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September 25, 2020

VIA ELECTRONIC FILING

Ms. Kimberly A. Campbell, Chief Clerk
North Carolina Utilities Commission
4325 Mail Service Center
Raleigh, North Carolina 27699-4300

Re: Duke Energy Carolinas, LLC
Late-Filed Exhibit No. 13
Docket No. E-7, Sub 1214
Docket No. E-7, Sub 1213

Dear Ms. Campbell:

Per the Commission's request during the evidentiary hearing on September 18, 2020, I enclose a late-filed exhibit on behalf of Duke Energy Carolinas, LLC (the "Company") for filing in connection with the above-referenced dockets. Late-Filed Exhibit No. 13 provides comments that the Company submitted to the Environmental Protection Agency in response to the 2010 draft rulemaking on Coal Combustion Residuals.

Please do not hesitate to contact me should you have any questions. Thank you for your assistance in this matter.

Sincerely,

/s/ Kiran H. Mehta

Kiran H. Mehta

Enclosure

cc: Parties of Record

ORAL TESTIMONY OF DUKE ENERGY

On the

HAZARDOUS AND SOLID WASTE MANAGEMENT SYSTEM;
IDENTIFICATION AND LISTING OF SPECIAL WASTES; DISPOSAL OF
COAL COMBUSTION RESIDUALS FROM ELECTRIC UTILITIES;
PROPOSED RULE

Docket ID No. EPA-HQ-RCRA-2009-0640

September 14, 2010

Good evening. My name is Allen Stowe. I am an Environmental Specialist testifying today on behalf of Duke Energy. The question for Duke Energy is not whether to regulate, but how to regulate. Duke Energy has evaluated the alternatives and determined the Subtitle D Prime option, with appropriate adjustments, is the best path forward. Unlike the Subtitle C approach, Subtitle D Prime will enable EPA to establish an environmentally protective program without crippling CCR beneficial use, threatening jobs and increasing electricity costs.

Environmental groups allege dozens of new damage cases, listing some Duke Energy facilities. The actual number of proven damage cases is quite small. The current total is twenty seven (27) proven damage cases and forty (40) potential damage cases.

A close examination of the facts reveals many flaws in the recent allegations made regarding damage cases. Many of the assertions in the reports are based on extremely flimsy evidence, with unfounded conclusions meant to scare the public. EPA cannot rely on these assertions in any final rulemaking without conducting its own factual, independent review of the sites and allowing for public notice and comment on its findings.

For example:

- An Electric Power Research Institute analysis of the EPA damage case report in 2008 shows only a handful of these cases actually involve off-site MCL exceedances. For example, of the 54 proven or potential damage cases cited by EPA in the report involving groundwater contamination, only three involved off-site contamination exceeding MCLs.
- The same is likely true with the alleged new damage cases cited by environmental groups -- In fact, during their press conference, they acknowledged that some of these cases do not involve off-site contamination, but they were merely speculating that the damage may migrate off-site at some point in the future.
- Another significant flaw is that the environmental groups have not consulted with the very states whose programs they allege are deficient. The states

contest these allegations and charge that the environmental groups have improperly characterized the effectiveness of their state controls.

Assuming the allegations have any factual basis, USWAG and Duke Energy support a Subtitle D program that will involve groundwater monitoring controls specifically designed to detect any contamination before it moves off-site. Duke Energy supports federal regulations that will actually address the potential threats that environmental groups allege may occur from these sites. If Duke Energy determines an impact to ground water has occurred at any of its facilities, the appropriate regulatory agency is notified and proper next steps taken to ensure public safety. In North Carolina, Duke Energy voluntarily initiated ash basin groundwater monitoring more than six years ago and has taken substantial measures to reduce or eliminate potential environmental impacts.

Thank You

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ORAL TESTIMONY OF DUKE ENERGY

on the

HAZARDOUS AND SOLID WASTE MANAGEMENT SYSTEM; IDENTIFICATION AND LISTING OF SPECIAL WASTES; DISPOSAL OF COAL COMBUSTION RESIDUALS FROM ELECTRIC UTILITIES; PROPOSED RULE

Docket ID No. EPA-HQ-RCRA-2009-0640

September 14, 2010

Good afternoon. My name is George Everett, and I am Director of Environmental and Legislative Affairs for Duke Energy. Duke Energy strongly supports RCRA's Subtitle D non-hazardous program to regulate CCRs and specifically the "D Prime" option.

Subtitle D would raise the bar nationally for surface impoundment safety and achieve the environmental protection we all seek without the exponential cost and damaging consequences to the beneficial reuse industry.

Subtitle D would require electric utilities to either remove solids from existing surface impoundments and retrofit them with a composite liner or cease receiving CCRs within five years of the effective date and close the unit. New impoundments could only be constructed with composite liners. Groundwater monitoring would be required for all new and old landfills to provide continual assessment of any possible groundwater impacts.

Utilities have safely managed CCRs in hundreds of surface impoundments for decades. In the Carolinas, for example, Duke Energy has had a robust monitoring, maintenance and inspection program for all its ash basin dams since 1976. This involves daily observations and monthly inspections by plant staff, plus additional inspections after two inches of rain in 24 hours. Annual inspections by a licensed professional Duke engineer and an inspection every five years by an independent licensed professional engineer have now been supplanted with inspections by the NC Dam Safety Program. This program was in place well before the EPA inspections under way currently.

Duke Energy's North Carolina ash basins are rated as "high hazard" based on the North Carolina Dam Safety Regulations rating system. However this rating is often misrepresented publicly and provides no indication about the actual structural integrity of the dam. Our surface impoundments are sound, and we are committed to continue operating them safely.

It's also important to note that there are currently no permitted hazardous waste landfills in North or South Carolina. Consequently, a Subtitle C regulatory program would place an enormous burden on these states and their electric utilities to permit enough disposal capacity to handle the volume of CCRs generated in meeting the states' energy needs.

Dam stability is a critical piece of this regulatory puzzle, and quite simply, a Subtitle C hazardous designation for coal ash is not warranted to ensure the structural stability of surface impoundments.

Thank you.

**Comments of
The Utility Solid Waste Activities Group,
The Edison Electric Institute,
The American Public Power Association, and
The National Rural Electric Cooperative Association on
Hazardous and Solid Waste Management System;
Identification and Listing of
Special Wastes; Disposal of Coal Combustion Residuals From
Electric Utilities;
Proposed Rule**

75 Fed. Reg. 35128 (June 21, 2010)

**Volume I
Comments**

**submitted to
The United States
Environmental Protection Agency
Docket No. EPA-HQ-RCRA-2009-0640**

November 19, 2010

**Of Counsel:
Venable LLP
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INTRODUCTION AND EXECUTIVE SUMMARY

The Utility Solid Waste Activities Group (“USWAG”) submits these comments in response to the United States Environmental Protection Agency’s (“EPA” or “Agency”) proposed rule entitled “Hazardous Waste Management System: Identification and Listing of Special Wastes; Disposal of Coal Combustion Residuals (“CCRs”) From Electric Utilities.” 75 Fed. Reg. 35128 (June 21, 2010) (“CCR Proposal” or “Proposal”). USWAG is an association of over one hundred and ten utilities, utility operating companies, energy companies, and associations, including the Edison Electric Institute (“EEI”), the American Public Power Association (“APPA”), and the National Rural Electric Cooperative Association (“NRECA”).¹ USWAG has worked closely with EPA for approximately thirty years on the Agency’s implementation of the Bevill Amendment’s regulatory determination process for CCRs. As part of this ongoing dialogue, USWAG has provided the Agency with technical data and related input to assist EPA in reaching the appropriate Regulatory Determination for CCRs under the Resource Conservation and Recovery Act (“RCRA”).

Following issuance of EPA’s final 2000 Regulatory Determination declaring that CCRs do not warrant regulation under RCRA’s Subtitle C hazardous waste regulations (65 Fed. Reg. 32214 (May 29, 2000)), USWAG continued its work with EPA to ensure that CCRs are managed under RCRA’s non-hazardous waste program in a manner that

¹ EEI is the association of U.S. shareholder-owned electric companies. APPA is the national association of publicly-owned electric utilities. NRECA is the national association of rural electric cooperatives. Together, USWAG members represent more than 73 percent of the total electric generating capacity, 91% of the nation’s coal-fired generation, and service more than 95 percent of the nation’s consumers of electricity. Throughout these comments, we refer to our industry as the “utility” or “electric utility” industry. This term is intended to include those portions of the industry and those USWAG members that generate electricity but do not directly provide electricity to the public and are technically not “utilities.”

is fully protective of human health and the environment. Among other things, USWAG initiated and developed a Voluntary Action Plan to implement groundwater monitoring and appropriate corrective action at CCR disposal units. See 72 Fed. Reg. 49714 (Aug. 29, 2007). USWAG also undertook measures to ensure that the beneficial use of CCRs, which has flourished since EPA's final 2000 Regulatory Determination, is performed in an environmentally protective manner. For example, USWAG developed and shared with EPA detailed engineering and environmental guidance on the use of CCRs in engineered structural fill projects. See Letter from USWAG to EPA transmitting USWAG's Engineering and Environmental Guidance on the Beneficial Use of Coal Combustion Products in Engineered Structural Fill Projects (May 4, 2009)(attached as Appendix 1). Thus, long before EPA's initiation of this rulemaking, USWAG has worked cooperatively with EPA to ensure that CCRs are managed in a responsible manner. USWAG looks forward to continuing its work with EPA during this rulemaking process to achieve this common objective.

As we have stated throughout the public hearing process on the CCR proposal, USWAG supports the development of federal regulations for CCRs under RCRA's Subtitle D non-hazardous waste program. Indeed, the question for USWAG is not whether EPA should develop regulations for CCRs, but rather *how* best to regulate CCRs under a federal program. As detailed in these comments, we have carefully evaluated the full range of alternatives available to EPA and believe that the "Subtitle D Prime" option, with appropriate adjustments, offers the best path forward. Unlike the Subtitle C option, which is not legally authorized, would create disposal capacity shortfalls, cripple the beneficial use of CCRs and impose unnecessary costs on power

plants (and ultimately consumers), threatening jobs and increasing electricity costs, the Subtitle D option will enable EPA to develop an environmentally protective program for CCRs without the attendant adverse consequences of the Subtitle C approach.

While USWAG has a number of significant comments on the Subtitle D proposal, RCRA's Subtitle D framework provides the appropriate legal structure under which EPA may develop federal regulations for CCRs. In fact, it is the only lawful option available to the Agency. The development of Subtitle D regulations is the appropriate outgrowth of EPA's two Reports to Congress and two final Regulatory Determinations under the Bevill Amendment declaring that CCRs do not warrant hazardous waste regulation under RCRA Subtitle C.

Further, EPA readily acknowledges that it can develop non-hazardous waste rules for CCRs under RCRA's Subtitle D framework that will be fully protective of human health and the environment. The proposed substantive standards for CCR landfills and surface impoundments under the Subtitle C and Subtitle D options are virtually identical. See 75 Fed. Reg. at 35213. Both options would ensure the safe management of CCRs through, among other things, the requirements for the use of liner systems, groundwater monitoring and corrective action. A key difference, however, is that the Subtitle D rules can be implemented in a quick, practical and cost-effective manner without the collateral adverse impacts of the Subtitle C option. Indeed, EPA has determined that the CCRs being remediated from the release at TVA's Kingston facility – one of the principle rationales for this rulemaking – can be safely disposed of in a unit operating in compliance with applicable RCRA Subtitle D requirements. See Administrative Order and Agreement on Consent at ¶ 45, *In the Matter of TVA Kingston Fossil Fuel Plant Release*

Site, Roane County, Tennessee, (May 6, 2009) (attached as Appendix 2). Moreover, since the TVA ash release, EPA has been conducting comprehensive structural integrity assessments of CCR impoundments across the country. Of the more than 120 CCR impoundments evaluated thus far, *none* of the impoundments has received an “unsatisfactory” rating, meaning that not one impoundment inspected thus far presents an imminent threat of a catastrophic release similar to that which occurred at TVA’s Kingston facility. EPA Coal Combustion Residuals Impoundment Assessment Reports, <http://www.epa.gov/epawaste/nonhaz/industrial/special/fossil/surveys2/index.htm> (last visited Nov. 3, 2010). Thus, the question for EPA is not whether a Subtitle D program for CCRs can fully protect human health and the environment – it undoubtedly can – but rather how best to implement such a program.

In this respect, USWAG believes that any final Subtitle D regulatory program for CCRs must include a mechanism for the administration and implementation of the rules by the states. As EPA itself has concluded, many states already have well-established and protective regulatory controls for CCRs. Therefore, it makes sense to coordinate development of new federal rules for CCRs with existing state regulations. Failure to do so would result in redundant and potentially inconsistent regulations and would contravene the Bevill Amendment’s directive that, in developing federal regulations for CCRs, EPA avoid duplication of effort with pre-existing regulatory programs.

As the Agency acknowledges, the final Subtitle D rules for CCRs would be directly enforceable by the states and the public under RCRA’s citizen suit provision and violators would be subject to significant penalties. 75 Fed. Reg. at 35211. EPA would also retain its imminent and substantial endangerment authority under RCRA to take

action against any CCR unit that posed a risk to human health and the environment. *Id.* Additionally, the Agency could use its imminent and substantial endangerment authorities under CERCLA, as well as other federal authorities, including the Clean Water Act, to address circumstances where a CCR unit posed a threat. *Id.*

Notwithstanding this array of enforcement authorities and EPA's earlier finding that they were adequate to ensure compliance with Subtitle D rules for CCRs, 65 Fed. Reg. at 32232, EPA is concerned with the perceived lack of *direct* federal enforceability under a Subtitle D option. In response, USWAG urges EPA to consider carefully the comments from the numerous state environmental protection agencies addressing their ability to fully and effectively enforce the Subtitle D rules for CCRs. The states share EPA's goal of protecting their citizens and their natural resources from the potential mismanagement of CCRs. The testimony and comments of the states underscores their commitment to effectively enforce the Subtitle D regulations for CCRs. For example, the Pennsylvania Department of Environmental Protection testified at the CCR public hearing in Pittsburgh that there is a 96% compliance rate by facilities in that state with Pennsylvania's Subtitle D rules. Testimony of the Pennsylvania Department of Environmental Protection during EPA's CCR Public Hearing, Pittsburgh, PA, (Sept. 21, 2010) (attached as Appendix 3). This commitment by the states should allay EPA's concerns over the adequacy of the compliance mechanisms under a Subtitle D regulatory regime for CCRs.

Nonetheless, to the extent that EPA continues to believe that some degree of direct federal enforceability is necessary under the Subtitle D option, there are options available to EPA to achieve this result. These include, among others, developing a

federally-enforceable program for CCRs under RCRA Subtitle D using the same statutory authorities the Agency employed to promulgate the federally enforceable Subtitle D rules for municipal solid waste landfills. USWAG supports EPA's development of similar federally enforceable non-hazardous waste regulations for CCRs and we have outlined the legal basis for this approach in our comments.

In the end, however, EPA must not lose sight of the fact that the legal, practical and policy rationales of the Subtitle D option over the Subtitle C option are far too great to allow this enforcement concern to dissuade EPA from pursuing the Subtitle D approach for CCRs. For this reason, the Agency must carefully evaluate whether its concern with federal enforceability under the Subtitle D option is truly warranted and, if so, employ the necessary means to address this concern and *not* allow it to serve as a barrier to pursuing the Subtitle D approach.

Indeed, while USWAG is fully supportive of a federal Subtitle D program for CCRs, it is adamantly opposed to the proposed Subtitle C option. Under this approach, EPA would subject CCRs destined for disposal to the full range of RCRA Subtitle C hazardous waste regulations. 75 Fed. Reg. at 35173. The Agency would regulate CCRs under the Subtitle C hazardous waste rules by listing CCRs as a hazardous waste under EPA's hazardous waste listing criteria. *Id.* While EPA would label CCRs subject to hazardous waste regulation as "special wastes," this would be done solely for the purpose of attempting to deflect the stigmatic effects and liability concerns on beneficial use that would result from the regulation of CCRs under EPA's hazardous waste regulations. *Id.* at 35185. As even EPA concedes, the "special waste" label does nothing to alter the fact that, under the Subtitle C option, CCRs destined for disposal

would be subject to the full array of federal hazardous waste regulations. *Id.* at 35174.

In fact, under the Subtitle C option, EPA would seek to regulate CCR disposal practices *more* stringently than any other hazardous waste by proposing to take the unprecedented step of subjecting previously closed and/or inactive CCR surface impoundments to full hazardous waste regulation. *Id.* at 35174, 35177.

As discussed in detail below, the Subtitle C option would constitute an impermissible reversal of EPA's final 1993 and 2000 Regulatory Determinations that CCRs do not warrant hazardous waste regulation and would be in direct contravention of RCRA's plain language establishing an unambiguous statutory process by which EPA can determine whether and how to regulate CCRs under RCRA. Having completed the Bevill determination process for CCRs in 2000 pursuant to the statutorily prescribed procedures, EPA is not at liberty to undo that process. Even assuming that the statute did allow EPA to make a new determination more than ten years after completing the Bevill process, EPA would at a minimum be obligated to adhere to the statutory procedures that Congress prescribed for making the original regulatory determination, including providing a Report to Congress setting forth its recommendation. EPA has ignored these procedures in the Subtitle C proposal.

There are additional legal and policy reasons why EPA cannot choose the Subtitle C option for CCRs. These points are detailed in our comments, but include the following issues:

- Contrary to EPA's theory that regulating CCRs under RCRA Subtitle C will increase beneficial use, the testimony and comments from numerous persons, including CCR marketers and end users, the states, independent standard

setting organizations and the electric industry show that regulating CCRs under RCRA's hazardous waste regulations would cripple the beneficial use market; the docket already contains record evidence identifying specific examples of how the mere specter of Subtitle C hazardous waste regulation is already adversely affecting CCR beneficial use projects;

- The Subtitle C option would impose unduly stringent regulations and staggering compliance costs for the management of CCRs in the range of at least \$55.3 to \$74.5 billion, which is nearly three to four times EPA's projected Subtitle C compliance costs of approximately \$20.3 billion;
- The Subtitle D rules would provide equally protective controls at far lower costs than the Subtitle C option. Thus, the Subtitle C option directly contravenes Congress' express purpose in enacting the Bevill Amendment that EPA avoid the imposition of the onerous economic burden of stringent Subtitle C hazardous waste controls on electric utilities if at all possible;
- Contrary to EPA's suggestion that electric utility CCR disposal practices would remain unchanged under the Subtitle C option, at least 15 to 21 million tons of CCRs would enter the Subtitle C hazardous waste commercial disposal market on an annual basis, in contrast to the 2 million tons of hazardous waste currently disposed of in commercial hazardous waste landfills; this influx of Subtitle C wastes into the system would quickly overwhelm the approximately 23 to 30 million tons of total commercial hazardous waste landfill disposal capacity in the nation and create an immediate compliance dilemma for electric utilities. This capacity shortfall would create havoc for the entire RCRA Subtitle C hazardous

waste program and would, among other things, adversely impact hazardous waste remediation projects across the country;

- The Subtitle C hazardous waste option is inconsistent with the views of the other federal and state agencies that Congress directed EPA to consult with in rendering a final regulatory determination for CCRs; all of these agencies have either strongly opposed regulating CCRs under the Subtitle C hazardous waste regulations or have sharply questioned the appropriateness of this option;
- Due to the sheer volume and the physical composition of CCRs, *de minimis* volumes of CCRs are inevitably released during normal power generation and subsequent CCR handling operations; if CCRs are regulated as a listed “special waste” subject to full hazardous waste regulation, these *de minimis* releases would constitute improper hazardous waste disposal, subjecting electric utility coal-fired power plants to potential liability for what would likely be a perpetual state of RCRA non-compliance; and
- The Subtitle C option includes the unprecedented and unlawful proposal to extend RCRA Subtitle C hazardous waste jurisdiction to previously closed and/or inactive CCR surface impoundments that do not receive CCRs after the effective date of the final Subtitle C rule. This retroactive application of RCRA would not be sustained because it violates the plain language of RCRA and controlling legal precedent.

USWAG is not alone in its adamant opposition to the Subtitle C option. A bi-partisan group of 165 members of Congress, including a majority of the House Energy and Commerce Committee, 45 U.S. Senators, virtually all the states, other

federal agencies, municipal and local governments, CCR marketers and beneficial users, unions, state PUCs, and many other third-parties have made clear to EPA during this rulemaking process that regulating CCRs under RCRA's hazardous waste program would result in excessive regulation, and, in fact, would be counter-productive because it would cripple the CCR beneficial use industry. In short, the record is clear that regulating CCRs as a listed waste under RCRA Subtitle C, the most burdensome and extreme option under federal law, is not authorized or warranted.

Our comments address the above issues in detail. Chapter 1 addresses why EPA cannot pursue the Subtitle C option for CCRs. In particular, Section I discusses the legislative history and text of the Bevill Amendment, as the Amendment sets forth the statutory conditions against which to evaluate the proposed Subtitle C option. Section II provides a chronology of EPA's implementation of the Bevill Amendment over the last 30 years, including the Agency's final Regulatory Determinations that CCRs should not be regulated under Subtitle C of RCRA. Section III details why EPA's proposed Subtitle C option is inconsistent with the text and purpose of the Bevill Amendment. Section IV explains why, even assuming EPA had the authority to reverse its final Regulatory Determinations for CCRs, the Subtitle C option would nonetheless be inconsistent with the Bevill Amendment and would be arbitrary and capricious. Section V discusses why the CCR units that qualify as proven "damage cases" do not justify the Subtitle C option.

Chapter 2 presents additional reasons why the Subtitle C option is legally flawed and cannot be pursued. In particular, Section VI explains why EPA's proposed listing of CCR, is overly broad and legally defective. Section VII details critical flaws in EPA's

Regulatory Impact Analysis (“RIA”) for the Subtitle C option, including its under-estimation of the true costs of this option. Section VIII outlines some of the practical compliance and disposal dilemmas presented by the Subtitle C option and Section IX explains why EPA cannot retroactively regulate under the Subtitle C option previously closed and/or inactive CCR surface impoundments. Finally, Section X addresses EPA’s failure to convene a small business advocacy review panel to assess the impact of the proposal on utilities that qualify as “small business” under the Regulatory Flexibility Act (“RFA”).

Chapter 3 addresses the proposed Subtitle D option. Section XI discusses USWAG’s support for the Subtitle D Prime option, while making clear that any final Subtitle D rule must include a mechanism for state implementation of the federal Subtitle D rules. This section also includes a discussion of USWAG’s strategy for Agency implementation of the Subtitle D rules in a manner that would allow for federal enforceability in instances where the states do not appropriately implement the federal rules. Section XII details the amendments that we believe are necessary under the Subtitle D option, including important changes to certain proposed definitions. Section XIII outlines certain amendments to the proposed regulations to ensure that EPA does not inappropriately regulate as CCR disposal those activities that constitute legitimate CCR beneficial use. Finally, Section XIV outlines USWAG’s support for EPA’s proposed structural integrity requirements for CCR surface impoundments.

CHAPTER ONE

EPA CANNOT PROMULGATE SUBTITLE C REGULATIONS FOR COAL COMBUSTION RESIDUALS

I. THE BEVILL AMENDMENT

A. The Legislative History Of The Bevill Amendment

The Bevill Amendment to RCRA, enacted in 1980, was an outgrowth of Congress's concern that EPA might discourage the development of coal as one of the nation's primary sources of energy if it prematurely and inappropriately subjected CCRs to regulation under Subtitle C of RCRA. Representative Bevill of Alabama, sponsor of the Amendment in the House, feared that the cost of hazardous waste regulation of CCRs would have an immediate inflationary effect on the economy and a disastrous impact on coal utilization.

To avoid this result, Representative Bevill explained in unambiguous terms that the purpose of the Amendment was to:

encourage development of coal as a primary domestic source of energy, avoid unnecessary inflationary impact, and focus the efforts of the Environmental Protection Agency in implementing the Resource Conservation and Recovery Act toward activities truly necessary to protect public health and the environment, specifically, it would require EPA to defer imposition of regulatory requirements on the disposal of the waste by-product of fossil fuel combustion, of discarded mining materials and of cement kiln dust until after EPA has completed studies to determine whether, if at all, these materials present any hazard to human health or the environment. These studies would include evaluation of the economic and environmental aspects of existing and alternative disposal and reuse options. EPA would also be required to focus on the impact of these alternatives on the use of our coal and other natural resources.

126 Cong. Rec. 3361 (1980).² Representative Bevill estimated that compliance with the proposed Subtitle C program would cost the utility industry \$1 billion in the first three years, and that these “costs are likely to be passed along to consumers, with an immediate inflationary impact.” 126 Cong. Rec. at 3361; *see also id.* at 3363 (remarks of Rep. Findley); 125 Cong. Rec. at 13245 (remarks of Sen. Huddleston); *id.* at 13246 (remarks of Sen. Ford). As the D.C. Circuit has made clear, “the emphasis on economic factors . . . is consistent with . . . Congress’s obvious goal in enacting the Bevill Amendment – to relieve [the Bevill industries] of the onerous economic burden of stringent Subtitle C controls *if at all possible*.” *Env’tl. Def. Fund v. EPA*, 852 F.2d 1309, 1315 (D.C. Cir. 1988) (emphasis added) (“*EDF v EPA*”).³ As discussed below, the projected compliance costs associated with EPA’s proposed Subtitle C option have skyrocketed to a range of at least \$5.32 to \$7.62 billion *per year*. *See* EPRI, 2010, Cost Analysis of Proposed National Regulation of Coal Combustion Residuals from the Electric Generating Industry, EPRI, Palo Alto, CA: 2010. 1022296 at 4-1 (“EPRI Cost Report”).

Additionally, other supporters of the Amendment have been acutely sensitive to the nation’s dependence on foreign energy sources; they intended the Bevill Amendment to reflect congressional policy that any regulatory program for CCRs under

² On the same day that the Senate passed the Huddleston Amendment (the Senate predecessor to the Bevill Amendment), it also adopted a resolution expressing concern about the national security implications of dependence on foreign oil supplies and calling on the President to propose a plan for displacing specific percentages of foreign oil with domestic coal. S. Res. 175, 96th Cong., 1st Sess. (1979), 125 Cong. Rec. 13241 (1979).

³ While the *EDF v. EPA* decision involved a challenge to EPA’s regulatory determination not to regulate Bevill mining wastes under RCRA Subtitle C, the Court’s description of the purpose of the Bevill Amendment to have EPA avoid Subtitle C regulation if at all possible for Bevill wastes obviously applies to all the Bevill wastes, including CCRs.

RCRA not create disincentives for the use of coal, including regulations that would cause utilities to switch fuels from coal to other sources. See, e.g., 126 Cong. Rec. at 3363 (remarks of Rep. Rahall) (“[a]t a time when we are seeking to encourage electric utilities and others to switch from the burning of oil to coal, it would be highly inappropriate to place further unnecessary regulatory roadblocks in the way of increased coal usage”); 125 Cong. Rec. at 13246 (remarks of Sen. Byrd) (under this amendment, “those who produce coal will be able to do so without the fear that utility customers will be forced to use some other fuel because of environmental regulations”).

The Amendment also reflected the congressional intent to promote the beneficial use of CCRs since “a national commitment to encourage reuse of such materials as fly ash was a key element of RCRA,” which Representative Bevill observed “seem[ed] to have not received adequate attention at EPA.” 126 Cong. Rec. at 3362.⁴

Representative Findley of Illinois, another supporter of the Amendment, was more direct in his caution to EPA about the adverse impact on CCR beneficial use resulting from the regulation of CCRs under RCRA Subtitle C. He warned that if the Agency were to regulate CCRs under RCRA’s hazardous waste program, the “flourishing industry which recycles these byproducts would be gravely disrupted and possibly closed down.” *Id.* at 3363.

Representative Rahall of West Virginia was equally direct that EPA avoid any unnecessary regulation of CCRs under RCRA Subtitle C for fear that such a program

⁴ Representative Bevill emphasized that the beneficial use of CCRs “saves energy,” explaining, for example, that the use of fly ash in cement results in a 15 percent savings in the amount of energy needed to that product, and is cost effective, saving tax payers 10-15 percent in federally sponsored concrete construction projects. 126 Cong. Rec. at 3362.

would devastate the CCR beneficial use market. He urged that “avoidance of unnecessary regulation of coal byproducts is particularly important because of the impact such regulation will have on reuse.” *Id.* He stressed that it was critical to avoid such unnecessary regulation in light of the fact that CCRs used in the beneficial use market compete with a variety of other natural aggregates and materials:

It is obvious that the imposition of any expensive regulatory requirements on these developing industries will have a disastrous impact on them. It is thus vital that EPA fully evaluate a need for regulation, and the alternatives to various regulatory schemes, before blindly and only because coal is involved, imposing regulations on these coal byproduct materials.

Id. at 3363-64. Representative Staggers, Chairman of the Interstate and Foreign Commerce Committee, which reported the RCRA reauthorization bill, echoed the concerns about the adverse impact on CCR beneficial use if CCRs were regulated under Subtitle C:

[Subtitle C regulation of fossil fuel combustion wastes] would run counter to one of the principal designs of the Resource Conservation and Recovery Act -- conservation of valuable material ... Coal combustion products, including particularly fly ash, provide significant beneficial reuses and substitution for other more costly materials ... The act [RCRA] is intended to encourage, not discourage, such beneficial reuses.

126 Cong. Rec. at 3364-65. See also *id.* at 3362 (remarks of Rep. Beville), 3362-63 (remarks of Rep. Horton), 3363 (remarks of Rep. Findley & Rep. Rahall); 125 Cong. Rec. at 13245 (remarks of Sen. Huddleston). Senator Huddleston summed up the purpose of the Beville Amendment by making clear to EPA that such regulation was to be an option of last resort:

In my amendment [the Senate equivalent to the Beville amendment] the Administrator should be extremely cautious in imposing any additional regulations on these materials, particularly in view of the resulting

discouragement of coal use and the recovery and reuse of valuable fossil fuel combustion byproducts.

125 Cong. Rec. at 13245.⁵

B. The Text Of The Bevill Amendment

The enacted Amendment ultimately incorporated these congressional policy directives into RCRA by first suspending EPA's authority to regulate CCRs under Subtitle C of RCRA until EPA completed a study to determine whether such regulation was warranted. Specifically, the Bevill Amendment provides that fly ash waste, bottom ash waste, slag waste, and flue gas emission control waste generated primarily from the combustion of coal or other fossil fuels shall be subject to regulation only under other applicable provisions of federal or state law in lieu of RCRA Subtitle C until at least six months after the date of submission to Congress of a comprehensive study of those wastes. RCRA § 3001(b)(3)(A), 42 U.S.C. § 6921(b)(3)(A).⁶

This comprehensive study was to assess the environmental risks, if any, posed by CCRs, taking into account the following eight factors:

- (1) the source and volumes of such material generated per year;

⁵ Both amendments were virtually identical in their treatment of utility combustion wastes. Compare 125 Cong. Rec. 13241, 13244 (1979) with 126 Cong. Rec. 3359-61 (1980). The significant difference in the two versions was that the Senate amendment also suspended the regulation of certain oil, natural gas and geothermal energy wastes, while the House amendment suspended the regulation of mining and cement kiln dust wastes. The Conference Committee reconciled the two versions by adding the Senate's oil, natural gas and geothermal waste suspension to the House version on utility, mining and cement kiln dust wastes. See H.R. Conf. Rep. No. 96-1444 at 31-32 (1980), reprinted in 1980 U.S.C.C.A.N. 5030-31.

⁶ This section reads in pertinent part:

Notwithstanding the provisions of paragraph (1) of this subsection, each waste listed below shall, except as provided in subparagraph (B) of this paragraph, be subject only to regulation under other applicable provisions of Federal or State law in lieu of this subtitle until at least six months after the date of submission of the applicable study required to be conducted under subsection (n) of section 6982 of this title and after promulgation of regulations in accordance with subparagraph (C) of this paragraph:

- (i) Fly ash waste, bottom ash waste, slag waste, and flue gas emission control waste generated primarily from the combustion of coal or other fossil fuels.

- (2) present disposal and utilization practices;
- (3) potential danger, if any, to human health and the environment from the disposal and reuse of such materials;
- (4) documented cases in which danger to human health or the environment from surface runoff or leachate has been proved;
- (5) alternatives to current disposal methods;
- (6) the costs of such alternatives;
- (7) the impact of those alternatives on the use of coal and other natural resources; and
- (8) the current and potential utilization of such materials.

RCRA § 8002(n), 42 U.S.C. § 6982(n).

To ensure that all relevant information was available to the Agency and to avoid duplication of effort, Congress specifically directed EPA to “review studies and other actions of other Federal and State agencies and invite participation by other concerned parties, including industry and other Federal and State agencies” *Id.*

Within six months following completion of the study and a report to Congress on the Agency’s findings, EPA was required to make a final regulatory determination whether to (1) subject to Subtitle C regulation the CCRs addressed in the study and report to Congress, or (2) determine that Subtitle C regulation of these wastes is not warranted. The Bevill Amendment required the Agency to base this final regulatory determination “on information developed or accumulated pursuant to such study, public hearings, and comment. . . .” RCRA § 3001(b)(3)(C), 42 U.S.C. § 6921(b)(3)(C). In short, EPA could only reach the decision to regulate CCRs under Subtitle C after following a statutorily-prescribed series of steps that involved congressional oversight marked by EPA’s submission of reports to Congress that would inform the relevant

congressional committees of jurisdiction of the Agency's preliminary recommendations. The final regulatory determination was to be issued according to a statutorily-imposed deadline and based on public hearings and comments responding to the report to Congress. See *EDF v. EPA*, 852 F.2d at 1314 ("The statute clearly states that the agency is to base its regulatory determination on the information gathered for the § 8002(p) study.").

Also, it is important to appreciate that Congress was particularly concerned that EPA not make this decision in a vacuum. To that end, Congress emphasized that the Agency was to seek the assistance and cooperation of those with expertise in the field including "other agencies of Government that are aware of the role coal plays in our national energy policy, or of actual disposal and utilization practices." 126 Cong. Rec. at 3362. These included the Department of Energy, the Department of the Interior, the Federal Highway Administration, Department of Commerce, and the Department of Agriculture. *Id.* The input of these other federal agencies to assist EPA in reaching a final regulatory determination was a critical component of the Bevill Amendment; it was important to Congress that the final determination reflect "a cooperative, informed effort" that met the nation's energy goals. *Id.*

Also of critical importance to Congress was the Bevill Amendment's decision-making process; these provisions reflect congressional intent that EPA reach all final decisions in a transparent manner that provides the public and Congress with an opportunity to determine whether any decision to regulate CCRs under RCRA Subtitle C was appropriate. Representative Bevill emphasized this point by stressing that, after EPA issued its statutorily-required report to Congress containing its recommendation

whether CCRs warranted regulation under RCRA Subtitle C, the Agency would “be required to obtain public views on [the report] and to make known whether as a result of this process, EPA believes any regulation of these materials is necessary.” *Id.*

Congress viewed this requirement as “especially important in view of our national commitment to develop a coherent and consistent policy toward the use of our coal and other energy resources.” *Id.* The public notice and comment requirement was also intended to “allow interested parties to evaluate the basis of the Agency’s decision, and to address the question of what degree of regulation, if any, is appropriate” for CCRs. *Id.*

Taking into consideration these congressional concerns, EPA completed its statutory obligation under the Bevill Amendment in May 2000, when it issued its final Regulatory Determination concluding that CCRs do not warrant regulation under Subtitle C of RCRA.

II. IMPLEMENTATION OF THE BEVILL AMENDMENT

Shortly after enactment of the Bevill Amendment in 1980, EPA began the required report to Congress (“Report to Congress”) but soon realized that the scope of such a report would be so broad that the Agency would have difficulty completing the work by the statutory deadline of October 1982. As a result, EPA divided the statutorily-mandated report to Congress into two phases. The initial phase addressed the four large-volume CCRs generated by coal-fired electric utilities, including: fly ash, bottom ash, boiler slag, and flue gas emission control waste. See 1988 Report to Congress at ES-2; 58 Fed. Reg. 42466, 42467 (Aug. 9, 1993).

