ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 257

[EPA–HQ–OLEM–2022–0903; FRL 11262–02–OLEM]

Alabama: Denial of State Coal Combustion Residuals Permit Program

AGENCY: Environmental Protection Agency (EPA).

ACTION: Availability of final decision.

SUMMARY: Pursuant to the Resource Conservation and Recovery Act (RCRA), the Environmental Protection Agency (EPA or the Agency) is denying the Alabama Department of Environmental Management's (ADEM) Application for approval of the Alabama coal combustion residuals (CCR) permit program (Application). After reviewing the State CCR permit program Application submitted by ADEM on December 29, 2021, additional relevant materials, including permits issued by ADEM, and comments submitted on the Proposed Denial, EPA has determined that Alabama's CCR permit program does not meet the standard for approval under RCRA.

DATES: This action is effective on July 8, 2024.

ADDRESSES: EPA has established a docket for this action under Docket ID No. EPA–HQ–OLEM–2022–0903. All documents in the docket are listed on the *https://www.regulations.gov* website. Although listed in the index, some information is not publicly available, *e.g.,* Confidential Business Information or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, is not placed on the internet and will be publicly available only in hard copy form.

FOR FURTHER INFORMATION CONTACT: Michelle Lloyd, Office of Resource Conservation and Recovery, Materials Recovery and Waste Management Division, U.S. Environmental Protection Agency, 1200 Pennsylvania Avenue NW, MC: 5304T, Washington, DC 20460; telephone number: (202) 566–0560; email address: *lloyd.michelle@epa.gov.* For more information on this notification please visit *https://www.epa.gov/coalash.*

SUPPLEMENTARY INFORMATION:

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List of Acronyms

ACM Assessment of Corrective Measures
ADEM Alabama Department of Environmental Management
CCP coal combustion product
CCR coal combustion residuals
CFR Code of Federal Regulations
EPA Environmental Protection Agency
EPRI Electric Power Research Institute
FR Federal Register
GWMP Groundwater Monitoring Plan
GWPS groundwater protection standard
MCL maximum contaminant level
MNA Monitored Natural Attenuation
MSL mean sea level
NOPV Notice of Potential Violation
NPDES National Pollutant Discharge Elimination System
RCRA Resource Conservation and Recovery Act
RTC Response to Comments
TSD Technical Support Document
TVA Tennessee Valley Authority
USGS U.S. Geological Survey
WBWT waste below the water table
WIIN Water Infrastructure Improvements for the Nation

I. General Information

A. Summary of Final Action

EPA is taking final action to deny approval of Alabama's CCR permit program because the Agency finds that the State's program does not require each CCR unit in the State to achieve compliance with either the minimum requirements in the Federal CCR regulations or with alternative requirements that EPA has determined to be at least as protective as the requirements of the Federal CCR regulations in 40 CFR part 257, subpart D, for the reasons set forth in the Proposed Denial and this final action. See, 42 U.S.C. 6945(d)(1)(B).

B. Background

CCR are generated from the combustion of coal, including solid fuels classified as anthracite, bituminous coal, subbituminous coal, and lignite, for the purpose of generating steam to power a generator to produce electricity or electricity and other thermal energy by electric utilities and independent power producers. CCR include fly ash, bottom ash, boiler slag, and flue gas desulfurization materials. CCR contain many contaminants that may pose a hazard to human health and the environment.

On April 17, 2015, EPA published a final rule, creating 40 CFR part 257, subpart D,[1] that established a comprehensive set of minimum Federal requirements for the disposal of CCR in landfills and surface impoundments (80 FR 21302, April 17, 2015) (''Federal CCR regulations''). Section 2301 of the 2016 Water Infrastructure Improvements for the Nation (WIIN) Act amended section 4005 of RCRA, creating a new subsection (d) that establishes a Federal CCR permit program that is similar to the permit programs under RCRA subtitle C and other environmental statutes. See, 42 U.S.C. 6945(d).

The Federal CCR regulations are self-implementing, which means that CCR landfills and surface impoundments must comply with the terms of the rule even prior to establishment of a Federal CCR permit program, and noncompliance with any requirement of the Federal CCR regulations can be directly enforced against the facility. Once a final CCR permit is issued, the terms of the permit apply in lieu of the terms of the Federal CCR regulations, and RCRA section 4005(d)(3) provides a permit shield against direct enforcement of the applicable Federal CCR regulations (meaning the permit's terms become the enforceable requirements for the permittee).

RCRA section 4005(d) also allows States to seek approval for a State CCR permit program that will operate in lieu of a Federal CCR permit program in the State. The statute provides that after a State submits an application to the Administrator for approval, EPA shall approve the State permit program within 180 days after the Administrator determines that the State program requires each CCR unit located in the State to achieve compliance with either the Federal requirements or other State requirements that EPA determines, after consultation with the State, are at least as protective as those included in the Federal CCR regulations. See, 42 U.S.C. 6945(d)(1)(B).

After EPA issued the Federal CCR regulations in 2015, Alabama established ADEM Administrative Code Chapter 335–13–15, for the portions of

[1] Unless otherwise specified, all references to parts 257 and 239 in this notification are to title 40 of the Code of Federal Regulations (CFR).

those regulations for which the State is seeking approval, and language in the State's regulations is almost identical to EPA regulations. Alabama's regulations became effective in 2018, and soon after the State began implementing its State CCR permit program and issuing permits. At the time of submission of ADEM's December 29, 2021, Application to EPA, ADEM had issued permits for the following CCR facilities: (1) the James H. Miller Electric Generating Plant (Permit #37–51; issued December 18, 2020); (2) Greene County Electric Generating Plant (Permit #32–03: issued December 18, 2020); (3) Gadsden Steam Plant (Permit #28–09, issued December 18, 2020); (4) James M. Barry Electric Generating Plant (Permit #49–35, issued July 1, 2021); (5) E.C. Gaston Electric Generating Plant (Permit #59–16, issued May 25, 2021); and (6) Charles R. Lowman Power Plant (Permit #65–06, issued August 30, 2021). After its Application was submitted to EPA, ADEM proceeded to issue permits for the William C. Gorgas Electric Generating Plant (Permit #64–12 issued February 28, 2022) and for the Tennessee Valley Authority (TVA) Plant Colbert (Permit #17–11, issued October 25, 2022).

Starting in January 2018, EPA began working with ADEM as the State developed its Application for the State's CCR permit program, and, over the course of several years, EPA had many interactions with ADEM about the development of a state CCR permit program. See Unit III.E. of the Proposed Denial and Technical Support Document (TSD) Volume II (summarizing and listing, respectively, the communications between EPA and ADEM concerning the State's CCR permit program and implementation of the CCR regulations). As with other States, EPA discussed with ADEM the process for EPA to review and approve the State's CCR permit program, including ADEM's plans for formally adopting CCR regulations, ADEM's anticipated timeline for submitting a CCR permit program Application to EPA, and ADEM's regulations for issuing permits. EPA also reviewed ADEM's submissions on multiple occasions and sent comments to ADEM on those documents. On December 29, 2021, ADEM submitted its State CCR permit program Application to EPA Region 4 requesting approval of the State's partial CCR permit program.[2]

ADEM established State CCR regulations that largely mirror the provisions in the Federal CCR regulations and contain additional State-specific provisions and clarifications.

At the same time EPA was in discussions with Alabama about its CCR permit program, the Agency was also reviewing facility requests for extensions of the date to cease sending all waste to unlined surface impoundments under Part A of the Federal CCR regulations.[3] To be eligible for an extension under Part A, a facility was required to demonstrate that the CCR unit was in compliance with the Federal CCR regulations in 40 CFR part 257, subpart D.[4] The Agency's review of the Part A compliance demonstrations showed EPA that there were systemic problems with facility compliance with the groundwater monitoring, corrective action, and closure requirements.[5]

On January 11, 2022, EPA emailed ADEM copies of the first set of proposed Part A decisions, including the proposed decision for the General James M. Gavin Power Plant in Cheshire, Ohio. Proposed Denial TSD Volume II (listing communications between EPA and ADEM). Three of the proposed decisions addressed facilities that had one or more unlined surface impoundments with CCR continually saturated by groundwater, and that intended to close the units without addressing that situation. In each case, EPA explained that the facility failed to demonstrate that the closure of these units complied with the plain language of the performance standards in § 257.102(d)(2)—which include addressing infiltration into and releases from the impoundment and eliminating free liquids—given that groundwater appeared to be continually saturating CCR in the unlined impoundments. The closure regulations limit contact between the waste (CCR) in the unit and groundwater after closure because it is critical to minimizing contaminants released into the environment and will help ensure communities near the sites have access to safe water for drinking and recreation.

After forwarding the proposed decisions, EPA met with ADEM to discuss how the Federal regulations apply to situations in which an unlined surface impoundment has been constructed in or below the water table.[6] EPA also held a meeting about this topic where all the Region 4 States were invited, including ADEM.

After issuing the proposed Part A decisions, EPA looked at several of Alabama's State CCR permits for unlined surface impoundments that had been issued by that time. Of particular concern to the Agency were facilities that were closing (or had already closed) unlined CCR surface impoundments while leaving waste (*i.e.,* CCR) below the water table (WBWT), and ADEM had issued permits for such surface impoundments at Greene County Electric Generating Plant, Gadsden Steam Plant, and William C. Gorgas Electric Generating Plant. After a brief review of these permits, EPA identified to ADEM aspects of Alabama's permit program that appeared to differ from the Federal program, and the Agency explained that the differences appear to make the State's program less protective than the Federal program. The Agency specifically identified problems with the State's permit requirements covering closure of unlined surface impoundments, groundwater monitoring networks, and corrective action. With respect to some of EPA's concerns about compliance with the closure standards in § 257.102(d)(2) of the Federal CCR regulations, ADEM indicated it intended to address any ongoing issues with the facility closure plans through corrective action requirements instead of requiring compliance with the applicable closure requirements with respect to free liquids and infiltration from the bottom and sides.[7] See Unit IV.C of the Proposed

[2] Alabama Department of Environmental Management. Application For CCR Permit Program Approval. December 2021. The State is seeking approval of a partial CCR permit program because certain provisions of the Federal Program were not included in the State regulations. See Part IV.B. of the Proposed Denial for details on the State's regulations.

[3] 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 FR 53516, August 28, 2020.

[4] Section 257.103(f) required a certification of current compliance and that the owner or operator will remain in compliance with the applicable requirements of subpart D of part 257 at all times and a narrative compliance strategy. See the Part A Final Rule at 85 FR 53542–53544.

[5] On January 11, 2022, EPA issued proposed determinations on demonstrations submitted by facilities for extensions to the cease receipt of waste deadline per 40 CFR 257.103(f)(1) and (2), which the Agency refers to as ''Part A determinations'' or ''Part A''. The CCR Part A Final Rule (85 FR 53516, August 28, 2020) grants facilities the option to submit a demonstration to EPA for an extension to the deadline for unlined CCR surface impoundments to stop receiving waste. Facilities had until November 30, 2020, to submit demonstrations to EPA for approval.

[6] See March 15, 2022, Docket Number: EPA–HQ–OLEM–2022–0903–0039. The email included a list of units in Alabama that EPA believed were closing with waste in place with waste below the water table.

[7] See July 6, 2022, email from S. Scott Story, ADEM, to Meredith Anderson, EPA Region 4, entitled ''Meeting Follow Up'' which included two attachments: Plant Gadsden Waste Below the Water Table (WBWT) and Closure Questions and Plant Green County Waste Below the Water Table

Continued

Denial and Proposed Denial TSD Volume I for a detailed discussion of the deficiencies in ADEM's CCR permits.[8]

In addition to the concerns raised with respect to Plants Greene County, Gorgas, and Gadsden, EPA also raised concerns with respect to the proposed CCR permit for TVA Plant Colbert. On June 29, 2022, ADEM posted public notice of the draft permit for Plant Colbert. The proposed permit for Plant Colbert raised many of the same issues already being discussed with respect to the previously issued permits for CCR surface impoundments at Plants Greene County, Gorgas, and Gadsden. On September 15, 2022, EPA submitted a letter to ADEM outlining specific concerns with respect to the proposed permit.[9] On October 25, 2022, ADEM issued a CCR permit to Plant Colbert without revising the proposed permit to address EPA's concerns. In a letter dated October 27, 2022, ADEM responded to EPA's letter regarding Plant Colbert, again presenting the flawed interpretation of the requirements applicable to closing unlined CCR surface impoundments, even though EPA had rejected the State's interpretations of the Federal CCR regulations in previous discussions with ADEM. To date, the State has not taken action to revise the permits issued to Plants Greene County, Gorgas, Gadsden, or Colbert to address the deficiencies EPA noted to ADEM.

On November 18, 2022, EPA issued a final decision to deny the Gavin Plant's request to continue disposing CCR into an unlined surface impoundment after the deadline to stop such disposal has passed. EPA finalized this denial because Gavin had failed to demonstrate compliance with the Federal CCR regulations. Among other areas of non-compliance, EPA specifically noted that Gavin had closed an unlined CCR impoundment with at least a portion of the CCR in continued contact with groundwater, and without taking any measures to address the groundwater continuing to migrate into and out of the impoundment. EPA further explained that Gavin's closure of its unlined impoundments under these conditions failed to comply with the plain language of the closure standards in 40 CFR 257.102(d)(1) and (2).

Less than a month later, on December 9, 2022, ADEM gave EPA notice of its intent to sue EPA under section 7002(a)(1)(A) and (1)(B) of RCRA, alleging EPA failed to perform a nondiscretionary duty to approve the State's CCR permit program.[10] Among other things, ADEM asserted that EPA failed to comply with the statutory requirement to approve the State's CCR permit program within 180 days of the State's submittal of the permit program Application on December 29, 2021. On February 1, 2023, EPA responded to ADEM's Notice of Intent to Sue. EPA informed the State that the 180-day timeframe does not start to run until EPA determines that a State's Application is administratively complete and that, in this case, the State's Application was not complete because EPA's concerns with ADEM's interpretation of the minimum requirements of the Federal CCR regulations had yet to be resolved, and that EPA was providing an opportunity for ADEM to submit further Application information.[11] EPA further stated that the Agency could evaluate the State's program on the current record if ADEM decided not to supplement its Application with an explanation of how the State's interpretation of its regulations is at least as protective as the Federal CCR regulations, and EPA expressed concern that the current record would not support a proposal to approve the State's partial CCR permit program. Id. On February 17, 2023, ADEM responded to EPA that it did not intend to supplement the record and that EPA should evaluate its program accordingly.[12]

EPA thereafter reviewed the Application based on the information submitted to that date and on other publicly available and relevant information. Specifically, because ADEM started issuing permits for unlined surface impoundments prior to EPA approval of the State's CCR permit program, the Agency determined that the statute required some consideration of Alabama CCR permits as part of the permit program review to ensure that the State's program requires each CCR unit in the State to achieve compliance with either of the standards in RCRA section 4005(d)(1)(B). EPA reviewed several of Alabama's State CCR permits for unlined surface impoundments and provided comments on issues EPA identified with those permits as part of the Agency's evaluation of the State's Application.

On August 14, 2023, EPA proposed to deny approval of Alabama's CCR permit program (Proposed Denial).

C. Statutory Authority

EPA is issuing this final action pursuant to sections 4005(d) and 7004(b)(1) of RCRA. 42 U.S.C. 6945(d) and 6974(b)(1).

Under RCRA section 4005(d)(1)(A), 42 U.S.C. 6945(d)(1)(A), States seeking approval of a permit program must submit to the Administrator, ''in such form as the Administrator may establish, evidence of a permit program or other system of prior approval and conditions under state law for regulation by the State of coal combustion residuals units that are located in the State.'' EPA shall approve a State permit program if the Administrator determines that the State program requires *each* CCR unit located in the State to achieve compliance with either: (1) The Federal CCR requirements at 40 CFR part 257, subpart D; or (2) Other State criteria that the Administrator, after consultation with the State, determines to be ''at least as protective as'' the Federal requirements. 42 U.S.C. 6945(d)(1)(B). The Administrator must make a final determination, after providing for public notice and an opportunity for public comment, within 180 days of determining that the State has submitted a complete application consistent with RCRA section 4005(d)(1)(A).[13] See 42 U.S.C. 6945(d)(1)(B). EPA may approve a State CCR permit program in whole or in part. Id. Once approved, the State permit program operates in lieu of the Federal requirements. 42 U.S.C. 6945(d)(1)(A). In a State with a partial permit program, only the State requirements that have been approved operate in lieu of the Federal requirements, and facilities remain

(WBWT) and Closure Questions. Docket Number: EPA–HQ–OLEM–2022–0903–0065.

[8] Technical Support Document Volume III. See Volume III: Technical Support Document for the Proposed Notice to Deny Alabama's Coal Combustion Residuals Permit Program, EPA Analysis of Alabama CCR Permitting and Technical Regulations. U.S. Environmental Protection Agency, Office of Land and Emergency Management (5304T), 1200 Pennsylvania Avenue NW, Washington, DC 20460. August 2023.

[9] Letter from Carolyn Hoskinson, Director, Office of Resource Conservation and Recovery, to Mr. Russell A. Kelly, Chief, Permits and Services Division, and Mr. Steve Cobb, Chief, Land Division. EPA Comments on Proposed Permit, Tennessee Valley Authority Colbert Fossil Plant, Alabama Department of Environmental Management, Permit No. 17–11. September 15, 2022.

[10] Letter from Alabama Attorney General Steve Marshall to EPA Administrator Michael Regan, Notice of Endangerment and Intent to Sue under Section 7002(a)(1)(A) and (1)(B) of the Resource Conservation and Recovery Act. December 9, 2022.

[11] Letter from Barry Breen, Acting Assistant Administrator, OLEM, to Lance LeFleur, Director, ADEM, February 1, 2023. Email sent February 2, 2023.

[12] Letter from Lance LeFleur, Director, ADEM, to Barry Breen, Acting Assistant Administrator, OLEM, February 17, 2023.

[13] See U.S. Environmental Protection Agency. Coal Combustion Residuals State Permit Program Guidance Document; Interim Final, August 2017, Office of Land and Emergency Management, Washington, DC 20460 (providing that the 180-day deadline does not start until EPA determines the application is complete).

responsible for compliance with all remaining non-State approved requirements in 40 CFR part 257, subpart D.

The Federal CCR regulations are self-implementing, which means that CCR landfills and surface impoundments must comply with the terms of the rule even prior to obtaining a Federal permit or permit issued by an approved State, and noncompliance with any requirement of the Federal CCR regulations can be directly enforced against the facility. 42 U.S.C. 6945(d)(3). Once a final CCR permit is issued by an approved State, the terms of the State permit apply in lieu of the terms of the Federal CCR regulations and/or requirements in an approved State program. Further, RCRA section 4005(d)(3) provides a permit shield against direct enforcement of the applicable Federal standards or State CCR regulations (meaning that the permits terms become the enforceable requirements for the permittee).

D. Summary of Proposed Denial of Alabama's CCR Permit Program Application

On August 14, 2023, EPA published notice of the proposal to deny approval of Alabama's December 29, 2021, CCR permit program application. 88 FR 55220 (August 14, 2023). In the document, the Agency conducted an analysis of the Alabama CCR permit program Application, including a thorough analysis of ADEM's statutory authorities for the CCR program, as well as the regulations at Alabama Administrative Code Chapter 335–13–15, Standards for the Disposal of Coal Combustion Residuals in Landfills and Impoundments. See Unit IV.B.2.b of the Proposed Denial and TSD Volume III. EPA also reviewed Alabama's permitting regulations and recent and ongoing permit decisions ADEM was making under its CCR regulations.

In the Proposed Denial, EPA provided its interpretation of the scope of the Agency's review of a State CCR permit program under section 4005(d)(1)(B) of RCRA. That section of the statute provides in part that the Administrator ''shall approve, in whole or in part, a permit program or other system of prior approval and conditions submitted under subparagraph (A) if the Administrator determines that the program or other system *requires each coal combustion residuals unit located in the State to achieve compliance with*'' either: (1) The Federal CCR requirements at 40 CFR part 257 (*i.e.,* the Federal CCR regulations); or (2) Other State criteria that the Administrator, after consultation with the State, determines to be at least as protective as the Federal requirements. 42 U.S.C. 6945(d)(1)(B) (emphasis added). See Proposed Denial Unit IV.A (providing the Agency's interpretation of EPA's authority to review State CCR permit program applications). The Agency explained that such determinations necessarily include consideration not only of a State's statute and regulations, but what the State requires ''each CCR unit'' to do, such as in permits or orders, when such information is available prior to approval of the State program. EPA further explained that because ADEM started issuing permits prior to program approval the State's permitting decisions under its existing CCR regulations are directly relevant to understanding whether the State's program requires ''each [CCR] unit located in the State to achieve compliance with'' either the Federal regulations or alternative State standards that are at least as protective as the Federal CCR regulations as required by RCRA section 4005(d)(1)(B).

In the Proposed Denial, EPA first evaluated the terms of Alabama's permit program that, as noted above, largely mirror the Federal CCR Regulations. The Agency proposed to find that the terms of ADEM's CCR permit program regulations demonstrate that the State program includes all regulatory provisions required for approval of a partial program.[14] Thus, EPA concluded that the terms of the permit program provide ADEM with the authority necessary to issue permits that will ensure each CCR unit in the State achieves the minimum required level of protection (*i.e.,* the State has the authority to issue permits that require compliance with standards that are at least as protective as those in the Federal CCR regulations).

While EPA concluded that the statutes and regulations of the Alabama CCR permit program provide the State with sufficient authority to require compliance with the Federal requirements or State requirements that are as protective as the Federal requirements, EPA also proposed to determine that permits issued by ADEM allow CCR units in the State to comply with alternative requirements that appeared to be less protective than the requirements in the Federal CCR regulations with respect to groundwater monitoring, corrective action, and closure. EPA reviewed four permits for CCR surface impoundments in Alabama and the Agency found that those permits allow CCR in closed units to remain saturated by groundwater, without requiring adequate (or any) engineering measures to control the groundwater flowing into and out of the closed unit. See Proposed Denial Unit IV.C and the TSD Volume I (providing a detailed discussion of EPA's concerns with the closure requirements for surface impoundments at Alabama CCR permits issued to Plants Colbert, Gadsden, Gorgas, and Greene County). EPA also noted that ADEM approved groundwater monitoring systems that contain an inadequate number of wells, and in incorrect locations, to detect groundwater contamination from the CCR units. Id. Finally, EPA proposed to find that ADEM issued multiple permits that effectively allow permittees to delay implementation of effective measures to remediate groundwater contamination both on- and off-site of the facility. Id.

In addition, EPA proposed that a review of the permit records demonstrates a consistent pattern of deficiencies in the permits that is allowed to occur because of the State's flawed interpretation of the Federal CCR regulation and by a lack of oversight and independent evaluation of facilities' proposed permit terms on the part of ADEM. For the permits terms reviewed in the proposal, EPA was unable to locate any evaluation or record of decision documenting that ADEM had critically evaluated the materials submitted as part of the permit applications, or otherwise documented its rationale for adopting those proposed permit terms prior to approving the application. Because of the technical insufficiency of the permit terms as issued and the absence of any supporting rationale for why those permit terms were protective of human health and the environment notwithstanding their deficiencies, EPA could not conclude that the Alabama CCR permits are as protective as the Federal CCR regulations; therefore, EPA could not conclude that Alabama's program satisfied the requirement for approval of a State CCR permit program.

EPA discussed these general issues with ADEM and the State declined to revise the permits to be consistent with the Federal CCR regulations. ADEM also declined to demonstrate that its

[14] EPA conducted a thorough review of the terms of Alabama's CCR permit program submittal, consistent with review of submittals by states that were granted approval, and that review can be found in the Proposed Denial TSD Volume III: Technical Support Document for the Proposed Notice to Deny Alabama's Coal Combustion Residuals Permit Program, EPA Analysis of Alabama CCR Permitting and Technical Regulations. U.S. Environmental Protection Agency, Office of Land and Emergency Management (5304T), 1200 Pennsylvania Avenue NW, Washington, DC 20460. August 2023.

alternative requirements satisfy the requirement in RCRA section 4005(d)(1)(B)(ii). Instead, the Alabama Attorney General, on behalf of ADEM, stated in the Notice of Intent to Sue [15] that EPA does not have the authority to consider implementation of the State program when determining whether a State program is sufficient, and that the Agency may only look to the ''four corners'' of the State program Application when evaluating the program for approval. In the Notice of Intent to Sue, the ''four corners'' of the application are described as being public participation, guidelines for compliance, guidelines for enforcement authority, and intervention in civil enforcement proceedings. The Notice of Intent further argued that EPA could only consider implementation after approval, and then withdraw the program if issues were identified.

In Unit IV.A of the preamble to the Proposed Denial, EPA rejected ADEM's position that RCRA section 4005(d) prohibits EPA from considering the permits issued under the State CCR permit program when determining whether to approve the program and that EPA may only address such issues after the State program is approved. In Unit IV.B of the preamble to the Proposed Denial, the Agency provided a short summary of EPA's conclusions after review of the express terms of the ADEM statutes and regulations. In Unit IV.C of the preamble to the Proposed Denial, EPA identified specific permits that the Agency believes are deficient and explained the bases for EPA's proposed determination that they are inconsistent with the standard for approval in RCRA section 4005(d)(1)(B).

II. Final Action on Alabama CCR Permit Program Application

After considering comments on the Proposed Denial, EPA is taking final action to deny approval of Alabama's CCR permit program for the reasons set forth below in summary and as explained in detail in the Proposed Denial.

A. Legal Authority To Evaluate State CCR Program Applications

EPA is affirming the interpretation of the statute set forth in detail in Unit IV.A of the Proposed Denial and summarized below.

The terms and structure of RCRA 4005(d) require EPA to consider the CCR permits a State has issued under the CCR program it has submitted for EPA approval. Section 4005(d)(1)(B) requires EPA to determine whether the State program ''requires each'' CCR unit in the State ''to achieve compliance'' with either the Federal regulations at 40 CFR part 257, subpart D (*i.e.,* the Federal CCR regulations), or with alternative requirements at least as protective as the Federal CCR regulations. This direction necessarily includes Agency consideration of the existing record of what the State actually requires individual CCR units to do pursuant to the program that the state has submitted to EPA for approval. The statute provides that once a permit is in effect, the permit terms replace the regulations as the criteria with which the permitted facility must comply. See, 42 U.S.C. 6945(d)(6). Consequently, once issued, the permits effectively are the program, or at the least, a substantial component of the CCR program for the individual facilities. The Agency does not believe it can reasonably ignore such information, as it falls squarely within the ordinary meaning of what the statute expressly directs EPA to consider. The overall context of RCRA section 4005(d) further supports consideration of State CCR permits when they have been issued prior to approval of a State program. Specifically, the Agency concludes that it would not be reasonable to ignore permits issued prior to approval of a State CCR program because, as noted above, a permit issued pursuant to a Federal or approved State permit program acts as a shield to direct enforcement of the Federal CCR regulations. Once a permit is issued by an approved State, facilities are shielded from enforcement of requirements that are addressed in the provisions of the applicable State permit, even if those permit provisions are not as protective as the Federal CCR regulations. The permit shield supports EPA's conclusion that it would be unreasonable to approve a State CCR permit program where the Agency knows that permits issued by the State are not at least as protective as the Federal CCR regulations because, once the State program is approved, neither EPA nor a member of the public can take action to require the facility to comply with the minimum level of protection contemplated under the statute. Further compounding the problem is the fact that once a State CCR program is approved, RCRA requires EPA to follow a statutorily established process to either convince the State to revise the defective permits or withdraw approval of the State CCR program. During the time it takes to address the program deficiencies, the CCR units with inadequate permits would be authorized to continue to operate in a manner that the EPA believes is not as protective as the Federal CCR regulations require. Further, it would arguably be arbitrary to ignore such information when it is available given that RCRA requires State CCR programs to ensure compliance with the Federal standards, yet EPA would effectively be allowing facilities with such deficient permits to manage unlined surface impoundments in a manner that poses potential ongoing hazards to human health and the environment. In sum, EPA approval of a State program that has issued deficient permits is also EPA approval of the deficient permits; therefore, it is reasonable for EPA to consider State issued CCR permits when determining whether a State has satisfied the statutory requirements for a State CCR permit program.

A State's permitting decisions under its CCR regulations are thus directly relevant to understanding the submitted program, and to determining which statutory standard EPA must use to evaluate the State program. If a State interprets its statute and regulations to impose the same requirements found in the Federal CCR regulations—or issues permits that impose the same requirements—the relevant standard is found in subsection (B)(i). 42 U.S.C. 6945(d)(1)(B)(ii). By contrast, where the State interprets its program to impose different requirements or issues permits that impose different requirements than the Federal CCR regulations, the relevant standard is found in (B)(ii), which requires EPA to determine whether the State's alternative standards are ''at least as protective as the Federal CCR regulations.'' 42 U.S.C. 6945(d)(1)(B)(ii).

Here, there is no question that the relevant standard is found in section 4005(d)(1)(B)(ii). The State expressly acknowledged that it interprets its closure regulations to impose different requirements than those found in the Federal CCR regulations, and the State has issued permits authorizing closures that are inconsistent with the plain language of the Federal CCR regulations. Although the state disputes EPA's reliance on the ordinary meaning of the provisions, it is well-settled that in the absence of a statutory or regulatory definition, reliance on the ordinary meaning is the default. *See, Williams* v. *Taylor,* 529 U.S. 420, 431 (2000)) (''It is fixed law that words of statutes or regulations must be given their 'ordinary, contemporary, common meaning.' ''). And with EPA's recent adoption of the ''default'' dictionary

[15] Letter from Alabama Attorney General Steve Marshall to EPA Administrator Michael Regan, Notice of Endangerment and Intent to Sue under Section 7002(a)(1)(A) and (1)(B) of the Resource Conservation and Recovery Act. December 9, 2022.

definitions of infiltration and liquid into the Federal CCR regulations, there is no plausible argument that Alabama's CCR program is the same as the Federal. See ''Hazardous and Solid Waste Management System: Disposal of Coal Combustion Residuals From Electric Utilities; Legacy CCR Surface Impoundments'', 89 FR 38950, 39100 (May 8, 2024) (*e.g.,* adding a definition of ''infiltration'' to the Federal CCR rule).

The same holds true with respect to the groundwater monitoring and corrective action portions of the program. Although ADEM has not similarly acknowledged different interpretations of the groundwater monitoring and corrective action regulations, it has repeatedly issued permits that authorize groundwater monitoring systems and corrective actions that do not comply with the Federal CCR regulations.

B. EPA Review of Alabama Regulations for CCR Units

EPA is taking final action on the proposed determination that the express terms of Alabama's CCR regulations provide the State with sufficient authority to issue permits that are at least as protective as those required under the Federal CCR regulations. See Proposed Denial Unit IV.B and TSD Volume III (providing EPA's analysis of the laws and regulations for Alabama's CCR permit program). In sum, Alabama established State CCR regulations that largely mirror the language in the Federal CCR regulations in almost all respects, and, to the extent the provisions are different, the differences in the State regulations are at least as protective as the Federal CCR regulations. For this reason, the Agency believes the record would support approval of Alabama's program if the State either modifies its permits to be consistent with the Federal requirements or demonstrates that its alternative interpretations of the Federal CCR regulations ensure that State permits are at least as protective as the Federal CCR regulations.

C. EPA Review of Alabama's Permits Issued Under the State CCR Regulations

After consideration of comments, the Agency is taking final action denying Alabama's Application because EPA finds that the State's CCR permit program does not require each CCR unit in the State to achieve compliance with either the minimum requirements in the Federal CCR regulations or with alternative State requirements that EPA has determined to be at least as protective as the Federal provisions. EPA is basing this decision on the evaluations of the Alabama CCR permits for Plants Colbert, Gadsden, Greene County, and Gorgas contained in the Proposed Denial, and on Alabama's stated interpretation of the closure requirements, as discussed in the Proposed Denial and confirmed in ADEM's comments on the Proposed Denial. See Proposed Denial Unit IV.C and TSD Volume III; see also State of Alabama Comments.[16]

EPA reviewed the permits for the identified plants in part because the permits were issued to unlined surface impoundments that have closed or are closing with waste that will remain in place below the water table. For the review, EPA considered the publicly available information about the plants and CCR units at issue. EPA did not attempt to catalog every potential inconsistency between the permits and the Federal CCR regulations, but only considered the permits' consistency with certain fundamental aspects of the closure, groundwater monitoring, and corrective action requirements. The review revealed a consistent pattern of ADEM issuing permits to CCR units that fail to require compliance with significant requirements in 40 CFR part 257 that are necessary to protect human health and the environment from exposure to contamination from leaking CCR units. EPA also identified a consistent pattern of ADEM approving documents submitted by the facilities, such as closure plans, groundwater monitoring plans, and assessments of corrective measures, even though the submissions lack critical information or are otherwise deficient. ADEM also did not require the permittees to take any action to cure deficiencies in the permits even where ADEM previously identified the deficiencies and requested further information prior to issuing the final permits. The permit information further showed that ADEM issued multiple permits allowing CCR in closed units to remain saturated by groundwater, without requiring engineering measures that will control the groundwater flowing into and out of the closed unit. EPA also found that ADEM approved groundwater monitoring systems that contain an inadequate number of wells, and in incorrect locations, to monitor all potential contaminant pathways and to detect groundwater contamination from the CCR units in the uppermost aquifer. Finally, EPA determined that ADEM issued multiple permits that allow the permittee to delay implementation of effective measures to remediate groundwater contamination both on- and off-site of the facility. Overall, EPA's review of the permit records and other readily available information demonstrates a consistent pattern of deficient permits and a lack of oversight and independent evaluation of facilities' permit terms and supporting documentation. In each instance described in the proposal, EPA was unable to locate any evaluation or record of decision documenting that ADEM critically evaluated the materials submitted as part of the permit application, or otherwise documented its rationale for adopting them.

