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July 8, 2016

Ms. Ashley R. Farless, PE, AICP
NEPA Compliance
Tennessee Valley Authority
1101 Market Street
Chattanooga, TN 37402

Re: Final Ash Impoundment Closure Environmental Impact Statement, Part I -
Programmatic NEPA Review, and Part II, Site-Specific NEPA Review
(June 2016)

Dear Ms. Farless:

The undersigned groups are writing to provide comments on the Final Ash Impoundment Closure Environmental Impact Statement (Part I-Programmatic NEPA Review and Part II-Site-Specific NEPA Review) (“FEIS”).

We remain extremely concerned that TVA provides no site-specific analysis of groundwater and surface water impacts at each of the six sites considered in Part II of the DEIS: Allen, Bull Run, Kingston, and John Sevier in Tennessee, and Widows Creek and Colbert in Alabama. This omission is surprising and alarming, given that groundwater and surface water impacts are the key potential impacts associated with leaving coal ash in unlined pits next to (and sometimes in) rivers, as TVA proposes to do. More than 3 million people in Tennessee and Alabama rely on drinking water from these rivers.

The FEIS has only deepened our concern about potential groundwater and surface water impacts at these sites and the resulting risks to public health and the environment. In the FEIS, TVA admits for the first time that ash is submerged in groundwater at a minimum of seven of the ten impoundments considered in Part II, including impoundments at Bull Run, Kingston, Colbert and Widows Creek. A new report issued by TVA’s consultant, the Electric Power Research Institute (“EPRI”) confirms that its hypothetical model does not consider key site-specific groundwater characteristics—including the greater depth to which ash is buried in groundwater at these sites.

In addition, after the issuance of the FEIS, the United States Court of Appeals for the D.C. Circuit issued an order that will ultimately vacate the early closure provision of the federal Coal Ash Rule and require TVA to comply with the performance standards and groundwater quality standards of the Rule. Despite this significant new information and change in regulatory circumstances, TVA still has not performed a site-specific analysis of groundwater and surface water impacts for the ten impoundments considered in the FEIS.

TVA's refusal to evaluate the actual groundwater conditions and intersection of waste and groundwater at these ten impoundments appears calculated to provide it a basis for moving forward with covering up its ash as quickly and cheaply as possible, without considering the site-specific risks to human health and the environment associated with leaving millions of tons of coal ash in leaking, unlined pits next to our rivers and streams.

The FEIS, and any Record of Decision that relies on it, run counter to TVA's obligations to evaluate impacts to groundwater and surface water under at least three regulatory requirements: (1) NEPA; (2) the federal Coal Ash Rule; and, for impoundments in Tennessee, (3) the administrative order issued by the Tennessee Department of Environment and Conservation. TVA's proposal to cap impoundments in place also threatens to continue violating the Clean Water Act due to the hydrological connection between groundwater and surface water, as well as the provisions in TVA's current NPDES permits that prohibit groundwater contamination.

The attached comments reflect evaluation of the FEIS by attorneys at the Southern Environmental Law Center and the Environmental Integrity Project, with additional expert evaluation by Global Environmental LLC (Mark Quarles, Licensed Professional Geologist).

We respectfully insist that TVA comply with its obligations under NEPA and federal and state laws designed to protect our groundwater and surface water resources before it moves forward with its plan to cover up coal ash throughout its system, and specifically at the ten ponds analyzed in Part II of the FEIS.

Sincerely,



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COMMENTS ON FINAL ASH IMPOUNDMENT CLOSURE ENVIRONMENTAL IMPACT STATEMENT

I. Introduction

In the Final Ash Impoundment Closure Environmental Impact Statement (Part I-Programmatic NEPA Review and Part II-Site-Specific NEPA Review) (“FEIS”), TVA admits the following:

- Coal ash is buried in the groundwater beneath several ponds it is proposing to close in place, including ponds at Bull Run, Kingston, Colbert and Widows Creek.
- In ponds where ash is buried in the groundwater, closure by removal, or excavating the ash and moving it to dry, lined storage, is “more beneficial” to protect groundwater.
- The agency has not characterized or quantified—let alone analyzed—the site-specific groundwater impacts associated with its decision to leave coal ash in leaking, unlined pits at any of the sites identified in Part II of the FEIS.

TVA’s failure to take the essential first step of accurately characterizing the existing groundwater conditions at each site, and to base its identification of reasonable alternatives and analysis of impacts on the real-world risk of groundwater and surface water pollution, violates NEPA and renders arbitrary and unlawful its decision to move forward with closure in place at all ten ponds considered in Part II of the FEIS. NEPA does not dictate an agency’s substantive choice, but it does require the agency to fully disclose and analyze all relevant impacts associated with that choice. TVA has failed to do so in the FEIS.

In our comments on the Ash Impoundment Closure Environmental Impact Statement (Part I-Programmatic NEPA Review and Part II-Site-Specific NEPA Review) (“DEIS”) submitted on March 9, 2016, we pointed out, among other things, the following flaws that rendered the DEIS fundamentally deficient:

- The DEIS failed to establish the proper baseline for analysis of key impacts, particularly impacts to groundwater and surface water, at either the programmatic or site-specific level. Contrary to standard practice for siting waste disposal facilities, TVA did not even consider whether the ash is submerged in groundwater or is located in an unstable area.
- The public’s ability to comment meaningfully on the DEIS had been thwarted by TVA’s refusal to disclose key analyses of environmental impacts.

- TVA's programmatic approach to closure of coal ash ponds improperly obscured the extent of site-specific environmental impacts.
- The statement of purpose and need in the DEIS artificially constrained TVA's timeline for closing the ponds and ignored the full extent of TVA's legal obligation to protect human health and the environment.
- Neither the programmatic DEIS nor the site-specific analyses considered a reasonable range of clean closure alternatives, including closure that uses on-site lined landfills or transportation off-site by rail, barge, or other trucking options.

Further, as we explained in our comments on the Part II DEISs for Allen, Kingston, Bull Run, John Sevier, Colbert, and Widows Creek, TVA carried these flaws forward into its site-specific analyses, rendering them fundamentally deficient as well.

On May 23, 2016, a subset of the Environmental Groups submitted supplemental comments, pointing out TVA's obligation to prepare a supplemental EIS based on the following:

- Significant regulatory changes to the federal Coal Ash Rule would eliminate the early closure loophole upon which TVA incorrectly relied to justify closing its ponds quickly without analyzing site-specific groundwater and surface water impacts.
- Substantial changes in the proposed action at Bull Run—including a plan to dump up to 250,000 cubic yards of additional ash into the Fly Ash Pond before closing it—had been submitted to the Tennessee Department of Environment and Conservation shortly after the close of the public comment period, and had not been disclosed or analyzed in the DEIS.
- Significant information regarding the existing environment at Bull Run—including the fact that ash in the Fly Ash Pond and Sluice Channel is buried in the groundwater and within the normal pool elevation of the inundated Clinch River and Bull Run Creek—was omitted in the DEIS.

By letter dated June 9, 2016, TVA refused to prepare a supplemental EIS notwithstanding these significant defects in the DEIS.

The FEIS cures none of the flaws we identified in comments on the DEIS and in supplemental comments.¹ Instead, in a desperate attempt to patch over its failure to perform the

¹ See SELC et al., Comments on Draft Ash Impoundment Closure Environmental Impact Statement 53-55 (Mar. 9, 2016) [hereinafter Comments on DEIS]; Letter from SELC, et al., to Ashley Farless, TVA, re: TVA's Obligation to

site-specific analyses required by NEPA, TVA introduces a “qualitative” assessment of groundwater and surface water impacts. Unfortunately for TVA, even its own consultant, the Electric Power Research Institute (“EPRI”), admits that these “qualitative” assessments do not evaluate the actual impacts to groundwater and surface water at each site.

In fact, neither EPRI’s analyses nor any other evidence in the record supports TVA’s conclusion that covering up coal ash in place will protect groundwater and surface water from contamination when the ash is submerged in groundwater. Thus, TVA’s decision to move forward with the closure in place alternative is unreasonable for every pond analyzed in Part II of the EIS.

Despite TVA’s utter failure to provide the site-specific analysis of groundwater and surface water impacts required by NEPA, the FEIS and EPRI’s “qualitative” assessment upon which it relies contain a wealth of significant new information, and substantial changes to the proposed actions in Part II, each of which is “relevant to environmental concerns,” and therefore triggers the need for a supplemental EIS prior to the issuance of any Record of Decision for the actions proposed in Part I and Part II of the FEIS. Significant new information in the FEIS and the EPRI “qualitative” assessment includes the following:

- Ash is buried in groundwater at several of the ponds TVA proposes to close in place, including Bull Run, Kingston, Colbert and Widows Creek.
- The assumptions employed by EPRI in the Relative Impact Framework and the Hypothetical Site Assessment, as reported in the new EPRI “qualitative” analysis, are not representative of the existing conditions at any of the sites analyzed in Part II, or many other sites throughout the TVA system.

Substantial changes to proposed actions in Part II include the following:

- At Bull Run, TVA’s final determination that dumping additional ash into a leaking, unlined pit for permanent disposal constitutes “beneficial use” within the meaning of the federal Coal Ash Rule.
- At John Sevier, TVA’s revelation that the amount of ash to be covered up in the Bottom Ash Impoundment is *five times* the amount it considered in the DEIS.

Prepare a Supplemental Environmental Impact Statement for Draft Ash Impoundment Closure Environmental Impact Statement, Part I-Programmatic NEPA Review, and Part II, Site-Specific NEPA Review (“DEIS”) (Originally published December 2015); TVA’s Continuing Refusal to Disclose and Properly Analyze Key Environmental Impacts in the DEIS (May 23, 2016) [hereinafter Comments re: Obligation to Prepare SEIS]. Because our previous two sets of comments, and the accompanying reports and attachments, apply with equal force to the FEIS, we incorporate them here, including all attachments, by reference.

In addition to including significant new information and substantial changes to proposed actions in the FEIS, TVA also fails to disclose and analyze changes to the proposed action, including connected actions, at Kingston Fossil Plant, and fails to analyze the impact of changed regulatory circumstances, i.e., whether its proposal to close ponds in place will satisfy the applicable performance standards and groundwater quality standards in the federal Coal Ash Rule.²

In its response to our extensive comments on the DEIS, which demonstrated the inadequacy of that document, TVA repeatedly invokes a letter from EPA Region 4 that indicated a “Lack of Objections” to the DEIS.³ We disagree with the conclusion of EPA Region 4 regarding the DEIS, but in any case, a lack of objections is not equivalent to an endorsement. In addition, that letter was written before (1) TVA admitted its ash is buried in groundwater at the majority of the sites, which violates its existing permits; and (2) the court ordered a regulatory change that will vacate the early closure loophole.

TVA’s proposal to cover up ash that is buried in groundwater is a scenario that was not modeled by EPA and certainly was not considered in the Coal Ash Rule at the level of selecting an appropriate method of closure for a specific site. Given this new factual information and changed regulatory circumstances, TVA must prepare a supplemental EIS and perform the site-specific analysis required by NEPA.

II. Despite its admission that ash is submerged in groundwater at a minimum of four of the six sites considered in Part II of the EIS, TVA refuses in the FEIS to provide the site-specific groundwater analyses required by NEPA.

As we explained in our comments on the DEIS, NEPA requires TVA to disclose and analyze impacts at a site-specific level.⁴ NEPA further requires that this analysis occur *before* TVA makes a decision to move forward with a proposed action.⁵ TVA has not satisfied this obligation with regard to groundwater and surface water impacts associated with its preferred Closure-in-Place alternative for any of the ten impoundments analyzed in Part II of the FEIS.

² As discussed in Section V.C below, on June 14, 2016, the United States Court of Appeals for the D.C. Circuit issued an order vacating the early closure loophole, and staying the vacatur until EPA promulgates new deadlines applicable to impoundments that had submitted notices of intent to close under the early closure loophole. A significant result of this regulatory change is that TVA will have to monitor groundwater for coal ash contamination at most of the impoundments included in Part II.

³ See, e.g., TVA, Final Ash Impoundment Closure EIS Part I-Programmatic NEPA Review and Part II-Site-Specific NEPA Review, Ch. A.2 Response to Comments 3 (June 2016) [hereinafter FEIS Part I and FEIS Part II].

⁴ Comments on DEIS at 10; *California v. Block*, 690 F.2d 753, 761 (9th Cir. 1982).

⁵ Comments on DEIS at 10-12; *Blue Mountains Biodiversity Project v. Blackwood*, 161 F.3d 1208, 1216 (9th Cir. 1998).

A. TVA now admits that ash is submerged in groundwater at Bull Run, Kingston, Colbert and Widows Creek.

In our comments on the DEIS, we explained that TVA had not adequately or accurately disclosed and analyzed baseline groundwater conditions that affect the potential for the Closure-in-Place alternative to contaminate groundwater.⁶ These baseline groundwater conditions include, but are not limited to, “whether the ash is in contact with groundwater at each site.”⁷ As we explained, this is crucial information because, among other reasons, (1) whether waste is in contact with groundwater “is normally the fundamental issue taken into account when decisions are made regarding past disposal....”⁸; and (2) groundwater is a public resource for which TVA must obtain permission from the state before it makes a decision to leave ash in place to pollute for decades to come.⁹

In its response to comments, TVA admits, for the first time in this NEPA process, that ash is in contact with groundwater at seven of the ten impoundments considered in Part II of the EIS, including both impoundments at Bull Run, both impoundments at Kingston, Ash Pond 4 at Colbert, and all of the ash impoundments at Widows Creek except the Dredge Cell.¹⁰ In fact, according to TVA, at Bull Run, the ash in the Fly Ash Pond and the Sluice Channel is currently submerged in 18 feet of groundwater on average.¹¹ Similarly, at Kingston, the ash in the Sluice Trench is submerged in 22 feet of groundwater on average, and the ash in the Stilling Impoundment is submerged in 12 feet of groundwater.¹²

TVA attempts to downplay the significance of its admission by asserting that groundwater wells “may” show a significant drop in groundwater levels after the ash is covered up.¹³ Yet nowhere in the FEIS, or any of the EPRI reports upon which it relies, does TVA perform a site-specific analysis that would confirm this speculative and unfounded assertion for each of the ten impoundments considered in Part II of the FEIS.¹⁴ In fact, in the FEIS itself, TVA states only that reducing the hydraulic head will *reduce* the pressure of water forcing ash into the groundwater, not that the groundwater—which rises and falls—will magically begin

⁶ See, e.g., Comments on DEIS at 28-30.

⁷ *Id.* at 29.

⁸ *Id.*

⁹ *Id.* Indeed, polluting groundwater violates the water quality laws of both Tennessee and Alabama. See Tenn. Code §§ 69-3-103(44); 69-3-102(a); Ala. Code § 22-22-1(b)(2); Ala. Admin. Code r. 335-6-6-.03.

¹⁰ FEIS Part I, Chapter A.2 Response to Comments at 27.

¹¹ *Id.*

¹² *Id.*

¹³ *Id.* at 26.