The second phase covered all other combustion wastes generated by utilities and non-utilities, including the above-identified CCRs when co-managed with certain low volume wastes. *See id.*; *see also* 1999 Report to Congress at ES1-2; 65 Fed. Reg. 32214, 32218 (May 22, 2000).

A. EPA's March 1988 Report To Congress On CCRs

Pursuant to this two-phase approach, EPA published its first Report to Congress on March 8, 1988, concluding that the large-volume coal combustion waste streams listed above generally do not exhibit hazardous characteristics under current RCRA regulations, and therefore “EPA does not intend to regulate under [RCRA] Subtitle C fly ash, bottom ash, boiler slag, and flue gas desulfurization wastes. 1988 Report to Congress at ES-6. The 1988 Report to Congress also encouraged the use of coal combustion wastes to the extent such use can be done in an environmentally safe manner. *Id.* at ES-8.

B. EPA's 1993 Final Regulatory Determination For CCRs

EPA published its first final Regulatory Determination for CCRs on August 9, 1993.⁷ This final Regulatory Determination set forth EPA's conclusion that RCRA Subtitle C regulation of the four large-volume CCRs – fly ash, bottom ash, boiler slag, and flue gas desulfurization waste – was not warranted. 58 Fed. Reg. 42466 (Aug. 9, 1993). Specifically, the Agency concluded that:

⁷ In September 1991, an Oregon-based citizens group, Citizens Interested in Bull Run, Inc., filed a RCRA citizen suit against EPA for the Agency's alleged failure to meet certain statutory deadlines, including the Bevill Amendment's October 1982 statutory deadline for issuing a final regulatory determination for CCRs. *Gearhart v. Reilly*, No. 91-2345 (D.D.C. 1991) (“*Bull Run*”). USWAG intervened in the litigation, and EPA entered into a settlement agreement in which it agreed to issue the final regulatory determination for the electric utility-CCRs addressed in the 1988 Report to Congress by August 2, 1993, while deferring a supplemental report to Congress and regulatory determination on all other fossil fuel combustion wastes, including CCRs managed with certain low volume wastes, until April 1, 1998.

Regulation under Subtitle C of RCRA is inappropriate for the four waste streams that were studied [fly ash, bottom ash, boiler slag, and flue gas emission control waste] because of the limited risks posed by them and the existence of generally adequate State and Federal regulatory programs. The Agency also believes that the potential for damage from these wastes is most often determined by site- or region-specific factors and that the current State approach to regulation is thus appropriate. Therefore, the Agency will continue to exempt these wastes from regulation as hazardous wastes under RCRA Subtitle C EPA will consider these wastes during the Agency's ongoing assessment of industrial non-hazardous wastes under RCRA Subtitle D.

Id. at 42466.

EPA's conclusion not to regulate CCRs under Subtitle C was also based on the inflexible Subtitle C hazardous waste framework, which the Agency found inappropriate for CCRs. The Agency stated that "it is unlikely that Subtitle C would effectively address the problems associated with the four large-volume fossil-fuel combustion wastes [CCRs] without imposing unnecessary costs." *Id.* at 42477. EPA reached this conclusion after evaluating a number of factors, including "the impacts to the industry that regulation under Subtitle C would create" *Id.* at 42471. Not surprisingly, EPA found that the rigid nature of the Subtitle C regulatory system would result in excess costs and unnecessary regulation as applied to CCR management units:

A Subtitle C system would require coal combustion units to obtain a [RCRA] Subtitle C permit (which would unnecessarily duplicate existing State requirements) and would establish a series of waste unit design and operating requirements for these wastes, which would generally be in excess of requirements to protect human health and the environment. For example, if such wastes were placed in the Subtitle C universe, all ash disposal units would be required to meet specific liner and monitoring requirements. Since [CCR] sites vary widely in terms of topographical, geological, climatological, and hydrological characteristics (e.g., depth to groundwater, annual rainfall, distance to drinking water sources, soil type) and the wastes' potential to leach into the groundwater and travel to exposure points is linked to such factors, it is more appropriate for

individual States to have the flexibility necessary to tailor specific controls to the site or region specific risks posed by these wastes.

Id. at 42477.

C. EPA's March 1999 Report To Congress On CCRs

Following issuance of the 1993 Regulatory Determination, EPA began work on its second report to Congress on the remaining fossil fuel combustion wastes, including CCRs managed with certain low-volume wastes. EPA issued its second Report to Congress in March 1999, reiterating that “that [RCRA] Subtitle C is inappropriate to address any problems associated with disposal of these wastes and that the continued use of site and region specific approaches by the states is more appropriate for addressing the limited human health and environmental risks that may be associated with disposal of these wastes.” 1999 Report to Congress Vol. 1 at 3-5. EPA also reiterated its belief that regulating CCRs under RCRA’s hazardous waste program would unnecessarily duplicate existing state requirements, and would establish a series of waste unit design and operating requirements for these wastes that would most often exceed the requirements necessary to protect human health and the environment. *Id.*

D. EPA's 2000 Final Regulatory Determination For CCRs

EPA completed the statutorily-required Bevill Amendment process in May 2000 when it issued its final Regulatory Determination for all remaining fossil fuel combustion wastes, including CCRs managed with certain low-volume wastes. 65 Fed. Reg. 32214 (May 22, 2000). Based on the record evidence, hearings, and public comment on the 1999 Report to Congress, EPA once again concluded that CCRs and other fossil fuel combustion wastes did not warrant regulation under RCRA’s Subtitle C hazardous waste program. EPA concluded instead that the development of national non-

hazardous solid waste regulations under RCRA Subtitle D is appropriate when CCRs are disposed of in landfills or surface impoundments. *Id.*

In addition to the fact that CCRs rarely exhibit a hazardous waste characteristic (*id.* at 32222), EPA explained that its final determination was based on the following factors: improving trends in present CCR disposal and utilization practices per the Bevill study factor in section 8002(n)(2); the current and potential utilization of CCRs (*i.e.*, beneficial use) per the Bevill study factor in section 8002(n)(8); and Congress's admonition in the Bevill Amendment against duplication of efforts by other federal and state agencies. *Id.* at 32215. EPA pointed to the record evidence, as set forth in the 1999 Report to Congress, that the utility industry had made significant improvements in its waste management practices and to similar record evidence showing that "[CCR regulatory] programs have, in fact, substantially improved over the last 15 years or so. *Id.* at 32222, 32228-29.

In fact, EPA found that the ability for most states to impose specific regulatory controls for coal combustion wastes has increased almost three-fold over the past 15 years. *Id.* at 32230. EPA concluded that with the exception of relatively few states, the regulatory infrastructure is generally in place at the state level to ensure adequate management of these wastes. *Id.* at 32217 (as discussed below, a DOE/EPA Report shows that state CCR regulatory programs have continued to improve since EPA's 2000 final Regulatory Determination). Thus, EPA concluded that "[w]e believe that subtitle D regulations are the most appropriate mechanism for ensuring that these wastes disposed in landfills and surface impoundments are managed safely." *Id.* at 32221.

Given state law, and the evidence that CCR controls were improving, EPA was mindful of Congress's directive in section 8002(n) that the Agency, in reaching a final determination, consider [the] action of state and other federal agencies with a view to avoiding duplication of effort. *Id.* at 32217. Consistent with this statutory dictate, EPA concluded that Subtitle D controls will provide sufficient clarity and incentive for states to close the remaining gaps in coverage, and for facilities to ensure that their wastes are managed properly. *Id.* at 32217.

Also critical to EPA's final determination that CCRs do not warrant regulation under Subtitle C was the Beville Amendment's direction in RCRA section 8002(n) that any final decision take into account the current and potential utilization of such materials. In particular, EPA saw a potential downside to pursuing a Subtitle C approach, citing the concerns of commenters that subjecting any coal combustion wastes to a Subtitle C regime would place a significant stigma on these wastes, notably that it would adversely impact beneficial reuse. *Id.* at 32217. EPA acknowledged the possibility that the [Subtitle C] approach could have unintended consequences, and that it was particularly concerned about any adverse effect on the beneficial re-use market for these wastes. *Id.* Thus, while normally concerns about stigma are not a deciding factor in EPA's decisions under RCRA, EPA concluded that, given its conclusion that "the subtitle D approach here should be fully effective in protecting human health and the environment, and given the large and salutary role that beneficial reuse plays for

this waste, concern over stigma is a factor supporting our decision today that subtitle C regulation is unwarranted in light of our decision to pursue a subtitle D approach.” *Id.*⁸

E. Joint DOE/EPA Report On State CCR Programs

After EPA issued its final 2000 Regulatory Determination, the Agency continued to evaluate options for implementing Subtitle D non-hazardous waste regulations for CCRs. As part of this process, in 2005 and 2006, EPA and the U.S. Department of Energy (DOE) jointly conducted a study of current and recent (1) management practices for CCR disposal by industry, (2) state regulations for CCR management, and (3) implementation of state requirements by state authorities. This study examined landfills and surface impoundments that were permitted, built, or laterally expanded between January 1, 1994 and December 31, 2004 to determine what changes, if any, in CCR disposal management practices and state regulatory controls had occurred since the 1994 close of the administrative record for the Bevill Regulatory Determination and EPA’s 1999 Report to Congress.

In a report titled “Coal Combustion Waste Management at Landfills and Surface Impoundments, 1994-2004” (“DOE/EPA Report”), DOE and EPA found that, “[b]etween 1994 and 2004, the amount and quality of environmental controls used at CCW

⁸ It is also worth noting that EPA considered, and ultimately rejected, a so-called Subtitle C “contingent management” option for CCRs. This option was similar to that proposed for cement kiln dust, and would have involved establishing federal Subtitle D non-hazardous waste rules for CCR disposal facilities. CCRs managed in accordance with the applicable Subtitle D standards would remain exempt from Subtitle C hazardous waste controls. *Id.* at 32232. However, those facilities that committed “egregious or repeated violations of” the applicable Subtitle D CCR management standards would have been “moved into the subtitle C program” and the CCRs at such facilities would have been subject to tailored Subtitle C hazardous waste controls. *Id.* Even though the contingent management Subtitle C option evaluated and rejected by EPA in 2000 was less sweeping in scope than the current Subtitle C option, EPA’s concern with the adverse stigmatizing effects of this more limited option on the beneficial use of CCRs were significant enough to influence EPA’s determination that the Subtitle C contingent management option was not warranted for CCRs.

management units appear to have increased.” DOE/EPA Report at S5-S7. The DOE/EPA Report cited improvements in the management of CCRs in new or expanded landfills and surface impoundments, including the use of liners and the monitoring of groundwater. *Id.*

EPA and DOE also examined whether state CCR regulatory controls had similarly improved and found that: “[i]n eight areas of regulatory control reviewed for this report, more CCWs destined for landfills in the States reviewed had tightened regulatory controls than had relaxed controls between the times data were collected for the 1988 [Report to Congress] and for this report.” *Id.* at S7. Consistent with this continuing improvement in the administration of state CCR controls, EPA and DOE also found that the grants of variances from regulatory controls by state regulators had sound scientific support. *Id.* at S7-S11.

Based on the above, DOE/EPA concluded that “[t]he data and analyses documented in this report provide new information that appears to show improved management of CCWs in both landfills and surface impoundments.” *Id.* at S-11. The findings of the DOE/EPA Report are significant because they provide updated information supporting the conclusions in the final 2000 Regulatory Determination that Subtitle C regulation of CCRs is not warranted due, in part, to the significant and continuing improvements in CCR waste management practices and corresponding improvements in state CCR regulatory programs. See 65 Fed. Reg. at 32222. Since completion of the DOE/EPA Report in 2006, several states have proposed and/or implemented further enhancements of their CCR controls.

F. Notice Of Data Availability

As part of the process for following-up on its 2000 Regulatory Determination to develop Subtitle D non-hazardous waste regulations for CCRs, EPA issued a Notice of Data Availability (“NODA”) in August 2007 announcing the availability of new information on the management of CCRs in landfills and surface impoundments. EPA sought comment on this new information to better assess “how, if at all, this additional information should affect the Agency’s decisions as it continues to follow-up on its Regulatory Determination for [CCRs] disposed of in landfills and surface impoundments.” 72 Fed. Reg. 49714 (Aug. 29, 2007). The new information included (1) the joint DOE/EPA study referenced above providing an update on the status of state CCR disposal regulations, and (2) a draft risk assessment conducted by EPA on the management of CCRs in landfills and EPA’s assessment of CCR disposal units that it had identified as “damage cases.” *Id.* EPA also sought comment on a rulemaking petition filed by citizens’ groups, as well as approaches suggested by the electric utility industry, including USWAG, regarding the management of CCRs. EPA stated that it would consider the new information and the associated comments, as well as the results of the peer review of the draft risk assessment, “as it continues to follow-up on its Regulatory Determination for [CCRs] disposed of in landfills and surface impoundments.” *Id.*

III. EPA MAY NOT REVERSE ITS FINAL REGULATORY DETERMINATIONS THAT CCRS DO NOT WARRANT REGULATION UNDER RCRA SUBTITLE C

The fundamental flaw in the proposed Subtitle C option is that it is premised on the notion that EPA is at liberty to reverse its final Regulatory Determinations that CCRs do not warrant regulation under Subtitle C of RCRA. Because the statute does not

authorize EPA to reverse these final Regulatory Determinations, EPA may not adopt the Subtitle C hazardous waste option for CCRs. Even assuming for purposes of argument that the statute did authorize such reversal, EPA's proposal to regulate CCRs under Subtitle C does not comport with the Bevill Amendment's statutorily-prescribed decision-making process.

While EPA's current policy goals may favor the Subtitle C option over the Subtitle D option, policies cannot trump the law. The United States Court of Appeals for the District of Columbia Circuit cautioned against precisely such precipitous agency action by new administrations when, in the pursuit of political and policy agendas, agencies stray beyond the plain language of their authorizing statutes:

We recognize that a new administration may try to effectuate new philosophies that have been implicitly endorsed by the democratic process. Nonetheless, it is axiomatic that the leaders of every administration are required to adhere to the dictates of statutes that are also products of democratic decision-making. Unless officials of the Executive Branch can convince Congress to change the statutes they find objectionable, their duty is to implement the statutory mandates in a rational manner.

Int'l Ladies' Garment Workers' Union v. Donovan, 722 F.2d 795, 827 (D.C. Cir 1983).

The D.C. Circuit's caution rings true in this case.⁹ While Administration and EPA

⁹ The same caution was echoed by in a recent speech before the Environmental Law Institute by Judge Tatel of the D.C. Circuit:

[I]t's at times like these, when a new administration is determined to change environmental policy, that our commitment to the fundamental principles of administrative law is really tested... In both Republican and Democratic administrations, I have too often seen agencies failing to display the kind of careful and lawyerly attention one would expect from those required to obey federal statutes and to follow federal statutes and to follow principles of administrative law. *In such cases, it looks to all the world that agencies choose their policy first and then later seek to defend its legality.* This gets it backwards. . . . It's backwards because whether or not agencies value neutral principles of administrative law, courts do, and they will strike down agency action that violates those principles – whatever the president's party, however popular the administration, and no matter how advisable the initiative.

(continued on next page)

policies may have changed over the last two years, the law governing the decision-making process by which EPA may choose to regulate CCRs under RCRA has not.

A. EPA Completed The Bevill Regulatory Process For CCRs In 2000 And The Statute Does Not Authorize EPA To Reverse That Decision

EPA has completed the Bevill process pursuant to a judicially-imposed deadline and determined, in accordance with the congressionally-mandated decision-making process, that CCRs do *not* warrant regulation under Subtitle C. The statutory decision-making process is complete and RCRA does not authorize EPA to decide to take a second bite at the apple and reverse its final CCR Regulatory Determinations in a manner of its own choosing.

Congress established a detailed process by which EPA could determine whether and how to regulate CCRs under RCRA Subtitle C. EPA has completed that statutory process, determining that CCRs do not warrant regulation under RCRA Subtitle C, and concluding instead that CCRs warrant regulation under RCRA's Subtitle D non-hazardous waste program. The plain language of the statute does not contemplate, let alone authorize, EPA undertaking another round of the Bevill decision-making for CCRs. If it did, the statutory process and its associated deadlines for reaching a final regulatory determination would have no meaning and EPA could continually change its mind in an abbreviated fashion, as illustrated by the proposed Subtitle C option.

EPA readily concedes that the Bevill Amendment does not include a process for Agency reversal of the CCR final Regulatory Determinations. In response to an inquiry

"The Administrative Process and the Rule of Environmental Law"; the Honorable David S. Tatel, at an Environmental Law Institute symposium entitled "An Agenda for the New EPA" (Oct. 6, 2009), (emphasis added).

from Representative Markey following the Kingston ash release regarding whether and how EPA could reverse its final CCR Regulatory Determinations for CCRs, EPA's then-Acting Associate Administrator readily acknowledged that "RCRA does not specifically spell out the process by which we [would] revise the Regulatory Determination." See Letter from Joyce K. Frank, EPA Acting Associate Administrator, to Rep. Markey, Chair, House Committee on Energy and Commerce, at 3 (Jan. 30, 2009) ("Frank Letter") (attached as Appendix 4). As the D.C. Circuit has held, Congress' failure to grant an agency a given power is not an ambiguity as to whether that power has, in fact, been granted. On the contrary, and as this Court persistently has recognized, *a statutory silence on the granting of a power is a denial of that power to the agency. American Bus. Ass'n v. Slater*, 231 F.3d 1, 8 (D.C. Cir. 2000) (Sentelle, J., *concurring*) (emphasis added). Here, even EPA acknowledges that the statute does not speak to whether and how EPA can revise its final CCR Regulatory Determinations. The Agency nonetheless assumes that it possesses such power. It does not.

It is a fundamental principle of administrative law that an agency's authority to act must come directly from Congress. Absent such authority, an agency may not act. See *U.S. Telecom Ass'n v. FCC*, 359 F.3d 554, 566 (D.C. Cir. 2004) ([S]tatutory silence simply leaves th[e] lack of authority untouched. In other words, the failure of Congress to use Thou Shalt Not language doesn't create a statutory ambiguity of the sort that triggers *Chevron* deference.); *Ethyl Corp. v. EPA*, 51 F.3d 1053, 1060 (D.C. Cir. 1995) ("We refuse ... to presume a delegation of power merely because Congress has not expressly withheld such power."); *Ry. Labor Executives' Ass'n v. Nat'l Mediation Bd.*, 29 F.3d 655, 671 (D.C. Cir. 1994) (*en banc*) ("Were courts to presume a delegation of

power absent an express withholding of such power, agencies would enjoy virtually limitless hegemony, a result plainly out of keeping with *Chevron* and quite likely with the Constitution as well.”) (emphasis in original).¹⁰

The Bevill Amendment is completely silent on EPA’s authority to redo or reverse a final regulatory determination that the Agency has already properly reached pursuant to the Amendment’s statutorily prescribed procedures and deadlines.¹¹ If Congress had wanted to give EPA this authority, it would have done so explicitly.¹² As the above federal decisions make clear, such silence means that EPA does not have the authority to undertake, through a process and timing of its own choosing, a second regulatory determination.

The plain language of the statute provides for only a one-time decision, directing EPA to determine, not later than six months after the statutorily-required report to Congress on CCRs, whether Subtitle C regulation for CCRs is warranted. See RCRA

¹⁰ See also *Adams Fruit Co. v. Barrett*, 494 U.S. 638, 649 (1990) (“A ‘gap’ is not created in a statutory scheme merely because a statute does not restate the truism that States may not preempt federal law.”); *Aid Ass’n for Lutherans v. USPS*, 321 F.3d 1166, 1174-75 (D.C. Cir. 2003) (“[T]he Postal Service’s position seems to be that the disputed regulations are permissible because the statute does not expressly foreclose the construction advanced by the agency. We reject this position as entirely untenable under well-established case law.”).

¹¹ Though, as noted above, EPA missed the statutory deadlines set forth in the statute for reaching a final regulatory determination for CCRs; a citizen suit over this missed statutory deadline resulted in EPA being subject to court-ordered deadlines for issuing both the 1993 and 2000 CCR final Regulatory Determinations.

¹² Indeed, when Congress wishes to give an agency the authority to revisit prior statutory compelled actions, it knows how to do so. See e.g., Clean Air Act § 112(c)(1), 42 U.S.C. § 7412(c)(1) (1990) (“CAA”) (directing EPA to re-evaluate no less often than every eight years and revise, as appropriate, based on public comment or new information, the list of categories of major sources and area sources listed by EPA under CAA Section 112(c)(3)); see also CAA § 109(d), 42 U.S.C. § 7409(d) (directing EPA to review at five year intervals the criteria for pollutants published under CAA Section 7408 and the national ambient air quality standards promulgated under Section 7409 and make such revisions and promulgate new standards as may be appropriate). As explained above, Congress has not provided EPA with similar authority to re-evaluate and revise its final CCR Regulatory Determinations.

§ 3001(b)(3)(C). That determination, which was to be based on information developed or accumulated pursuant to such study, public hearings, and comment, was to be published in the Federal Register and accompanied by an explanation and justification of the reasons for it. *Id.* EPA completed this statutory process for CCRs over ten years ago, concluding for a multitude of reasons that CCRs do not warrant regulation under RCRA Subtitle C. The statute simply does not empower EPA to revisit its final decision and render a new determination.

If EPA wishes once more to undertake the statutorily-prescribed process for reaching a final regulatory determination for CCRs, it must obtain this authority from Congress. If Congress were to grant EPA such authority, it would be reasonable to expect that Congress would establish new statutory deadlines and perhaps new and different statutory study factors for EPA to evaluate in undertaking an additional regulatory determination for CCRs. Absent such authority from Congress, the Agency is not empowered to alter its final 1993 and 2000 Regulatory Determinations for CCRs. Therefore, EPA cannot pursue the Subtitle C option.¹³

B. Assuming, For Purposes Of Argument, That EPA Is Authorized To Make A Second Regulatory Determination, EPA Has Failed To Adhere To The Bevill Amendment's Prescribed Process

Even assuming that RCRA could be read as authorizing EPA to reverse its final Regulatory Determination for CCRs, the Agency would have to adhere to the statutorily-prescribed procedures that Congress demanded EPA follow in determining whether and

¹³ While “[a]n agency can normally change its position and reverse a decision ... Congress, however, undoubtedly can limit an agency’s discretion to reverse itself[.]” *New Jersey v. EPA*, 517 F.3d 574, 582-83 (D.C. Cir. 2008). Here, Congress has limited EPA’s ability to reverse its final Bevill Regulatory Determination by specifying prescribed procedures and timeframes for completing the determination and not authorizing the Agency to revisit that final determination and issuing a new determination.

how to regulate CCRs. EPA itself has recognized this; in responding to Representative Markey's inquiry to EPA about the steps it would need to take to regulate CCRs under RCRA Subtitle C, the Agency stated that it would be "advisable [for EPA] to go through the same process we followed" in issuing the 1993 and 2000 final Regulatory Determinations.¹⁴ Despite what it told Congress, EPA has inexplicably strayed beyond the plain language of the statute by proposing to reverse its final Regulatory Determinations for CCRs without following the statutorily-required process it followed for issuing those Determinations in the first instance.

As explained above, the Bevill Amendment requires that, before making any final regulatory determination for CCRs, EPA first must study CCRs pursuant to the eight statutory study factors and then "publish a report on such study, which shall include appropriate findings." RCRA § 8002(n). The statute then directs that "such study and findings [*i.e.*, the Report to Congress] shall be submitted to the Committee on Environment and Public Works of the United States Senate and the Committee on Energy and Commerce of the United States House of Representatives." *Id.* Following submission of the report to the appropriate congressional committees, the statute directs EPA to conduct public hearings and provide an opportunity for comment on the Report to Congress, and either determine to promulgate regulations regulating CCRs under RCRA's Subtitle C regulations or determine that such regulations are unwarranted. RCRA § 3001(b)(3)(C). Following this process, EPA was directed to publish its regulatory determination, "which shall be based on information developed or

¹⁴ See Frank Letter, attached as Appendix 4.

accumulated pursuant to such study, public hearings, and comment, in the Federal Register accompanied by an explanation and justification of the reasons for it.” *Id.*

Despite these unambiguous statutory conditions for determining whether and how to regulate CCRs under RCRA, EPA has not complied with these conditions in proposing to reverse and reissue its final Regulatory Determination for CCRs. Among other things, EPA has not prepared a Report to Congress setting forth its rationale for proposing to reverse course and issuing a new regulatory determination declaring that CCRs now warrant Subtitle C regulation. This failure violates the express terms of the statute that any final regulatory determination be *based* on public hearings and comments *on* the Report to Congress. This requirement is not satisfied by the truncated and abbreviated review of the Bevill Amendment’s statutory study factors presented by EPA in the instant proposal.

The language of the statute could not be clearer on this point: following submission of its Report to Congress, and after public hearings, and comment on the report, EPA was to publish its regulatory determination “which shall be based on information developed or accumulated pursuant to such study [*i.e.*, EPA’s Report to Congress], public hearings, and comment, in the Federal Register accompanied by an explanation and justification of the reasons for it.” RCRA § 3001(b)(3)(C). The D.C. Circuit has confirmed that the statute unambiguously directs that the final regulatory determination is to be based on the Report to Congress. *EDF v. EPA*, 852 F.2d at 1314 (“The statute clearly states that the agency is to base its regulatory determination on the

information gathered for the § 8002(p) study”).¹⁵ As the Supreme Court stated in *Nat’l R.R. Passenger Corp. v. Nat’l Ass’n of R.R. Passengers (Amtrak)*, “[w]hen a statute limits a thing to be done in a particular mode, it includes the negative of any other mode.” 414 U.S. 453, 458 (1974).

Thus, even assuming EPA was authorized to render a new and revised regulatory determination, such determination must be preceded and predicated on a new Report to Congress. Even EPA has recognized that any final regulatory determination must be predicated on the Report to Congress. See 75 Fed. Reg. at 35151 (explaining that EPA addressed the Bevill statutory study factors for CCRs in the 1988 and 1999 Reports to Congress and “[t]he findings of these two Reports to Congress were the basis for our decisions in the August 1993 and May 2000 Regulatory Determinations to maintain the Bevill exemption for CCRs.”); see *also* 65 Fed. Reg. at 32219 (detailing how EPA’s 2000 final Regulatory Determination was based on public comments on the Agency’s 1999 Report to Congress).

Representative Bevill underscored the point that the public hearing and comment process was intended to directly respond to EPA’s Report to Congress and that any final regulatory determination was to be based on the information resulting from that process: “Finally, let me direct the House’s attention to the fact that *after EPA concludes these studies, it will be required to obtain public views on them* and to make

¹⁵ The Section 8002(p) study refers to the EPA’s Report to Congress on certain mining wastes that also were subject to the Bevill Amendment. Importantly though, the D.C. Circuit’s decision is equally applicable to CCRs, as the statutory process for EPA issuing a final Regulatory Determination for mining wastes and CCRs is identical. See RCRA § 3001(b)(3)(C) (referencing both the CCR § 8002(n) study and mining waste § 8002(p) study).

known whether, as a result of this process, EPA believes any regulation of these materials is necessary.” 126 Cong. Rec. at 3362 (emphasis added).

Here, of course, there is no Report to Congress recommending that CCRs be regulated under RCRA Subtitle C. This is especially egregious given that the Reports to Congress that EPA *did* provide to Congress made clear that CCRs do *not* warrant regulation under RCRA’s Subtitle C hazardous waste program and that, therefore, EPA would not pursue this regulatory path. Now, more than ten years later, EPA is proposing to reverse that decision and issue a new regulatory determination for CCRs without explaining its reasoning to Congress as required by the statute, and without allowing for public comment and hearings on the Report to Congress.

EPA may believe that its abbreviated review of the Bevill statutory factors in the proposed rule is the functional equivalent to preparing and submitting a Report to Congress, but the Agency’s view is legally flawed for at least three reasons. First, as explained above, such a position would be at direct odds with the plain language of the statute, which unambiguously commands that any final regulatory determination be based on the Report to Congress. The statute simply does not authorize the type of fast-track decision-making process that EPA is attempting to employ under the Subtitle C option.

Second, the statute does not authorize the Agency to collapse the Bevill Amendment’s statutory decision-making process into the more abbreviated exercise, which the Agency is undertaking here, by combining a proposed reversal of its earlier final Regulatory Determinations with the proposed development of Subtitle C regulations for CCRs. As EPA candidly admits, the end result would be the issuance of

a new regulatory determination calling for Subtitle C regulation along with the final Subtitle C regulations. This ignores the plain language and purpose of the Bevill Amendment which requires the regulatory determination to precede the promulgation of any subsequent regulations.

Looking again at the statutory text, RCRA Section 3001(b)(3)(C) provides that after issuing and obtaining public input on its Report to Congress, EPA was to “either determine to promulgate regulations” for CCRs under RCRA Subtitle C “or determine that such regulations are unwarranted.” The Agency was then directed to publish its final determination in the Federal Register. *Id.* As the D.C. Circuit has explained, the text of the Bevill Amendment juxtaposes the terms ‘determination’ and ‘regulation,’ . . . signifying that, consistent with the principle that effect must be given to each word of a statute, the two terms were intended to have distinct meanings.” *Am. Portland Cement Alliance v. EPA*, 101 F.3d 772, 775 (D.C. Cir. 1996) (“*American Portland Cement*”). Given this distinction, the sequence of actions directed by Section 3001(b)(3)(C) makes clear that the regulatory determination – whether or not to regulate CCRs under Subtitle C – was to be a separate and distinct step from the subsequent promulgation of any such regulations.

This statutory step-wise process is consistent with the Bevill Amendment’s legislative history that EPA employ a more deliberative, sequential procedure than that traditionally applied to other wastes under RCRA in determining whether and how EPA should regulate Bevill wastes in the first instance. See e.g., *EDF v. EPA*, 852 F.2d at 1314 (“Indeed, our reading of the statute and the legislative history strongly suggests that Congress designed the Bevill Amendment to break with the previous approach to

regulation of hazardous industrial wastes.”). Under the Bevill Amendment, only *after* the regulatory determination has been issued does the statute contemplate EPA undertaking any appropriate rulemakings based on the determination. As the court explained in *American Portland Cement*:

Section 3001(b)(3)(C) provides the product of the notice and comment process [on the Report to Congress] will be a determination of whether regulation is warranted in the future, not regulations themselves. While Congress established a timetable for EPA’s Regulatory Determination, it set no deadline for the promulgation of regulations that EPA might find necessary under § 3001(b)(3)(C). Accordingly, the notice and comment proceedings [on the Report to Congress] were aimed at informing EPA’s decision at an intermediate rather than ultimate stage in the rulemaking process.

101 F.3d at 777.

Therefore, the accelerated decision-making process contemplated in EPA’s proposed Subtitle C option – involving the simultaneous reversal and reissuance of the final Regulatory Determination for CCRs, coupled with the issuance of Subtitle C hazardous waste regulations for CCRs – is flatly inconsistent with the statute. Indeed, the public notice and comment process on the Report to Congress is focused only on the appropriateness of EPA’s evaluation of the Bevill Amendment’s eight statutory study factors and EPA’s recommendation in that Report on whether CCRs warrant regulation under Subtitle C. The notice and comment process on any subsequent rulemaking implementing a final regulatory determination necessarily involves a wholly separate set of legal and factual issues. Therefore, as the D.C. Circuit recognized, the statute does not authorize EPA merging these two distinct agency actions into a single step. By attempting to merge the two separate agency actions together in the instant rulemaking, EPA has not clearly delineated its rationale for proposing to reverse and issue a new

regulatory determination from the rationale underlying the proposed Subtitle C regulations. The result is a confusing and disjointed proposal that fails to comply with the sequential decision-making and implementation process required by the statute. This is why Congress established a formalized step-wise process for issuing the final regulatory determination and any subsequent regulations.

Finally, EPA's failure to issue a new Report to Congress setting forth its reasoning on why it now believes CCRs warrant hazardous waste regulation – after twice reaching just the opposite conclusion – deprives Congress of its statutorily-prescribed right to be fully informed of any such recommendation. Congress required this so that it could evaluate and respond, as appropriate, to the Agency's proposed course of action *before* EPA makes a final Regulatory Determination and develops federal regulations. This is not a mere procedural formality. As Representative Bevill emphasized when introducing his amendment, it was especially critical that EPA *not* make the final regulatory determination in isolation, but that Congress and relevant federal agencies be involved in the decision-making process. 126 Cong. Rec. at 3362. The multi-step decision-making process set forth in the Bevill Amendment, including the submission of a Report to Congress, was specifically designed to enable Congress and other federal agencies to “evaluate the basis of the Agency's decision, and to address the question of what degree of regulation, *if any*, is appropriate [emphasis added]” and ultimately to ensure that the final regulatory determination was consistent with the nation's “commitment to develop a coherent and consistent policy toward the use of our coal and other energy resources.” *Id.* This multi-stake holder process reflects Congress' intent that it, along with other informed federal agencies and not EPA in

isolation, are responsible for striking the delicate balance between the nation's environmental and energy goals.

Indeed, a key purpose of Congress requiring EPA to submit its Report to Congress was to ensure that any final regulatory determination appropriately reflect Congress' intentions that any regulation of CCRs *not* discourage the development of coal as one of the national primary sources of energy. This is precisely the type of oversight role that Congress reserves for itself when requiring agencies to submit reports to Congress prior to taking regulatory action. *See Natural Res. Def. Council, Inc. v. Hodel*, 865 F.2d 288, 319 (D.C. Cir. 1988) ("*NRDC v. Hodel*") (in explaining Congress' ability to respond to an agency report that is required to be submitted to Congress, the Court observed that "[i]t scarcely bears more than passing mention that the most representative branch is not powerless to vindicate its interests or ensure Executive fidelity to Legislative directives.").¹⁶ In this case, EPA's failure to prepare a Report to Congress regarding its proposal to regulate CCRs under RCRA's hazardous waste program has eviscerated the statutory oversight role provided to Congress in the Bevill Amendment's decision-making process for CCRs.

For these reasons, even assuming EPA had the authority to revisit and reverse its previous, final Regulatory Determination for CCRs, the Agency's proposed Subtitle C option does not comport with the statutory process that Congress imposed on EPA in

¹⁶ See also generally James R. Bowers, "Regulating the Regulators" (1990); Joel D. Aberbach, "Keeping a Watchful Eye: The Politics of Congressional Oversight 132" (1990). For example, Congress can control agency action by writing more detailed legislation, by requiring staff investigations or field studies, or through agency reports required by Congress. See also *United States v. S. Ind. Gas & Elec. Co.*, 2002 U.S. Dist. LEXIS 20936 at *14 (S.D. Ind. Oct. 24, 2002) (noting that the purpose of Congress requesting an agency to report on a new rule was "was to provide a check on administrative agencies' power to set policies and essentially legislate without Congressional oversight.").

determining whether and how to regulate CCRs under RCRA Subtitle C. At a minimum, EPA must conduct thorough studies demonstrating a clear need for regulation; provide to Congress a report detailing its findings on those studies; conduct public hearings and solicit comments on the new Report to Congress; and finally base any final regulatory determination on the new Report to Congress. Congress did not painstakingly craft such mechanisms into the statute for its own amusement and EPA is not at liberty to ignore such clear congressional directions.

