7.1 of the ACM.

An additional data gap was identified in Table 6-2 in the ACM, bench-scale treatability testing for molybdenum. The ACM indicates that study was needed to fully evaluate certain corrective measures for molybdenum. However, as stated previously, EPA believes this information was required in the ACM itself and should not have resulted in additional time to select a remedy.

Of greater significance, however, IKEC has presented no evidence of any progress toward collecting any of these data. This is confirmed by the June 2020 Semi-Annual Remedy Selection Progress Report, which reports no progress in collecting these data and instead discusses continued assessment monitoring and continued efforts to plan closure of the LRCP. These activities are not necessary prerequisites to selecting a remedy and do not otherwise demonstrate progress toward remedy selection. Neither the Demonstration nor the 2019 Annual GWMCA Report describes any additional work, such as work to characterize site conditions that could ultimately affect a remedy, that would indicate any progress toward selecting a remedy. According to the June 2020 Semi-Annual Remedy Selection Progress Report, no progress toward selection of a remedy was reported.

Although, as discussed in the previous section, much of the analysis in the ACM was inappropriately skewed in favor of MNA, the ACM nevertheless identified corrective measures that could meet all the standards in 40 C.F.R. § 257.97(b). These include, for example, excavation of ash and ex-situ treatment of groundwater. It is not apparent why it was not "feasible" for IKEC to select one or more of these measures as a remedy. Moreover, given the existence of these measures, 40 C.F.R. § 257.97(a) does not allow IKEC to delay selection of a

remedy under the guise of collecting additional data that are not needed to select a remedy. This is particularly true when the focus of additional data collection is to study a remedy (MNA through dilution and dispersion). As EPA has explained above, as a primary remedy at this site, MNA through dilution and dispersion does not meet certain requirements under 40 C.F.R. § 257.97(b).

Finally, statements in section 6.3 of the ACM appear to indicate that IKEC intends to delay remedy selection and implementation of corrective action until after closure of the LRCP,

> "...groundwater quality near the LRCP is anticipated to significantly improve over time as a result of planned closure activities. Therefore, a flexible and adaptive approach to groundwater remediation that begins with post-closure groundwater monitoring at the unit is planned. During the post-closure monitoring period, the positive impacts of closure and the effects of natural attenuation on groundwater quality will be fully evaluated. The need for more active remedial measures (as discussed below) will be determined after sufficient post-closure groundwater quality data has been collected and evaluated."

This intention is confirmed in the June 2020 Semi-Annual Remedy Selection Progress Report, which seems to inappropriately indicate progress toward closure is progress toward remedy selection:

> "The initial closure methods described above will reduce the potential for releases and migration of CCR constituents. Groundwater assessment monitoring as required by 40 C.F.R. § 257.96(b) will continue until a remedy is selected and implemented. The monitoring will be conducted to track changes in groundwater conditions as a result of these closures and operational changes. These data will also be considered in the selection and design of a remedy in accordance with 40 C.F.R. § 257.97."[41]

Closure of a CCR unit is not progress toward selection of a remedy. Delaying remedy selection until after closure of the LRCP does not comply the requirement to select a remedy "as soon as feasible." 40 C.F.R. § 257.97(a).

[41] Semi-Annual Selection of Remedy Progress Report, June 2020, Section 4.1.

**IV. Proposed Date to Cease Receipt of Waste**

EPA is proposing that IKEC must cease receipt of waste within 135 days of the date of the Agency's final decision (i.e., the date on which the decision is signed). EPA is further proposing that, under certain circumstances described below, EPA could authorize additional time for IKEC to continue to use the impoundments to the extent necessary to address demonstrated grid reliability issues, if any, provided that IKEC submits a planned outage request to PJM within 15 days of the date of EPA's final decision and IKEC provides the PJM determination disapproving the planned outage and the formal reliability assessment upon which it is based to EPA within 10 days of receiving them.