EPA confirms the proposed conclusions from the Agency's technical review of the four Alabama CCR permits in this final action, and the comments responding to some of EPA's technical evaluations of the groundwater monitoring networks and corrective action provisions in the CCR permits do not address EPA's concerns as explained below. Further, the comments do not address all of the technical issues EPA identified nor do the comments address the broader concerns with the pattern of inadequate review and approval of permit applications by ADEM. Further, Alabama specifically acknowledges in its comments that it interprets the closure requirements for unlined surface impoundments differently than EPA. Alabama's interpretation allows unlined surface impoundments to close with CCR in contact with groundwater without requiring measures to prevent groundwater from flowing into and out of the closed unit indefinitely. EPA rejects the State's interpretation because it is inconsistent with the plain language of the Federal CCR regulations and because it is not as protective of human health and the environment. Thus, Alabama's interpretation of the closure standards for surface impoundments alone supports EPA's Final Denial because approval of the State program would mean approval of the CCR permits EPA reviewed in the Proposed Denial and a permit shield would allow those CCR units to continue to operate with inadequate permits until and unless EPA withdraws the approval, at which time the Federal CCR Regulation would again directly apply to the CCR surface impoundments. Under these circumstances, EPA cannot conclude that Alabama's CCR permit program requires each CCR unit in the State to achieve compliance with either the Federal CCR regulations or with alternative State requirements that EPA

[16] Available in the docket: EPA–HQ–OLEM–2022–0903–0261.

has determined are at least as protective as the Federal CCR Regulations as required under section 4005(d) of RCRA.

III. Summary of Comments and Responses

EPA received 4,775 comments on the Proposed Denial. EPA reviewed the comments, and the Agency provides summaries of and responses to the comments below and in the Response to Comments document in the docket.

A. Legal and Policy Comments on EPA's Review of Alabama's CCR Permit Program

1. Comments Opposing EPA's Process for Reviewing Alabama's CCR Permit Program in Accordance With RCRA Section 4005(d)

Comments: ADEM and other State and industry commenters assert that EPA has interpreted the State program approval provisions of RCRA incorrectly because the Agency considered CCR permits issued by ADEM to support the Proposed Denial of the Alabama CCR permit program and that the Agency failed to adequately communicate its concerns to ADEM.

ADEM appears to disagree with EPA that the State had extensive communication with the Agency about development of the State's Application for a CCR permit program, that EPA detailed its concerns, and that ADEM declined to alter its course by continuing to issue CCR permits. ADEM also takes issue with EPA's statement in the Proposed Denial that ADEM put the Agency in the position where it had no choice but to proceed to program denial. ADEM asserts that its Application was a multi-year development project in very close communication with EPA Region 4 and Headquarters such that and that Region 4 personnel clearly indicated the final application was complete and approvable upon its submittal on December 29, 2021, and subsequent transmittal to EPA HQ on January 3, 2022. ADEM states that at no time leading up to this point in the process, during which EPA was fully aware that ADEM was reviewing and processing CCR permit applications and issuing CCR permits to the Alabama facilities did EPA identify deficiencies or recommend changes to any ADEM CCR permits. ADEM asserts that receipt of the pre-publication copy of EPA's Proposed Denial of ADEM's CCR program on August 3, 2023, was the first written identification from EPA of any alleged deficiencies in ADEM's CCR program Application, or its proposed or issued permits. ADEM acknowledges that it did receive several questions from EPA regarding specific permits to which ADEM states that it provided EPA detailed verbal and written responses. ADEM maintains that thereafter EPA made no effort to seek any further clarifications and gave no indication that any of its questions remained unanswered. Many of the technical issues discussed during the meetings with EPA reappear in the Proposed Denial and are framed in a manner to make it appear ADEM's program is non-compliant.

ADEM also maintains that it had no opportunity to correct the perceived deficiencies. According to ADEM, EPA made no direct requests of ADEM to change or modify any of its CCR program components. ADEM states that EPA expressly admits that the ADEM regulations largely mirror the Federal rules. ADEM then argues that the sole focus of EPA's program approval review is the issued permits which ADEM argues are sufficient because language in the permits largely mirror language in the Federal CCR regulations. ADEM concludes that it is a ''mystery'' exactly what the State would modify to bring the program to the level of equivalency that EPA believes to be lacking. ADEM maintains that the 200-plus page **Federal Register** notification of EPA's proposed Program Denial provides no clarity to this issue.

ADEM and other commenters note that EPA makes numerous references to 42 U.S.C. 6945(d)(1)(B), and ADEM quoted the provision in whole to point out the timing for EPA to review and act on a State CCR permit program application. ADEM states that EPA Region 4 transmitted ADEM's final permit approval Application to EPA HQ on January 3, 2022 (see Docket No. EPA–HQ–OLEM–2022–0903–0029), seemingly for the purpose of final processing. ADEM contends that, in accordance with 42 U.S.C. 6945(d)(1)(B), EPA had until July 2, 2022, to approve ADEM's CCR permit program. Instead, ADEM asserts, that what ensued was a series of discussions and reviews long after the public comment periods and issuance of the CCR permits. ADEM argues that EPA has clearly missed the statutorily mandated deadline to approve ADEM's CCR program.

ADEM states that EPA focuses on the ''such other State criteria'' noted in 42 U.S.C. 6945(d)(1)(B)(ii) as the basis to allow it to review issued permits as part of the permit approval record. ADEM argues that approach is illogical on its face when considered in the context of EPA's specific actions in this matter. Hypothetically, ADEM states it could have chosen to delay issuance of the permits until after submittal of the final program approval Application, as other States with approved programs chose to do. At that hypothetical point, EPA would have only ADEM's CCR regulations upon which to review its equivalency to the Federal program. ADEM can only assume that EPA would have then proceeded directly to program approval in this hypothetical scenario. EPA, presumably, would not have waited for ADEM to start issuing permits to observe the way it interprets its rules prior to approval. ADEM states that EPA clearly did not do this during the permitting program approvals for Oklahoma, Georgia, and Texas. ADEM argues that if EPA is not requiring other States to issue permits to observe their interpretations of their CCR regulations, it is not logical or consistent for EPA to incorporate reviews of ADEM's previously issued permits into its program approval review. ADEM argues this punishes Alabama for its proactive approach to CCR facility management.

ADEM does not agree that 42 U.S.C. 6945(d)(1)(D) authorizes EPA to review permits as part of the program approval process simply because EPA is able to consider permits when the Agency periodically reviews approved State programs. ADEM maintains that EPA suggests that there is no fundamental difference between it reviewing permits after approval and concluding program withdrawal is warranted, versus reviewing permits issued prior to approval and determining permit program denial is warranted. ADEM argues that because EPA had ample opportunity to actively participate in the permit development process, to avail itself of the public review process, and to formally outline its permitting concerns to ADEM prior to permit issuance, the Agency cannot use permits as the basis for program denial because EPA stayed silent about permitting concerns until after the permits were issued (years after in most cases). ADEM maintains EPA's permitting concerns did not arise until after the permits were issued and that EPA did not act in good faith. ADEM further contends that even if permit reviews were an appropriate part of the program approval process, the State objects in the strongest possible terms to EPA's waiting until the program approval process to object. ADEM argues EPA's approach makes it difficult for ADEM to respond to EPA's concerns, and the State does not believe Congress intended for EPA to approach State permit program approval in this manner.

ADEM argues that EPA ultimately proposed to deny ADEM's Application,

not because ADEM's criteria were deficient or its authority to implement and enforce those criteria were somehow lacking, but rather because EPA believes that proposed and final permits in Alabama ''contain permit terms that are neither the same as, nor as protective as, the Federal CCR regulations.'' ADEM maintains that nothing in the WIIN Act or EPA's ''Coal Combustion Residuals State Permit Program Guidance Document: Interim Final'' (82 FR 38685, August 15, 2017) (''Guidance Document'') indicates that States can, should or must submit actual permits to EPA as part of the review and approval process.

ADEM notes that to date, EPA has reviewed and approved (at least in part) three other State CCR permit programs—83 FR 30356 (June 28, 2018) (Oklahoma); 85 FR 1269 (January 10, 2020) (Georgia); and 86 FR 33892 (June 28, 2021) (Texas). ADEM maintains that those States did not submit individual permits as part of their applications, nor did EPA ask to review particular permits, or any permit language that any of the States contemplated using after their programs were approved. By way of example, in Oklahoma, EPA noted in its approval decision that four of the five CCR units subject to the Federal CCR regulations in the State were already permitted and, once the State's program was approved, would be subject to the State's CCR regulations. Instead of reviewing any of those permits, EPA focused its review on the State's CCR regulations and the ''four corners'' of its legal and regulatory framework—public participation opportunities in the permitting process, guidelines for compliance, guidelines for enforcement authority, and intervention in civil enforcement proceedings. ADEM further states that until now, EPA performed the same scope and level of ''four corners'' review in each State that submitted an application. According to EPA, the WIIN Act ''directs EPA to determine that the state has sufficient authority to require compliance from all CCR units located within the state'' and ''[t]o make this determination EPA evaluates the State's authority to issue permits and impose conditions in those permits, as well as the State's authority for compliance monitoring and enforcement.'' In short, ADEM argues that EPA's review is—and has been—limited to a State's authority, not to any particular exercise of such authority for individual permit decisions.

ADEM states that EPA claims that it would be illogical not to review individual permit language because EPA would then be required to approve a State permit program that EPA believes it likely will eventually have to withdraw. ADEM argues that this ignores EPA's role in the State permitting process. ADEM argues that if EPA believes a State has drafted a CCR permit that deviates from applicable regulatory requirements, EPA would have ample opportunity to comment or object, consistent with its general oversight duties. Moreover, if a State finalizes a permit in a manner that does not resolve legitimate concerns (if any) raised by EPA, then EPA would have the same appeal options as any other interested party. Indeed, this opportunity for engagement and dispute resolution is precisely what EPA presented in its Guidance Document for ''adequate public participation.''

ADEM argues that the Federal CCR regulations do not specify permit terms, so there is no regulatory basis for EPA to compare any particular State permit language or find it to be more or less protective. ADEM further asserts that EPA has not proffered or finalized any particular permit terms that could serve as a basis for comparison and that, to the contrary, EPA's Federal permit program proposal would specifically allow a permit writer—in its discretion—to incorporate the regulatory criteria by ''re-writing them into the permit or incorporating them by reference.'' ADEM states that it followed this approach in its permits but that EPA still found fault with the permits. According to ADEM, even if EPA had the authority to assess permit language as part of its review of a State permit program, there is no rational basis for EPA to reject ADEM's permit language since it mirrors what EPA has proposed for its own permit writers.

Response: EPA does not agree that the Agency's approach to review of the Alabama's CCR permit program was in error. In addition, as the record shows EPA did inform ADEM of the Agency's concerns with the State's interpretation of the Federal CCR regulations before signing the Proposed Denial. See TSD Volume II.

As explained in detail in the Proposed Denial, section 4005(d)(1) of RCRA directs EPA to determine whether a State program ''requires each'' CCR unit in the State ''to achieve compliance'' with either the Federal standards or an alternative State program at least as protective as the Federal CCR regulations. See Proposed Denial, 88 FR 55220, 55226 (August 14, 2023). Given that statutory directive, EPA concludes that it cannot ignore permits that are available prior to approval of a State CCR program, as in this case. Id. ADEM implies that EPA is acting in an unreasonable manner by taking this approach, but in fact it would be both unreasonable and arbitrary and capricious to ignore issued permits since they are the best evidence of whether a State program does in fact require each CCR unit in the State to achieve compliance with the Federal CCR regulations or State standards that are at least as protective as the Federal regulations.[17]

EPA also disagrees that the Agency is treating ADEM unfairly. ADEM complains that EPA is evaluating the permits the State issued and asserts that EPA is treating Alabama differently than it treated Oklahoma, Georgia, and Texas when it approved those partial State CCR permit programs. ADEM is incorrect that EPA is treating Alabama differently. As ADEM noted, two of the three approved States had not issued permits at the time the Agency approved their programs, but the Agency did evaluate Oklahoma's final permits as part of its program review and EPA did not identify the persistent problems the Agency found when it reviewed Alabama's. In addition, for Alabama as for other States, EPA has incorporated a consideration of both final *and* proposed State permits as part of the Agency's review of initial State CCR permit program Applications submitted for a completeness determination because of concerns with implementation of certain provisions of the Federal CCR regulations with respect to unlined CCR surface impoundments. In fact, EPA recently sent a letter to the State of Wyoming indicating the Agency could not determine the State's application to be complete due to a number of issues including a lack of clarity in how the State interprets the Federal CCR closure performance standard.[18] The Agency is also in active discussions with other States seeking program approval (Arizona, Arkansas, Florida, Illinois, Indiana, Kansas, Louisiana, Maryland, Michigan, Mississippi, Missouri, Montana, Nebraska, North Carolina,

[17] EPA detailed the interactions between EPA and Alabama in the Proposed Denial. See Proposed Denial Section III.E. With respect to ADEM's suggestion that EPA surprised the State with its approach to review of the State's CCR program and the Agency's application of the Federal CCR regulations, there is information in the record to the contrary. Specifically, EPA issued a letter to ADEM concerning the Colbert facility on September 15, 2022, and the Agency sent to ADEM a list of unlined CCR surface impoundments in the State with waste below the water table on March 15, 2022.

[18] Letter from Barry Breen, Principal Deputy Assistant Administrator for the Office of Land and Emergency Management to Mr. Todd Parfitt, Director of the Wyoming Department of Environmental Quality. December 5, 2023.

North Dakota, Ohio, Pennsylvania, Tennessee, Utah, Virginia, West Virginia, Wisconsin, Wyoming) and the Agency intends to consider permits as part of its review of those programs.

ADEM also argues that the statute requires EPA to delay review of the State's CCR permits until after EPA has approved the State program. But the statute does not mandate that approach and, further, that approach would be unreasonable under the current situation. As noted in the Proposed Denial, it would be illogical for EPA to approve a State CCR permit program that the Agency believes it likely will eventually have to withdraw. Moreover, withdrawing a State CCR permit program takes significant time, during which CCR units in the State could continue to operate—or new permits could be issued—under conditions that are less protective than those required in the Federal CCR regulations. Third, if EPA were to approve Alabama's program now (*i.e.,* after the deficient CCR permits were issued), the Alabama CCR program, including the facility-specific permits, would apply in lieu of the Federal CCR regulations pursuant to RCRA section 4005(d)(3)(B), preventing enforcement of the Federal standards in the interim. None of these outcomes is consistent with RCRA's requirement that each CCR unit be subject to a minimum level of protection established in the Federal CCR regulations.

EPA also does not agree that the time it takes a State to satisfy the requirements to develop a complete permit application changes the Agency's responsibility under the statute to consider the available and relevant information when making its decision. ADEM incorrectly suggests that EPA is bound by supposedly clear representations from EPA Region 4 staff indicating to ADEM that the State's application was complete upon submission of the Application on December 29, 2021, and because the regulatory provisions of the State's program mirror the regulatory provisions in the Federal CCR Regulations.[19] As an initial matter, Region 4 has not been delegated the authority to make a completeness determination and EPA does not provide oral completeness determinations. In fact, the Agency did not determine at that time or since that the State's application was complete because the Agency was, prior to that time, aware of facilities in Alabama and other States that were planning to close or had closed unlined surface impoundments while leaving waste below the water table. EPA discussed with ADEM the Agency's concerns with the State's implementation of the closure standards for unlined surface impoundments, but the State maintained that its interpretation of the Federal CCR regulations was correct and EPA's interpretation of the Federal closure standards for unlined surface impoundments was wrong. In addition, as EPA reviewed ADEM's permits in more detail, EPA identified additional concerns with the State's implementation of the program with respect to groundwater monitoring systems and corrective action. As a result of these discussions, on July 7, 2022, EPA informed ADEM via telephone that the Agency was putting on hold its completeness review of ADEM's CCR permit program Application until Alabama demonstrated to EPA that the State was implementing its program consistent with the Federal CCR regulations. Further, EPA explained to ADEM that it was exploring options for actions to take at the Federal level with respect to both the CCR permit program Application, and at specific facilities where there are outstanding concerns.

EPA disagrees that the Agency is prohibited from considering the State's proposed CCR permits as part of the CCR permit program review process and disagrees that EPA is limited to reviewing State permits during the State's permit issuance process. As an initial matter, it is not possible for EPA to review even a fraction of the State permits that are issued to CCR units. But even if it were possible for EPA to review all State CCR permits, RCRA does not require it. ADEM cites nothing to support its contention that EPA can only review a State permit during its issuance. Instead, RCRA provides EPA with authority to review CCR permits issued by a State at any time. As discussed above, the mandate to determine whether the State program ''requires each'' CCR unit in the State ''to achieve compliance'' with either the Federal CCR regulations or with standards at least as protective as the Federal CCR regulations necessarily includes Agency consideration of State permits, when such information is available prior to approval of the State program. See, 42 U.S.C. 6945(d)(1)(B) and the statute expressly provides that EPA may review State permits ''as the Administrator determines necessary'' as part of a State program review. RCRA section 4005(d)(D)(i)(I). In fact, as ADEM recognizes, RCRA section 4005(d)(1)(ii)(II) authorizes EPA to evaluate a State program, including permits issued under the program, as part of EPA's required periodic program review of approved State programs; and the statute does not limit the scope of the Agency's periodic review to only the permits on which the Agency commented during the State's permit issuance process. For these reasons, it is appropriate for EPA to consider permits issued under a State CCR permit program as part of an initial program review, regardless of whether EPA submitted comments on those permits in the State permitting proceeding.

EPA also disagrees that the Agency has not told ADEM what it must do to address the Agency's concerns. All States were on notice when EPA published proposed denials of Part A extension requests and when the Agency informed States with unlined surface impoundments that EPA was concerned about compliance with the closure standards. EPA has also directly communicated with Alabama as set forth in the Proposed Denial, and the Agency's comments on the Colbert permit explained many of EPA's concerns with Alabama's interpretation and implementation of its CCR permit program. In any case, to the extent there remains confusion, ADEM's permits misapply the Federal closure standards for unlined surface impoundments, ADEM is not adequately evaluating groundwater monitoring networks in proposed permits to ensure that those networks are configured to properly detect contamination coming from permitted units, and ADEM is not ensuring timely implementation of corrective action measures after contamination is detected. EPA summarized its concerns with ADEM's implementation in the Proposed Denial at 88 FR 55230 where EPA explained that it had identified a consistent pattern of ADEM issuing permits to CCR units that fail to demonstrate compliance with fundamental requirements in part 257, without requiring the permittees to take specific actions to bring the units into compliance. EPA went on to say that it

[19] EPA provided in the proposed rule a summary of calls, emails and letters where EPA brought up specific concerns with the State's CCR permit program and specific permit conditions at facilities. See Proposed Denial, 88 FR 55223, 55224 (August 14, 2023). ADEM's account of the situation differs in some regards to EPA's, and the Agency stands by its rendering of events. But even if the State's characterization of the facts leading up to the proposed decision were accurate, those facts do not change EPA's responsibility under the statute. EPA cannot ignore information indicating that a State program is not as protective as the Federal CCR program, no matter the timing of that information. If as here, the information is available prior to program approval, the information is relevant to program approval and EPA may consider that information.

also identified a consistent pattern of ADEM approving documents submitted by the facilities, such as closure plans, groundwater monitoring plans, and assessments of corrective measures, even though the submissions lacked critical information or are otherwise deficient. ADEM also did not require the permittees to take any action to cure deficiencies in the permits even where ADEM previously identified the deficiencies and requested further information prior to issuing the final permits. Further, EPA explained that it was proposing to determine that ADEM issued multiple permits allowing CCR in closed units to remain saturated by groundwater, without requiring engineering measures that will control the groundwater flowing into and out of the closed unit. See, 40 CFR 257.102(d). EPA also stated that ADEM approved groundwater monitoring systems that contain an inadequate number of wells, and in incorrect locations, to monitor all potential contaminant pathways and to detect groundwater contamination from the CCR units in the uppermost aquifer. See, 40 CFR 257.91. Finally, EPA said it proposed to determine that ADEM issued multiple permits that effectively allow the permittee to delay implementation of effective measures to remediate groundwater contamination both on- and off-site of the facility. See, 40 CFR 257.96 and 257.97. Overall, EPA's review of the permit records and other readily available information documented a consistent pattern of deficient permits and a lack of oversight and independent evaluation of facilities' proposed permit terms.

ADEM's comments on the Proposed Denial do not address these systemic issues in any substantive manner or explain how it will proceed to ensure that CCR permits are at least as protective as the Federal CCR regulations and that the records contain all the information necessary for EPA and the public to evaluate the terms of the permits for compliance with the standards. Instead of addressing these issues, ADEM relies on a narrow legal argument that its interpretation of EPA's regulations governs, which EPA addresses elsewhere.

For all these reasons, EPA is taking final action to deny approval of Alabama's CCR permit program.

Comment: ADEM stated that it is aware that EPA received a joint letter, dated March 11, 2022, from the Sierra Club and the Southern Environmental Law Center. The letter transmits several extensive technical reports prepared by paid third parties. ADEM only learned of this letter months after EPA received it and had to specifically request a copy of it. The letter seeks to provide EPA with a detailed ''outline [of] the legal basis for denying ADEM's State CCR permit program'' and includes as attachments several reports contracted for by the groups critiquing various CCR permits issued by the Department. ADEM states that it is unclear what influence this letter had on EPA's decision-making process for Alabama's approval application, but the timing of its receipt by EPA falls directly between the time of EPA's receipt of Alabama's final program approval application, and the May through July conference calls described above. Also, there is a clear similarity between the technical concerns raised in the letter and those raised by EPA in the months following ADEM's final program application. Furthermore, EPA's actions after receiving this letter appear to follow the playbook for agency action promoted by the advocacy groups. ADEM, and Alabama's citizens, are due an explanation why this letter does not appear in the official EPA docket for the proposed denial.

Response: ADEM's suspicions that a letter from Environmental groups somehow influenced EPA are baseless. Well before the submission of the March 11, 2022, letter, EPA had made it clear to ADEM that EPA had concerns about how ADEM was implementing the regulations, especially in regard to CCR units closing with waste in place where the waste remained in contact with groundwater. In fact, on January 11, 2022, EPA emailed ADEM copies of the first set of proposed Part A decisions, including the proposed decision for the General James M. Gavin Power Plant in Cheshire, Ohio. Three of the proposed decisions addressed facilities that had one or more unlined surface impoundments with CCR continually saturated by groundwater, and that intended to close the units without addressing that situation. EPA explained that in each case, the facility had failed to demonstrate that the closure of these units complied with the plain language of the performance standards in § 257.102(d)(2), which include addressing infiltration into and releases from the impoundment, and eliminating free liquids, given that groundwater appeared to be continually saturating the unlined impoundment. EPA went on to send a list of CCR units with WBWT that had indicated they would be closing with waste in place and scheduled meetings with ADEM and other Region 4 States to discuss these issues. The letter ADEM is concerned with was not placed in the docket because it was not considered by EPA during development of the proposed denial.

Comment: Commenter ADEM states that EPA explicitly acknowledges that it has not conducted a complete or detailed review of the facility files or background information used by ADEM to issue its CCR permits. Commenter states that despite this, EPA drew unfounded conclusions about the reviews and analysis conducted by the State prior to issuing the permits. Commenter states EPA ignores the facts, including the fact that ADEM issued unilateral administrative orders in 2018 and 2019 to each Alabama CCR facility requiring the collection and submission of detailed and voluminous information related to detailed site characterization and assessment for each unit at each facility, detailed information related to site geology and hydrogeology, detailed information related to existing contamination, development of groundwater remediation plans, and other items.

Commenter states that EPA also ignored that ADEM required each facility to submit detailed permit applications for each unit/facility including site history, unit construction and operation, planned closure methods and procedures, and planned corrective measures to address groundwater contamination among other items. Commenter states that these applications were subjected to detailed review and evaluation by ADEM's staff of multiple Professional Engineers (P.E.s) and Professional Geologists (P.G.s) with extensive professional experience evaluating environmental assessments, groundwater monitoring systems, environmental permit applications, and corrective action systems. Commenter states that following these extensive reviews, the facilities were required to revise their applications and provide additional information to address identified deficiencies. Commenter states that EPA's review was perfunctory in nature and that the Agency made numerous flawed conclusions that essentially dismiss the dedicated work by the many seasoned professionals involved in development of the permits. Commenter asserts that EPA is not living up to the standard that is expected and that should be demanded from a seasoned, science-based government agency responsible for protecting human health and the environment through the application of sound science and engineering.

Response: ADEM makes much of the point that EPA states in the Proposed Denial that the Agency did not do a complete review of the permits. EPA did

do a thorough review of the portions of the permits discussed in the Proposal. The purpose of this statement was merely to be clear that EPA had not reviewed every provision of each of the permits, so neither the State nor the facilities should assume that EPA has identified all the potential problems with the permits. In any case, the problems EPA did identify with the four permits reviewed were alone sufficient to support the Proposed Denial, and ADEM does not explain how further analysis of the permits would have changed EPA's conclusions about the provisions that were reviewed. Specifically, EPA reviewed three areas that showed consistent problems in facilities' Part A extension requests—closure, groundwater monitoring, and corrective action—and the Agency documented the findings in the Proposed Denial. EPA found that the permits were neither consistent with, nor as protective as the Federal CCR regulations with respect to all three areas reviewed.

The Agency also disagrees that it should defer to the work of States or facilities and their P.E.s and P.G.s when reviewing permits. EPA has significant technical expertise to evaluate a permit record and determine whether the record is complete and demonstrates that the permit is at least as protective as the Federal standards. EPA must follow the facts. This demands that the Agency conduct its own evaluation and reach its own conclusions, and not uncritically adopt P.E. and P.G. assessments from other parties. This is the case regardless of those individuals' own professionalism. To do otherwise for fear of causing offense, would be to abrogate the Agency's oversight role.

Further, as noted below in response to several technical comments, ADEM and facilities provide new explanations for actions taken in the permits that they say justify the permit terms. But such comments make EPA's point. That additional explanations are necessary demonstrates the insufficiency of the preexisting permit records with respect to both groundwater monitoring networks and corrective actions. In any case, the technical comments on the Proposed Denial do not address all the technical issues EPA raised and none of the comments satisfactorily explain how the closure requirements were met. In addition, even when the comments address issues raised in the Proposed Denial, those comments do not supplement or substitute for enforceable permit conditions and, therefore, the comments do not demonstrate that the permits themselves are actually in compliance with the Federal CCR regulations or more stringent State requirements.

2. Comments in Support of EPA's Process for Evaluating Alabama's CCR Permit Program

Comment: Environmental and public health commenters state that ADEM's operation of its State CCR program and its repeated failure to protect Alabama's communities and clean water from dangerous CCR disposal and pollution establish that ADEM's application fails the protective standards contained in the WIIN Act. Commenters state that ADEM has violated the Federal CCR regulations across Alabama by approving the cap in place closure of unlined leaking CCR lagoons that will pollute and threaten Alabama's clean water, rivers, and communities forever. Commenters state that EPA's careful analysis shows ADEM has issued permits that would allow Alabama utilities to store millions of tons of CCR in groundwater in perpetuity, and the commenters cite a memorandum from a licensed hydrogeologist who studied the Alabama sites for years and whose analysis is consistent with EPA's. Commenters conclude that EPA's Proposed Denial upholds the law and protects Alabama's people and water from the illegal permitting practices of ADEM. Only the vigorous enforcement of the Federal CCR regulations will provide Alabama the protections that it deserves, and ADEM has demonstrated that it cannot and will not follow the law and protect the State, its communities, and its clean water.

Response: EPA agrees that the Alabama CCR program is not as protective as the Federal CCR regulations, and the Agency is taking final action to deny approval of the State program.

Comment: Several commenters strongly support the proposed decision of EPA to deny Alabama's request for approval of its Application. Commenters state that ADEM's CCR permit program fails to meet the standard for EPA authorization in significant ways. Commenters state it is likely that EPA will soon be required to approve or deny additional State CCR permit program applications and it is essential that EPA apply the same strong reasoning, and fidelity to the Federal CCR regulations evidenced in the proposed Alabama denial to any new requests to operate State CCR programs. Commenters state that there will be scores of permits issued that are not as protective as the Federal CCR regulations and consequently harm human health and the environment unless EPA maintains the same approach to reviewing other State programs that it took with Alabama.

Commenters state that allowing permit programs like ADEM's to operate is particularly damaging because once an approved State issues a permit, the permitted facility is shielded from enforcement of any requirement other than the provisions contained in the State permit. Permit deficiencies such as those EPA identified in Alabama must be resolved now, before a State is approved to operate in lieu of the Federal program. Commenters further argue that this is a matter of considerable urgency because there is no quick fix once an approved State issues a permit that fails to protect health and the environment. Commenters note that EPA has the authority to withdraw a deficient State permit program, but that the statutorily mandated process takes considerable time. Commenters state that they conducted a limited analysis of State permitting at sites and that it reveals that States are regularly permitting companies to dispose of CCR in contact with groundwater, even where there is clear evidence that the ash is leading to unsafe levels of contamination. Commenters state that they also found instances where States are applying a risk-based analysis to corrective action—an approach clearly prohibited by the Federal CCR regulations—as well as at least one State imposing groundwater monitoring requirements that are ineffective and significantly less robust than those required by EPA. Commenters further argue it is essential for EPA to provide oversight now, before a State applies for program authorization. Commenters state that EPA enforcement actions at facilities that are violating the prohibition against closure with CCR in groundwater, operating deficient groundwater monitoring systems, and selecting impermissible and ineffective groundwater remedies are needed at many facilities nationwide. Commenters assert that EPA must proactively communicate and demonstrate to States that their permitting cannot circumvent Federal requirements because noncompliance is widespread, and plants are initiating and completing illegal closures at a rapid pace pursuant to the Federal requirement to close unlined units.

Commenters state that denial of Alabama's CCR permit program helps to protect Alabama, its residents, and its clean water from CCR pollution and dangerous CCR storage when ADEM will not. Commenters maintain that ADEM has demonstrated that it will authorize unlawful CCR storage and

pollution to continue indefinitely and that it will not enforce the law and the Rule's protections against the powerful utilities in Alabama. Commenters state that, by denying ADEM's application, EPA will prevent ADEM from being able to put in place CCR regulations permits that violate the Federal CCR regulations and will ensure that citizens and EPA can enforce the Federal CCR regulations and see that Alabama communities receive its protections. Commenters maintain that EPA will also communicate to other State agencies, utilities, and communities across the nation that the protective standards of the Federal CCR regulations will be upheld.

Commenters agree with EPA's draft denial stating that RCRA establishes clear standards that States must meet to receive approval for a State CCR permit program. Specifically, RCRA requires ''each CCR unit located in the state to achieve compliance with'' either the Federal criteria in part 257 or other State criteria that ''are at least as protective as'' the Federal regulations. Commenters agree that EPA demonstrated in its Proposed Denial that it is not enough that State regulations parrot the language of the Federal CCR regulations; they must adhere to its substance. Commenters state that EPA's examination of permits issued by ADEM reveals that the State is implementing its regulations in a manner that is significantly less protective than the plain language of the Federal CCR regulations. Commenters state that the permits issued by ADEM impose requirements that are less protective than the Federal CCR regulations with respect to groundwater monitoring, corrective action, and closure. Commenters state that, for example, ADEM has issued multiple permits allowing CCR in closed units to remain saturated by groundwater, without requiring any engineering measures to control the groundwater flowing into and out of the closed unit. Thus, according to the comments, ADEM is allowing multiple regulated facilities to violate one of the most critical requirements of the Federal CCR regulations.

Response: EPA agrees that the Alabama CCR program is not as protective as the Federal CCR regulations and the Agency is taking final action to deny approval of the State program. EPA agrees that its approach to evaluating State CCR programs should be similar in similar circumstances, and so it intends to consider proposed and final State CCR permits when determining whether to approve all State CCR permit programs as it has in evaluating the Alabama program.