IV. THE PROPOSED SUBTITLE C OPTION IS INCONSISTENT WITH THE BEVILL AMENDMENT AND IS ARBITRARY AND CAPRICIOUS

Even assuming, for purposes of argument, that EPA was authorized to revisit its final Bevill Regulatory Determination for CCRs *and* that it followed the appropriate statutory procedures for issuing a new regulatory determination, the Subtitle C option would nonetheless be unlawful because it (1) is inconsistent with the Bevill Amendment's directive that any final determination not impair CCR beneficial use, (2) conflicts with Congress' directive that any regulatory program for CCRs not discourage the use of coal by imposing undue regulatory costs on the management of CCRs, and (3) disregards the nearly unanimous views of the federal and state agencies (with which the Bevill Amendment directs EPA to consult in reaching a final regulatory determination) that Subtitle C regulation is not warranted for CCRs. In addition, the Subtitle C option is arbitrary and capricious because EPA has not provided a reasoned explanation for reversing its previous conclusion that application of the inflexible Subtitle C regulatory program to CCRs will result in excessive and unnecessary regulation. These issues are discussed in detail below.

A. The Subtitle C Option Is Inconsistent With The Bevill Amendment Because It Would Adversely Impact CCR Beneficial Use And Is Based On The Arbitrary And Capricious Position That Subtitle C Regulation Of CCRs Will Increase Beneficial Use

EPA's theory that regulating CCRs under RCRA's Subtitle C regulations will actually *increase* CCR beneficial use is one of the most fallacious aspects of the CCR proposal. 75 Fed. Reg. at 35185-87. This position ignores (1) actual marketplace evidence, which already is showing declines in CCR beneficial use just from the threat of Subtitle C regulation, (2) EPA's prior positions, (3) the views of other federal agencies and state environmental protection agencies, (4) the views of standards setting organizations that have no economic, political or other vested interests in the outcome of this rulemaking, (5) the long-standing view of Congress, and (6) the position of electric utilities – the very entities that would introduce the CCRs into the beneficial use market in the first instance.

EPA identifies the array of valid concerns raised by industry, utilities, the states, standard setting organizations, and others that Subtitle C regulation will effectively cripple the CCR beneficial use market, but remarkably offers little if any response to these points. In fact, EPA expressly acknowledges that, if it pursues the Subtitle C option, some states, such as Florida, "would likely prohibit the beneficial use of CCRs." *Id.* at 35187. Instead of providing substantive responses to these concerns, EPA persists in its position that it understands the economic drivers in the CCR beneficial use market better than those actually engaged in the business. EPA argues that driving up the costs of CCR disposal as high as possible (as would happen under the Subtitle C option) would force more CCRs into the beneficial use market. *Id.* EPA's theory, however, is based on flawed examples, and ignores the first-hand knowledge of those

actually involved in the CCR beneficial use market who have consistently provided EPA with information and data demonstrating that any form of Subtitle C regulation will cripple the beneficial use of CCRs. EPA's theory also fails to consider whether the marketplace can in fact absorb the vastly increased volume of CCRs that it speculates will be beneficially used under the Subtitle C option.

Rather than substantiate its theory that CCR beneficial use will increase under Subtitle C, EPA places on those involved in CCR beneficial use the burden of providing "actual instances" of the adverse impact on beneficial use from a Subtitle C regulation that has yet to be promulgated. *Id.* at 35222-23. While it is impossible for anyone to prove the effects of regulations that have not yet been promulgated, ash marketers, utilities and others *have* presented EPA with real world data showing the adverse impacts on CCR beneficial use resulting from the mere threat of Subtitle C regulation. The only support EPA offers for its theory that CCR beneficial use will increase under Subtitle C are examples of certain materials for which EPA claims recycling has increased since becoming subject to hazardous waste regulation. *Id.* at 35186-87. Here too, however, even EPA admits that its examples involve materials that, unlike CCRs, "are not used in residential settings." *Id.* at 31586. Moreover, as discussed below, certain of the examples cited by EPA involve materials that are not actually regulated under RCRA Subtitle C. Another example involves used oil, which EPA specifically declined to list as a hazardous waste precisely because of its concerns that doing so would undermine the used oil recycling market.

EPA also argues that the stigma resulting from Subtitle C regulation will be "significantly reduced by listing CCRs as a 'special waste,'" (*Id.* at 35187) attempting to

deflect attention from the reality that these materials would be subject to hazardous waste regulation from their point of generation until their ultimate disposal. EPA's "special waste" label will do nothing to reduce the potential legal liabilities of using a material in a commercial or residential setting that has been determined by EPA to meet the hazardous waste listing criteria and subject to hazardous waste regulation when disposed of. RCRA makes clear that only materials that are "*hazardous waste listed or identified*" under Subtitle C are subject to the statute's hazardous waste controls. See, e.g., RCRA § 3004(a) (EPA is to establish regulations for "owners and operators of facilities for the treatment, storage, or disposal of *hazardous waste identified or listed under this subchapter*") and § 3005(a) (EPA is to require permits for "the treatment, storage, or disposal of *hazardous waste identified or listed under this subchapter*"). Put another way, only "hazardous wastes" – not "special wastes" – can be subject to RCRA's Subtitle C controls. There is no way around the "hazardous waste" label and the associated stigma that comes with this designation if EPA subjects CCRs to Subtitle C controls.

In evaluating the potential impacts of Subtitle C regulation on CCR beneficial use, it is important to note that the sponsors of the Bevill Amendment cautioned EPA against regulation of CCRs under Subtitle C for precisely the reasons being offered today by opponents of the Subtitle C option: subjecting CCRs to the stringent Subtitle C program is certain to have adverse impacts on the use of these materials. Representative Bevill was clear that one of the primary purposes of his Amendment was to reinforce the "national commitment to encourage reuse of such materials as fly ash." 126 Cong. Rec. at 3362. In support of this objective, Representative Findley cautioned

EPA that regulation of CCRs under RCRA Subtitle C would have an adverse impact on CCR beneficial use, warning that if the Agency were to regulate CCRs under RCRA's hazardous waste program, the "flourishing industry which recycles these byproducts would be gravely disrupted and possibly closed down." *Id.* at 3363. Representative Staggers was more direct, warning that regulating CCRs as hazardous waste – even with a "special waste" label – "would run counter to one of the principal designs of [RCRA] – conservation of valuable material." *Id.* at 3364-65. And, as the CCR beneficial use industry is arguing today, Representative Rahall recognized thirty years ago that the stringent regulation of CCRs would put these materials at a distinct disadvantage in the marketplace precisely because they must compete with a variety of other natural aggregates and materials. He stated: "[i]t is obvious that the imposition of any expensive regulatory requirements on these developing industries will have a disastrous impact on them." *Id.* at 3363.

Considering the above in addition to the record evidence already assembled in this rulemaking proceeding, it is clear that regulating CCRs under any Subtitle C hazardous waste regime, even with the "special waste" label, will have a significant adverse impact on CCR beneficial use. These issues are discussed further below.

1. The Record Makes Clear That Regulating CCRs Under RCRA Subtitle C Will Significantly Harm CCR Beneficial Use

- a. DOE Ash Barriers Report – Following enactment of the Bevill Amendment, Congress remained concerned with the adverse effects on CCR beneficial use resulting from the stigma of adverse regulatory labels. Because of this continuing concern, in 1992, Congress directed the U.S. Department of Energy to "conduct a detailed and

comprehensive study on the institutional, legal, and regulatory barriers to increased utilization of coal combustion byproducts by potential governmental and commercial users.” Energy Policy Act § 1334, 42 U.S.C. § 13364(b)(1). In response, the Secretary of Energy submitted a Report to Congress in July 1994 finding, among other things, that the “[d]esignation of coal byproducts as a solid waste, while fostering public misconception about the risk of these materials, stymies attempts to develop or expand markets for their use.” U.S. Dept. of Energy, Report to Congress, Barriers to the Increased Utilization of Coal Combustion/Desulfurization Byproducts by Governmental and Commercial Sectors at iv (1994) (“DOE Ash Barriers Report”). The DOE Ash Barriers Report also found that “State regulation of [beneficially used] fly ash as a solid waste “ was an institutional barrier to increased use of coal combustion byproducts (DOE Ash Barriers Report at 16), and concluded that “[d]esignation of coal byproducts as solid waste, even if used, creates attitudinal barriers in producers, end users, utilization technology developers, marketers, and regulators [and] . . . fosters misconceptions by the public.” *Id.* at 17. In addition to the “attitudinal barriers” from the solid waste label, DOE concluded that even designating CCRs that are disposed of as a *non-hazardous* solid waste raised legitimate barriers to beneficial use.

b. EPA’s 2000 Final Regulatory Determination – EPA itself concluded in its 2000 Regulatory Determination that the stigma from regulating CCRs under RCRA’s hazardous waste program could harm CCR beneficial use. Importantly, the Subtitle C option considered and rejected in 2000 was a “contingent Subtitle C” option, which meant that CCRs managed in accordance with Subtitle D-like standards would not be classified as a hazardous waste; only CCRs not properly managed under the Subtitle D

standards would have been regulated as listed hazardous wastes. 65 Fed. Reg. at 32216. EPA recognized that, even under that approach, the mere possibility of subjecting CCRs to hazardous waste regulation would have an adverse stigmatizing effect on CCR beneficial use. As EPA explained in rejecting the Subtitle C contingent management approach:

We also see a potential downside to pursuing a subtitle C approach. Section 8002(n)(8) [of RCRA] directs us to consider, among other factors, 'the current and potential utilization of such materials.' Industry commenters have indicated that they believe subjecting any coal combustion wastes to a subtitle C regime would place a significant stigma on these wastes, the most important effect being that it would adversely impact beneficial reuse. ... EPA believes the contingent management scheme we discussed should diminish any stigma that might be associated with the subtitle C link. *Nonetheless, we acknowledge the possibility that the approach could have unintended consequences. We would be particularly concerned about any adverse effect on the beneficial re-use market for these wastes ...*

EPA continued:

Normally, concerns about stigma are not a deciding factor in EPA's decisions under RCRA, given the central concern under the statute for protection of human health and the environment. However, given our conclusion that the subtitle D approach here should be fully effective in protecting human health and the environment, and given the large and salutary role that beneficial reuse plays for this waste, *concern over stigma is a factor supporting our decision today that subtitle C regulation is unwarranted in light of our decision to pursue a subtitle D approach.*

Id. at 32217 (emphasis added).

Given that EPA has expressly acknowledged that just the *possibility* of subjecting CCRs to Subtitle C regulation could adversely impact CCR beneficial use, it is even more astonishing that EPA now takes the position that the more draconian Subtitle C proposal under consideration here – which would automatically subject all CCRs destined for disposal to hazardous waste regulation – will have no stigmatic effect on

CCR beneficial use and will instead *promote* CCR beneficial use. EPA fails to provide any reasoned explanation for this about-face regarding its views on the adverse impact of Subtitle C regulations on CCR beneficial use. There is no reasoned explanation for this change of position in the rulemaking record.

c. CCR Beneficial Use Market – Since EPA initiated this rulemaking and advised that it was considering reversing its final Regulatory Determinations and regulating CCRs under RCRA Subtitle C, the Agency has received hundreds of letters and written testimony at public hearings and has heard congressional testimony from a wide-spectrum of third parties directly involved in the business of marketing and beneficially using CCRs. Their views reiterate what EPA itself acknowledged in 2000: just the threat of Subtitle C regulation for CCRs would adversely impact CCR beneficial use. USWAG cannot summarize all of the individual submissions in these comments, though we have included them as part of this submission for the record.¹⁷ It is useful, however, to reference key findings from just a few of these comments to underscore the overwhelming evidence that Subtitle C regulation of CCRs will adversely impact CCR beneficial use in this country.

Especially critical is the information provided to EPA showing actual evidence of adverse impacts on CCR beneficial use from even the *threat* of Subtitle C regulation. As detailed below, CCR beneficial use projects have been canceled as a result of the proposed Subtitle C option; this means that CCRs that previously would have been beneficially used are now being disposed of. This information responds to EPA's

¹⁷ See attached CD-ROM entitled "Public Comments and Testimony on EPA's Regulation of Coal Combustion Residuals," (Nov. 19, 2010).

request for data “supporting the claims that ‘stigma’ will drive people away from the use of valuable products [in this case CCRs], or that states will prohibit the reuse of CCRs under their beneficial use programs if EPA regulates any aspect of CCR management under Subtitle C.” 75 Fed. Reg. at 35156. The information detailed below by beneficial use market (and by electric utilities) is more than just “statements or declarations” (*Id.*); it is actual record evidence demonstrating that any Subtitle C option will have a devastating impact on the beneficial use of CCRs. Such a result would be directly counter to the plain language and purpose of the Bevill Amendment and underscores that the Subtitle C option would be inconsistent with the statute as well as arbitrary and capricious.

For example, in recent testimony before the House Subcommittee on Rural Development, Entrepreneurship and Trade on the potential impact on small businesses from regulating CCRs under RCRA Subtitle C, Tom Adams, Executive Director of the American Coal Ash Association (“ACAA”), presented real world evidence of the adverse impacts on the CCR beneficial use markets already occurring merely from EPA proposing its Subtitle C option, including the following:

- Anne Arundel County in Maryland has prohibited the use of fly ash in county construction projects pending EPA’s final rule.
- The Los Angeles Unified School District has stopped allowing the use of fly ash in all LAUSD projects pending EPA’s final rule.
- CalStar Products opened a plant in Wisconsin to manufacture bricks and pavers from fly ash. Their process uses fly ash as a primary ingredient and consumes 85% less energy than that used in producing traditional clay bricks. The Brick Industry Association has published comments that infer safety concerns because the brick is made with “hazardous wastes”.
- Reed Minerals (a division of Harsco), a large manufacturer of residential roofing shingles made using CCRs, had to threaten legal action against a proposed

advertising campaign of a competitor. The campaign theme was “Our shingles do not contain hazardous waste. Do yours?”

Statement of Thomas H. Adams, Executive Director, American Coal Ash Association, before the House Small Business Subcommittee on Rural Development, Entrepreneurship and Trade (July 22, 2010) (attached as Appendix 5).

ACAA’s testimony also effectively responds to EPA’s request for comment on the type of liability issues that CCR marketers and users are concerned about if CCRs are regulated under Subtitle C, explaining that a primary concern in the market is liability exposure to toxic tort lawsuits. Mr. Adams testified that:

[i]n discussions with engineers, contractors, and concrete producers over the last several months, it is clear that the use of fly ash would be severely curtailed due to fear of tort or class action suits. Many in the concrete industry do not believe EPA’s assertion that the exemption would provide all the protection needed. Many do believe that a lawyer could make a simple argument to a jury that the fly ash in the disposal facility has exactly the same physical and chemical characteristics as the fly ash in the concrete in a home, hospital, daycare center, or school. Therefore if it is hazardous in the disposal facility, it must be hazardous in those structures thereby opening the door to financial claims. Even if a claim is found to be minimal, the costs of legal defense are something firms want to avoid.

Id.

Similar concerns were expressed in testimony presented to the Subcommittee by Dr. Craig H. Benson, PhD, PE, DGE, Professor of Geological Engineering and Civil & Environmental Engineering, Chair of Geological Engineering, and Director of the Recycled Materials Resource Center at the University of Wisconsin-Madison. Mr. Benson described the liability concerns that marketers of industrial byproducts have struggled to overcome with respect to the beneficial use of these materials and cautioned that the same “psychological” barriers would arise if CCRs were regulated under RCRA's hazardous waste regulations. Dr. Benson cautioned that:

none of these science-based principles and tools will overcome the psychological impact of CCPs being deemed a hazardous waste. An exemption for beneficial use will have virtually no effect on this psychological impact. The “hazardous” designation will scare users and incite liability, and thereby decimate beneficial use of CCPs. Some have proffered that a hazardous designation coupled with a beneficial use exemption will increase the amount of CCPs that are beneficially used in a manner analogous to the reduction hazardous waste volume that occurred when RCRA hazardous waste rules were originally developed. My experience suggests that this outcome is unrealistic. ... There is no basis to believe that infrastructure owners will accept that the risks of using CCPs in infrastructure are minimal when essentially the same material is deemed a hazardous waste in a different setting.

Testimony of Craig H. Benson, PhD, PE, DGE, Wisconsin Distinguished Professor, University of Wisconsin-Madison, before the House Small Business Subcommittee on Rural Development, Entrepreneurship and Trade (July 22, 2010) (attached as Appendix 6).

Dr. Benson also testified to the competitive disadvantage that the CCR beneficial use industry already is confronting as a result of EPA’s proposal to regulate CCRs as a hazardous waste:

Manufacturers of competing products and materials that do not include CCPs have also taken advantage of the hazardous waste stigma by advertising that their products and materials do not include hazardous waste. I surmise that beneficial use of all industrial byproducts will diminish if CCPs are deemed hazardous waste. The logical inference from the perspective of a potential user is “Will the industrial byproduct I am using today be designated as a hazardous waste tomorrow? How will this affect my long-term liability?” The logical decision from the perspective of the user is to avoid beneficial use of industrial byproducts altogether.

Id.

Echoing Dr. Benson’s findings at the hearing was Bill Gehrman, President of Headwaters Resources, Inc, the “nation’s largest post-combustion coal product manager” involved in all aspects of CCR beneficial use. Testimony of William H. Gehrman, President, Headwaters Resources, Inc., before the House Subcommittee on

Rural Development, Entrepreneurship and Trade Committee on Small Business

(July 22, 2010) (attached as Appendix 7). Critically, Mr. Gehrmann also testified that due to the stigma and liability issues associated with using a material subject to hazardous waste regulation, his company is already seeing a slowdown in the financing of CCR beneficial use projects:

If coal ash is designated as 'hazardous waste' when disposed, ash technology providers and developers will face significant new customer objections and barriers to raising capital for development activities. Even in advance of enactment of any rule, companies in this sector have reported slowdowns in financing activities and customer purchases attributed to the regulatory uncertainty presented by EPA's draft rulemaking proposal.

Id.

Mr. Gehrmann also testified about the competitive disadvantages directly attributable to the Subtitle C proposal being felt by ready mix concrete producers due to their use of fly ash in lieu of cement in the production of concrete:

If coal ash is designated a 'hazardous waste' when disposed, end users will likely demand products that contain no 'hazardous' substances. This phenomenon is already being seen even in advance of EPA enacting any new rules. The drumbeat of the phrase 'toxic ash' in news stories about EPA's rulemaking efforts has resulted in many ready mixed concrete producers receiving calls from customers asking for fly ash to be eliminated from their concrete.

Id.

In addition to the above testimonials, dozens of individual companies who use CCRs in their products, including small ready mix concrete companies and federal and state trade associations representing the concrete, construction and related infrastructure construction industries, have written EPA cautioning that the regulation of CCRs under Subtitle C, even with an exemption for beneficial use, will have devastating

consequences for the CCR beneficial use market. Many of these companies have told EPA that they will not take on the legal risks associated with using CCRs in their products if these materials are regulated under Subtitle C when disposed of. For example, a small, ready-mix concrete company in Milwaukee, Wisconsin, wrote to EPA stating that, even with an exemption for CCR beneficial use, it would not take the risk of using CCRs in its products if regulated as hazardous waste when disposed of. The company explained:

“do you really think that motivated reporters would even try to make that distinction, certainly attorneys won’t. Not only can you not call this material a hazardous waste, as a producer of a potentially hazardous waste product, I now need to know definitively that it is not now and never will be classified as a hazardous waste to continue to use it. I cannot afford to put a potential hazardous waste into my finished product.”

Letter from Schmitz Ready Mix, Inc. to EPA Administrator Lisa Jackson (2009) (attached as Appendix 8). These statements and letters are from companies directly involved in all aspects of CCR beneficial use, with first-hand knowledge of, and experience with, the economic drivers in the CCR beneficial use market. They will not be directly regulated by the CCR disposal regulations, so their views regarding the crippling effects the Subtitle C option will have on CCR beneficial use are both informed and objective. Indeed, we expect that these companies would support the Subtitle C option if this option would actually lead to increased CCR beneficial use. The record evidence, however, is just to the contrary; EPA cannot ignore this significant body of evidence and pursue the Subtitle C option.

d. Standard-Setting Organizations – While professional standard-setting organizations generally do not weigh in on proposed EPA regulations, in this instance the prospect of the adverse impact of Subtitle C regulation on CCR beneficial use has

caused both the American Concrete Institute (“ACI”) and ASTM International (“ASTM”) to take the unusual action of specifically cautioning EPA that the Subtitle C option would likely result in the removal from national and international building standard specifications any materials (*i.e.*, fly ash) that are determined to be a hazardous waste in another setting.

ACI, one of the world’s leading authorities on concrete technology, develops international standards and publishes technical papers and manuscripts to “advance concrete knowledge for the benefit of the general public.” Letter from ACI to EPA Administrator Lisa Jackson (September 4, 2009) (attached as Appendix 9). To underscore its purely professional and objective perspective on this issue, ACI emphasized in its letter to EPA that it “is a technical society, and unlike trade organizations does not represent any trades related to or part of the concrete industry.” *Id.* Instead, ACI’s concerns regarding the Subtitle C option “deals with the impact that designating fly ash as a ‘hazardous waste’ will have on concrete technology, the best use of concrete, and concrete’s sustainable impact on society.” *Id.* ACI was direct with respect to these concerns, explaining that:

[i]t is ACI’s opinion that designating fly ash as a “hazardous waste” will result in little or no fly ash being used in concrete in the US. We anticipate the concrete industry will no longer specify its use; and fly ash producers would not permit its beneficial use due to liability concerns, preferring to impound fly ash rather than allow its use.

Id. In short, ACI cautioned that “[d]esignation of fly ash as a ‘hazardous waste’ will likely eliminate its inclusion in future project specifications for fear of possible legal exposure and liability. Such designation would also likely lead to its removal from future national codes and standards for the same reason.” *Id.*

ACI's professional opinion was not swayed by EPA's proposal to regulate CCRs under RCRA's hazardous waste regulations while applying the "special waste" label. In its written testimony before the recent House Subcommittee hearing on the impact of the Subtitle C option on small businesses, ACI cautioned again that the stigma resulting from regulation of CCRs under RCRA Subtitle C would adversely impact CCR beneficial use, stating that "[i]f EPA designates fly ash as special waste, but requires hazardous waste regulations, acceptance throughout the different audiences in the concrete industry will be difficult to maintain." Written Testimony of Richard Stehly, President, ACI, submitted to the House Committee on Small Business, Subcommittee on Rural Development, Entrepreneurship and Trade (July 22, 2010) (attached as Appendix 10).

ASTM has been equally direct regarding the adverse impact on CCR beneficial use resulting from the Subtitle C option. ASTM is one of the largest voluntary standards development organizations in the world and its committees "develop and oversee more than 12,000 ASTM standards that are used by individuals, companies, and agencies around the world" and are referenced by government agencies in "codes, regulations, and laws; and many others refer to them for guidance." Letter from ASTM to EPA Administrator Jackson (Dec. 23, 2009)(attached as Appendix 11). While ASTM standards are voluntary in "the sense that their use is not mandated by ASTM . . . government agencies often give voluntary standards the force of law by citing them in laws, regulations, and codes." *Id.* Of particular importance here, ASTM Committee C009 provides test methods and specifications for concrete making materials, which serve a variety of functions, including "the means of quality assurance by purchasers, a

basis for training and certification of testing personnel, and protection against liability through their use in contracts.” *Id.*

ASTM has advised EPA that, should it regulate CCRs under RCRA’s Subtitle C program, ASTM will need to modify its product standard specifications for the use of fly ash in concrete to properly reflect the material’s new regulatory status. ASTM explains that “[a] ‘hazardous waste’ designation, even with an exclusion for beneficial use, would cause the ASTM standard for fly ash to be removed from project specifications due to concerns over legal exposure, product liability, and public perception. This will likely result in little or no fly ash being used beneficially in concrete or other applications that support sustainability objectives.” *Id.*

As with the views and data provided by CCR beneficial users, the technical views of ACI and ASTM cannot be ignored by EPA. They represent another significant component of the record evidence illustrating the fallacy of EPA’s position that regulating CCRs under RCRA Subtitle C will somehow increase beneficial use. The data and views of the experts in the field are unanimous that any Subtitle C option will undoubtedly cripple – if not eliminate altogether – the CCR beneficial use market.

e. State Environmental and Transportation Agencies – State environmental protection and transportation agencies also have advised EPA that the Subtitle C option will significantly harm CCR beneficial use. They have identified state laws that would effectively preclude CCR beneficial use if regulated under Subtitle C provided EPA with more information as to why a Subtitle C designation would effectively end the beneficial use of CCRs in highway construction projects across the country.

The Association of State and Territorial Solid Waste Management Officials (“ASTSWMO”) has warned EPA repeatedly since initiation of this rulemaking that “[t]he most compelling reason not to impose Subtitle C regulations [on CCRs] is that the beneficial use of CCB has been very successful. The ‘hazardous’ label of Subtitle C would be detrimental to State CCB beneficial use programs...” Letter from ASTSWMO to EPA (April 1, 2009) (attached as Appendix 12). Just last fall, after polling every state in the nation on the potential impacts on state programs of regulating CCRs under Subtitle C, ASTSWMO wrote EPA to caution that “[r]egulation under RCRA Subtitle C has the potential to put an end to many beneficial uses for [coal combustion waste]. In most States, a primary requirement for a beneficial use determination is that the waste *not* be hazardous. Labeling CCW a hazardous waste will have a detrimental [impact] on its beneficial use.” Letter from ASTSWMO to EPA (Nov. 4, 2009) (attached as Appendix 13).

Environmental protection agencies, including those from Colorado, Florida, Hawaii, Iowa, Kansas, Michigan, Missouri, Ohio, South Dakota, Tennessee, Virginia, West Virginia and Wisconsin, also have specifically advised that regulating CCRs under RCRA Subtitle C would complicate and/or result in a flat-out prohibition on the beneficial use of CCRs. See attachment to ASTSWMO letter to EPA (Nov. 4, 2009) (attached as Appendix 13). Michigan was blunt and to the point: “The regulation of coal ash under full RCRA Subtitle C would end the current beneficial uses of coal ash.” *Id.* And, as EPA itself recognizes, the same would be true in Florida, where “[the state’s] definition of hazardous waste would likely prohibit the beneficial use of CCRs” under the Subtitle C option for CCRs. 75 Fed. Reg. at 35187. Wisconsin, which has one of the most

successful CCR beneficial use programs in the country, has specifically cautioned EPA that “[w]e remain deeply concerned that such a categorization [regulating CCRs under Subtitle C] would have a significant adverse impact to our ongoing successful efforts to beneficially reuse these materials.” Letter from Wisconsin Department of Natural Resources to EPA (March 16, 2009) (attached as Appendix 14).

In addition, the American Association of State Highway and Transportation Officials (“AASHTO”) has warned EPA that “the stigma and legal ramifications associated with using a ‘hazardous waste’ material could effectively eliminate the ability to use Fly Ash in highway construction, even if exceptions are made to allow for beneficial applications.” Letter from AASHTO to EPA Administrator Lisa Jackson (Nov. 23, 2009) (attached as Appendix 15). This view has been echoed by numerous individual state Departments of Transportation (“DOTs”), including, among others, those in Arizona, Colorado, Florida, Indiana, Michigan, Minnesota, New Hampshire, North Dakota, Texas and Utah. For example, the Indiana DOT advised EPA that it “strongly opposes any designation of CCPs as hazardous waste. Such action would have significant and long lasting adverse effect upon our ability to beneficially use fly ash and other CCPs in highway construction projects.” Letter from Indiana Department of Transportation to EPA Administrator Lisa Jackson (Sept. 9, 2009) (attached as Appendix 16).

Michigan’s DOT provided a similar caution to EPA:

We believe that regulating fly ash as a hazardous waste would have significant unintended negative consequences on its beneficial reuse. Even if EPA plans only to regulate the disposal of fly ash as a hazardous waste, the stigma associated with such an approach will have a chilling effect on the use of the material for our infrastructure.

Letter from Michigan Department of Transportation to Victor Mendez, Administrator, Federal Highway Administration (Nov. 10, 2009) (attached as Appendix 17).

These views are coming from the associations of state environmental and transportation agencies as well as from the individual states themselves – parties directly involved with regulation involving the beneficial use of CCRs. Their warnings to EPA constitute compelling evidence that the Subtitle C option would have a significant adverse impact on CCR beneficial use.

f. Electric Utilities – Real-world evidence of the adverse impacts on CCR beneficial use stemming from just the *prospect* of Subtitle C regulation also is being reported by electric utilities. Just as CCR marketers and end-users are already feeling the adverse impacts of this proposal, so too have utilities become painfully aware of the stigma associated with the proposal.

For example, Xcel Energy, which engages in beneficial use operations in Wisconsin, a state that EPA recognizes has one of the most successful CCR beneficial use programs in the nation, has had to halt the beneficial use of CCRs in a geotechnical fill project. This is due, in part, to regulatory concerns associated with the pending Subtitle C proposal and the possibility that EPA could regulate CCRs as hazardous. This project was to have been undertaken in accordance with Wisconsin's NR-538 rule, which has been cited by EPA as an example of a successful state regulatory program for the responsible reuse of CCRs. Despite the fact that this type of use has been successfully demonstrated in the past, the project has been put on hold and the fly ash from an Xcel Energy plant that was at one time under contract to be 100% beneficially used is now being landfilled.

In addition to projects being halted by state governments due to the threat of Subtitle C regulation, liability concerns have been raised by CCR beneficial use contractors resulting in cancelled beneficial use projects. Xcel reports that it recently had an ash utilization contractor object to the environmental terms and conditions of a CCR beneficial use contract due to contractor concerns over the future regulation of CCRs and potential liability under the RCRA Subtitle C hazardous waste program. Similar to the experiences of other utilities, the parties in this matter have, thus far, been unable to reach a mutually acceptable resolution of this issue, resulting in a decision to cancel plans for CCR utilization at that facility, at least temporarily. As a result, all of the CCRs will be disposed of, as opposed to being beneficially used.

Another utility in Wisconsin, Wisconsin Power and Light ("WP&L"), reports that the use of bottom ash from one of its power plants in Wisconsin for snow and ice control has been discontinued by the town of Lodi, Wisconsin. Because this market is no longer available, the facility must now determine whether to dispose of bottom ash that was previously beneficially used. The local paper reported that this decision was based *solely* on public opposition to beneficially using bottom ash, even though the town of Lodi chairman stated that he did not "have worries about the health risk of bottom ash . . . but public feedback over the use of the coal by-product prompted the ban." See Lodi Enterprise "E" News, (posted Aug. 11, 2010). Jennifer Fetterly, Town of Lodi Stops Bottom Ash Use, Lodi Enterprise E-News, (Aug. 11, 2010) (available online at <http://www.lodienews.com>) (current as of Sept. 27, 2010). In fact, the Lodi town chairman made it clear that "[t]his decision is being made as a request by citizens, *not one that is dictated by scientific data. In fact the data supports its [bottom ash's] use on*

the roads.” Id. (emphasis added). The paper also reported that citizens will seek to establish similar bans on the use of bottom ash for snow and ice controls in neighboring municipalities. *Id.*

This example is significant because the use of bottom ash for snow and ice control is explicitly identified by EPA as one of the types of CCR beneficial use that the Agency does not want to adversely impact as result of the Subtitle C option. EPA correctly recognizes that this is an important and legitimate beneficial use, explaining that:

[u]se of CCRs in highway projects is a significant practice covering road bed and embankments. CCRs used according to FHA/DOT standards provide an important function in road building, replacing material that would otherwise need to be obtained, such as aggregate or clay. In many cases, the CCRs can lead to better road performance. *For snow and ice controls, the beneficial use is limited to boiler slag and bottom ash, which replaces fine aggregate that would otherwise need to be used to prevent skidding, and amounts used are in line with the materials they replace.*

75 Fed. Reg. at 35163 (emphasis added). Nonetheless, the WP&L example provides real-world evidence that the stigma associated with the Subtitle C option has prompted public opposition to and bans on the very beneficial uses of CCRs that EPA acknowledges are important and legitimate. The WP&L example is one of many pieces of record evidence directly rebutting EPA’s theory that the Subtitle C option will lead to an increase in CCR beneficial use.

The adverse impacts on CCR beneficial use are being reported in other parts of the country as well. PPL Corporation (“PPL”), a global energy company that engages in significant CCR beneficial use operations in Pennsylvania, reports the cancellation of CCR beneficial use projects due to the proposed Subtitle C option. PPL has testified to EPA that:

[t]he impact to beneficial uses from the stigma of labeling CCRs a hazardous waste is real — and is already occurring. One of PPL's largest marketers of coal ash for cement products has had one of its main customers stop using coal ash. WHY? Potential product liabilities if EPA actually regulates CCRs as a hazardous waste. Furthermore, many companies have told our marketers that they will not use coal ash in their products if CCRs are classified as a hazardous waste, regardless of any use exclusion by EPA. WHY? They don't want their products to contain an ingredient that would otherwise be subject to hazardous waste regulation. Based on EPA's own economic analysis, if a subtitle C regulation eliminates beneficial uses, the financial impact on our struggling economy will be in the billions of dollars.

PPL Testimony of Craig Shamory at EPA CCR Public Hearing, Pittsburgh, PA, (Sept. 21, 2010) (attached as Appendix 18). PPL also reported that one of its key CCR marketers has already had a customer stop using bottom ash as aggregate in the manufacture of concrete blocks. Other customers have told PPL that they will not use CCRs if this material is listed as a hazardous waste, despite any exclusions EPA may provide in the Subtitle C regulation for qualified beneficial uses.

LG&E and KU Energy LLC, formerly E.ON U.S. ("LG&E/KU"), a subsidiary of PPL Corporation, reported the cancellation of existing beneficial use projects and concerns about the viability of beneficial use projects in the future due to the specter of CCR regulation under Subtitle C. LG&E/KU reported that one of its ash marketers has advised that an end use customer declined to enter into a contract until finalization of the CCR rule due to concerns that the material could be designated as a hazardous waste. In addition, one of LG&E/KU's structural fill beneficial reuse projects has been canceled due to the pending rule. Further, LG&E/KU's ash marketers have expressed grave concern that many end users, including engineers, architects, and property owners, will refuse to use material designated as a hazardous waste for a beneficial use, particularly for new construction projects in schools, hospitals, and restaurants.

In sum, electric utilities, which serve as the first-step in the CCR beneficial use chain, already are reporting cancellation of CCR beneficial use projects resulting from just the threat of CCR regulation under Subtitle C. Real-world examples such as these, along with those already presented to EPA by other third parties in the CCR beneficial use system, make it clear that the Subtitle C option would have a significant adverse impact on CCR beneficial use, in direct contravention to the plain language of the Bevill Amendment and its legislative history.

2. EPA's Examples of Increased Beneficial Use Despite Hazardous Waste Label Are Without Merit

Rather than respond to the overwhelming evidence from federal and state agencies and the entire spectrum of entities involved in the beneficial use market that the Subtitle C option will devastate the CCR beneficial use market, EPA simply points to certain materials for which it claims that the "hazardous waste" label has not impaired beneficial use. These examples are irrelevant; to the extent they do bear on the current proposal, these examples actually provide further evidence that regulating CCRs under Subtitle C will have an adverse stigmatic effect on CCR beneficial use.

a. EPA did not list used oil as a hazardous waste because of concerns that the listing label would adversely impact used oil recycling.

It is curious that EPA points to used oil as an example of a material for which the hazardous waste label has not impaired recycling. In fact, EPA did not list used oil as a hazardous waste precisely because Agency studies showed that the stigma from being labeled a hazardous waste would cripple the used oil recycling market. When first assessing whether to regulate used oil as a listed waste under Subtitle C, EPA specifically recognized that the stigma from the hazardous waste label would cause

dislocations in the [used oil] recycling market.” 51 Fed. Reg. 41900, 41902 (Nov. 19, 1986). This concern was based on a study prepared for the Agency analyzing the adverse market implications for the used oil recycling market stemming from the stigma of regulating used oil as listed hazardous waste. See Analysis of Possible Market Impacts Resulting from Stigmatizing Effects of Listing Recycled Oil,” by Temple, Barker, and Sloanne, Inc. (Nov. 1986).