¹⁴ Att. 1, Global Environmental LLC, Summary of Supplemental Opinions Regarding TVA’s Final Ash Impoundment Closure Environmental Impact Statement ¶¶ 5, 9-10 (July 8, 2016) [hereinafter Quarles Report III].

flowing only under the ash.¹⁵ As discussed below, without performing the site-specific analysis required by NEPA and other laws, TVA cannot demonstrate that its ash will be above the groundwater before it covers it up.

TVA also asserts that the public should not rely on its admission that ash is in groundwater because “there is uncertainty regarding the depth of CCR impoundments....”¹⁶ To the extent this admission is truthful, it highlights precisely why TVA has put the cart before the horse in deciding to move forward with closing these ash impoundments in place. Determining the extent to which ash is in contact with groundwater is essential to determining how much groundwater contamination will persist after TVA covers up its ash.

Moreover, this admission calls into question TVA’s estimates of the amount of ash it is proposing to leave in unlined, leaking pits. In order to estimate the amount of ash in each impoundment analyzed in Part II of the FEIS, TVA had to determine the depth of the impoundment.¹⁷ If it does not have this information, it should not be moving forward with a plan to cover up the ash in place. For example, as discussed in more detail below, at John Sevier, TVA has changed its estimate of the amount of ash to be covered up from 145,000 cubic yards to 770,000 cubic yards—a fivefold increase.¹⁸ TVA provides no explanation of what triggered this change in its estimate, but a reasonable assumption is that TVA has discovered that ash is buried much deeper in the Bottom Ash Impoundment at John Sevier than previously thought.¹⁹

In any case, TVA is likely understating the extent to which ash at the ten impoundments considered in Part II are and will remain in contact with groundwater. Table 2 in the Response to Comments presents “average” water table elevations. What actually matters in terms of a groundwater contamination pathway is the highest elevation to which groundwater can be expected to rise.²⁰ If, for example, groundwater were to saturate coal ash for two or three months each year, the average water table may be below the coal ash, but there would still be a significant groundwater contamination pathway.²¹ The FEIS also fails to quantify other factors

¹⁵ FEIS Part I at 64.

¹⁶ FEIS Part I, Ch. A.2 Response to Comments at 26.

¹⁷ Quarles Report III ¶ 1.

¹⁸ Compare TVA, Draft Ash Impoundment Closure Environmental Impact Statement, Part II (John Sevier), at 4 (Dec. 2015) [hereinafter DEIS Part I and DEIS Part II], with FEIS Part II (John Sevier) at 4.

¹⁹ Despite its obligation to do so under NEPA, TVA provides no analysis of the implications for groundwater impacts of this significant change. See Section V.B.2 below.

²⁰ Quarles Report III ¶ 2.

²¹ This is why EPA required a buffer between coal ash disposal units and the highest expected groundwater elevation. Specifically, for new landfills and new or existing impoundments, the coal ash rule requires a buffer of at least five feet between the base of the disposal unit and the “upper limit of the uppermost aquifer,” or a demonstration that the base of the disposal unit will not come into contact with “the seasonal high water table.” 40 C.F.R. § 257.60(a).

that influence the intersection of ash and groundwater, such as the lateral groundwater inflow that flows through ash in the impoundments from upgradient areas.²²

B. Leaving ash in the groundwater is a violation of TVA's current NPDES permits, and TVA does not explain how its plan to cover up the ash will remedy that violation.

Although TVA now admits that its ash is submerged in groundwater at seven of the ten sites considered in the FEIS, it fails to acknowledge that its ongoing discharge of coal ash and coal ash contaminants into groundwater is a violation of its current NPDES permits, and therefore a violation of the federal Clean Water Act. TVA's current NPDES permits for the ash ponds at Colbert and Widows Creek in Alabama include the following provision: "[T]he discharge of pollutants to groundwater is prohibited."²³

Similarly, TVA's current NPDES permits for the ash ponds at Bull Run and Kingston include the following provision: "Sludge or any other material removed by any treatment works must be disposed of in a manner, [sic] which prevents its entrance into or pollution of any surface or subsurface waters."²⁴ Courts have held that these types of provisions apply to coal ash and related contaminants entering groundwater under ash impoundments.²⁵

Thus, TVA's admission that its ash currently enters groundwater is an admission that it is currently violating its NPDES permits. Yet TVA does not explain how its plan to cover up the ash will remedy that current and ongoing violation. Instead, TVA relies on a speculative guess that, no matter how much of ash is currently buried in groundwater at a particular site, dewatering and covering it up will somehow cause the groundwater to never be in contact with ash.²⁶

TVA also argues that even if it leaves ash in groundwater, dewatering and covering up an ash pond will result in less groundwater pollution than TVA is currently causing.²⁷ Even if that

²² Quarles Report III ¶¶ 24-30; 31.

²³ Att. 2, Ala. Dep't of Env'tl. Mgmt., Widows Creek Fossil Plant, NPDES Permit No. AL0003875 at pt. III.G (Mar. 8, 2005); Att. 3, Ala. Dep't of Env'tl. Mgmt., Colbert Fossil Plant, NPDES Permit No. AL0003867 at pt. III.G (Jan. 7, 2008). In addition, the Alabama Water Pollution Control Act includes groundwater in its definition of waters of the State, and any unpermitted discharge to groundwater is a violation of the AWPCA.

²⁴ Att. 4, Tenn. Dep't of Env'tl. & Conservation, Bull Run Fossil Plant, NPDES Permit No. TN0005410 At pt. I.A.d (effective date Nov. 1, 2010, modified May 16, 2011); Att. 5, Tenn. Dep't of Env't. & Conservation, Kingston Run Fossil Plant, Draft NPDES Permit No. TN0005452 (October 11, 2010).

²⁵ *Yadkin Riverkeeper, Inc. v. Duke Energy Carolinas, LLC*, 141 F.Supp.3d 428, 446-47 (M.D.N.C. 2015) (denying Duke Energy's 12(b)(6) motion to dismiss a claim premised on violation of a NPDES permit containing "removed substances" provision).

²⁶ Quarles Report III ¶¶ 24-30.

²⁷ FEIS Part I at 64.

were true—and TVA has not demonstrated that it is true at any specific site analyzed in Part II of the FEIS²⁸—it would not remedy TVA’s violation of the plain prohibition on contaminating groundwater that it agreed to in its NPDES permits.

C. TVA’s own consultant admits that its “qualitative” analysis cannot provide a site-specific evaluation of risks of groundwater and surface water contamination associated with capping coal ash in place.

In our comments on the DEIS, we explained that TVA’s analysis of groundwater impacts is based almost entirely on the results of an undisclosed Relative Impact Framework and Impact Assessment developed by EPRI.²⁹ The Impact Assessment, in turn, is based upon a ‘hypothetical’ coal ash pond in Tennessee—not the actual environment that exists at each coal ash pond in TVA’s system in Tennessee, Alabama and Kentucky.”³⁰ This, we explained, did not satisfy TVA’s obligation under NEPA to provide a site-specific analysis of the potential impacts of its proposed action.³¹

Apparently recognizing this shortcoming of its analysis, TVA introduces in the FEIS a third EPRI report: the *Qualitative Application of the Relative Impact Framework to Ten Tennessee Valley Authority Surface Impoundments* (“Qualitative Application”).³² Although TVA relies extensively in the FEIS on all three reports it has commissioned from EPRI,³³ this is the

²⁸ Quarles Report III ¶¶ 31-34.

²⁹ Comments on DEIS at 8-10; *see also* EPRI, *Relative Impact Framework for Evaluating Coal Combustion Residual (CCR) Surface Impoundment Closure Options* (Jan. 2015) [hereinafter *Relative Impact Framework*]; EPRI, *Relative Impact Assessment Report for a Hypothetical Coal-Powered Utility on a River in Tennessee* (Oct. 2015) [hereinafter *Impact Assessment*]. These documents appear to have been updated for the FEIS. *See* FEIS Part I at 144 (citing to versions published in 2016). Neither the *Relative Impact Framework* nor the *Impact Assessment* is available and accessible for purposes of satisfying the public disclosure requirements of NEPA. *See* Att. 6, EPRI, *Product Abstract, Relative Impact Framework Application for a Hypothetical Coal Combustion Residual Surface Impoundment*, <http://www.epri.com/abstracts/Pages/ProductAbstract.aspx?ProductId=000000003002007544> (last visited July 8, 2016) and Att. 7, EPRI, *Product Abstract, Relative Impact Framework for Evaluating Coal Combustion Residual Surface Impoundment Closure Options*, <http://www.epri.com/abstracts/Pages/ProductAbstract.aspx?ProductId=000000003002007543> (last visited July 8, 2016) (reports can be purchased for \$25,000 each).

³⁰ Comments on DEIS at 28. Despite our persistent efforts to obtain a copy of the *Relative Impact Framework* and the *Impact Assessment*, first informally and then by FOIA request, TVA has refused to disclose them.

³¹ *Id.* at 28-32. *See also* *Native Ecosystems Council v. Tidwell*, 599 F.3d 926, 937 (9th Cir. 2010) (“[T]he Forest Service’s use of the nonexistent sage grouse as an MIS to assess the project’s impact on all sagebrush species’ diversity was flawed” and did not constitute the hard look required by NEPA).

³² FEIS Part I at 32; Att. 8, EPRI, *Qualitative Application of the Relative Impact Framework to Ten Tennessee Valley Authority Surface Impoundments* (2016 Technical Report) [hereinafter *Qualitative Application*], available at <http://www.epri.com/abstracts/Pages/ProductAbstract.aspx?ProductId=000000003002007542>.

³³ We explain at length in our comments on the DEIS all of the ways in which the DEIS relies on the undisclosed EPRI reports. The FEIS similarly relies on the reports for its groundwater and surface water analyses. An email from TVA to EPRI in July 2015 confirms, “We are planning to use the *Relative Risk Framework* to evaluate

first EPRI report regarding its ash impoundment closure plan that TVA has made available to the public.

The Qualitative Application does nothing more than confirm what we suspected: The previous undisclosed EPRI reports do not reflect the actual conditions at the ash impoundments considered in Part II of the FEIS.³⁴ In fact, the Qualitative Application itself identifies many ways in which the actual site conditions differ from the hypothetical site. For example, the “hypothetical site” is located 1,000 feet from the river.³⁵ At Bull Run, however, EPRI states that the Fly Ash Pond is a mere 20-50 feet from the river.³⁶ (The analysis presented in our supplemental comments demonstrates that the impoundment actually is situated *in* the river, not 20-50 feet from it.)³⁷ Similarly, at Colbert, EPRI states that Ash Pond 4 is “bordered by a creek on three sides.”³⁸ Moreover, the intersecting groundwater scenario using the “hypothetical site” assumes “intersection thickness is about 5 ft.”³⁹ At Bull Run, however, TVA has admitted that the average depth to which ash is buried in groundwater is 18 feet.⁴⁰ At Kingston, TVA has admitted that the average depth to which ash is buried is 22 and 12 feet (Sluice Trench and Stilling Impoundment, respectively).

In fact, EPRI admits in the Qualitative Application that neither the Impact Assessment (which analyzed the “hypothetical site”) nor the Qualitative Application provide a site-specific analysis of groundwater or surface water impacts for any of the sites analyzed in the FEIS.⁴¹ Indeed, for each impoundment, the Qualitative Application states:

The groundwater parameters at the site (*e.g.*, hydraulic conductivity, vadose zone thickness, distance to SI [surface impoundment]-groundwater intersection, aquifer thickness) were not available at the time of the analysis.⁴²

whether to clean close or close in place.” Att. 9, E-mail from Ann Aiken, TVA, to Ken Ladwig, EPRI, re: Citing Relative Risk Framework (July 30, 2015).

³⁴ Quarles Report III ¶¶ 13-23.

³⁵ Qualitative Application at 2-4 and 5-3.

³⁶ *Id.* at 5-3.

³⁷ Comments re: Obligation to Prepare SEIS at 16 and attachments.

³⁸ Qualitative Application at 7-3.

³⁹ *Id.* at 2-4.

⁴⁰ FEIS Part I, Chapter A.2 Response to Comments at 27.

⁴¹ The Qualitative Application continues to omit crucial groundwater assumptions used in the Impact Assessment, instead referring the reader to that undisclosed and inaccessible document. *See, e.g.*, Qualitative Application at 5-3 (“The hypothetical site and sensitivity analysis modeling relies on an assumed set of groundwater parameters (see EPRI 2016b for specific assumptions).”).

⁴² Qualitative Application at 4-3 (Allen West Pond); 5-3 (Bull Run Fly Ash Pond); 6-3 (Bull Run Sluice Channel); 7-3 (Colbert Ash Pond 4); 8-3 (John Sevier Bottom Ash Impoundment); 9-3 (Kingston Stilling Pond); 10-3 (Kingston Sluice Trench); 11-3 (Widows Creek Main Ash Impoundment); 12-3 (Widows Creek Dredge Cell).

Moreover, EPRI explains the effect of this critically important, yet omitted information, on its “qualitative comparison”:

This is an area of uncertainty that can be further evaluated once information about this feature at the TVA SIs [surface impoundments] becomes available.⁴³

In other words, even in the Qualitative Application, EPRI has not analyzed potential groundwater impacts at the site-specific level. Although EPRI attempts to minimize this revelation by stating generally that its hypothetical site analysis employed both intersecting and non-intersecting groundwater scenarios and included sensitivity analyses, the Qualitative Application expressly states that crucial groundwater and surface water site features, including ash-groundwater intersection, “were not tested as part of the sensitivity analyses.”⁴⁴ Thus, none of the EPRI reports relied on by TVA to support its groundwater and surface water impact analyses provide the site-specific evaluation required by NEPA and necessary to adequately protect public health and water resources.

D. The FEIS does not otherwise provide a site-specific evaluation that quantifies the amount of groundwater that will continue to flow through the ash and contaminate groundwater and surface water.

In its response to comments, TVA claims that it conducted “its own independent analyses” to support its conclusions in the FEIS, including its conclusion that closure in place will be “equally protective” of groundwater.⁴⁵ Yet in each site-specific EIS in Part II, TVA admits that it is “in the process of further studying groundwater characteristics....”⁴⁶ It is difficult to reconcile these two statements, particularly when, as discussed above, TVA’s own consultant admits that it could not perform site-specific analyses because TVA did not provide it with the relevant information.

Nor does TVA provide the relevant information for either its hypothetical pond or the impoundments analyzed in Part II of the EIS. With respect to the hypothetical pond, TVA and EPRI continue to claim that information is proprietary and must be purchased from EPRI.⁴⁷ With respect to specific sites, TVA states only that it is continuing to evaluate site-specific

⁴³ *Id.*

⁴⁴ *Id.*

⁴⁵ FEIS Ch. A.2 Response to Comments at 22.

⁴⁶ FEIS Part II (Bull Run) at 18; FEIS Part II (Allen) at 18; FEIS Part II (Colbert) at 18; FEIS Part II (John Sevier) at 18; FEIS Part II (Kingston) at 16; FEIS Part II (Widows Creek) at 18.