The regulations state that, when EPA denies an application for an extension, the final decision will include the facility's deadline to cease receipt of waste, but they do not provide direction on what the new deadline should be. 40 C.F.R. § 257.103(f)(3). EPA is proposing to set a new deadline for IKEC to cease receipt of waste that would be 135 days from the date of the final decision on IKEC's Demonstration. This would provide IKEC with the same amount of time that would have been available to the facility had EPA issued a denial immediately upon receipt of the Demonstration (i.e., from November 30, 2020, when EPA received the submission, to April 11, 2021, the regulatory deadline to cease receipt of waste). This amount of time thus puts the facility in the same place it would have been had EPA immediately acted on the Demonstration and therefore adequately accounts for any equitable reliance interest IKEC may have had after submitting its Demonstration. Moreover, as discussed further below, this date should provide IKEC with adequate time to coordinate with and obtain any necessary approvals from PJM for any outage of the coal-fired boiler that may be necessary. This proposed deadline

for IKEC to cease receipt of waste is the same as the proposed effective date of EPA's final decision (*see* Unit VI below).

Given that this proposed deadline (135 days from the date of EPA's final decision) is sooner than the deadline requested by IKEC, EPA understands that it is likely that the coal-fired boilers associated with the CCR units will temporarily need to stop producing waste (and therefore power) until either construction of the alternative disposal capacities is completed and commercially operational or some other arrangements are made to manage its CCR and/or non-CCR wastestreams. *See* discussion of adverse effects above in Unit III.B. In IKEC's Demonstration it noted that if the requested deadline were not granted, it "might" affect the reliability of the electricity grid. IKEC provided no information or evidence to support this statement. EPA does not have independent evidence showing that the temporary outage of the coal-fired boiler at this facility would affect the reliability of the grid.

This facility operates as part of the PJM system, which is the largest competitive market for electric power in the United States. PJM is an RTO that is part of the Eastern Interconnection grid. PJM currently has a significant amount of excess generating capacity, and consequently, a relatively large reserve margin. A reserve margin is a measure of the system's generating capability above the amount required to meet the system's peak load.[42] PJM's target reserve margin[43] for the region is now 14.7%.[44] PJM's actual reserve margin in 2018 was more than

[42] Reserve margin is defined as the difference between total dependable capacity and annual system peak load (net internal demand) divided by annual system peak load.
[43] The target reserve margin, also known as the Installed Reserve Margin, is "the percent of aggregate generating unit capability above the forecasted peak load that is required for adherence to meet a given adequacy level." Page 52, https://www.pjm.com/-/media/committees-groups/committees/mc/2020/20201119/20201119-cac-2-2020-installed-reserve-margin-study-results-report.ashx.
[44] North American Electric Reliability Corporation, Summer 2021 Reliability Assessment, page 44 (where "Reference" Reserve Margin Level refers to PJM's Installed Reserve Margin), https://www.nerc.com/pa/RAPA/ra/Reliability%20Assessments%20DL/NERC%20SRA%202021.pdf.

twice that, at 32.8%; in 2019 it was 29%. The anticipated reserve margin for 2021 is projected to be almost 34%.

The significant exceedance of PJM's existing target reserve margin, combined with scheduled new capacity coming online into the market, suggests that the temporary outage at Clifty Creek would not adversely affect resource adequacy requirements. EPA also has not seen any information to indicate that an extended planned outage at Clifty Creek would trigger local reliability violations.[45] Additionally, especially with the advance notice, there are a wide array of tools available to utilities, system operators, and State and Federal regulators to address situations where the outage of a generating unit might otherwise affect local electric reliability conditions.

Nonetheless, EPA is sensitive to the importance of maintaining enough electricity generating capacity to meet the region's energy needs, including meeting specific, localized issues. EPA understands that it is possible that in some instances temporarily taking generating units (including coal-fired units) offline could have an adverse, localized impact on electric reliability (e.g., voltage support, local resource adequacy), although IKEC has presented no evidence that such is the case with this facility.

If a generating asset were needed for local reliability requirements, the grid operator (e.g., PJM) might not approve a request for a planned outage. In such instances, the owners/operators of the generating unit could find themselves in the position of either operating in noncompliance with RCRA or halting operations and thereby potentially causing adverse reliability conditions.

[45] A local reliability violation might occur, for example, if transmission line constraints limit the amount of power that can get to an area from plants outside that area.