While the D.C. Circuit ultimately concluded that EPA’s hazardous waste listing regulations did not allow the Agency to consider stigma, the Bevill Amendment (pursuant to RCRA Section 8002(n)(8)) *demands* as a statutory matter that EPA consider stigma in determining whether CCRs warrant regulation under Subtitle C in the first instance. Therefore, while EPA may not be able to consider stigma under its listing regulations, it *must* consider stigma as a threshold matter under the Bevill Amendment in determining whether CCRs warrant Subtitle C regulation. Thus, the import of EPA’s decision not to regulate used oil as a listed hazardous waste is that it directly belies and exposes the fallacy of EPA’s current position that regulating CCRs as a listed waste under Subtitle C will result in the increased beneficial use of these materials. Even the Court recognized that listing a waste under RCRA Subtitle C could adversely impact recycling:

The EPA’s concern over the possible adverse environmental consequences of listing the used oil may well be warranted. See Katzman, From Horse Carts to Minimills, 92 *The Public Interest* 121, 132 (Summer 1988) (“when the EPA threatened to recognize waste oil from dismantled cars as hazardous, the highly efficient waste-oil refining industry simply closed its doors until the threat disappeared. Obviously, these rejected materials do not simply evaporate; they may merely be disposed of surreptitiously.”)

Hazardous Waste Treatment Council v. EPA, 861 F.2d 270, 277 (D.C. Cir. 1988).

Similarly, “[w]hen the EPA in one region threatened to classify shredder fluff as hazardous (because of the PCB content of old appliances), scrap processors across the country refused to accept heavy appliances.” *Id.*, see also *Dithiocarbamate Task Force v. EPA*, 98 F.3d 1394, 1401 (D.C. Cir. 1996) (“*Dithiocarbamate*”) (observing that “EPA itself noted . . . that RCRA listing [of used oil] might result in stigma, leading to subterfuge of regulations.”).

EPA’s final used oil regulations do *not* list used oil as a hazardous waste. Rather, EPA excluded virtually all forms of used oil recycling from hazardous waste regulation; only those used oils that (1) are not recycled *and* (2) that exhibit a hazardous waste characteristic are subject to Subtitle C regulation. See 40 C.F.R. § 279.81. As EPA implicitly recognized in the final used oil rule where it, once again, did not list used oil as a hazardous waste, there is a significant difference from the perspective of stigma in classifying a material as a listed waste under Subtitle C, versus subjecting the same material to hazardous waste regulation only if it exhibits a hazardous waste characteristic. The listing option automatically subjects the entire universe of such materials to hazardous waste regulations (as well as any materials mixed with or derived from the listed waste), while the characteristic option only captures a subset of those materials that actually exhibit a hazardous waste characteristic. Hence, the listing option is the most severe method for regulating a waste under Subtitle C and it has the most draconian regulatory consequences. Because of this, there is a recognized adverse stigma associated with the listing label under Subtitle C and not the same

stigma from being subject only to the characteristic test (which all materials are subject to when discarded).

EPA understands this distinction and also understands that CCRs rarely, if ever, exhibit a hazardous waste characteristic and thus would rarely be regulated under Subtitle C, if this were the option under which they could be subject to Subtitle C regulation. Therefore, it is both disingenuous and factually incorrect for EPA to cite to used oil as an example of a material for which recycling has increased under the hazardous waste label, when EPA's own actions and market studies show that *listing* used oil as a hazardous waste – which is precisely what the Agency proposes to do with CCRs under the Subtitle C option – would have had precisely the opposite effect.

b. The examples cited by EPA of increased recycling under hazardous waste regulation are misleading and/or irrelevant.

Other than used oil, EPA points to several other materials, including chat, electric arc furnace dust (“EAF”), electroplating wastewater sludge, and spent solvents, as examples of where regulation under Subtitle C has not harmed the materials’ beneficial use. 75 Fed. Reg. at 35186. Here too, EPA’s examples do nothing to support the proposition that listing CCRs under Subtitle C would actually increase beneficial use of CCRs. Even assuming, for purposes of argument, that these examples had any relevance to CCRs, they cannot overcome the direct evidence already provided by federal and state agencies and those businesses directly involved in CCR beneficial use markets that make clear that the Subtitle C option would have a devastating impact on CCR beneficial use.

In an example that is almost as inappropriate as the reference to used oil recycling, EPA points to the fact that “chat,” a CERCLA mining waste, is used in road

construction as support for its position that regulating CCRs as a listed waste under RCRA Subtitle C will not harm CCR beneficial use. *Id.* As EPA knows, however, that is not a RCRA listed waste and therefore this example has no relevance whatsoever to the question of stigma resulting from classification of a material as a listed waste under RCRA. Indeed, virtually thousands of everyday materials can be subsumed by the extremely broad definition of a CERCLA “hazardous substance,” whereas only a finite number of materials have ever been listed by EPA as RCRA Subtitle C listed wastes. This is a nonsensical comparison.

With respect to the remaining materials – EAF, electroplating wastewater sludge and spent solvents – the Agency itself concedes that these comparisons are of questionable relevance as they involve products that, unlike CCRs, “are *not* used in residential settings.” *Id.* (emphasis added). In fact, it is precisely because CCRs are used in such a wide variety of beneficial use applications, including in wallboard and concrete in both residential and commercial settings, that the stigma of a hazardous waste listing would have such a devastating impact on the beneficial use of these materials. As explained by Bill Gehrman, President of Headwaters Resources, Inc., in his recent testimony before a congressional subcommittee on the adverse impact of the Subtitle C option on CCR beneficial use:

In its proposed coal ash disposal rule, the EPA cites examples of other industries in which materials designated as ‘hazardous’ have been successfully recycled. None of EPA’s examples, however, are analogous to coal ash – which is used without undergoing additional processing and is placed in products that come into direct contact with end users. EPA’s examples also concern materials that are sold to sophisticated users accustomed to handling hazardous materials. Coal ash users do not have this level of experience and capability.

Testimony of William H. Gehrmann, President, Headwaters Resources, Inc., before the House Subcommittee on Rural Development, Entrepreneurship and Trade Committee on Small Business (July 22, 2010) (attached as Appendix 7). As these statements make clear, those entities with the most extensive experience and informed knowledge with respect to the CCR beneficial use market have provided the Agency with legitimate reasons as to why EPA's attenuated recycling examples have no bearing on the question of stigma in this rulemaking.

B. The Subtitle C Option Is Inconsistent With The Bevill Amendment And Arbitrary And Capricious Because It Would Result In Unnecessary And Excessively Burdensome Regulation Of CCRs

A fundamental purpose of the Bevill Amendment is to ensure that any final regulatory option that EPA selects for CCR uses cost-effective controls, to avoid imposing undue regulatory costs on the utility industry. Representative Bevill could not have been more direct on this point when introducing his Amendment, emphasizing that any final regulation of CCRs not result in “unnecessary inflationary impact[s]” on the use of coal from overly stringent CCR regulations. 126 Cong. Rec. 3361; *see also id. at* 3363 (remarks of Rep. Rahall) (“[a]t a time when we are seeking to encourage electric utilities and others to switch from the burning of oil to coal, it would be highly inappropriate to place further unnecessary regulatory roadblocks in the way of increased coal usage”); 125 Cong. Rec. at 13246 (remarks of Sen. Byrd) (under this amendment, “those who produce coal will be able to do so without the fear that utility customers will be forced to use some other fuel because of environmental regulations”).

The D.C. Circuit expressly acknowledged the Bevill Amendment's directive to EPA that it consider costs in making a final regulatory determination, emphasizing that:

Congress intended attention to cost and the economic impact of regulatory controls in making a regulatory determination. The emphasis on economic factors is consistent with Congress' obvious goal in enacting the Bevill Amendment – to relieve [the Bevill industries] of the onerous economic burden of stringent Subtitle C controls *if at all possible*.

EDF v. EPA, 852 F.2d at 1314 (emphasis added). Indeed, RCRA Section 8002(n)(6) specifically lists costs as an independent study factor in determining whether CCRs warrant regulation under RCRA Subtitle C.

EPA's Subtitle C option is flatly inconsistent with Congress's "obvious goal in enacting the Bevill Amendment" to avoid Subtitle C regulation and the associated regulatory costs of this option "if at all possible." In fact, EPA readily acknowledges that one of the express purposes of the Subtitle C option is to *increase* the costs of CCRs under the Agency's misguided impression that this will increase CCR beneficial use. See 75 Fed. Reg. at 35185. In fact, as discussed below, EPA's proposed Subtitle C option would regulate CCR disposal facilities more stringently than *any* other hazardous waste by taking the unprecedented step of extending Subtitle C controls to previously closed and inactive CCR surface impoundments. *Id.* at 35177. Thus, not only does the Subtitle C option reflect the most extreme and costly regulatory choice available to EPA under RCRA, it would apply the hazardous waste disposal rules to CCRs in a manner more stringent than that previously applied to any other hazardous wastes.

This draconian approach to regulating CCRs under RCRA is diametrically opposed to the very purpose and objective of the Bevill Amendment and cannot be pursued. While Congress directed EPA to select the most cost-effective regulatory option for CCRs, the proposed Subtitle C option appears to be specifically designed to

have just the opposite result; namely, to make the disposal of CCRs as costly and as burdensome as possible.

The EPRI Cost Report referenced above examined the full range of Subtitle C compliance costs for utilities, including the costs of retrofitting upstream CCR handling units (e.g., hoppers, tanks and conveyor systems) to meet EPA's hazardous waste design and operating requirements. See EPRI Cost Report at 2-11 – 2-12. EPA acknowledges that this latter cost element – the need to upgrade and/or retrofit upstream CCR handling units – is a necessary cost component of the Subtitle C option, but the Agency's Subtitle C cost estimate does not include this important cost component because EPA lacked information “on baseline CCR storage practices.” 75 Fed. Reg. at 35212. The EPRI Cost Report also includes another important cost element of Subtitle C compliance not evaluated by EPA; specifically, the costs to power plants of having to construct new wastewater treatment facilities to replace the wastewater treatment function served by CCR surface impoundments that would have to close under the Subtitle C option. EPRI Cost Report at 2-10 – 2-11. In its cost analysis, EPA fails to recognize that CCR surface impoundments often serve a dual function at power plants: both to manage CCRs and to serve as a component of the plant's wastewater treatment system. Mandatory closure of the CCR surface impoundments under the Subtitle C option will require power plants to invest substantial resources in designing and constructing new wastewater treatment facilities.

Finally, the EPRI Cost Report also includes the increased disposal costs that will be incurred by electric utilities under the Subtitle C option due to the need to send CCRs to off-site commercial hazardous waste disposal facilities. *Id.* at 2-14 – 2-16. As

discussed further below, EPA mistakenly assumes that, under the Subtitle C option, electric utility CCR disposal options will remain unchanged. In fact, however, for a multitude of reasons, many utilities will not be able to permit new Subtitle C landfills on-site, will be legally prohibited from using nearby existing commercial RCRA Subtitle D landfills, and will be compelled to transport CCRs currently managed on-site or locally to out-of-state commercial hazardous waste disposal facilities.

All told, the EPRI Cost Report estimates that the compliance costs for electric utilities will be, at a minimum, in the range of \$55.3 to \$74.5 billion over a 20-year horizon (at a seven percent discount rate). *Id.* at 4-1. If a three percent discount rate is used, which is often appropriate where, as here, the regulatory costs could be passed onto consumers in the form of higher electricity rates, the Subtitle C compliance costs jump to a range of \$78.9 to \$110.0 billion. *Id.* at 4-4 – 4-5.¹⁸ These numbers are in contrast to the \$20.1 billion in compliance costs estimated by EPA in its Regulatory Impact Analysis (“RIA”).

Further, even the staggeringly high compliance numbers included in the EPRI Cost Report are predicated on a number of conservative assumptions regarding the ability of power plants to meet the Subtitle C requirements in a full and timely fashion. *Id.* at 4-5 – 4-6. In fact, the real world compliance costs may be far higher. These costs would be sufficiently high to render some coal-fired power plants, particularly smaller generating units, not economically viable, forcing their early closure. See EOP Group,

¹⁸ Further, these estimates do not include other costs that would be incurred under the Subtitle C option, including (1) landfill construction costs and associated land acquisition costs; (2) costs of replacement power during outages or to compensate for early retirements; (3) undertaking facility-wide corrective action as a condition of obtaining a RCRA Subtitle C permit; (4) state hazardous waste generator fees; and (5) the cost of capital. *Id.* at 2-8 – 2-9.

Inc, "Cost Estimates for the Mandatory Closure of Surface Impoundments Used for the Management of Coal Combustion Byproducts at Coal-Fired Electric Utilities," (Nov. 2010) ("EOP Report") at 13 (attached as Appendix 19). Thus, instead of promoting the use of coal by selecting the most cost-effective regulatory option for CCRs, EPA's Subtitle C option will actually discourage the use of coal by rendering the use of coal at some facilities uneconomical. This result is in direct contravention of the express congressional purpose behind the Bevill Amendment.

Such an approach is unsupportable given the fact that EPA itself readily acknowledges that the substantive controls for CCR landfills and surface impoundments are similar. See 75 Fed. Reg. at 35213. Given that the substantive disposal controls under the Subtitle D option would be just as effective in protecting human health and the environment, as those provided for under the Subtitle C option at far less cost and without the severe collateral impacts on beneficial use, the price of power and the use of coal, the Subtitle C option is inconsistent with the stated purpose of the Bevill Amendment.

The hazardous constituents present in CCR leachate also support EPA's earlier Regulatory Determinations that these materials can appropriately be managed under a Subtitle D program. As AECOM Environment summarizes in its report, EPRI conducted a comparison between the hazardous constituents present in CCR leachate and leachate from municipal solid waste landfills ("MSWLFs"), which are, of course, subject to Subtitle D regulation. See AECOM Environment, Report on CCR Proposal (Nov. 2010) ("AECOM Report") at 4 (attached as Appendix 20). This analysis determined that 99 hazardous constituents were detected in the MSWLF leachate of which 62 were

detected at the 90th percentile, while only 14 hazardous constituents were detected in the CCR leachate all of which were detected at the 90th percentile. *Id.* Given the significantly broader range of hazardous constituents in MSWLF leachate, it appears wholly unjustified to subject CCR to more restrictive Subtitle C regulation while MSWLFs are subject to Subtitle D controls.

Further, EPA's selection of the Subtitle C option would be arbitrary and capricious because EPA has not explained why its earlier conclusions that the Subtitle C option would result in excessive and inappropriate regulatory controls for CCRs are no longer true. In its 1993 final Regulatory Determination concluding that the four large volume CCRs – fly ash, bottom ash, boiler slag, and flue gas desulfurization waste – do not warrant hazardous waste regulation, EPA emphasized that the inflexible Subtitle C hazardous waste framework was inappropriate for CCRs, explaining “that it is unlikely that Subtitle C would effectively address the problems associated with the four large-volume fossil-fuel combustion wastes [CCRs] *without imposing unnecessary controls.*” 58 Fed. Reg. at 42477 (emphasis added).

This was an important conclusion, because as EPA explained in outlining the factors that it would evaluate in making a final regulatory determination, “the special status of the [CCR] waste *requires* that the Agency consider the impacts to the industry that regulation under Subtitle C would create in making a decision to regulate the waste as hazardous.” 58 Fed. Reg. at 42471(emphasis added). EPA found that the rigid nature of the Subtitle C regulatory system would result in excess costs and unnecessary regulation as applied to CCR management units. After acknowledging that CCRs rarely exhibit a hazardous waste characteristic and thus would not be subject to hazardous

waste controls unless they were listed as a hazardous waste, EPA emphasized that the listing approach would be inappropriate and excessive:

Furthermore, it was noted that even if these wastes were listed as hazardous, and therefore, regulated under Subtitle C, such an approach would be inappropriate for these wastes. A Subtitle C system would require coal combustion waste units to obtain a RCRA Subtitle C permit (which would unnecessarily duplicate existing State requirements) *and would establish a series of waste unit design and operating requirements for these wastes, which would generally be in excess of requirements to protect human health and the environment.*

Id. at 42477 (emphasis added).

EPA reiterated this conclusion in its 1999 Report to Congress, explaining “that [RCRA] Subtitle C is inappropriate to address any problems associated with disposal of these wastes and that the continued use of site and region specific approaches by the states is more appropriate for addressing the limited human health and environmental risks that may be associated with disposal of these wastes.” 1999 Report to Congress Vol. at 1 3-5. EPA emphasized that regulating CCRs under RCRA’s hazardous waste program “would unnecessarily duplicate existing State requirements” and “would establish a series of waste unit design and operating requirements for these wastes, which *would generally be in excess of requirements to protect human health and the environment.*” 58 Fed. Reg. at 42471 (emphasis added).

Having previously concluded that the Subtitle C approach would be inappropriate because, among other reasons, it would result in the over-regulation of CCRs in contravention of the Bevill Amendment, EPA provides no explanation whatsoever in the instant proposal as to what, if anything, has changed to suggest that the imposition of these very same Subtitle C controls will no longer result in inappropriate and unnecessary costs on the utility industry. As EPA itself noted earlier, “the special status

of the [CCR] waste requires that the Agency consider the impacts to the industry that regulation under Subtitle C would create in making a decision to regulate the waste as hazardous.” *Id.* at 42471. There is no reasoned explanation for EPA’s about-face on this issue.

The excessive costs and unduly burdensome regulation of CCRs under the instant proposed Subtitle C option are at least as great today as they were ten years ago when EPA rejected application of the Subtitle C hazardous waste rules for CCRs. As EPA has completely failed to explain why regulation of CCRs under Subtitle C is now appropriate, having expressly found earlier that such regulation would be both “inappropriate” and in “excess of requirements” for CCRs, any final Subtitle C regulation would be arbitrary and capricious. See *S. Co. Servs. v. FCC*, 313 F.3d 574 (D.C. Cir. 2002) (noting that, in evaluating whether an agency’s changed position is arbitrary and capricious, “the issue is whether the agency furnished a reasoned explanation for its changed position.”).

C. The Subtitle C Option Is Arbitrary And Capricious Because It Is Inconsistent With The Views Of The Other Federal And State Agencies That EPA Was Obligated To Consult In Reaching A Final Regulatory Determination

EPA’s proposed Subtitle C option is opposed by virtually every federal and state agency that has opined on this rulemaking. This broad opposition to the Subtitle C option is significant because the Bevill Amendment and its legislative history make clear that the informed views of these agencies were to be considered by EPA in the issuance of any final regulatory determination for CCRs. Given this broad opposition to the Subtitle C option by the groups Congress directed EPA to consult as part of the decision-making process for CCRs, selection of the Subtitle C option would be

inconsistent with the statute and arbitrary and capricious. See, e.g., *Nuclear Energy Inst., Inc. v. EPA*, 373 F.3d 1251, 1273 (D.C. Cir. 2004) (holding that it was arbitrary and capricious for EPA to issue a regulation directly contrary to the opinion of the National Academies of Science with which EPA was required by statute to consult).

The statute specifically directs that EPA, in preparing its study on CCRs, “shall, as [the Administrator] deems appropriate, review studies and other actions of other Federal and State agencies concerning such material and invite participation by other concerned parties, including industry and other Federal and State agencies, with a view toward avoiding duplication of effort.” RCRA § 8002(n). As noted above, Representative Bevill elaborated on this collaborative process by emphasizing that “EPA’s studies *should not proceed in a vacuum*,” but rather that EPA was to reach out to those with expertise in the field. As Representative Bevill emphasized:

Moreover, EPA should seek the assistance and cooperation of those most expert in this field. With regard to fossil fuel byproducts, I include in this category not only representatives of coal-burning industries, but personnel from other agencies of Government that are aware of the role coal plays in our national energy policy, or of actual disposal and utilization practices. These agencies include the Department of Energy, the Department of the Interior, the Federal Highway Administration, Department of Commerce, the Department of Agriculture, among others. In the face of our current energy crisis and the increasing costs of Government, American taxpayers cannot afford to have separate agencies of Government working without coordination. Instead, we *need a cooperative, informed effort* directed to the goals the President has set for us.

126 Cong. Rec. at 3362 (emphasis added).

During the inter-agency review process of EPA’s draft CCR proposal by OMB’s Office of Information and Regulatory Affairs, the very agencies that Congress directed EPA to consult with regarding any final determination for CCRs uniformly opposed or

sharply questioned the Subtitle C option. For example, the Department of Energy emphatically rejected EPA's proposed regulation of CCR under Subtitle C:

DOE continues to believe that the regulation of these [coal combustion] practices under RCRA subtitle C as hazardous waste is unwarranted, and supports the continued collection of information to help resolve EPA's concerns regarding CCRs.

...

EPA ruled in 2000 that a Subtitle C designation was unwarranted, and all available evidence supports the conclusions made at that time. Continued evidence does show that unlined units have caused environmental damage; however, the promulgation of this Subtitle C regulation to treat all CCRs as hazardous waste does not appear to be justified, especially when, as mentioned by EPA in the preamble, the disposal practices at power plants have shown a history of improvement and are continuing to improve. The benefits of CCR regulation under Subtitle C are not apparent and DOE urges EPA to fully understand the implications of such a regulation before going forward with the current proposed designation.

...

In the Regulatory Determination (RD) of 2000, which DOE agreed with, EPA decided to regulate CCRs as Subtitle D waste, stating that "The Agency has determined that industry practices are moving toward increased use of control measures (liners, covers, etc.) and groundwater monitoring." This statement is further reinforced by the 2006 joint DOE/EPA report on recent disposal practices.¹⁹

...

Despite the indication of better disposal practices, the proposed rule advocates Subtitle C regulations. This is in direct opposition to the 2000 RD that Subtitle C regulations were unwarranted, when EPA determined 'that it is unlikely that Subtitle C would effectively address the problems associated with the four large-volume fossil-fuel combustion wastes without imposing unnecessary controls.'

Interagency Working Comments on Draft Rule under EO 12866 at p. 21-22.

¹⁹ Coal Combustion Waste Management at Landfills and Surface Impoundments, 1994-2004. Available at: <http://www.osti.gov/bridge>.

The Department of the Interior (“DOI”) sharply questioned the Subtitle C option and echoed the concerns referenced above by the CCR beneficial use industry that “[r]egulating CCR disposal as RCRA Subtitle C, in full or by implementing a hybrid regulation, we believe that the availability to purchase fly ash for use in concrete will be eliminated.” *Id.* at 26. DOI stated that it concurs “with industry leaders who feel strongly that if fly ash is designated a hazardous waste, fully or in a hybrid classification, it will no longer be used in concrete.” *Id.*

The Department of Transportation (“DOT”) similarly cautioned EPA against regulating CCRs under Subtitle C because of the adverse impact on CCR beneficial use:

DOT is concerned about the negative impacts that may result from designating fly ash as a hazardous material The Rule would designate all CCRs as hazardous and then exempts beneficial uses. However, DOT is concerned that this approach is confusing, and may still have unintended consequences associated with Subtitle C. For example, many States have policies that forbid the use of any hazardous materials. Thus, if fly ash is designated as a hazardous material, it would fall under these general State prohibitions and would legally prevent the use of fly ash in public works structures and highways. Furthermore, an exemption in a Federal regulation probably would not negate State laws. If a material is in any manner considered hazardous, States will not risk future liability.

Id. at p. 28-29. The Department of Agriculture also cautioned EPA that: “Listing of all CCRs as hazardous waste significantly inhibits recognized, current, and continuing beneficial uses.” *Id.* at 41.

Comments submitted by the White House Council for Environmental Quality (“CEQ”) directly challenged the Subtitle C option, explaining that “it will be very expensive to regulate CCR with likely little environmental benefit based on what has been presented thus far . . . less expensive approaches could include enforcement of

annual inspections which would provide much greater environmental benefits relative to those proposed.” *Id.* at 17. CEQ also noted that approximately 2.5 million tons of materials are disposed of annually as hazardous waste and that bringing CCRs into the hazardous waste system would add “the order of 130 million tons per year to this inventory,” thus causing disposal capacity shortfalls and likely requiring some facilities “to shut down temporarily, or permanently, due to the lack of viable hazardous waste disposal options.” *Id.* Further, CEQ identified the serious compliance challenges that would be imposed on utilities under the Subtitle C option, including the fact that *de minimis* releases of CCRs “would constitute improper hazardous waste disposal and subject facilities to non-compliance.” *Id.* Given these problems, CEQ recommended that the Agency “re-examine if Subtitle C regulation is warranted, in accordance with Section 3004(x) and focus in on the special characteristics of such waste, the practical difficulties associated with implementation of such requirements, and site-specific characteristics.” *Id.* at 18.

In addition to the above federal agencies, Congress directed EPA to consult with state agencies in assessing whether and how to regulate CCRs under RCRA. State trade associations and individual state environmental protection agencies have uniformly advised EPA that regulating CCRs under Subtitle C would have a devastating impact on CCR beneficial use. In addition, national associations representing state governments have more broadly advised EPA of their opposition to the Subtitle C option because it would be duplicative of and disruptive to existing state controls for CCRs. It is precisely this type of duplication that the Bevill Amendment directs EPA to avoid. See RCRA § 8002(n).

For example, the National Governors Association advised EPA that the “Governors support their state-run programs and have concerns regarding potential federal regulation of CCW. ... In summary, Governors are very concerned about potential federal regulation of CCW as either a hazardous or nonhazardous substance under RCRA. While we are unaware of issues EPA may have with our state programs, we hope to work with you and your staff to address any questions.” Letter from National Governors Association to EPA at 1 (Nov. 16, 2009) (attached as Appendix 21). The Western Governors Association also disagreed with EPA’s proposed regulation of CCRs under Subtitle C:

The federal regulation of CCB as hazardous waste would undercut existing and effective state regulatory authority resulting in additional and unwarranted regulatory programs and would add costly burdens to states’ budgets that are already significantly strained. States should review their existing regulations of CCB and make any changes necessary in light of the 2008 TVA impoundment pond failure.

Western Governors agree with US EPA’s 1993 and 2000 regulatory determinations that CCB do not warrant regulation as hazardous wastes and that the western states have an effective regulatory infrastructure in place to continue as the principal regulatory authorities to ensure protection of human health and the environment through the safe and secure management of CCB under state solid waste, groundwater protection and coal mine regulatory programs.

Western Governors Association, Policy Resolution 10-1 (attached as Appendix 22).

Further, the Environmental Council of the States (“ECOS”) has expressly opposed EPA’s proposed regulation of CCRs under Subtitle C, stating that ECOS:

Agrees with U.S. EPA’s repeated assessments in 1988, 1993, 1999, 2000, and 2005 that CCW disposal does not warrant regulation as hazardous wastes under RCRA Subtitle C;

Agrees with U.S. EPA’s finding in the 2005 study previously cited that “the regulatory infrastructure is generally in place at the state level to ensure

adequate management of these wastes” and believes that states should continue to be the principal regulatory authority for regulating CCW as they are best suited to develop and implement CCW regulatory programs tailored to specific climate and geological conditions designed to protect human health and the environment;

Therefore [ECOS] calls upon U.S. EPA to conclude that additional federal CCW regulations would be duplicative of most state programs, are unnecessary, and should not be adopted, but if adopted must be developed under RCRA Subtitle D rather than RCRA Subtitle C, and in addition, urges U.S. EPA to make a timely decision, and calls upon U.S. EPA to begin a collaborative dialogue with the states to develop and promote a national framework for beneficial use of CCW including use principles and guidelines, and to accelerate the development of markets for this material.

ECOS, Revised Resolution No. 08-14 (Mar. 23, 2010) (attached as Appendix 23).

Similarly, the Association of State and Territorial Solid Waste Management Officials (“ASTSWMO”) expressly rejected EPA’s proposed regulation of CCRs under Subtitle C:

To artificially classify [coal combustion products (CCB)] as hazardous will needlessly limit the management options for both the CCBs and other wastes legitimately classified as hazardous which will be competing with CCBs for limited hazardous waste disposal capacity, while not producing any great degree of environmental protection. Transportation, manifesting and licensing requirements for CCBs as a listed hazardous waste are excessively burdensome without sufficient evidence of a benefit. It would be more appropriate to regulate and manage CCBs using design and operation standards specified for Subtitle D programs except in cases where a particular source material is deemed hazardous upon testing for characteristics.

The most compelling reason not to impose Subtitle C regulations is that the beneficial use of CCB has been very successful. The “hazardous” label of Subtitle C would be detrimental to State CCB beneficial use programs[.] Regulation under RCRA Subtitle C has the potential to put an end to many beneficial uses for CCB.

Letter from ASTSWMO to EPA, at 4-5 (Apr. 1, 2009) (attached as Appendix 12).

In short, the statute and its legislative history make clear that EPA was to “seek the assistance and cooperation of those most expert in this field,” including the above-

referenced federal and state agencies, in making a final regulatory determination. EPA's selection of the Subtitle C option would be directly contrary to the unanimous views of these informed parties and to Congress' directive that EPA produce a "collaborative, informed" regulatory determination for CCRs.

V. THE DAMAGE CASES DO NOT SUPPORT THE SUBTITLE C OPTION

EPA suggests that the newly identified "damage cases" may warrant reversal of the 2000 Regulatory Determination, resulting in the regulation of CCRs under RCRA Subtitle C. 75 Fed. Reg. at 35155-56.²⁰ However, the new damage cases, which are limited almost exclusively to older, unlined units as were the original damage cases, in no way undermine EPA's original decision in the 2000 Regulatory Determination that the best means to address the damage cases is to "develop national Subtitle D regulations." 65 Fed. Reg. at 32216.

USWAG acknowledges that some of the damage cases identified by EPA have had environmental impacts. At the same time, however, the proposed Subtitle D requirements – including the liner, groundwater monitoring, corrective action and structural stability requirements – will be fully effective in addressing EPA's concerns about the damage case sites without the attendant adverse impacts of the Subtitle C option. Therefore, the new damage cases justify neither the reversal of EPA's 2000 final Regulatory Determination nor the resulting regulation of CCRs under Subtitle C. We discuss below the fact that the proven damage cases represent only a subset of

²⁰ One of the eight statutory study factors that EPA must evaluate in determining whether CCRs warrant regulation under RCRA Subtitle C is "documented cases in which danger to human health or the environment from surface runoff or leachate has been proved." RCRA § 8002(n)(4). These cases are referred to by EPA as "damage cases." See 75 Fed. Reg. at 35146.

CCR management units and that EPA's concerns about this distinct subset of units will be adequately addressed under the Subtitle D option.

A. The Damage Cases Represent A Subset Of Older, Unlined CCR Disposal Units

At the time of the final 2000 Regulatory Determination, EPA had identified 14 "proven" damage cases²¹ and 36 "potential" damage cases.²² 75 Fed. Reg. at 35142. Since that time, EPA has identified 13 additional proven damage cases and four more potential damage cases, bringing the total to 27 proven cases and 40 potential damage cases. *Id.* at 35143. Virtually all of these damage cases involve unlined units that began operation before 1990; these cases do not involve the newer, lined units that have commenced operation since that time. See "Evaluation of Coal Combustion Product Damage Cases," Electric Power Research Institute, July 2010, EPRI Report No. 1020553 ("EPRI Damage Case Report").

Before addressing the nature of the damage cases, it is important to emphasize that it is inappropriate for EPA to include potential damage cases in its evaluation of the appropriate regulatory option for CCRs. The Bevill Amendment provides that, in considering the "documented cases" of danger from the management of CCRs, the

²¹ "Proven" damage cases "means those cases with (i) Documented exceedances of primary maximum contaminant levels (MCLs) or other health-based standards measured in ground water at sufficient distance from the waste management unit to indicate that hazardous constituents have migrated to the extent that they could cause human health concerns, and/or (ii) where a scientific study provides documented evidence of another type of damage to human health or the environment (*e.g.*, ecological damage), and/or (iii) where there has been an administrative ruling or court decision with an explicit finding of specific damage to human health or the environment." 75 Fed. Reg. at 35131.

²² *Potential damage case* means those cases with documented MCL exceedances that were measured in ground water beneath or close to the waste source. In these cases, while the association with CCRs has been established, the documented exceedances had not been demonstrated at a sufficient distance from the waste management unit to indicate that waste constituents had migrated to the extent that they could cause human health concerns. *Id.*

Agency was only to evaluate those instances where such danger “*has been proved.*” RCRA § 8002(n)(4) (emphasis added). EPA has acknowledged this statutory limitation, observing in its final 2000 Regulatory Determination that, although the potential damage cases may pose a “potential danger” to human health and the environment in some circumstances, they do not “satisfy the statutory criteria of documented, proven damage cases because damage to human health or the environment has not been proven. . . .” 65 Fed. Reg. at 32225. Therefore, it is inconsistent with the plain language of the statute for EPA to include the potential damage cases in its assessment of the “documented cases” of danger to human health and the environment from the management of CCRs. EPA cannot use the potential damage cases as the foundation for a reversal of its final 2000 Regulatory Determination.

It is important to note that even the proven damage cases are limited to only a subset of the universe of CCR disposal units; namely, older, unlined units. Of the 16 proven damages cases identified in the 2007 NODA that involved groundwater contamination, 15 of the 16 units were unlined (with the remaining unit being a surface impoundment where it was unclear whether the unit was lined or unlined). 75 Fed. Reg. at 35147. The only other proven damage case involving groundwater contamination identified since the 2007 NODA is the BBBS Sand and Gravel Quarries in Gambrills, MD, also an unlined site. *Id.*

Even assuming, for purposes of argument, that it is appropriate to include the potential damage cases in this evaluation, the vast majority of impacts to groundwater from the potential damage cases are similarly from unlined facilities. According to EPRI’s comprehensive evaluation of the combined total of 63 proven and potential

damage cases identified in the 2007 NODA, only six (10%) had liners. EPRI Damage Case Report at 3-5. Since issuance of the NODA, the only other potential damage case identified by EPA is the Battlefield Golf Course in Chesapeake, VA, an unlined site, although EPA has recently issued a report concluding that no residential wells were impacted by CCRs at the site and that there are no adverse health effects expected from exposure to surface water or sediments at the site. See <http://yosemite.epa.gov/opa/admpress.nsf/0/72D8A4102AE78DA88525770D00546146>.

In addition, virtually all of the damage cases, both proven and potential, involve older landfills that began operating before it was common practice to install liners in CCR disposal units. Of the 63 proven and potential damage cases identified in the 2007 NODA, approximately two-thirds of all the facilities for which operating periods could be established began operations before 1976 and *all* began operations before 1990. *Id.* at 3-7 – 3-8. The data are even more striking when this analysis is properly limited to the proven damage cases; all of the 24 proven damage cases identified in the NODA commenced operations between 1948 and 1983, with “the median opening year of 1967.” *Id.* at 3-8.

As EPA itself reported in the DOE/EPA Report, the vast majority of CCR disposal units that have been constructed since 1990 are “better designed, in that they are lined and have installed groundwater monitoring systems, and therefore the total percentages of unprotected units have been reduced.” 75 Fed. Reg. at 35150. In fact, the DOE/EPA Report found that “[t]he vast majority (98%) of the 56 identified units (both landfills and surface impoundments)” built or expanded from 1994 to 2004 have liners. *Id.* at 31.

The point is that the damage cases involve older and almost exclusively unlined units and represent only a segment of the total universe of CCR disposal units.

Not only do the damage cases involve an unrepresentative subset of CCR disposal units, legitimate questions exist regarding whether even this limited subset of units are truly “damage” cases. The EPRI Damage Case report identifies a number of important flaws with the proven and potential damage cases identified in the 2007 NODA, including, among other things, that (1) characterization of at least 13 of the sites as “damage” cases was questionable because of the lack of any long-term impacts that could be attributed to CCRs; (2) nearly two-thirds of the 54 groundwater damage case facilities were located at sites where there was a low potential for downgradient receptors; and (3) off-site exceedances of MCLs attributable to CCR impacts, a fundamental criterion for being classified as a proven damage case, were observed *in only three cases* of the combined total of 54 proven and potential groundwater damage cases. *Id.* at vi of Report Summary.

These findings underscore the fact that the damage cases, including in particular the proven damage cases, represent only a fraction of CCR disposal units and that the limited number and nature of these cases do not warrant Subtitle C regulation. The lack of justification for CCR regulation under Subtitle C is underscored by the fact that the Subtitle D controls can fully address EPA’s concerns with these facilities.