⁴⁷ *See. e.g.*, Qualitative Analysis at 7-3 (referring reader to undisclosed EPRI report for hypothetical site parameters).

groundwater conditions. Examples of specific groundwater information relevant to evaluating impacts that is omitted in the FEIS include the following:

- Depth to groundwater in the impoundments
- Amount of groundwater mounding
- Quantity of leachate that is seeping downward and into groundwater
- How much groundwater flows laterally from upgradient areas and into the coal ash
- How leachate and groundwater flows to and interacts with the receiving stream
- Soil permeability conditions to estimate how fast leachate seeps vertically
- Water depth in a surface impoundment
- Volume and composition of the coal ash materials
- Direction of groundwater flow⁴⁸

TVA also claims that the federal Coal Ash Rule determined *ex ante* that Closure in Place is “equally protective” of groundwater in all cases.⁴⁹ We rebut this claim extensively in our comments on the DEIS and will not repeat those arguments here.⁵⁰ In Section III.B below, we further explain that contrary to TVA’s claim,⁵¹ EPA’s risk assessment by no means supports TVA’s conclusion that Closure in Place is universally as protective as Closure by Removal regardless of individual site-specific conditions.

As a fallback argument, TVA asserts that “removal of the hydraulic head of water in an impoundment reduces the risk of groundwater contamination under [either] closure scenario.”⁵² TVA has not demonstrated that this reduction will occur based on site-specific conditions, nor quantified the extent to which it might occur at each impoundment.⁵³ As discussed below, the groundwater at the TVA sites is plainly unsafe to drink now, and TVA has failed to provide a demonstration that it will ever be safe to drink at any particular time in the future. The lack of site-specific analysis also raises the question of groundwater contamination migrating off-site to neighboring drinking water wells.⁵⁴ To say that closure in place “reduces the risk of groundwater contamination” says nothing about restoring groundwater to a safe state at any specific site.

⁴⁸ Quarles Report III ¶ 7.

⁴⁹ FEIS Part I at 2.

⁵⁰ *See, e.g.*, Comments on DEIS at 14-17, 30-31 and accompanying citations; *see also* Quarles Report III ¶¶ 24-30 .

⁵¹ FEIS Part I, Ch. A.2 Response to Comments at 12.

⁵² *Id.* at 5.

⁵³ Quarles Report III ¶¶ 31-34.

⁵⁴ *See, e.g.*, Jordan Buie and Josh Cross, *Chemicals found in wells near Gallatin power plant*, The Tennessean (Oct. 23, 2015), <http://www.tennessean.com/story/news/environment/2015/10/23/chemicals-found-wells-near-gallatin-power-plant/74374292/>.

In response to our comment that TVA’s plan merely to decant, and not fully dewater, the ash ponds is inconsistent with the performance standards in the federal Coal Ash Rule,⁵⁵ TVA states that “TVA intends to dewater at all of its sites. A dewatering method that follows standard industry practice will be used.”⁵⁶ However, as its description of “dewatering” in the Alternatives section of the FEIS makes clear, it still plans simply to decant the standing water in the ponds. Table 2-2 explains the dewatering process as follows: “Dewatering of free water within impoundment.”⁵⁷ Dewatering free water is the same as decanting. For all of the reasons explained in our comments on the DEIS, this is inadequate under the federal Coal Ash Rule and will not result in a reduction of groundwater contamination.⁵⁸

Finally, TVA points to an example at its Cumberland Fossil Plant to support its finding that Closure-in-Place will reduce the risk of groundwater contamination.⁵⁹ Specifically, TVA argues that “In the case of Cumberland, when sluicing of CCRs changed from an open impoundment to sluicing in geomembrane-lined channels, groundwater parameters changed from occasionally exceeding some MCLs to below the MCL.”⁶⁰ This example is wholly inapplicable to the Closure-in-Place method of ash disposal described in the FEIS. In the Cumberland sluice channel example, TVA installed a *liner* under the ash— which is precisely the opposite of what TVA is proposing to do when it covers up its ash in *unlined* pits sitting in groundwater at the sites analyzed in Part II of the FEIS.⁶¹

In summary, despite its claim to have conducted “independent analysis” at the site-specific level, TVA admits that it has not characterized groundwater sufficiently to conduct such an analysis. Its consultant EPRI admits the same in the Qualitative Application. As explained in detail in our comments on the DEIS and Section III.B below, the federal Coal Ash Rule provides no support for TVA’s site-specific selection of the Closure-in-Place alternative. Thus, we are back where we started: TVA is still planning to cover up ash in leaking, unlined pits at each of the sites identified in Part II without having disclosed and analyzed the site-specific groundwater and surface water impacts that will result.

⁵⁵ Comments on DEIS at 31-32.

⁵⁶ FEIS Part I, Ch. A.2. Response to Comments at 33.

⁵⁷ FEIS Part I at 16.

⁵⁸ Comments on DEIS at 31-32 and accompanying citations; Quarles Report III ¶¶ 25-28.

⁵⁹ FEIS Part I at 64-65.

⁶⁰ *Id.*

⁶¹ See Comments on DEIS at 28-31 and accompanying citations (explaining that covering ash will not prevent lateral inflow or groundwater mounding).

E. TVA's own data show that every site analyzed in Part II of the FEIS is already contaminated with coal ash indicator pollutants.

Although TVA's analysis contains a brief discussion of current groundwater monitoring results at each site, the utility has not acknowledged, much less accounted for, the existing widespread groundwater contamination at its coal plants that establishes the baseline from which it should analyze potential impacts. As we explained in our comments on the DEIS, the groundwater at every site analyzed in Part II of the FEIS is contaminated with coal ash indicator pollutants.⁶² Despite these facts, TVA continues to ignore or dismiss large amounts of data it has generated and submitted to state agencies. In the response to comments, TVA attempts to obscure the facts by only discussing pollutants that are currently limited by the states. The facts speak for themselves: The groundwater at the TVA plants is contaminated by coal ash and is unsafe for human use.

In its response to our comments on the issue of groundwater contamination, TVA implies that groundwater is safe if it doesn't exceed state standards or maximum contaminant levels (MCLs), even if those standards only cover a subset of the toxic pollutants in the groundwater.⁶³ We are discouraged to see TVA dismissing legitimate public health concerns. Water with unsafe concentrations of boron or manganese is not magically safe to drink simply because state agencies have not yet established standards. Moreover, TVA will be required to monitor for several pollutants for which MCLs have not been established under the federal Coal Ash Rule.⁶⁴

TVA also asserts that "EPA guidelines are not enforceable limits."⁶⁵ This is not at all significant, despite TVA's attempts to imply otherwise. EPA's guidelines draw the line between water that is safe to drink and water that is unsafe to drink. We sincerely doubt that any of the authors of the EIS would be comfortable drinking water with boron concentrations 10 times higher than EPA's health advisory simply because that health advisory is not enforceable. EPA's guidelines are an attempt to help the public protect themselves from unsafe drinking water. The guidelines are directly relevant to groundwater quality and the EIS.

TVA is also ignoring the fact that state agencies have the discretion to establish site-specific standards for pollutants, *and have done so at the TVA plants using the EPA guidelines.*

⁶² See Comments on DEIS at 28, 45-47, 52-55, 59-65, 68-69, 73-76, 84-87.

⁶³ FEIS Part I, Ch. A.2 Response to Comments at 47.

⁶⁴ See 40 C.F.R. § 257.90-98 and App. III and IV.

⁶⁵ FEIS Part I, Ch. A.2 Response to Comments at 47.

For example, TDEC applied a groundwater protection standard for cobalt of 11 micrograms per liter at the Bull Run site in 2011, basing it on EPA's Regional Screening Level for cobalt.⁶⁶

Tennessee regulations explicitly state that TDEC should expand the list of monitoring parameters when TDEC knows that there are indicators of the waste being regulated. According to Tenn. Comp. R. & Regs. 0400-11-01-.04:

The Commissioner may establish an alternative list of inorganic indicator parameters for a SWLF unit, in lieu of some or all of the heavy metals (constituents 1-17 in Appendix I to this rule), if the alternative parameters provide a reliable indication of inorganic releases from the SWLF unit to the ground water.

Even TVA has acknowledged that several pollutants, including aluminum, arsenic, boron, manganese, strontium, sulfate, and TDS “provide a reliable indication of inorganic releases.”⁶⁷ TDEC plainly has a legal basis, and a responsibility, to require monitoring of these pollutants.

In addition, according to the groundwater protection and monitoring standard regulations for Class II landfills:

Since the operator of a Class II facility may or may not be required by the Commissioner to conduct sampling and analysis for the constituents listed in Appendix II of this rule, the operator shall develop and submit a ground water quality assessment plan as required in part (a) 6 of this paragraph and shall conduct corrective action as required in part (a) 8 of this paragraph based on sampling and analysis of ground water monitoring parameters specified by the Commissioner to be characteristic of the wastes and/or the constituents listed in Appendix II of this rule. The Commissioner, at his discretion based on statistical increases in sampling parameters, may expand the number of parameters that characterize the waste.⁶⁸

TDEC can and—for the sake of public health and the health of our aquatic ecosystems—should make use of this authority at all of TVA's coal ash disposal areas in Tennessee. However,

⁶⁶ In its groundwater monitoring reports, TVA noted that the groundwater protection standard for cobalt was set to the Regional Screening Level “at the request of TDEC regulator over the site.” Att. 10, TVA, Bull Run Fossil Plant Gypsum/Coal Ash Landfill Groundwater Assessment Monitoring Report – May 2011, 3 (June 24, 2011).

⁶⁷ See, e.g., TVA, Colbert Fossil Plant Groundwater Assessment, 51 (Oct. 1994) (stating that “pH, sulfate, and TDS are considered to be indicators of coal ash leachate in groundwater” and that aluminum, manganese and iron can be associated with ash leachate); *id.* at 52 (stating that boron, molybdenum, and strontium are often considered to be indicators of ash leachate); TVA, Groundwater Monitoring Report – Allen Fossil Plant, at 2 (Aug. 22, 2008) (identifying arsenic, boron, and sulfate as “ash leachate indicators”).

⁶⁸ Tenn. Comp. R. & Regs. 0400-11-01-.04(7)(b)(5) (emphasis added).

TDEC's failure to do so does not, contrary to TVA's implication, make the groundwater safe to drink.⁶⁹

It is deeply troubling that TVA is still unable to acknowledge what is plainly true—the groundwater at its coal plants is contaminated by coal ash and unsafe for human use. TVA asserts that it needs more time to collect data,⁷⁰ but for most sites, this is simply not the case. As our earlier comments explain in great detail, there is abundant evidence right now showing the extent of the problem.

Allen provides a useful example. TVA makes an utterly unconvincing attempt to explain away the arsenic contamination at Allen's East Ash Pond.⁷¹ Arsenic in well P6 exceeds upgradient concentrations by a large margin, and concentrations of boron and sulfate – well-known coal ash indicators – also exceed upgradient concentrations in that well. It is hard to imagine stronger evidence for coal ash contamination. TVA has not provided any meaningful evidence that this is anything other than coal ash contamination.⁷²

Bull Run provides another example. Here TVA attempts to “disagree” with basic facts showing groundwater contamination.⁷³ The data that we presented in our earlier comments – based on TVA's own groundwater monitoring – couldn't be clearer. TVA states that it disagrees, but provides no evidence to counter the facts that we presented. Its reference to MCLs is inaccurate, as described below, and beside the point. The water is contaminated and unsafe to drink.

TVA also attempts to evade responsibility for the contamination by noting that the most recent monitoring reports do not show contamination.⁷⁴ This is only true because TVA stopped monitoring key coal ash pollutants. The last time TVA measured boron in well 45R at Bull Run, it found a concentration of 20.1 mg/L. This is almost 7 times higher than EPA's Child Health Advisory of 3 mg/L. There is no reason to believe that there is less boron in that well today. In fact, boron concentrations had been steadily increasing since 2008. Manganese, molybdenum, and sulfate were also exceeding drinking water guidelines consistently. TVA then stopped

⁶⁹ The Alabama Department of Environmental Management similarly has discretion to require additional monitoring to protect public health and the environment. *See* Ala. Admin. Code 335-13-4-.27(3)(a)(4).

⁷⁰ *See, e.g.,* FEIS Part I, Ch. A.2 Response to Comments at 25.

⁷¹ FEIS Part I, Ch. A.2 Response to Comments at 48.

⁷² TVA makes one particularly bizarre statement – that “[l]evels of arsenic in well P6 average 40 ug/L, which is much less than natural levels in Shelby County soil of 10,000 ug/L.” FEIS Part I, Ch. A.2 Response to Comments at 149. We are not aware of naturally-occurring concentrations of arsenic in groundwater in Tennessee ever getting that high, and suspect that TVA is mistakenly referring to soil concentrations (in which case the units should be ug/kg), which cannot be compared to groundwater concentrations.

⁷³ FEIS Part I, Ch. A.2 Response to Comments at 50.

⁷⁴ *Id.* at 51.

measuring them. Faced with mounting evidence of contamination, TVA has chosen to stop collecting relevant data, and now asserts that the problem has gone away.

TVA also states that the use of MCLs “to benchmark water quality” is “conservative.”⁷⁵ This assertion inaccurately downplays legitimate public health concerns and mischaracterizes MCLs. As mandated under the Safe Drinking Water Act, EPA sets limits for contaminants that are known to be present in public drinking water supplies. These limits – MCLs – are legally enforceable standards that apply to public water systems. However, they do not always limit dangerous contaminants to levels that protect health. EPA decides which contaminants to regulate by considering, among other things, the potential health effects of a contaminant and how often that contaminant occurs in public water supplies. Once EPA decides to regulate a contaminant, it sets a Maximum Contaminant Level Goal – the maximum level of that contaminant that *should* be allowed in drinking water. The goal is set at a level “at which no known or anticipated adverse effect on the health of persons would occur.”⁷⁶ The goal for most carcinogens, including arsenic, is zero, because there is no known exposure level that would not increase cancer risk.

Once the MCL Goal is set, EPA establishes the MCL itself as close to the goal as feasible, taking into account the cost of treatment. The MCL for arsenic, for example, is 10 micrograms per liter of water, because EPA concluded that the *costs* of a stricter MCL would not justify the *benefits*.⁷⁷ Since the MCL for arsenic is much higher than the MCL goal, the MCL is set at a level that is by definition unsafe. In fact, exposure to arsenic in drinking water at the MCL of 0.01 mg/L, using EPA’s most recently proposed arsenic potency factor and standard assumptions about body weight (70 kg) and drinking water intake (2 L/d), is associated with a cancer risk of 73 in 10,000. This is well above the range of cancer risks that EPA considers acceptable in drinking water (1 in 1,000,000 to 1 in 10,000). A minimally “acceptable” arsenic exposure concentration – one that would present a risk of 1 in 10,000 – would be less than 0.001 mg/L. Groundwater at the TVA plants frequently exceeds that level.