Comment: Commenter states that its members rely on good quality water in the Black Warrior River for drinking, fishing, swimming, hunting, and boating. The commenter agrees with EPA's preliminary determination that the State's application for and implementation of its own CCR program is significantly less stringent than the Federal minimum standard requirements and does not meet the standard for approval under RCRA. Commenter states that CCR has been mismanaged by Alabama Power Company for roughly 100 years and improperly regulated by ADEM for nearly 40 years, allowing toxic contamination of groundwater, streams and rivers at Plant Gorgas, Plant Miller, and Plant Greene County (all located within the Black Warrior River watershed). Commenter supports denial of Alabama's CCR permit program and hope it forces Alabama Power to properly dispose of its toxic CCR waste away from water resources. Commenter states proper disposal of CCR is critical to the health and success of future generations of humans and wildlife that depend on the river. Commenter maintains that across the Southeast, States like Virginia, North Carolina, and South Carolina have required utilities to clean up CCR contamination, with over 250 million tons of hazardous CCR being excavated from unlined pits near waterways. These materials are either recycled or disposed of in modern, lined landfills away from rivers. Commenter states that even Alabama Power's sister company, Georgia Power, has recycled or properly disposed of over 65 million tons of ash. Commenter states EPA's decision makes clear that Alabama can no longer be the outlier and must implement similar safeguards. Commenter states the following problems exist with ADEM's permits: (1) The Draft Permits and Closure Plans, as written, do not require the Ash Pond facilities to come into compliance with Federal and State CCR regulations; (2) The Draft Permits and Closure Plans allow the continued location of the Ash Ponds in areas where they cannot be permitted by law; (3) The Draft Permits and Closure Plans should require and include more information about the extent of contamination from the Ash Ponds; (4) The Draft Permits and Closure Plans do not consider contamination that has migrated offsite, or the remediation of that contamination; (5) The Draft Permits and Closure Plans do not consider the long-term maintenance of artificial caps; (6) The Draft Permits and Closure Plans do not consider responsibility for the facilities after the 30-year post closure care period; (7) The Draft Permits and Closure Plans lack key modeling information; (8) ADEM unnecessarily grants the Company variances from including boron as an Appendix IV Monitoring parameter; (9) Neither ADEM nor the Company provide any information about alternative closure methods; therefore, the public is limited in its knowledge about closure techniques that would be more protective of human health and the environment; and (10) Alabama Power's closure plans approved under ADEM's regulatory program allow CCR to remain in groundwater, in violation of the Federal CCR regulations.

The commenter states that the list is representative, but not exhaustive of all the deficiencies with the permits ultimately issued by ADEM. Because ADEM's application does not meet the standards established under RCRA and because the permits issued under ADEM's non-approved CCR program are also deficient, the commenters believe that EPA has made the correct decision to deny the ADEM's Application to manage the State's CCR program.

Response: EPA agrees that Alabama's permits are not as protective as the Federal CCR regulations and EPA is taking final action to deny approval of the program. The remainder of the comment addresses issues that are outside the scope of the Final Decision and no response is required.

3. EPA Should Defer to State's Interpretation of the Federal CCR Regulations

Comments: Several comments state that the 2017 Guidance Document and the information required for the Oklahoma, Georgia, and Texas permit programs applications do not require States to provide EPA with issued permits or proposed permits if the State begins to implement the State permit program prior to EPA approval. Commenters maintain that State agencies should be allowed reasonable latitude to interpret regulations, particularly where EPA guidance has not been issued. Commenters recommend that EPA review all State permit programs with the same criteria and in accordance with the Interim Final Guidance, RCRA 4005, and WIIN Act section 2301.

Commenters disagree that Alabama's interpretation of the Federal CCR regulations is flawed. Commenters argue that because the Federal regulations are self-implementing in all but three States (Oklahoma, Georgia, and Texas) that

EPA should leave interpretation up to the regulated community and the States who have received State CCR permit program approval from EPA. Commenters state that EPA has no plans to provide implementation guidance through rulemaking but will instead provide guidance to States seeking permit program approval. Commenters maintain that EPA has not provided formal comprehensive written guidance on implementation to States or the regulated community.

Commenters maintain it is unreasonable and unrealistic for EPA to direct States to EPA's Part A determinations for guidance on the correct interpretation of the plain language of the Federal regulations. Commenters argue it is not reasonable for EPA to provide a comprehensive interpretation of Federal regulations by comparing one facility's final Part A determination in one State to another facility's proposed Part A decision (that includes different hydrologic and geologic conditions) in a different State. Commenters argue that States should not be forced to look at EPA decisions in other States to determine how to implement Federal regulations within their own State. Commenters argue that States do not have the resources to review several proposed and one final Part A decisions (and Part B decisions) to evaluate how EPA may interpret Federal CCR regulations in their own State.

Commenters argue that the requirements of the Federal CCR regulations are subject to interpretation and the plain language of the Federal CCR regulations can reasonably be interpreted in more than one way as the interpretation often depends on site-specific circumstances. Commenters state that in March 2022, comments regarding proposed Part A determinations noted that the proposed decisions seek to clarify several interpretive issues involving the closure of unlined CCR surface impoundments. Commenters argue that the clarifications are a significant shift in policy from long standing regulations, guidance, and interpretations of closure requirements including those pertaining to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) remedial actions, RCRA subtitle C closure actions, RCRA subtitle D closure actions for sanitary landfills and open dumps, and more recently for RCRA subtitle D CCR unit closures. Commenters urged EPA to employ a more formal approach (*i.e.,* rulemaking, policy memo, guidance document) to establish such interpretations if EPA finalizes these determinations and thus makes a substantial shift in the interpretation and policies for closure requirements for CCR or other units. Commenters argue that absent formal comprehensive written guidance, State agencies should be allowed latitude to interpret the regulations.

Response: EPA does not agree with the comments suggesting EPA should defer to the varying interpretations of the Federal CCR regulations of the 50 States and the regulated community until EPA has revised the Guidance Document or revised the CCR regulations. EPA is aware of no authority that supports—or requires—such an approach and the comments do not provide any. Further, such an approach would lead to inconsistent interpretations of the regulations and, as the Agency is seeing here, interpretations that are leading to State permits that are not as protective as the Federal CCR regulations.

EPA also disagrees that directing States to the Part A and Part B determinations is in any way inappropriate or unreasonable. At the same time EPA was reviewing Alabama's and other States' CCR permit program applications, EPA was reviewing requests for Part A extensions of the deadline to cease receipt of waste to unlined surface impoundments and Part B submissions for alternate liner demonstrations. When conducting those reviews, the Agency was required to review facility compliance with the Federal CCR regulations as part of the decision-making process. What EPA found during the Part A and Part B reviews was significant noncompliance with the requirements of the Federal CCR regulations, particularly noncompliance with the closure requirements for unlined surface impoundments, the groundwater monitoring network requirements, and the corrective action requirements.[20] As explained in the Proposed Denial, the proposed Part A determinations and comments on those determinations brought to light the extent to which some States and members of the regulated community were not interpreting the regulations correctly, particularly with respect to the closure requirements for unlined surface impoundments. 88 FR 55229. EPA thereafter informed States and facilities with unlined surface impoundments of the Agency's concerns and directed them to the Part A determinations for the guidance on implementing the rules. The proposed and final Part A decisions were internally consistent and available to States to explain EPA's concerns with CCR permits, and all States with unlined surface impoundments then had detailed descriptions of EPA's concerns.

EPA further disagrees that the litigation on the Agency's interpretation of the closure requirements means the Agency must approve or defer decisions on State programs that the Agency believes are less protective than the Federal CCR regulations. As noted above, EPA disagrees with the comments against EPA's interpretation of the closure requirements and those issues are being litigated. In this case, EPA is simply applying its consistent position on the matter. The fact that that a similar dispute over the meaning of EPA's regulations is occuring in an unrelated action is no reason for EPA to refuse to apply this position or to act inconsistently with its stated position. Further, no commenter has explained how it would be reasonable to for EPA to approve a State program that the Agency concludes does not in fact require each CCR unit to comply with standards at least as protective as Federal CCR regulations. EPA has not identified a rationale either. Furthermore, as noted above, EPA also proposed to deny approval of Alabama's program due to deficiencies in the groundwater monitoring networks and corrective action requirements and a general pattern of inadequate review and documentation of CCR permit applications. 88 FR 55230. Thus, even if EPA did not consider the closure issues, the Agency would still be unable to conclude that Alabama's CCR program requires each CCR unit to achieve at least the minimum level of protection.

EPA also disagrees that it is changing long standing regulations, guidance, and interpretations of closure requirements, including those pertaining to the CERCLA remedial actions, RCRA subtitle C closure actions, RCRA subtitle D closure actions for sanitary landfills and open dumps, and more recently for RCRA subtitle D CCR unit closures. All of these arguments related to closure are addressed in the Gavin Decision [21] and the litigation on the closure standards, and EPA is maintaining the interpretations set forth therein. Further, EPA disagrees that it must or should wait to rely on the Agency's interpretation of the closure requirements until the litigation is

[20] This web page contains links to Part A decisions that EPA proposed in 2022 and 2023. It also links to the Gavin final decision: CCR Part A Implementation: *https://www.epa.gov/coalash/coal-combustion-residuals-ccr-part-implementation.*

[21] Final Decision: Denial of Alternate Closure Deadline for General James M. Gavin Plant, Cheshire, Ohio, EPA–HQ–OLEM–2021–0100 November 22, 2022.

resolved or wait to consider CCR permits as part of the state permit program review until the Agency revises the Guidance or regulations. EPA has identified a problem and it would not be reasonable to ignore information relevant for determining whether a State CCR program is sufficiently protective simply because the Guidance has not caught up to the facts. Finally, as noted above, EPA has now revised the CCR regulations to include new definitions that make clear Alabama's CCR program is inconsistent with and less protective than the Federal program with respect to closure of unlined surface impoundments.

4. EPA Should Consider CCR Permits in Its State Program Approval Process

Comment: Commenter agrees with EPA's approach to considering State CCR permits when reviewing State CCR permit programs and states that Georgia is an instructive example of why it is important to take this approach. Commenter states that Georgia had not issued State CCR permits when EPA approved the State's CCR permitting program in January 2020, so the Agency did not have the benefit of knowing how the State would administer its State regulations. Commenter states that since EPA approval, Georgia issued a proposed permit in July 2021 for a CCR impoundment at Georgia Power Company's Plant Hammond, which would authorize closure with waste left in the impoundment and installing a cap which would leave CCR deep in groundwater forever. Commenter states that Georgia's disregard of the plain language of the Federal CCR regulations led to EPA writing Georgia Environmental Protection Division (EPD) concerning its permitting practices. Commenter states that since that time, Georgia has not issued a final permit for Plant Hammond,[22] has not issued proposed permits for any other CCR impoundment in Georgia, and, in effect, has stopped operating its CCR program. Commenter States that the Georgia fiasco should not be repeated. Commenter states that through this denial, EPA will avoid an even worse outcome in Alabama, where ADEM has issued illegal final permits. Commenter also states that by its action EPA will also communicate to Georgia and other State agencies that a State CCR permit program must actually follow the requirements of the Federal CCR regulations.

[22] EPA notes that Georgia EPD issued a final CCR permit on November 13, 2023, for Plant Hammond's Ash Pond 3 (AP–3).

Response: EPA agrees that considering State CCR permits when determining whether to approve a State CCR permit program application is consistent with the statute and necessary to ensure no State program is approved unless it requires each CCR unit in the State to comply with the minimum level of protection (*i.e.,* the Federal CCR regulations). In part because EPA concludes that Alabama's permits are not as protective as the Federal CCR regulations, EPA is taking final action to deny approval of Alabama's CCR permit program. Comments related to Georgia are outside the scope of this action and no response is required.

5. EPA Should Not Consider CCR Permits in Its State Program Approval Process

Comment: Commenters maintain that EPA relies on its recent, disputed, and legally contested interpretations of the regulatory closure performance standards, groundwater monitoring conditions, and corrective action requirements in the Federal CCR regulations to conclude that several ADEM-issued permits are inadequate because they allegedly fail to achieve those requirements (as interpreted by EPA). More specifically, commenters state that EPA faults ADEM for issuing permits:

1. ''allowing CCR in closed units to remain saturated by groundwater, without requiring engineering measures that will control the groundwater flowing into and out of the closed unit;''

2. ''approv[ing] groundwater monitoring systems that contain an inadequate number of wells, and in incorrect locations, to monitor all potential contaminant pathways and to detect groundwater contamination from the CCR units in the uppermost aquifer;'' and

3. ''allow[ing] the permittee to delay implementation of effective measures to remediate groundwater contamination both on- and off-site of the facility.''

Commenters assert that EPA's allegations of deficiency are predicated on EPA's recent and disputed interpretations, none of which have been formally promulgated through notice and comment rulemaking, as well as its own unilateral technical review, without regard to the role of—or certifications provided by—P.E.s. Commenters believe EPA's allegations are improper and cannot lawfully be used as a basis for denying ADEM's CCR permit program.

Commenters further argue that EPA acted improperly because it reviewed available State issued and proposed permits. Commenter notes that EPA stated ''unlike Georgia, Texas, and Oklahoma (currently the only three States with EPA approval for State CCR permit programs), Alabama had already begun implementing its State CCR Permit program and issuing permits prior to its submittal of an Application for EPA approval of the State's CCR permit program''. Commenters further note that EPA stated ''to the extent the state implements its CCR regulations prior to EPA's determination of state program adequacy, EPA will also discuss that state's interpretation and implementation of its program to ensure EPA fully understands the program and to determine which of the two statutory standards EPA will use to evaluate the state program. EPA took the same approach with Alabama as with other states seeking approval.''

Commenters argue EPA is wrong to take this approach because the 2017 Guidance Document and the information required for the Oklahoma, Georgia and Texas permit programs applications do not require States to provide EPA with issued permits or proposed permits if the State begins to implement the State permit program without EPA approval. Commenters also argue this is the correct approach because State agencies should be allowed reasonable latitude to interpret regulations; especially where EPA guidance has not been issued. Commenters further recommend that EPA review all State permit programs with the same criteria and in accordance with the 2017 Guidance Document and RCRA section 4005(d).

Response: As stated above, EPA does not agree that it must approve a State program where the Agency has determined State permits are less protective than the Federal CCR regulations. Instead, in light of EPA's review, it would be unreasonable to approve the State program since the Agency has concluded that the State permits do not in fact require compliance with at least the minimum level of protection required. Further, in this case, Alabama would have to acknowledge EPA's concerns and take steps to start revising flawed permits for EPA to approve the State's CCR permit program.

Further, despite the commenters' assertion, not all of the bases for the proposed and final denial are subject to litigation and, even if they were, it would make sense for EPA to maintain consistent positions across different actions. With respect to P.E. assessments, EPA made clear in the 2015 Rule that it would not rely exclusively on engineer certification to

ensure compliance with technical standards, but that other mechanisms would also help to ensure compliance. 80 FR 21312, 21334–35. First, the performance standards in the regulations are independent requirements and are enforceable regardless of whether a P.E. certification was obtained. The 2015 rulemaking preamble made this clear in response to commenters concerned that the proposed regulations relied too heavily upon the judgment of P.E. In the preamble, EPA explained that it disagreed that the rules rely ''almost entirely'' on professional engineers to protect human health and the environment. The final rule relies on multiple mechanisms to ensure that the regulated community properly implements requirements in this rule. As one part of this multi-mechanism approach, owners or operators must obtain certifications by qualified individuals verifying that the technical provisions of the rule have been properly applied and met. However, a more significant component is the performance standards that the rules lay out. These standards impose specific technical requirements. The certifications required by the rule supplement these technical requirements, and while they are important, they are not the sole mechanism ensuring regulatory compliance. Id. at 80 FR 21335.

In addition, information the P.E. uses to assess compliance is required to be publicly posted on a website specifically to allow for interested parties to evaluate the accuracy of the P.E. certifications. 80 FR 21339. EPA did not have enforcement authority in 2015, and the statute instead left enforcement to States and citizens. See 42 U.S.C. 6972(a)(1)(A). 80 FR 21309. To facilitate such enforcement, the 2015 rule required engineer certifications and other underlying compliance data to be posted to the internet, as this would allow states and the public to evaluate the accuracy of the certifications in assessing whether to sue. Id. at 21335. If EPA intended P.E. certification to effectively serve as a shield, there would be no reason to require posting on a publicly accessible website of the majority of compliance data that underly the certifications. EPA confirmed this in the preamble to the 2015 regulations, stating that making this information available to other parties (*e.g.,* state agencies and citizens) was another mechanism to ensure technical performance standards established in the regulations would be achieved. ''EPA has developed a number of provisions designed to facilitate citizens to enforce the rule pursuant to RCRA section 7002. Chief among these is the requirement to publicly post monitoring data, along with critical documentation of facility operations, so that the public will have access to the information to monitor activities at CCR disposal facilities.'' Id. In sum, the certifications do not act as prohibitions on state or citizen enforcement, and they certainly do not bar EPA from using its WIIN Act authority to enforce standards in the regulations. Thus, despite commenters' assertions, a P.E. certification does not demonstrate or assure actual compliance with the Federal CCR regulations (or any rule), nor does it deprive EPA of its ability to conduct an independent assessment or to reach a contrary conclusion from a P.E. In this case, comments have not provided sufficient evidence to rebut EPA's conclusions in favor of the conclusions reached by the P.E.'s hired by the relevant facilities as part of the State permitting processes.

As stated above, EPA does not agree that its approach with respect to Oklahoma, Georgia, and Texas prevent EPA from now considering proposed and final permits that are available for review at the time the Agency is evaluating a State program. EPA was not aware of the potential widespread issues with implementation of the Federal CCR regulations when approving those State programs, and it was not until the Agency reviewed the Part A applications and received comments on the Part A Proposed Denials that the Agency realized the extent of the problems. Since that time, EPA has proactively engaged States and facilities to ensure compliance with the Federal CCR regulations. In any event, EPA considered Oklahoma's permits as part of the review approval process, and EPA is currently engaged with both Georgia and Texas as they issue State CCR permits.

EPA also disagrees that the Agency should defer to potentially many different State interpretations of the Federal CCR regulations.

6. EPA Must Approve Alabama's CCR Permit Program Because Alabama's Regulations Mirror the Federal CCR Regulations

Comments: Commenters argue that ADEM's permit program meets statutory requirements because it mirrors the Federal CCR regulations and it is consistent with EPA's 2017 Guidance Document, so EPA must approve without looking to implementation of the regulations. Commenters maintain that ADEM complied with the WIIN Act because the State provided ''evidence of a permit program or other system of prior approval and conditions under State law'' for CCR units and showed that the State program is ''at least as protective as'' the Federal CCR regulations. Commenters state that EPA reviewed ADEM's authority, State public participation procedures, technical criteria, and other relevant factors in the Proposed Denial and the Agency found that ''these aspects of the Alabama CCR permit program provide the State with the necessary authority to implement an adequate State program.'' Commenters also state that EPA does not question ADEM's resources to administer the program.

Commenters note that EPA did not stop its review with the State's CCR permit program regulations, as it should according to comments, and EPA instead based its disapproval of ADEM's program on the Agency's review of Alabama CCR permits and on recent statements of interpretation which were not subject to proper notice and comment rulemaking and are currently being challenged in the U.S. Court of Appeals for the D.C. Circuit. Commenters conclude that EPA should approve because, according to the commenters, ADEM has implemented regulations that are identical in text and substance to those of EPA as to the standards at issue; ADEM's provisions for public participation are satisfactory to EPA; there is no risk to human health or the environment; and ADEM has demonstrated that it has the appropriate resources and expertise to implement the CCR program, backed by decades of implementation of parallel RCRA programs.

Commenters state that the WIIN Act requires EPA to approve a State CCR permit program application no later than 180 days after submission if the Agency ''determines that the program or other system requires each coal combustion residuals unit located in the State to achieve compliance with the applicable criteria for coal combustion residuals units under part 257 of title 40, Code of Federal Regulations . . . or such other State criteria that the Administrator, after consultation with the State, determines to be at least as protective'' as the Federal CCR regulations. Thus, according to commenters, the plain text of Alabama's regulations requires CCR units in the State to comply with all of the substantive Federal CCR regulations requirements, including those related to closure, corrective action, and groundwater monitoring, and EPA has determined that ADEM's standards are

at least as protective as the Federal CCR regulations. Commenters state that because ADEM's application fulfills the requirements of 42 U.S.C. 6945(d) to require compliance with the Federal CCR regulations criteria or State-specific criteria that are at least as protective as the Federal CCR regulations, EPA must approve the application and the Agency should not consider information beyond the four corners of the application when evaluating a State CCR permit program application, particularly when the new positions at issue were put forth without proper notice and comment and are subject to litigation as discussed below.

Commenters argue that the WIIN Act provides a separate mechanism for EPA to review an approved State permit program and address alleged deficiencies with implementation of the approved State program. According to commenters, the WIIN Act directs EPA to provide a notice of deficiencies and an opportunity for a public hearing if ''the State has not implemented an adequate permit program'' or if ''the State has, at any time, approved or failed to revoke a permit for a coal combustion residuals unit, a release from which adversely affects or is likely to adversely affect the soil, groundwater, or surface water of another State.'' Based on this language, commenters assert EPA must approve an application first before addressing any alleged issues with implementation.

Commenters also state that RCRA subtitle D ''envisions that states are primarily responsible for regulating disposal of nonhazardous wastes in landfills and dumps.'' Commenters further assert that EPA's principal role under subtitle D ''is to announce Federal guidelines for state management of nonhazardous wastes. . . .'' Thus, according to commenters, States have the primary role to interpret and implement waste regulations and EPA should not attempt to supplant the cooperative federalism approach that is enshrined in RCRA by requiring strict compliance with the Agency's flawed positions as a prerequisite for approving a State program.

Commenters note that in August 2017, EPA issued the Guidance Document for States with information and procedures on how to develop and submit their State CCR permit programs to EPA for approval. The guidance includes frequently asked questions about the WIIN Act and the process for States to seek approval, as well as detailed checklists for State program submittals. Commenters further state that ADEM initially submitted its application for State permit program approval to EPA over five years ago on July 12, 2018. Commenters state that ADEM submitted revised applications on February 26, 2021, and December 29, 2021. Commenters state that ADEM's latest application (*i.e.,* its ''evidence of a permit program'') contains all of the information and followed all of the procedures outlined by EPA in its interim final guidance, and, after review of the State's submission, EPA confirmed that ''the express terms of ADEM's CCR permit program . . . include[ ] all regulatory provisions required for approval'' and ''provide the State with sufficient authority to require compliance with the Federal requirements or equivalent State requirements.''

Commenters further state that EPA changed its approach and took a sharp turn and began describing its evaluation of Alabama's program against criteria not only outside of EPA's statutory directive but also beyond any regulatory authority of the Agency. Commenters state this approach is troubling for many reasons and that the proper standard for comparison exists in 40 CFR part 257. Commenters further state that Alabama has easily satisfied both criteria, and its program should be approved expeditiously. Commenters assert that EPA has appropriately determined that Alabama's approach to CCR permit applications and approvals is adequate. See, 88 FR 55229, August 14, 2023. Commenters also assert that EPA found that the Alabama CCR program will provide robust implementation and enforcement of the State's CCR requirements and afford adequate opportunity for citizen intervention in civil enforcement proceedings. 88 FR 55229; see also Docket ID EPA–HQ–OLEM–2022–0903–0133, Proposed Denial TSD Volume III. Commenters state that the Alabama CCR program constitutes a well-developed permit program that, as required by the WIIN Act, ''provide[s] evidence of a permit program or other system of prior approval and conditions under State law for regulation by the State of coal combustion residuals units that are located in the State.'' 42 U.S.C. 6945(d)(1)(A). Commenters maintain that Alabama's CCR permit program will provide more than adequate opportunities for public participation in the permitting process. Commenters state that to the extent there are any differences, ''the differences do not on their face substantively make the State regulations less protective than the Federal CCR regulations.'' Id. Commenters maintain that the State's CCR regulations contain all the technical elements of the Federal CCR regulations, including requirements for location restrictions, design and operating criteria, groundwater monitoring and corrective action, closure requirements, post-closure care, recordkeeping, notification and publicly accessible website posting requirements. EPA TSD Volume III at 6–9; 88 FR 55228. For these reasons, commenters state that EPA should approve Alabama's CCR permit program, such that it will apply in lieu of the Federal regulations.

Commenters point to the program review and withdrawal provisions of RCRA 4005(d) and state that the key takeaways from this portion of the statute are that: (1) In the event the State were to fail to cure program implementation deficiencies identified during EPA's periodic review of the State program, or if the State were to fail to deliver on its commitment to update its approved program at such time as the Federal requirements change, EPA has the authority and responsibility to withdraw the State's program approval, after appropriate notice and opportunity for a public hearing; and (2) Once a program withdrawal occurs, the State has the opportunity to have its program approval restored upon correction of the offending program deficiencies. Commenters maintain that the review and withdrawal provisions support a conclusion that EPA may not consider implementation and State CCR permits when evaluating a State CCR permit program.

Response: EPA agrees that Alabama's State CCR regulations in large part mirror the Federal CCR regulations and that, for this reason, the State's regulations provide Alabama with sufficient authority to implement a CCR program that meets the standard for approval under section 4005(d)(1)(B). But EPA disagrees that copying the Federal CCR regulations alone is sufficient to require EPA to approve a State program when the Agency has concluded that the program, as implemented through State permits, is in practice, not as protective as the Federal CCR regulations. As noted above, section 4005(d)(1)(B) of RCRA requires EPA to conclude that a State program ''requires each CCR unit . . . to *achieve* compliance'' with at least the minimum level of protection (*i.e.,* the Federal CCR regulations or equivalent State standards) before approving the program, not, as the commenters contend, to simply require compliance with those standards. Congress was thus clear that a requirement to comply is insufficient; this is why EPA evaluates not only the CCR specific requirements but also the State's general authority to

issue permits and impose conditions in those permits, as well as the State's authority for compliance monitoring and enforcement, and whether the State has the resources to implement and enforce the program. Consequently, the RCRA section 4005(d)(1)(B) standard is not met where, whatever the State regulations may say, the permits issued to implement those regulations authorize actions that are inconsistent with the plain language of the Federal CCR regulations. This is because Congress specified that what matters is what the State program actually requires the permittee to achieve; and, for example, a permit that simply recites the regulations while simultaneously approving a clearly deficient closure or groundwater monitoring plan cannot plausibly be argued to require the facility to achieve compliance with those regulations. And where, as here, the Agency has concluded the State program is not as protective, EPA does not have a basis to approve the program under the statute.

At the same time, however, none of the comments appear to question EPA's authority to withdraw a State CCR program if, after approval, the Agency determines that a State is not implementing its CCR permit program in a manner that ensures permits require at least the minimum level of protection. See RCRA section 4005(d)(1)(D). The withdrawal provisions of the statute presume that EPA disagrees with how a State is implementing its CCR permit program (*e.g.,* EPA believes the state permits are inadequate) when EPA takes action to withdraw a State CCR program, and the statute gives EPA the authority to review all State CCR permit programs, including those that mirror the Federal CCR regulations. Notwithstanding, the comments appear to suggest that EPA cannot question implementation of a State program that adopts the Federal CCR rule terms because States are allowed to interpret the regulations differently than EPA. Taken to its logical conclusion, there would be separate standards for withdrawal based on whether the program was approved under RCRA 4005(d)(1)(B)(i) or (ii), and EPA would be essentially precluded from withdrawing approval of a State program if approval was based on RCRA 4005(d)(1)(B)(i). The commenters' interpretation would read a limitation on State withdrawal that has no basis in the statute. EPA declines to read such a limitation into the statute or adopt a position that requires the Agency to ignore information (*e.g.,* final State permits) that is clearly relevant to the finding that EPA must make when determining whether a State program in fact meets the statutory requirements. Finally, EPA does not see any benefit to a system where EPA must first approve a deficient program to only then be forced to expend further resources on withdrawing that same program for the same deficiencies.

In addition, comments do not address all the technical issues with the Alabama CCR permits that EPA identified in the Proposed Denial. For example, the comments do not demonstrate EPA's interpretations of the requirements for groundwater monitoring systems and corrective action are novel or a change in the standards, and many of the issues identified in the Proposed Denial were either not addressed or insufficiently addressed in the comments. Without some response to the issues, EPA cannot conclude that the permits in fact require each CCR unit to achieve the minimum level of protection. As EPA explained in the proposal, because the permits issued by Alabama appear to interpret the Federal CCR regulations differently than EPA, Alabama is essentially submitting ''other State criteria,'' and consistent with RCRA 4005(d)(1)(B)(ii), in order for EPA to approve such a program, Alabama must provide the information to support a determination that the State criteria are ''at least as protective as the [Federal CCR regulations].'' Further, none of the comments address the general concern that Alabama is not exercising sufficient review and oversight of the program, and, conversely, the fact that information beyond what is in the permit record is necessary to explain why the permits are sufficient demonstrates that ADEM's permit program implementation is insufficient. See Comment Response above.

EPA also disagrees that the Agency is prohibited from considering State permits in the program review process because the Guidance Document does not contemplate review of permits. The Guidance Document does not, and indeed cannot, prevent EPA from considering information that falls squarely within the ordinary meaning of what the statute expressly directs EPA to consider, even if that information is not described therein when such an instance arises. In this instance, the reason the Guidance Document does not address the issue is because, as noted above, EPA was not aware of the widespread problems with State CCR permits until the Agency reviewed the Part A requests for extensions and received the comments from States and industry on the Proposed Denials of Part A requests in 2021, three years after issuance of the Guidance Document. EPA also did not anticipate that a State might demonstratively contend that EPA should adopt a fundamentally different interpretation of the CCR regulations than what EPA intended in writing them. In addition, as noted above, EPA has since raised the issue of permits with every State requesting approval of a State CCR permit program and with the three States that have approved State programs.

Finally, EPA disagrees that it is attempting to supplant the cooperative federalism approach enshrined in RCRA. Even under the more limited authority conferred on the Agency prior to the WIIN Act, EPA's subtitle D criteria established minimum national standards with which facilities were required to comply, irrespective of state law. The Federal criteria are intended to establish a consistent minimum national floor; if States could simply reinterpret those criteria to establish different requirements (*e.g.,* a different floor specific to the state), this would defeat the purpose. Moreover, the commenter has misunderstood both the intent and effect of the WIIN Act. Congress deliberately expanded EPA's role under the existing subtitle in 2016 when it granted EPA the authority to enforce the Federal criteria, issue permits in non-participating states, and to establish the minimum national standards that are both applicable directly to facilities and used to evaluate state programs.

7. Lack of a Federal Permit Program To Serve as Comparative Basis

Comment: Commenters state that in the Proposed Denial, EPA specifies that section 2301 of the WIIN Act amended section 4005 of RCRA, creates a new subsection (d) that establishes a Federal CCR permitting program similar to permit programs under RCRA subtitle C and other environmental statutes. Commenters further state that the WIIN Act only establishes a Federal permit program; it does not specify it be under RCRA subtitle C. Commenters note that on April 17, 2015, EPA published the first Federal CCR regulations regulating CCR as a subtitle D solid waste. Commenters conclude that section 2301 of the WIIN Act and section 4005 of RCRA do not specify the establishment of a Federal CCR permitting program similar to permit programs under RCRA subtitle C. Commenters state that Chapter 2 Item 1 of the 2017 Guidance Document states that EPA is using 40 CFR part 239, which are the requirements for determining adequacy of State subtitle D permit programs, as a guide for what a State submission

should include. Commenters argue that this is the reason States are drafting CCR State permit programs that are in line with their EPA approved subtitle D permit programs.

Commenters recommend EPA approve State permit programs that permit and interpret the Federal regulations in line with RCRA subtitle D solid waste programs since EPA promulgated national CCR standards under RCRA subtitle D and not RCRA subtitle C.

Commenters argue that the lack of a Federal permitting program is a key weakness in EPA's Proposed Denial. Commenters maintain that EPA has no Federal permit program for States to compare to the State programs and that EPA does not have any practical experience developing and issuing CCR permits. Commenters appear to believe that EPA cannot evaluate permits until the Agency has established a Federal CCR permit program and started issuing permits under the program.

Commenters note that the Proposed Denial contends that once a permit is issued, the permit serves as a ''shield'' to the regulations and at that point the facility is only responsible for compliance with the permit and the Federal regulations are no longer the governing rules (88 FR 55223, August 14, 2023). Commenters state that these assertions by EPA are incorrect. Commenters note that EPA has no CCR permitting program. Commenters question how the Federal CCR regulations requires a facility to achieve compliance without a Federal permit program. Commenters also state that because ADEM regulations are equivalent to the Federal rules, inclusion of ADEM regulations in ADEM-issued permits is equivalent to inclusion of Federal rules in the permit. Commenters state that, for this reason, if EPA considers the current Federal rules sufficient to require facilities to ''achieve compliance'', then the ADEM-issued permits that refer to these rules must also meet the same standard. Commenters argue that EPA is attempting to hold ADEM to a higher standard than EPA itself is required to achieve and seeks to punish ADEM for having a permitting program when EPA does not. Commenters conclude that, at best, it seems premature to move directly to program denial until EPA has, through the traditional, long-standing regulatory development and approval process, promulgated a set of Federal permitting standards.

Response: EPA disagrees that it is holding ADEM to a higher standard than EPA itself is required to achieve. The statute imposes the same standard on EPA permits that it imposes on State permit programs. See 42 U.S.C. 6945(d)(2)(B) (''Administrator shall implement a permit program *to require each coal combustion residuals unit* located in the nonparticipating State *to achieve compliance with* applicable criteria established by the Administrator under part 257 . . .'') (emphasis added). EPA has interpreted this provision to require a Federal CCR permit to include specific provisions to ensure that the permittee achieves compliance with the Federal CCR regulations, rather than merely reiterating the regulations. See, 85 FR 9964–9965 (describing examples of permit conditions).