B. The Proposed Subtitle D Controls Will Prevent Future Damage Cases, And Existing Damage Cases Are Being Effectively Remediated

EPA’s primary concerns with the identified damage cases involve surface and groundwater contamination from CCR disposal units and the structural failure of CCR

surface impoundments. 75 Fed. Reg. at 35147. These are precisely the risks, however, that the proposed Subtitle D controls are designed to address. EPA has stated repeatedly that the substantive standards for CCR disposal units are virtually identical under both the Subtitle C and Subtitle D options (*id.* at 35213), with both proposed regulatory programs requiring liners and leachate collection systems for new disposal units and lateral expansions of existing units, as well as the retrofitting of existing CCR impoundments. See, e.g., *id.* at 35243-45 (proposed 40 C.F.R. §§ 257.70-72). Further, under the Subtitle D option, existing CCR disposal units would be subject to groundwater monitoring standards that will allow for the early detection of any groundwater contamination from both lined and existing unlined units. *Id.* at 35246 (proposed 40 C.F.R. § 257.90). Finally, the Subtitle D option would impose structural integrity requirements on all CCR surface impoundments, thus addressing EPA's concerns with the potential structural failure of such units that served as the basis for identifying the TVA Kingston facility and Martin's Creek Power Plant as proven damage cases. *Id.* at 35243-45 (proposed 40 C.F.R. §§ 257.71(b)-(f), 257.83).

While the Subtitle D regulations will be effective in preventing future damage cases, the existing damage cases already are being properly remediated under state and federal remediation programs. As EPA acknowledged with respect to the proven damage cases identified in the 2000 Regulatory Determination, all of these cases are being adequately addressed by the states (and in two cases, by EPA under the Superfund program), which EPA explained shows "the effectiveness of states responses when damages were identified." 65 Fed. Reg. at 32216. In addition, the newly identified damage cases are being effectively remediated. The EPRI Damage

Case Report includes a detailed analysis of the remediation efforts at these additional sites and found that “[a]vailable information indicates that remediation is complete or underway at *all* sites where remediation was required.” *Id.* at 8-1; see also *id.* at 7-1 – 7-2. Indeed, of the 16 proven cases of damages to groundwater, EPA has confirmed that “corrective actions have been completed in seven cases and are ongoing in the remaining nine cases.” 75 Fed. Reg. at 35150 n.43.

In short, existing damage cases are already being adequately addressed, and the proposed Subtitle D regulations would prevent future damage cases. Therefore, there is no reason for EPA to pursue the Subtitle C option when the Subtitle D option would effectively address the issues associated with the damage cases. Given the underlying goal of the Bevill Amendment that EPA avoid the Subtitle C regulation of CCRs “if at all possible” (*EDF v. EPA*, 852 F.2d at 1314), there is no basis for EPA to rely on the damage cases as the basis for pursuing the Subtitle C option.

C. The Alleged Damage Cases Presented by Environmental Groups Are Not Proven and Cannot Be Relied Upon by EPA in This Rulemaking

EPA references the allegations of additional damage cases by certain environmental organizations, including in particular assertions made by the Environmental Integrity Project (“EIP”) and Earthjustice in a February 24, 2010 report (75 Fed. Reg. at 35148) and, more recently, an August 26, 2010 report from the same two environmental organizations and the Sierra Club. EPA acknowledges that it has not had time to review these allegations, though it promises to review this information and encourages other stakeholders to also comment on these allegations. *Id.*

As an initial point, it is inappropriate for EPA to rely on the allegations of these environmental groups in any final rulemaking for CCRs before the Agency has fully evaluated the allegations and provided an opportunity for public hearing and comment on EPA's initial conclusions. Indeed, this is precisely what the Bevill Amendment requires. Before making any final regulatory determination, EPA is required to submit its initial recommendation, along with the reasons for this recommendation, in a Report to Congress, and to provide an opportunity for public comment and hearings on these initial findings. For EPA to base a new regulatory determination on the mere allegation of additional damage cases without first providing the public an opportunity to review and comment on EPA's initial conclusions regarding the allegations would be inconsistent with the dictates of the Bevill Amendment.

Past experience underscores the importance of this statutorily-prescribed vetting process, as many of the previous allegations of damage cases identified by environmental groups have been meritless and have been dismissed by EPA as unsubstantiated and/or incorrect. For example, prior to initiating this rulemaking, EPA gathered or received information on 135 alleged damage cases, many of which were submitted to EPA by the same environmental organizations referenced above. 75 Fed. Reg. at 35147. After evaluating these allegations, close to half (62) were dismissed "because there was little or no information supporting the concerns identified." *Id.* Another six were outside the scope of the rulemaking. *Id.* Of the remaining 67 allegations, 24 were identified as proven damage cases, but this included the 14 proven cases already identified in the 2000 Regulatory Determination. *Id.* The point is that less

than two-tenths of the cases “alleged” to have been damage cases have, in the end, been determined by EPA to be “proven” damage cases.

The same over-counting of damage cases exist in the case of the more recent damage allegations submitted by EIP, Earthjustice and the Sierra Club. An initial analysis by EPRI of certain of these allegations reveals that there are similar factual errors and/or lack of a factual basis for classifying these sites as damage cases. As EPRI reports, these groups have identified 70 new alleged damage cases, “based primarily on researching state records.” EPRI Comments on CCR Proposal (Nov. 19, 2010) (“EPRI Comments”) at 43. EPRI’s summary review of these new allegations reveals the same type of factual errors and/or misinterpretations as contained in past damage case allegations presented by these groups. For example, EPRI reports that “[o]ff site migration claims are frequently not substantiated,” pointing out that for 35 of the alleged cases (half of the alleged new cases), environmental groups claim that groundwater contamination is “moving off-site.” *Id.* at 47. In fact, however, the EPRI Report reveals that “there appears to be little or no documentation of actual off-site movement at these sites, and in fact the reports state many of these sites don’t have off-site wells.” *Id.* The lack of factual foundation and simple factual errors also undermine the veracity of the new allegations. In one case, single occurrences of elevated levels of certain metals were reported as evidence of contamination, when subsequent samples over the next 12 years were all very low, indicating that the “single occurrences clearly appear to be outliers.” *Id.* at 44. In yet another case, the groundwater well that is relied upon for alleging that contamination has been observed off-site, is in fact located *on-site*. *Id.* at 48. These types of factual errors and unfounded

assertions underlie many of the new allegations of damage cases made by the above organizations. See *id.* at 43-49.

In fact, similar factual inaccuracies were identified by the Pennsylvania Department of Environmental Protection (“PADEP”) with respect to the damage case allegations by EIP and Earthjustice in their February 2010 report entitled “Out of Control: Mounting Damages from Coal Ash Waste Sites.” In that report, EIP and Earthjustice identified four facilities located in the southwest region of PADEP as constituting “damage cases.” PADEP explains that “[s]ince the EIP report did not contain standard scientific documentation, the Department has responded based on a scientific review of each facility’s data and the Department’s familiarity of the sites and their groundwater data and impacts.” Commonwealth of Pennsylvania Department of Environmental Protection Southwest Region, Review of the Environmental Integrity Project and Earthjustice Report: “Out of Control: Mounting Damages From Coal Ash Waste Sites,” (Oct. 13, 2010) (attached as Appendix 24). The PADEP “reviewed and responded to each specific allegation point by point” and concluded, after a “methodical, organized and scientific review” of its data, that “the allegations regarding groundwater and surface water contamination by Primary MCL’s are unfounded.” *Id.*

In short, the Bevill Amendment prohibits EPA from relying on the new allegations of damage cases without first fully examining these allegations and providing the public with an opportunity to evaluate and comment on the Agency’s initial findings. Given that the vast majority of similar allegations in the past have been meritless, this type of careful review is necessary to ensure that unfounded and/or incorrect charges of new damage cases are not used as the basis for any final decisions.

CHAPTER TWO

THE SUBTITLE C PROPOSAL IS LEGALLY FLAWED

VI. EPA's PROPOSED LISTING OF CCRs AS A SPECIAL WASTE IS LEGALLY DEFECTIVE

EPA proposes to regulate CCRs under the Subtitle C option by listing CCRs as a “special” waste under RCRA’s hazardous waste regulations. 75 Fed. Reg. at 35166. The listing would apply to all CCRs destined for disposal. *Id.* In proposing to regulate CCRs, the Agency evaluated CCRs against the listing criteria in 40 C.F.R. § 261.11(a)(3). *Id.* at 35166. Under this provision, EPA may list a waste as hazardous if, after evaluating ten individual criteria,²³ the Agency concludes that “the waste is capable of posing a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported or disposed of, or otherwise managed.” *Id.* at 35167. As discussed above, despite referring to CCRs captured by the listing as “special waste,” EPA readily acknowledges that CCRs included in the listing description would be regulated under the full scope of RCRA’s Subtitle C hazardous waste regulations, including “40 C.F.R. parts 260 through 268 and 270-279 and 124, and subject to the notification requirements of section 3010 of RCRA.” *Id.* at 35166.

CCRs included in the listing would be categorized as “coal combustion residuals generated by the electric power sector (Electric Utilities and Independent Power Producers)” and assigned EPA waste code S001. *Id.* at 35254 (proposed 40 C.F.R.

²³ While the regulation lists eleven criteria, there are really only ten, as the eleventh factor is a “catch-all, allowing the Administrator to consider any other factor she finds relevant.” *Dithiocarbamate* at 1398.

§ 261.50(a)).²⁴ For purposes of the proposed S001 listing, the term “coal combustion residuals” is defined to include “fly ash, bottom ash, boiler slag, and flue gas desulfurization materials generated by the electric utility industry.” *Id.* (proposed 40 C.F.R. § 261.50(b)). The listing would cover CCRs disposed of in any type of disposal unit, regardless of the location of the unit and/or whether it has a liner and/or groundwater monitoring system.

EPA’s proposed listing of CCRs is fatally defective for a number of reasons, including (1) the scope of the proposed listing is overly broad and, as a result, EPA has not properly evaluated the individual CCRs against the listing criteria; (2) EPA has employed an unrealistic scenario in evaluating the “plausible mismanagement” scenario to which the waste could be subjected; (3) EPA has not identified, let alone evaluated, other federal and state regulatory programs applicable to CCRs as required by the listing criteria; (4) the risk assessment that serves as the cornerstone for certain elements of the proposed listing contains fundamental errors; and (5) EPA’s draft screening analysis involving the potential risks for CCR fugitive dust emissions is based on inaccurate inputs and does not reflect real world conditions. As a result of these flaws, EPA may not list any of the four CCRs as a listed waste under Subtitle C.

A. The Overbroad Listing Undermines EPA’s Listing Analysis

EPA proposes to include four distinct categories of waste from the combustion of coal (fly ash, bottom ash, boiler slag, and flue gas desulfurization materials (“FGD materials”)) into the single listing category of “coal combustion residuals,” implicitly

²⁴ For purposes of this listing, the electric power sector would be defined “as electricity-only and combined-heat-and-power (CHP) plants whose primary business is to sell electricity, or electricity and heat, to the public; i.e. NAICS code 221112 plants.” *Id.* (proposed 40 C.F.R. § 261.50(b)).

concluding that all four wastes can be viewed as single waste stream for purposes of evaluating whether they meet the ten listing criteria in 40 C.F.R. § 261.11(a)(3). This approach inappropriately combines four physically and chemically distinct classes of waste into a single waste code. Because of this error, EPA has failed to properly evaluate these distinct classes of wastes against the ten regulatory listing criteria, as is required by the plain language of the listing regulations. As a result, EPA cannot proceed with listing any one of the four types of CCRs as listed waste under Subtitle C.

The D.C. Circuit addressed a similar overly-broad listing attempt by EPA in *Dithiocarbamate*. In that case, EPA unlawfully bundled into a single listing description a group of carbamate compounds that, while having “similarities in their chemical origins and structures,” were distinct enough for a variety of reasons to preclude the Agency from evaluating and subsequently classifying the entire group as single listed waste. *Dithiocarbamate*, 98 F.3d at 1394. In its holding, the court established certain rules that EPA must adhere to when evaluating whether to list a waste under 40 C.F.R. § 261.11(a)(3). EPA has not, and cannot, meet these rules in the case of CCRs.

First, the court made clear that the Agency must ensure that the waste is evaluated under *all* ten of the listing criteria set forth in § 261.11(a)(3). *Id.* at 1398-99. A second and related listing condition is that EPA is only authorized to evaluate a group of wastes in the aggregate “if the known similarities of members of a class are such that it is reasonable to infer the presence of a disputed characteristic throughout the class (not just among members for which it has been shown).” *Id.* at 1399.

As was the case in the *Dithiocarbamate* decision, while the individual categories of wastes comprising the proposed CCR listing category – *i.e.*, fly ash, bottom ash,

boiler slag and FGD materials – may share some common characteristics, it is inappropriate for EPA to view these four wastes as sharing a common characteristic when evaluating them against *each* one of the ten listing criteria under 40 C.F.R.

§ 262.11(a)(3). As EPA itself acknowledges, fly ash, bottom ash, boiler slag and FGD materials are produced at different points and stages in the power production process and have unique physical and chemical characteristics. See 75 Fed. Reg. at 35137;²⁵ see also *id.* at 35138, Table 2. The individual CCRs are also produced in significantly different volumes, which is an individual listing criterion that must be evaluated by EPA. See 40 C.F.R. § 261.11(a)(3)(viii).²⁶

The fundamental differences in the physical and chemical composition of these four wastes, as well as their relative volumes and the site-specific differences in management practices, preclude EPA from evaluating them under the “class-based” listing approach suggested in the proposal. See *Dithiocarbamate*, 98 F.3d at 1400. Where a group of four distinct types of wastes have different physical and chemical properties, are produced in different volumes, and are managed in different categories of disposal units with differing types of design standards and groundwater monitoring controls, it is arbitrary and capricious to view the wastes as a single class for the

²⁵ The chemical distinctions between the individual CCRs are well-documented, including in various EPRI reports (1987, 2010), literature sources (Pflughoeft-Hassett, et al., 2000; Attalla, et al., 2007), and the Agency’s 2010 report entitled “Characterization of Coal Combustion Residues from Electric Utilities – Leaching and Characterization Data,” and EPA’s “Technical Background Document for the Report to Congress on Remaining Wastes from Fossil Fuel Combustion” (March 15, 1999).

²⁶ Data available for the year 2009 from the American Coal Ash Association (“ACAA”) on CCR production in the U.S. reveals that, out of a total of 135 million tons produced in 2009, fly ash comprised approximately 63 million tons (or 47%), bottom ash comprised approximately 16.5 million tons (or 12%), boiler slag comprised just 2 million tons (or just under 2%), and FGD materials comprised approximately 40.4 million tons (or 30%). The survey includes an “other” category to primarily account for the production of approximately 12.5 million tons of fluidized bed combustion ash (9%).

purpose of evaluating the wastes under the Agency's listing criteria. Because EPA inappropriately viewed the four distinct types of CCRs as a single class of wastes, the Agency failed to evaluate each individual CCR under the ten listing criteria as required by the plain language of the regulations. As a result, EPA cannot proceed with listing any one of the four CCRs under the Subtitle C regulations. To do so would be inconsistent with the plain language of the regulations and arbitrary and capricious.

B. EPA's "Plausible Mismanagement" Scenario Does Not Reflect Utility Practices

Another error in the proposed listing of CCRs is the Agency's selection of an unrealistic scenario for its assessment of the "plausible type of improper management to which the waste could be subjected." 40 C.F.R. § 261.11(a)(3)(vii). This criterion is fundamental to any listing decision.

As the *Dithiocarbamate* court emphasized, the "plausible mismanagement" criterion is directly relevant to the other listing criteria, including "the potential of the constituent . . . to migrate into the environment" (§ 261.11(a)(3)(iii)) and the "nature and severity of the human health and environmental damage . . . as a result of the improper management of the waste" (§ 261.11(3)(ix)). 98 F.3d at 1440. Indeed, "the very question that the ten [listing] factors . . . are supposed to help answer – the hazard posed by the substance – is explicitly phrased in terms of improper management." *Id.* Consistent with this point, the D.C. Circuit has "insisted that the agency 'provide at least some factual support' for a conclusion that a particular mismanagement scenario is plausible" before concluding that the materials warrant hazardous waste regulation. *Id.*, citing *Edison Elec. Inst. v. EPA*, 2 F.3d 438, 446 (D.C. Cir. 1993) ("*EEI v. EPA*"). Here,

the Agency cannot credibly argue that the mismanagement scenario on which its proposed listing of CCRs is based is plausible.

When discussing the “plausible mismanagement” scenario for CCRs, EPA explains that

[a]s shown in the risk assessment and damage cases, the disposal of CCRs into *unlined* landfills and surface impoundments is likely to pose significant risks to human health and the environment. Additionally, documented damage cases have helped to confirm the actuality and magnitude of risks posed by these *unlined* disposal units.

75 Fed. Reg. at 35172 (emphasis added). Thus, a central element of EPA’s mismanagement scenario for CCRs involves the management of CCRs in unlined landfills and surface impoundments. The “plausible mismanagement” scenario also assumes that the constituents will migrate undetected from these unlined units for a prolonged period of time, eventually reaching receptors, with “the magnitude of risk to those receptors” consistent with those predicted in EPA’s risk assessment.” *Id.* at 35170. Thus, the key features of EPA’s plausible mismanagement scenario for CCRs are the management of CCRs in unlined units, the long-term, undetected migration of constituents from these units, and their eventual migration to downgradient receptors at concentrations that pose a risk to human health and the environment (including the assumption that the receptors are always located downgradient of the CCR management unit). *Id.* at 35169-73.

This scenario is *not* plausible as virtually no unlined CCR management units have been constructed since at least 1994 and none would be constructed under a Subtitle D non-hazardous waste regulatory regime. First, as EPA itself explains, as of 2004, the Agency estimated that “69% of the CCR landfills and 38% of the CCR surface

impoundments had liners.” *Id.* at 35172. However, these data are based on older units. As EPA stated in its final 2000 Regulatory Determination, “[b]etween 1985 and 1995, 75 percent of new landfills and 60 percent of new surface impoundments within the utility sector had been lined.” 65 Fed. Reg. at 32228. Even more recent data described in the DOE/EPA Report found that, since 1994, “virtually all newly constructed landfills and all newly constructed impoundments are lined, whether as a permit requirement or voluntarily.” DOE/EPA Report at 32. Similarly, the percentage of CCR landfills and surface impoundments employing groundwater monitoring has increased substantially over time. The DOE/EPA Report states that the “vast majority (91%)” of the newly constructed or expanded units surveyed in the report had groundwater monitoring, and that “there has been an increase in groundwater monitoring for both landfills and surface impoundments since 1994.” *Id.* at 34-35. Given the fact that a large number of CCR disposal units employ both liner systems and groundwater monitoring, EPA cannot provide any “factual support for its conclusion” that its mismanagement scenario involving the long-term, undetected migration of CCR constituents from unlined units is “plausible” for a large percentage of CCRs.

More critically, EPA will not be able to make this demonstration for *any* CCR management unit under the Subtitle D option. The substantive Subtitle D standards for CCR landfill and surface impoundment units are virtually identical to those proposed under the Subtitle C option, and include siting, design, liner, groundwater monitoring and corrective action requirements. See 75 Fed. Reg. at 35240 (proposed 40 C.F.R. §§ 257.40-.99). As a result of these requirements, all new units and a significant majority of existing CCR management units will have to be retrofitted with liner systems

or closed. In addition, all CCR units will have to install groundwater monitoring systems to detect off-site migration and respond appropriately with corrective action.

In other words, situations involving past management practices of CCR units where there was undetected migration of constituents from unlined CCR management units are not realistic “plausible” management scenarios under the Subtitle D option. As a result, application of a “plausible mismanagement” scenario based on these past practices is arbitrary and capricious and is a fatal flaw of EPA’s proposed CCR listing. *See Dithiocarbamate*, 98 F.3d at 1404 (vacating a listing for a waste where past management practices that served as the basis for the “plausible mismanagement” scenario were “unlikely to be repeated” going forward).

C. EPA Has Not Properly Evaluated Regulatory Actions of Other Governmental Agencies

The tenth listing criterion directs EPA to examine the “[a]ction taken by other governmental agencies or regulatory programs based on the health or environmental hazard posed by the waste or waste constituents.” 40 C.F.R. § 261.11(a)(3)(x). As the Court in *Dithiocarbamate* recognized, this criterion is “interlocked” with the plausible mismanagement criterion described above and failure to “to give serious consideration to the ‘softer’ variables of § 261.11(a)(3)”, including this criterion, “tends to turn [EPA’s] application of that section into an exercise in totally standardless discretion.” 98 F.3d at 1402.

Here, EPA has failed to give *any* meaningful consideration to the actions taken by other governmental agencies or regulatory programs for regulating CCRs, including most notably state regulatory programs. Indeed, EPA does not reference a *single* state regulatory program already in place for CCRs. Instead, EPA’s analysis of this listing

criterion involves only a single paragraph stating in general terms that, due to the mismanagement of CCRs, “EPA and the states have taken steps to compel cleanup in several situations.” 75 Fed. Reg. at 35173. EPA then simply refers to the fact that some CCR sites have been placed on the National Priorities List (“NPL”) and that certain states have issued administrative orders requiring the remediation of CCR sites.

Id.

As explained above, EPA must give serious consideration to every one of the listing criterion in § 261.11(a)(3); failure to do so renders a listing decision arbitrary and capricious. EPA’s utter failure to reference any federal or state regulatory controls already in place for CCRs renders EPA’s proposed listing for CCRs legally defective. It is not the responsibility of USWAG or the regulated community to bring to EPA’s attention the spectrum of existing regulatory controls for CCRs; EPA bears the legal burden of evaluating existing relevant regulatory programs. See 40 C.F.R. § 261.11(a)(3)(x). Nonetheless, even a cursory review of the rulemaking record highlights the legal flaws in EPA’s listing proposal.

For example, EPA itself documented in the final 2000 Regulatory Determination the growing effectiveness of state regulatory programs for CCRs, concluding that “with the exception of relatively few states, the regulatory infrastructure is generally in place at the state level to ensure adequate management of these wastes.” 65 Fed. Reg. at 32217. The subsequent DOE/EPA Report further documented the growing effectiveness of state regulatory programs for CCRs, concluding that “[i]n eight areas of regulatory control reviewed for this report, more [CCRs] destined for landfills in the States reviewed had tightened regulatory controls than had relaxed controls between

the times data were collected for the 1988 [Report to Congress] and for this report.”

DOE/EPA Report at 57. Even more striking is EPA’s express acknowledgement in the instant proposal that CCRs are already regulated under state solid waste management programs and that surface water discharges from CCR units may be regulated under the Clean Water Act’s National Pollutant Discharge Elimination System regulations. 75 Fed. Reg. at 35142. Indeed, EPA discusses in great detail the data suggesting that state regulatory controls for CCRs have generally improved, though this is one of the key areas on which EPA seeks comment. *Id.* at 35151-52. The point here is not to respond to this issue for comment, but to highlight the absence of any analysis by EPA of existing state CCR controls that is required by this listing criterion.

As the *Dithiocarbamate* court made clear, this criterion is linked to the plausible mismanagement criterion, as EPA cannot credibly evaluate what constitutes a plausible mismanagement scenario for any given waste without first evaluating what regulatory controls are in place for the waste. For example, in its final rule determining that used oil did meet the listing criteria under 40 C.F.R. § 262.11(a)(3), EPA found that an array of other regulatory controls would adequately address “any plausible mismanagement of used oil that is destined for disposal” and that, as a result, listing such materials as a hazardous waste was not necessary to protect human health and the environment. 57 Fed. Reg. 21524, 21528 (May 20, 1992) (the used oil rule survived a subsequent legal challenge; see *Natural Res. Def. Council, Inc. v. NRDC*, 25 F.3d 1063 (D.C. Cir.)).

The plain language of this listing criterion could not be clearer: EPA must evaluate the “[a]ction taken by other governmental agencies or regulatory programs” in response to the health or environmental hazard posed by CCRs. 40 C.F.R.

§ 262.11(a)(3)(x). For purposes of its listing analysis, EPA has not even identified, let alone evaluated, the adequacy of existing state CCR regulatory controls and any other federal controls as required by this listing criterion. For this reason alone, EPA's proposed listing for CCRs is defective.

D. The Risk Assessment Is Fundamentally Flawed And Cannot Be Relied On To Support the Subtitle C Option, Including Evaluating The Listing Criteria For CCRs

As part of its evaluation of whether to reverse its final 2000 Regulatory Determination and to list CCRs under Subtitle C, EPA relies heavily on its CCR Risk Assessment. 75 Fed. Reg. at 35144-46. With respect to the proposed listing, the fate and transport model in the Risk Assessment is relied on extensively to evaluate the potential for constituents to migrate from CCR disposal units under the listing criterion at § 261.11(a)(3)(iii). *Id.* at 35169. In particular, EPA used the model to predict the potential migration of CCR constituents "from different waste types through different exposure pathways, to receptors and to predict whether CCRs under different management scenarios may produce risks to human health and the environment." *Id.* The groundwater risks from CCR disposal units "were based on a groundwater fate and transport model in which constituents leached to groundwater consumed as drinking water, migrated to surface water and bioaccumulated in recreationally caught and consumer fish, and on direct ecological exposure." *Id.*

The fate and transport model employed in the Risk Assessment contains fundamental errors and overstates the risks from CCR disposal units under all three of the exposure scenarios discussed above. For the reasons discussed in detail in the AECOM Report, the Risk Assessment's fate and transport model does not represent

realistic, real-world risk scenarios from CCR management units. Therefore, the Risk Assessment's modeling results cannot be relied upon by the Agency in evaluating the listing criterion regarding the potential for constituents in CCRs "to migrate from the waste into the environment." 40 C.F.R. § 261.11(a)(3)(iii).

The AECOM Report details the numerous fundamental flaws in the Risk Assessment's construction, including the fate and transport model. Key flaws in the Risk Assessment including the following:

- Inappropriate Inputs. Inappropriate and outdated inputs were used to describe the CCR management scenarios. EPA relied on pre-1995 CCR management data to use as a source term for the model and did not account for updated management practices as expressed in the DOE/EPA report. This latter report demonstrates drastic improvement since 1993 in the use of liners and the employment of groundwater monitoring by owners/operators of CCR management units – see Table 1-1 of the Risk Assessment (reproduced in the AECOM Report).
- Insufficient Inputs. The flaws from the use of overly conservative results from the outdated CCR management data are compounded by the paucity of data used to develop the distributional inputs in the probabilistic risk assessment. For example, while there were locational data for 52 unlined surface impoundments where CCRs and coal refuse were co-disposed, there are only 5 leachate/pore water samples upon which the probabilistic risk assessment is based – see Table A of the AECOM report. This is especially problematic because it is this scenario – the co-disposal of CCRs and coal refuse in an unlined surface

impoundment – upon which the risk assessment’s unrealistically high cancer risk estimate of 2E-02 or 2 in 100 for Arsenic III and Arsenic V is based. It is completely unfounded from a modeling or risk evaluation perspective to base a national regulation on the risk results of a scenario that has input data from only 5 samples of pore water. More fundamentally, it is arbitrary and capricious to purportedly generate scenarios representative of the geologic conditions for the entire United States from a data set consisting of only a handful of units.

- Inappropriate Groupings. The proposed CCR listing inappropriately evaluates all CCRs as one waste stream, and the CCR Risk Assessment evaluates three groups of CCR management scenarios artificially identified for the fate and transport model. This grouping leads to a flawed risk assessment as EPA’s approach does not reflect real world management scenarios.
- Unrealistic Mass Estimates. The representation of the source term as the total mass of the constituent in the waste (*i.e.*, the assumption that all constituents are depleted from the landfill) is an unrealistic representation of the leaching process from CCR management units and leads to an overestimate of the calculated risks from these units. Literature and research document that only a fraction of most constituents is available to be leached from CCRs. Therefore, by modeling leaching of these relatively immobile constituents in CCRs throughout the hundreds of years required until the total mass is removed results in unrealistic loading to groundwater and transport of these constituents to unrealistic distances.

- Unrealistic 10,000-Year Model Period. The Risk Assessment is predicated on the overly conservative assumption that constituent concentrations in the leachate from CCR units would remain constant throughout the 10,000 year modeling period (or until the constituent mass is depleted from the unit). Use of a 10,000-year simulation period is wholly unrealistic in that it assumes all other conditions within the modeling are essentially unchanged during this period (for example, groundwater hydraulic gradients, locations of surface water bodies, locations of receptors, climate, hydrology, permanence of disposal area, etc.). In reality, it is unreasonable to assume that these conditions will not change over 10,000 years, just as such changes have taken place in the last 10,000 years. The most recent Ice Age ended approximately 15,000 years ago, and entire hydrologic systems have been created and modified since that time. Therefore, modeling over 10,000 years results in predictions that cannot be correct; reliance on such attenuated modeling scenarios is arbitrary and capricious. For example, Table 4-7 of the Risk Assessment provides the time to peak concentration for a set of constituents for landfills and surface impoundments at the 10th to the 90th percentiles. For *all* landfill scenarios modeled, the shortest time to peak concentration at the 10th percentile is 300 years (boron, unlined). This result clearly does not warrant regulation of landfills under any configuration. For the surface impoundments, the shortest time to peak concentration at the 10th percentile is 70 years (Arsenic III, boron, and Selenium VI; unlined). All results at the 90th percentile for unlined surface impoundments are greater than 100 years. Therefore, the use of the 10,000-year timeframe in estimating potential risks

centuries into the future is not a credible modeling scenario and cannot serve as the basis for any final regulation.

- Inappropriate Attenuation Modeling. The groundwater modeling of constituent migration does not adequately reflect the attenuation processes that occur in groundwater, especially with regards to the mobility of Arsenic, which is controlled by redox conditions. In the current version of the Risk Assessment, both Arsenic III and Arsenic V are modeled. For Arsenic V to be present and stable, the groundwater must be aerobic. Under these aerobic conditions, however, Arsenic is relatively insoluble and would not be mobile in groundwater. As Arsenic is the risk-driver in the human health risk assessment results, this is a serious flaw in the analysis, resulting in overstating the risks associated with the migration of constituents from CCR disposal units.
- Lack of Model Validation. While the models used in the fate and transport analysis were peer-reviewed when they were developed (*i.e.*, a before-the-fact review of the underlying principles and mathematics), there has been no field verification of the model-predicted concentrations. That is, even if the underlying principles and mathematics were considered to be appropriate, there has been no evaluation of the model accuracy in this particular case, specifically, how the scenario-specific inputs may or may not result in realistic or believable outcomes. Use of real world, observed concentrations of the various constituents in groundwater in the vicinity of CCR units is a critical step in evaluating the reliability and confidence in the Risk Assessment's modeling predictions. The critical step of model validation is well-documented in the scientific literature and

recognized and endorsed by EPA (see e.g., Resolution on the Use of Mathematical Models by EPA for Regulatory Assessment and Decision-Making,” at 3 (“There is a need for models used in regulatory application to be confirmed with laboratory and field data.”). Groundwater data are available for waste management units from a variety of sources, including EPRI, and a comparison of these real, observed field data to the interim predictions by the model is a critical step in validating the model predictions. This is missing in the Risk Assessment.

- Unrealistic Receptor Location and Frequency. For the drinking water scenario, the model evaluates a downgradient drinking water receptor in each and every one of the 10,000 model runs. This assumption does not account for the real-world scenarios of potential receptors being cross-gradient or upgradient of the waste management unit and grossly overestimates the probability of an exposure occurring. The model also assumes that impacted groundwater travels to every downgradient receptor location and is available for exposure; this assumption does not take into account cases where there are no downgradient receptor locations, or where receptors (that is, residents) in the downgradient locations are serviced by municipal water (thus, do not have drinking water wells), or cases where intervening water bodies intercept the further downgradient transport of constituents. By not accounting for any of these real-world scenarios, the Risk Assessment grossly overestimates the level of potential exposure via the drinking water pathway and presents an unrealistic mismanagement scenario.

- Incorrect Aquatic Benchmark for Boron. EPA has continued to use an incorrect aquatic benchmark for boron, such that the predicted ecological risks for boron are over-estimated by three orders of magnitude. When the correct benchmark is applied, the boron results are below levels of concern.
- Inappropriate Fish Ingestion Evaluation. EPA points to the risks for Arsenic III and Arsenic V from the ingestion of recreationally caught fish scenario as additional evidence of risks due to CCR mismanagement in surface impoundments. However, EPA has not factored into these risk estimates the fact that arsenic in organic tissues is predominantly present in a non-toxic organic form. Less than 1% of arsenic in fish tissue has been shown to be in the potentially toxic inorganic form. If EPA had accounted for this in the CCW Risk Assessment, the risks for this pathway would be below concern.
- Unfounded Use of Risk Attenuation Factor. EPA used a screening analysis to identify constituents for the full-scale risk model, however, EPA did not carry through all of the identified constituents into the full-scale model, which is not standard practice. Instead, EPA accounted for these constituents at the end of the modeling by using a contrived “risk attenuation factor,” which is the ratio of the full-scale risk results to the screening level risk results for the constituents used in the full-scale model. This approach ignores the unique fate and transport properties of these omitted constituents, such that the scaled risks are not correct.
- Lack of Population Context in Rulemaking. Even accepting the fundamental flaws in EPA’s risk assessment that lead to gross overestimates of potential risk

to human health, evaluating the hypothetical impact of these overly conservative risks on the U.S. population is instructive. Based on an EPRI evaluation of the potential for the occurrence of receptors downgradient of a CCR management unit, and information on the U.S population (which is currently 307,006,550), it is estimated that there could be hypothetically up to 7,770 users of downgradient groundwater as drinking water for the 508 CCR management facilities evaluated by EPA in the RIA. Further, assuming a worst-case scenario that *all* management units are unlined surface impoundments that contain CCRs co-disposed with coal refuse (which is not the case), the predicted excess lifetime cancer risk of 2×10^{-2} or 2 in 100 results in a hypothetical 155 lifetime cancer cases out of the total U.S. population of 307,006,550 (to help put this into perspective, the measured background cancer incidence in the U.S. population is between 1 in 2 to 1 in 3). However, because co-disposal of CCRs with coal refuse in unlined surface impoundments account for only a fraction of the CCR management scenarios in the U.S., and as the assumptions used in the Risk Assessment result in gross over-estimates of risk, the hypothetical number of cancer cases that could result from the current management practices for CCRs would be *much* less than the hypothetical 155 cases modeled under the overly conservative assumptions in the Risk Assessment. For example, assuming that the entire receptor population was downgradient of an unlined CCR surface impoundment that did involve co-disposal with coal refuse, the number of hypothetical, estimated lifetime cancer cases would be 15, based on a cancer risk estimate of 2×10^{-3} for Arsenic III. Similarly, the worst-case landfill risk

estimate is 5E-04 for Arsenic III in an unlined co-disposed CCR and coal refuse landfill; the number of hypothetical estimated lifetime cancer cases if all receptors are assumed to be downgradient of this type of waste management unit is 4 out of the total U.S. population of 307,006,550. Again, even these numbers of hypothetical estimated lifetime cancer cases are based on the results of an extremely flawed risk assessment.

E. EPA's Draft Screening Assessment Of Fugitive Dust Risks Does Not Support the Proposed Listing Of CCRs

As part of its listing evaluation, EPA theorizes that air emissions from CCR disposal and storage facilities “may cause adverse human health effects” due to the inhalation of small-diameter “respirable” particulate matters from these sources. 75 Fed. Reg. at 35171. EPA did not provide data to support this position. Instead, EPA performed a screening-level analysis to evaluate the potential exposure to particulate matter by residents who live near CCR landfills. To do this, EPA used the SCREEN3 model and produced a draft report entitled *Inhalation of Fugitive Dust: A Screening Assessment of the Risks Posed by Coal Combustion Waste Landfills – DRAFT* (U.S. EPA 2010b). *Id.* EPA requests comment on the draft screening analysis and the results of any real-world data that may be available regarding the potential for residents to be exposed to CCR constituents by the inhalation pathway. *Id.*

As discussed below, the draft screening model has significant flaws that preclude it from being used to support the CCR listing proposal. In addition, real-world air monitoring data from the remedial activities associated with the TVA ash release make clear that the potential inhalation exposure pathway does not present the level of risk sufficient to support a hazardous waste listing.