Allowing dangerous contaminants at unsafe levels is only one of the limitations associated with MCLs. For many contaminants, there is no MCL at all. For some of those, EPA has set Secondary MCLs, designed to prevent aesthetic effects like staining or odor. But secondary MCLs are not health-based, and they are not enforceable. Other contaminants that are

⁷⁵ FEIS Part I, Ch. A.2 Response to Comments at 47.

⁷⁶ EPA, How EPA Regulates Drinking Water Contaminants, <https://www.epa.gov/dwregdev/how-epa-regulates-drinking-water-contaminants> (last visited July 8, 2016).

⁷⁷ Att. 11, EPA, Technical Fact Sheet: Final Rule for Arsenic in Drinking Water, <http://nepis.epa.gov/Exe/ZyPdf.cgi?Dockey=20001XXE.txt> (last visited July 8, 2016).

known to present risks to human health, like boron, are not regulated through this program, probably because they are not commonly found in public water supplies.

In short, contrary to TVA's assertion, the use of MCLs "to benchmark water quality" is not at all conservative. The opposite is true. Relying on MCLs to screen groundwater for human health risks understates the actual risk.

F. Applying EPRI's estimates for "reductions" in groundwater contamination to TVA's existing groundwater monitoring data shows that the Closure-in-Place alternative would trigger corrective action under the federal Coal Ash Rule at many impoundments.

According to a presentation that EPRI gave to the TVA Regional Energy Resource Council,⁷⁸ the EPRI model estimates, for the closure-in-place scenario where coal ash is in contact with groundwater ("Intersecting GW"), that groundwater concentrations will plateau at roughly 40% of the "concentration in leachate," and never drop below that concentration for at least 140 years.

Since we have not been able to evaluate EPRI's assumptions, we cannot say whether a 60% reduction is plausible, or whether it is applicable to specific locations. However, for illustrative purposes, we applied this 60% reduction to recent groundwater monitoring data. In our analysis, we have included data for wells under ash disposal areas not analyzed in Part II of the FEIS because of the programmatic nature of TVA's analysis and its potential applicability to future closure activities. As shown in Table 1 below, using EPRI's estimate of groundwater pollution reductions following closure-in-place, groundwater will still exceed the groundwater protection standards established by the federal Coal Ash Rule.

The true extent of post-closure contamination is likely to be even higher. EPRI's model reduces pollution from a baseline defined as leachate concentrations. Leachate is much more concentrated than groundwater some distance away from a disposal unit. We did not have leachate data, so we used groundwater monitoring data as a baseline. Since our baseline concentrations are less than EPRI's baseline concentrations, the resulting post-closure groundwater concentrations in Table 1 are underestimates. Moreover, at any given site the coal ash may be more saturated than EPRI's model assumes, which would also increase post-closure pollution levels.

⁷⁸ FEIS Part I at App. B, Regional Energy Resource Council Presentation at 44.

Table 1: Evidence of unsafe post-closure groundwater. The following table presents instances of unsafe groundwater after reducing existing levels of contamination by 60%, per EPRI’s estimate of post-closure groundwater pollution reductions for the “intersecting GW” closure-in-place scenario.

Well	Pollutant	2008-2015 ⁷⁹ mean concentration (mg/L)	40% of mean (mg/L)	MCL or upgradient concentration ⁸⁰
Allen P6	Arsenic	0.031	0.012	0.01
Allen P6	Boron	1.09	0.44	0.20
Bull Run 10-52	Arsenic	0.027	0.011	0.01
Bull Run BRF-47	Boron	2.07	0.83	0.16
Bull Run BRF-47	Molybdenum	0.041	0.016	0.011
Bull Run BRF-48	Boron	1.75	0.70	0.16
Bull Run BRF-48	Cobalt	0.045	0.018	0.005
Bull Run BRF-49	Boron	2.17	0.87	0.16
Bull Run BRF-49	Molybdenum	0.560	0.220	0.011
Bull Run F45R	Boron	16.3	6.5	0.2
Colbert MC1	Arsenic	0.057	0.023	0.01
Colbert MC1	Boron	3.3	1.3	0.5
Colbert MC1	Molybdenum	0.153	0.061	0.018
Colbert MC4	Arsenic	0.049	0.020	0.01
Colbert MC4	Boron	3.4	1.4	0.5
Colbert MC4	Molybdenum	0.156	0.062	0.018
Colbert MC5A	Arsenic	0.045	0.018	0.01

⁷⁹ See Comments on DEIS for precise date ranges; means were calculated with the assumption that non-detects were present at one-half the detection limit.

⁸⁰ According to 40 C.F.R. § 257.95(h), the groundwater protection standard for a pollutant without an MCLs will be the background concentration of that pollutant. For Colbert, we used the higher of the well CA5 and the well CA6 mean for each pollutant.

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Colbert MC5A	Boron	2.9	1.2	0.5
Colbert MC5A	Molybdenum	0.134	0.054	0.018
Colbert MC5C	Molybdenum	0.049	0.019	0.018
Colbert CA29AR	Boron	1.6	0.6	0.5
Colbert CA29AR	Molybdenum	0.050	0.020	0.018
Colbert CA29BR	Molybdenum	0.056	0.022	0.018
John Sevier W28	Boron	2.86	1.14	0.17
John Sevier W29	Boron	1.28	0.51	0.17
John Sevier W30	Boron	4.81	1.92	0.17
John Sevier W31	Boron	13.15	5.26	0.17
John Sevier W31	Molybdenum	2.943	1.177	0.003
Kingston AD-2	Boron	0.62	0.25	0.13
Kingston AD-2	Cobalt	0.007	0.003	0.002
Kingston AD-3	Boron	0.87	0.35	0.13
Kingston 6AR	Boron	0.62	0.25	0.13
Kingston 6AR	Cobalt	0.106	0.042	0.002
Widows Creek 31	Boron	2.30	0.92	0.10
Widows Creek 31	Cobalt	0.014	0.006	0.003
Widows Creek 31	Lead	0.009	0.004	0.001
Widows Creek 10-48	Boron	2.93	1.17	0.10
Widows Creek 10-50	Boron	2.40	0.96	0.10
Widows Creek 10-52	Boron	13.0	5.20	0.10

III. The evidence in the record contradicts TVA’s conclusion that covering up coal ash in place will protect groundwater and surface water from contamination when the ash is submerged in groundwater, rendering its selection of the closure in place alternative unreasonable at every site.

NEPA requires the agency proposing the action to provide a full and fair analysis of the environmental impacts of a proposed action and its alternatives.⁸¹ In order to engage in this analysis, the agency must (1) define the purpose of its action; (2) identify reasonable alternatives that might help it achieve that purpose; and (3) describe an accurate environmental baseline against which to evaluate the impacts of the proposed action and its alternatives.⁸²

Under NEPA, agencies are required to include in an EIS “a detailed statement by the responsible official on . . . alternatives to the proposed action.”⁸³ This analysis of alternatives “is the heart of the environmental impact statement.”⁸⁴ Agencies must “[r]igorously explore and objectively evaluate all reasonable alternatives” and must “[d]evote substantial treatment to each alternative considered in detail including the proposed action so that reviewers may evaluate their comparative merits.”⁸⁵ To determine whether an agency considered reasonable alternatives, courts look at the objectives in an EIS’s purpose and needs statement.⁸⁶ “An ‘alternative is reasonable only if it will bring about the ends of the federal action.’”⁸⁷ Further, “[a]lternatives that ‘do not accomplish the purpose of the action are not reasonable’ and need not be studied in detail by the agency.”⁸⁸ “[A]lternatives that are not legally permissible do not meet the purpose and need’s criteria for detailed consideration.”⁸⁹

The FEIS identifies the purpose and need for the proposed actions as “to support the implementation of TVA’s goal to eliminate all wet CCR storage at its coal plants by closing CCR impoundments across the TVA system, and to assist TVA in complying with EPA’s CCR Rule.”⁹⁰ As described in detail below, none of the evidence in the record supports TVA’s conclusion that the Closure-in-Place alternative will accomplish these purposes at a

⁸¹ 40 C.F.R. § 1502.14.

⁸² *Id.* §§ 1502.13–16.

⁸³ 42 U.S.C. § 4332(2)(C)(iii).

⁸⁴ 40 C.F.R. § 1502.14.

⁸⁵ *See id.*

⁸⁶ *Citizens’ Committee to Save Our Canyons v. U.S. Forest Serv.*, 297 F.3d 1012, 1030 (10th Cir. 2002) (citing *Colo. Envtl. Coal. v. Dombeck*, 185 F.3d 1162, 1174 (10th Cir. 1999)).

⁸⁷ *Tenn. Envtl. Council v. TVA*, 32 F.Supp.3d 876, 888 (E.D. Tenn. 2014) (quoting *Citizens Against Burlington, Inc. v. Busey*, 938 F.2d 190, 195 (D.C. Cir. 1991)).

⁸⁸ *Citizens’ Committee to Save Our Canyons*, 297 F.3d at 1030 (citing *Custer Cty. Action Ass’n v. Garvey*, 256 F.3d 1024, 1041 (10th Cir. 2001)).

⁸⁹ *Wyo. State Snowmobile Ass’n. v. U.S. Fish & Wildlife Serv.*, 741 F. Supp. 2d 1245, 1254 (D. Wyo. 2010).

⁹⁰ FEIS Part I at 7.

programmatic level or at the ten impoundments considered in Part II of the EIS. First, TVA proposes to leave ash submerged in groundwater—contrary to its goal of “eliminating wet storage.” Second, there is no support in the federal Coal Ash Rule for TVA’s proposal to cover up coal ash in ponds that are submerged in groundwater. In fact, all of the available evidence, including EPRI’s analysis, indicates that Closure-in-Place will not accomplish TVA’s stated purpose. Nor will it be “equally protective” of groundwater and surface water resources, as TVA claims.

A. TVA’s own consultant concludes that closure by removal is “more beneficial” for groundwater in the “intersecting groundwater” scenario.

In the FEIS, TVA repeatedly insists that “either Closure-in-Place or Closure-by-Removal would be equally protective if conducted properly.”⁹¹ In our comments on the DEIS, we explained why neither the federal Coal Ash Rule nor other site-specific studies (including a previous study by TVA’s consultant EPRI)⁹² supported TVA’s conclusion that Closure-in-Place could be done “properly” at every site, and therefore did not support TVA’s conclusion that both closure methods are equally protective.⁹³

Indeed, the findings of TVA’s own consultant, EPRI, contradict TVA’s assertion that Closure-in-Place will be “equally” protective when ash is submerged or saturated in groundwater—as TVA admits is the case at the majority of impoundments analyzed in Part II of the FEIS. As summarized in the FEIS,⁹⁴ in its analysis of a hypothetical ash pond where the ash intersects with groundwater, EPRI concluded “the Closure-by-Removal option would have a greater beneficial impact on surface water and groundwater quality than Closure-in-Place if the water table intersects the CCR....”⁹⁵ Although TVA never discusses what “beneficial impact” means in quantitative terms at the site-specific level, EPRI did find that where five feet of ash is

⁹¹ See, e.g., *id.* at 34, Ch. A.2 Response to Comments at 29.

⁹² In the response to comments, TVA attempts to diminish the previous EPRI study by pointing out differences between the impoundment modeled in that study and the hypothetical site it considered for the EIS. FEIS Part I, Ch.A.2 Response to Comments at 28. In its response, TVA appears to concede our point in bringing the EPRI study to TVA’s attention: site-specific details matter to the evaluation of the potential effectiveness of a cap and potential groundwater impacts associated with the Closure-in-Place alternative at any specific impoundment. See Comments on DEIS at 30 and accompanying citations. In any case, TVA’s attempt to distinguish the site studied in the previous EPRI report from the hypothetical site on which it bases its assessment is irrelevant to determining the effectiveness of Closure-in-Place at any of the sites analyzed in Part II of the DEIS because, as explained in Section II.C, the hypothetical site does not reflect the actual groundwater conditions at any of these sites.

⁹³ Comments on DEIS at 14-16, 30-32.

⁹⁴ Neither environmental commenters nor other members of the public have access to the EPRI Relative Impact Framework or Impact Assessment, or to a full discussion of their underlying assumptions and conclusions.

⁹⁵ FEIS Part I at 32; see also Qualitative Application at ix (summarizing findings and explaining that Closure by Removal “is predicted to have a greater beneficial impact than [Closure in Place] on the high mobility constituent in groundwater pathway when groundwater intersects the CCR”).

in contact with groundwater, Closure-by-Removal would result in 20-times more “beneficial impact” over baseline for high-mobility pollutants, compared with 2-times more “beneficial impact” from Closure-in-Place.⁹⁶

These findings tell us nothing about the actual impact of Closure-in-Place on groundwater contamination at individual sites.⁹⁷ Nevertheless, they entirely undercut TVA’s assertion that Closure-in-Place will be “equally protective” of groundwater and surface water at impoundments where ash intersects with groundwater. Given TVA’s admission that most of the impoundments in Part II intersect with groundwater—and many of them significantly more than the five feet modeled by EPRI—EPRI’s conclusions support the selection of Closure-by-Removal at the impoundments analyzed in Part II, not Closure-in-Place.

Perhaps recognizing that the conclusions of its consultant contradict its plans to cover up ash and allow it to keep contaminating groundwater, TVA attempts to reassure the public by noting that it will now have to comply with post-closure monitoring and corrective action under the federal Coal Ash Rule and state law.⁹⁸ Setting aside the fact that in the DEIS, TVA was prepared to move forward with its cover-up plans without such monitoring, nothing in NEPA allows TVA to proceed without performing a site-specific analysis of groundwater impacts *before* it makes a decision to keep polluting in place.⁹⁹ The federal Coal Ash Rule similarly requires a demonstration that Closure-in-Place will meet performance standards, including minimizing post-closure releases of coal ash to groundwater and surface water, at the specific site for which it is proposed.¹⁰⁰

B. Contrary to TVA’s assertions, EPA’s risk assessment does not conclude that capping coal ash in place will be “equally protective” when ash is submerged in groundwater.

In our comments on the DEIS, we pointed out that EPA never modeled closure in place where ash was in contact with groundwater, and hence could not provide support for TVA’s assertion that it could be done “properly” within the meaning of the federal Coal Ash Rule.¹⁰¹ In response, TVA asserts that EPA “considered the potential implication of groundwater saturated

⁹⁶ FEIS Part I at 65.

⁹⁷ See Quarles Report III ¶¶ 13-23. Our analysis in Section II.F above is illustrative only, based on the limited information available to us.

⁹⁸ FEIS Part I at 34.

⁹⁹ *Blue Mountains Biodiversity Project*, 161 F.3d at 1216 (NEPA “emphasizes the importance of coherent and comprehensive up-front environmental analysis to ensure informed decisionmaking to the end that ‘the agency will not act on incomplete information, only to regret its decision after it is too late to correct.’”)

¹⁰⁰ See 40 C.F.R. §§ 257.102(b)(iii), (d).

¹⁰¹ Comments on DEIS at 20.