Commenters are also incorrect to the extent they suggest the Federal CCR regulations cannot be enforced because EPA has yet to take final action on the Federal CCR permit program regulations. The Federal CCR regulations are directly enforceable against facilities until they receive a permit from an approved State or pursuant to a Federal permit program. For this reason, if EPA approved Alabama's CCR permit program, the Federal CCR regulations would no longer apply to the final CCR permits that EPA believes are insufficiently protective, and facilities would have a permit shield for their flawed permits. Absent approval and the attendant permit shields, EPA can proceed with actions at any time to require the facilities to come into compliance with the Federal CCR regulations. Indeed, EPA is currently pursuing a number of enforcement actions. Further, the comments imply that Alabama's CCR permits simply recite the applicable regulations, but, in fact, the permits not only cite the applicable regulations but also specify the actions required to be taken to comply with the provisions. In this case, many of the actions being required in the permits are not sufficient to meet the requirements of the Federal CCR regulations.

EPA also disagrees with comments stating the Agency must approve Alabama's program because the regulations are identical. Because the State's interpretation of EPA's regulations is different from the Agency's (as demonstrated by the permits it has issued), Alabama is in fact operating a different program than EPA, even if the terms of the regulations are the same. Under the statute, the State must explain how its alternative standards are as protective and ADEM has refused to provide an explanation. RCRA 4005(d)(1)(B)(ii).

The fact that EPA's permitting regulations have not yet been promulgated is irrelevant to the fact that permits issued by ADEM allow CCR units in the State to comply with alternative requirements that are less protective than the requirements in the Federal CCR regulations with respect to groundwater monitoring, corrective action, and closure. Even absent a Federal CCR permit program, the Federal CCR requirements apply directly to facilities until the facility obtains a permit from an authorized State or EPA after it promulgates the Federal CCR permit program.

For example, as discussed in the Proposed Denial, ADEM has issued multiple permits allowing CCR in closed units to remain saturated by groundwater, without requiring adequate, or in some cases any, engineering measures to control the groundwater flowing into and out of the closed unit. ADEM has also approved groundwater monitoring systems that contain an inadequate number of wells, and in incorrect locations, to detect groundwater contamination from the CCR units. Finally, ADEM has issued multiple permits that effectively allow the permittee to delay implementation of effective measures to remediate groundwater contamination both on- and off-site of the facility. Overall, EPA's review of the permit records demonstrates a consistent pattern of deficiencies in the permits and a lack of oversight and independent evaluation of facilities' proposed permit terms on the part of ADEM.

EPA further disagrees with the comments stating that EPA must approve State programs consistent with the way State programs are approved under RCRA subtitle D for non-CCR units, and that EPA is approving State CCR permit programs under RCRA subtitle C. In fact, EPA is not evaluating State CCR permit programs the same as the approach for evaluating other State permit programs under either subtitle D for non-CCR units or subtitle C for hazardous waste units, and instead the Agency is evaluating State CCR permit programs based on RCRA section 4005(d), which is a unique State program approval provision that is different from the other State program approval provisions in RCRA subtitle C and D. In addition, EPA's advice in the Guidance Document to look at the process for approval of State programs under RCRA subtitle D when developing the regulations and procedures for a State CCR program was not an indication that those regulations apply or that the standard for approval of non-CCR RCRA State programs applies to approval of State CCR permit programs. Instead, EPA must comply with RCRA section 4005(d) when

evaluating State CCR permit programs and the commenters do not explain how EPA could ignore that provision and apply a different RCRA State program approval process.

8. Comments in Support of EPA's Interpretation of the Closure Standards for Unlined Surface Impoundments

Comment: Commenters state that the governing standards for closure in place, monitoring, and corrective action are set out clearly in the Federal CCR regulations, and EPA consistently has applied the plain language of the Federal CCR regulations as it has in the Proposed Denial. Commenters state that Alabama has adopted regulations that mimic the language of the Federal CCR regulations, but as EPA points out, ADEM has disregarded the plain language of the regulations and instead has allowed utilities in Alabama to leave CCR in old, unlined, leaking riverfront pits saturated in water, below the water table and even below sea level. Commenters state that EPA has clearly applied the straightforward requirements of the Federal CCR regulations in its Gavin decision and has replied to all the arguments made by ADEM, Alabama Power, and Alabama Power's trade associations in its responses to comments on the proposed Gavin decision. Commenters state that EPA has also applied those standards in issuing a Notice of Potential Violations to the Alabama Power Company (Alabama Power) for its violations of the Federal CCR regulations at Plant Barry near Mobile. Commenter notes that, in the Proposed Denial, EPA applied the plain language of the Federal CCR regulations and the WIIN Act and followed the same course it has followed repeatedly in the past.

Commenters note that Duke Energy, one of the largest energy companies in the country, also recognizes and understands the plain language of the Federal CCR regulations. Commenters state that Duke Energy has set out that the 2015 CCR Rule's closure performance standards prohibit closure-in-place where groundwater is in actual or likely contact with the CCR unless effective engineering measures can be installed to control, minimize, or eliminate such conditions. Commenters further assert that contrary to the closure and storage practices ADEM has repeatedly permitted, the utility industry's research arm, the Electric Power Research Institute, long ago informed its members that capping an unlined CCR impoundment in place is inappropriate where the ash remains in contact with groundwater: ''Caps are not effective when [coal ash] is filled below the water table, because groundwater flowing through the [coal ash] will generate leachate even in the absence of vertical infiltration through the [coal ash].'' Commenters state that the legal standards are clear, and EPA has fully explained them in the Proposed Denial, the Notice of Potential Violations sent to Alabama Power, the Gavin decision, the Agency's response to Gavin comments, and elsewhere.

Commenters state that the Federal CCR regulations plainly states that if a CCR impoundment is to be capped in place, ''[f]ree liquids must be eliminated,'' the utility must ''[p]reclude the probability of future impoundment of water, sediment, or slurry,'' and the utility must ''[c]ontrol, 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 CFR 257.102(d)(2)(i) and (d)(1)(ii) and (i). Yet, as EPA sets out in its Proposed Denial and its Notice of Potential Violation (NOPV) for Plant Barry, ADEM has allowed utilities to cap in place unlined leaking CCR impoundments across Alabama, in violation of all these provisions. Commenter argues that ADEM seeks to justify approval of its Application despite its pervasive violations of the Federal CCR regulations by pointing out that its State CCR regulations copy the relevant language of the Federal CCR regulations. Commenters assert that ADEM asks EPA to put on blinders, to read just the bare language of ADEM's regulation, and to ignore what ADEM is doing in practice across the State to allow CCR impoundments to fall far short of the Federal standards. Commenters state that ADEM's argument asks EPA to allow Alabama to nullify the Federal CCR regulations and the WIIN Act and to violate the requirements and purpose of the WIIN Act. Commenters argue that the WIIN Act requires much more than EPA merely reviewing a State application to see if the language of the State regulations matches the language of the Federal CCR regulations, and, instead, the WIIN Act requires EPA to determine that ''the program or other system [of the State] requires each coal combustion residuals unit located in the State to achieve compliance with'' either the criteria set out in the Federal CCR regulations or other State criteria that EPA determines to be as protective as the criteria of the Federal CCR regulations. 42 U.S.C. 6945(d)(1)(B). Commenters maintain that EPA is not directed to perform a word check of the State regulations but rather to determine whether the State's program or other system actually requires all the CCR units in the State to achieve compliance with the Federal CCR regulations or other criteria that are as protective. Commenters maintain that ADEM's program miserably fails to achieve that compliance and that ADEM's argument, if adopted, would make compliance with the WIIN Act and the protective standards of the Federal CCR regulations a farce. Commenters believe a State agency like ADEM, which has acted contrary to the plain language of the Federal CCR regulations and refuses to address EPA's concerns with its program, would be able to disregard entirely the standards designed to protect the public, communities, and clean water and allow CCR to be stored permanently in unlined pits sitting deep in groundwater beside major waterways—despite the plain language of the Federal CCR regulations and State regulations to the contrary if Alabama's State CCR permit program were approved. Commenter states further that EPA maintains that approval would not only violate the plain language of the WIIN Act, it would also eliminate the protections the Federal CCR regulations provides for all people and all waters in the United States, including all Alabamians and the waters in Alabama.

Commenters also state that Alabama is an outlier and that in the Southeast, over 250 million tons of CCR are being cleaned up. Commenters note that by contrast, every unlined CCR impoundment in South Carolina is being excavated; every unlined CCR impoundment in North Carolina is being excavated; all of Dominion's unlined CCR lagoons in Virginia are being excavated; notwithstanding Georgia EPD's failure to implement the CCR regulations, Georgia Power has committed to excavate about two-thirds of its CCR from unlined impoundments in Georgia; and to date the TVA has been required to excavate CCR impoundments at its Gallatin plant near Nashville and its Allen plant in Memphis. Commenters maintain that every unlined CCR impoundment in the coastal region of these Southeastern States is being excavated—but not in Alabama. Commenters state that only Alabama is allowing every utility in the State—regardless of where the CCR impoundment is located and even though all the impoundments have ash sitting deep in groundwater—to leave all their millions of tons of CCR in unlined, leaking impoundments beside the State's waterways.

Commenters further allege that all eight of the final CCR permits ADEM

has issued violate the Federal CCR regulations. Commenters note that EPA focused on four Alabama CCR Permits that were issued to impoundments that are being closed with waste in place below the water table in the Proposed Denial: TVA's Plant Colbert and Alabama Power's Plants Gadsden, Gorgas, and Greene County. Commenters state that while EPA concentrated on these permits, the four additional CCR permits issued by ADEM—for Alabama Power's Plants Barry, Gaston, and Miller and PowerSouth Energy Cooperative's Plant Lowman—share similar fundamental flaws and further demonstrate that Alabama's permit program fails to meet the statutory standard for approval. Commenter states that the permits for Plants Barry, Gaston, Miller, and Lowman also ''allow[] CCR in closed units to remain saturated by groundwater, without requiring engineering measures that will control the groundwater flowing into and out of the closed unit.'' 88 FR 55220, 55230 (August 14, 2023).

Commenters state that there are additional instances where ADEM has allowed noncompliance with the Federal CCR regulations and that these additional flaws further support EPA's denial of ADEM's permitting program. Commenters state that ADEM adopted the location restrictions, including a requirement that by October 17, 2018, that utilities make a demonstration that their CCR impoundments are not located in wetlands. 40 CFR 257.61(a), (c). Commenters state that ADEM CCR regulations contain the same requirement. Alabama Administrative Code r. 335–13–15.03(2). Commenters state that Alabama Power posted its wetlands demonstration for Plant Barry for both the Federal and State CCR regulations on its CCR website and that its demonstration states that the Plant Barry CCR impoundment is a wastewater treatment facility and that wastewater treatment facilities are excluded from the definition of wetlands. According to commenters, based on these conclusions, Alabama Power states that the Plant Barry CCR impoundment is not in wetlands. Commenters state that this approach makes a mockery of the wetlands location demonstration because many, and perhaps all, CCR impoundments have been permitted under the Clean Water Act as wastewater treatment facilities. Commenters state that the approach Alabama Power takes under both the Federal and Alabama CCR regulations would result in all permitted CCR impoundments satisfying the wetlands location restriction—even though they are in wetlands, within the floodplain, and built on top of a stream, as is true with the Plant Barry CCR impoundment. Commenters state that the standard is whether the impoundment is ''in'' wetlands, not whether the impoundment ''is'' a wetland, but that ADEM has allowed Alabama Power to get away with this nonsensical response to the wetlands location restriction. A review of Alabama Power's website demonstrates that it has filed such meaningless and evasive wetlands location demonstrations for all its CCR facilities. Commenters state that this approach to wetlands requirements has not been taken in other jurisdictions. For example, Duke Energy reported that its CCR impoundment at its H.F. Lee facility in North Carolina did not meet the location restriction because of leakage into surrounding wetlands. Duke Energy reached the same conclusion for its West Ash Basin at its Roxboro facility also in North Carolina.

Response: EPA agrees with the comments that the Agency's application of the closure requirements in § 257.102(d) to the unlined surface impoundments at issue is reasonable and reflects the plain meaning of the regulations. The Agency also agrees that it is appropriate to consider State CCR permits when evaluating whether to approve a State CCR permit program. EPA also agrees that allowing unlined impoundments to comply with only the standards in § 257.102(d)(3) relating to the cover system is not as protective as the Federal CCR regulations. As the commenters note, this conclusion is consistent with a technical report from the Electric Power Research Institute (EPRI) that was included in attachments to the comment. The report says, ''Capping is usually performed to prevent or reduce infiltration of water into CCPs, which subsequently reduces the volume of leachate generated. Caps can be installed on both legacy and recently filled CCP sites. Depending on climatic conditions, designs can range from barrier caps utilizing low permeability materials such as PVC, to evapotranspirative caps that utilize soil sequencing and vegetation to promote runoff and evaporation of water. Caps are not effective when CCP is filled below the water table, because groundwater flowing through the CCP will generate leachate even in the absence of vertical infiltration through the CCP.'' [23]

EPA also agrees that the Agency's review of the Alabama CCR permits was not exhaustive—EPA did not attempt to identify every potential inconsistency with the Federal requirements, either in the permits reviewed in the Proposed Denial or in other permits that were not reviewed by EPA. EPA stated in the Proposed Denial that it was not conducting a comprehensive review because the purpose of the evaluations of the permits was not to evaluate compliance by the regulated facilities, but instead to determine whether the facilities' permits require facilities to comply, regardless of actual compliance by the facilities (stated differently, it is theoretically possible that the facilities reviewed in the Proposed Denial are in compliance with the Federal CCR regulations even though their permits by the terms do not require compliance).

The remainder of the comment address issues outside the scope of this action and no response is required.

9. Comments in Support of EPA's Evaluation of CCR Permits Issued by ADEM

Comment: Commenter states that the Black Warrior river watershed flows through one of the most biodiverse regions in the country and provides a source of drinking water for dozens of communities across north-central Alabama; the river drains parts of 17 Alabama counties and the area the river drains, its watershed, covers 6,276 square miles in Alabama and measures roughly 300 miles from top to bottom; the watershed is home to over 1 million residents and contains 16,145 miles of mapped streams; thousands of people use the river and its tributaries for fishing, swimming, hunting, and watersports, contributing to Alabama's $14 billion outdoor recreation economy; and the river supports numerous freshwater species, including some that occur in the Black Warrior basin and nowhere else in the world. Commenter states that despite the river's importance to the State, Alabama Power plans to keep three unlined, leaking CCR pits along the river: Plant Gorgas (Mulberry Fork, Walker County), Plant Miller (Locust Fork, Jefferson County), and Plant Greene County (lower Black Warrior River). Commenter states that these three pits contain a total of about 55 million cubic yards of CCR, or an estimated 55 million tons (110 billion pounds, or 10 times the amount released in the Kingston disaster). Commenter states that Alabama Power's federally mandated groundwater monitoring

[23] Groundwater Remediation of Inorganic Constituents at Coal Combustion Product Management Sites, EPRI Technical Report (2006), SELC Comment Attachment 11 at p. 3–6. Docket Number EPA–HQ–OLEM–2022–0903–0260.

indicates that groundwater around the pits contains unsafe levels of toxic contaminants such as arsenic, cobalt, lithium, and molybdenum. Commenter states that but for the mandated monitoring and reporting requirements of the Federal CCR regulations, Alabama residents would have no idea of the extent of this contamination or the risk it presents to their communities.

Commenter states that Plant Greene County Ash Pond was constructed between 1960 and 1965, and the ash pond currently occupies approximately 489 acres on the banks of the Black Warrior River near Forkland, Alabama. Commenter states that, according to United States Geological Survey (USGS) topographic maps, the unlined ash pond was built across Big Slough, and associated wetlands, which flows into Backbone Creek, a tributary of the Black Warrior River. Commenter states Alabama Power stopped burning coal at Plant Greene County in March 2016 after converting all of its electric production to natural gas, meaning that the plant is no longer generating new CCR. Commenter states that at the last inspection, the ash pond was determined to be filled to its capacity, containing 10,300,000 cubic yards (yd^3) of CCR.

Commenter states that EPA's environmental justice mapping and screening tool shows Plant Greene County has three environmental justice indexes above the 80th percentile. Commenter states that these indexes measure the environmental burden upon the surrounding community; the higher the index score, the greater the burden on the local community. Plant Greene County's score for wastewater discharge concerns is 90.4. Commenter states that the Plant Greene County pond was constructed over 5 decades ago and the pond does not meet the specifications required under current regulations for the proper disposal of CCR. Commenter states that the ash pond was constructed without any currently acceptable form of bottom liner, leaving the CCR and its toxic constituents to leach into groundwater, the average level of which is less than 5 feet below the pond.

Commenter states that a stream named Big Slough was essentially cut in half by the construction of Plant Greene County, its CCR pond, and its barge canal in the mid-1960s. Commenter states that the Big Slough and surrounding wetlands throughout the middle of this large river bend were buried beneath and contaminated by toxic CCR. Big Slough continues to flow from the west side of the CCR pond to the southwest into Backbone Creek, which flows into the Black Warrior downriver. Commenter states that the CCR pond is surrounded by a large earthen dike that contains over fifty years-worth of toxic CCR waste, now estimated to be 10.3 million tons. Commenter states that capping CCR in place at Plant Greene County will not erase the very real connection that exists between Alabama Power's toxic CCR, Big Slough buried underneath it, the wetlands and floodplain it was constructed in, and the groundwater it sits in. All of this water is dynamic, flowing and moving constantly, creating an ongoing pathway for continued contamination of groundwater throughout the area, local streams, wetlands, and the lower Black Warrior River.

Commenter states that the deficiencies in the construction of the ash pond at Plant Greene County have damaged the groundwater below and around the pond. Commenter states that Alabama Power's own testing demonstrates that the groundwater is contaminated with arsenic, cobalt, and lithium concentrations that exceed levels deemed safe by EPA. Commenter states that arsenic levels in the groundwater at Plant Greene County have been measured at levels up to 7.5 times greater than the action level determined by EPA. Commenter states that every semi-annual groundwater sampling event at Plant Greene County since Alabama Power began testing has shown levels of pollutants that exceed GWPS. Commenter states that without the effective removal of the CCR waste, the contamination of ground and surface water at Plant Greene County will continue for decades.

Commenter states that the CCR pond at Plant Miller was originally constructed in the late 1970s, and the primary dike impounding the CCR disposal facility stands at 170 feet tall and 3,300 feet long, or about 0.625 miles, creating an unlined pond that occupies approximately 321 acres and is located near Quinton, Alabama. Commenter states that Alabama Power built the Plant Miller Ash Pond on the bank of the Locust Fork of the Black Warrior River and it was constructed to contain a maximum of 22,000,000 cubic yards of CCR. Commenter states that the pond now holds more than 18,500,000 cubic yards, and discharges wastewater at a rate of approximately 11.5 million gallons per day (MGD). Commenter states that the CCR disposal facility at Plant Miller was constructed prior to modern regulations and does not meet current regulatory safety requirements. The commenter states that the pond does not have a bottom liner to prevent toxic CCR leachate from contaminating the underlying water table, which is located less than 5 vertical feet from the base of the bottom of the pond. Commenter states that two unnamed tributaries (UTs) to the Locust Fork of the Black Warrior River were partially buried when Alabama Power constructed its CCR pond at Plant Miller in the late 1970s. Commenter states that the West UT's three headwater streams were buried beneath the toxic CCR waste repository and the South UT's headwater reaches were also buried. Essentially, the upper half of each stream's watershed was buried by Alabama Power's CCR. Commenter states that both streams were filled with large dams made of clay, soil, and rock fill, and the dam is approximately 170 ft. tall at its highest point, and over 3,300 ft. long. The commenter states that the dam connects to a large earthen dike that flanks the southwest side of the ash pond and that the dike holds back the ponded water along the entire western side of the ash pond and all of the 18.5 million tons of toxic ash deposited there since the 1970s, which looms over the remaining lower reaches of the UTs and the Locust Fork below. Commenter states that capping CCR in place at Plant Miller will not erase the very real connection that exists between Alabama Power's toxic CCR, the two streams buried underneath it, and the groundwater it is sitting in. All of this water is flowing and moving constantly, creating an ongoing pathway for continued contamination of groundwater throughout the area, local streams, and the Locust Fork. Commenter states that these fundamental deficiencies in the facility construction have led to significant contamination of groundwater in the area surrounding the pond. Commenter states that groundwater monitoring at Plant Miller demonstrates contamination but the full extent of which is still unknown.

Commenter states that Alabama Power's Plant Gorgas is located in Walker County, Alabama, near the town of Parrish, where Baker Creek flows into the Mulberry Fork of the Black Warrior River. Commenter states that after more than 100 years of generating electricity by burning coal, Plant Gorgas was decommissioned on April 15, 2019. Commenter states that Alabama Power disposed of CCR in several different areas around the facility and that the largest of these ash dumps, the primary CCR pond known locally as Rattlesnake Lake, has received the bulk of the electric plant's CCR waste over the last 60+ years. Commenter states that the

facility's gypsum pond, which has only been in operation for about 14 years, also receives some CCR residue mixed with spent gypsum from the plant's air pollution emissions scrubbers, and Alabama Power has used three onsite landfill structures for additional CCR disposal, one each for bottom ash, fly ash, and gypsum. Commenter states that the primary CCR disposal facility for the waste created at Plant Gorgas (Rattlesnake Lake) is a 420-acre impoundment on the opposite bank of the Mulberry Fork from the electric generating facility. Commenter states that it was constructed in 1953 as a cross-valley dam blocking Rattlesnake Creek. Currently, the dam stands at about 140 feet above the elevation of the river below. Commenter states that as of a May 1, 2018, inspection, Rattlesnake Lake contained approximately 25 million cubic yards of CCR, according to documents published on the power company's website. Commenter states that the Rattlesnake Lake was constructed without the minimum 5-foot buffer between the base of the CCR unit and the uppermost limit of the uppermost, underlying aquifer and it was also constructed without any bottom liner to prevent contamination of the underlying aquifer. Commenter states that Rattlesnake Lake does not meet current State and Federal regulations and that it must be safely and permanently closed without ash sitting in groundwater, just like the ash ponds at Plants Miller and Greene County.

Rattlesnake Creek was dammed by Alabama Power in the early 1950s to form Rattlesnake Lake for CCR waste storage. The majority of the creek and its tributaries are impounded as a result. Only the tail end of the creek remains below the dam before it flows into the Mulberry Fork. This part of the creek is a slough due to being part of the Mulberry Fork's reservoir effect caused by Bankhead Dam far downstream on the Black Warrior River.

Commenter states that Alabama Power elected cap-in-place as its preferred method for closing the ash pond at Plant Gorgas. However, Alabama Power announced plans do not seem to take into account the inherent difficulty in removing the water from a continuously flowing creek that drains a watershed of over 1,300 acres. Commenter states that the plans do not address exactly how the left-over CCR will be separated from the natural course of Rattlesnake Creek. Instead, according to commenter, the plans simply state the CCR will be consolidated to an area somewhat smaller than its current footprint and covered with a low-permeability liner. Commenter states that Alabama Power has not indicated any form of protective bottom liner will be employed to prevent future contamination of groundwater. Commenter states that Alabama Power's monitoring has detected contamination of arsenic, lithium and molybdenum in the underlying aquifer.

Commenter states that capping CCR in place at Plant Gorgas' Rattlesnake Lake will not erase the very real connection between Alabama Power's toxic CCR, the creek buried underneath it, and the groundwater it is sitting in. Commenter states that all of this water is flowing and moving constantly, creating an ongoing pathway for continued contamination of groundwater throughout the area, local streams, Rattlesnake Creek, and the Mulberry Fork. Commenter states that a flowing creek, fed by groundwater and springs, cannot be dewatered. Commenter maintains that no matter what Alabama Power endeavors to do at Rattlesnake Lake, leaving toxic CCR in place there will cause continued intermingling of ash waste with the creek and groundwater for future generations to deal with.

Commenter maintains that using cap-in-place in these circumstances, as allowed by the closure plans approved under ADEM's deficient regulatory program, also fails to address the threat of a potential catastrophic dam failure or release of ash at all three facilities on the Black Warrior River. Commenter states that over 55 million cubic yards of CCR are stored along the banks of the Black Warrior River at the facilities and that improper maintenance or the possibility of extreme weather events or natural disasters damaging the dike and/or dam systems could result in breaches or failures that could release massive quantities of toxic CCR into the river. Commenter states that the Federal CCR regulations require a risk assessment evaluation at CCR ponds (40 CFR 257.73), and the ash ponds at Plant Greene County and Plant Miller were classified as a Significant Hazard, meaning that dam failure or improper operation of the facility would likely result in significant economic loss or environmental damage. Commenter states that the dam at Plant Gorgas was assessed as a High Hazard Potential, meaning that in addition to economic loss and environmental damage, dam failure would also likely result in the loss of human life. Commenter states that the inundation maps provided by Alabama Power (available to EPA) depict the areas that could be flooded with CCR and contaminated water under current conditions at the ponds in the event of such a catastrophe. Commenter states that the inundation maps demonstrate that failure at any one of the three facilities would be devastating to the river and the surrounding communities.

Commenter states that even after final pond closure, the remaining ash will continue to be located in close proximity to the underlying aquifers and will likely intermingle with the groundwater table at times. Commenter states that Alabama Power's Assessment of Corrective Measures (ACM) filed with ADEM for all three facilities propose to address the groundwater contamination primarily with a process known as monitored natural attenuation (MNA). Commenter states that the selected remedy of MNA here means that the Company will continue to monitor groundwater while allowing natural chemical and physical processes in the subsurface environment to remove, dilute, or immobilize the contaminants. Commenter states this means that Alabama Power will do little to treat the groundwater contamination on site or in the surrounding environment, other than adopt a wait-and-see attitude with possible (not guaranteed) future actions. Commenter states that the ACMs contemplate several other potentially viable corrective measures, but the Company has not committed to employing these measures, asserting that one or more of these technologies may be used as adaptive site management as a supplement to the selected remedy, if necessary.

Commenter states that EPA guidance (2015)[24] recommends a four-tiered approach should be used to establish whether MNA can be successfully implemented at a given site. Commenter states that the first step is to demonstrate that the extent of groundwater impacts is stable, and that the Company has failed to do at all three facilities. Commenter states that, second, Alabama Power should determine the mechanisms and rates of attenuation, and that the Company has failed to do that. Third, Alabama Power should determine if the capacity of the aquifers is sufficient to attenuate the mass of constituents in groundwater and that the immobilized constituents are stable. Id. The fourth and final step is for Alabama Power to design performance monitoring programs based on the mechanisms of attenuation and establish contingency remedies (tailored

[24] U.S. EPA. Use of Monitored Natural Attenuation for Inorganic Contaminants in Groundwater at Superfund Sites. Office of Solid Waste and Emergency Response (OSWER). August 2015.

to site-specific conditions) should MNA not perform adequately. Commenter states that Alabama Power failed to take these steps.

Commenter states that Alabama Power has yet to demonstrate how MNA will work, evaluate whether it is a feasible remedy based upon site specific conditions at all three facilities or even analyze whether the aquifer has sufficient capacity to absorb all the toxic CCR pollution. Commenter states that even without these assurances, the ACMs note that the process of MNA could take two decades or more after final closure to allow contaminants to bleed out of the source and move through the groundwater into the environment so that the groundwater monitoring will begin to measure levels that meet GWPS, meaning that it may be 2045 or later before the CCR contaminants have moved out of the measured groundwater sites into the surrounding environment, even generously assuming MNA could even work here.

Commenter states that EPA's Proposed Denial correctly points out multiple additional deficiencies with the Company's selection of MNA as a proposed remedy at all three facilities, with ADEM's permitting of the ash pond closure at all three facilities with deficient ACMs, with ADEM's oversight of the selection of remedial measures, with Alabama Power's implementation of groundwater monitoring and ADEM's oversight of groundwater monitoring. The commenter agrees with the Agency's assessment on each of these points.

Commenter supports EPA's Proposed Denial of Alabama's CCR regulatory program 100%. Commenter states that but for Federal oversight of CCR pollution, Alabama's citizens would have absolutely no data about the danger that CCR pollution presents to public health and the environment. Commenter states there was no meaningful groundwater monitoring performed at Alabama CCR sites and no public data about the migration of dangerous CCR contaminants into adjacent ground and surface waters until the Federal CCR regulations required it.

Commenter states that Alabama rushed to submit its own CCR regulatory program, a program that EPA has correctly found fails to meet Federal standards. Commenter states that it is important to realize that Alabama submitted its regulatory program not to protect people and special places from CCR pollution but to protect Alabama Power. Commenter states that they filed technical comments every step of the way during Alabama's development and implementation of its flawed CCR program. Commenter states that the State failed to follow the data, the science, and the law to develop a protective regulatory scheme that would require Alabama Power to clean up the CCR pollution that the power company's own sampling shows is contaminating Alabama's groundwater, rivers, and streams. Commenter made many of the same arguments that EPA made in support of its meticulously supported Proposed Denial.

Commenters state that despite the irrefutable evidence that leaving CCR in primitive unlined pits does not stop water pollution or mitigate risks of spills during extreme weather events, ADEM chose to stubbornly persist with its dangerous and deficient regulatory program. Commenter states that Alabama's program unlawfully allows CCR to remain saturated by groundwater after closure; fails to require appropriate groundwater monitoring; and permits Alabama Power to delay indefinitely the implementation of measures to remediate documented groundwater pollution. Commenter states that without EPA's Proposed Denial of Alabama's CCR program, the State's residents and special places would be at the mercy of a substandard regulatory system that ignores the documented dangers of CCR. According to commenter, Alabama Power forecasts rate increases that will be implemented if the power company is forced to comply with the rule, increases that will hit hardest in Alabama's poor communities. Commenter maintains that Alabama Power has earned more than $1 billion in profits from 2014–2018 compared to the industry average, and that for over a decade, Alabama's residential electricity bills have been in the top three highest in the nation while Alabama Power banked higher profits than comparable electric utilities in other southern States. Commenter states that Alabama Power earned a 38% higher profit margin than sister company Georgia Power, and that the people in Georgia have electric bills averaging $134.11 per month, people in Mississippi average $135.31, and Alabamians averaged $147.75 in 2021, according to the most recent available data from the U.S. Energy Information Administration, up from $143.95 in 2020. Commenter states that Alabama Power's return on average equity (ROE) for 2018 to 2020 was 12.76 percent. Commenter states that in comparison, Florida Power & Light earned 11.39%, Mississippi Power 11.11%, Duke Energy Carolinas 9.37%, Georgia Power 9.24% and Louisville Gas & Electric 8.67%. Commenter asserts that if Alabama Power's ROE had instead been the average for the industry, Alabama Power customers would have saved $1.02 billion since 2014. Commenter states that if Alabama Power puts its record profits toward cleaning up CCR to comply with the 2015 CCR Rule, it can limit the impact of rate increases on its poorest customers.

Commenter also states that Alabama Power insists that it will have to implement a logistically challenging trucking scheme to dispose of its CCR in remote landfills, but that this argument is another red herring. Commenter states that power companies in Virginia, North Carolina, South Carolina, Tennessee, and Georgia have built upland lined landfills to properly dispose of their CCR. Alabama Power, as one of the largest landowners in the State, will surely do the same to limit the costs of cleaning up CCR. Alabama Power has constructed and operated other landfills and there is no reason to expect it will not do the same here. For all of the reasons cited in this letter, as well as all of the reasons stated in EPA's proposed rule, commenter believes that the Agency has taken the appropriate action in proposing to deny the State of Alabama's application for a State CCR permit program.

Response: EPA agrees that closure with waste in place in the groundwater without taking measures to ensure that liquid does not enter the units or that free liquids and contaminants do not migrate out of the unit after closure is inconsistent with the Federal CCR regulations. EPA also agrees that permits allowing such closure are not as protective as the Federal CCR regulations require and that such units pose a potential ongoing hazard to human health and the environment. EPA also agrees that Alabama's CCR permits do not adequately implement corrective action.

10. Comments Opposed to EPA's Application of the Closure Performance Standards

Comment: Commenters state that EPA's current ''no waste below the water table'' interpretation is based on three terms: infiltration, future impoundment, and free liquids. Commenters state that just as the word ''groundwater'' does not appear in the close-in-place regulations, none of these three terms appears in EPA's groundwater regulations, nor does any of the text around them refer to groundwater. Commenters state that these terms have meanings that easily harmonize with the purposes and goals

of facility closure, which are primarily to achieve a stable and secure base and to install a protective cover.

Commenters state that a protective cover that is designed and installed to EPA's specifications repels stormwater to prevent it from infiltrating downward into the waste, where it could become a source of leachate. Commenters note that this is not to say that some other source of water (such as laterally flowing groundwater) cannot also generate leachate, nor does ''infiltrate'' as a general vocabulary word always refer to movement in a single direction. Rather, commenters state that for over more than 40 years of usage under RCRA, in the context of closing a waste facility in place, EPA has consistently used the word ''infiltration'' to describe the potential for stormwater to penetrate downward into the waste.