The attached AECOM technical report also includes a critical analysis of EPA's draft SCREEN3 assessment. The AECOM report makes clear that EPA's draft screening assessment uses a series of compounding conservative assumptions that results in a modeled concentration for 24-hour PM₁₀ of 13,390 µg/m³ in comparison to the 24-hour PM₁₀ NAAQS of 150 µg/m³. To illustrate the overly conservative nature of EPA's draft model, the modeled result of 13,390 µg/m³, PM₁₀ concentrations is similar to concentrations observed in the vicinity of a volcano after eruption. AECOM Report at Appendix 20. Some of the unrealistic, conservative elements of the draft screening assessment are EPA's (1) use of the wrong emission factors, (2) use of overly conservative parameter selections, and (3) failure to take into account the real-world moisture content of CCRs. Given that the emissions estimator that EPA is using cannot take into account the moisture content of the CCRs (or any material for that matter), when other more appropriate, yet still conservative, refinements are made to the draft screening assessment, AECOM reports that many of the modeled concentrations are at or below the NAAQS for 24-hour PM₁₀ (150 µg/m³).

Indeed, real-world data underscore the overly conservative nature of EPA's draft assessment. A comprehensive public health assessment of the TVA coal ash release was conducted by the Tennessee Department of Health, under a cooperative agreement with the U.S. Department of Health, Agency for Toxic Substances and Disease Registry. See Public Health Assessment Final Release: Tennessee Valley Authority (TVA) Kingston Fossil Plant, Tennessee Department of Health (Sept. 7, 2010) (available online at http://health.state.tn.us/Environmental/PDFs/pha-e-TVA_Kingston_Fossil_Plant_Final.pdf ("TVA Health Assessment"). Thousands of air

measurements have been collected by TVA, EPA and the Tennessee Department of Environment and Conservation (“TDEC”) since December 2008. See *id.* at 45-53.

Among other things, the final assessment found that, with respect to risk from fugitive emissions associated with the release, “sampling and analysis of particulate matter by all agencies indicated that particulate matter, less than or equal to 2.5 microns in diameter (PM_{2.5}) and less than or equal to 10 microns in diameter (PM₁₀), in ambient air surrounding the coal ash release met all National Ambient Air Quality Standards.”

Id. at xxxi. In addition, measurements of metals concentrations in air have “consistently been within background levels of metals in the U.S. or below any health comparison values.” *Id.* at 64.

The real-world data from the TVA Kingston site compared to the overly conservative estimates modeled in EPA’s draft screening assessment makes clear that EPA has not established a record supporting the listing of CCRs based on risks from the inhalation exposure pathway.

VII. EPA’S REGULATORY IMPACT ANALYSIS CONTAINS FUNDAMENTAL METHODOLOGICAL FLAWS THAT UNDERMINE ITS MOST BASIC CONCLUSIONS

To support the CCR proposal, EPA conducted a Regulatory Impact Analysis (RIA) of the various regulatory options being considered in the rulemaking. Regulatory Impact Analysis For EPA’s Proposed RCRA Regulation of Coal Combustion Residues (CCR) Generated by the Electric Utility Industry, Environmental Protection Agency (April 30, 2010). EPA’s analysis examined the costs and benefits for each of the regulatory options related to four principle areas: (i) the benefits of avoided future groundwater contamination, including the remediation costs avoided and the value of the avoided

cancer risks; (ii) avoided cleanup costs of future surface impoundment structural failures; (iii) regulatory costs of compliance; and (iv) economic and environmental benefits from future increases in CCR beneficial use by other industries. EPA uses these data to demonstrate that if, as the Agency maintains, beneficial use of CCR increases due to the significantly higher disposal costs of CCRs under a Subtitle C program, the Subtitle C option will result in the greatest net benefits, \$66.8 to \$81.8 billion at a 7% discount rate over a 50-year period. 75 Fed. Reg. at 35215-16.

USWAG engaged EOP Group, Inc. to review the RIA to assess whether its conclusions with respect to the overall costs/benefits of the proposed regulatory options are accurate. EOP RIA Report, (Nov. 2010), attached as Appendix 25. While there are numerous problems with the RIA, we summarize here EOP's main findings that render the RIA invalid, namely EPA's failure to properly value the increase of CCRs for beneficial use and accurately assess the reduction of cancer incidents resulting from the three alternative regulatory options. We discuss below why these fundamental errors impact the RIA's conclusions.

A. EPA Failed To Properly Value The Impacts Of The Proposed Regulatory Options On CCR Beneficial Use

The primary economic component of the RIA's conclusions regarding the costs and benefits of each of the three regulatory options are the benefits associated with increased beneficial use of CCRs. In the analysis of the Subtitle C option, the benefit associated with future increase in CCR beneficial use is \$84.5 billion, while the total costs of the entire regulatory scheme are \$20.3 billion and all other benefits total \$17.6 billion. The increased CCR beneficial use benefits under the other regulatory options are a similar percentage of the total cost/benefit of the options, although the expected

value is significantly lower. We address above why USWAG echoes the concerns of CCR beneficial users and marketers that subjecting CCRs to Subtitle C regulation will dramatically reduce beneficial use. Notwithstanding the potential stigmatizing effects associated with labeling CCRs as a Subtitle C waste (even if only in the context of disposal), there are other clear errors in EPA's method for valuing the assumed increase in CCR beneficial use.

The first critical error is EPA's use of the wrong baseline for assessing the costs and benefits of its proposed regulatory options. As detailed in EOP's report, the Agency includes the avoided costs of disposal as a significant benefit that will accrue if the beneficial use of CCRs increases. That is, the costs of disposing of CCRs under the proposed Subtitle C regime are considered a baseline cost, which is in essence recovered when CCRs are beneficially used. Assessing the costs and benefits of a proposed regulatory approach by including the worst-case regulatory costs of compliance as a benefit fundamentally fails to assess the actual costs and benefits of the regulatory options. The purpose of a regulatory impact assessment is to evaluate the costs and benefits of proposed regulatory options by comparison with a baseline *pre-rule* state. This assessment should consider the costs and benefits of imposing each of the regulatory options on the status quo (*i.e.*, the present state of affairs) and not assume that management options not otherwise selected can yield a benefit.

The EOP Report highlights perverse regulatory outcomes that arise when avoided costs are considered part of the baseline as EPA has done in the RIA. These include the possibility of generating even higher expected benefits by dramatically increasing the costs of compliance with an alternative. EPA could make the costs of

disposing of CCRs absurdly high (EOP suggests mixing CCRs with rose petals and diamond dust in landfills lined with \$100 bills) which would yield an expected benefit to beneficial reuse that would reflect these absurdly high costs. This would allow EPA to find a net benefit for any regulatory proposal as long as the costs of compliance with an alternative were sufficiently high. In fact, the total benefits to any potential CCR proposal would be directly proportional to the costs that the Agency could impose on CCR disposal. All else being equal, the cheaper option to comply with would always have the least net benefits, turning regulatory decision-making on its head. EPA's RIA conclusions directly reflect this approach. This is a patently absurd way of assessing the benefits associated with the potential increase in CCR beneficial use.

Another fundamental error in EPA's valuation of the benefits associated with increased beneficial use in the RIA is the Agency's faulty assumption that there can be, in the first instance, any net benefit associated with increases in the beneficial use of CCRs. As EOP explains, one must assume that there currently exists equilibrium in the marketplace for CCRs (*i.e.*, market demand meets market supply at the optimum price). Currently, utility generators of CCRs have every incentive to subsidize the use of CCRs up to their costs of disposal, and CCR marketers and users are willing to pay for or accept a subsidy for these materials up to the price/benefit associated with alternative materials. Since the market is in equilibrium, a socially optimal level of CCRs is being beneficially used.

For purposes of this rulemaking, EPA assumes that CCR beneficial use will increase due to the increased costs of disposal of CCRs. While we disagree with this assumption, even if we assume it to be correct it does not logically follow that this

increased use constitutes a societal benefit. EPA believes that increasing the cost of disposal will increase the subsidy (e.g., payment to a marketer or including transportation costs in a transaction) utilities are willing to pay ash users/marketers to accept CCRs for beneficial use. This would change the supply of CCRs in the marketplace by making more materials available at a cheaper price because utilities would pay more for these materials to be used. In the RIA, EPA assumes that this increased beneficial use of CCRs is a benefit of the regulatory options under consideration, when in fact it is merely a transfer of resources from utilities to ash marketers/users. EPA should realize that a transfer (in the form of the subsidy) from one party to another is not a net benefit overall.

Because the marketplace must be assumed to be in equilibrium, any impact that EPA's regulations make to that marketplace will distort incentives and result in a net cost to the CCR market. By increasing the costs of disposal, EPA encourages utilities to subsidize CCR beneficial uses resulting in overuse by marketers/users because they would not have accepted the same volume of CCRs at a lower price/subsidy.²⁷ If the rulemaking stigmatizes the beneficial use of CCRs (which USWAG believes would happen under a Subtitle C rule), transfers of CCRs that were producing net benefits to both parties would be abandoned, resulting in a net societal cost. The best outcome of this rulemaking on the CCR beneficial use market — setting aside other types of benefits of the rulemaking such as lower incidence of surface impoundment structural

²⁷ USWAG is not suggesting that EPA should not adopt a federal rule that will increase the costs of disposal for utilities. What we are suggesting, however, is that increasing the costs of disposal will be suboptimal for the beneficial use marketplace. EPA can and has elsewhere in the RIA assessed the benefits to human health of these regulatory options. We simply believe that any regulatory option that increases or decreases the use of CCRs does not provide a net benefit to the beneficial use marketplace for CCRs.

failures or risks to human health—is for there to be no impact on either the supply or demand of CCRs for beneficial use.

B. EPA's Assessment Of The Benefits Of Avoided Cancer Incidents Contains Serious Errors and Overstates The Risk Reduction from The Subtitle C Alternative

In the RIA, EPA also assesses the benefits of each of the three regulatory alternatives on reducing potential cancer risks associated with drinking groundwater contaminated with arsenic from CCR surface impoundments. The Agency's analysis includes a number of methodological errors that overstate the value of the human cancer cases avoided by the Subtitle C regulatory option.

One critical error included in the analysis relates to EPA's use of data on current state regulatory programs and its determination of expected compliance rates with federal Subtitle D programs. To assess the cost of complying with the regulatory alternatives, the Agency established a baseline of the percentage of facilities that are already performing certain activities (e.g., conducting groundwater monitoring) that will be required by the regulatory options. RIA at 122-124. While EPA's estimates of the costs associated with the regulatory alternatives are reduced by the number of facilities already performing these activities, the Agency does not similarly discount the avoided cancer risks by the number of facilities already in operating in accordance with the proposed federal controls. By making this error, EPA is assuming that imposing federal requirements for activities that are already being conducted will impose no additional costs, but will increase the effectiveness of these activities in reducing cancer risks from 0% to 100% effective. This error either greatly inflates the benefits of the regulatory options or improperly reduces the costs of these options. USWAG maintains that there

are many effective state programs that properly control CCR surface impoundments and landfills. In the RIA, EPA completely disregards the effectiveness of these programs in reducing cancer risks.

Additionally, EPA's assessment of the effectiveness of the Subtitle D and Subtitle D Prime options is based directly on the percentage of states that impose groundwater monitoring requirements on new units and on existing units respectively. EPA uses this groundwater monitoring rate as a proxy for determining whether states will adopt federal Subtitle D requirements for CCR management units. EPA assumes that the Subtitle D program will only be adopted in those states that impose groundwater monitoring on new surface impoundments. Therefore, because only 48% of CCR is disposed of in states that already have such requirements, the Subtitle D regulatory option will only be 48% as effective as the Subtitle C option (which is assumed to be 100% due to the direct federal enforceability that this option includes). The same methodology is used for the Subtitle D Prime option where a 12% rate of compliance is imputed due to the rate of groundwater monitoring requirements for existing CCR surface impoundments. Based on these proxies, EPA's analysis suggests that the Subtitle D regulatory options will *only* be effective in those states that *already* impose groundwater monitoring on CCR surface impoundments.

By establishing this methodology, EPA is assuming that states will only adopt a federal rule if they already have similar controls and that no additional states (those without groundwater monitoring requirements for new or existing surface impoundments) will adopt the rule. As described above, however, even in those states that already have such requirements, the groundwater monitoring controls are assumed

to be completely ineffective at reducing cancer risks, but will be completely effective when the federal requirements are adopted in these states. Even more critically, the Agency assumes that no utility disposal facilities will comply with the Subtitle D rules unless a state regulatory program directly adopts the federal rules, notwithstanding the self-implementing nature of the regulations and the threat of enforcement by citizens and/or states (even if the rules are not adopted by the states). EPA also assumes that a Subtitle C alternative will provide greater reduction in cancer risks than a Subtitle D rule because all states will adopt these requirements and they will be 100% effective from the existing baseline controls that are 0% effective. This analysis completely fails to assess what likely improvements these regulatory options will provide, does not address the effectiveness of existing requirements, and does not assess other regulatory controls (e.g., liners, siting, construction standards) that already exist at the state level that reduce cancer risks.

Another critical error in this section of the RIA is that EPA relies on outdated information on the controls at CCR disposal units and does not take into consideration the more protective controls that have been installed at recently constructed units. See, e.g., DOE/EPA Report. Failure to use newer information understates the presence of better controls at facilities and includes this already occurring baseline trend as an expected benefit of the proposed regulatory options.

The assessment of the avoided cancer benefits also does not properly include the appropriate timeframes for discounting the value associated with reducing cancer risks. The RIA does not account for the amount of time arsenic takes to reach a drinking water well and does not discount for the time between exposure to the

contamination and the onset of cancer. Both of these errors overstate the present value of the avoided cancer risks.

As we address below, EPA includes in this rulemaking (including in the RIA's analysis of the benefits of reduced cancer risks), a number of impoundments that were included as CCR surface impoundments based on the Agency's recent survey of these units. As we described below, however, EPA defined units for the survey as CCR impoundments if they contained even *de minimis* amounts of CCRs. This inappropriately included wastewater ponds that contained little (if any) CCRs into the total number of surveyed and reported units. In the RIA, EPA uses information on the number and size of surface impoundments in 1995 to extrapolate to the much higher number of surface impoundments reported in the recent survey. RIA at 41. The Agency assumed that the large number of recently reported impoundments were the same size as those reported in 1995 which were reported based on a more precise definition of surface impoundment. *Id.* This extrapolation seriously overestimates the size of existing surface impoundments as well as the concentrations and risks associated with managed CCRs in these impoundments.

In addition to the issues identified above, regarding the errors in EPA's methodology for evaluating impacts to CCR beneficial use and reductions in cancer risk, EOP's report evaluates other errors in the RIA including (i) the double counting of avoided groundwater remediation costs and cancer risks, (ii) the failure to address alternative approaches to avoiding structural impoundment collapses and (iii) the Agency's lack of justification for its proposal and failure to properly consider regulatory alternatives in accordance with OMB guidance and Executive Order Number 12866.

Even a cursory review of the principal components of the RIA yields fundamental methodological errors that undermine even its most basic conclusions. EPA's reliance on these unfounded conclusions in this rulemaking will constitute arbitrary and capricious agency action.

VIII. THE SUBTITLE C OPTION PRESENTS INSURMOUNTABLE COMPLIANCE AND DISPOSAL OBSTACLES FOR ELECTRIC UTILITIES

Not only does the Subtitle C option present serious legal hurdles, it would also impose serious and often intractable compliance problems for electric utilities given the physical nature of CCRs and the volume of CCRs generated by the industry in the course of producing electricity. Also, EPA is wrong in its position that, under the Subtitle C option, "disposal patterns will remain generally the same" and that Subtitle C commercial disposal capacity will not be overwhelmed by introducing at least 76 million tons of CCRs (the approximate amount of CCRs currently disposed of on an annual basis) per year to this disposal market. 75 Fed. Reg. at 35158. As discussed below, regulation of CCRs under Subtitle C would create significant disposal capacity shortfalls for electric utilities as well as other generators of non-CCR hazardous wastes.

A. Compliance Concerns

One of the fundamental reasons EPA cited for deciding not to regulate CCRs in its final Regulatory Determination for the four large-volume CCRs was the recognition that the inflexible, one-size-fits-all nature of the Subtitle C hazardous waste program simply was not appropriate for the diverse nature of CCR disposal facilities. As EPA explained:

if such wastes were placed in the Subtitle C universe, all ash disposal units would be required to meet specific liner and monitoring requirements. Since [CCR] sites vary widely in terms of topographical,

geological, climatological, and hydrological characteristics (e.g., depth to groundwater, annual rainfall, distance to drinking water sources, soil type) and the wastes potential to leach into the groundwater and travel to exposure points is linked to such factors, it is more appropriate for individual States to have the flexibility necessary to tailor specific controls to the site or region specific risks posed by these wastes.

58 Fed. Reg. at 41477.

This conclusion remains true today; the Subtitle C hazardous waste program remains inappropriate for CCRs as this option will present serious practical and compliance concerns for coal-fired power plant operations. Most significantly, due to the sheer volume and the physical composition of CCRs, *de minimis* volumes of CCRs are inevitably released during normal power generation and subsequent CCR handling operations (e.g., fugitive and *de minimis* emissions from ash conveyor equipment or loading equipment and during the transport/handling of CCRs for beneficial use). This holds true notwithstanding utilization of even the most sophisticated CCR handling, conveyance, and storage equipment; *de minimis* releases of these materials are impossible to prevent. Nonetheless, if CCRs are regulated as a listed “special waste” subject to full hazardous waste regulation, even these *de minimis* releases would constitute improper hazardous waste disposal, subjecting electric utility coal-fired power plants to liability for what would likely be a perpetual state of RCRA non-compliance. This is because RCRA Subtitle C contains no *de minimis* exemption for listed wastes; *any* material, no matter how small or inconsequential, derived from a listed hazardous waste remains subject to full Subtitle C regulation. See 40 C.F.R. § 261.3(c)(2).

Clearly, the prospect of Subtitle C liability for any *de minimis* release or spill of CCRs constituting improper hazardous waste disposal is a significant compliance concern, even though there is very little risk associated with such *de minimis* releases.

Electric utilities strive for full compliance with all applicable environmental laws and regulations, but the Subtitle C option would make this objective virtually impossible to achieve. Moreover, the fact that such inevitable releases would constitute improper disposal would expose facilities to continual and harassing citizen suits based solely on these *de minimis* and inconsequential releases. This illogical result, flowing from overly stringent and unnecessary regulation of precisely the type that Congress directed EPA to avoid when issuing any final CCR regulations under RCRA, would be both an unjustifiable burden on the regulated community and wasteful of agency and judicial resources. See 126 Cong. Rec. at 3361.

CEQ's comments on the draft Subtitle C option underscore the seriousness of this issue, as does a letter written to EPA Administrator Lisa Jackson last spring by members of the House Energy and Commerce Committee. Interagency Working Comments on Draft Rule under EO 12866 at 17-18; Letter from Reps. Upton, Boucher, Space and Rogers to EPA Administrator Lisa Jackson (April 27, 2010) ("Upton Letter") (attached as Appendix 26). The Representatives writing the letter asked EPA whether, if CCRs were subject to Subtitle C hazardous waste regulation, the inevitable release of *de minimis* amounts of CCRs during normal power generation activities would "constitute improper disposal of a hazardous waste." *Id.* Understandably, these members of Congress shared the concern that, given the language and purpose of the Beville Amendment, the inflexible nature of the Subtitle C hazardous waste program would thrust hundreds of facilities into a regulatory scenario where full compliance with the law is unachievable. Remarkably, EPA failed to provide any credible response to this legitimate concern.

In its reply to the Upton Letter, the Agency confirmed that such *de minimis* releases would be subject to full hazardous waste regulation, stating “the management of this special waste will generally be addressed in the same way that management of hazardous waste is addressed at any other production facility that generates hazardous waste.” EPA Response to Upton Letter (July 15, 2010) (attached as Appendix 27). Significantly, EPA stated that the “term ‘*de minimis*’ is not used in the [hazardous waste] regulations except in one provision applicable to commercial chemical products or intermediates,” which is not relevant to the regulation of CCRs under the Subtitle C hazardous waste program. *Id.* In conclusion, EPA stated simply that such *de minimis* releases would be addressed through the Subtitle C hazardous waste regulations that “address responses to unplanned releases, such as accidental spills or leaks.” *Id.*

Having confirmed that the inevitable *de minimis* releases of CCRs during normal power plant operations would be subject to full hazardous waste regulation, and understanding that such releases would therefore constitute improper disposal of CCRs, EPA apparently also recognizes that the Subtitle C option would thrust utilities into a regulatory regime where full compliance is impossible. See 40 C.F.R. § 260.10 defining “disposal” under the Subtitle C regulations to include, among other things, the “spilling, leaking or placing of any solid waste or hazardous waste onto or on any land.” Though this eventuality would seem to be of significant concern to regulators and utilities alike, EPA provides no thoughtful discussion of or practical solution to the problem.

This foreseeable consequence of the Subtitle C option is directly contrary to the Bevill Amendment’s directive that EPA avoid imposition of the Subtitle C regulations on CCRs to the greatest extent possible so as not to impose undue regulatory burdens on

utilities and discourage the use of coal. See 126 Cong. Rec. at 3361. Further, such an impractical regulatory program constitutes unreasoned agency decision-making; it is a fundamental principle of administrative law that it is arbitrary and capricious to establish a regulatory program that makes full compliance impossible. See *Alliance for Cannabis Therapeutics v. DEA*, 930 F.2d 936, 940 (D.C. Cir. 1991) (impossible requirements imposed by the Agency are per force unreasonable, citing *D.C. Transit Sys., Inc. v. Wash. Metro. Area Transit Comm.*, 466 F.2d 394, 402 (D.C. Cir. 1972)).

On a related note, USWAG does not support EPA's effort to set the CERCLA hazardous substance reportable quantity (RQ) for CCRs based on the RQ of the most toxic substance present in the waste (*i.e.*, arsenic and mercury RQs of 1 pound). 75 Fed. Reg. at 35183-84. This standard would require the reporting to the National Response Center and local emergency response organizations for releases of 1 pound of CCRs, even though the maximum concentration of arsenic in the waste is 773 parts per million (ppm) and the maximum concentration of mercury is 384 ppm. *Id.* at 35185. Establishing an RQ for CCRs that is based on the thresholds for arsenic and mercury even though these substances may be present at exceedingly low levels would trigger reporting for releases that contain only minimal levels of hazardous constituents. This would divert utility personnel as well as federal and local regulators and emergency response personnel to these spills and away from other, potentially more harmful, releases. Instead, USWAG supports EPA's alternative proposal whereby the Agency would set the RQ for CCRs based on the maximum observed concentration (or EPA identified maximum concentrations) of each hazardous substance constituent such that CCRs would only trigger its RQ when a constituent triggers its individual RQ. *Id.* at

35185. Based on EPA's data, this would mean that CCRs would not trigger an RQ threshold until 1,294 pounds had been released based on the maximum concentration of arsenic in CCRs.

B. The Subtitle C Option Will Result In Serious Disposal Capacity Shortfalls

As USWAG and others have repeatedly warned EPA throughout this rulemaking process, a combination of factors associated with the Subtitle C regulation of CCRs will create a serious shortfall of on-site CCR disposal capacity, requiring more CCRs to be shipped off-site for disposal in commercial Subtitle C facilities. If only a fraction of the estimated 76 million tons of CCRs disposed of annually (see 75 Fed. Reg. at 35158) is diverted to the commercial hazardous waste disposal market, the commercial market will be overwhelmed, leaving CCR generators as well as thousands of other generators of non-CCR hazardous waste without any legally viable disposal options for their wastes.

As EPA acknowledges, only two million tons of hazardous waste are disposed of annually in hazardous waste landfills; the total current national commercial hazardous waste disposal capacity is between 23.5 and 30.3 million tons. *Id.* However, based on a survey of electric utilities evaluating how the industry would dispose of CCRs under the Subtitle C option, the EPRI Cost Report found that at least 12% of CCRs would be diverted to the commercial Subtitle C hazardous waste disposal market. EPRI Cost Report at 3-6. This correlates to approximately 15 million to 21 million of CCRs annually having to be disposed of in a Subtitle C commercial landfill, in comparison to the approximately two million tons of hazardous waste currently disposed of in commercial hazardous waste landfills. *Id.* at 4-5. This would be approximately an order

of magnitude increase, on an annual basis, of the amount of wastes having to be disposed of in the Subtitle C commercial market and would, within two years, overwhelm the overall nationwide Subtitle C landfill capacity of 23.5 to 30.3 million tons. *Id.*

As discussed below, the states have already raised these concerns, warning EPA that they will not have the ability to permit the necessary additional hazardous waste disposal capacity in a timely fashion. These findings disprove EPA's assumption that owners and operators of CCR landfills will be willing to or be capable of converting all their existing CCR disposal units to permitted Subtitle C disposal units and that there will be no shift in "disposal patterns in a way that substantially increases the disposal of CCRs off-site from generating facilities to commercial hazardous waste landfills." *Id.* at 35158.

The results from the EPRI survey should not be surprising as a multitude of factors make clear that subjecting CCRs to Subtitle C regulation will quickly overwhelm Subtitle C disposal capacity. First, the Subtitle C option effectively mandates the phase-out of CCR surface impoundments, meaning that approximately thirty million tons of CCRs currently managed annually in surface impoundments will have to be converted to management in landfills. In turn, utilities must either obtain permits for this additional landfill capacity or divert the additional volumes of CCRs to the commercial market. A significant percentage of existing CCR landfills, including commercial RCRA Subtitle D landfills that receive CCRs today, will not be able to obtain Subtitle C permits or will decline to attempt to do so for a variety of reasons, including the length and uncertainty of the Subtitle C permitting process and the intense public opposition to the citing of any

new hazardous waste landfills, especially for CCRs. See EPRI Cost Report at 3-6, 4-5 and 4-6. This strong opposition to the siting of any new CCR landfills by activist groups has already been well-documented during the EPA-sponsored public hearings on this proposal.

Additionally, some states, including Florida and Kansas, prohibit the siting of hazardous waste landfills, which would foreclose any opportunity for the continued on-site or nearby disposal of CCRs. See Letter from Kansas Department of Health and Environment to EPA (Sept. 21, 2009) (attached as Appendix 28), (explaining that Kansas “state law prohibits the land disposal of any RCRA hazardous waste. If [CCR] is declared ‘hazardous,’ all current permitted disposal activities would become prohibited and these wastes would need to be transported out of state for disposal).” Florida has cautioned EPA of the same result in that state. See Letter from Florida Department of Environmental Protection to EPA, (April 27, 2009) (attached as Appendix 29). Therefore, it is simply unrealistic for EPA to assume that all existing CCR landfill disposal capacity, or even a majority of such capacity, could be readily converted to RCRA Subtitle C units.

Further compounding the disposal capacity problem is that certain CCR beneficial uses currently employed in the market will be prohibited, creating additional volumes of CCRs that must be disposed of. For example, EPA takes the position that many large-scale structural fill projects (which would fall within EPA’s broad description of “large scale fill operations”) do not constitute an excluded beneficial use. As a result, the millions of tons of CCRs, which have historically been beneficially used for these fill operations, would be diverted to the Subtitle C disposal market, increasing demand on

the already strained disposal market. EPA may suggest, in response, that CCR beneficial use opportunities will increase under the Subtitle C option, but this theory has already been uniformly rejected by the states, the CCR beneficial use market, and other independent third parties. Despite any additional appeal of CCR beneficial uses that may arise in the context of a severe disposal capacity shortage, numerous and significant hurdles to CCR beneficial use including, but not limited to, the stigmatizing effect Subtitle C regulation will have on CCRs will severely limit the opportunities for beneficial use of CCRs. In short, there is no disputing the fact that promulgation of any Subtitle C option will mean that tens of millions of tons of CCRs would have to be disposed of on an annual basis; there simply will not be enough Subtitle C disposal capacity to absorb these materials.

USWAG is not alone in cautioning EPA about the short-fall in disposal capacity that will arise under the Subtitle C option. Also vocal in their opposition to the Subtitle C approach are the states, the entities that are closest to this issue, as they have the greatest wealth of information regarding existing disposal capacity, and who ultimately would be responsible for permitting the necessary new landfills. ECOS has specifically cautioned EPA that the current Subtitle C commercial disposal capacity will not be able to accommodate the influx of CCRs into the system if CCRs are regulated under Subtitle C. Like USWAG, ECOS pointed out that, if just a fraction of CCRs currently being disposed of in on-site utility landfills are diverted into the Subtitle C commercial disposal market, the commercial market will be quickly overwhelmed.

On this point, ECOS states that “[i]n the unlikely event that beneficial use continues at its current rate *and* half of the coal fired utilities seek Subtitle C permits for

the disposal facilities that they manage, *the 2013 capacity [for commercial Subtitle C facilities] will be consumed in less than one year.*” See Letter from ECOS to Mr. Mathy Stanislaus, EPA, at 5. (Oct. 15, 2009) (emphasis added) (attached as Appendix 30). ECOS also cautions that “[c]onsuming the commercial hazardous waste landfill capacity not only means that [CCRs] will begin to pile up unmanaged at utilities, but that the current 2 million tons of hazardous waste generated by industry and hazardous waste site remedial activities will also begin to accumulate on-site,” bringing to a halt Superfund clean-ups that require off-site disposal capacity. *Id.* at 5-6. As ECOS points out, it “can take years to permit a new hazardous waste landfill.” *Id.*

ASTSWMO has echoed this same concern to EPA. Letter from ASTSWMO to Matt Hale, EPA (Nov. 4, 2009) (attached Appendix 13). Among other points, ASTSWMO observed that the state resources required to manage up to an additional 134 million tons of CCRs will divert resources from the proper management of existing hazardous wastes (which are likely far more hazardous).

In sum, the record evidence shows that, contrary to EPA’s belief, subjecting CCRs to Subtitle C regulation will quickly overwhelm the Subtitle C disposal market. The foreseeable shortfall in off-site CCR disposal capacity compounded with the inability to manage CCRs on-site will force utilities to either store CCRs on-site, in non-compliance with RCRA’s permit requirements (subjecting the utility to continuing daily penalties), or cease operations altogether to avoid producing CCRs. These alternatives are not acceptable or warranted.

C. Other Issues Related To Subtitle C Regulation

Another serious problem with the proposed Subtitle C regulations is the elimination of the management options to (1) dispose of and store CCRs in surface impoundments, and (2) allow for the placement of wastewaters in impoundments that contain CCRs. EPA suggests in the preamble to the proposal that the continued wet handling of CCRs in surface impoundments can be conducted in a manner that is protective of human health and the environment provided that the proposed composite liner requirements are met. 75 Fed. Reg. at 35174. However, certain components of the land disposal restrictions (“LDRs”) that the Agency proposes would eliminate the use of surface impoundments, even those that employ the requisite liner systems. The application of these restrictions has not been adequately justified, imposes unnecessary burdens on the utility industry, and constitutes arbitrary and capricious rulemaking.

In the preamble to the CCR Subtitle C proposal, EPA suggests that the continued wet handling of CCRs in surface impoundments would be authorized and that the Agency would establish composite liner systems for surface impoundments and landfills. *Id.* The proposed regulatory text, however, does not include the composite liner requirements for surface impoundments. EPA explained that it would adopt such requirements because the Risk Assessment on which the Agency bases much of the rationale for the CCR proposal determined that “[c]omposite liners, as modeled in this assessment, effectively reduce risks from all constituents to below the risk criteria for both landfills and surface impoundment at the 90th and 50th percentiles.” *Id.* at 35145. Based largely on this finding, EPA proposes to establish a composite liner system for landfills and surface impoundments under the Subtitle C option because the Agency

believes a composite liner system would be adequately protective of human health and the environment. *Id.* at 35174. In making this proposal, EPA intended to replace the double liner system currently in the hazardous waste regulations because such technology would be unnecessarily burdensome. *Id.* Although the preamble indicated that these alternative standards would be applicable to both surface impoundments and landfills, the proposed composite liner regulations were only applicable to CCR landfills.

It seems that EPA did not establish composite liner requirements for surface impoundments because other portions of EPA's proposed regulatory scheme would effectively eliminate CCR impoundments. As EPA well knows, the addition of the 100 mg/l total suspended solids ("TSS") LDR treatment standard for CCRs in surface impoundments will have the practical effect of eliminating the use of surface impoundments for both the disposal of CCRs as well as the management of wastewater in impoundments that contain CCRs. See 75 Fed. Reg. at 35262 (proposed 40 C.F.R. § 268.40). The TSS standard that EPA proposes to impose on CCR-containing wastewater has never previously been applied to other types of hazardous wastes and the Agency has barely attempted to provide *any* justification for virtually eliminating the wet handling of CCRs in surface impoundments that would otherwise meet all other proposed management standards and all other applicable LDR treatment standards. The other applicable LDR standard is that the CCR wastewater must meet the Universal Treatment Standards ("UTS") at 40 C.F.R. Part 268. The TSS treatment standard would be in addition to the UTS LDR treatment standard. EPA establishes this standard because it believes that dry disposal of the CCR solids will protect human health and the environment which is borne out by the results of the Agency's risk assessment and

damage case assessments, which show that wet disposal poses the greatest risks of contaminant release.” *Id.* at 35180. This rationale is wholly inadequate given that only a few pages earlier in the preamble EPA maintains that composite liners are adequately protective of human health and the environment for surface impoundments. *Id.* at 35174.

EPA’s incorporation of the TSS LDR standard to eliminate the wet handling of CCRs in surface impoundments is unwarranted and constitutes arbitrary and capricious rulemaking. These surface impoundments would need to be constructed with composite liners which the Agency has explicitly determined are sufficiently protective of human health and the environment and would need to meet groundwater monitoring and location restrictions, as well as the LDR standards normally applicable to all other hazardous waste units, all of which, based on EPA’s own determination, would result in the safe management of CCRs. Adding the TSS LDR standard to an already protective regime is an abuse of Agency rulemaking discretion.

IX. THE SUBTITLE C PROPOSAL TO REGULATE INACTIVE AND/OR PREVIOUSLY CLOSED SURFACE IMPOUNDMENTS IS UNLAWFUL

One of the most extreme examples of Agency overreach in the Subtitle C option is the unprecedented and unlawful proposal to extend RCRA Subtitle C jurisdiction to previously closed and/or inactive CCR surface impoundments. *Id.* at 35177. Even if such impoundments did not receive CCRs after the effective date of the rule, EPA would require these impoundments to close in compliance with the rule. EPA acknowledges that it has never attempted to extend RCRA in such a far-reaching manner to any other hazardous waste in its thirty-year implementation of the statute. In fact, EPA has consistently taken the opposite position throughout its administration of

the RCRA program, explaining that RCRA's Subtitle C regulations are prospective in nature and are not directed at inactive facilities for a host of practical, equitable and economic reasons. See e.g., 43 Fed. Reg. 58984 (Dec. 18, 1978); 45 Fed. Reg. 33074 (May 19, 1980).

Nonetheless, EPA is proposing to reverse this position in the case of CCRs and retroactively apply RCRA's Subtitle C hazardous waste rules to previously closed and/or inactive CCR surface impoundments on the theory that the definition of "regulatory disposal" encompasses "passive leaking" from these units, and includes "the continued release of constituents to surrounding soil and groundwater through the continued infiltration of precipitation through inappropriately closed CCR impoundments" *Id.* at 35177. Under this theory, any previously closed and/or inactive CCR surface impoundment that is no longer receiving CCRs, but which has not closed pursuant to the interim status hazardous waste closure requirements, would be subject to full Subtitle C hazardous waste controls on the effective date of the Subtitle C rules and would have to "re-close" under the hazardous waste regulations. See *id.* at 35258 (proposed 40 C.F.R. § 265.1300). This would mean that literally hundreds of previously closed and inactive surface impoundments - many of which were properly closed decades ago under state solid waste programs, have changed owners, and now have structures built on top of them - would be considered "active" CCR disposal units and would be subject to full Subtitle C hazardous waste regulation. EPA's position runs directly counter to existing case law on the definition of disposal, as well as Congress' RCRA and CERCLA statutory scheme, and would raise a host of practical and compliance issues that EPA has, itself, recognized.