CCR ... on its risk conclusions.”¹⁰² TVA mischaracterizes the EPA risk assessment. The section of text cited by TVA describes a sensitivity analysis where EPA varied the distance between disposal units and groundwater.¹⁰³ However, as the text makes clear, even in its sensitivity analysis, EPA never modeled the scenario at issue here, because its model limits the depth of each disposal unit to the boundary of the water table – it does not model ash below the water table.¹⁰⁴ EPA recognizes that this may lead to an underestimate of risk, but states that the “exact magnitude of this uncertainty is unknown.” In effect, EPA is acknowledging that they don’t know how significant this omission is.

EPA explains that there are two sources of uncertainty that, in its judgment, effectively cancel each other out for purposes of a nationwide risk assessment justifying regulation of ash impoundments: “Given that there is potential for both higher and lower risks than modeled, this uncertainty is unlikely to have an appreciable effect on the principle findings of the risk assessment.”¹⁰⁵

EPA’s statement applies to a *nationwide* analysis, in which there may be more impoundments constructed above grade than the model assumes (decreasing the nationwide risk), and more impoundments with coal ash in contact with groundwater (increasing the nationwide risk). In other words, it attempts to average site-specific uncertainties for a nationwide result. The statement has no relevance to the selection of a closure method for a specific impoundment.

For the TVA coal ash impoundments, TVA has detailed information suggesting that the model is significantly *underestimating* risks, including (1) ash saturated in several feet of groundwater at many sites; and (2) existing contamination of groundwater with coal ash indicator pollutants.¹⁰⁶

Despite TVA’s efforts to distort the record, it cannot avoid the simple fact that nowhere in EPA’s rulemaking docket did the Agency demonstrate that closing a saturated coal ash impoundment in place is protective of human health or the environment.¹⁰⁷ Saturated coal ash

¹⁰² FEIS Part I, Ch. A.2 Response to Comments at 12.

¹⁰³ EPA, Human and Ecological Risk Assessment of Coal Combustion Residuals, 5-10 to 5-11 (Dec. 2014).

¹⁰⁴ *Id.*

¹⁰⁵ This is poor risk assessment practice, because EPA does not know anything about the magnitude of uncertainty in either direction. In reality, EPA simply ignores the risks associated with saturated ash. TVA is not obligated to accept this data gap, and is in fact obligated to fill it at the site-specific level.

¹⁰⁶ See, e.g., Quarles Report III ¶ 35 (discussing site-specific groundwater and hydrogeologic conditions at the Bull Run impoundments that are “critical factors to evaluate prior to selecting a remedial alternative,” as recognized by the EPRI model and Qualitative Application).

¹⁰⁷ In a comment submitted on the DEIS, the Utility Solid Waste Activities Group (USWAG) “agree[s] with TVA’s statement that once closure is complete, the closure in place and closure by removal options under EPA’s CCR rule are equally protective of public health and the environment,” and states that EPA makes the same point

will be a critical problem under TVA's closure-in-place scenario, yet TVA continues to obscure or ignore this issue. As we explain above in Section II, despite TVA's admission that ash in many disposal units is in contact with groundwater, TVA has not yet analyzed the potential impacts on groundwater and surface water at a site-specific level.

C. The experience of other utilities demonstrates a significant drop in groundwater contamination after removal of ash.

In its response to comments, TVA discusses at length the drop in arsenic contamination that occurred at an ash pond at Wateree Fossil Plant in South Carolina after it was partially excavated.¹⁰⁸ According to TVA, "this example shows the benefits of dewatering a CCR impoundment," not excavating it.¹⁰⁹ TVA is wrong.

As a preliminary matter, as discussed above, TVA's own consultant's model demonstrates that removal is better for groundwater when the ash intersects with groundwater (as it does at most if not all of TVA's sites). In fact, EPRI found that excavating the ash resulted in 20-times more "beneficial impact" over baseline for high-mobility pollutants, compared with 2-times more "beneficial impact" from Closure-in-Place.¹¹⁰ Thus, TVA's unsubstantiated opinion about the reason for the reduction of groundwater contamination at Wateree is contradicted by its own consultant's analysis.

In the specific case of the groundwater contamination levels at Wateree, the pond that South Carolina Electric and Gas agreed to excavate was Pond 1.¹¹¹ As an aerial map of the Wateree ash ponds shows, there was no free water in Pond 1 in September 2013.¹¹² The arsenic drop occurred in 2014-2015 when ash was removed from a pond with no free water in it.¹¹³ The reduction in contamination in Pond 1 at Wateree cannot, therefore, be attributed to dewatering, as TVA suggests. Instead, the drop in arsenic contamination derives from excavation of the ash. This is entirely consistent with TVA's own consultant's findings.

"repeatedly." FEIS Part I, Ch. A.2 Response to Comments at 7. Although we recognize that this is USWAG's statement, and not TVA's, our explanation of EPA's statement similarly rebuts USWAG's inaccurate interpretation of the EPA rule.

¹⁰⁸ FEIS Part I, Ch. A.2 Response to Comments at 12.

¹⁰⁹ *Id.*

¹¹⁰ FEIS Part I at 65.

¹¹¹ Att. 12, South Carolina Electric & Gas, Wateree Station Semi-Annual Status Report (January – June 2015) 2 (July 2015).

¹¹² Att. 13, SELC, Wateree Station, map created by Jovian Sackett (September 24, 2013).

¹¹³ South Carolina Electric & Gas, Wateree Station Semi-Annual Status Report (January – June 2015) (July 2015) (showing significant drop in arsenic contamination in Monitoring Well 11 near Pond 1 in 2014-2015).

Santee Cooper experienced a similar drop in groundwater contamination at its Grainger ponds after excavation.¹¹⁴ Similar to Wateree, the Grainger pond did not contain free water, and the contamination drop occurred during excavation.¹¹⁵

In summary, contrary to TVA's unfounded conclusions, the experience of other utilities confirms that excavation—not dewatering alone—significantly improves groundwater quality.

D. TVA's unsupported assertion that closure in place will be protective of groundwater regardless of site-specific conditions makes it an outlier.

Throughout the Southeast, other utilities are moving their ash to dry, lined landfills. As we explained in our comments on the DEIS, all of the utilities in South Carolina have committed to excavating their ash.¹¹⁶ Georgia Power recently announced that it would excavate 16 ponds in its territory.¹¹⁷ Duke Energy has committed to excavating ash at seven ponds as well.¹¹⁸ It is worth noting that regulators in North Carolina found that *all* of Duke Energy's impoundments should be excavated.¹¹⁹ In Tennessee, state regulators have indicated to TVA that it may need to excavate at least some ponds to adequately protect public health and the environment under state law.¹²⁰

Despite these actions of peer utilities and regulators to protect public health and public groundwater and surface water resources by disposing of ash in dry, lined landfills, TVA doggedly insists that Closure in Place is “equally” protective no matter the circumstances. This insistence, which as described in Sections II and III, is entirely unsupported by the evidence, makes TVA an outlier. Given TVA's history of coal ash mismanagement, perhaps the public should not be surprised. But we certainly are disappointed.

¹¹⁴ Compare Att. 14, Santee Cooper, Grainger Generating Station, NPDES Permit # SC0001104; Site ID # 00367, NPDES Groundwater Semi-annual and Compliance Report for 2013 with Att. 15, Santee Cooper, Grainger Generating Station, NPDES Permit # SC0001104; Site ID # 00367, NPDES Groundwater Semi-annual and Compliance Report for 2016.

¹¹⁵ *Id.*

¹¹⁶ Comments on DEIS at 6.

¹¹⁷ Att 16, Liz Fabian, *Georgia Power spending nearly \$2 billion to retire coal ash ponds*, Macon Telegraph, June 20, 2016, <http://www.macon.com/news/local/article84877497.html>.

¹¹⁸ Att 17, Robert Zullo and John Ramsey, *“Is Everybody Else Wrong?” In Other States, Coal Ash Being Excavated to Protect Waterways*, Richmond Times-Dispatch, July 2, 2016, http://www.richmond.com/news/virginia/article_a6829ea9-623d-516a-a65e-a1e907152da2.html.

¹¹⁹ *Id.*

¹²⁰ FEIS Part I, App. C, Letter from Kendra Abkowitz, TDEC Department of Policy and Planning, to Ashley Farless, TVA, 4-5 (Mar. 8, 2016).

In addition, TVA has failed to rebut evidence we presented showing that removing ash is far less expensive and takes less time than its unsupported estimates suggest. In our comments on the DEIS, we provided examples of utilities that had begun excavation and were doing it far more quickly and cheaply than TVA projects.¹²¹

In response, TVA asserts that it “relied on previous CCR impoundment closure experience and professional judgment” to develop its cost and timing projections.¹²² TVA further faults SELC for not providing detailed information regarding the examples we provided. To the extent that is true, TVA is guilty of the same offense. Nowhere in the FEIS does TVA explain the basis for its estimates, other than invoking its “professional judgment.” Given that TVA’s cost estimates for Closure-by-Removal are five times the actual costs reported by Santee Cooper,¹²³ we question TVA’s “professional judgment” in this matter.

Moreover, in contrast to TVA’s dismissive response to our evidence, SELC has made a good faith attempt to obtain the basis for TVA’s cost estimates. In a FOIA request dated February 10, 2016, SELC sought “[a]ll documents relating to the preliminary cost estimates referred to in Table 2-1 at p. 12 and Table 2-3 at p. 20 of the DEIS Part I.”¹²⁴ TVA has provided no documents responsive to this request, and no explanation for its failure to do so. Despite this fact, TVA asserts publicly in its final EIS that it has provided this information to SELC. Specifically, in the response to comments in the final EIS, TVA states, “TVA has provided the Southern Environmental Law Center, as requested, information supporting its cost and duration estimates.”¹²⁵

TVA has provided no such information. In fact, none of the three response letters provided by TVA even claim to include information responsive to our FOIA request regarding cost estimates. SELC has appealed this unexplained adverse determination pursuant to the FOIA.¹²⁶

¹²¹ Comments on DEIS at 24.

¹²² FEIS Part I, Ch. A.2 Response to Comments at 23.

¹²³ Comments on DEIS at 25-26.

¹²⁴ Att. 18, Letter from Beth Alexander, SELC, to Denise Smith, TVA, re: Expedited Freedom of Information Act Request: Tennessee Valley Draft Ash Impoundment Environmental Impact Statement December 2015 (Feb. 10, 2016).

¹²⁵ FEIS Part I, Ch. A.2 Response to Comments at 24.

¹²⁶ Att. 19, Letter from Amanda Garcia, SELC, to Janet Brewer, TVA FOIA Appeal Officer, re: Appeal re: FOIA request 4788 for documents and data relied on in TVA’s draft environmental impact statement for ash impoundment closure (June 15, 2016).

In any case, it is the agency's obligation—not commenters'—to provide support for its analysis in the FEIS.¹²⁷ TVA has not satisfied this obligation under NEPA.

IV. The FEIS continues to ignore significant surface water impacts associated with closing its ponds in place.

In our comments on the DEIS and our supplemental comments, we identified several ways in which TVA's analysis of surface water impacts was incomplete.¹²⁸ These comments apply equally to the analysis in the FEIS. Moreover, TVA's admissions in the FEIS that (1) many of its ponds are submerged in groundwater; and (2) it has not performed any site-specific analysis of the groundwater and surface water impacts associated with this condition, leave it with no support for its conclusion that no significant surface water impacts will result from covering up ash in place and allowing groundwater contamination to continue to flow into surface water for decades.

In addition to failing to analyze the site-specific surface water impacts associated with closing coal ash ponds in place, the FEIS fails to meaningfully address the following surface water impacts raised in our previous comments:

- Permanently disposing of ash in a river and dumping additional ash or other fill into a river are significant surface water impacts.
- Continuing to discharge coal ash contaminants to surface water through groundwater is inconsistent with the federal Clean Water Act's prohibition on discharging without a permit.

TVA also fails to meaningfully address EPA's request that TVA explain how closing the ponds in place will address current and potential seeps into surface waters. TVA responds to EPA with a dismissive statement: "We are unaware of any seeps currently reaching surface water at TVA plants."¹²⁹ Yet even a cursory review of TVA's own documents reveals that seeps develop with alarming frequency at its impoundments.¹³⁰ In fact, seeps are so pervasive at

¹²⁷ *City of Davis v. Coleman*, 521 F.2d 661, 667 (9th Cir. 1975) ("Compliance with NEPA is a primary duty of every federal agency; fulfillment of this vital responsibility should not depend on the vigilance and limited resources of environmental plaintiffs").

¹²⁸ Comments on DEIS at 32-35; Comments re: Obligation to Prepare SEIS at 19-20.

¹²⁹ FEIS Part I, Ch. A.2 Response to Comments at 31.

¹³⁰ Att. 20, Complaint ¶¶ 66-69, 118-124, *Tennessee Clean Water Network v. Tennessee Valley Authority*, Case No. 15-00424 (M.D. Tenn. April 14, 2015); Att. 21, Letter from Delta Anne Davis, et al., on behalf of the Sierra Club, to TVA, re: 60-Day Notice of Intent to Sue, 33 U.S.C. § 1365, for Violations of the Clean Water Act by Tennessee Valley Authority—TVA Cumberland Fossil Plant (CUF), NPDES No. TN0005789 16-20 (January 14, 2016); Att. 22, TVA, Kingston Fossil Plant NPDES Permit No. TN0005452 Red Water Seepage Report 2015 (Feb. 4, 2016); Att.

TVA's ponds that the state requires TVA to monitor and report seeps on a quarterly basis. TVA itself has acknowledged the pervasive nature of seeps at its impoundments. For example, the following figure from TVA's "2015 Seepage Action Plan" at Cumberland Fossil Plant identifies the *entire perimeter* of the ash impoundments as the "potential seepage zone":

23, Allen Fossil Plant NPDES Permit No. TN0005355 Red Water Seepage Report 2015 (January 25, 2016); Att. 24, Joint Motion for Consent Order ¶¶ 21, *Alabama Department of Environmental Management v. Tennessee Valley Authority*, Case No. 20-CV-2013-900123 (Al. Circuit Ct. May 13, 2013) (requiring TVA to remediate and monitor for seeps at Colbert); Att. 25, Stantec, 2014 Inspection of CCP Storage Facilities and Ponds, Bull Run Fossil Plant (June 16, 2014) (documenting seeps at the Fly Ash Pond, Bottom Ash Disposal Area, and Gypsum Disposal Area).



Despite the pervasive nature of seeps at its impoundments, TVA's perfunctory response fails to explain how closing its ash ponds in place will address existing and potential future seeps. This is particularly concerning in light of TVA's admission that the ash in many of its ponds is buried in groundwater and its failure to demonstrate that the ash will be removed from the groundwater prior to closure. TVA says nothing about attempting to stop the flow of contaminated groundwater into and through impoundments when repairing seeps.