EPA is obligated to ensure compliance with RCRA to protect human health and the environment. Where there is a conflict between timely compliance and electric reliability, EPA intends to carefully exercise its authorities to ensure compliance with RCRA while taking into account any genuine, demonstrated risks to grid reliability identified through the process established by PJM that governs owner/operator requests for planned outages and/or deactivation.[46]

Accordingly, EPA is proposing to rely on established processes and authorities used by PJM to determine whether a planned outage necessary to meet the new deadline would cause a demonstrated grid reliability issue.

PJM is responsible for coordinating and approving requests for planned outages of generation and transmission facilities, as necessary, for the reliable operation of the PJM RTO.[47] In PJM, power plants are to submit a request at least 30 days in advance of a planned outage to allow PJM to evaluate whether the resource is needed to maintain grid reliability. PJM will grant the request unless it determines that the planned outage would adversely affect reliability.

If PJM approves a planned outage request, the outage may proceed and there would be no reason to expect that the outage would affect reliability. However, if PJM disapproves a planned outage, the procedure is for the PJM member to submit a new planned outage request for PJM to evaluate (with potential proposals to mitigate previously indicated reliability violations with the prior request). This process is repeated until the generating facility submits an acceptable request. The PJM member may also request PJM's assistance in scheduling a planned outage.

[46] *See, e.g.*, PJM Manual 10: Pre-Scheduling Operations, Revision: 39, Effective Date: November 19, 2020 (Section II), available at https://www.pjm.com/~/media/documents/manuals/m10.ashx.
[47] *See*, PJM Manual 10: Pre-Scheduling Operations, Revision: 39, Effective Date: November 19, 2020 (Section II), available at https://www.pjm.com/~/media/documents/manuals/m10.ashx.

PJM may rely on different bases in determining whether to deny a request for a planned outage. For example, a denial may be issued because of timing considerations taking into account previously approved planned outage requests, in which case the EPA would expect the plant owner to work with PJM to plan an outage schedule that can be approved by PJM and also satisfies the plant owner's RCRA obligations, without regard to any cost implications (e.g., in meeting any contractual obligations with third parties) that may result for the plant owner under a revised proposed outage schedule.

Alternatively, however, in some cases, PJM might deny a request should it determine that the planned outage could not occur without triggering operational reliability violations. In such cases, the system operator might determine that the generating unit would need to remain in operation until remedies are implemented. As set forth above, IKEC has presented no evidence that such is the case with this facility.

For Clifty Creek, EPA is proposing to rely on PJM's procedures for reviewing planned maintenance outage and similar requests. Accordingly, EPA is proposing that, if PJM approves IKEC's planned outage request, EPA would not grant any further extension of the deadline to cease receipt of waste (i.e., the deadline would be 135 days from the date of EPA's final decision). If, however, PJM disapproves IKEC's planned outage request based on a technical demonstration of operational reliability issues, EPA is proposing that, based on its review of that disapproval and its bases, EPA could grant a further extension (i.e., beyond 135 days from the date of EPA's final decision). EPA is further proposing that such a request could only be granted if it were supported by the results of the formal reliability assessment(s) conducted by PJM that established that the temporary outage of the boiler during the period needed to complete construction of alternative disposal capacity would have an adverse impact on reliability. In such

a case EPA is proposing that, without additional notice and comment, it could authorize continued use of the impoundments for either the amount of time provided in an alternative schedule proposed by PJM or the amount of time EPA determines is needed to complete construction of alternative disposal capacity based on its review of the Demonstration, whichever is shorter. EPA is further proposing that a disapproval from PJM without a finding of technical infeasibility for demonstrated reliability concerns would not support EPA's approval of an extension of the date to cease receipt of waste because any concern about outage schedules and their implications for plant economics could be resolved without an extension of RCRA compliance deadlines (e.g., through provision of replacement power and/or capacity; rearranging plant maintenance schedules; reconfiguration of equipment).