Commenters also discuss future impoundments and contend that ash is dewatered and stabilized to ensure the closed unit maintains a slope, so rainwater runs off. Commenters state that if not adequately pre-stabilized, ash could settle over time and create a bowl or indentation on top of the cap where rainwater could pond. Commenters note that the longer impounded water stands on top of the ash, the greater the possibility that the cap could fail and water could infiltrate downward. Commenters assert that the obligation to prevent future impoundment refers to the need to ensure the cap is adequately supported and settlement of this nature does not occur.

With reference to free liquids, commenters assert that the regulations require the free liquids that must be removed are the relatively free-flowing liquids which otherwise could contribute to instability and affect the cap. Commenters state that there has never been an obligation to remove all liquids, nor is it true as a principle of engineering that CCR or other waste must achieve a moisture content of zero before it can be sufficiently stabilized. Commenters maintain that stability is determined by engineers who investigate and perform calculations according to well understood principles and procedures, taking into account liquids that may be present and any other relevant factors.

Commenters state that the terminology in the close-in-place performance standard reflects concepts and functions that naturally harmonize with the goals of facility closure. Commenters state that there is no need to search for a groundwater-related purpose where none is named, because a different division of EPA's regulations addresses groundwater quality issues.

Commenters note that EPA has stated recently that it has consistently held its current position on waste below the water table since 1982, and it cites documents dating back to then that refer to the need to address groundwater. Commenters do not dispute the requirement to protect groundwater, but commenters maintain that, if EPA had held a consistent position on this point since 1982, that means EPA also must have had a relatively complete understanding of both the closure and corrective action processes at that time. Commenters state that, otherwise, EPA could not have determined which elements were required for closure versus corrective action (or both) or identified a specific engineering response as mandatory in a particular scenario (such as waste below the water table). Commenters maintain that was not the case in 1982. Commenter states that, for example, in 1998, EPA described the history of hazardous waste regulations as follows:

> The closure process in Parts 264 and 265 was promulgated in 1982, before the Agency had much experience with closure of RCRA units. Since that time, EPA has learned that, when a unit has released hazardous waste or constituents into surrounding soils and groundwater, closure is not simply a matter of capping the unit, or removing the waste, but instead may require a significant undertaking to clean up contaminated soil and groundwater. The procedures established in the closure regulations were not designed to address the complexity and variety of issues involved in remediation. Most remediation processes, on the other hand, were designed to allow site-specific remedy selection, because of the complexity of and variation among sites.

Commenters assert that this passage emphasizes the need for remediation to address groundwater impacts, an unremarkable and undisputed proposition. In terms of understanding the respective purposes of closure and corrective action, the commenters contend that the statement is contrary to the notion that EPA's views on the selection of measures for remediation, whether at the time of closure or otherwise, had already crystallized in 1982. Commenters state that rather, according to the agency, EPA ''learned'' after then that it was unwise if not impossible to mandate particular responses in advance or from the top down without a ''site specific'' evaluation that accounted for ''the complexity and variation among sites.''

Response: EPA does not agree with the commenter that the Agency has incorrectly applied the Federal CCR regulations. Further, the comments are substantively the same as comments submitted to EPA in response to the proposed Part A decision for Gavin, and EPA responded to the comment in the Response to Comments (RTC) for the final Part A decision for Gavin. See *e.g.,* Gavin RTC, pages 65 and 102. EPA adopts the responses from Gavin for this final action. See also Gavin Final Decision [25] pages 24–41; 89 FR 38987–38995, 39077–39078.

Comment: Commenters assert that if EPA's interpretations are indeed new—as is more likely the case—then it is clear that 2015 rules do not require removal of CCR as a part of a closure-in-place closure, and do not require the complete isolation of the CCR from all potential sources of moisture in order to meet the performance standards required as a part of the closure-in-place. Rather, these issues are addressed as a part of the post-closure risk-based corrective action process, as clearly contemplated in the 2015 rules.

Response: EPA disagrees that its interpretations of closure are new and notes that EPA responded to comments that are substantively the same in several instances, including in the RTC to the final Part A decision for Gavin Final. See *e.g.,* Gavin RTC pages 65 and 96. EPA adopts the responses from Gavin in response to the comments. See also Gavin Final Decision, pages 24–41.

Comment: Commenter ADEM states that it promulgated CCR regulations in 2018 that reflect the same options for closure established by EPA. Commenter states it has issued permits to Alabama Power approving the Company's plans to close its ash ponds using the closure-in-place method and Alabama Power has acted in accordance with those permits. Commenter states that if closure-in-place is not available, the only alternative is closure-by removal. Commenter states that as of the 3rd quarter of 2023, Alabama Power estimates the costs of closure-in-place to be $3.5B and that at the present time, closure-by-removal is estimated to be three to five times more costly than closure-in-place. Commenter states this is due to, for example, the associated cost of excavation, transportation, and disposal in an offsite landfill compared to the costs of closure-in-place.

Commenter states that not only are the costs associated with closure-by-removal significantly higher and more burdensome to Alabama citizens, but the timeframe to complete closure is also significantly greater. Commenter states that Alabama Power has already completed closure-in-place at one of its

[25] Final Decision: Denial of Alternate Closure Deadline for General James M. Gavin Plant, Cheshire, Ohio, EPA–HQ–OLEM–2021–0100 November 22, 2022.

plants, with the remainder projected to be completed by 2032 or earlier. Commenter states that based on initial evaluations, closure-by-removal can take anywhere from 16 years to 54 years, depending on the plant site. Commenters state that in addition, the initial evaluations assumed landfill sites within a reasonable proximity to each plant would be readily available, but the commenter asserts this has proven not to be the case, which may further extend the time necessary to complete closure-by-removal.

Response: Comments do not provide support for the claimed costs of closure by removal, which in any event, are not relevant under RCRA. But, in any case, the differential cost of closure approaches does not equate to a conclusion that EPA is improperly requiring all CCR surface impoundments to close by removal. Nor does the cost of closure by removal allow a facility to close a unit without concern for the continued movement of liquid into and out of a unit closed with waste in the water table. Instead, as EPA has repeatedly stated, whether any particular unit can meet the closure in-place standards is a fact- and site-specific determination that will depend on a number of considerations, such as the hydrogeology of the site, the engineering of the unit, and the kinds of engineering measures implemented at the unit. Accordingly, the fact that, prior to closure, the base of a unit intersects with groundwater does not mean that the unit may not ultimately be able to meet the performance standards for closure with waste in place. In other words, EPA is not mandating that a unit submerged in groundwater prior to closure must necessarily close by removal. Depending on the site conditions the facility may be able to meet the performance standards in § 257.102(d) by demonstrating that a combination of engineering measures and site-specific circumstances will ensure that, after closure of the unit has been completed, the groundwater would no longer remain in contact with the waste in the closed unit. See Gavin RTC page 103. See also Gavin Final Decision pages 28–30.

Comment: Commenter states that EPA has approved closures with waste below the water table. Commenter states that EPA's primary disagreement with ADEM's implementation of the CCR program is the approval of closures in place where waste (*i.e.,* saturated ash) remains below the water table. Commenter states that, under such circumstances, according to EPA, the facility must either remove the waste below the water table or execute certain as yet unspecified engineering measures. Commenter also noted that EPA asserts that it has held the same view consistently since the early 1980s as to waste at hazardous waste and municipal solid waste facilities.

Commenter disagrees and states that, over a period of decades, EPA has repeatedly approved the closure of sites with hazardous waste and materials below the water table and found that such closures both protected human health and the environment and complied with RCRA subtitle C standards. Commenter states that EPA could not have approved closures in this fashion if it had been impossible to protect human health and the environment with waste below the water table or if a closure in place under such circumstances violated RCRA closure standards.

Commenter states that EPA approved these closures under the primary authority of CERCLA, commonly referred to as the Superfund program. Commenter states that section 121 of CERCLA imposes two important statutory obligations. First, as under RCRA, EPA must ensure closures protect human health and the environment. Second, ''[w]ith respect to any hazardous substance, pollutant or contaminant that will remain onsite,'' EPA must ensure that a CERCLA closure also complies with ''any standard, requirement, criteria, or limitation under any Federal environmental law,'' explicitly including RCRA, that may impose a ''legally applicable or relevant and appropriate standard, requirement, criteria, or limitation'' (which EPA references as ''ARAR''). Commenter states that, thus, where EPA identified RCRA closure standards as ARARs at a CERCLA site, EPA was under a statutory obligation to confirm compliance with those standards, which applied the same terms and concepts as those found in § 257.102(d).

Commenter states that EPA's Superfund closures with waste below the water table thus stand for two important propositions: first, if waste remains below the water table, RCRA does not impose an absolute requirement to close by removal or to implement any particular engineering measures, nor does that circumstance necessarily preclude protection of health or the environment; and second, even if those are EPA's interpretations through these decisions, EPA repeatedly expressed a contrary view in the past.

Commenter states that when EPA promulgated the CCR regulations in 2015, it was under an obligation to prepare a Regulatory Impact Analysis (RIA) that included, among other things, an estimate of compliance costs. Commenter states that the cost analysis prepared by EPA ''assume[d] that all surface impoundments undergo closure as landfills, meaning that surface impoundments are not excavated, nor is their ash trucked off-site.'' Commenter states that EPA referred to the cost of closure throughout the RIA as the ''capping and post-closure monitoring costs,'' and EPA did not estimate the cost of excavation and redisposal. Commenter states that EPA acknowledged in its Risk Assessment for the final rule that some CCR impoundments ''come in direct contact with the water table for at least part of the year.'' Commenter states that, if EPA knew some ash ponds had ash in contact with groundwater and believed that its rule required closure by removal (or some other special engineering response) in that scenario, then EPA was required to include the costs of that response in the RIA. Commenter states that the absence of consideration of costs of that nature indicates that EPA did not believe closure in place was necessarily prohibited or that measures beyond those currently planned at Alabama facilities were required for units with ash below the water table.

Response: EPA does not agree with the commenter's assertion that all CERLA actions constitute a determination by EPA that a selected remedy meets all requirements of RCRA, and therefore the existence of Superfund cleanup decisions that allow waste to remain in place in groundwater at certain sites means that RCRA generally allows closure with waste remaining in groundwater. The quotations provided in the comments are incomplete and strung together by words not found in the statute (see section 121 of CERCLA). This inaccuracy, combined with the lack of consideration of the specific facts and circumstances at the Superfund sites with remedy documents referenced in Attachment 2 of the comment,[26] render the commenter's conclusions flawed.

CERCLA is a risk-based cleanup program that does not require that RCRA standards be met in all cases. CERCLA requires consideration of costs in selecting remedies. Additionally, CERCLA cleanups can be divided into portions (*i.e.,* operable units) which approach cleanups from multiple perspectives to address risks. This means that a remedy selected for a landfill could leave waste in place, even if it had some contact with groundwater,

[26] Comment submitted by Energy Institute of Alabama, Docket ID: EPA–HQ–OLEM–2022–0903–0182.

but engineering controls that would be required by RCRA (*e.g.,* to prevent groundwater contact with waste) could be required in a remedy selected for another operable unit (*e.g.,* a contaminated groundwater plume).

Attachment 2 referenced by the commenter does not provide any information about the remedies selected in the Records of Decision (RODs) listed. It does not indicate whether RCRA was considered an ARAR in the RODs, whether the remedies selected in the listed RODs included engineering controls to control, minimize or eliminate post-closure infiltration of groundwater into the waste and releases of contaminants, or whether there were other operable units with selected remedies at these sites whose remedies may have required these controls. In any case, the commenter's attempt to rely on a handful of CERCLA RODs to demonstrate the proper interpretation of the requirements in the CCR regulations is not reasonable.

Regarding the comment about the RIA, the conclusions in the risk assessment and the RIA were based on the factual scenarios EPA believed were most likely to occur. See Gavin RTC page 69. Simply put, at the time the risk assessment and the RIA were developed, EPA had not been made aware by any facility that a significant proportion of unlined CCR surface impoundments were constructed in groundwater several feet deep. No commenter during the 2015 rulemaking identified the prevalence of such conditions, or even noted their existence. Thus, the RIA was based on the best information EPA had at the time, and unfortunately, the regulated community did not provide this information to EPA when commenting on the 2015 rule. To now argue that underestimates in the RIA should dictate how the regulation must be interpreted is unreasonable, particularly because their interpretation would mean the regulations fall short of the statutory mandate, as explained in *Utility Solid Waste Activities Group* v. *EPA,* 901 F.3d 414 (D.C. 2018).

B. Comments on EPA's Technical Evaluation of Alabama CCR Permits

1. Comments Opposed to EPA's Evaluation of CCR Permits Issued by ADEM

Comment: Commenter TVA states that it is committed to meeting its obligations associated with the Federal CCR regulations and ADEM's CCR regulations at the Colbert Plant and in so doing continuing to protect human health and the environment and the commenter disagrees with EPA's observations and assumptions about ADEM's permit decisions as discussed in Unit VI.

Commenter states that the Colbert Plant was retired in 2016 and that closure of Ash Disposal Area 4 (also known as Ash Pond 4 (AP–4)) was completed in 2018 in accordance with the Federal CCR regulations and State requirements. Commenter states that Ash Disposal Area 4 was investigated pursuant to the requirements of the Federal CCR regulations and the First Amended Consent Decree between ADEM and TVA. Commenter maintains closure was based on site-specific data and that it is protective of human health and the environment. Commenter notes that there is more work ongoing to address the limited groundwater impacts from Ash Disposal Area 4, but no remedy has been selected, or approved by ADEM, at this time. Commenter states that ADEM has requested more site-specific data and evaluations to support remedy selection. Commenter states that once a remedy is selected and approved by ADEM, TVA will implement that remedy and continue to monitor the unit as the groundwater reaches and maintains GWPS. Commenter asserts that it will adjust the remedy and unit, if needed, to maintain compliance with performance standards with the oversight of ADEM.

Response: The commenter describes actions that must be taken beyond the terms of the applicable CCR permit record in order for the facility to be in compliance with the Federal CCR regulations. However, the fact that necessary actions are not reflected in, or required by, the permit supports EPA's conclusion that Alabama's CCR program is not as protective as the Federal CCR regulations. Specifically, the commenter provides information about actions TVA is taking to collect additional site-specific data and select a remedy. However, this data collection is not required in the final permit issued by ADEM, and the permit provides no deadline for remedy selection. Thus, TVA can be in compliance with its permit without collecting additional data and taking an indefinite amount of time to select a remedy. While this inaction would result in compliance with the permit, it would not achieve compliance with the Federal regulations. See additional discussion of this practice on pages 55241–55242 of the Proposed Denial where EPA states, ''What the permittee is required to do in order to achieve compliance with the regulations must be determined prior to final permit issuance, because the permit must contain these requirements.'' The Colbert permit is thus not as protective as the Federal CCR regulations, regardless of any voluntary actions the facility may be taking.

The facts demonstrate that the permit is not sufficiently protective because Colbert has for several years collected data to conduct an ongoing study without specific objectives, but that study has still not yet resulted in selection of a remedy; nor does the permit provide a deadline for remedy selection. While this protracted study without remedy does not appear to violate the permit, it is neither consistent with nor as protective as the Federal CCR regulations. Specifically, 40 CFR 257.96(a) requires the ACM be completed within 180 days unless a 60-day extension is warranted. Remedy selection is required as soon as feasible, but no less than 30 days after the results of the ACM are discussed in a public meeting with interested parties. See 40 CFR 257.96(e) and 257.97(a). EPA does not agree that permits that allow continued data collection without enforceable requirements (*e.g.,* a permit that includes the regulatory deadlines) to select and implement a remedy are consistent with these requirements. Instead, such permits, if issued pursuant to an approved State program, would shield the permittee from enforcement of the Federal corrective action provisions while releases continue to migrate from the CCR unit. Thus, the Colbert permit is not as protective as the Federal CCR regulations. In addition, EPA's review of Alabama's permits shows that open ended corrective action is common among the facilities permitted by ADEM, which supports EPA's conclusion that the State's program does not require each CCR unit in the State to comply with standards at least as protective as the Federal regulations.

Comment: Commenter states that EPA conjectures that ADEM has approved a monitoring plan with an insufficient number of monitoring wells at necessary locations and vertical depths to ensure that all potential pathways have been monitored. Commenter says that EPA further asserts that bedrock monitoring wells have not been installed at the downgradient boundary as required by 40 CFR 257.91(a)(2) and that some wells are located up to hundreds of feet away from the boundary and on the other side of Cane Creek. Commenter maintains that this leads EPA to conclude that ADEM issued a final permit that approved the bedrock monitoring wells to not be installed at the waste boundary as required by Federal CCR regulations.

Commenter states that the Colbert monitoring system was designed and approved by ADEM by considering site-specific technical information as required by 40 CFR 257.91(b), and the commenters asserts that EPA apparently ignored the information. The commenter maintains that EPA fails to consider that some monitoring wells at the facility were installed prior to implementation of the CCR program and not directly at the unit boundary. Commenter maintains that the geophysical methods confirmed fractures present at these locations, implying an existing connection to the CCR unit, and because of the high hydraulic conductivity in karst due to the presence of preferential pathways, commenter asserts that it is appropriate to assume that groundwater samples from these monitoring wells located beyond the boundary should accurately represent the quality of water that passes it. Commenter states that additionally, some specific well locations were chosen based on anomalies detected from surface geophysical (electrical resistivity) investigations to target areas with preferential pathways. Commenter states that EPA also references monitoring wells located on the opposite side of Cane Creek from the CCR unit. Commenter maintains that Cane Creek is recharged by water from the alluvium, and groundwater within the bedrock aquifer is expected to flow beneath the creek. Commenter states that ADEM's approval of the Colbert monitoring system was based on its review and understanding of the entirety of information and data available for the site.

Response: EPA disagrees with the commenter's explanation as to why a sufficient number of bedrock compliance wells were not installed at the downgradient waste boundary. While EPA appreciates the efforts of TVA and ADEM to design and approve a monitoring program before implementation of the CCR program, the Federal CCR regulations were published in April 2015. Therefore, ADEM has had nearly nine years to require and approve modifications to the groundwater monitoring system to ensure that the requirements outlined at § 257.91(a)(2) were met.

EPA also disagrees with the commenter's technical rationale for not installing additional compliance bedrock wells at the downgradient waste boundary. The regulation specifies that ''[t]he downgradient monitoring system must be installed at the waste boundary that ensures detection of groundwater contamination the uppermost aquifer.'' 40 CFR 257.91(a)(2). The fact that the facility may have installed wells farther away that also accurately represent the quality of groundwater passing the waste boundary of the CCR unit does not satisfy the requirement for a system *at* the waste boundary. As explained in the 2015 final rule, wells installed at the waste boundary ensure early detection of contamination so that corrective measures can be implemented to protect sensitive receptors. In short, wells installed at the waste boundary ensure that worst case contamination is detected as quickly as possible. At AP–4, COF–111BR is the sole bedrock well installed at the downgradient waste boundary. This well alone does not represent the quality of groundwater passing the entire downgradient waste boundary of the CCR unit, especially since groundwater contamination has been identified in this well and the cross-gradient bedrock well COF–114BR. Furthermore, according to the commenter, the reason for installing downgradient bedrock wells so far away from the waste boundary was because geophysical methods confirmed fractures and preferential pathways, implying an existing connection to the CCR unit. While those connections serve as potential contaminant pathways, given the lack of bedrock wells installed at the downgradient waste boundary, it is unclear if those are the only contaminant pathways that exist in the bedrock. The permit record, even with the additional comments submitted on the Proposed Denial, does not demonstrate that all potential contaminant pathways are being monitored. As written, the permit is less protective than the Federal requirements at § 257.91(a)(2).

Comment: Commenter disagrees with EPA's position with respect to the screened or open intervals of monitoring wells and argues that site-specific technical information was considered during the design and approval of this monitoring well system. Commenter states that for monitoring wells COF–111 and COF–111BR, the shallow screened interval and the larger open borehole interval were targeted zones to ensure the presence of groundwater for monitoring. Commenter states that the ''57-foot vertical gap'' as described by EPA consists of a fat clay from a depth of 18 feet to approximately 60 feet and competent un-fractured limestone bedrock from 60 feet to 77 feet, both of which would likely not be a productive zone. Commenter maintains that it is also important to note that the zone within this ''gap'' should not be connected to the zone monitored by monitoring well COF–111BR to prevent cross-contamination. Commenter concludes that EPA has failed to consider the holistic battery of information and technical data in its post-issuance review of the Colbert Permit.

Response: EPA acknowledges the additional information provided by the commenter; however, it does not change EPA's assessment that critical zones are left unmonitored at COF–111 and COF–111BR. While the presence of a fat clay down to 60 feet may partially explain the rationale for a long casing, as EPA pointed out in its Proposed Denial, transition zones in karst environments such as residuum to epikarst and epikarst to ''unweathered'' bedrock are critical zones to monitor for potential contamination because the groundwater hydraulics at these transition zones are often complex. Therefore, it's EPA assessment that the transition from fat clay to ''un-fractured limestone bedrock'' is a potential contaminant pathway, especially considering that nearly all the downgradient compliance wells are not installed at the waste boundary. In other words, there is not sufficient evidence from other properly located compliance wells to rule out monitoring this transition zone.

Comment: Commenter states that EPA discusses four CCR facilities in Alabama for the proposition that ADEM has approved permits for facilities that are allegedly violating Federal standards. Commenter asserts that EPA has not identified any harm to human health or the environment at these facilities, nor has EPA provided evidence of risk of exposure to CCR constituents at harmful levels.

Commenter states that EPA's discussion of the Greene County ash pond provides a helpful example of how closure under a permit issued by ADEM addresses the kind of risks RCRA authorizes EPA to address. Commenter states that EPA describes various elements of the closure plan as reflected in the ADEM-approved permit and finds that the closure plan allows water to remain in contact with some ash within the disposal unit. Commenter states that fact alone is not direct evidence of any potential for harm to health or the environment, and to the contrary, the closure elements discussed by EPA show an effective plan for source control. Commenter states that CCR at Greene County will be consolidated into a smaller area within the original dikes, held in place by engineered soil containment berms, covered by a low-permeability artificial cover, and surrounded below the surface by a

slurry wall. Commenter states that EPA stated in the Proposed Denial that ''a barrier wall keyed into the low permeability Demopolis Chalk will be installed around the perimeter of the consolidated CCR material to create a hydraulic barrier that limits the movement of interstitial water through the constructed interior dike and existing northern dike,'' and asserts that EPA found ''[t]his hydraulic barrier will be connected to the geomembrane of the final cover system.''

Commenter argues that EPA thus acknowledges that the CCR at Greene County will be surrounded on all sides by features that completely separate the ash within the boundaries of the ash unit from the surrounding natural environment: on top by the cover system, on the sides by containment berms and subsurface barrier walls, and on the bottom by the Demopolis Chalk. Commenter states that EPA's analysis does not question the efficacy of any of these features. Commenters states as an example that EPA did not conclude that the cover or slurry wall will not perform as expected or that the Demopolis Chalk will not serve as an effective barrier to contaminant migration.

Commenter states that all of these protections are in addition to the removal of free-standing water from the pond. Commenter states that EPA has observed:

> EPA's risk assessment shows that the highest risks are associated with CCR surface impoundments due to the hydraulic head imposed by impounded water. Dewatered CCR surface impoundments will no longer be subjected to hydraulic head so the risk of releases, including the risk that the unit will leach into the groundwater, would be no greater than those from CCR landfills.

Commenter states that EPA estimates that 640,000 cubic yards will remain saturated post-closure. Commenter states that, assuming that number to be accurate, that amounts to roughly 6% of the total volume of ash, which is approximately 10,300,000 cubic yards. Commenter notes that historically all of the ash at Greene County was more or less fully saturated and there was also a sizable area of free-flowing ponded water. Commenter states that as the volume of water in the pond is reduced, the hydraulic head that drove exceedances in the past will be similarly reduced.

Commenter states that after the driving force behind exceedances (*i.e.,* free standing water and most other liquid) is removed, infiltration of stormwater is contained, and source control is achieved, the most reasonable conclusion based on the evidence is that post-closure migration of constituents from ash to the environment will cease. Commenter states that its assessment is backed by detailed analyses prepared by qualified and licensed professional engineers and geologists, which was submitted to ADEM and is publicly available on the internet in closure and corrective action documentation. Commenter concludes that the available evidence therefore indicates that CCR and its constituents will be safely contained in a manner that suggests ''no reasonable probability of adverse effects on health or the environment.'' Commenter states that EPA offers no evidence or even a theory of how appendix IV of part 257 constituents could move from ash inside the Greene County ash pond through the post-closure containment barriers and into the surrounding environment. Commenter asserts that EPA's discussion of the Colbert, Gadsden, and Gorgas facilities similarly lacks any plausible linkage from the ash ponds to a discernible risk of impacts to drinking water or ecological receptors.

Response: In the Proposed Denial, EPA acknowledges that the closure design outlined in the Closure Plan (Plan) at Plant Greene County could be implemented to be consistent with the Federal requirements. However, EPA's concern is that ADEM approved a Closure Plan without adequate details explaining how the closure requirements would be met, especially with respect to the saturated CCR that will remain in the unit. Essentially, EPA conducted the saturation analysis that ADEM should have required Alabama Power to complete. With that information ADEM may have been able to issue a permit specifying what the facility needed to do to meet the closure requirements or required the facility to submit a revised closure plan. ADEM did neither, and as a consequence, there is no binding and enforceable provision in the permit that requires the facility to comply with the closure performance standards. See Proposed Denial pages 55270–74.

EPA continues to believe that in many respects, the outlines of the closure presented in the Plan could be implemented to be consistent with the Federal requirements; however, ADEM approved the Plan without requiring Alabama Power to provide the information necessary to confirm that several critical closure requirements—which were not addressed or were insufficiently described—would be met. Specifically, neither the Closure Plan nor other materials in the Permit Application addressed how the performance standards in § 257.102(d)(2) will be met with respect to the saturated CCR that it appears will remain in the base of the consolidated unit. The Permit could either have specified what the facility needs to do to meet the requirements, or ADEM could have required the facility to submit a revised Closure Plan. ADEM did neither, and as a consequence, there is no binding and enforceable provision for the facility to comply with these performance standards. In essence, ADEM has issued a permit that allows the facility to decide whether to comply with § 257.102(b) and (d)(2), rather than ''requiring each CCR unit to achieve compliance with'' those provisions. 42 U.S.C. 6945(d)(1). Thus, while the closure plan for Plant Greene County may meet the Federal CCR regulations, the State CCR permit does not on its face require the necessary measures, so the permit is flawed even if closure actually complies with the Federal CCR regulations. In any case, EPA also identified groundwater monitoring and corrective action issues with the Plant Greene County permit, and neither the comments on the Proposed Denial or the State CCR permit record address those issues.

Further, Plant Greene County is not an adequate representation of closure plans for the other Alabama CCR permits discussed in the Proposed Denial because none of the other Alabama CCR permit closure plans require the types of measures that Plant Greene County plans to install (*e.g.,* a slurry wall) to ''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 to ''preclude the probability of future impoundment of water, sediment, or slurry.'' See 40 CFR 257.102(d)(1)(i) and (ii). In fact, the other permits do not adequately address those requirements or explain why it is not feasible to take some measure to prevent the flow of liquids into and out of the closed CCR units indefinitely. The lack of such analyses in the permit records further supports EPA's conclusion that Alabama's CCR permit program is not as protective as the Federal CCR regulations.

Finally, EPA disagrees that the permits ensure that contamination from the closed surface impoundments does not pose a hazard to human health or the environment. It is not possible to draw this sort of broad conclusion from the permit records because the monitoring well networks at those facilities discussed in the Proposed Denial are deficient and there are likely unmonitored potential contaminant

pathways that still exist. Further, in the preamble to the 2015 Federal CCR regulations, EPA explained the value of protecting groundwater as a resource, regardless of whether there are currently any nearby human receptors, and the Federal CCR regulations do not require such a finding before requiring corrective action. 80 FR 21452. See response to comment below.

Comment: Commenter states that EPA does not allege any conditions that cause harm to human health or the environment in the Proposed Denial. Commenter states that EPA does not identify any source of drinking water that has been impacted from an ash pond, nor does EPA assert that arsenic or any other CCR constituent is exposed to any habitat, fish, or wildlife in harmful concentrations. Commenter states that EPA provides no evidence that there is any risk of such harms developing at any site in Alabama. Commenter states that before source control at Plant Lowman is achieved through closure and while corrective action is still under consideration at ADEM that the groundwater is not connected to any source of drinking water. Commenter states that there is no evidence of any impacts off the plant site or of any harm to fish or wildlife or their habitat and commenter states that conditions will only improve after dewatering and capping. Commenter states that the plans were designed by experts whose entire careers are focused on closing waste sites safely and correcting groundwater issues. Commenter states that as the ash and gypsum dry out and stormwater is cut off with a protective cap, that the CCR unit is likely to achieve compliance with all applicable GWPS without any further action. Commenter states that it will be prepared to execute additional measures to protect groundwater if that proves to be necessary over time. Commenter states that given this there is every indication that ADEM's program is working as required by both RCRA and State law to protect human health and the environment.

Commenter states that if there is no harm to drinking water, to fish and wildlife, or to habitat under current conditions, then it follows that there is no opportunity to improve conditions for people or the environment. Commenter states that the CCR material is safely contained on the plant site, where it should be, and safety will only improve as closure and corrective action continue. Commenter states that, since EPA has yet to approve any engineering control measures, the only apparent alternative to closure in place is closure by removal. Commenter urges EPA to consider the location of landfills that could serve as potential disposal sites in this region and the character of neighborhoods near landfills and points between there and a power plant. Commenter states that off-site transportation and disposals impose challenges for people who live near the facility to avoid with a safe, on-site closure as planned.

Response: EPA agrees that safe on-site closure will avoid off-site transportation and disposal challenges, but EPA disagrees that the Alabama permits support a conclusion that the subject closure plans will protect groundwater resources or that they are as protective as the Federal CCR regulations requires. In fact, given the insufficiency of the groundwater monitoring networks, it is possible that unmonitored releases are occuring and, if so, it is possible those releases are posing a hazard to human health and the environment. In addition, with the exception of Plant Greene County, the permit records EPA reviewed do not support a conclusion that any efforts were made to identify and implement feasible engineering measures as required by 40 CFR 257.102(d)(1)(i). Absent such evaluations, EPA cannot conclude that the permits are as protective as the Federal CCR regulations.

Further, as discussed in the preamble to the final 2015 CCR Rule at 80 FR 21399, the objective of a groundwater monitoring system is to intercept groundwater to determine whether the groundwater has been contaminated by the CCR unit. Early contaminant detection is important to allow sufficient time for corrective measures to be developed and implemented before sensitive receptors are significantly affected. To accomplish this, the rule requires that wells be located to sample groundwater from the uppermost aquifer at the waste boundary.

Establishment of a groundwater monitoring network that meets each of the performance standards of 40 CFR 257.91 is a fundamental component of the CCR program. EPA noted significant deficiencies with the groundwater monitoring networks at each CCR unit that was reviewed as part of the Proposed Denial. Because of these deficiencies, there is potential for additional, unmonitored releases from the CCR units. Therefore, it is inappropriate to draw broad conclusions about receptors or the lack thereof until the deficiencies in the groundwater monitoring networks are addressed.

In the preamble to the 2015 CCR Rule, EPA explained the value of protecting groundwater as a resource, regardless of whether there are currently any nearby human receptors at 80 FR 21452. The preamble states that: whether the constituent ultimately causes further damage by migrating into drinking water wells does not diminish the significance of the environmental damage caused to the groundwater under the site, even where it is only a future source of drinking water. EPA further refers back to the preamble to the original 1979 open dumping criteria, which are currently applicable to these facilities. That preamble states that EPA is concerned with groundwater contamination even if the aquifer is not currently used as a source of drinking water. Sources of drinking water are finite, and future users' interests must also be protected. See 44 FR 53445–53448. EPA believes that solid waste activities should not be allowed to contaminate underground drinking water sources to exceed established drinking water standards. This means that whether or not receptors have been identified does not affect the need to comply with all corrective action requirements in the CCR regulations.

Further, Plant Lowman was not one of the sites reviewed, so EPA does not have comments on the adequacy of the groundwater monitoring networks at Plant Lowman.

Comment: Commenter states that TVA began closing Ash Disposal Area 4 at Colbert in accordance with State and Federal requirements and that the closure activities included decanting liquid from the unit, stabilizing the remaining waste and installing an engineered cap-and-cover system. Commenter states that the system was designed to be consistent with the relevant standards under subtitle D of RCRA. Commenter states that consistent with the self-implementing nature of the Federal CCR regulations, the closure was completed and certified by a qualified professional engineer in the State of Alabama as being in accordance with 40 CFR 257.102.

Commenter states that since completing closure and capping of Ash Disposal Area 4, TVA has continued to investigate and monitor groundwater as required by the Federal CCR regulations, ADEM's CCR Rule, and the First Amended Consent Decree. Commenter states that TVA also conducted a Comprehensive Groundwater Investigation (2018–2019) and installed 12 additional monitoring wells at Colbert pursuant to the consent decree, bringing the total number of monitoring wells at the site to 66. The investigation included an extensive evaluation of the

hydrogeologic conditions and groundwater quality at Colbert.