In the response to comments, TVA repeatedly touts its "robust" monitoring of impacts on the aquatic ecology. What TVA fails to mention is that none of that monitoring data demonstrates that our rivers and streams are free of the effects of coal ash contamination. The biological assessment monitoring described by TVA merely evaluates the presence or absence of species and water quality related to thermal discharges.¹³¹ It does not evaluate the levels of toxic chemicals in the species that are present in the vicinity of TVA's coal ash impoundments. The whole effluent toxicity (WET) testing that TVA is required to perform in its NPDES permits measures toxicity in aquatic species at the outfalls permitted by the state.¹³² It does not measure toxicity levels in aquatic species near the seeps and underground channels that illegally leak coal ash pollutants into our rivers and streams.

Finally, TVA has provided no site-specific analysis of risks associated with dike stability and structural integrity at each site. In its programmatic analysis, TVA states that it has determined that each site "meets minimum safety factors under static conditions."¹³³ TVA further states that it is "currently investigating seismic stability for all of its ash impoundments."¹³⁴ The FEIS does not discuss whether site-specific conditions are relevant to considering whether to leave ash in place, even when "minimum" safety factors have been met. The FEIS acknowledges that TVA's investigation may identify unacceptable seismic risks, yet it makes attempt to identify such risks at specific sites.¹³⁵ TVA claims the risks will be mitigable, but that is not a foregone conclusion. A site-specific analysis of structural stability—whether seismic or static—is crucial for the public and decision maker to understand the risks associated

¹³¹ Att. 26, TVA, Biological Monitoring of the Tennessee River near Widows Creek Fossil Plant Discharge Autumn 2011 2-11 (October 2012); Att. 27, TVA, Biological Monitoring of the Tennessee River in the Vicinity of Colbert Fossil Plant during Autumn 2011 2-11 (July 2012); Att. 28, TVA, Biological Monitoring of the Clinch River near Bull Run Fossil Plant Discharge Autumn 2014 3-18 (June 2015); Att. 29, TVA, Biological Monitoring of the Clinch River near Kingston Plant Discharge Autumn 2013 3-16 (July 2014).

¹³² See, e.g., See, e.g., Tenn. Dep't of Env'tl. & Conservation, Bull Run Fossil Plant, NPDES Permit No. TN0005410 At pt. III.G (effective date Nov. 1, 2010, modified May 16, 2011).

¹³³ FEIS Part I at 58.

¹³⁴ *Id.* at 58-59.

¹³⁵ Quarles Report III ¶ 12.

with leaving coal ash in unlined impoundments in perpetuity. It is particularly imperative for the impoundments in Alabama, the only state in the country that lacks any dam safety laws.¹³⁶

V. TVA must prepare a supplemental EIS before it issues a Record of Decision for the actions proposed in Part I and Part II.

NEPA requires an agency to prepare a supplemental EIS if: “(i) The agency makes substantial changes in the proposed action that are relevant to environmental concerns; or (ii) There are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts.”¹³⁷ An agency is required to “prepare, circulate, and file a supplement to a statement in the same fashion (exclusive of scoping) as a draft and final statement. . . .”¹³⁸ TVA’s NEPA regulations require it to make “significant new information concerning action modifications, alternatives or probable environmental effects” available to the public.¹³⁹

If changed circumstances or new information will affect the environment “in a significant manner or to a significant extent not already considered, a supplemental EIS must be prepared.”¹⁴⁰ An agency must evaluate the significance of the new information using several metrics,¹⁴¹ including, but not limited to:

- Potential impacts on public health and safety;
- The controversial nature of the effects on the environment;
- The degree of uncertainty about the effects;
- The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration; and
- Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.¹⁴²

A supplemental EIS is also appropriate to correct significant omissions in the original draft.¹⁴³

¹³⁶ See Att. 30, John Sharp, “Alabama only state in U.S. without a dam safety program: 'Dams do fail,’” *AL.com*, May 9, 2014, http://blog.al.com/live/2014/05/alabama_only_state_in_us_witho.html.

¹³⁷ 40 C.F.R. § 1502.9(c)(1).

¹³⁸ *Id.*

¹³⁹ TVA Procedures for Compliance with the National Environmental Policy Act § 5.4.10.

¹⁴⁰ *Marsh v. Oregon Nat. Res. Council*, 490 U.S. 360, 374 (1989).

¹⁴¹ *Id.*

¹⁴² See 40 C.F.R. § 1508.27 (defining “significantly”).

A. Significant new information in the FEIS regarding baseline groundwater conditions and assumptions used in the EPRI reports require TVA to prepare a supplemental EIS.

In our comments on the DEIS, Environmental Groups identified whether and the extent to which ash is in contact with groundwater as “basic information that is necessary to assess the ongoing risk of contamination and harm at each site.”¹⁴⁴ As discussed above in Section II, in the FEIS, TVA discloses for the first time that ash is buried in groundwater at several impoundments it has decided to close in place.¹⁴⁵ The Qualitative Application published by TVA’s own consultant underscores the importance of site-specific information to determine groundwater risks.¹⁴⁶ Thus, the disclosure in the FEIS that ash is in contact with groundwater at Kingston, Bull Run, Colbert and Widows Creek constitutes significant new information “relevant to environmental concerns and bearing on the proposed action or its impacts.”¹⁴⁷

Similarly, in our comments on the DEIS we explained that “hypothetical” ash pond analyzed in the DEIS did not reflect “the actual environment that exists at each coal ash pond in TVA’s system in Tennessee, Alabama, and Kentucky.”¹⁴⁸ Throughout the NEPA process, SELC and environmental commenters have repeatedly requested that TVA provide information regarding its assumptions in the EPRI reports, but TVA has steadfastly refused.¹⁴⁹ For the first time, the newly-disclosed Qualitative Application reveals some (but by no means all) of the assumptions we sought to obtain.¹⁵⁰ TVA’s eleventh-hour disclosure of these assumptions confirms what we suspected: The hypothetical site studied by EPRI bears little relation to the real-life conditions at ash ponds throughout TVA’s territory. This, too, constitutes significant new information within the meaning of the NEPA guidelines.

By issuing an incomplete and inadequate DEIS and then issuing such critically important and significant new information in the FEIS with a preferred alternative already firmly in place, TVA has severely impeded the ability of agencies and the public to understand the potential impacts of proposed project alternatives and to comment in a meaningful and thorough fashion. A primary function of an FEIS is to provide a forum in which the lead agency responds to

¹⁴³ *Idaho Sporting Cong. Inc. v. Alexander*, 222 F.3d 562, 567 (9th Cir. 2000).

¹⁴⁴ Comments on DEIS 2; see also Comments on DEIS at 28-30 and accompanying citations.

¹⁴⁵ FEIS Part I, Ch.A.2. Response to Comments at 27.

¹⁴⁶ See Section II.C above.

¹⁴⁷ 40 C.F.R. § 1502.9(c)(1); see also Quarles Report III ¶ 35(k).

¹⁴⁸ Comments on DEIS at 28.

¹⁴⁹ See Comments on DEIS 8-10 and accompanying citations; Comments re: Obligation to Prepare an SEIS 21-23 and accompanying citations.

¹⁵⁰ See Section II.C and II.D above.

comments submitted by other agencies and the public on the DEIS¹⁵¹—a task that the FEIS is unable to perform because agencies and the public were not given the opportunity to comment on the significant information that appeared for the first time in the FEIS itself. A DEIS is the best opportunity “to react to the effects of a proposed action at a meaningful time,”¹⁵² and TVA here has stripped the public of that opportunity, granted by NEPA, to do so.

The new information disclosed for the first time in the FEIS is without doubt “significant new . . . information relevant to environmental concerns and bearing on the proposed action or its impacts,”¹⁵³ and its inclusion in the FEIS alone bypasses the NEPA-mandated opportunity for full and meaningful public review. As such, it is imperative that TVA comply with NEPA and prepare a supplemental EIS that makes all significant new information available for a thorough review. Until this step is taken, TVA should refrain from any further action to move forward with its proposal to cover up ash at the ten impoundments analyzed in Part II of the FEIS.

B. Significant new information and substantial changes in the proposed actions at Bull Run, John Sevier, and Kingston require TVA to prepare a supplemental EIS.

Significant new information and substantial changes in the proposed actions at impoundments at a minimum of three of the six sites analyzed in Part II of the EIS similarly require preparation of a supplemental EIS. TVA appears to believe that the analysis in the DEIS allows it to dispose of an unlimited amount of coal ash in unlined pits, even if it discloses for the first time in the FEIS that it plans to (1) increase fivefold the amount of ash to be disposed; and (2) dump thousands of tons of additional ash into a pit located in waters of the United States before closing it. TVA similarly appears to believe that it can ignore new information and substantial changes that also constitute connected actions and cumulative impacts at the sites under review in the FEIS. TVA is wrong on all counts.

The regulations implementing NEPA require preparation of a supplemental EIS in these circumstances.¹⁵⁴ Even if the general nature of the impacts resembles those already analyzed, a significant change in the scope, size or footprint of the project requires the agency to perform additional analysis in a supplemental EIS.¹⁵⁵ Similarly, a supplemental EIS is appropriate where

¹⁵¹ See 40 C.F.R. § 1502.9.

¹⁵² *N.C. Wildlife Fed'n v. N.C. Dept. of Transportation*, 677 F.3d 596, 601(4th Cir. 2012) (quoting *Marsh*, 490 U.S. at 371).

¹⁵³ 40 C.F.R. § 1502.9(c)(1).

¹⁵⁴ *Id.*

¹⁵⁵ See, e.g., *New Mexico ex rel. Richardson v. U.S. Bureau of Land Mgmt.*, 565 F.3d 683, 707 (10th Cir. 2009) (alternative proposing new locations of activities required SEIS because it affected “environmental concerns in a different manner than previous analyses,” even though general nature of impacts resembled those already analyzed);

an agency fails to analyze the impacts associated with interrelated components of a larger project.¹⁵⁶

1. TVA’s decision to dump additional coal ash into the Fly Ash Pond—a water of the United States—before closing the pond is a substantial change that TVA admits it has not analyzed in the FEIS.

In our supplemental comments, we explained TVA’s obligation to prepare a supplemental EIS based on a final closure plan for Bull Run submitted to the Water Resources division of the Tennessee Department of Environment and Conservation.¹⁵⁷ In the closure plan, TVA disclosed its plan to dump up to 250,000 cubic yards of additional coal ash into the Fly Ash Pond before covering it up. TVA claimed that this plan constituted beneficial use within the meaning of the federal Coal Ash Rule. TVA further disclosed that it would excavate the neighboring Stilling Pond and the Bottom Ash Disposal Area in order to obtain the ash to dump into the Fly Ash Pond.

In our letter, we explained that TVA’s proposal constituted a substantial change in the proposed action, and that TVA had not analyzed the impacts of dumping additional ash into an unlined pit that is sitting in groundwater within the normal pool elevation of the inundated Clinch River.¹⁵⁸ Nor had TVA analyzed the impacts of dumping additional ash into a water of the United States.¹⁵⁹ We further explained that neither the federal Coal Ash Rule, the federal Clean Water Act, nor state law authorized TVA to use coal ash as fill in an unlined coal ash disposal pit. To the contrary, such use constitutes disposal and triggers additional regulatory requirements under federal and state law.

In its letter refusing to prepare a supplemental EIS, TVA argues that proposing to dump additional ash into the Fly Ash pond does not constitute a substantial change because its closure plan for Bull Run is not “final” and could change.¹⁶⁰ Yet in the FEIS, TVA makes clear that it

see id. (“We would not say that analyzing the likely impacts of building a dirt road along the edge of an ecosystem excuses an agency from analyzing the impacts of building a four-lane highway straight down the middle, simply because the type of impact—habitat disturbance—is the same under either scenario”); *see also Native Ecosystems Council*, 599 F.3d at 926 (Forest Service erred by failing to prepare a supplemental EIS when it discovered significantly more acreage that was relevant to evaluating impacts on nesting habitat).

¹⁵⁶ *See, e.g., Miccosukee Tribe of Indians of Fla. v. U.S. Army Corps of Eng’rs*, 420 F. Supp. 2d 1324, 1334 (S.D. Fla. 2006) (holding that impacts of project with multiple related components required analysis in a supplemental EIS).

¹⁵⁷ Comment re: Obligation to Prepare SEIS at 10-20.

¹⁵⁸ *Id.*

¹⁵⁹ *Id.*

¹⁶⁰ Att. 31, Letter from G. Signer, TVA, to Amanda Garcia, SELC, Re: Ash Impoundment Closure Environmental Impact Statement 4 (June 9, 2016) [hereinafter TVA June 9 letter]. TVA attempts to make a similar argument in the FEIS. *See* FEIS Part II (Bull Run) at 11.

has “completed its beneficial use analysis for the bottom ash at BRF under the CCR Rule and has concluded that it meets the beneficial use criteria.”¹⁶¹ Thus, consistent with the final closure plan, TVA’s proposed action at Bull Run as described in the FEIS includes using coal ash from the Bottom Ash Disposal Area and Stilling Pond as “fill” in the Fly Ash Pond.

Despite TVA’s stated intent in the FEIS to use bottom ash as “fill,” this aspect of its proposed action was not disclosed nor its potential impacts analyzed in the DEIS.¹⁶² Nor does the FEIS analyze the impacts on groundwater or surface water of dumping additional ash into the Fly Ash Pond. Indeed, in its letter refusing to prepare a supplemental EIS, TVA admits that it has not analyzed these impacts: “TVA did not assume that bottom ash could be used as fill and it assessed the impacts of trucking in fill material....”¹⁶³

On June 6, 2016, in response to a request submitted by SELC pursuant to the FOIA, TVA provided its final beneficial use demonstration to support its decision to use bottom ash as fill in the Fly Ash Pond at Bull Run (“Beneficial Use Demonstration”).¹⁶⁴ Although we have not yet had time to develop a comprehensive analysis of the Beneficial Use Determination, our preliminary review of the document confirms that TVA’s proposed use of 250,000 cubic yards of bottom ash as fill constitutes a substantial change in the proposed action that is “relevant to environmental concerns.”¹⁶⁵ In addition, the Beneficial Use Demonstration is itself significant new information “relevant to environmental concerns and bearing on the proposed action or its impacts.”¹⁶⁶ TVA must disclose and analyze this change and its impacts to groundwater and surface water.

Notwithstanding the fact that dumping additional coal ash into an unlined pit and putting a cap over it constitutes disposal under all relevant laws and regulations, the Beneficial Use Demonstration attempts to show that this dumping will satisfy either of two prongs in the fourth criterion of the beneficial use requirement in the federal Coal Ash Rule, i.e., “that environmental releases to groundwater, surface water, soil and air are comparable to or lower than those from analogous products made without CCR, or that environmental releases to groundwater, surface

¹⁶¹ FEIS Part II (Bull Run) at 11.

¹⁶² TVA’s offhand mention of studying the use of bottom ash as fill in the DEIS (DEIS Part II (Bull Run) at 10) does not constitute the disclosure and analysis of a proposed action and its impacts required by NEPA.

¹⁶³ TVA June 9 letter at 4.