To obtain an extension, EPA is proposing that IKEC must submit a request for an outage to PJM within 15 days of the date of EPA's final decision. To avoid the need for serial requests and submissions to PJM, EPA is proposing to require IKEC to contact PJM and request assistance in scheduling the planned outage so that IKEC and PJM can determine the shortest period of time during an overall planned outage period in which the generating unit must be online to avoid a reliability violation. EPA expects that IKEC and PJM would plan the outage(s) and return-to-service periods – and any other needed accommodations – in ways that minimize the period of actual plant operations.

Finally, to obtain an extension from EPA, IKEC must submit a copy of the request to PJM and the PJM determination (including the formal reliability assessment) to EPA within 10 days of receiving the response from PJM. EPA would review the request and, without further notice and comment, issue a decision.

One hundred and thirty-five days should normally provide adequate time to obtain a decision from PJM. According to the PJM Manual 10 (at page 17), the normal process for obtaining approval for a planned outage is 30 days. One hundred and thirty-five days should also provide sufficient time to accommodate multiple requests, if necessary, to obtain approval. However, EPA solicits comment on whether 135 days from the date of the final decision provides sufficient time to accommodate the normal process of obtaining approval for a planned outage.

**V. Conclusion**

In conclusion, EPA is proposing to deny IKEC's request for an alternative cease receipt of waste date for the CCR surface impoundments, WBSP and LRCP, located at the Clifty Creek Power Station in Madison, Indiana. EPA is proposing that IKEC cease receipt of waste and initiate closure no than 135 days from the date of EPA's final decision.

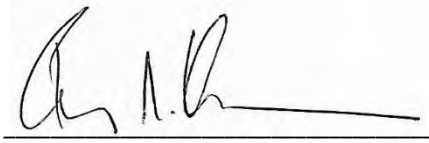
EPA is proposing to deny IKEC's extension request based on its proposed determination that Clifty Creek Power Station has failed to demonstrate that the facility is in compliance with all the requirements of 40 C.F.R. subpart D. 40 C.F.R. § 257.103(f)(1)(iii). Based on the information provided, it appears that the closure of both the WBSP and the LRCP does not meet the technical requirements of 40 C.F.R. § 257.102(d). Additionally, EPA has preliminarily identified concerns that the groundwater monitoring networks for both the WBSP and the LRCP fail to meet the standards found in 40 C.F.R. §§ 257.90 and 257.91, particularly the standards with respect to the placement of background wells. Lastly, EPA has identified several concerns with the ongoing corrective action activities at the LRCP.

Finally, due to the nature of the noncompliance EPA has preliminarily identified at Clifty Creek, EPA is proposing to issue a denial rather than a conditional approval. As discussed in greater detail in the proposed H.L. Spurlock Power Station decision, EPA is proposing that a conditional approval may be appropriate in situations where the actions necessary to bring the facility into compliance are straightforward and the facility could take the actions well before its requested deadline (or the alternative deadline that EPA has determined to be warranted). But in the case of Clifty Creek, the noncompliance EPA has identified involves more complicated technical issues, where the specific actions necessary to come into compliance cannot be easily identified and/or cannot be implemented quickly. As discussed previously EPA is proposing to determine that a significant component of the alternative disposal capacity IKEC intends to construct is out of compliance with several regulatory provisions, including the groundwater monitoring and closure requirements. Although EPA has preliminarily identified options that would be consistent with the regulations (see Section III. E. 1. b), EPA cannot determine precisely how those options might function with all of the other components of the alternative disposal system or even whether they are genuinely feasible in light of site conditions. Nor could EPA conclude that IKEC could come into compliance with all the groundwater monitoring and corrective action requirements before its requested deadline. Moreover, EPA continues to believe that where there is affirmative evidence of harm at the site, such as where a facility has delayed corrective action, EPA cannot grant additional time for the impoundment to operate without some evidence that these risks are mitigated.

## VI. Effective Date

EPA is proposing to establish an effective date for the final decision on IKEC's demonstration of 135 days after the date of the final decision (i.e., the date that the final decision

is signed). EPA is proposing to align the effective date with the new deadline that EPA is proposing to establish for IKEC to cease receipt of waste. EPA is doing so for all of the reasons discussed as the basis for proposing to establish the new cease receipt of waste discussed in Section IV of this document.



January 11, 2022
Date

Barry N. Breen
Acting Assistant Administrator