A. EPA's Position On Passive Migration Is Contradictory To Federal Case Law

EPA's current position that RCRA's definition of "disposal" applies to closed and/or inactive units has been flatly rejected by the courts. Five United States Courts of Appeals have looked directly at the question of whether the definition of "disposal" includes the type of passive migration that EPA is proposing to force into the scope of these regulations. All five courts have soundly rejected this interpretation.²⁸ Although these cases have considered the definition of disposal in the context of CERCLA, 42 U.S.C. § 9601 *et seq.*, "the distinction is of no moment" as CERCLA specifically incorporates by reference RCRA's statutory definition of "disposal." *Delaney v. Town of Carmel*, 55 F. Supp. 2d 237, 256 (S.D.N.Y. 1999); *see also Interfaith Cmty. Org. v. Honey-Well Intl Inc.*, 263 F. Supp. 2d 796, 846 n.10 (D.N.J. 2003) (finding that although the Third Circuit's opinion in *United States v. CMDG Realty Co.*, 96 F.3d 706 (3rd Cir. 1996), "addressed CERCLA liability, the Court was interpreting the RCRA definition of 'disposal'" and the Third Circuit's holding was therefore controlling in an assessment of RCRA liability as well).²⁹

Under RCRA, "disposal" means:

[t]he discharge, deposit, injection, dumping, spilling, leaking, or placing of any solid waste or hazardous waste into or on any land or water so that such solid waste or hazardous waste or any constituent thereof may enter

²⁸ Notably, the only Administrative Law Judge ("ALJ") to have considered this issue also concluded that the term "disposal" does not include the passive migration of hazardous waste. *In re Globe Aero Ltd., Inc. and the City of Lakeland*, 1996 EPA ALJ Lexis 47 (June 4, 1996). The ALJ held that "[d]isposal is an act rather than a state of continued noncompliance. The fact that the waste or waste constituents may migrate does not provide a basis for finding a continued disposal violation." *Id.* (internal citations omitted)."

²⁹ See CERCLA § 101(29), 42 U.S.C. § 9601(29) ("The term[] 'disposal' shall have the same meaning provided in section 1004 of the Solid Waste Disposal Act")

the environment or be emitted into the air or discharged into any waters, including ground waters.

RCRA § 1004(3), 42 U.S.C. § 6903(3). Most recently, the Court of Appeals for the Ninth Circuit joined four other circuit courts in rejecting the notion that the passive migration of contaminants through the soil falls within this statutory definition of “disposal.” See *Carson Harbor Vill. v. Unocal Corp.*, 270 F.3d 863 (9th Cir. 2001). Adhering to the Supreme Court’s admonition that “[i]n examining the statutory language, we . . . adhere to the ‘Plain Meaning Rule,’” the court reasoned that “[i]f we try to characterize this passive soil migration in plain English, a number of words come to mind, including gradual ‘spreading,’ ‘migration,’ ‘seeping,’ ‘oozing,’ and possibly ‘leaching.’ But certainly none of those words fits within the plain and common meaning of ‘discharge, . . . injection, dumping, . . . or placing.’” *Id.* at 879 (ellipses in original). The Ninth Circuit’s holding in *Carson Harbor Vill.* therefore is directly at odds with EPA’s proposed interpretation that the passive migration of constituents from previously closed CCR surface impoundments constitutes “disposal” under RCRA. See also *Delaney*, 55 F. Supp. 2d at 256 (“the alleged passive migration of hazardous waste, through the groundwater or otherwise[,] . . . does not constitute ‘disposal’ of hazardous waste as defined in RCRA”).

In addition, the Sixth Circuit has held that “because ‘disposal’ is defined primarily in terms of active words such as injection, deposit, and placing, the potentially passive words ‘spilling’ and ‘leaking’ should be interpreted actively[.]” *United States v. 150 Acres of Land*, 204 F.3d 698, 706 (2000). As there would be no human activity involved in the movement of water through closed and/or inactive CCR impoundments, EPA’s

proposed expansion of the definition of “disposal” to include passive migration directly contradicts the Sixth Circuit’s holding.

The Second Circuit has similarly agreed that “[n]one of these terms [*i.e.*, discharge, deposit, injection, dumping, spilling, leaking, or placing] is commonly used to refer to the gradual spreading of hazardous chemicals already in the ground.” *ABB Industrial Systems v. Prime Technology*, 120 F.3d 351, 358 (2d Cir. 1997). Therefore, this Circuit’s holding would also not permit EPA’s proposed expansion of “disposal” to include the gradual spreading of chemicals already in the ground.

In addition, the Third Circuit has held that, based on the plain meaning of the words used to define disposal, “the passive migration of contamination dumped in the land prior to ownership does not constitute disposal.” *United States v. CDMG*, 96 F.3d 706, 711 (3rd Cir. 1996). The Third Circuit noted that its conclusion was supported by the fact that the term “leaching” is not included in the statutory definition of “disposal.” *Id.* at 715. The Third Circuit’s holding in *CDMG* rejects EPA’s efforts to force the “passive migration” of wastes into the definition of “disposal.”

The Fifth Circuit has also agreed that where the plaintiff “failed to show that any hazardous waste ‘leaked’ or ‘spilled’ during [the defendant’s] ownership of the property[,] a disposal did not occur during [the defendant’s] ownership.” *Joslyn Mfg. Co. v. Koppers Co.*, 40 F.3d 750, 762 (5th Cir. 1994). This position is consistent with the holdings in the Second, Third, Sixth and Ninth Circuits, and similarly demonstrates that EPA’s proposed passive disposal theory violates RCRA’s clear statutory language.

B. EPA's Proposal Runs Afoul Of Congress' Statutory Scheme

As EPA knows, it is elementary that RCRA's Subtitle C hazardous waste rules have properly and consistently been construed as being *prospective* in nature. Remedial statutes such as CERCLA, as well as RCRA's imminent and substantial endangerment provision, are the congressionally-provided statutory mechanisms that EPA has used to address historic waste management operations, including previously closed CCR surface impoundments. See *Gwaltney of Smithfield v. Chesapeake Bay Found.*, 484 U.S. 49, 57 (U.S. 1987) (noting that Congress "has demonstrated ... [through amendment of RCRA's citizen suit provision in 1984 to include Section 7002(a)(1)(B)] that it knows how to avoid th[e] prospective implication [of the RCRA statute] by using language that explicitly targets wholly past violations.").

The prospective nature of RCRA's Subtitle C regulatory program derives from the plain language of RCRA Section 3004(a), under which EPA is authorized to promulgate Subtitle C regulations, including the proposed regulations at issue here. That language provides, in pertinent part, that EPA is to promulgate regulations "applicable to owners and operators of facilities for the treatment, storage, or disposal of hazardous waste." 42 U.S.C. § 6924(a). In contrast to RCRA's imminent hazard and citizen suit provisions where Congress specifically referenced "past" disposal practices, the language of Section 3004(a) makes clear that the Subtitle C regulations are to apply only to active, ongoing treatment, storage, and disposal operations – *not* to closed and/or inactive facilities. See, e.g., RCRA § 7002 (a)(1)(B)(authorizing a citizen suit against any "past or present" generator, transporter, owner, or operator of a treatment, storage, or

disposal facility “who has contributed or who is contributing to the past or present handling, storage, treatment, transportation, or disposal of certain hazardous waste”).

Additionally, EPA’s proposed interpretation of “disposal” renders the statutory phrase “past . . . disposal . . . of any solid or hazardous waste” in RCRA’s imminent and substantial endangerment provision meaningless because, under the Agency’s interpretation, as applied to CCR impoundments, there can be no “past” disposal of CCRs in impoundments, only present, *ongoing* disposal. This interpretation of the statute defies both logic and the plain language of the statute. *See Allen Oil Co., Inc. v. Comm’r of Internal Revenue*, 614 F.2d 336, 339 (2d Cir.1980) (“[A] statute must, if reasonably possible, be construed in a way that will give force and effect to each of its provisions rather than render some of them meaningless.”).

Furthermore, as the Third Circuit in *United States v. CDMG* noted in finding that the definition of disposal does not include passive migration, the term “leaching” is not included within the scope of the activities that constitute disposal. 96 F.3d at 715. “Leaching” is not an obscure term that Congress would have overlooked in drafting the definition of “disposal.”³⁰ Rather, inclusion of the term “leaching” in the definition of “release” under other provisions of the CERCLA statute demonstrates that Congress was aware of this process, understood it was conceptually different than “leaking” or

³⁰ As EPA well knows, “leaching” is the “process or an instance of separating the soluble components from some material by percolation,” see Webster’s Third New International Dictionary, Unabridged 1285 (Philip Babcock Gove & the Merriam-Webster Editorial Staff eds., 1986), and is commonly used in the environmental context to describe the type of migration of contaminants (*i.e.*, “the continued release of constituents to surrounding soil and groundwater through the continued infiltration of precipitation”) that EPA now proposes include in its overly expansive interpretation of the definition of “disposal.” *Id.* (“Leaching of contaminants from rain and groundwater movement is a principal cause of contaminant movement in landfills, see Superfund [Exposure Assessment Manual 8 (1988)], and is the predominant cause of groundwater contamination from landfills, Edward Repa & Charles Kufs, Leachate Plume Management 2 (1985).”)

“spilling,” and chose not to include it in RCRA’s definition of “disposal.” EPA’s proposal, which would essentially read a term into RCRA’s definition of disposal that Congress had included in similar statutes, but chose not to include here, impermissibly violates fundamental canons of statutory construction.

C. Regulating Previously Closed/Inactive CCR Surface Impoundments Raises A Host Of Legal And Practical Implications

Even EPA has recognized the illogical implications of interpreting “disposal” to apply to closed and/or inactive facilities. When the Agency first promulgated the Subtitle C hazardous waste rules, it candidly and correctly acknowledged that the hazardous waste regulations, for a multitude of legal, practical, economic, equitable, and technical reasons, should not be applied to units that have ceased operation before the effective date of an otherwise applicable Subtitle C rule. The Agency explained:

RCRA is written in the present tense and its regulatory scheme is organized in a way which seems to contemplate coverage *only of those facilities which continue to operate after the effective date of the regulations*. The Subpart D standards and Subpart E permitting procedures are not directed at inactive facilities. *Enormous technical, legal, and economic problems would arise if these standards were to be directly applied to inactive facilities [i.e., those facilities which have ceased receiving, treating, storing and disposing of wastes prior to the effective date of the Subtitle C regulations] and all such facilities were required to upgrade*. Such an approach also does not seem equitable because of the enormous difficulty of bringing a closed facility into compliance, and because the present owner of land on which an inactive site is located might have no connection (other than present ownership of the land) with the prior disposal activities.

For those reasons, EPA does not plan to apply Subpart D standards to inactive facilities. The Agency believes that it can more equitably use Section 7003 (Imminent Hazard) of RCRA to bring suit against inactive facilities which pose human health and environmental problems[.]

43 Fed. Reg. at 58984 (emphasis added). EPA’s proposal offers no legal basis or other rationale for its position as to why RCRA is no longer “written in the present tense” or

why its regulatory scheme is no longer “organized in a way which seems to contemplate coverage only of those facilities which continue to operate after the effective date of the rules.” Nor does EPA provide any reason why all the “enormous technical, legal, and economic problems” that would arise from applying RCRA’s Subtitle C regulations to inactive units would not apply to closed and/or inactive CCR surface impoundments. Similarly, EPA does not explain why an approach that was not equitable thirty years ago “because of the enormous difficulty of bringing a closed facility into compliance” with the Subtitle C hazardous waste regulations is somehow equitable in the case of closed CCR surface impoundments today.

Rather than provide a justification for its abrupt and complete reversal of the statutory scope of RCRA, the Agency simply asserts that this new position is appropriate because of the size of previously closed CCR surface impoundments and the volumes of CCRs that remain in these units. The same could be said, however, for the literally thousands of *non*-utility landfills and surface impoundments that had closed prior to the enactment of RCRA’s Subtitle C regulations over thirty years ago when EPA correctly reasoned that RCRA was not designed to address such units. EPA has not attempted to reach these other disposal units under RCRA’s Subtitle C regulations, however; the preposterous theory that the Agency now advances has been reserved for previously closed CCR surface impoundments. There is no basis for EPA’s attempt to reverse course solely in the case of CCR impoundments. The lack of any reasoned analysis for this about-face is the hallmark of arbitrary and capricious agency action. *AT&T v. FCC*, 236 F.3d 729 (D.C. Cir. 2001) (Agency “cannot silently depart from

previous policies or ignore precedent”), citing *Greater Boston v. FCC*, 444 F.2d 841, 852 (D.C. Cir. 1970).

EPA’s proposal also assumes, without any record evidence, that every former CCR surface impoundment, including those that closed in full conformance with applicable state laws and regulation, are now experiencing passive disposal from those units (*i.e.*, the leaching of CCR constituents from the impoundment). Put another way, under the proposal, any former surface impoundment that did not close in accordance with the hazardous waste closure requirements, even though the hazardous waste closure rules did not apply at the time of the unit’s closure, was closed improperly and is releasing constituents to the environment. EPA has no knowledge that this is in fact the case. The Agency also does not know how many such units exist, where they are located, or how they were closed. In fact, units that closed in a fully protective manner and pose no threat to human health and the environment would be subject to regulation because the Agency assumes without any evidence that constituents are leaching from the unit. Any final regulation based on such an ill-informed and wholly unsubstantiated assumption constitutes arbitrary and capricious agency action and cannot be sustained.

Notably, EPA’s proposal would also require “disposal” to be interpreted as a continued state of noncompliance without any discrete ending, for however many years and/or however many miles wastes continued to migrate. This entire time, a current, former, or even adjoining landowner could find themselves liable under RCRA for this so-called “disposal.” Such unlimited and unending RCRA liability clearly violates both the letter and the spirit of the statute.

EPA's proposal would have absurd practical implications and contravene Congress' directive that, in determining whether and how to regulate CCRs under RCRA, EPA was to avoid Subtitle C regulation if at all possible – not subject CCRs to the most stringent disposal regulations applicable to any hazardous waste regulated under Subtitle C. The proposal cannot be sustained because it violates the plain language of RCRA and, for this reason, has been flatly rejected by five United States Courts of Appeals that, upon examining the issue have determined that the inclusion of passive migration in RCRA's definition of "disposal" is at odds with the text and purpose of RCRA.

X. EPA VIOLATED THE REGULATORY FLEXIBILITY ACT

A. Background of RFA and SBREFA

In addition to the points discussed above, the Subtitle C option is fatally flawed due to EPA's failure to adhere to the requirements of the Regulatory Flexibility Act ("RFA"), 5 U.S.C. §§ 601-612, as amended by the Small Business Regulatory Enforcement Fairness Act ("SBREFA"), Pub. L. No. 104-121, tit. II, 110 Stat. 857, 864-68 (1996). Congress enacted the RFA to address the often disproportionate adverse economic effect that many federal regulations had on small entities, even when those small entities had done little to create the problems which the blanket regulations sought to correct. See Pub. L. No. 96-354, § 2(a), 94 Stat. 1164. As originally enacted, the RFA required that federal agencies solicit comments from small³¹ entities; examine the impact of proposed, newly promulgated, and existing rules on small entities; examine

³¹ The term "small" as used in this section to modify the words "business," "businesses," "entity," "entities," "government," "governments," "utility," and "utilities" refers to the small business size standards established by the Small Business Administration and located at 13 C.F.R. § 121.201 (Sector 22).

regulatory alternatives that would achieve the same purposes while minimizing adverse impacts on small businesses; and review the continued need for existing rules. Pub. L. No. 96-354.

Under the RFA, agencies must prepare and publish a preliminary regulatory flexibility analysis when proposing a rule, and a final regulatory flexibility analysis when issuing a final rule. 5 U.S.C. §§ 603-604. The RFA creates an exception from these requirements where the administrator of an agency “certifies that the rule will not, if promulgated, have a significant economic impact on a substantial number of small entities [“SISNOSE].” *Id.* § 605(b). Congress raised the bar for these no-SISNOSE certifications in 1996 with passage of SBREFA, removing the language allowing agency administrators to “publish such certification ... along with a *succinct* statement explaining the reasons for such certification” and instead requiring agencies to publish the certification “along with a statement explaining the reasons for such certification.” See Pub. L. No. 96-354; Pub. L. No. 104-121. The removal of the word “succinct” from this provision signals Congress’ intention that agencies provide a more thorough justification before making a no-SISNOSE certification and thereby avoid the requirement of examining the rule’s impact on small entities through preparation of a regulatory flexibility analysis.

SBREFA also amended the RFA to require that EPA receive input from affected small businesses through the Office of Advocacy of the Small Business Administration (“SBA”) before the required initial regulatory flexibility analysis is published. See 5 U.S.C. § 609(b). Additionally, when an agency’s proposal is expected to have a SISNOSE, the agency must convene a panel of employees from the agency, the Office

of Advocacy, and the Office of Management and Budget (“OMB”) to review a copy of the draft proposed rule and related agency analyses under RFA. *Id.* This Small Business Advocacy Review (“SBAR”) Panel must also collect advice and recommendations of each individual small entity representative identified by the agency (through consultation with the SBA’s Chief Counsel for Advocacy) and report on the panel’s findings with respect to this input from small entities. *Id.* § 609(b)(4)-(5). Following the report of the SBAR Panel, where appropriate the agency must modify its proposed rule, initial regulatory flexibility analysis, and/or its decision on whether an initial regulatory flexibility analysis is required. *Id.* § 609(b)(6).

B. The Agency’s Determination Under § 605(b) That The Rule Would Not Have A SISNOSE Was Arbitrary And Capricious.

In evaluating the small business impact of the Subtitle C option, EPA failed to account for a number of potentially affected small entities in Step 1. This error was compounded by EPA’s omission of a number of significant economic impacts associated with the Subtitle C Option in Step 2. As a result, EPA’s determination in Step 3 that the rule was appropriate for § 605(b) “No SISNOSE” certification was fatally flawed.

As a threshold matter, USWAG believes that EPA grossly undercounted the number of small power producers and small governments that will be directly and adversely affected by the Subtitle C Option, if promulgated. This issue is discussed in greater detail in the comments of USWAG members APPA and NRECA, the relevant portions of which are herein incorporated by reference.

In addition, EPA failed to consider the full range of cost impacts associated with the Subtitle C option. For example, as discussed above, compliance with the Subtitle C

option would require utilities to convert from the wet to dry handling of CCRs, effectively requiring the closure of CCR surface impoundments and forcing the construction of new wastewater treatment facilities, a function previously served by the CCR impoundments. Promulgation of the Subtitle C option would also compel many utilities to obtain RCRA Subtitle C operating permits, which in turn would require these facilities to undertake facility-wide Subtitle C corrective action. While it is difficult to provide an industry wide number for these costs, they can be significant depending on plant specific characteristics. Utilities also would incur additional costs required to retrofit upstream CCR handling units (*e.g.*, hoppers, tanks, conveyor systems) as well as implement additional operating and management measures to meet RCRA's hazardous waste design and operating requirements. In addition, regulation of CCRs under Subtitle C would force utilities to retrofit and/or re-close previously closed or inactive impoundments. As explained above, EPRI projects that compliance costs for the utility sector under the Subtitle C option would be in the range of at least \$55.3 to \$74.5 billion. EPRI Cost Report at 4-1.

The magnitude of these costs will prove devastating for small electric cooperatives and small governments, including many members of USWAG, members APPA and NRECA. Anticipating this foreseeable result, prior to the proposal's publication both APPA and NRECA made a formal request of EPA that the Agency convene an SBAR Panel. Letter from APPA and NRECA to EPA Administrator Jackson (Nov. 3, 2009) (attached as Appendix 32). The information provided to EPA by APPA and NRECA made clear that the Subtitle C option would have an enormous impact on a number of small utilities, and certainly demonstrated that, at the very least, the RFA and

SBREFA required EPA to conduct a thorough analysis of the extent of these impacts before deciding how to proceed with respect to the subsequent statutorily-prescribed process. Nonetheless, the Agency declined to convene an SBAR Panel, and subsequently proceeded to issue its ill-informed and short-sighted no-SISNOSE certification. These actions were in direct contravention of the RFA, as amended by SBREFA, and were arbitrary and capricious.

CHAPTER THREE

EPA SHOULD ADOPT FEDERAL NON-HAZARDOUS WASTE RULES FOR CCRS

XI. EPA SHOULD ADOPT THE SUBTITLE D PRIME OPTION, WITH APPROPRIATE ADJUSTMENTS, AND COORDINATE IMPLEMENTATION OF THE SUBTITLE D REGULATIONS WITH THE STATES

As USWAG has testified at the EPA public hearings on this proposal, we support the development of Subtitle D non-hazardous waste regulations for CCRs under the proposed Subtitle D “Prime” option, provided that EPA first incorporates certain important modifications discussed below. See e.g., Testimony of USWAG Executive Director Jim Roewer at the EPA CCR Proposal hearing, Denver, CO (September 2, 2010) (attached as Appendix 31). The question for USWAG is not *whether* to regulate CCRs under a federal program, but *how* to regulate CCRs. The Subtitle D Prime option, with the proper adjustments, will allow EPA to establish a robust and environmentally protective program for coal ash disposal units without crippling coal ash beneficial use and imposing unnecessary regulatory costs on power plants, threatening jobs, power reliability, and increasing electricity costs. While some of our suggested modifications to the Subtitle D Prime proposal will likely necessitate issuance of a supplemental proposal, this additional procedural step is worthwhile because it will help ensure promulgation of an environmentally protective regulatory program for CCRs consistent with the rulemaking record and the dictates of the Bevill Amendment.

A. The Rulemaking Record Supports The Subtitle D Option

At the outset, it is important to reiterate that the development of Subtitle D non-hazardous waste regulations for CCRs is consistent with the rulemaking record; in fact, as discussed above, it is the only lawful option available to the Agency. The

development of Subtitle D regulations would be the appropriate outgrowth of EPA's two Reports to Congress and two Regulatory Determinations under the Bevill Amendment declaring that CCRs do not warrant hazardous waste regulation under RCRA Subtitle C, but rather should remain primarily the province of state regulatory programs under RCRA Subtitle D.

Throughout its 20-year study and issuance of the required Reports to Congress and final CCR Regulatory Determinations, EPA has consistently found that the Subtitle D approach, with active state involvement, was the appropriate regulatory course for CCRs. In its first CCR Regulatory Determination in 1993, EPA concluded that, because "the potential for damage from these wastes is most often determined by site- or region-specific factors," the "current State approach to regulation" under RCRA Subtitle D is most appropriate. 58 Fed. Reg. at 42466. EPA echoed this finding in its second Report to Congress in 1999, concluding once again "that [RCRA] Subtitle C is inappropriate to address any problems associated with disposal of these wastes and that the continued use of site and region specific approaches by the states [under RCRA Subtitle D] is more appropriate for addressing the limited human health and environmental risks that may be associated with disposal of these wastes." 1999 Report to Congress at 3-5.

EPA reaffirmed the appropriateness of the Subtitle D option in its 2000 Regulatory Determination, concluding that "the subtitle D regulations are the most appropriate mechanism for ensuring that [CCRs] disposed in landfills and surface impoundments are managed safely." 65 Fed. Reg. 32221. In addition to the fact that CCRs rarely exhibit a hazardous waste characteristic, EPA explained that the decisive factors underlying its final determination that CCRs do not warrant regulation under

RCRA's Subtitle C hazardous waste regulations were: (1) improving trends in present CCR disposal and utilization practices (per the Bevill study factor in 8002(n)(2)); (2) the current and potential utilization of CCRs (*i.e.*, beneficial use), (per the Bevill study factor in 8002(n)(8)); and (3) Congress's admonition in the Bevill Amendment against duplication of efforts by other federal and state agencies. *Id.* at 32222, 32215.

In concluding that Subtitle D was the appropriate regulatory path forward, EPA also pointed to the record evidence as set forth in the 1999 Report to Congress that "the utility industry has made significant improvements in its waste management practices over recent years" and to similar record evidence that "state [CCR regulatory] programs have, in fact, substantially improved over the last 15 years or so." *Id.* at 32215, 32228-29. EPA found that "the ability for most states to impose specific regulatory controls for coal combustion wastes has increased almost three-fold over the past 15 years." *Id.* at 32230. EPA concluded that, "with the exception of relatively few states, the regulatory infrastructure is generally in place at the state level to ensure adequate management of these wastes." *Id.* at 32217. Critically, this positive trend has continued, with EPA and DOE finding in their joint report of state CCR controls that "[t]he data and analyses documented in this report provide new information that appears to show improved management of CCWs in both landfills and surface impoundments." DOE/EPA Report at S-11.

Since the initiation of this rulemaking effort, the record support for the Subtitle D option has become even more compelling. Over the last year, the overwhelming majority of the states, the National Governors' Association, municipal and local governments, ASTSWMO, ECOS, over two dozen state environmental protection

agencies and state departments of transportation, federal agencies including the Department of Energy, a bi-partisan group of 165 members of Congress, including the majority of the House Energy and Commerce Committee, 45 U.S. Senators, and many other third-parties have expressed their support for regulation of CCRs as a non-hazardous waste under RCRA Subtitle D.³² Given the breadth of federal agency, state, and local government and congressional support for the Subtitle D option, rejection of the Subtitle D option in favor of the Subtitle C approach would fly in the face of the Bevill Amendment's directive that any final regulatory program for CCRs take into account the views of other federal agencies and the states to ensure a unified decision that "avoid[s] a duplication of effort." See RCRA § 8002(n).

As discussed above, Representative Bevill repeatedly cautioned EPA that it was not to make a final regulatory determination for CCRs "in a vacuum," but rather was to consult and coordinate with other key agencies that also have evaluated CCRs, including, among others, the Departments of Energy, the Interior, and Agriculture, and other government agencies to ensure a coordinated regulatory approach for CCRs consistent with the nation's "commitment to develop a coherent and consistent policy toward the use of our coal and other energy resources." 126 Cong. Rec. at 3362. These federal, state, municipal and local agencies have spoken and they are overwhelmingly in support of the Subtitle D option over the Subtitle C approach.

Even EPA has found that the coal ash being recovered from TVA Kingston's CCR release can be safely disposed of in a RCRA Subtitle D non-hazardous waste

³² See attached CD-ROM entitled "Public Comments and Testimony on EPA's Regulation of Coal Combustion Residuals," (Nov. 19, 2010).

facility under the federal Superfund program. In other words, the CCRs from the very event that served as a primary impetus for this rulemaking proceeding are being safely disposed of in a Subtitle D non-hazardous waste facility with EPA's explicit approval. And just recently, the Tennessee Department of Health, in conjunction with the federal Agency for Toxic Substances and, Disease Registry, issued a final Public Health Assessment concluding that the coal ash from the TVA release did not result in groundwater contamination nor result in ambient releases of ash above levels of concern. Public Health Assessment, Tennessee Valley Authority (TVA) Kingston Fossil Plant, Tennessee Department of Health (Sept. 7, 2010).

In short, given the overwhelming views by the very agencies that Congress directed EPA to consult in determining how to regulate CCRs under RCRA, combined with EPA's own Reports to Congress and two final Regulatory Determinations rejecting the concept of regulating CCRs under RCRA's hazardous waste program, the Subtitle D option provides the only lawful regulatory approach for these materials under RCRA.

B. The Subtitle D Prime Option Will Be Fully Protective Of Human Health And The Environment

USWAG supports the Subtitle D Prime option because it would ensure the development of fully protective controls for CCRs in an effective and practical manner. It would include all the elements of the primary "Subtitle D" option with the exception that it "would not require the closure or installation of composite liners in existing surface impoundments; rather, these surface impoundments could continue to operate for the remainder of their useful life." 75 Fed. Reg. at 35210.

As EPA itself acknowledges, many of the Subtitle D option's substantive requirements, including those under Subtitle D Prime, are the same as those under the

Subtitle C option, including the technical and design standards for CCR liner systems, groundwater monitoring and associated corrective action, and surface impoundment integrity standards. 75 Fed. Reg. at 35193. In fact, many of the provisions under the Subtitle D option “either correspond to the provisions EPA is proposing to establish for RCRA Subtitle C, or are modeled after existing Subtitle C requirements.” *Id.* In addition to borrowing from key elements of RCRA’s existing standards for municipal solid waste landfills under 40 C.F.R. Part 258 – which the Agency found “would be expected to address the risks presented by the constituents in CCR wastes” – the proposed Subtitle D rules also considered and incorporated some of the self-implementing elements of RCRA’s hazardous waste interim status requirements into the Subtitle D proposal. *Id.*

Given that the Subtitle D Prime’s substantive controls are patterned in large part on the proposed Subtitle C controls, the overall level of protection to human health and the environment are equivalent under both options. As EPA explains in describing the protective nature of the Subtitle D option, the Agency has historically interpreted both the Subtitle C and Subtitle D statutory provisions as requiring it “to establish a comparable level of protection, corresponding to an acceptable risk level ranging between 1×10^{-4} to 1×10^{-6} ” and that EPA can establish even more stringent Subtitle D standards where it deems such regulations are appropriate. *Id.* Therefore, the Subtitle D Prime option would provide the same level of protection to human health and the environment as the Subtitle C option without the corresponding adverse impacts of the Subtitle C approach.

One of the elements of the Subtitle D Prime option that makes it the better choice is that it does not require all existing surface impoundments to close if they are

operating in a manner that is fully protective of human health and the environment. This option does *not* include the automatic requirement to dredge and line all existing CCR surface impoundments within five years of the effective date of the regulations, or close these impoundments. *Id.* at 35244 (proposed 40 C.F.R. § 257.71(g)). Under the Subtitle D Prime option, existing CCR surface impoundments would continue to be subject to groundwater monitoring and corrective action requirements so that any threats from these units during their operating life would be detected and appropriate corrective action would be taken. USWAG agrees that CCR disposal units that are not fully protective must either take appropriate corrective action or close; however, there are many CCR surface impoundments that are perfectly safe. There is no reason why these units should not be allowed to continue operating.

Indeed, one of the largest cost elements of the primary Subtitle D option is the mandatory upgrading and/or closure of all CCR surface impoundments, irrespective of their environmental performance. According to the EOP Group's analysis, the costs to the utility industry of converting CCR wet handling systems to dry CCR handling systems under the Subtitle D option would be approximately \$34 billion dollars. See EOP Report at 16 (attached as Appendix 19).³³ There is no basis for the blanket imposition of this requirement and the associated staggering costs on existing units that

³³ From a strict analytical perspective, EOP also evaluated compliance costs under the Subtitle D option assuming no facilities converted from wet to dry handling, but instead constructed new impoundments meeting the Subtitle D composite liner and groundwater monitoring requirements. Under this scenario, Subtitle D compliance costs were estimated to be approximately \$7 billion. *Id.* at 15. However, as EOP points out, this scenario is not realistic for a number of reasons including lack of land availability for constructing new impoundments, permitting concerns, local opposition and long-term liability. *Id.* at 15-16. In fact, EOP reports that, for these reasons, many utilities would undertake wet-to-dry conversions for all fly ash ponds and at least half of all bottom ash and FGD impoundments. *Id.* at 16. Indeed, even the \$34 billion Subtitle D cost estimate does not include the fully loaded costs of converting from wet-to-dry CCR management.

are operating in a safe and effective manner. USWAG therefore supports the Subtitle D Prime option because it will ensure that CCR disposal practices are protective of human health and the environment without requiring the needless closure of environmentally sound CCR impoundments.

C. The Subtitle D Program Must Include A Mechanism For State Implementation Of The CCR Rules

While USWAG supports the Subtitle D Prime option (with the adjustments discussed below), a major shortcoming of this approach, as well as with the other Subtitle D alternatives, is the lack of any mechanism for qualified state programs to step in and directly administer the Subtitle D regulations, where the state programs meet or exceed the federal controls. Such an approach makes no practical sense, and would result in parallel and redundant regulatory programs for the same materials and, more importantly, would directly contravene the Bevill Amendment's directive that EPA avoid duplication of effort with pre-existing regulatory programs. See RCRA 8002(n).³⁴ EPA has previously recognized this point. One of the Agency's primary reasons for concluding in its 2000 Regulatory Determination that CCRs do not warrant Subtitle C regulation was Congress's admonition in the Bevill Amendment against duplication of efforts by other federal and state agencies. 65 Fed. Reg. at 32215. Unfortunately, EPA has failed to adhere to this congressional directive in the proposed Subtitle D regulatory alternatives, including the Subtitle D Prime option.

³⁴ This section provides, in relevant part, that "the Administrator shall, as he deems appropriate, review studies and other actions of other Federal and State agencies concerning [CCRs] and invite participation by other concerned parties, including industry and other Federal and State agencies, with a view toward avoiding duplication of effort." 42 U.S.C. § 6982(n).

As a result of its findings in the final 2000 Regulatory Determination and the supplemental DOE/EPA Report of state CCR programs, EPA is well aware that there are many mature state CCR regulatory programs with permitting, liner, and groundwater monitoring controls similar to those proposed in the Subtitle D options. In fact, EPA concluded in its 2000 Regulatory Determination that state CCR controls have “substantially improved over the last 15 years,” and that a “high percentage of states had authority to impose protective management standards on surface impoundments and landfills, especially for groundwater monitoring, liners, and leachate collection” *Id.* at 32229. The DOE/EPA Report, which evaluated changes in state CCR controls that occurred after 1995 (the cut-off date for the data used in the 1999 Report to Congress), found even further improvements in state CCR controls. Based on the states surveyed, the report found more stringent state CCR controls with respect to permitting, liner, groundwater monitoring, leachate collection, closure and post-closure care, and siting requirements. DOE/EPA Report at S-8.

In addition, the most recent survey of state CCR controls compiled in 2009 by ASTSWMO confirms the increasing level of protection provided by state controls, finding, among other things, that 86% of the states with CCR landfills and 69% of states with CCR surface impoundments have permitting requirements for these disposal units. Letter from ASTSWMO to Matt Hale, EPA (April 1, 2009) (attached as Appendix 12). Nonetheless, under all the proposed Subtitle D options, these state controls would be administered in addition to and without coordination with nearly identical, self-implementing federal controls. Such duplication is both unnecessary and unduly burdensome.

Under this dual regulatory approach, for example, an owner/operator of a CCR disposal facility could be found to be in non-compliance with a groundwater monitoring requirement that is contained in both the Subtitle D self-implementing rule and in an independently administered state regulatory program. In these circumstances, the owner/operator could be subject to a citizen suit enforcement action in federal court for alleged violation of the self-implementing Subtitle D rule, and to a wholly separate enforcement action in state court for violation of the parallel state requirement. This makes no sense; apart from the waste of federal and state judicial resources, it could result in inconsistent federal and state court determinations with respect to an identical regulatory requirement.

It is essential that any final Subtitle D rules for CCRs include a mechanism for qualified state programs to administer the rules in lieu of the self-implementing approach set forth in the proposal. As discussed below, EPA could readily develop a process for evaluating state CCR controls and determining whether state controls are no less stringent than the final Subtitle D controls (much like EPA does now in the case of municipal solid waste landfills under 40 C.F.R. Part 258). In those states that have qualifying controls for CCRs, EPA would allow the states to administer the controls to avoid the duplication of regulatory programs, with appropriate EPA backup. In this way, many of the self-implementing procedures in the Subtitle D approach could be eliminated as there would be a qualified state regulatory body with responsibility for ensuring compliance with the applicable requirements. This approach would allow for the requisite degree of state involvement in administration of the CCR rules that EPA concluded was appropriate in its Report to Congress and final Regulatory

Determinations, and avoid duplication of regulatory controls as directed by the Beville Amendment.