¹⁶⁴ Att. 32, Letter from Amanda Garcia, SELC, to Denise Smith, TVA FOIA Officer, re: Expedited Freedom of Information Act Request: Beneficial Use Analysis in Tennessee Valley Authority Final Ash Impoundment Closure Environmental Impact Statement, June 2016 (June 21, 2016); Att. 33, Letter from Denise Smith, TVA FOIA Officer, to Amanda Garcia, SELC (July 6, 2016); Att. 34, AECOM, Report CCR Beneficial Use Demonstration, TVA Bull Run Fossil Plant (June 6, 2016) [hereinafter Beneficial Use Determination].

¹⁶⁵ 40 C.F.R § 1502.9(c)(1).

¹⁶⁶ *Id.*

water, soil and air will be at or below relevant regulatory and health-based benchmarks for human and ecological receptors during use.”¹⁶⁷

Perhaps not surprisingly, the methodology and data employed in the Beneficial Use Determination are deeply flawed and inadequate according to state and federal guidance and best practices for evaluating site-specific risks of groundwater and surface water contamination. Nevertheless, even TVA’s own deeply flawed analysis shows that it cannot meet the requirements for beneficial use set forth in the federal Coal Ash Rule. Rather, the Beneficial Use Determination confirms that the proposed dumping will not satisfy either prong of the fourth criterion in the Rule.

First, purportedly to demonstrate compliance with the first prong, which requires “that environmental releases to groundwater, surface water, soil and air are comparable to or lower than those from analogous products made without CCR,”¹⁶⁸ the Beneficial Use Demonstration compares the use of bottom ash to other potential fill materials. The data show that bottom ash leachate contains *higher* levels of toxic coal ash pollutants than other potential fill materials including flowable fill and waste foundry sand. In fact, many of the coal ash pollutants were not present at all in the other materials. The toxic coal ash pollutants in the bottom ash leachate that exceeded levels in other materials include: antimony, arsenic, beryllium, hexavalent chromium, cobalt, magnesium, mercury, selenium, thallium, titanium and vanadium.¹⁶⁹ The exposure point concentration for arsenic, for example, was 23 in the bottom ash, compared to 2 to 5 for waste foundry sand and “not detected” in flowable fill. These findings do not satisfy the requirement in the federal Coal Ash Rule that releases to groundwater be “comparable or lower than those from analogous products made without CCR.”¹⁷⁰

The Beneficial Use Demonstration further notes that it did not analyze bottom ash leachate relative to leachate data for local soils.¹⁷¹ Although TVA claims in the Beneficial Use Determination that it “does not have any significant sources of earthen fill on the Reservation,” its draft EIS for a proposed on-site coal ash landfill states that it will need approximately 285,000 cubic yards of soil for that project and asserts that “sufficient materials will be available from on-site sources.”¹⁷² Given the apparent availability of on-site soil for the 250,000 cubic yards of fill required for closure of the Fly Ash Pond, the Beneficial Use Determination should have conducted a comparison of local soil with bottom ash.

¹⁶⁷ *Id.* § 257.53.

¹⁶⁸ *Id.*

¹⁶⁹ Beneficial Use Determination at 8 and Tables 3, 4, 6, 7, 8.

¹⁷⁰ 40 C.F.R. § 257.53.

¹⁷¹ Beneficial Use Determination at 8.

¹⁷² TVA, Bull Run Fossil Plant Landfill Draft Environmental Impact Statement 15 (May 2016).

Second, the Beneficial Use Demonstration purports to evaluate the alternative second prong, i.e., whether “environmental releases to groundwater, surface water, soil and air will be at or below relevant regulatory and health-based benchmarks for human and ecological receptors during use.”¹⁷³ As a preliminary matter, the evaluation in the Beneficial Use Demonstration does not take into account the pre-existing levels of coal ash contamination in groundwater downgradient from the Bottom Ash Disposal Area or the Fly Ash Pond,¹⁷⁴ or make any attempt to evaluate the leachate that will result from combining bottom ash with the fly ash that has already been disposed there. According to groundwater monitoring data collected in 2013, the highest concentrations of sulfate were reported in wells downgradient of the Bottom Ash Disposal Area.¹⁷⁵ Groundwater sampling results from the Bottom Ash Disposal Area demonstrate that constituents leach from the ash in actual field conditions at far greater concentrations than what the laboratory leaching procedure predicted (e.g. 1,400 mg/l in Well 48 versus the 15 mg/l “maximum detect” value reported in the Beneficial Use Determination.)

Even the flawed analysis in the Beneficial Use Demonstration shows that releases to groundwater will be *above* relevant regulatory and health-based benchmarks. The analysis identifies above-benchmark values for the following contaminants in leachate: arsenic, hexavalent chromium, cobalt, lead, mercury and thallium.¹⁷⁶ Again, the result for arsenic is particularly concerning: 23 ug/l exposure point concentration, compared to the human health screening value of 0.018 ug/l.¹⁷⁷

Contrary to the analytical results, the Beneficial Use Determination concludes that the use satisfies the federal Coal Ash Rule requirement. This conclusion is based on an analysis that suggests the contamination will be diluted when it reaches the Clinch River.¹⁷⁸ That is not the relevant requirement. Independent of releases to surface water, the rule requires TVA to show that releases to *groundwater* will be at or below relevant regulatory and health-based benchmarks for human and ecological receptors during use.”¹⁷⁹ The analysis in the Beneficial Use Determination, flaws notwithstanding, confirms that releases to groundwater will be above

¹⁷³ 40 C.F.R. § 257.53.

¹⁷⁴ See Comments on DEIS at 53-55; Comments re: Obligation to Prepare SEIS and attachments. According to TVA’s own discussion in the FEIS, wells downgradient from the Fly Ash Pond have significantly exceeded groundwater protection standards for arsenic every time they have been sampled. FEIS Part I at 19-20.

¹⁷⁵ Att. 35, TVA, Groundwater Assessment Monitoring Report, App. C, May 2013 Event (July 2, 2013).

¹⁷⁶ Beneficial Use Determination at 11 and Table 6.

¹⁷⁷ *Id.* Table 6.

¹⁷⁸ *Id.* at 12, 16. In addition to not properly characterizing existing contamination and actual leachate conditions, the assumptions used to calculate “assimilation” into the Clinch River also likely understate the amount of pollution discharging into the river.

¹⁷⁹ 40 C.F.R. § 257.53. This is consistent with the groundwater monitoring requirements in the rule, which independently apply to groundwater. See *id.* § 257.90-98.

those benchmarks. Actual data from wells downgradient from the Bottom Ash Disposal Area similarly confirm that bottom ash leaches into and contaminates groundwater above relevant benchmarks. Therefore, the proposed dumping does not satisfy the second prong of the fourth criterion of the beneficial use requirement in the federal Coal Ash Rule.

In summary, neither the DEIS nor the FEIS evaluate the potential impacts associated with dumping 250,000 cubic yards of additional coal ash into an unlined pit that TVA now admits is submerged in groundwater, and that we have demonstrated is within the normal pool elevation of inundated waters of the United States.¹⁸⁰ Coal ash in the Fly Ash Pond is already contaminating groundwater, and TVA now proposes to dump more coal ash into it.

As we explained in our supplemental comments, neither the federal Coal Ash Rule nor other state or federal laws authorize TVA to carry out this proposed action. As such, TVA's proposed action is, in itself, arbitrary and capricious.¹⁸¹ In any case, the Beneficial Use Determination confirms that TVA's decision constitutes a substantial change in the proposed action relevant to environmental concerns and significant information bearing on impacts to groundwater and surface water. To the extent that TVA intends to adopt its decision to illegally dump additional ash into the Fly Ash Pond, it must prepare a supplemental EIS analyzing this substantial change.

2. TVA's revelation in the FEIS that the Bottom Ash Impoundment at John Sevier contains *five times* the amount of coal ash it analyzed in the DEIS is a substantial change that TVA has not evaluated for potential groundwater and surface water impacts.

In the DEIS, TVA described the proposed action at the Bottom Ash Impoundment at John Sevier as closure of an ash impoundment containing 145,000 cubic yards of ash.¹⁸² In the final EIS, TVA describes the proposed action at the Bottom Ash Impoundment at John Sevier as closure of an ash impoundment containing 770,000 cubic yards of ash.¹⁸³ This five-fold increase in the amount of ash to be left in an unlined pit constitutes a substantial change in the proposed action. Indeed, as TVA acknowledges in the FEIS, the revised estimate exceeds TVA's own flawed threshold for determining whether to carry forward the Closure-by-Removal alternative at a particular site.¹⁸⁴ TVA nevertheless retains the Closure-by-Removal alternative for John Sevier, and makes changes to the costs and impacts associated with that alternative (e.g.,

¹⁸⁰ Comments re: Obligation to Prepare an SEIS at 20-23 and accompanying citations.

¹⁸¹ See *Wyo. State Snowmobile Ass'n.*, 741 F. Supp. 2d at 1254 (“[A]lternatives that are not legally permissible do not meet the purpose and need's criteria for detailed consideration.”)

¹⁸² DEIS Part I at 2.

¹⁸³ FEIS Part I at 2.

¹⁸⁴ FEIS Part II (John Sevier) at 7.

increases in cost, number of truckloads, trucks per hour). But despite the dramatic increase in the amount of ash to be covered up, TVA does not similarly revisit its analysis of groundwater and surface water impacts associated with the Closure-in-Place alternative for the Bottom Ash Impoundment.

TVA provides no explanation for the substantial change in the volume of coal ash contained in the Bottom Ash Impoundment. The FEIS states only that “the estimate of volume of CCR at JSF was refined...”¹⁸⁵ As we note above, a reasonable inference in the change in estimate would be that the ash is buried much deeper than TVA previously thought. Yet TVA makes no attempt to analyze the potential impacts on groundwater and surface water associated with its revised estimate. Indeed, not even the Qualitative Application performed by EPRI addresses the revised estimate. The FEIS explains that the Qualitative Application provided for the Bottom Ash Impoundment “was based on a previous estimate (lower) of CCR volume.”¹⁸⁶ Yet the Qualitative Application itself explains that “[a]ssessment assumes that CCR volume has a greater influence on comparisons with the hypothetical site than SI acreage.”¹⁸⁷

In summary, neither the FEIS nor the Qualitative Application provide any basis for TVA’s conclusion that the substantial increase in the amount of ash to be covered in the Bottom Ash Impoundment will not result in significant groundwater and surface water impacts. TVA must prepare a supplemental EIS that analyzes the extent to which the Bottom Ash Impoundment is in contact with groundwater, and the potential impacts associated with TVA’s revised proposal to leave 770,000 cubic yards of ash in a leaking, unlined pit near the vulnerable Holston River.

3. TVA must prepare a supplemental EIS because it fails to disclose in the FEIS connected and cumulative actions planned for the Kingston Stilling Pond, including plans to build a “polishing pond” that will overlap with another ash disposal area—the Ball Field—that TVA plans to close in place.

In addition to the new information and substantial changes to proposed projects disclosed in the FEIS itself, TVA has also continued its pattern of submitting information to state regulators that is inconsistent with the proposed actions described in the DEIS and FEIS.¹⁸⁸ At Kingston, for example, TVA has submitted documents to TDEC revealing its plans to construct a

¹⁸⁵ *Id.* at 19.

¹⁸⁶ *Id.*

¹⁸⁷ Qualitative Application at 2-10.

¹⁸⁸ *See* Comments re: Obligation to Prepare an SEIS at 10 (identifying this pattern occurring at Bull Run Fossil Plant).

“polishing pond” to take the place of the Stilling Pond that it proposes to close in the FEIS.¹⁸⁹ An email from a representative of TVA characterizes the polishing pond as “needed in order to support closure of the stilling pond to comply with the Federal CCR Rule.”¹⁹⁰ Moreover, a closure plan submitted to TDEC for the Ball Field explains that the polishing pond will share its liner with the cap to be constructed for yet another ash disposal area—the Ball Field—that TVA plans to close in place.¹⁹¹

The NEPA regulations require TVA to evaluate “connected” actions in a single EIS.¹⁹² Connected actions include actions that cannot or will not proceed unless other actions are taken previously or simultaneously and/or are interdependent parts of a larger action and depend on the larger action for their justification.¹⁹³ A failure to analyze connection actions and their cumulative impacts in a single EIS constitutes impermissible segmentation of a proposed action.¹⁹⁴

The NEPA regulations also require TVA to analyze cumulative impacts of reasonably foreseeable projects.¹⁹⁵ The analysis of cumulative impacts must be useful,¹⁹⁶ and to be useful it must contain some “quantifiable or detailed information . . . general statements about possible effects and some risk do not constitute a ‘hard look,’” unless there is a justification for why a more detailed statement could not be given.¹⁹⁷ To remedy segmentation and failure to analyze cumulative impacts, TVA must prepare a supplemental EIS for the Kingston impoundments.¹⁹⁸

As the documents TVA has submitted to TDEC demonstrate, the construction of the polishing pond and the closure of the Ball Field, the latter of which will share a liner/cover with

¹⁸⁹ Att. 36, TVA, Kingston Fossil Plant Ball Field Interim Staging Area Closure Plan 2 (Apr. 26, 2016) [hereinafter Ball Field Closure Plan] (describing polishing pond and ball field as “adjoining” and sharing a liner/cover).

¹⁹⁰ Att. 37, E-mail from Michael Love, TVA, to Robert Alexander, TDEC, re: TVA-KIF_NPDES Permit No. TN0005452 Polishing Pond Engineering Report (Apr. 29, 2016) (“The new polishing pond is needed in order to support closure of the stilling pond to comply with the Federal CCR rule”).

¹⁹¹ Ball Field Closure Plan at 2.

¹⁹² 40 CFR § 1508.25(a)(1)(ii-iii).

¹⁹³ See *id.*

¹⁹⁴ See *Natural Res. Def. Council, Inc. v. Hodel*, 865 F.2d 288, 297-98 (D.C. Cir. 1988) (The purpose of this requirement is to prevent agencies from dividing one project into multiple individual actions “each of which individually has an insignificant environmental impact, but which collectively have a substantial impact.”) (quoting *Thomas v. Peterson*, 753 F.2d 754, 758 (9th Cir.1985)).

¹⁹⁵ 40 C.F.R. § 1508.7.

¹⁹⁶ *Kern v. U.S. Bureau of Land Mgmt.*, 284 F.3d 1062, 1075 (9th Cir. 2002).

¹⁹⁷ *N. Plains Res. Council v. Surface Transp. Board*, 668 F.3d 1067, 1076 (9th Cir. 2011) (use of a five-year time period for evaluating methane development and exclusion of a report using twenty-year data without providing justification was arbitrary and capricious).

¹⁹⁸ See *Miccokuskee Tribe of Indians of Florida*, 420 F. Supp. 2d at 1334 (holding that impacts of project with multiple related components required analysis in a supplemental EIS); see *id.* (“Projects of this sort are not meant to be instituted piecemeal.”)

the polishing pond, constitute connected actions under NEPA. TVA itself describes the construction of the polishing pond as necessary for the closure of the Stilling Pond. Moreover, the impacts associated with the construction of the polishing pond and the closure of the Ball Field are clearly foreseeable. Yet none of these connected actions or their cumulative impacts are described or analyzed in the DEIS or the FEIS.