Response: EPA acknowledges the commenter's assertion that TVA has conducted a comprehensive groundwater investigation. However, EPA's assertion is that the permit is not as protective as the Federal requirements at § 257.91(a)(2). Specifically, a sufficient number of wells have not been installed at the downgradient waste boundary to ensure detection of groundwater contamination in the uppermost aquifer and that all potential contaminant pathways are not being monitored. From the available information, EPA concluded that the permit did not require a sufficient monitoring system to monitor all potential contaminant pathways, making the permit less protective than required by the Federal regulations.

Comment: Commenter stated that, in addition to installing new wells, TVA evaluated geochemical conditions within the underlying aquifer, performed geophysical surveys of the bedrock, completed offsite migration evaluations, and studied potential impacts to surface water using ADEM's risk-based model (RM2). Commenter states that the data from these activities indicate that the areas of elevated groundwater chemistry onsite are limited to a few constituents at low concentrations, are isolated to certain wells onsite (*i.e.,* not migrating offsite), and do not present a risk to adjacent properties or surface waters.

Commenter states that it is with this understanding that in 2019 TVA performed two ACMs involving Ash Disposal Area 4 to meet Federal and State requirements. Commenter states that one ACM was performed in accordance with the Federal CCR regulations and focused on groundwater in the vicinity of Ash Disposal Area 4 (the CCR Rule regulated unit) and it identified and evaluated various technologies for groundwater remediation. Commenter states that a second ACM was performed in accordance with the First Amended Consent Decree and it was based on the conceptual site model that was developed after the comprehensive groundwater investigation to consider remedies that are protective of human health and the environment. Commenter maintains that, as required by the First Amended Consent Decree, a remedy was proposed, which included MNA, an Environmental Covenant, and Adaptive Management. Commenter asserts that the proposed remedy was based on the determination that groundwater conditions at Colbert are protective of human health and the environment and are expected to continue improving in the future. Commenter states that TVA received comments from ADEM on this ACM and continues to work with ADEM and perform remedy-specific investigations at specific well locations to further develop the final approach for the site.

Response: As discussed previously, the changes requested by ADEM in its comments are not requirements of the permit, and the permit contains no deadline to address them or make changes. The permit does not contain a requirement to apply for a permit modification to incorporate remedy requirements once the work is completed. TVA may continue to comply with the permit without completing the study, selecting a remedy, or implementing the remedy. Therefore, the permit is less protective than the Federal requirements that include a series of deadlines for actions that are not included in Alabama's CCR permits.

Comment: Commenter disagrees with EPA's evaluation of the permit ADEM issued for Ash Disposal Area 4 at Colbert and disagrees with EPA's conclusions of deficiencies. Commenter states that EPA made incorrect assumptions.

Commenter states that EPA incorrectly states that TVA is using intrawell data comparisons described in the Groundwater Monitoring Plan approved by ADEM. Commenter states that EPA explains that this method does not require TVA to achieve compliance with the requirement in § 257.91(a)(1) to establish background groundwater quality in an upgradient well unless the criteria in § 257.91(a)(1)(i) or (ii) are met. See, 88 FR 55241, August 14, 2023.

Commenter states that ADEM approved the analyses of background conditions at Colbert based on interwell statistical methods, not intrawell statistics. Commenter agrees with EPA that intrawell comparisons are appropriate in certain circumstances; however, TVA is not proposing intrawell comparisons at Ash Disposal Area 4 at this time. Commenter states that all compliance data for Ash Disposal Area 4 submitted to ADEM or posted for the Federal CCR regulations used interwell statistical methods. Commenter states that the statistical analysis plan, which was developed in coordination with Dr. Kirk Cameron (the primary author of EPA's *Unified Guidance on Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities*), merely identifies intrawell comparisons as a potential option. Commenter states it is appropriate to consider and include intrawell statistics in the groundwater monitoring plan approved by ADEM as a possible means of analysis of the groundwater quality, should conditions arise where an understanding of a well's history is warranted when evaluating groundwater conditions. Commenter states that TVA would have to notify ADEM before using intrawell statistical methods as the compliance method and that TVA will continue to work with Dr. Cameron, P.E.s, and ADEM to assure statistical methods used meet the requirements of the rules and adhere to EPA guidance.

Commenter states that ADEM approved interwell statistical methods in the CCR permit for Ash Disposal Area 4, the fact that this statistical approach is appropriate and justified, and that is the method currently employed under the permit, the use of this statistical method is not a factor that supports EPA's Proposed Denial.

Response: Regarding interwell vs. intrawell statistics, the commenter provides information about actions being taken by facilities which are not required by the permit. This is not relevant to this action. The permit issued to Colbert approves a groundwater monitoring plan which allows intrawell comparisons in some circumstances. When conducting intrawell comparisons, background levels are established using data from downgradient wells. The regulation in 40 CFR 257.91(a)(1) requires that background data have not been affected by leakage from a CCR unit. Downgradient wells at the boundary of a CCR unit that has been operating for decades do not meet this requirement. Because the procedures for updating background levels used in intrawell data comparisons are approved in the Final Permit, this permit does not require Colbert to achieve compliance with either the Federal requirements at § 257.91(a)(1) or an alternative State requirement that is equally protective.

Comment: Commenter states that EPA states that while the groundwater monitoring plan (GWMP) approved by ADEM includes bedrock monitoring wells COF–111BR, COF–112BR, COF–113BR, COF–114BR, CA17B, CA30B, MC1, MC5C, and COF108BR (future installation), CA6 (background), and COF–116BR (background) as part of the groundwater monitoring system for Ash Disposal Area 4, none of these bedrock wells are located at the downgradient waste boundary as required by § 257.91(a)(2). Commenter states that instead, EPA states they are located hundreds of feet away from this boundary. See, 88 FR 55239, August 14, 2023.

Commenter states that the groundwater monitoring system at Colbert includes 19 wells around the entire perimeter of Ash Disposal Area 4. Commenter states that to assure groundwater passing by the CCR unit boundary is accurately represented, the system was specifically designed to monitor groundwater quality in the alluvial aquifer (*i.e.,* the uppermost aquifer) at the unit boundary, at a location hydraulically downgradient of Ash Disposal Area 4. Commenter states that, in addition, because the underlying bedrock aquifer appears hydraulically connected to the alluvial aquifer, groundwater quality is also monitored in the bedrock aquifer in the downgradient direction of flow to evaluate this potential contaminant pathway. Commenter maintains this approach is consistent with the requirements of § 257.91.

Commenter states that the eight bedrock wells included in the Ash Disposal Area 4 Groundwater Monitoring Plan are positioned appropriately along the bedrock groundwater preferential pathways downgradient of Ash Disposal Area 4. Commenter states that the conceptual site model, informed by years of investigation and monitoring data, suggests that impacts to groundwater, if present, would be detected first in the upper groundwater zone downgradient of Ash Disposal Area 4 (the alluvial aquifer). Commenter states that this is based on the understanding that groundwater flow in alluvium and bedrock is primarily horizontal, with shallow groundwater flow towards Cane Creek. Commenter states, as such, monitoring wells screened in alluvium on the downgradient waste boundary are positioned to monitor the uppermost aquifer which is the most susceptible geologic unit at the downgradient waste boundary. Commenter states that the bedrock well locations were specifically selected based on documented groundwater flow pathways further from the waste boundary, and that these bedrock wells are positioned to monitor potential impacts along preferential pathways if impacts from Ash Disposal Area 4 were more extensive. Commenter maintains this approach of monitoring groundwater quality at both the alluvial aquifer at the downgradient unit boundary and the bedrock aquifer along potential pathways meets the requirements of § 257.91.

Response: EPA does not agree that the monitoring plan for Plant Colbert is as protective as the Federal CCR regulations. As discussed in the preamble to the Proposed Denial, to ensure detection of a release, the regulations establish a general performance standard that all groundwater monitoring systems must meet: all groundwater monitoring systems must consist of a sufficient number of appropriately located wells that will yield groundwater samples in the uppermost aquifer that represent the quality of the background groundwater and the quality of groundwater passing the downgradient waste boundary, monitoring all potential contaminant pathways. 40 CFR 257.91(a)(1) and (2). See Proposed Denial pages 55238–55239. Because hydrogeologic conditions vary so widely from one site to another, the regulations do not prescribe the exact number, location, and depth of monitoring wells needed to achieve the general performance standard. Rather the regulation requires installation of a minimum of one upgradient and three downgradient wells, as well as any additional monitoring wells necessary to achieve the general performance standard of accurately representing the quality of the background groundwater and the groundwater passing the downgradient waste boundary, monitoring all potential contaminant pathways. 40 CFR 257.91(c)(1) and (2).

Further, the number, spacing, and depths of the monitoring wells must be determined based on a thorough characterization of the site, including a number of specifically identified factors relating to the hydrogeology of the site (*e.g.,* aquifer thickness, groundwater flow rates and direction). 40 CFR 257.91(b).

EPA does not disagree with commenter that the installation of bedrock wells at some distance away from the downgradient edge of the waste boundary is beneficial to understanding and characterizing the uppermost aquifer. EPA also acknowledges that in some cases, groundwater contamination via vertical communication between the alluvial aquifer and bedrock aquifer may not occur until some distance beyond the downgradient waste boundary. However, installing bedrock wells at some distance away from the downgradient edge of the waste boundary is not as protective as § 257.91(a)(2). The commenter specifically acknowledges there is a hydraulic connection between the alluvial aquifer and bedrock aquifer. This can only happen via vertical communication and is precisely why compliance wells must be at the waste boundary. Installing compliance wells at appropriate horizontal locations and vertical depths at the waste boundary provides the best opportunity to detect worst case situations where contamination is leaving the unit. By ensuring that both the § 257.91(a)(2) and the § 257.91(b) requirements are met, the facility could definitively conclude that the compliance well network accurately represents the quality of groundwater passing the waste boundary and that vertical communication via preferential pathways between the alluvial aquifer and bedrock aquifer does not occur until some distance beyond the downgradient boundary. Currently, ADEM cannot definitively claim either based on the permit record.

Comment: Commenter states that EPA takes the position that the corrective measures the permittee is required to take to achieve compliance with the regulations must be determined prior to final permit issuance because the permit must contain the requirements. See, 88 FR 55242, August 14, 2023. Commenter maintains that permitting actions require adherence to the regulatory framework (*e.g.,* RCRA), but do not contemplate the specifics of corrective actions. Commenter states that in most cases, identification and selection of corrective actions would be impossible at the time of permitting. Commenter states that, for example, Class II landfills that have solid waste permits have detection monitoring, assessment monitoring, and corrective action frameworks built into the permit. Commenter states that once assessment monitoring begins, the permit is modified to include additional needs to address potential remedial actions, but the permit is not issued with remedial actions already required. Commenter states that, on the contrary, the permit is issued based on design and construction performance standards, but EPA appears to imply that the Federal CCR regulations differs from other permitting actions in that permits cannot be issued until a remedial action is selected.

Commenter states that because ADEM has provided a framework that is required and consistent with the Federal CCR regulations, the permits issued by ADEM are sufficient. Commenter states that ADEM is providing oversight to TVA to identify appropriate remedial actions for Ash Disposal Area 4 at Colbert, and that these remedial activities will need to satisfy ADEM and meet the State and Federal CCR regulations before ADEM will approve the proposed alternative, which they have not yet done.

Response: The Commenter misconstrues EPA's position as implying that a permit cannot be issued until a remedy is selected. This is not

the case. The corrective action requirements include a series of actions, beginning with data collection to characterize a release and site conditions that may ultimately affect the remedy selected (40 CFR 257.95(g)). This is followed by requirements to complete an ACM, hold a public meeting, and select a remedy. Remedy Selection Reports must specify a schedule to implement remedial activities and then the remedy must be implemented. Permit applicants may not be subject to corrective action at the time of permitting, or they may be at any step in the corrective actions process.

Permits must implement the underlying regulations by establishing clear and enforceable requirements that a facility must satisfy to comply with the underlying regulations. This includes reviewing application materials and determining which requirements apply, which applicable requirements have already been met, and which have not yet been met. The applicable requirements the permittee has not yet met must be included in the permit. ADEM failed to do this in permits reviewed by EPA. The permit record indicates that the ACM at Colbert had been submitted to ADEM prior to permit issuance, but ADEM did not determine in the permitting action whether the ACM met the requirements in the regulation, or whether a revised ACM must be submitted to address any deficiencies. ADEM simply copied and pasted corrective action requirements from the regulations into the permit, without applying those requirements to the specific facts at the site. That is not adequate oversight and implementation.

ADEM's failure to adjudicate the requirements applicable to Colbert, or to review and either approve or disapprove submitted application materials, means its permit program is not operating as a ''system of prior approval.'' In the example of Colbert, ADEM should have reviewed the ACM and either approved it or included requirements in the permit to revise it as needed to satisfy the requirements in the regulations. If the ACM was approved, ADEM should have included requirements in the permit to hold a public meeting by a particular deadline and prepare a Remedy Selection Report. ADEM should have established a deadline to prepare the Remedy Selection Report and required it to be submitted in an application for a permit modification. The Remedy Selection Report must include a plan to implement the remedy, with actions and deadlines for them. ADEM must review and approve the selection of the remedy and the schedule to incorporate those requirements into the permit through a modification.

Additionally, these approvals and modifications are subject to public participation requirements. Commenters have provided information that implies ADEM is circumventing its public participation requirements by working with the permittees outside of the permitting process to approve plans and reports, without allowing the opportunity for public comment. If correct, this is a further indication that ADEM is not implementing its program in a manner that ensures its program is at least as protective as the Federal CCR regulations.

Comment: Commenter states that EPA suggests that ADEM approved wells that were not constructed in accordance with § 257.91(e), and consequently, EPA implies that the groundwater monitoring system will not accurately yield samples that are representative of the overall the quality of groundwater around Ash Disposal Area 4. Commenter states that EPA calls into question TVA's use of Rotosonic drilling, claiming that it may alter, pulverize, or otherwise destroy or obfuscate acquired sample materials. See 88 FR 55240, August 14, 2023. Commenter states that § 257.91(e) of the Federal CCR regulations, however, does not specify a drilling method. Commenter states that EPA's self-implementing CCR regulations relies on P.E.s to provide assurance that activities meet industry standards in the absence of technical criteria in the CCR regulations and that this reliance extends to selecting appropriate drilling methods based on site-specific conditions. Commenter states that Rotosonic drilling was selected as the most appropriate method for Colbert to complete soil borings and install monitoring wells.

Commenter states that Rotosonic drilling, more often referred to simply as sonic drilling, is an effective and widely used technique for collecting soil and rock samples and is far superior to formerly employed techniques such as air rotary, air hammer, and mud rotary. Commenter maintains that sonic drilling is arguably the best drilling technique available for environmental investigations in a wide variety of geologic settings because it provides continuous, nearly undisturbed sample cores, maintains borehole integrity and geochemistry, and can be used for both soil and rock while significantly reducing the introduction of drilling fluids and the generation of drilling wastes. Commenter states that sonic drilling demonstrably does not ''alter, pulverize or otherwise destroy'' acquired samples because the vibrations employed reduce the friction between the drill bit and the soil/rock, allowing it to cut through the material with less resistance and, therefore, less disturbance. Commenter states that, by contrast, it is the air rotary and air hammer techniques that ''alter, pulverize or otherwise destroy'' the penetrated rock, and this obliteration of formation material results in the poor return of samples, very often intermixing penetrated intervals when the shattered cuttings are ejected at the surface. Commenter maintains that mud rotary has also been shown to have these same disadvantages along with substantially altering groundwater geochemistry. For these reasons, commenter states that TVA and its contractor used the sonic drilling technique at Colbert in lieu of these other methods.

Commenter states that the TSD in support of the Proposed Decision includes a discussion of alleged technical issues related to ADEM's permits and site-specific conditions. Commenter states that Rotosonic drilling is a commonly used drilling method in the industry, as EPA recognized in the TSD, however, the TSD implies that Rotosonic drilling may not be an appropriate drilling method, noting that ''it occasionally suffers from poor physical sample recovery issues depending on site conditions and other factors, and the resulting data gaps must be considered in assessments which depend on such samples.''

Commenters state that the examples of poor recovery cited by EPA in the Proposed Denial Volume I TSD (Unit II.d) are limited and not applicable to the geological conditions at Colbert. Commenter maintains that EPA acknowledges as much when it refers to these examples as ''particular site-specific issues.'' Commenter states that TVA has had very good results using sonic drilling at Colbert and has installed 22 monitoring wells, totaling nearly 2,000 linear feet of borings using this technique. Commenter states that the average percent recovery was 91 percent. Commenter states that the use of sonic drilling at Colbert resulted in substantial recovery of soil and bedrock cores in a continuous, nearly undisturbed condition. Commenters state that site experts used multiple lines of evidence such as downhole geophysics logging to confirm competent zones of bedrock as well as permeable zones that are potential conduits for transmissive groundwater flow. Commenter concludes that TVA believes EPA's concerns about sonic

drilling at Colbert are unwarranted and that the monitoring wells comply with the performance criteria outlined in § 257.91(e) and thus, is not a factor that supports EPA's denial of ADEM's permit program.

Response: The selection of the drilling method or methods is an important step in the overall well installation process. EPA did not intend to call into question whether Rotosonic drilling was an appropriate method in general or even inappropriate for this site. Instead, EPA intended to convey concern with the adequacy of the selected monitoring zones, based on the details noted in the Rotosonic drill logs. EPA maintains that the zones of ''no recovery'' recorded for specific intervals in specific wells may represent data gaps, particularly if such zones occur at key locations and depths along potential flow pathways. The central issue EPA raised in the Proposed Denial in this respect related to the uncertainties regarding the nature of the geologic materials which were *not sampled, i.e.,* the depth intervals resulting from site-specific application of the Rotosonic method where no recovery of geologic materials occurred. A comprehensive assessment of the relevant issues must therefore include not only the technicalities of the Rotosonic method, but also the characteristics of the local geology, data gap intervals resulting from application of Rotosonic methods at Colbert, and the locations and depths of these data gaps in the site-specific hydrogeologic context. A comprehensive discussion of the limitations of the monitoring network at TVA needs to consider all these factors, as well as how such information was used in making decisions which produced the existing monitoring network. EPA remains concerned that the resulting monitoring network may not comply with the requirements § 257.91(a)(2) in that all potential contaminant pathways may not be monitored at the unit boundary.

In a karst setting such as the Colbert site, the zones of ''no recovery'' while employing Rotosonic drilling methods can represent void space or extremely weathered materials. While such intervals are problematic for all drilling methods, the original comment identified these zones of 'no recovery' or *no data,* to potentially represent void spaces or highly weathered intervals which could be of critical importance to monitoring efforts.

Comment: Commenter states that ADEM appropriately approved TVA's use of open borehole wells and disagrees with EPA's suggestion that the long-screened interval open-borehole monitoring wells yield blended or otherwise unrepresentative samples, and thus do not comply with the performance standards in § 257.91(a)(1) and (2) and (e). See 88 FR 55240, August 14, 2023. Commenter states that use of open-borehole wells in limestone bedrock is compliant with EPA's CCR regulations, the American Society for Testing and Materials (ASTM) standards, USEPA Region 4 guidance, and Interstate Technology and Regulatory Counsel (ITRC) guidance. Commenter maintains that ASTM D5092/D5092M–161 clearly states that the practice of screening wells and installing filter packs is ''not applicable in fractured or karst rock conditions.'' Commenter states that USEPA Region 4 and ITRC3 also acknowledge that open bedrock completions are warranted in karst conditions and fractured rock. During the Comprehensive Groundwater Investigation (CGWI) conducted at Colbert in 2019, commenter asserts that TVA and its contractor performed surface geophysics and borehole geophysical logging of the CGWI monitoring wells that provided an understanding of the bedrock structure. Commenter states that using the borehole geophysical logging data, including the heat pulse flowmeter, the essential preferential flow fractures in each CGWI monitoring well were identified, and the dedicated groundwater low flow pumps were positioned precisely to monitor groundwater in the most representative intervals of the Tuscumbia limestone (*i.e.,* zones of highest groundwater flow), while preserving the ability to monitor other intervals if the need should arise.

Commenter maintains that TVA's analyses of older screened wells at Colbert indicated that well casings have blocked/sealed off significant water-bearing fractures and are not representative of overall Tuscumbia bedrock aquifer conditions. Commenter states that ASTM and USEPA Region 4 clearly recognize that using screened wells to monitor groundwater in a bedrock aquifer of this type is technically unsound if for no other reason than introducing an unacceptable sampling bias that could produce misleading and unreliable groundwater quality data. Commenter states that utilizing open-hole monitoring wells avoids the unfavorable limitations of screened wells that can only yield samples from discrete isolated fractures that are not representative of large-scale groundwater quality in the bedrock aquifer, and that, by contrast, wells with an open-hole completion represent more completely the groundwater quality of the upper portion of the bedrock unit that could potentially affect surface water quality (*i.e.,* the Tennessee River and Cane Creek). Commenter and P.E. contend the construction of the open-borehole wells comply with the performance standards in § 257.91(a)(1) and (2) and (e), and thus, is not a factor that supports EPA's denial of ADEM's permit program.

Response: EPA appreciates the additional information provided by the commenter. However, the comment is somewhat self-contradictory, and in some respects tangential to the issues raised in the original comment. It is conceivable that low flow sampling within an open borehole, if appropriately deployed, may be used to monitor discrete zones within a bedrock aquifer. However, this presumes that certain preconditions are met, which are discussed further below. First it must be acknowledged that the goal of such sampling is not to assess ''large-scale groundwater quality'' of the bedrock aquifer as the commenter suggests. Such a ''large-scale'' assessment of groundwater quality would require an approach altogether different from low-flow methods. Instead, the purpose of low-flow sampling is to collect *representative* groundwater samples from key depth-discrete zones. Each sample is intended to be representative of the specific depth interval where the pump intake is deployed, rather than an ''average'' or ''blended'' sample of an entire borehole.

It is for this reason that guidance documents for low flow sampling generally indicate a preference for permanent monitoring well installations with short, screened intervals (*e.g.,* 10-feet or less), to be used in conjunction with low-flow approaches. Short screened or open intervals are installed at targeted depths based on geologic and other information to enable and facilitate sampling of a specific zone or zones with low-flow methods. Long-screened intervals or open intervals in open bedrock boreholes should be generally avoided. To this point, EPA Region 4 guidance document, entitled *Design and Installation of Monitoring Wells, January 1, 2018,* states the following:

> Another limitation to the open rock well is that the entire bedrock interval serves as the monitoring zone. In this situation, it is very difficult or even impossible to monitor a specific zone because the contaminants being monitored could be diluted to the extent of being non-detectable. The installation of open bedrock wells is generally not acceptable in the Superfund and RCRA programs, because of the uncontrolled

monitoring intervals. However, some site conditions might exist, especially in cavernous limestone areas (karst topography) or in areas of highly fractured bedrock, where the installation of the filter pack and its structural integrity are questionable. Under these conditions the design of an open bedrock well may be warranted.

While this guidance does not *preclude* the use of open bedrock wells in ''cavernous limestone'' or ''highly fractured bedrock,'' it does not generally support the commenter's assertion that, ''Use of open-borehole wells in limestone bedrock is compliant . . . '' It should be noted that many of the open bedrock boreholes at Colbert do not indicate the presence of the voids or highly fractured zones listed above as conditions justifying open boreholes. More importantly, the presence of long open intervals in boreholes, while not addressed by the commenter, is listed as a particular limitation implied in the Region 4 guidance excerpted above (*i.e.,* ''*the entire bedrock interval serves as the monitoring zone. . . .*''). In addition to the concerns listed by the Region 4 guidance, long open boreholes commonly exhibit issues such as vertical flow and multiple inflow and outflow zones. Unless this ''short circuiting'' intra-borehole flow is understood at a high level of resolution, it would be difficult to determine precisely what a particular low flow sample from such a borehole represents, other than some sort of blended average. For this reason, inflatable straddle packers are commonly employed in long open boreholes to isolate zones of typically 10-feet or less in vertical length to minimize the confounding effects of intra-borehole flow. Even so, straddle packers also have potential leakage or other problems. For these reasons, conventionally screened wells should be installed or at least strongly considered where conditions allow for their installation. Another limitation of long open-hole intervals not discussed by the commenter is the potential blending of zones of different chemistry, *e.g.,* redox potential, or other parameters. Cross connecting independent zones with different redox potential is highly inadvisable as it may produce non-representative samples resulting from in-situ redox reactions not likely to occur without the presence of the borehole conduit.

The commenter provides little information which would outweigh the many negatives listed above for using long open borehole wells with or without low-flow sampling techniques, and in many cases the assertions are factually incorrect. For example, the commenter states, ''ASTM and USEPA Region 4 clearly recognize that using screened wells to monitor groundwater in a bedrock aquifer of this type is technically unsound if for no other reason than introducing an unacceptable sampling bias that could produce misleading and unreliable groundwater quality data.'' This statement is in direct conflict with the excerpted material from the Region 4 guidance presented just above. Similarly, the comment states, ''Utilizing open-hole monitoring wells avoids the unfavorable limitations of screened wells that can only yield samples from discrete isolated fractures . . . ''

As discussed previously, this assertion confuses limitations of *low-flow sampling* with limitations of *screened wells.* The intention of low-flow sampling is in fact to yield samples from discrete zones or fractures, and it is commonly accepted that low flow sampling is less effective to this intention in open boreholes, or wells or boreholes with excessively long open or screened intervals. The comment misses these points entirely in attempting to justify the unusual and problematic combination of low-flow sampling methodologies with long open boreholes selected by TVA and approved by ADEM.

It is not clear what is intended by the statement in the following comment:

> TVA's analyses of older screened wells at Colbert indicated that well casings have blocked/sealed off significant water-bearing fractures and are not representative of overall Tuscumbia bedrock aquifer conditions.

EPA concurs with this concern which suggests that the older screened wells are indeed problematic in that they have inadvertently excluded significant water-bearing fractures from the monitoring network. For example, EPA's analysis of monitoring wells COF–111 and COF–111BR indicates similar concerns, *i.e.,* that potentially significant water-bearing zones in the epi-karst materials in the uppermost portion of the bedrock have been effectively sealed off and isolated by steel casings and have therefore been similarly excluded from the monitoring well network and sampling program. It appears that there may be a systematic problem in that the potential contributions of these cased-off water-bearing zones have been in many cases inappropriately excluded from the monitoring network, and their potential contributions to the inputs of the totality of groundwater affecting the quality of surface water in Cane Creek have not been determined. This particular issue with the permit record could have been avoided with the use of clustered monitored wells, which are multiple groundwater monitoring wells placed in close proximity to one another. This well installation method would allow for the monitoring of groundwater conditions at various discrete-depth zones.

In conclusion, the explanations in the comment do not resolve the issue in that the long-screened interval open-borehole monitoring wells have the potential to yield blended or otherwise unrepresentative samples, and thus do not comply with the performance standards in § 257.91(a)(1) and (2) and (e). As discussed above, options are available to redevelop and reconfigure these existing open boreholes to fully comply with the regulations, including installing standard monitoring wells (*e.g.,* with discrete screened intervals) within the open boreholes with discrete screened intervals targeted to the most important discrete fracture zones, or a variety of specialized technologies and methods developed to address fracture-specific sampling in fractured bedrock environments. ADEM chose to approve the GWMP without requiring the necessary analysis and as a result none of these compliant alternatives were considered. Further, to the extent the comments do clarify the situation, such information should have already been in the permit record if necessary to adequately explain the groundwater monitoring network.

Comment: Commenter disagrees with EPA's Proposed Denial with respect to delineation of the uppermost aquifer. Commenter states that EPA conjectures the groundwater monitoring well network ADEM approved does not meet the performance standards in § 257.91(a) or (b), that the approved groundwater monitoring system is not based on a thorough characterization of the elements listed in § 257.91(b), and that the groundwater monitoring system does not ''yield groundwater samples from the uppermost aquifer'' as required by § 257.91(a). Commenters maintains this is due to EPA's conclusion that the subject facilities have failed to delineate the uppermost aquifer.

Commenter maintains there is simply no requirement for the compliance groundwater monitoring network to vertically delineate the uppermost aquifer and that EPA has, once again, read requirements into the Federal rules that simply do not exist. Commenter states that 40 CFR 257.91(a)(2) requires that the groundwater monitoring system consist of a sufficient number of wells, installed at appropriate locations and depths, to yield groundwater samples from the uppermost aquifer that

accurately represent the quality of groundwater passing the waste boundary of the CCR unit. Commenter states that these performance standards do not speak to complete delineation of the aquifer, but only to obtaining samples that accurately reflect the quality of groundwater passing the waste boundary. Commenter maintains that complete vertical delineation is not only not required on all cases, it is not logical or practical to require it in all cases, and that furthermore, EPA has approved, overseen, or itself installed groundwater monitoring systems around the Nation in the RCRA and CERCLA program, and, at no time, has taken a remotely similar position requiring complete vertical aquifer delineation in all of them.

Commenter states that with respect to Plant Gadsden, EPA specifically mentions, ''the variable nature of the bedrock/overburden contact was not sufficiently characterized to meet the performance standards in 40 CFR 257.91(a) or (b).'' Commenter states that EPA continues by stating ''[i]n addition, the top-of-bedrock surface has not been adequately resolved in all areas of the site because some boring logs lack reliable confirmatory data. According to the boring logs that were included in the Permit Application, there are multiple missing intervals of ''no recovery'' from numerous borings advanced into bedrock, which indicate a large potential for hydraulically significant zones that are currently insufficiently characterized. EPA is proposing to determine that the thickness, variability, nature, and hydrogeologic significance of the transitional zone of weathering in the uppermost part of bedrock has not been established, as required by 40 CFR 257.91(b).'' Commenter states that nineteen of the twenty-four monitoring wells and piezometers included within the Permit were drilled utilizing a sonic drilling method—a method known for the benefit of reliably providing continuous and minimally disturbed core samples, and that, as such, characterization of the uppermost portion of the bedrock has been successfully achieved through the thorough descriptions of recovered materials produced during activities related to installation of monitoring wells, piezometers, and vertical delineation wells that were provided on the very boring logs referenced by EPA.

Commenter states that EPA expands on their claim that the uppermost aquifer has not been sufficiently characterized and the depth of the lower confining unit has not been established with respect to Plant Gorgas, contending that contradictory information has been portrayed in the facility file by stating, ''the Pratt Coal System and the American Coal Systems are mapped together and separately in different groundwater monitoring reports.'' Commenter maintains that this faulty conclusion stems from EPA's limited and perfunctory review of the massive amount of data available for the facility. Commenter maintains that the separation of the Pratt and American flow systems stemmed from the receipt of additional site cross-sections with the Supplemental Site Hydrogeologic Characterization Report dated March 5, 2021. Commenter asserts that it is a well-established fact that a successful conceptual site model is continually improved as more data becomes available, as was the case with this distinction of the Pratt Coal and American Coal Systems. Commenter concludes that a complete vertical delineation may not be logical or practical in every case, and as such, the uppermost aquifer has been characterized to the extent that is technically feasible.

Response: Regarding the regulations outlining the requirements for groundwater monitoring systems, EPA disagrees with the commenter's statement that EPA has read requirements into the Federal CCR regulations that simply do not exist. Furthermore, contrary to the commenter's claims, EPA is not contending that the level of detail discussed in the comment is required to meet the Federal requirements.

According to the commenter, 40 CFR 257.91(a)(2) requires that the groundwater monitoring system consist of a sufficient number of wells, installed at appropriate locations and depths, to yield groundwater samples from the uppermost aquifer that accurately represent the quality of groundwater passing the waste boundary of the CCR unit. However, that is only one half of the regulation. Section 257.91(a)(2) also states the downgradient monitoring system must be installed at the waste boundary to ensure (1) detection of groundwater contamination in the uppermost aquifer; and (2) monitoring of all potential contaminant pathways. Potential contaminant pathways can only be identified by conducting a thorough characterization of the uppermost aquifer. In fact, 40 CFR 257.91(b) outlines several technical criteria, such as aquifer thickness and the materials comprising the confining unit defining the lower bound of the uppermost aquifer, that needs to be evaluated before installing the compliance monitoring wells. Characterization, including the delineation of the upper and lower bounds of the uppermost aquifer and the potential contaminant pathways within, can be accomplished by scientific literature and a site-specific investigative tool such as exploratory borings and geophysics. Plant Gorgas is a very complex site, and the information available as part of the permit record does not support that all preferential pathways are being monitored.

In short, EPA's statements in the Proposed Denial regarding groundwater monitoring systems was in response to ADEM's approval of groundwater monitoring plans containing a poor characterization of the uppermost aquifer at each facility. Identifying the upper and lower bounds of the uppermost aquifer has not been achieved resulting in potential unmonitored contaminant pathways. Lastly, the permits do not provide any indication of how and when the groundwater monitoring system requirements will be met.

Comment: Commenter states that EPA asserts multiple times throughout its post-issuance critiques of multiple permits that there is an insufficient number of wells laterally and vertically along the downgradient perimeter of the unit to monitor all potential contaminant pathways. Commenter states that the performance standard for groundwater monitoring systems requires a sufficient number of wells installed at appropriate locations and depths to accurately represent the quality of groundwater passing the waste boundary of the CCR unit. Commenter states that a minimum spacing between well locations and well depths is not specified by the Federal rules, and that instead it is then left to the professional judgement of ADEM staff scientists, geologists, and engineers, working collectively with the permittees to design/approve the most practical system to monitor the quality of groundwater entering the uppermost aquifer from the units. Commenter maintains this is an ongoing effort.