TVA's failure to disclose and analyze these proposed actions requires it to prepare a supplemental EIS.

C. Significant changed regulatory circumstances require TVA to prepare a supplemental EIS.

On June 14, 2016, the United States Court of the Appeals for the District of Columbia issued an order granting EPA's unopposed motion to vacate the early closure loophole.¹⁹⁹ Although the FEIS attempts to account for this anticipated regulatory change by altering the timeframe applicable to its closure plans to five years,²⁰⁰ it fails to take into account the full implications of the federal Coal Ash Rule requirements with which it must now comply at most of the sites analyzed in Part II.²⁰¹

First, TVA still insists that it must rush to close its sites regardless of the potential threat to public health and the environment, even though nothing in the federal Coal Ash Rule requires it to do so. TVA refers to "the 5-year timeframe that EPA set for completing impoundment closures."²⁰² The federal Coal Ash Rule does not include a rigid five-year closure schedule, however, and as TVA acknowledges elsewhere, the rule clearly provides for extensions of up to 2 years for impoundments less than 40 acres in size, and up to 10 years for impoundments greater than 40 acres in size.²⁰³ The closure schedule for the impoundments at Allen, Bull Run, and Kingston could therefore be as long as 7 years, and the schedule at Colbert, John Sevier, and Widows Creek could be as long as 15 years. Despite the regulatory change, the EIS continues to suffer from an impermissible, self-imposed constraint on the range of alternatives. This defect must be remedied in a supplemental EIS.

¹⁹⁹ Att. 38, Order, *Utility Solid Waste Activities Group v. Environmental Protection Agency*, No. 15-1219 (D.C. Cir. June 14, 2016).

²⁰⁰ FEIS Part I, Ch. A.2 Response to Comments at 5.

²⁰¹ TVA claims Widows Creek is exempt from the federal Coal Ash Rule as a legacy pond. FEIS Part II (Widows Creek) at 1. Whether EPA arbitrarily excluded such ponds from regulation is still at issue in the federal litigation. See Comments on DEIS at 15 n. 100.

²⁰² FEIS Part I, Ch. A.2 Response to Comments at 5.

²⁰³ FEIS Part I, Table 1-1.

Second, nowhere in the FEIS does TVA explain how it will meet the performance standards it will be required to discuss in publicly-available closure plans for each site.²⁰⁴ Nor does TVA discuss how it will meet the applicable groundwater standards that will apply to its impoundments.²⁰⁵ Instead, TVA conclusorily states that it “expects to comply with all regulatory requirements that apply to CCR management activities....”²⁰⁶ Yet TVA now admits that its ash is buried in groundwater at many sites. And, as we explained in our comments on the DEIS and above, the groundwater at all of the sites analyzed in Part II is already contaminated by coal ash indicator pollutants. For many of these sites, TVA will not be able to meet the applicable standards precisely because its ash is buried—and will continue to be buried—in groundwater.

Moreover, given the change in federal regulatory circumstances, TVA fails to explain why it cannot perform the site-specific investigations required by TDEC in its administrative order *before* covering up its coal ash at its sites in Tennessee.²⁰⁷ TVA claims that it “expects to comply” with the TDEC order,²⁰⁸ yet does not explain how it will do so without performing an adequate site-specific analysis to support covering up its coal ash in place. TVA will be required to obtain permits or other permission from TDEC before beginning construction. TDEC cannot issue such permits before it determines that TVA’s plan to cover up ash is consistent with state law and the federal laws it is charged with administering.²⁰⁹

D. For all of the reasons discussed in our supplemental comments, TVA is required to prepare a supplemental EIS for its proposed action at Bull Run.

As described in Section V.B.1, a subset of environmental commenters submitted a letter identifying TVA’s obligation to prepare a supplemental EIS based on substantial changes to the proposed action and significant omitted information regarding the two impoundments TVA proposes to close in place at Bull Run Fossil Plant: the Fly Ash Pond and the Sluice Channel.²¹⁰ By letter dated June 9, 2016, TVA refused to prepare a supplemental EIS. This refusal violates NEPA.

²⁰⁴ See 40 C.F.R. § 257.102(b), (d).

²⁰⁵ See *id.* § 257.90-.98, -.104.

²⁰⁶ FEIS Part I, Ch. A.2 Response to Comments at 22.

²⁰⁷ Commissioner’s Order at 2, *In re Tenn. Valley Auth.*, No. OGC015-0177 (Tenn. Dep’t of Env’t & Conservation Aug. 8, 2015), https://tn.gov/assets/entities/environment/attachments/TVA_Order_8-6-15.pdf; FEIS Part I App. C, Letter from Kendra Abkowitz, TDEC Department of Policy and Planning, to Ashley Farless, TVA, 4-5 (Mar. 8, 2016).

²⁰⁸ FEIS Part I, Ch. A.2 Response to Comments at 22.

²⁰⁹ See Comments re: Obligation to Prepare SEIS (identifying examples of permits and permission TVA will need to obtain from TDEC to cover up its ash at Bull Run).

²¹⁰ See Comments re: Obligation to Prepare SEIS at 18-23.

In our letter, we identified substantial changes to the proposed action at Bull Run, including rerouting process water and stormwater, excavating the Bottom Ash Disposal Area and the Stilling Pond, and dumping additional ash into the Fly Ash Pond.²¹¹ TVA attempts to dismiss these changes as mere “design” changes that do not require additional NEPA review.²¹²

These substantial changes to the proposed action at Bull Run are not “design” changes. Rather, they are connected actions and cumulative impacts of reasonably foreseeable projects. Under NEPA, they must therefore be disclosed and analyzed in a single EIS. In the FEIS, the proposed action at Bull Run is closure in place of the Stilling Pond and Sluice Channel. TVA is going to excavate the Bottom Ash Disposal Area and the Stilling Pond and dump their contents into the Fly Ash Pond. Rerouting of process water is required because TVA plans to close the Sluice Channel. These actions will not proceed unless closure of the Fly Ash Pond and Sluice Channel proceeds, and they are interdependent parts of the closure plans for the Fly Ash Pond and Sluice Channel and depend on the larger action for their justification.²¹³ Yet the FEIS continues to largely omit them from the description of TVA’s preferred alternative and entirely omit them from the analysis of the impacts associated with it. This constitutes impermissible segmenting.

Nor does the FEIS identify these actions for purposes of analyzing cumulative impacts associated with the proposed action at Bull Run. TVA must prepare a supplemental EIS to disclose and analyze these substantial changes in the proposed project and their potential impacts on groundwater and surface water.

In our letter, we also explained that the vacatur of the early closure loophole constituted changed circumstances that would allow TVA to consider using the on-site landfill currently under development at Bull Run to dispose of ash from the Fly Ash Pond and Sluice Channel.²¹⁴ In response, TVA asserted that SELC should have raised this issue in our comments on the DEIS and in scoping for the proposed landfill.²¹⁵ As a preliminary matter, it is TVA’s responsibility to identify and analyze reasonable alternatives to its proposed action, not ours.²¹⁶ This remains true when circumstances change after the issuance of an EIS.²¹⁷

²¹¹ *Id.* at 10-11.

²¹² TVA June 9 letter at 3.

²¹³ *See id.*; *see also Comm. of 100 on the Fed. City v. Foxx*, 87 F. Supp. 3d 191 (D.D.C. 2015).

²¹⁴ Comments re: Obligation to Prepare SEIS at 9.

²¹⁵ TVA June 9 letter at 2-3.

²¹⁶ *Friends of the Clearwater v. Dombek*, 222 F.3d 552, 559 (9th Cir. 2000) (“It is the agency, not an environmental plaintiff, that has a ‘continuing duty to gather and evaluate new information relevant to the environmental impact of its actions,’ even after release of an EIS.”) (quoting *Warm Springs Dam Task Force v. Gribble*, 621 F.2d 1017, 1023 (9th Cir. 1980)).

²¹⁷ *Id.*

Nevertheless, SELC and Environmental Groups *did* raise the issue that TVA omitted analysis of an on-site landfill variation on Closure-by-Removal at both the programmatic and site-specific levels in the DEIS.²¹⁸ In addition, in comments submitted to TVA regarding the scoping for the coal ash landfill at Bull Run, SELC and a coalition of environmental groups provided a lengthy analysis of TVA's obligation to consider existing coal ash contamination and the need to close its existing ponds as connected and cumulative actions to be considered in the EIS for that proposed action.²¹⁹ TVA, not commenters, chose to artificially narrow the scope of analysis for the landfill.²²⁰

TVA also claims that it reasonably excluded the on-site landfill at Bull Run as an alternative because the permitting and NEPA processes could be "lengthy."²²¹ It attempts to bolster that assertion by adding a paragraph to the FEIS rejecting on-site landfills at the programmatic level for the same reason.²²² In the specific case of the landfill at Bull Run, however, TVA has already been planning and preparing for the on-site landfill for several years.²²³ Indeed, TVA has already issued an EIS and submitted a complete Part II application to the Tennessee Department of Environment and Conservation.²²⁴ The regulatory process and construction of the landfill will be complete well within even TVA's cramped five year timeframe for closing the Fly Ash Pond and the Sluice Channel. In sum, the record demonstrates that, in light of the vacatur of the early closure loophole, TVA arbitrarily excluded consideration of an on-site landfill as a reasonable alternative at Bull Run.

Finally, in our letter we showed that TVA omitted from the DEIS significant information that demonstrates that ash is submerged in groundwater in the Fly Ash Pond and Sluice Channel, and that both impoundments are within the current surface elevation of impounded waters of the United States. In response, TVA argues that this information is not "new" because TVA and state and federal regulators already had it.²²⁵

TVA misunderstands our argument. We brought this information to TVA's attention precisely because (1) it already existed; (2) it contained information relevant to issues TVA

²¹⁸ Comments on DEIS at 19, 41.

²¹⁹ Att. 39, Letter from Angela Garrone, Southern Alliance for Clean Energy, to Anita Masters, TVA, re: Scoping Comments on TVA's Environmental Impact Statement for the Disposal of Coal Combustion Residuals for Bull Run Fossil Plant 6-13 (July 2, 2015).

²²⁰ TVA, Bull Run Fossil Plant Landfill Draft Environmental Impact Statement 1 (May 2016).

²²¹ TVA June 9 letter 3.

²²² FEIS Part I 23-24.

²²³ Att. 40, AECOM, Part II Permit Application, CCP Disposal Facility, TVA Bull Run Fossil Plant, Operations Manual Vol. 1 of 3 (November 2015); Att. 41, AECOM, Coal Combustion Product (CCP) Class II Disposal Facility, Bull Run Fossil Plant Permit Drawings (Full Set) (November 13, 2015); Att. 42, TVA, Bull Run Fossil Plant House Demolition and Hydrogeologic Investigations Environmental Assessment (May 2013).

²²⁴ *See id.*

²²⁵ TVA June 9 letter at 4-6.

claimed were unknown and uncertain in the DEIS, such as whether ash is buried in groundwater at Bull Run; and (3) TVA failed to include it in the DEIS. Our point was—and remains—that TVA *knew* that it built the Fly Ash Pond and the Sluice Channel in groundwater and in a floodplain within the current surface elevation of the river and it failed to disclose those basic facts in the DEIS.²²⁶

The FEIS takes the first step toward acknowledging the actual conditions at Bull Run by admitting that ash is submerged in 18 feet of groundwater in the Fly Ash Pond and Sluice Channel. Nevertheless, the FEIS continues to omit significant site-specific information that demonstrates the actual extent to which the Fly Ash Pond and the Sluice Trench are submerged in groundwater and located within the footprint of impounded waters of the United States, and fails to analyze the groundwater and surface water impacts that flow from these facts. These omissions violate NEPA and must be remedied by the preparation of a supplemental EIS.

VI. TVA's refusal to disclose the EPRI reports or any information about the assumptions employed in the EPRI reports violates NEPA's public participation requirements.

As we have explained throughout this NEPA process, TVA's refusal to disclose the Relative Impact Framework and the Impact Assessment reports, or any information about key assumptions in the EPRI reports violates the public participation requirements of NEPA.²²⁷ TVA's last-ditch effort to remedy this fatal flaw in its analysis—the Qualitative Application—only underscores why access to the EPRI reports themselves is critical to understanding the shortcomings of the analysis in the DEIS. As explained in detail in these comments, nothing in the FEIS or the Qualitative Application remedies those shortcomings. For this reason, in addition to the many others described throughout our comments, TVA still has not satisfied its obligation to publicly disclose and analyze the impacts associated with its proposed actions in the FEIS.

VII. TVA cannot reasonably tier to the fundamentally flawed programmatic EIS for future decisions regarding closure of the ponds considered in Part II, or other ponds in its system.

²²⁶ TVA again attempts to blame SELC for not bringing this information to its attention during the comment period. *Id.* 4-6. It is TVA's responsibility, not ours, to fully disclose baseline environmental conditions and analyze relevant impacts associated with its proposed actions. Many of these documents came to our attention through TVA's submittal of the final closure plan for Bull Run to the Tennessee Department of Environment and Conservation, which occurred shortly after the close of the public comment period on the DEIS.

²²⁷ Comments on DEIS at 8-10; Comments re: Obligation to Prepare SEIS at 21-23.

As we explained in our comments on the DEIS, because its programmatic analysis was so fundamentally flawed, TVA could not reasonably tier to it for site-specific analyses. The FEIS remains fundamentally flawed. As discussed throughout this letter, these fundamental flaws are particularly salient with respect to the analysis of groundwater and surface water impacts. Nevertheless, TVA continues to propose tiering to the programmatic EIS for future closure activities. In fact, TVA identifies a limited set of factors that would trigger the need for future EISs associated with closure activities: history of surface water quality exceedance, extensive floodplain impacts, extensive wetland impacts, impact to historic properties, impact to threatened and endangered species, and environmental justice impacts.²²⁸ Notably absent from this list is impacts to groundwater and surface water resources (apart from surface water exceedances). This arbitrary omission of the key impacts associated with the Closure-in-Place alternative, coupled with the fundamentally flawed analysis in the programmatic EIS, render all current and future attempts to tier to the FEIS unreasonable and arbitrary.

Given the significance of TVA's current and future closure decisions—decisions that affect the rivers and streams that provide drinking water for 3 million people—TVA must perform adequate site-specific analyses of groundwater, surface water and stability impacts now and in the future without relying on its flawed and incomplete programmatic analysis. It has not done this analysis for any of the ten impoundments evaluated in Part II of the FEIS, and therefore cannot lawfully approve its plans to close these impoundments in place.

VIII. Conclusion

For all of the foregoing reasons, in addition to the reasons set forth in our letters dated March 9, 2016, and May 23, 2016, the FEIS remains fundamentally flawed. TVA cannot lawfully issue a Record of Decision based on the programmatic analysis provided in Part I or the site-specific analyses provided in Part II.

²²⁸ FEIS Part I at 5.