Commenter further asserts that groundwater monitoring systems are continuously evaluated and modified as more data is collected and analyzed. Commenter maintains that EPA seeks to substitute its judgement, based on a cursory review of limited information, for that of ADEM, whose professional staff have conducted extensive reviews and analyses of the holistic battery of data available for each facility.

Response: The Commenter describes an approach to designing a groundwater monitoring system that is inconsistent with the CCR regulations. First, the CCR regulations present criteria for designing

a groundwater monitoring system for each CCR unit (40 CFR 257.91) with a deadline for installation of the system and collection of the first 8 samples from each well no later than October 17, 2017 (40 CFR 257.90(b)). Thorough characterization of site-specific hydrogeological characteristics (*e.g.,* groundwater flow rate and direction, aquifer thickness, hydraulic conductivities) was required to support this design (40 CFR 257.91(b)). This design should not be an ongoing process six years after the deadline. Along those lines, while collaboration is a good thing, ADEM and the facility should not be ''working collectively to design/approve'' a groundwater monitoring system. It was the facility's responsibility to design the system years ago, and it is ADEM's responsibility to thoroughly evaluate the facilities system and only approve it if all the requirements of the regulations are met.

In this case, it appears that ADEM simply approved the systems submitted by the facilities. To the extent there was meaningful evaluation, that is not included in the permit record and available for review, which again highlights the concern that ADEM is not adequately overseeing and documenting its decisions. EPA must rely on the available permit record whether the groundwater monitoring system (GWMS) is designed in compliance with the Federal CCR regulations, and, at this time, the GWMSs reviewed in the proposal appear inadequate based on the available information in the permit record.

Post hoc explanations not included in the permit record do not cure the deficient permits. For the reasons provided in the Proposed Denial and discussed in this document, EPA finds that the permits are not as protective as the Federal rule and that the permit records are insufficient.

Comment: Commenter states that with respect to lateral spacing, one of the considerations ADEM took into account is that most of the CCR units are unlined, and for this reason, it would be reasonable to assume that potential leakage from these units would not follow the same pattern as those from a lined unit. Commenter states that a leak resulting from a failure or breach to a liner system would likely represent an individual ''point of release,'' whereas with an unlined unit, the leakage would likely result in more widespread impacted areas dependent on the variable permeability of the clay base, and, as such, a tighter-spaced network of wells would be required to adequately monitor and detect a release from a lined unit, whereas the monitoring well network for adequately detecting a release from an unlined unit would not be required to be as closely spaced.

Commenter states that in other cases ADEM had to consider the topographic relief, geometric footprint, or other site conditions at the waste boundary, verified, at times, by ADEM staff conducting site visits, that prohibited access or installation directly at the limits of the CCR unit. Commenter states that in situations where installation at the waste boundary was considered to be technically infeasible, as was the case with Plant Gorgas, monitoring well locations were selected based on best professional judgement. For example, commenter asserts that monitoring wells were strategically placed in areas that receive groundwater from multiple directions occurring from the finger-like features of the CCR unit.

Commenter states that much of EPA's commentary on vertical spacing seems to orbit the idea that Federal rules require compliance monitoring wells throughout the entire depth of the uppermost aquifer including its upper and lower bounds. Commenter states that this is neither correct nor feasible, because, as ADEM explained in response to the delineation issue, the Federal CCR regulations require a monitoring network that detects contamination released from the unit, not one that characterizes the entire depth of the aquifer and that it is not practical to do so. Commenter states, for example, that the majority of the lower boundary of the CCR unit at Plant Gadsden is at approximately 500 to 505 feet AMSL (above mean sea level). Commenter states that monitoring wells installed at depths of 100 feet or greater, or at elevations near 415 feet AMSL, as suggested by EPA would not detect contamination from a breach of the liner system and would not accurately represent the quality of groundwater passing the waste boundary. Commenter maintains that contaminants breaching the liner system would have to immediately descend to the lower bounds of the aquifer perfectly along the vertical plane of the waste boundary for EPA to be correct, but commenter asserts that contaminant migration is simply not expected to occur in this manner in any of the geological systems at any of Alabama's CCR facilities.

Commenter states that EPA goes further with this faulty notion by asserting that an insufficient number of monitoring wells are screened within Unit 1 of the uppermost aquifer at Plant Greene County, resulting in inadequate vertical spacing of compliance wells. Commenter notes that it is true that the majority of monitoring wells have been screened within Unit 2 of the uppermost aquifer, but EPA does not appear to understand the site geology and characteristics of each unit. Commenter states that the quaternary alluvium and low terrace deposits comprise the uppermost aquifer; that these units overlie the Demopolis Chalk, which acts as a lower confining unit for the aquifer; Unit 1 of the uppermost aquifer consists of lean-to-fat clays that thin and become slightly more sandy towards the southwest; Unit 2 consists of fine-to-medium-grained sands that coarsen downward and include gravel lenses; and groundwater tends to sit on top of the chalk and within Unit 2, and Unit 1 acts as a semi-confining unit across much of the site. Based on these statements, commenter concludes that the compliance monitoring wells are appropriately screened within the Unit 2 sands and gravels to have the highest probability to detect any constituents that may be released from the CCR unit.

Response: EPA disagrees with the commenter's explanation and justification for the lateral spacing of compliance wells. While it is true that the exact location and magnitude of a release can affect plume geometry, these variables are often unknown regardless of if the unit is lined or unlined. Using the commenter's examples of a ''point release'' and a ''broad release'', a broad release from an unlined unit could easily mimic a point release from a lined unit if part of the CCR unit is in direct contact with groundwater. Conversely, a point release from a lined unit could mimic a broad release from an unlined unit if the leachate first disperses laterally for several feet (''fans out''), then gradually downward through a heterogeneous soil several feet before reaching the groundwater table. Lastly, the commenter's technical reasoning for the lateral spacing of compliance wells largely ignores the hydrogeology of the geologic units above and within the uppermost aquifer. The hydrogeology of these geologic units, based on an investigation of the criteria outlined in § 257.91(b), plays a much larger role in plume geometry and the lateral and vertical spacing of compliance wells than presumptions about the location, magnitude, and type of release.

The commenter's concern that the Agency did not understand the site geology and characteristics of each unit is also unfounded. The Agency evaluated the site geology based on the information in the permit record and determined that the saturated portion of Unit 1 is part of the uppermost aquifer. Nothing in the commenter's response

changes that determination. Rather, the commenter's response supports the Agency's position that the current groundwater monitoring network only monitors specific portions of the uppermost aquifer. Detection monitoring wells should have been screened in all transmissive zones that may act as contaminant transport pathways. This issue could have been resolved with the installation of multiple monitoring wells (well clusters or multilevel sampling devices) in places where a single well cannot adequately intercept and monitor the vertical extent of a potential pathway of contaminant migration, or when there is more than one potential pathway of contaminant migration in the subsurface at a single location.

Comment: Commenter states that Alabama Power's plans address groundwater quality at and around the commenter's sites and the groundwater monitoring systems are tailored to site geological conditions, certified by qualified professional engineers and geologists, and exceed EPA's monitoring requirements. Commenter asserts that Alabama Power's approach to corrective action is also tailored to site-specific risk considerations in accordance with the 2015 regulations, certified by qualified professional engineers and geologists, and designed to be responsive to any changes in site specific conditions. Commenter maintains this approach can include both passive and active measures, each working together with closure to achieve groundwater protection standards (GWPS) in compliance with both the Federal and State CCR regulations.

Response: The commenter does not provide any explanation of why the plans, including the proposed remedy, comply with the 2015 regulations. While it is understood that P.E. certifications have been obtained, in noted instances EPA does not agree with the conclusions of the P.E. EPA has provided significant analysis of why the plans fail to satisfy the 2015 regulations in those cases, and this comment does not respond to that analysis. The role of a permitting authority is to review the site-specific facts and determine whether the P.E. certification is true and whether the approach proposed by the facility does, in fact, achieve compliance with the regulations. ADEM should not assume compliance based on a P.E. certification and the P.E. certification does not prevent EPA from independently evaluating the permit. Finally, while EPA appreciates that Alabama Power's approach to corrective action may well be ''tailored to site-specific risk considerations in accordance with the 2015 regulations, certified by qualified professional engineers and geologists, and designed to be responsive to any changes in site specific conditions,'' the relevant standard to evaluate the adequacy of Alabama Power's corrective action remedy is in § 257.97(b) and (c). The commenter has presented nothing to address the specific concerns EPA identified in the proposal.

Comment: Commenter states that EPA includes in a TSD supporting the Proposed Denial a discussion of alleged technical issues related to ADEM's permits and site-specific conditions. Commenter does not comment on the site-specific conditions, but instead urges EPA to revise or clarify the following technical approaches. With respect to unit elevations, the commenter states that EPA relies on an average bottom elevation instead of modeling the available elevation data points, and that using an average incorrectly assumes that the bottom of the unit is flat.

Response: The commenter is correct that EPA used an average bottom elevation to estimate the amount of CCR in the unit that remains saturated by groundwater. EPA fully acknowledges that the bottoms of the CCR units are not likely to be flat over the span of the entire unit; however, EPA relied on the only data available from the permit application packages and documents available for review on the public CCR websites. Commenters do not claim that no CCR remains saturated in the closed units. Any further detailed analysis was unnecessary, and the approach used was appropriate and sufficient given the amount of data that is available. The purpose of this review was to determine whether Alabama's CCR permit program is as protective as the Federal CCR regulations, not to take action to bring the identified facilities into compliance with the Federal CCR regulations.

While the actual amount of groundwater in contact with CCR may differ to some degree, the Agency's approach provided a reasonable estimate of the amount of waste potentially below the water table. The Agency remains confident that, based on the information available to us in the permit applications and publicly available documents, that these units currently have waste in contact with the groundwater and will continue to have waste in sustained contact with the groundwater moving forward. In addition, with the exception of Plant Greene County, none of the sources evaluated, much less implemented, measure(s) designed to limit the flow of liquids into and out of the unit from the bottom and sides indefinitely.

Comment: Commenter states that saturation of waste, or the presence of a water table within the waste, does not necessarily indicate that the waste is in an unstable condition or contains readily separable liquids. Commenter asserts that material density and dewatering performed prior to cap construction also are factors that affect CCR stability. Commenter states that EPA describes how its review of permits issued under Alabama's program influenced the Proposed Denial and that EPA indicates ''. . . EPA is proposing to determine that ADEM issued multiple permits allowing CCR in closed units to remain saturated by groundwater, without requiring engineering measures that will control the groundwater flowing into and out of the closed unit.'' Commenter states that following this overall discussion of the permit review, the Proposed Denial details specific observations from the permit review for four power plants, including specific observations regarding saturated CCR, groundwater levels within CCR, and free liquids within CCR. Commenter states that with respect to Colbert, EPA stated ''it is clear from the post-closure 2019–2021 Annual Inspection Reports that whatever measures were taken as part of closure did not actually eliminate free liquids from Ash Pond 4. Commenter states that these reports document average groundwater elevations within the Ash Pond that significantly exceed 422 above MSL.'' Commenter states that with respect to Gadsden, EPA states, ''[a]s previously explained, in situations such as this, where the waste in the unit is continually saturated with groundwater, the requirement to eliminate free liquids obligates the facility to take engineering measures to ensure that the groundwater, along with the other free liquids, has been permanently removed from the unit prior to installing the final cover system. See, 40 CFR 257.102(d)(2)(i).'' Commenter states that the discussion continues on the same page with ''[a] further concern is that, given the failure to eliminate the free liquids from the saturated CCR underlying the consolidated unit, it is not at all clear that the remaining wastes have been stabilized sufficiently to support the final cover system, as required by § 257.102(d)(2)(ii). Creating a stable working surface for earthwork equipment while the cover system is being installed is not the same as ensuring that the unit has been sufficiently dewatered prior to installation of the cover system and that

over the long term there will be no differential settlement of the CCR in the closed unit that would disrupt the integrity of the cover system and allow liquids to infiltrate into the closed unit. Neither the approved Closure Plan nor ADEM's permit provides any details of engineering measures that were taken to address the groundwater that continues to flow into and out of the unit from the sides and bottom. In the absence of such measures, EPA has no basis for concluding that the standard in § 257.102(d)(2) has been met.''

Commenter states that in many cases the Proposed Denial's discussion of the four permits involves the level of documentation necessary to demonstrate compliance with the closure performance standards. Commenter states it cannot address the necessary level of documentation; however, within the Proposed Denial's discussion, there appears to be an underlying assumption regarding the behavior of saturated CCR.

Commenter states it has conducted considerable research on the geotechnical behavior of CCR that describes stability and drainage, and that a focus of research has been understanding CCR behavior using physical models and geotechnical centrifuges (3002001146; 3002006290; 3002020566; Madabhushi, 2020; Madabhushi, 2022a; Madabhushi, 2022b; Madabhushi, 2022c; Madabhushi, 2023). Commenter states that geotechnical centrifuges enable the evaluation of geotechnical behavior of large structures such as slopes and embankments through testing of much smaller scale models in controlled laboratory settings (Schofield 1980).

Commenter states that its centrifuge modeling has shown that the behavior of saturated coal fly ash depends on its density. Commenter states that relatively dense ashes behave much differently than relatively loose ashes, and that the key distinction is the relationship between the ash deposit's density and the critical state line (the critical state line describes the relationship between volume ratio of inter-particle spaces and particles and the effective stress between particles where shearing of a particulate material may continue indefinitely without change in volume). Commenter states that dewatering influences fly ash behavior, both through the increased effective stress in the dewatered zone and through the densification of the entire deposit that results from increased effective stress.

Commenter states that Figure 1 in their comment submittal shows the 9-meter geotechnical centrifuge (left) and the test box being filled with coal fly ash slurry (right). In the front of the test box (foreground, right image) are two aluminum doors with actuators. Commenter states that opening the doors rapidly creates a loss of confinement for ash slurry deposit, enabling the study of runout behavior of CCR. Commenter states that when spinning at 60 g in the centrifuge, this model represents a prototype with an ash thickness of about 70 feet.

Commenters states that the behavior of relatively dense coal fly ash in their centrifuge model experiments does not support a presumption that saturated CCR lacking engineering measures to reduce saturation will be unstable or jeopardize the integrity of a final cover system. Commenter states that to the extent that additional information beyond an engineer's certification is necessary to demonstrate compliance, they observe that in-situ density is an important parameter to consider in assessing stability of CCR deposits.

Commenter states that centrifuge modeling also shows that partial dewatering of saturated CCR increases the density and stability of an initially loose ash deposit. Commenter states that Figure 3 illustrates the difference in behavior between saturated (water table at surface) and partially dewatered loose coal fly ash (water table at 59% of ash thickness). Commenter states that on the left, the saturated loose ash exhibited a more rapid liquid-like flow, and on the right the partially dewatered ash exhibited a slow, soil-like slumping.

Commenter states that based on this experience from physical modeling, a presumption that partially dewatered CCR is unstable without further measures to eliminate saturation is not supported. Commenter states that it observes that in-situ densities and depth of dewatering are also parameters to consider in assessing stability of partially dewatered CCR deposits.

Commenter states that centrifuge modeling and laboratory experiments show that the water within saturated CCR is not necessarily readily separable. Commenter states that Figure 4 shows a birds-eye (top) view of the runout at four times from loss of confinement (left) to 1 hour following loss of confinement (right). Commenter states that the runout at the fourth/last time was previously shown in oblique view in Figure 2 (left). Commenter states that water only becomes visible on the surface of the ash late in the runout process, and that the delay in the appearance of water on the ash surface is interpreted to be caused by negative pore pressures from shearing- induced dilation. That is, the loss of confinement produced shear forces within the ash deposit, and the interaction of ash particles under these shearing forces increased the volume of spaces between the ash particles, thereby reducing the pore pressure in the water filling the spaces. Commenter states that water appears on the surface only when the negative pore pressures are dissipated by the redistribution of water within the pores. Commenter states that because of the small pore sizes and low hydraulic conductivity of the fly ash, the redistribution of porewater and emergence on the surface of the fly ash took considerable time.

Commenter states that the Paint Filter Liquids Test (PFLT) was developed by EPA to identify wastes containing free liquids for compliance with 40 CFR 264.314 and 265.314 (SW–846 Method 9095B) and involves observations over a period of 5 minutes following placement of a specimen in the test apparatus. Commenter states that during this time, the behavior of the specimen is influenced by its properties and, in the case of particulate solids such as CCR, the stress conditions resulting from its placement in the apparatus. Commenter states that a saturated CCR may not release water during the 5-minute PFLT due to the combination of CCR properties and stress conditions. Commenter states that Figure 5 illustrates the results of an ongoing, not-yet-published lab mixing study using CCR samples from two power plants. Commenter states that increments of water were added until each sample contained free liquids according to PFLT (released a drop of water within 5 minutes). Commenter asserts that the geotechnical moisture content of each sample at the last increment before the CCR contained free liquids, as defined by PFLT, is reported in Figure 5. Commenter maintains that many samples in this study have high fines contents, which correlate with small pore sizes and low hydraulic conductivities and exhibited no free liquids at geotechnical moisture content in excess of 40%, and some as high as 70%. (Geotechnical moisture content is calculated as the mass of water divided by the mass of solids; saturation is calculated as water-filled pore volume divided by the total pore volume.) Commenter states that it did not measure the density or degree of saturation within the PFLT, but it stated that the highest moisture content values are similar to saturated conditions observed based on densities and moisture contents of intact samples collected at Site 1 and previous

characterization of ashes from Site 2 (TR–101999).

Commenter states that based on its experience from centrifuge modeling and lab testing, a presumption that saturated CCR contains readily separable liquids, as determined by a PFLT, is not always supported. Commenter states that while degree of saturation, or moisture content, is important to free liquids determination, commenter observations suggest that CCR particle size distribution and in-situ density are also factors that influence the determination of readily separable liquids.

Response: The commenter's response is focused primarily on case studies and past laboratory testing of CCR within a controlled environment and does not appear to simulate groundwater flowing through a CCR unit. As noted in the proposed decision, neither the approved Plant Gadsden Closure Plan nor ADEM's permit that the commenter referenced in their response provided any details of engineering measures that were taken to address the groundwater that continues to flow into and out of the unit from the sides and bottom. In the absence of such measures, EPA had no basis for concluding that the standard in § 257.102(d)(2) had been met. EPA generally agrees with the commenter that PFLT is not the only and best tool for identifying readily separable liquids. It is only one of many tools, including such as cone penetrometers, piezometers, and monitoring wells, that can be used to detect readily separable liquids. Finally, the commenter notes that its findings are not absolute and that instead they depend on site conditions. As with many other issues, the permits do not show an analysis of the type described to support a conclusion that the stability of the cap is ensured or that measures were taken to limit the post closure flow of water into the units from the sides and bottom.

Comment: Commenter states that EPA has refused to confront the consequences of its new interpretations by effectively removing any option but to close existing unlined cells by removal. Commenter states that the choice to close-in-place, clearly provided in 40 CFR part 257, is taken away because there is no practical design protocol that would allow a final cover system to address lateral movement of liquids at depth in an existing, unlined impoundment. Commenter asserts this can only be accomplished by retrofitting the cell, and that this was pointed out to EPA leadership in one of the conference calls where EPA first began to review ADEM CCR permits. Commenter states that EPA had no answers for what alternative options would be available for those impoundments closing with material below the known water table, and, in the absence of any guidance from EPA, the possible alternatives to closure-in-place are limited. Commenter asserts that retrofitting the cell would involve dewatering and removing the waste material and temporarily staging it while the liner system for the cell is constructed and that provisions would have to be made to protect the staged material from leaching and erosion. Commenter states that the facility would have the expense of the construction of the staging area, handling/moving the waste mass twice (first to remove the waste to the staging area, then to replace it in the newly-lined cell) and of constructing a liner system within the newly emptied cell in addition to the costs of the final cover system, post-closure maintenance, groundwater monitoring, and, if necessary, corrective action. Commenter states that EPA's own estimates put these costs at $734M to $7.240B (80 FR 21459, Apr. 17, 2015), and that it is clear that retrofitting an existing cell is completely impractical.

Commenter states that the second alternative would be the permitting and construction of a new disposal cell on or near the site. Commenter states this is certainly a possible option, provided there is available space for such construction, but this would involve siting, permitting, and constructing the new disposal unit (a process which in itself often requires five or more years to complete before the new cell can be certified complete to begin receiving wastes) at the facility, and the facility occupying double the amount of land for CCR management and double the cost and regulatory burdens. Commenter states that this option does not address the common public concern for the waste's proximity to nearby surface water bodies and it is presumed that EPA would be opposed to this option since it also proposes to deny Alabama's permitting authority for new CCR management units.

Commenter maintains this leaves only one impractical option, the complete removal and offsite disposal of all residual material. Commenter states that other parties at the Public Hearing in Montgomery on September 20, 2023, raised the issue that truck transportation is not a viable transportation option due to the vast quantities of material to be moved, and the associated risks of highway transportation, leaving rail transport as the remaining option for most facilities. Commenter states that there is only one facility which has rail access currently permitted to manage CCR, the Arrowhead Landfill in Uniontown, Perry County, Alabama, and this landfill has been the subject of many environmental justice (EJ) concerns and a Title VI complaint, which EPA took 5 years to review and resolve. Commenter states that it is simply impractical to assume any other facility would be chosen for offsite disposal. Commenter states that the Arrowhead Landfill is owned by interests located primarily in New York and New Jersey, two States with some of the most stringent environmental justice requirements in the country. Commenter states that discussing the acquisition of the Arrowhead facility, Co-Founder & CEO William Gay stated, ''Our vision was to capitalize on the macro trends of declining disposal capacity and rising transportation and disposal costs in the Northeast and create a novel disposal solution for customers in the region.'' Commenter states that EPA and advocacy groups appear to seek to undermine their stated goals of protecting underserved and vulnerable communities from becoming the dumping ground for the waste disposal needs in more affluent areas. Commenters maintains that requiring the movement and re-disposal of vast amounts of CCR will only exacerbate this situation. Commenter asserts that it appears that the current EPA administration, and the environmental advocacy groups supporting this action, are intent on pushing wholesale CCR disposal to EJ area landfills, such as in Perry County, Alabama. Commenter states that Alabama's citizens, those who are the utility rate payers, and many of whom live in these underserved and vulnerable communities, will ultimately pay the enormous increased cost of this movement.

Commenter states that EPA remains unprepared to face the harsh realities of its new interpretation of requiring re-disposal of the hundreds of millions of tons of CCR that would result from this new interpretation. Commenter states that Alabama landfills currently dispose of approximately 9 million tons per year of solid waste (municipal solid waste, industrial, construction/demolition), and estimated volumes of Alabama CCR alone amount to 12 to 13 times this annual volume of other solid waste and would quickly consume all of the currently available airspace in all of Alabama's currently permitted MSW landfills, leaving no room for meeting the routine MSW disposal needs of the State and its citizens.

Commenter states that ADEM CCR permit program follows the letter and

spirit of EPA's CCR program, which was based on sound engineering and technological principles. Commenter states that EPA's program as originally designed, expressly permitted ''closing in place'' as a safe approach for permanently disposing of CCR, and EPA's program recognizes that the alternative to closing in place entails significant risks through excavating and transporting millions of tons of material across populated areas. Commenters states that it is its understanding that removing the material would entail a drawn-out process, requiring many years to complete and that it would lead to greatly increased costs which will negatively impact Alabama consumers.

Commenter states that Alabama's CCR permit program reflects the same options for closure established by EPA and that ADEM has issued permits to Alabama Power approving plans to close its ash ponds using the closure-in-place method. Commenter states that if closure-in-place is not available, the only alternative is closure-by-removal, and Alabama Power estimates the costs of closure-in-place to be $3.5 billion, which is estimated to be three to five times more costly than closure-in place. Commenter states this is due to, for example, the associated cost of excavation, transportation, and disposal in an offsite landfill compared to the costs of closure in place.

Commenter states that not only are the costs associated with closure-by-removal significantly higher and more burdensome to Alabama citizens, but the timeframe to complete closure is also significantly greater. Commenter states that Alabama Power has already completed closure-in-place at one of its plants, with the remainder projected to be completed by 2032 or earlier. Commenter states that based on initial evaluations, closure-by-removal can take anywhere from 16 years to 54 years, depending on the plant site, and that these initial evaluations assumed landfill sites within a reasonable proximity to each plant would be readily available. Commenter states this has proven not to be the case, which may further extend the time necessary to complete closure-by-removal.

Commenter states that it understands that no party has identified discernible impacts to any source of drinking water in Alabama attributable to closure of its unlined ash ponds. Commenter maintains that under these circumstances, closure-in-place appears to be an appropriate means to protect the health and safety of the public. Commenter states that it has grave concerns regarding the impact to customers if Alabama Power is required to incur significant additional costs associated with closure by removal costs that do not appear necessary to accomplish reasonable environmental objectives. Commenter urges EPA to carefully consider these impacts before issuing a final determination regarding ADEM's CCR program because Alabama ratepayers should not be unduly burdened by policy changes that are not absolutely necessary.

Response: The commenter has misunderstood EPA's construction of the regulations. As EPA has repeatedly stated, whether any particular unit can meet the closure in-place standards is a fact and site-specific determination that will depend on a number of considerations, such as the hydrogeology of the site, the engineering of the unit, and the kinds of engineering measures implemented at the unit. See Gavin RTC page 69 and 103 (discussing closure requirements of Federal CCR regulations). Accordingly, the fact that prior to closure the base of a unit intersects with groundwater does not mean that the unit may not ultimately be able to meet the performance standards for closure with waste in place. In other words, EPA is not mandating that a unit submerged in groundwater prior to closure must necessarily close by removal. Depending on the site conditions the facility may be able to meet the performance standards in § 257.102(d) by demonstrating that a combination of engineering measures and site-specific circumstances will ensure that, after closure of the unit has been completed, the groundwater would no longer remain in contact with the waste in the closed unit. Since as early as 1982, feasible engineering methods have been available to control, minimize or eliminate the continuous infiltration of groundwater or release of contaminants from surface impoundments. No commenter claimed that those method are unavailable to control CCR surface impoundments. Closure of Hazardous Waste Surface Impoundments, SW–873, p 81. Also, potential options that weren't mentioned in this comment include construction of in-situ impermeable barrier systems, CCR consolidation within portions of the unit that are out of the water table or CCR recycling. But if a facility cannot meet the performance standards in § 257.102(d), the facility must close by the only other method allowed under the regulations: closure by removal under § 257.102(c). See 40 CFR 257.102(a). And if a facility that has waste in contact with groundwater has installed only a cover system and taken no measures to address the continued infiltration of groundwater or the continued releases of leachate to the groundwater, or the CCR that EPA estimates could still be saturated—and would remain so indefinitely—has not met the performance standards for closure with waste in place. The lack of consideration of these factors in the permit records to support the final ADEM permits supports EPA's determination that Alabama's CCR permit program is not as protective as the Federal CCR regulations.

Concerning alternative waste disposal options, EPA recognizes that it may be difficult to find disposal sites but that does not relieve a facility from complying with Federal CCR regulations. Further, the commenters have not explained why they cannot address the short-term risks associated with removal of CCR to an alternative properly protective landfill. In addition, as noted in response to other comments, the Federal CCR regulations requirements for closure and corrective action are not premised on identifying a specific risk before compliance is required.

C. Miscellaneous Comments

1. EPA Should Update 2017 Guidance Document

Comment: Commenters state that EPA's 2017 Guidance Document is the only formal written guidance provided to States on the requirements for developing and submitting a State CCR Permit Program to EPA. Commenters state that Chapter 2 item 1 of the 2017 Guidance Document states that EPA is using 40 CFR part 239 as a guide for what a State submission should include: (a) A transmittal letter, signed by the State Director, requesting program approval; (b) A narrative description of the State permit program; (c) A legal certification; (d) Copies of all applicable State statutes, regulations, and guidance; and (e) A completed part 257 Checklist. The commenter states that there is no requirement in the 2017 Guidance Document to include State-issued permits in their CCR permit program application. For this reason, the commenters encourage EPA to either update the 2017 Guidance Document to include EPA's new interpretation of what is required or to review State permit program applications in accordance with the 2017 Guidance Document.

Response: See response to comment in Unit III.A.3 above explaining why the scope of the Guidance Document does not change EPA's responsibility to consider all relevant and reasonably

available information when determining whether to approve a State CCR permit program.

2. EPA Should Act on State CCR Permit Program Applications in a Timely Manner

Comment: Commenters argue that EPA must act on State CCR permit program applications in a timely manner. Commenters state that the WIIN Act requires EPA to approve a State CCR permit program application meeting the requisite criteria within 180 days of submission. Commenters state that EPA did not act in a timely manner and did not propose to deny ADEM's application for more than 18 months after submission. Commenter maintain that as more States submit CCR permit program applications, it is critical that EPA act on such applications within the statutory timeframe. Commenters state that Congress intended for States to be able to operate EPA-approved CCR permit programs in lieu of Federal regulation and that EPA's failure to act on State applications frustrates congressional intent and undermines the principle of cooperative federalism that underlies RCRA.

Commenters state that EPA cannot delay acting on State CCR permit program applications by indefinitely delaying a completeness determination, or by conflating substantive review with the completeness determination. Commenters state that in this case, EPA received a final, complete application on December 29, 2021, and should have acted within 180 days of that submission. Commenters state that upon receipt of a complete application, the Agency should promptly issue an official completeness determination, triggering the 180-day timeline. Commenters state that in the three prior CCR permit program decisions, EPA issued a formal letter to applicants notifying them that their application was complete. Commenters state that EPA did not do so for ADEM and, instead, first noted that the application was deemed complete in a legal filing five months after EPA allegedly made the completeness determination.

Commenters state that under RCRA section 4005(d)(1)(B), EPA must approve a State permit program, within 180 days after a State submits an application to the Administrator for approval, if the Administrator determines that the State program meets certain statutory requirements and public notice and opportunity to comment is provided prior to approval. Commenters state that EPA did not follow this timeline for Alabama's State CCR permit application. Commenters state that on December 29, 2021, ADEM submitted its revised State permit program application to EPA Region 4 for approval, on July 7, 2022, EPA put ADEM's application on hold, claiming that it had not demonstrated that it was implementing the program consistent with the Federal CCR regulations, and on Apr. 3, 2023, the State of Alabama and ADEM filed a complaint in the U.S. District Court for the District of Columbia seeking to compel EPA to determine whether its permitting program met the statutory standards. Commenters state that EPA issued the preliminary denial of ADEM's CCR permit program 593 days after receiving the revised application. Commenters maintain that EPA's slow pace of review will impact other States who are currently seeking or plan on seeking approval of their own State CCR permit programs.

Commenters argue that EPA's delay is particularly concerning in light of the Agency's basis for denial. Commenters maintain a State's implementation of their CCR permit program is beyond the scope of EPA's initial review of the program and is appropriately left for EPA's program review, which specifically addresses implementation of the State's approved program. According to commenters EPA delayed acting on Alabama's application and now is proposing to deny the application based not on the text of Alabama's regulations but on Alabama's issuance of permits pursuant to those regulations. Commenters maintain that such a posture sets EPA up to effectively delay acting on a complete application until the Agency can evaluate how the State implemented its regulations, *i.e.,* by waiting until the State issues a CCR permit. Commenters argue that EPA cannot withhold a completeness determination or a final decision to evaluate a State's implementation of their regulations.

Commenters further argue that basing a CCR permit program decision on implementation may disincentivize States from implementing their own CCR program as the WIIN Act intended. Commenters maintain that States seeking approval of a CCR permit program may wish to begin developing and issuing CCR permits while EPA reviews their application, particularly if EPA's review process is prolonged. Commenters argue that a CCR permit program denial based on permits issued and differences of professional judgment on highly detailed technical matters rather than the clear text of the regulations may cause States to delay implementing their program until receiving a decision from EPA, which, as evidenced here, may take years.

Commenters state that they are concerned about the slow pace of this review. Commenters note that EPA has completed its review and approval of only three State permit programs and that several more States have submitted applications for WIIN Act approval or have been working with EPA to do so. Commenters encourage EPA to review and act on State applications in a timely and efficient manner, and in accordance with the WIIN Act, so that the benefits of such programs (*e.g.,* removal of dual and potentially inconsistent regulatory regimes and addition of regulatory certainty) can be realized as soon as possible.

Response: The WIIN Act provides that the Administrator must make a final determination, after providing for public notice and an opportunity for public comment, within 180 days of determining that the State has submitted a complete application consistent with RCRA section 4005(d)(1)(A). See U.S. Environmental Protection Agency; Guidance Document (providing that the 180-day deadline does not start until EPA determines the application is complete). In the case of Alabama, On February 1, 2023, EPA responded to ADEM's Notice of Intent to Sue letter and informed the State that the 180-day timeframe does not start until EPA determines that a State's Application is administratively complete and that, in this case, EPA did not start the clock because EPA's concerns with ADEM's interpretation of the minimum requirements of the Federal CCR regulations had yet to be resolved and EPA was providing an opportunity for ADEM to submit further Application information. EPA further stated that the Agency could evaluate the State's program on the current record if ADEM decided not to supplement its Application with an explanation of how the State's interpretation of its regulations is at least as protective as the Federal CCR regulations, but EPA expressed concern that the current record would not support a proposal to approve the State's partial CCR permit program. On February 17, 2023, ADEM responded to EPA that it did not intend to supplement the record and that EPA should evaluate its program accordingly. EPA thereafter continued to review the Application based on the information submitted to date.

EPA also disagrees that the potential that States will delay implementing State programs means that EPA should ignore what appear to be industry wide issues with implementing the closure standards for unlined surface

impoundments, groundwater monitoring networks, and corrective action. Despite commenters assertions to the contrary, once EPA approves a State program the State permits apply in lieu of direct application of the Federal CCR regulations. Further, State permits do not only list provisions of the State CCR permit program as several commenters imply. Instead, the permits also apply those regulatory provisions and explain what exactly a facility has to do to comply with the relevant provision and the permits provide a shield that says as long as the facility meets the provisions of the permit then the facility is in compliance with the both the State and Federal standards. Thus, a permit from an approved State that allows compliance with requirements less protective than the Federal standards with respect to closure, groundwater monitoring, and corrective action will protect a facility from having to comply with the minimum level of protection.

Finally, EPA recognizes concerns of commenters about the pace of approval of State programs, but EPA must act consistent with the statutory mandate when evaluating State program applications. For this reason, EPA intends to continue to consider State permits as part of initial and periodic program reviews and the Agency is currently working with States to ensure their programs are approvable before EPA makes a completeness determination.

3. Considerations Regarding Qualified Professional Engineers

Comment: Commenters state that EPA has not identified any clear inconsistencies with the Federal CCR regulations and instead that all of EPA's assertions concern the State's technical judgment that the groundwater systems and measures put in place at each site meet the relevant regulatory performance standard. Commenters assert EPA must defer to this judgment. Commenters state that the Federal CCR regulations establish general performance standards for both the design of the groundwater monitoring system and any required corrective action when groundwater contamination above certain levels is identified and that when issuing the Federal regulations in 2015, that EPA specifically developed a groundwater monitoring program that ''is flexible and allows facilities to design a system that accounts for site specific conditions.'' 80 FR 21398. Commenters state that the rule's groundwater corrective action provisions set forth numerous factors that must be considered when developing a corrective action remedy, allowing facilities to take into account site specific conditions when determining the best approach for remediating groundwater. Id. at 80 FR 21406–21407.

Commenters maintain that under the self-implementing rule, P.E.s and facility personnel most familiar with the site are responsible for ensuring compliance with the rule's groundwater monitoring and corrective action performance standard. Under a State CCR program, the State agency fills this role. See 83 FR 36435, 36447 (July 30, 2018). Commenters state that ADEM has reviewed the plans and that EPA calls into question the technical judgement of ADEM staff. Commenters maintain that second-guessing of ADEM's expertise in implementing its State CCR permit program is both inappropriate and inconsistent with the WIIN Act's directive that States serve as the primary mechanism for implementing the Federal CCR regulations.

Response: EPA does not agree that Agency is prohibited from evaluating decisions made by ADEM in permits issued prior to program approval. EPA also disagrees that the fact that ADEM employs qualified professional engineers (P.E.s) means that EPA cannot find that an issued permit fails to require compliance with applicable requirements of subpart D. The commenters are also incorrect that EPA should defer to the P.E.s at ADEM regarding whether proposed compliance approaches in the permit applications achieve compliance with subpart D, because even if ADEM staff are more familiar with the facilities, that does not render EPA incapable of an independent evaluation of the permit and supporting record.

While it is true that the WIIN Act provides that compliance with a permit issued by an approved State program (or by EPA in a Federal permit program) serves as compliance with subpart D, there is no such provision for State programs which have not been approved by EPA to operate in lieu of the Federal program under section 6945(d)(1). Prior to approval of a State program, the State agency is not the primary authority to implement subpart D, and CCR units in that State are required to comply with all applicable provisions of subpart D. In the Proposed Denial, EPA identified numerous examples of permit terms that failed to require compliance with subpart D, in numerous CCR permits issued by ADEM.

EPA agrees that the preamble to the 2015 CCR regulations discusses flexibilities to allow facilities to take into account site-specific conditions when developing groundwater monitoring and corrective action compliance strategies. However, the commenters err when they imply flexibility means that the discretion to consider site specific conditions when establishing groundwater monitoring (§§ 257.90 through 257.95) and corrective action (§ 257.97(b)) plans means that those plans once established and ''stamped'' by a P.E. become immune to evaluation, or that such plans inherently comply with the standards set forth in the regulations. The performance standards are requirements that must be met at any CCR unit, regardless of site-specific circumstances, and if EPA has concerns with compliance, RCRA authorizes it to take action to ensure compliance. EPA cannot ignore a permit's failure to require compliance with performance standards simply because it was reviewed or written by a P.E. The 2015 CCR Rule preamble made this intent clear, in response to commenters concerned that the proposed regulations would rely too heavily upon the judgment of P.E. to determine whether performance standards were achieved. See 80 FR 21335, April 17, 2015.

The final rule relies on multiple mechanisms to ensure that the regulated community properly implements requirements in this rule. As one part of this multi-mechanism approach, owners or operators must obtain certifications by qualified individuals verifying that the technical provisions of the rule have been properly applied and met. However, regardless of certification, the performance standards that the rules lay out must be met. These standards impose specific technical requirements. The certifications required by the rule supplement these technical requirements, and while they are important, they are not the sole mechanism ensuring regulatory compliance. 80 FR 21335, April 17, 2015. The commenters cite to no RCRA or other authority to support the contention that the findings of a P.E. are binding. See also Gavin Final Decision pages 91–93.

Comment: Commenters state that in the Proposed Denial EPA makes only one reference to P.E.s, and then only for the purpose of noting that ADEM was not seeking approval for the provision allowing States to issue certifications in lieu of requiring a P.E. certification. Commenters maintain that, as a result, under the Alabama program and the Federal program, P.E.s are responsible for certifying compliance with the relevant standards for closure, groundwater monitoring and corrective

action. Commenters maintain that the Proposed Denial fails to address the role of the P.E. in certifying compliance and that EPA makes zero reference to such certifications.

Commenters state that EPA's own regulations underscore the importance of the P.E. role in certifying compliance, based on their specialized training and technical knowledge. Commenters state that in the 2015 CCR Rule, EPA explained ''that [P.E.s], whether independent or employees of a facility, being professionals, will uphold the integrity of their profession and only certify documents that meet the prescribed regulatory requirements; and that the integrity of both the professional engineer and the professional oversight boards licensing professional engineers are sufficient to prevent any abuses.'' Commenters state that EPA justified reliance on P.E. certifications and that the Agency stated that it ''re-evaluated the performance standards throughout the final [2015] rule to ensure that the requirements are sufficiently objective and technically precise that a qualified professional engineer will be able to certify that they have been met.''

Commenters maintain that EPA cannot simply dismiss this regulatory approach in favor of EPA using its own unilateral judgment as to whether P.E.-certified compliance documents in fact meet the regulatory performance standards. Commenters further argue that EPA certainly cannot fault ADEM for accepting such certifications, especially when ADEM is not seeking approval to displace the P.E. role.

Commenters state that the opportunity for an approved State to take on the P.E. role arises out of EPA's Phase One, Part One rule (83 FR 36435, July 30, 2018), which EPA adopted, at least in part, to implement the WIIN Act. In that rule, EPA explained that the original 2015 rule ''required numerous technical demonstrations made by the owner or operator be certified by a [P.E.] in order to provide verification of the facility's technical judgments and to otherwise ensure that the provisions of the rule were properly applied.'' EPA went on to note that ''the availability of meaningful third-party verification provided critical support that the rule would achieve the statutory standard, as it would provide a degree of control over a facility's discretion in implementing the rule.'' Commenters assert that EPA then explained that the situation had changed with the passage of the WIIN Act, which provided the opportunity for State oversight under an approved permit program, and that EPA added the provision allowing States to seek approval to certify that the regulatory criteria have been met in lieu of the exclusive reliance on a P.E. Commenters maintain that, in so doing, EPA noted that States retained discretion to choose whether to provide their own certifications, or alternatively, to continue to rely solely on certifications from P.E.s (*i.e.,* the status quo based on current regulations). Commenters maintain that ADEM's regulations include provisions that mirror EPA's as to the role of the P.E. in certifying compliance with the rule's technical requirements, consistent with both the original 2015 and currently applicable Federal rules.

Commenters further states that EPA claims that during its review of ADEM's application, the Agency ''identified a consistent pattern of ADEM approving documents submitted by the facilities, such as closure plans, groundwater monitoring plans, and assessments of corrective measures, even though the submissions lacked critical information or are otherwise deficient.'' Commenters state that noticeably absent from EPA's position is any reference to the P.E. certifications associated with each and every one of those documents, the P.E.'s professional obligation to ''only certify documents that meet the prescribed regulatory requirements,'' or the role that EPA defined for P.E.s to ''provide verification of the facility's technical judgments and to otherwise ensure that the provisions of the rule were properly applied.'' Commenters argue that EPA cannot lawfully overlook, ignore, or reject certifications from P.E.s that EPA itself has prescribed for purposes of regulatory compliance.

Commenters further argue that if EPA has concerns, based on its new interpretations, with how P.E.s are reviewing and certifying closure plans, groundwater monitoring networks or corrective action documents in any particular State or for any particular facility or unit, then EPA must first provide additional direction to States, the regulated community, and engineering community on what is expected or required. Commenters state that this is especially important in the context of EPA's new interpretations of the closure in place performance standards because EPA has not provided clear technical direction or guidance on the ''engineering measures'' that EPA believes must be implemented to address groundwater.

Commenters conclude that EPA must at a minimum recognize the critical role that EPA devised for P.E.s in the Federal CCR regulations and the importance of clear technical direction and guidance on meeting the regulatory performance standards so that P.E.s can properly certify compliance with those standards. Commenters state that asserting concerns with P.E.-certified plans here without proper direction or any reference to the P.E. role is misplaced, especially in the context of a State permit program submittal.

Response: EPA acknowledges that P.E.s play a role under the CCR regulations and that the regulations are self-implementing. EPA also agrees that the Agency did not address the role of the P.E. in certifying compliance in the Proposed Denial, but the Agency disagrees that there was a need to mention P.E. certifications in the Proposed Denial. P.E.s are not regulators and do not substitute for the oversight provided by a State or Federal government agency inherent in its implementation of a regulatory program on behalf of the public. Further, EPA did not base its denial on the role of P.E.s so there was no need to evaluate the certifications to determine whether the permits are in compliance with the Federal CCR regulations. The EPA has the expertise necessary to independently evaluate compliance with the Federal CCR regulations.

The commenter cites provisions in a 2018 Phase One Part One rulemaking (83 FR 36435, July 30, 2018), which was involved in litigation that was resolved through a voluntary remand. (See *Waterkeeper Alliance Inc.* v. *EPA,* No. 18–1289 (D.C. Cir. 2019) However, even if the provisions were still legally valid, the commenter misconstrues the intent of the cited provisions of that rulemaking. Those provisions were intended to provide a State an approach that did not require P.E. certifications because, since the State would be issuing permits, it would be evaluating all the strategies and plans in the compliance documents through its permitting process. However, a P.E. certification cannot replace review and approval or denial by a permitting authority. The preamble in the 2010 proposed CCR regulations clearly distinguishes P.E.s from regulators. That preamble at 75 FR 35194 stated that EPA recognized that relying upon third party certifications is not the same as relying upon the state regulatory authority and would most likely not provide the same level of ''independence.''

EPA does not agree with the commenters' assertion that EPA cannot lawfully overlook, ignore, or reject certifications from P.E.s that EPA itself has prescribed. EPA's incorporation of certifications by P.E.s into the CCR regulations for specified requirements did not create a shield against

noncompliance determinations for regulated facilities if they comply with the P.E. requirement but still fail to comply with the performance standards. Instead, the regulations allow regulatory authorities to review P.E. certifications and performance standards may be enforced regardless of P.E. certifications. In any case, the commenters have not explained how, legally, EPA could through regulations shield facilities from noncompliance if they obtain a certification from a P.E., thereby prejudging compliance for all facilities based on an evaluation by contractors hired by a regulated facility.

If performance standards cannot be enforced if a facility obtains a P.E. certification, there would be no reason to require posting on a publicly accessible website of the majority of compliance data which underly the certifications. Public posting of this information is required. In the preamble to the 2015 regulations, EPA stated that making this information available to other parties (*e.g.,* State agencies and citizens) was another mechanism to ensure technical performance standards established in the regulations would be achieved. ''EPA has developed a number of provisions designed to facilitate citizens to enforce the rule pursuant to RCRA section 7002. Chief among these provisions is the requirement to publicly post monitoring data, along with critical documentation of facility operations, so that the public will have access to the information to monitor activities at CCR disposal facilities.'' 80 FR 21335, April 17, 2015. This is also consistent with requirements in the Part A Rule to submit in the Demonstration documents other than P.E. certifications to demonstrate compliance, even for performance standards for which a P.E. certification is required (*e.g.,* design of a groundwater monitoring system). 40 CFR 257.103(f)(1)(iv)(A).

The commenters also state that any concerns with P.E. certifications in any particular State or for any particular facility or unit must first be addressed by issuing additional direction to States, the regulated community, and engineering community on what is required. Commenters do not provide any regulatory or statutory support for their assertion. See also Gavin Final Decision pages 91–93.

Comment: Commenters state that the 2015 CCR Rule was promulgated by EPA as self-implementing consistent with RCRA's statutory framework at that time, meaning that the standards and criteria were to be implemented without interaction with regulatory officials. See 80 FR 21302, 21330, April 17, 2015. Commenters further state that the regulations set forth standards that are ''sufficiently objective and technically precise'' so that regulated parties and their P.E.s can implement the standards. See id. at 80 FR 21335. Commenters state that EPA used terminology and standards that had been applied in long-standing solid and hazardous waste programs established under RCRA. Commenters state that TVA followed the CCR regulations requirements as evidenced in part by the P.E. certifications posted on TVA's CCR Rule Compliance Data and Information website.[27] Commenters assert that the P.E.s are experts with experience in long-established practices for closing waste units and groundwater remediation that have been deemed protective over the course of RCRA's history, and that TVA has relied on third-party professional engineers with extensive site knowledge and on site-specific scientific data, analysis, and professional judgment to support its CCR Rule P.E. certifications and permit application to ADEM and to ensure that its plans and designs are protective of human health and the environment. Commenters state that with the oversight of ADEM's permitting program, this has added the expertise of regulatory professionals with experience implementing RCRA permit programs in Alabama. Commenters further state that ADEM has actively engaged in providing oversight of Ash Disposal Area 4 investigations by providing detailed technical review of TVA's characterization of the site to independently verify the effectiveness of potential remedies. Commenters believe that working with ADEM will result in the most appropriate approach for the community and the State.

Response: EPA acknowledges that P.E.s have experience with long-established waste management practices over the course of RCRA's history and that ADEM can bring additional expertise to evaluation of CCR facilities. None of this takes away from EPA's own authority to evaluate CCR permits and State permit programs, and, even if ADEM's analysis was detailed and technical, the level of effort itself does not ensure that a permit is in compliance with Federal CCR regulations. See also Gavin Final Decision pages 91–93.

In addition, EPA's analysis and review of particular compliance documents approved in permits, in order to assess the protectiveness of the permitting program, was not directed toward any particular person who may have been involved in development of a permit, but instead to determine whether the Alabama CCR permit program ensures that each CCR unit complies with the minimum level of control. To do this, EPA analyzed and reviewed the site-specific facts and information included in the permit record, the requirements of subpart D and the Federal CCR regulations, and other relevant publicly available information EPA found during review of the permits. EPA disagrees that this approach is inappropriate or illegal and the comments did not provide any statutory or regulatory support that would prevent EPA from conducting such an analysis. Further, despite comments to the contrary, EPA cannot approve a State program when the Agency concludes the program is not as protective as the Federal program, per the requirements of RCRA section 4005(d).

4. EPA Should Provide Partial Approval for Alabama's CCR Permit Program

Comment: Commenters state that throughout the Proposed Denial EPA refers to the fact that Alabama is seeking partial not full program approval. Commenters maintain that states are forced to seek partial, instead of full, program approval because EPA has not determined: (1) Requirements for legacy CCR surface impoundments, to replace the vacated regulation 40 CFR 257.50(e); (2) Requirements for vegetative cover for slope stability, to replace the vacated regulations 40 CFR 257.73(a)(4) and (d)(l)(iv), 257.74(a)(4) and (d)(l)(iv); (3) Requirements for suspending groundwater monitoring, to replace the vacated regulation 40 CFR 257.90(g), and; (4) Requirements for treatment standards for constituents in Appendix IV having no maximum contaminant levels (MCLs), for which States must wait for EPA to act on the vacated regulation 40 CFR 257.95(h)(2). Commenter recommends EPA revise the language stating that Alabama is seeking partial, not full, program approval and make a statement clarifying that, at this time, no State can request full program approval because EPA has not acted on the above listed regulations.

Response: Alabama is in fact seeking approval of a partial State CCR permit program. The Agency will allow States to update their programs as additional requirements are promulgated.

5. Other Miscellaneous Comments Opposed to the Proposed Denial

Comment: Commenters cite comments on the January 2022

[27] *https://www.tva.com/environment/environmental-stewardship/coal-combustion-residuals.*

proposed CCR Part A demonstration decisions asserting that EPA's positions on the closure performance standards are inconsistent with the plain text of the Federal CCR regulations. Commenters maintain that the CCR regulations does not require facilities to address contact between CCR and groundwater as part of the closure performance standards under 40 CFR 257.102(d). Commenters further maintain that the CCR regulations requires ''[f]ree liquids [to] be eliminated by removing liquid wastes or solidifying the remaining wastes and waste residues.'' Commenters further argue that the Federal CCR regulations provides a specific technical definition of ''free liquids,'' which does not include ''groundwater'' (a separately defined technical term).

Commenters assert that EPA's positions on the closure requirements at 40 CFR 257.102(d) were first put forth in site-specific determinations issued in January 2022. Commenters state that in the proposed Part A decisions EPA established new positions on ''free liquids'' and ''infiltration'' that the commenter asserts are inconsistent with the plain text of the CCR regulations and retroactively broaden the scope of the CCR regulations without proper notice and comment. Commenter state that EPA's January 2022 decisions, and the new positions contained therein, were challenged in *Electric Energy* v. *EPA I*, and the litigation remains ongoing. The commenter further asserts that the Gavin Denial—which was based in part on EPA's new positions—is also subject to legal challenge. Commenters state that EPA references the Gavin Denial several times in the Proposed Decision—without a single reference to the pending litigation—in support of the Agency's position that a CCR unit cannot be closed with CCR in contact with groundwater.

Response: As commenters note, EPA cited the pending litigation in the Proposed Denial. To the extent the comments imply the need to cite to or discuss the litigation more, the Agency disagrees.

6. Other Miscellaneous Comments in Support of the Proposed Denial

Comment: Commenter states that ADEM has already violated the Federal CCR regulations by issuing permits to CCR facilities that simply cap in place the CCR disposals in existing unlined ponds and lagoons. Commenter states that, in many locations and scenarios, these CCR storage facilities also violate the Clean Water Act and that the risk of groundwater contamination is very real—not a hypothetical. Commenter notes the following: in 2019, Alabama Power was fined $250,000 by ADEM for CCR disposal violations in the Gadsden area. Groundwater tests around the Plant Gadsden CCR pond near the Coosa River revealed ''elevated levels of arsenic at two locations and one incidence of elevated radium.'' The previous year, ADEM fined Alabama Power $1 million ($250,000 per location) for groundwater contamination at five of its facilities due to CCR pond leakage. PowerSouth, another Alabama utility, was fined $250,000 for CCR pond leakage at its Charles R. Lowman Power Plant in Leroy, Alabama.

Response: EPA agrees that Alabama's CCR permits are not as protective as the Federal CCR regulations and the Agency is taking final action to deny Alabama's CCR permit program application. Comments on compliance with Clean Water Act (CWA) requirements are out of scope and are not further addressed.

D. Out of Scope Comments

1. Comments on Additional ADEM CCR Permits

Comment: Commenters state that, at Plant Barry, ADEM has authorized a cap in place closure that will leave millions of tons of CCR saturated in water in an unlined pit on the banks of the Mobile River, and that will waste untold millions of dollars on a harmful and unlawful cap in place closure. Commenters state that, according to EPA's estimates, of the 21.7 million tons of CCR in the Plant Barry impoundment, over 8 million tons of CCR are currently saturated in water while Alabama Power has begun implementing its cap in place closure, and over 5 million tons will be saturated in water when capping is complete. Commenters maintain that Alabama Power admits that it has begun implementing its cap in place closure with over 8 million tons of CCR saturated in water and admits that it will leave almost 1.1 million tons of CCR saturated in water. Commenters state that Alabama Power describes this huge amount of saturated CCR as ''less than 5% of the total volume,'' but that attempt to minimize the problem merely highlights the massive total amount of CCR in the Plant Barry impoundment: five percent of 21.7 million tons is approximately 1.1 million tons. A more relevant comparison is that this amount of saturated ash is approximately the same as all the CCR contained in the Plant Gadsden unlined CCR impoundment. Commenters note that over 1 million tons of water-saturated CCR is a very serious environmental problem and a blatant violation of the CCR regulations performance standards. Commenters state that the true amount of saturated ash post-closure is much more.

Commenters state that ADEM's failure to prevent this result further demonstrates the inadequacy of its permitting program. Commenter states that ADEM initially shared some of these same concerns. Specifically, commenters state that the ADEM criticized Alabama Power's Corrective Measures Assessments, stating that they ''do not meet the level of detail required in the regulations.'' ADEM further stated that, under Alabama Power's plans, ''source control will not be achieved for an average of 10 years and that no other mechanism is proposed to reduce the potential for further releases to the 'maximum extent feasible.' '' Indeed, even Alabama Power admits the uncertainty of achieving GWPS, stating in its plan, ''[t]ime for [monitored natural attenuation] to achieve GWPS is currently unknown and would require additional studies.'' Commenters state that ADEM still approved the plan notwithstanding Alabama Power's stated uncertainty about the efficacy of its closure plan. Commenters state that this abrupt about face confirms ADEM's inability to stand up to utilities and enforce the CCR Rule's requirements.

Commenters also discussed final CCR permits for Alabama Power's Plants Gaston and Miller and PowerSouth's Plant Lowman. Commenters state that combined, these facilities house approximately 48 million cubic yards of CCR. The Plant Gaston 270-acre ash pond contains almost 25 million cubic yards of CCR on the banks of the Coosa River, and its smaller gypsum pond contains 500,000 cubic yards of ash. Attachment 1 at 3–4.[28] The Plant Miller ash pond was constructed by damming tributaries that flowed into the Locust Fork of the Black Warrior River, and it contains approximately 19.5 million cubic yards of CCR. Id. at 5. The Plant Lowman ash pond complex is located along a significant bend in the Tombigbee River and is surrounded by wetlands. Commenters state that the three ponds at Plant Lowman contain approximately 2.5 million cubic yards of CCR, and that there is ongoing groundwater contamination at each of these facilities, as confirmed by ADEM Administrative Orders issued to each facility in 2018 for MCL exceedances. Commenters state that groundwater monitoring at the Plant Gaston ash pond found MCL exceedances for arsenic, lead, and combined radium. In addition, recent groundwater monitoring reports

[28] Comment from the Southern Environmental Law Center EPA–HQ–OLEM–2022–0903–0260.

have also shown significant groundwater contamination. For example, Alabama Power's 2019 Groundwater Monitoring Report for Plant Miller reported ''statistically significant changes to groundwater quality by ash-related parameters, including: Arsenic, Boron, Calcium, Chloride, Cobalt, Fluoride, Lithium, Sulfate, TDS and pH in wells located downgradient of the ash pond.'' Attachment 1 at 6. Commenters maintain that the utilities' own data on ash pond depth and groundwater depth show that the ash is saturated in groundwater. At Plant Gaston, more than 30 feet of saturated CCR exist in some areas of the ash pond. Id. at 4. At Plant Miller, 75 to 80 feet of CCR will be left below the current groundwater table in some portions of the impounded ash pond after closure. Id. at 6. And at Plant Lowman, ''the closure plan is estimated to leave 4 to 9-feet of CCR waste submerged in groundwater.'' Id. at 2. Commenters assert that, despite the documented saturated ash and groundwater contamination at each of these sites, ADEM's final permits authorize Alabama Power and PowerSouth to close the ash ponds in place, leaving ash permanently saturated in the groundwater. Commenters note that ADEM's permits for each of these facilities allow CCR to continue contaminating groundwater in the future due to their failure to prevent post-closure groundwater flow through the ash. Commenters state that ADEM's failure to ensure compliance with the CCR Rule's performance standards for these permits further demonstrates the inadequacy of its permitting program.

Response: EPA did not evaluate the permits for Plant Barry, Plant Gaston, Plant Miller or Plant Lowman for the Proposed Denial or this final action, therefore, these comments are out of scope and are not further addressed. See page 55224 for a discussion of why EPA began its review of permits with Plants Greene County, Gadsden, Gorgas, and Colbert. EPA did not focus on Plant Barry due to ongoing enforcement activities. EPA's review of the four permits mentioned above identified systemic problems with groundwater monitoring, closure and corrective action and there was no need to review additional permits.

Comment: A commenter submitted comments on Plant Barry stating that science experiments being proposed by Alabama Power and the idea of leaving the CCR in place at the Barry site in Bucks, AL, are dangerous, if not also criminal. Commenter states that removal of the dangerous heavy metal laden CCR and proper disposal away from sea level, away from hurricane paths and away from one of the most important estuary systems in North America is the only long term, safe solution guaranteed to last for centuries. The idea that Alabama Power can leave the CCR in place and be free of any liability after only 30 years is unconscionable. Commenter states that the dangers of CCR are going largely un-noticed by the general public in south Alabama and the commenter questions whether it is because the news media, Alabama Power, local and State politicians and environmental agencies all complicit in allowing this dangerous experiment to be approved. Commenter states that attempts to dewater and cap in-place the over 20 million tons of CCR can never ensure that the toxic heavy metals won't continue leaching out the bottom of the unlined surface impoundment or be spilled into the river.

Commenter states that the aquifer systems in the delta, the strength of the systems and subsurface architecture of the aquifer systems can never be fully understood. Commenter states they have degrees in geology and engineering, and after 30 years working as a reservoir engineer for a major, multinational energy company, the commenter states that they are sure that Alabama Power cannot competently incorporate all of the unknowns into their models. Commenter states that anyone who tells you they understand the aquifer systems under the Mobile-Tensaw delta, under the Barry site, are making absolute untenable conclusions and false assumptions in a mitigation plan. In addition to aquifer pressure, there are extreme unknowns that they cannot fully and competently incorporate into their models. Note the lack of control points or well locations and cross section line on the Hydrogeologic map relative to the Barry Plant unlined surface impoundment. Commenter states that if the CCR is left in place, it is eminent that the toxic pollutants will continue to destroy people's health and way of life on the Alabama Gulf Coast. Commenter states that the only long-term safe solution is for the CCR to be removed from the unlined surface impoundment.

Commenter states that Plant Barry is a coal and natural gas electric power generation facility in Bucks, Mobile County, Alabama, and, that the plant has been in operation since 1954 and at 600+ acres, has one of the largest unlined CCR surface impoundments in the Southeastern United States. Commenter states that the CCR surface impoundment is located on the eastern edge of the Mobile River and is separated from the river by a fragile 30 to 50' wide dam that extends roughly 2 miles along the river's edge in the middle of the delta.

Commenter states that in 2021 the volume of CCR at the Barry site is estimated to be in the range of 20 to 25 million tons. Commenter states that contamination can leach out of the bottom of the unlined surface impoundment into the river and aquifer systems, and that once these deadly carcinogens are released into the aquifer and river delta, they can never be remediated, and they will cause destruction to the environment while creating poor health condition for the Alabama Gulf Coast area.

Commenter states that Alabama Power is proposing a cap in-place solution to contain the CCR as opposed to moving the ash to a safe, final storage location. The concerns that EPA should all have regarding this proposed solution are multiple; a hurricane could still cause a breach in the dam allowing the CCR to enter the river and delta, there is no guarantee that leaching out of the carcinogens into the subsurface and ground water systems would not continue, the plastic capping system has not been proven to last but for a few decades, not for centuries, etc.

Commenter maintains that Alabama Power's estimates of the number of trucks and the years required to remove the ash from the Barry plant exceed the time limits required by law. Commenter states that the estimates are not consistent with the observed data from other companies in other States who are removing the ash from locations next to major rivers. Commenter acknowledges that physically moving over 20 million tons of CCR to a safe, long term, properly lined dry storage facility is no small issue, but other utility companies in other States are doing it. Commenter states that a more detailed solution and data are needed to explore and quantify the myriad of alternatives that exist to safely remove and relocate the 20 plus million tons of CCR from the Barry Plant, and that it must be secured in a lined, dry storage facility that is above sea level, away from hurricanes and river systems or into a salt dome that is beneath the water aquifer and river systems, securely underground.

Commenter further states that the mammoth cost to the tourism industry and the environment that would occur with a significant spill from the Barry plant far exceeds the cost of removal estimated at $3.3 billion. A catastrophic event like the ones that have occurred in other parts of the U.S. could devastate the tourism business and way of life on the Gulf Coast. Spill examples include the Kingston, TN, spill in 2008

(''Kingston CCR spill workers treated as 'expendables,' lawsuit by sick and dying contends'' (*knoxnews.com*)), the 2011 spill in Lake Michigan, and the 2014 spill in North Carolina.

Response: EPA did not address Plant Barry in the Proposed Denial, therefore, the comments are out of scope and not further addressed.

2. Comments on CCR Permits for Unlined Surface Impoundments in Other States

Comment: One commenter identified five Illinois facilities that have closed federally regulated units with waste in place, and the commenter examined State permits and groundwater documentation posted to State and Federal CCR compliance websites and found significant violations of the CCR regulations. Commenter discussed Luminant's Baldwin Energy Complex—Baldwin, IL; Grand Tower Energy Center—Jackson County, IL; Luminant's Hennepin Power Station—Hennepin, IL; Luminant's Coffeen Power Station—Montgomery County, IL; and Luminant's Duck Creek Power Station—Fulton County, IL.

Commenter reviewed CCR permits for unlined surface impoundments in Ohio and the commenter identified one facility that closed federally regulated CCR units with the approval of the Ohio Environmental Protection Agency (OEPA) despite its failure to meet Federal closure requirements. The commenter discussed American Electric Power's Gavin Power Plant—Gallia County, Ohio.

Commenter reviewed CCR permits for unlined surface impoundments in Kentucky and the commenter identified one particularly problematic closure at a site for which the commenter has documentation as a result of past advocacy. Commenter suggests that a comprehensive evaluation of more Kentucky sites would reveal a number of facilities where there has been closure in groundwater. Commenter discussed Louisville Gas & Electric and Kentucky Utilities' E.W. Brown Generating Station—Mercer County, KY.

Commenter reviewed permits for utility facilities in Missouri and the commenter identified problems. Commenter states that Missouri has not issued permits for the closure of CCR units, but they have issued National Pollutant Discharge Elimination System (NPDES) permits at sites with CCR units that are actively contaminating groundwater. In many of these permits, Missouri included language and guidance that directly conflict with the Federal CCR regulations. While the permits often state that the permittee must abide by any applicable Federal regulations, Missouri's inclusion of explicit directions that directly conflict with the CCR regulations at best creates confusion and at worst sanctions and compels noncompliance. Commenter reviewed several facilities with CCR units: Ameren's Rush Island Energy Center, Festus, MO; Associated Electric Cooperative's New Madrid Power Plant, Marston, MO; Ameren's Labadie Energy Center, Labadie, MO; City of Independence's Blue Valley Generating Station, Independence, MO; and City of Independence's Missouri City Generating Station, Independence, MO.

Commenter reviewed CCR permits for unlined surface impoundments in Indiana and the commenter identified two sites discussed below demonstrate that the Indiana Department of Environmental Management (IDEM) has approved closure plans for CCR units that are clearly non-compliant with the CCR regulations and its critical requirement that units not be allowed to close in place where CCR remains in contact with groundwater. The commenter reviewed permits for Duke Energy's Gallagher, New Albany, IN, and Duke Energy's Cayuga Station, Vermillion County, IN. Commenter states that IDEM has approved closure-in-place for at least two additional CCR ponds where there is clear evidence of CCR in contact with groundwater, Duke Energy Wabash River's North Ash Pond in Terre Haute, IN, and Duke Energy Gibson's South Ash Fill Area in Owensville, IN. Commenter states that Duke Energy claims that neither of these ponds is subject to the CCR regulations and IDEM has taken no steps to evaluate or refute this characterization.

Response: Comments on CCR permits in other States are outside the scope of the Proposed Denial and are not further discussed.

IV. Final Action

EPA has determined that the Alabama CCR permit program does not meet the statutory standard for approval. Therefore, in accordance with 42 U.S.C. 6945(d), EPA is denying the Alabama CCR permit program.

Michael S. Regan,

Administrator.

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