D. EPA Has The Authority To Develop Subtitle D Rules Administered By The States With Direct EPA Enforcement Authority

One of EPA's stated concerns with the Subtitle D option is that it would not allow EPA to require the states to implement the Subtitle D CCR controls through state permits, approve the adequacy of the state programs, or enforce the regulations against non-compliant facilities. 75 Fed. Reg. at 35194. This concern is misplaced. EPA is underutilizing the full scope of its authority under Subtitle D by looking solely to RCRA Section 4004 for purposes of developing Subtitle D controls for CCRs. 75 Fed. Reg. at 35193-35194. EPA can utilize the same combination of RCRA statutory authorities – *i.e.*, RCRA Sections 4010(c) and 4005(c) – for establishing controls for CCR disposal units that it employed in promulgating federally enforceable Subtitle D rules for municipal solid waste landfills ("MSWLFs") and for non-MSWLFs that receive household hazardous waste and small quantity generator waste under 40 C.F.R. Parts 257 and 258.

The combination of these two Subtitle D provisions enables EPA to promulgate non-hazardous waste rules for CCRs that can be directly administered through state permitting programs and backed up by direct EPA enforcement powers in those states that fail to adequately implement the federal rules. Such an approach offers a win-win for EPA: it provides the Agency with the enforcement authority it desires under a Subtitle D CCR regulatory program while enabling the states to have a prominent role in the administration of any Subtitle D CCR rules, thereby preventing the duplication of federal and state controls in keeping with the Beville Amendment.

1. RCRA Sections 4010(c) and 4005(c)

By way of background, RCRA Section 4010(c) was added to RCRA as part of the 1984 Hazardous and Solid Waste Amendments for purposes of having EPA upgrade its regulations with respect to those Subtitle D facilities “that may receive hazardous household wastes or hazardous wastes from small quantity generators” (referred to by EPA as “CESQG wastes”), including “facilities potentially receiving such wastes.” 42 U.S.C. § 6949a(c). As EPA knows, the standards developed under this provision must be those necessary to “protect human health and the environment” and “[a]t a minimum [the criteria] for facilities potentially receiving such wastes should require groundwater monitoring as necessary to detect contamination, establish criteria for the acceptable location of new or existing facilities, and provide for corrective action as appropriate.” *Id.*

Section 4005(c), which was enacted as a companion provision to section 4010(c), directs the states to adopt the new regulations for Subtitle D facilities that may receive household or CESQG wastes and, of critical importance here, specifically authorizes EPA to *enforce* such regulations in those states that fail to adequately adopt the federal rules. Specifically, that section provides in pertinent part that, after EPA has promulgated the revised criteria under section 4010(c) for the specified Subtitle D facilities, “each State shall adopt and implement a permit program or other system o[f] prior approval and conditions to assure that each solid waste management facility within such State which may receive” household or CESQG hazardous waste “will comply with” the revised criteria promulgated by EPA under RCRA § 4010(c) for such facilities. RCRA § 4005(c)(1)(B), 42 U.S.C. § 6945(c)(1)(B).

EPA is then required to determine whether each state “has developed an adequate program” to implement the revised criteria. RCRA § 4005(c)(1)(C), 42 U.S.C. § 6945(c)(1)(C). If EPA determines that a state has not done so, the Agency “may use the authorities available under sections 6927 and 6928 of this title [*i.e.*, RCRA Subtitle C enforcement and inspection authorities]” to enforce such revised criteria. *Id.* EPA has correctly described this authority as “significant in that *it represents the first authority for EPA enforcement of regulatory requirements under Subtitle D.*” 53 Fed. Reg. 33314, 33383 (Aug. 30, 1988) (emphasis added). Therefore, the Agency has already acknowledged that Subtitle D regulations promulgated under these provisions of the statute are enforceable by EPA.

2. EPA’s Implementation of Section 4010(c)

EPA’s history in developing regulations under Section 4010(c) is informative in underscoring why the Agency can use this authority, in conjunction with RCRA section 4005(c), in establishing federally enforceable Subtitle D rules for CCRs. The Agency implemented the Section 4010(c) regulations in phases. In 1991, the Agency issued upgraded Subtitle D standards for all MSWLFs. These regulations (codified in the Subtitle D regulations at 40 C.F.R. Part 258) establish minimum federal criteria for MSWLFs, including location restrictions, facility design and operating criteria, liner requirements (for new MSWLFs), groundwater monitoring requirements, corrective action requirements, financial assurance requirements, and closure and post-closure care requirements. These criteria apply to any MSWLF that accepts any household waste, whether or not such waste would be considered a household *hazardous* waste. See definition of “municipal solid waste landfill unit” at 40 C.F.R. § 258.2. In other

words, the Subtitle D regulations for MSWLFs promulgated under Section 4010(c) apply to all MSLWFs, even though such facilities may not actually *receive* household hazardous waste or CESQG hazardous wastes.³⁵

EPA recognized when developing the MSWLF rules that the scope of Section 4010(c) extends beyond MSWLFs to “the subset of solid waste disposal facilities ‘that *may* receive hazardous household wastes or hazardous wastes from small quantity generators.’” See 53 Fed. Reg. at 33322 (emphasis added). For example, EPA stated that it was “concerned about the estimated 28,000 industrial solid waste disposal facilities and 2,600 construction/demolition landfills,” but was limiting the scope of this initial rulemaking “to MSWLFs because there are insufficient data currently available to develop requirements for these other facilities.” *Id.* at 33326.

In 1996, EPA issued its second round of Section 4010(c) regulations for non-municipal non-hazardous waste disposal units that receive CESQG hazardous waste.³⁶ These upgraded Subtitle D criteria establish standards pertaining to location restrictions, groundwater monitoring and corrective action. See 40 C.F.R. Part 257, Subpart B. Like the upgraded MSWLF Subtitle D rules, EPA has direct regulatory enforcement authority for these rules in states that the Agency determines have not properly implemented the revised criteria. See 61 Fed. Reg. 34252, 34266 (July 1, 1996).

³⁵ This is consistent with the statutory language in section 4010(c) directing EPA to upgrade the Subtitle D standards for any Subtitle D facilities that “*may*” receive household hazardous waste or CESQG hazardous waste or may “potentially receive” such wastes.

³⁶ The timeframe for issuance of these second round of regulations was dictated by a lawsuit brought by Sierra Club alleging that EPA was required to issue its Section 4010(c) rulemakings by the statutory deadline in Section 4010(c). Without any adjudication of law or fact, EPA entered into a Consent Decree with Sierra Club agreeing to issue the second round of Section 4010(c) regulations by June 1, 1996. See Consent Decree in No. 93-2167 (D.D.C.).

During this second rulemaking, EPA once again addressed the scope of Section 4010(c). A commentor pointed out that the statutory language in Section 4010(c) directing EPA to upgrade the Subtitle D criteria for facilities that “*may receive*” CESQG hazardous waste and for “facilities *potentially* receiving” CESQG hazardous waste required the rules to extend to all Subtitle D facilities that could accept such wastes (even if they in fact did not receive CESQG hazardous wastes). *Id.* at 34254. At that time, however, EPA took the position that section 4010(c) only was intended to reach facilities that *actually* received household hazardous or CESQG wastes. *Id.*³⁷ In fact, however, Section 4010(c) does not contain this limitation, but applies to *any* Subtitle D facility that “may” or has the “potential” to receive household or CESQG hazardous wastes. The Agency itself recognized this broad statutory reach when it issued the Section 4010(c) regulations for MSWLFs, which apply to any MSWLF that “may” receive household *hazardous* waste or CESQG hazardous wastes, regardless of the fact of whether the MSWLF unit actually received such wastes.

3. Adoption of Regulations for CCRs under Section 4010(c)

The plain language of Section 4010(c) directs EPA to promulgate upgraded Subtitle D standards for “facilities that *may receive*” CESQG hazardous wastes and “for facilities *potentially* receiving such wastes.” 42 U.S.C. § 6949a(c) (emphasis added). This language applies on its face to CCR disposal units, as they are Subtitle D solid

³⁷ EPA did not include CCRs in this second round of regulations because CCRs were on a different statutory study schedule than most other of the solid waste disposal facilities subject to the Section 4010(a) study schedule. USWAG agreed with EPA at the time that it would be premature to include CCRs in this rulemaking until the Beville Amendment study process for CCR wastes was complete. Now that the Beville study process is complete and EPA has determined that CCRs do not warrant hazardous waste regulation under RCRA Subtitle C, Section 4010(c) provides EPA with the appropriate statutory authority for adopting non-hazardous Subtitle D rules for CCRs.

waste management units that, under RCRA's statutory scheme, *may receive* CESQG hazardous waste and clearly have the potential to receive such wastes. Indeed, the legislative history to Section 4010(c) underscores that Congress did not intend EPA to construe the statute in such a narrow manner, as "[t]he impetus for requiring these revisions is primarily the concern for potential disposal of hazardous materials with nonhazardous wastes. S. Rep. No. 98-284, at 50 (1983), reprinted in "A Legislative History of the Solid Waste Disposal Act, As Amended," at 2076 (1991). In short, nothing in the plain language of the statute limits these provisions to only those facilities that "actually receive" household hazardous wastes or CESQG wastes. If Congress had intended to limit the statute in this manner, it would have written the law to say just that; it did not.

In light of the above, USWAG urges EPA to re-evaluate its statutory authorities under RCRA Sections 4010(c) and 4005(c) as applied to CCR disposal units. Section 4010(c) directs EPA to establish fully protective Subtitle D disposal standards for CCRs, including: groundwater monitoring as necessary to detect and respond to groundwater contamination, corrective action, and criteria for the acceptable location of new or existing facilities. These criteria are fully consistent with the proposed Subtitle D controls in the instant proposal.

Equally important, development of CCR regulations under Section 4010(c) would allow for a meaningful and coordinated state role in the administration of the CCR rules, while providing EPA with direct enforcement authority in those states that fail to properly implement the federal rules. This balancing of the federal/state roles will ensure that there is a full and uniform application of the CCR Subtitle D rules in all the states and

would avoid the duplication of federal/state CCR controls as directed by the Bevill Amendment.

As noted above, USWAG appreciates that development of a proposed Subtitle D regime allowing for administration of the regulations by qualified state programs, whether under RCRA Section 4010(c) or through some other mechanism, will necessitate issuance of a supplemental proposal. Nonetheless, this additional procedural step is necessary to ensure promulgation of an environmentally sound regulatory program for CCRs that allows for appropriate state involvement. Such an approach is consistent with the rulemaking record and the dictates of the Bevill Amendment.

XII. THE SUBTITLE D PRIME OPTION REQUIRES CERTAIN AMENDMENTS TO BETTER REFLECT CCR DISPOSAL OPERATIONS

While USWAG supports the Subtitle D Prime option, and believes that it can be administered through qualified state programs with back-up EPA enforcement authority in under-performing states, there are fundamental flaws with elements of the proposed regulations in need of correction. Key problems include: unrealistically short closure timeframes for CCR disposal units; the unwarranted application of all location restrictions to *existing* CCR surface impoundments; the inclusion of inappropriate constituents in the proposed groundwater monitoring program, the failure to allow for alternate liner systems, and an overly broad definition of “CCR Landfill” that inappropriately includes all “large scale fill operations.” These and other issues are discussed below.

A. Compliance With EPA's Proposed Timeframe For Closure Of Surface Impoundments And Landfills Is Impossible

A significant flaw in the Subtitle D proposal is the unrealistic timetable for the closure of CCR surface impoundments and landfills that are unable to meet the proposed design and operating standards. Even under the Subtitle D Prime option, where CCR surface impoundments operating in an environmentally sound manner could continue to operate, there will undoubtedly be a significant number of impoundments that will have to close. Therefore, a more realistic and achievable closure process is necessary under this option.

The Subtitle D option would require that existing landfills and surface impoundments meet certain location restrictions or performance criteria (e.g., not be located in unstable areas or have engineering measures incorporated into the design to ensure that the integrity of the structural components will not be disrupted if located in unstable areas). 75 Fed. Reg. at 35241-43 (proposed 40 C.F.R. § 257.60-§ 257.65). Further, within five years of the effective date of the Subtitle D rules, existing surface impoundments would be required to be dredged and have installed a composite liner and leachate collection system, or close. *Id.* at 35244 (proposed 40 C.F.R. § 257.71(g)). Because these obligations may be impossible to fulfill and would impose significant operational costs on owners/operators, USWAG agrees with EPA that “many surface impoundments may close as a result of these requirements.” *Id.* at 35199. Likewise, a number of landfills may also close if they are unable to comply with the “unstable areas” location restriction. Many of these disposal units will need to close pursuant to the Subtitle D closure framework. The proposed timetables for actually

closing these landfills and surface impoundments, however, is totally unrealistic and many facilities will be physically incapable of meeting these schedules.

In particular, EPA proposes to require disposal units that cannot meet the location restrictions or associated operating standards to close within five years of the effective date of the finalized regulations, which may be extended by an additional two years³⁸ if the owner or operator can make a particular demonstration that there exists a lack of alternative disposal capacity and the unit poses no immediate threats to human health or the environment. *Id.* at 35243 (proposed 40 C.F.R. § 257.65).³⁹ While existing units may be allowed five years to continue operating, the period of time by which closure must be completed once they cease operating – *i.e.*, stop receiving CCRs – is simply too short for the vast majority of CCR disposal units, especially surface impoundments. The proposal provides that an owner/operator must begin closure activities within 30 days after the date on which the CCR landfill or impoundment receives the known final receipt of CCRs and *must complete closure within 180 days* following the start of closure activities.⁴⁰ *Id.* at 35253 (proposed 40 C.F.R. § 257.100(k)). This means, for example, that a CCR impoundment that is still operating on the effective date of the rules but subsequently ceases receiving CCRs after the

³⁸ Even though the proposed regulatory text only provides this additional two years to disposal units located in unstable areas, EPA indicates in the proposal's preamble that this extension is intended to be applicable to all location restrictions applicable to existing CCR disposal units. *Id.* at 35202.

³⁹ CCR surface impoundments that were not able to install a composite liner system would not be able to make this demonstration and would have to close within 5 years of the effective date of the rules. *Id.* at 35244 (proposed 40 C.F.R. § 257.71(g)).

⁴⁰ There is an exception to this requirement allowing closure to begin no later than one year from the last receipt of CCRs if the unit has remaining capacity and there is a reasonable likelihood that the unit will receive additional CCRs. *Id.* at 35252 (proposed § 257.100(j)).

effective date of the rules has only 210 days to complete closure after the final receipt of CCRs.

Given the number and size of the disposal units that utilities operate, a significant number of units will not be able to complete closure within this 210-day timeframe. First, because a large number of sites will have to be closed during roughly the same timeframe, utilities will not be able to obtain the personnel and equipment necessary to close multiple sites, especially since other companies will need to obtain the same resources at the same time. Furthermore, even if sufficient manpower/equipment is available, some owners/operators will simply be unable to close their disposal units in the timeframes EPA proposes, due to the size of certain CCR impoundments and landfills.

For instance, surface impoundments would be required to close by removing liquid wastes or solidifying remaining wastes. *Id.* at 35252 (proposed 40 C.F.R. § 257.100(c)(1)). For very small surface impoundments, it is conceivable that an owner/operator could comply with this requirement within the proposed time frame; for many surface impoundments, however, dewatering the impoundment alone can take several years to complete, making it physically impossible to comply with EPA's closure timeframe. As EPA acknowledges, its closure timeframes were borrowed directly from the existing closure timeframes for MSWFLs under 40 C.F.R. Part 258. *Id.* at 35209. While application of the MSWFLs standards to CCR disposal units is appropriate in many respects, this is not one of those instances. The CCR disposal units often are larger than MSWFLs, and MSWFLs obviously do not contain the volume of water contained in CCR impoundments.

Furthermore, landfills typically close each component cell when the cell reaches its disposal capacity so that many cells have already been “closed” when the landfill begins final closure. Surface impoundments, on the other hand, must be entirely dewatered before closure can even begin for any portion of the impoundment. While EPA’s proposed closure timeframe may be appropriate for some landfill types,⁴¹ it is inappropriate to apply this same timeframe to surface impoundments. In fact, a USWAG member recently obtained approval for a closure plan for a 343-acre surface impoundment that provided for a twelve-year closure period to ensure adequate time to complete dewatering of the impoundment, assure the stability of the dewatered CCRs, and uniformly construct the slope of the final cover materials.

Additionally, 210 days may not be sufficient to acquire the materials needed to conduct and complete closure. For example, due to the significant volume of clay that is needed to cover an impoundment hundreds of acres in size (as well as the likelihood that other units may need to close in the same timeframe), there may be insufficient supply of clay and/or it may be impossible to transport the needed volume of clay to the site. Moreover, in some circumstances, states may not be able to provide final approval of a facility’s closure plan before the end of the 210-day closure time limit, putting facilities in automatic non-compliance through no fault of their own, but due simply to limited state resources. There is an additional concern for northern tier states in that some closure work can only be conducted seasonally during the warm weather months.

⁴¹ Because EPA includes a wide variety of landfill types, which extend beyond those below-grade-units that are similar to MSWLFs, these timeframes may be impossible to meet for some units classified as landfills in the proposal (e.g., structural fills that may be located above grade or have other physical characteristics different from typical MSWLFs).

Depending on the scope of the work and the project start date, it might not even be possible to complete the closure of a small facility in 210 days.

Given the disparity in the sizes of these units, the length of time necessary to dewater impoundments, and the need for many of these units to be closed when the rules come into effect, USWAG strongly recommends that EPA not establish a specific timeframe for closure. Instead, we urge EPA to require utilities to close CCR surface impoundments and landfills consistent with a closure plan approved by a state, or developed and certified by a registered professional. The establishment of a closure plan, with set schedules, is the most effective method to account for the many variables associated with the closure of these units and is the approach commonly used by utilities. A closure plan also will provide EPA and the public with certainty that closure will occur in a step-wise and timely manner, without requiring facilities to comply with wholly unrealistic closure schedules.

On a related note, EPA has made no effort in its Subtitle D proposal to consider those state programs that provide a means to convert CCR surface impoundments to landfills through dewatering and other appropriate requirements. After these impoundments are appropriately converted, EPA should specifically identify these facilities as landfills and impose the regulatory requirements for existing CCR landfills rather than require these converted units to be subject to controls for existing surface impoundments, including potentially closure requirements. This will authorize the continued operation of these existing CCR landfills and regulate these units pursuant to the appropriate applicable standards and not require utilities to acquire land for the construction of new landfills.

B. EPA Should Not Apply Location Restrictions To Existing Surface Impoundments Or Landfills

The proposed Subtitle D standards would impose various location restrictions to new and existing CCR surface impoundments and landfills. In particular, new and existing CCR surface impoundments and landfills could not be located in floodplains (a requirement that is already in effect) or unstable areas. *Id.* at 35242-43 (proposed 40 C.F.R. § 257.64).⁴² In addition, new surface impoundments and new landfills could not be located in wetlands, fault areas, or seismic impact zones and must be located at least two feet above the natural water table. *Id.* at 35241-42 (proposed 40 C.F.R. §§ 257.60 - 257.63.) Of significant concern, EPA states in the preamble to the proposal that it intends to subject existing surface impoundments to *all* of these new location restrictions due to the risks posed by these units. *Id.* at 35198-99. In the corresponding proposed regulatory text, however, existing surface impoundments are only subject to the floodplains and unstable area location restrictions. *See id.* at 35243 (proposed 40 C.F.R. § 257.65).

USWAG assumes for purposes of these comments that EPA intends to subject existing CCR surface impoundments to the additional location restrictions consistent with the proposal's preamble and that the Agency's proposed regulatory text is inaccurate. Presumably, EPA copied the regulatory text for the regulations applicable to MSWLFs as codified at 40 C.F.R. Part 258. Although EPA intends to base the Subtitle D CCR disposal unit regulations in large part on the MSWLF regulations, here, the

⁴² For this and a few other location restrictions, disposal units can be located in these locations if they meet a design or operating standard sufficient that the risk associated with the location restriction has been addressed.

Agency clearly departs from those regulations, requiring all existing surface impoundments to comply with the full range of location restrictions, a condition that is normally only applied to new units. This is an extreme and draconian departure from the MSWLFs standards; EPA has not made a compelling justification for treating CCR impoundments more stringently than MSWLF units.

Subjecting existing surface impoundments to these location restrictions must be backed by an evaluation of the risks posed by facilities in each of these types of locations. USWAG is not aware of structural stability issues directly caused by the placement of surface impoundments in wetlands, fault areas, or seismic impact areas of less than two feet above the natural water table. More importantly, apparently neither is EPA. The Agency does not even begin to assess the risks associated with the placement of existing impoundments in these areas. EPA simply asserts that the risks associated with impoundments are greater than those associated with landfills and cites to the TVA spill as an example of the environmental consequences of a “catastrophic collapse” of a CCR impoundment. *Id.* at 35199. These general assertions, however, do not constitute the type of record evidence necessary to impose such sweeping requirements on all existing CCR surface impoundments. The Agency must conduct a detailed analysis of CCR surface impoundments located in these restricted locations and demonstrate, based on this analysis, that there are, in fact, increased risks from these impoundments to justify such a significant departure from how the Agency addressed and regulated MSWLFs.

USWAG does not believe that EPA can compile the record evidence necessary to support such a regulation. In fact, over the last year and a half since the TVA ash

release, EPA has been conducting comprehensive structural integrity assessments of utility CCR impoundments across the country. The results of EPA's investigation have not, to date, identified *any* CCR impoundment that presents the imminent threat of a catastrophic release similar to that which occurred at TVA's Kingston facility. EPA Coal Combustion Residuals Impoundment Assessment Reports (available online at <http://www.epa.gov/epawaste/nonhaz/industrial/special/fossil/surveys2/index.htm>) (current as of Nov. 3, 2010). Specifically, EPA's structural assessments rated the impoundments as "satisfactory," "fair," "poor," or "unsatisfactory" – terms commonly used in the field of dam safety. EPA explains that, "[e]xpert experience has shown that only impoundments rated as 'unsatisfactory' pose immediate safety threats." *Id.* Of the 120 CCR impoundments evaluated thus far, *none* of the impoundments received an "unsatisfactory" rating. *Id.* And, as EPA correctly points out, even those impoundments that received a "fair" or "poor" rating may have been found by the inspectors to be structurally sound, but did not receive a "satisfactory" rating based solely on lack of information. Therefore, there is no factual basis to assert that existing CCR impoundments pose the type of risk of catastrophic failure that justify the imposition of all the location restrictions on existing units; indeed, the record evidence makes clear that such restrictions are not warranted.

EPA does not propose subjecting existing CCR landfills to the full range of location restrictions because EPA reasons that such units are structurally less vulnerable than impoundments. Also, there would be significant disposal capacity shortfalls if existing CCR landfills located in these restricted areas – *i.e.*, wetlands, fault areas or seismic impact areas – had to close. 75 Fed. Reg. at 35198. USWAG agrees

with EPA that existing CCR landfills should not be subject to these additional location restrictions and shares EPA's concern that subjecting them to such controls would cause a significant decrease in disposal capacity.

USWAG shares EPA's concern that many CCR landfills are located in areas that would be subject to one or more of the above-referenced location restrictions and, while some landfills may be able to retrofit or already are in compliance with the performance standard tailored to the location restriction, some landfills could be forced to close due to the challenges of attempting to retrofit to meet the location-based performance standards. Aside from the fact that there is no factual record supporting the application of these additional restrictions to existing landfills, closure of these units would create disposal shortfalls. Among other things, unit closures would greatly complicate operations at many utilities that would need to find additional disposal capacity, requiring utilities to procure new real estate for siting a new landfill (which may be a significant distance from a power plant), obtain a new disposal permit for the landfill (which can take an extended period of time), and transport significant volumes of CCRs great distances to the newly-permitted facilities. There is simply no environmental basis for causing this disruption to utility CCR disposal practices by subjecting existing CCR landfills to the full range of location restrictions.

C. EPA Should Amend Its Run-On Control Requirements For CCR Surface Impoundments

One complication of copying the proposed CCR Subtitle D regulations from the MSWLF program is that some of the particular operating requirements for MSWLF landfills cannot be directly applied to CCR surface impoundments. As discussed above, this is true in the case of attempting to apply the MSWLF closure time periods to CCR

disposal units. Another important example is the proposed requirement for surface impoundments and landfills to establish specific operating controls for water run-on and run-off. *Id.* at 35245 (proposed 40 C.F.R. § 257.81). The run-on portion of these controls requires a “control system to prevent flow onto the active portion of the CCR landfill or surface impoundment” during peak discharge events. *Id.* (proposed 40 C.F.R. § 257.81(a)(1)). While this requirement may be appropriate for CCR landfills (as it is for MSWLFs), it is wholly inappropriate for surface impoundments that have been specifically designed as holding basins for stormwater or that have been formed by damming a ravine and have been designed with outlets that are sufficient to deal with the water flow from the natural watersheds into the impoundment during peak discharge events.

USWAG suggests that EPA address the inapplicability of this requirement for these types of surface impoundments by instead requiring that CCR impoundments be designed to appropriately address peak discharge events, rather than specifying that run-on into the impoundment be prevented. In this manner, impoundments that have been designed as described above and have been engineered to address peak discharge events will not be confronted with a restriction that is both unnecessary and effectively impossible to meet.

D. EPA Should Allow For Alternative Groundwater Monitoring Parameters And Should Revise Certain Of The Proposed Parameters

USWAG supports appropriate groundwater monitoring standards for CCR surface impoundments and landfills and we support the development of such standards under a RCRA Subtitle D framework, which is modeled largely after the groundwater

monitoring programs for MSLWFs under 40 C.F.R. Part 258 and for non-MWSLFs that may receive CESQG wastes under 40 C.F.R. Part 257, Subpart B. *Id.* at 35205.

Unfortunately, unlike the groundwater monitoring programs for these units under Parts 258 and 257, the Agency is not proposing to allow an alternate list of indicator parameters to be used in the proposed CCR groundwater monitoring program because of the lack of direct state oversight and “EPA’s information on CCRs indicates that their composition would not be expected to vary such that the parameters are inappropriate.” *Id.* at 35205-07. This is a mistake.

First, from a technical perspective, given that site-specific factors are critical for establishing constituents and corresponding concentrations for detection and assessment monitoring, it is important that EPA authorize registered professionals to certify variances from the otherwise applicable parameters used for detecting constituents in groundwater and assessing statistically significant increases from background for these parameters. Given the extreme range of natural variations in site geology and groundwater at CCR disposal units across the country, it will often be necessary for technical experts to adjust the specific groundwater monitoring standards that EPA establishes to account for various site-specific conditions and factors. Further, any variances to the list of regulatory parameters would only be available if approved by a qualified state program (under, for example, a state regulatory regime approved by EPA under RCRA Section 4005(c)) or if certified by a registered professional and such certifications are recorded in a facility’s operating record, filed with the state and posted on the state or facility’s publicly available internet site. As other critical elements of the Subtitle D program are predicated on compliance certifications by these technical

professionals, there is no reason not to authorize these professionals to identify and certify, where appropriate, necessary adjustments to the groundwater monitoring parameters based on site-specific factors.

Therefore, USWAG recommends that EPA include language in the Subtitle D groundwater monitoring rules for CCR disposal units similar to that in the MSWLFs rules allowing for the state or a registered professional (in the context of a self-implementing Subtitle D rule) to delete any constituents from otherwise required groundwater monitoring “if it can be shown that the removed constituents are not reasonably expected to be in or derived from the waste contained in the unit.” 40 C.F.R. § 258.54(a)(1). Similarly, the state or a registered professional should be authorized to establish an alternative list of indicator parameters in lieu of some or all of the otherwise specified indicator parameters “if the alternative parameters provide a reliable indication of inorganic releases from the [CCR] unit to the groundwater.” *Id.* at § 258.54(a)(2).

With respect to the initial list of indicator parameters proposed by EPA, USWAG agrees that it generally focuses on the mobile indicator parameters in leachate from CCR disposal units. 75 Fed. Reg. at 35253 (proposed Appendix III to 40 C.F.R. Part 257). The potential for false positives would increase significantly if the parameter list were burdened with a host of trace constituents that are much less mobile and are unlikely to be present in CCR leachate without the presence of the proposed indicator parameters. That being said, USWAG believes that the proposed indicator parameter list should be revised to more closely track the nature of materials that are disposed of in CCR surface impoundments and landfills. USWAG is particularly concerned that the proposed detection monitoring constituents - “conductivity,” “fluoride” and “sulfide” - are

unlikely to assist in efforts to determine whether CCR disposal units have released constituents into groundwater. In fact, the use of “conductivity” as a parameter may lead to false positives and there is no need for this parameter when the Total Dissolved Solids parameter is a much more accurate test for the same type of potential releases. Similarly, fluoride and sulfide are not good indicator parameters because these constituents generally are not present in high concentrations in CCR leachate and therefore a generic requirement that they be monitored for all CCR disposal units is not warranted. Hence, we urge EPA to remove these parameters from the detection monitoring list. We also recommend that the remaining detection monitoring constituents be added to the assessment monitoring list to assist in assessing statistically significant increases in the detection constituents.

Additionally, USWAG urges EPA to limit the list of assessment monitoring constituents to the primary drinking water constituents for which a maximum contaminant level has been established (as well as the detection monitoring parameters, as addressed above). These primary constituents are the only materials EPA has found to contribute to adverse health effects; all other listed constituents have not been linked to health effects and EPA should not require groundwater remediation for these parameters. Accordingly, EPA should remove aluminum, iron, manganese and molybdenum from the list of constituents for assessment monitoring.

E. EPA Should Allow Registered Professionals To Make Compliance Certifications Even If They Are Employees Of The Owner/Operator Of The Disposal Unit

As discussed above, it is critical that any final Subtitle D program for CCRs allow for administration of the Subtitle D regulations by qualified state regulatory programs. In

those states that EPA decides have adequate Subtitle D CCR programs, it will be unnecessary to have registered professionals certify compliance with the CCR regulatory provisions on behalf of the regulated owner/operator of the unit. Electric power producers will, of course, rely on these professionals for a review of all aspects of the design and operation of landfills and surface impoundments, but there is no need for the regulatory “certifications” contemplated under the self-implementing Subtitle D option if a state is conducting a simultaneous and identical review of compliance with the regulatory provisions. In those states, however, that do not have qualified programs to administer and enforce the federal Subtitle D rules for CCR disposal, USWAG supports using registered professionals to conduct a review of the disposal units and certify that design and operating criteria are being met and to approve variances from the regulatory criteria, if appropriate, for particular CCR disposal units. With the limited exceptions identified below, USWAG also supports the proposed credential requirements for these professionals. Clearly, someone without the required expertise should not be certifying that surface impoundments or landfills have been designed and are operating appropriately. However, USWAG believes that EPA should add professional geologists to the list of registered professionals that have the expertise and authority to certify compliance with certain of the Subtitle D operating standards. In particular, it is appropriate to have professional geologists certify compliance with groundwater monitoring standards, just as it is appropriate for PEs to certify compliance with the design of such units.

USWAG does not agree that PEs, hydrologists, and geologists must be independent (*i.e.*, not an employee) of the owner/operator of the landfill or surface

impoundment. As EPA notes, even though an independent professional will not be an employee of the power producer, they will still be hired as an independent consultant of the company. *Id.* at 35194. USWAG believes that it is inappropriate to require that such professionals be independent from the owner/operator of the disposal unit, because this condition imposes a significant barrier to meaningful and cost-effective compliance with the regulations, while providing little to no assurance that “independent” professionals have distinct interests from the owner/operator of the disposal unit.

Utilities and independent power producers typically employ a wide array of PEs and scientific staff. Most utilities employ a number of PEs, hydrologists, and geologists who often work exclusively with company-managed CCR disposal units. These professionals typically possess the most relevant experience and knowledge about these types of disposal units, especially those units owned/operated by their employers. Company-employed PEs, hydrologists and geologists are subject to the same type of state registration and licensing as those professionals that are not employed by these companies and have an equally strong incentive to maintain their licenses in good standing as those professionals that are “independent” of the utility or independent power producer. Such state-licensing and registration programs will help to ensure that all professionals exercise proper judgment about the operation of CCR landfills and surface impoundments.

Notably, in a very similar regulatory program, EPA decided that *not* allowing PEs employed by facility owner/operators to certify regulatory compliance was inappropriate. In the re-promulgation of the Spill Prevention, Control, and Countermeasures (“SPCC”)

regulatory framework, EPA addressed the issue of whether PEs employed by facilities should be allowed to certify SPCC plans. The Agency concluded:

We believe that most PEs, whether independent or employees of a facility, being professionals, will uphold the integrity of their profession and only certify Plans that meet regulatory requirements. We also agree that an in-house PE may be the person most familiar with the facility. EPA believes that a restriction of in-house PE certification might place an undue and unnecessary financial burden on owners or operators of facilities by forcing them to hire an outside engineer.

67 Fed. Reg. 47042, 47053 (July 17, 2002).

EPA's position in the SPCC program is equally applicable here; there is no reason for EPA to depart from this position in the CCR proposal. Given that professionals employed by a company are more familiar with their company's design and operation of disposal units, and because state registration and licensing arrangements ensure the sound professional judgment of all professionals, we believe that requiring "independence" of such professionals will add an unnecessary expense for utilities. Accordingly, EPA should eliminate the proposed requirements that these professionals be "independent" from the company for which they are certifying compliance.

F. The Subtitle D Rule Should Allow For Alternate Liner Systems

It is absolutely essential that the Subtitle D rule allow for the use of alternative liner systems for CCR disposal units. In some regions of the country, the proposed composite liner system simply is not necessary to ensure protection of groundwater. Moreover, there are alternative liner systems that can provide equal, if not more protection to groundwater and there is no reason why these alternate, but equally protective systems, should not be available.

Under the proposal, the liner system for CCR disposal units would track the default liner requirements for MSLWFs (but critically not the standards for obtaining variances from these standards) by requiring a composite liner consisting of two components: “[a]n upper component consisting of a minimum 30 mil-flexible membrane liner (FML), and a lower component consisting of at least a two-foot layer of compacted soil with a hydraulic conductivity of no more than 1×10^{-7} cm/sec.” 75 Fed. Reg. at 35202; see also *id.* at 35243 (proposed 40 C.F.R. § 257.70(a)(2)). While the proposal currently does not allow for any deviation from the liner requirements for CCR units, EPA appropriately asks whether the Subtitle D option “should allow facilities to use an alternative design for new disposal units” provided an independent registered PE or hydrologist certifies that an alternate design system would “ensure that the appropriate concentration values for a set of constituents typical of CCRs will not be exceeded in the uppermost aquifer at the relevant point of compliance – *i.e.*, 150 meters from the unit boundary downgradient from the unit, or the property boundary if the point of compliance (*i.e.*, the monitoring well) is beyond the property boundary.” *Id.* at 35202-03. There is no question that alternate liner systems must be allowed under the Subtitle D program.

As the Agency has consistently recognized throughout the Bevill Amendment regulatory determination process, given the vastly different site-specific characteristics of CCR disposal units across the country, there is no “one-size-fits all” approach when it comes to regulatory design standards for these units. EPA itself put it best when explaining in its final 1993 Regulatory Determination why the inflexible design standards

in the Subtitle C hazardous waste regulations were inappropriate for CCR disposal units:

A Subtitle C system would require coal combustion waste units to obtain a [RCRA] Subtitle C permit (which would unnecessarily duplicate existing State requirements) and would establish a series of waste unit design and operating requirements for these wastes, which would generally be in excess of requirements to protect human health and the environment. For example, if such wastes were placed in the Subtitle C universe, all ash disposal units would be required to meet specific liner and monitoring requirements. Since [CCR] sites vary widely in terms of topographical, geological, climatological, and hydrological characteristics (e.g., depth to groundwater, annual rainfall, distance to drinking water sources, soil type) and the wastes' potential to leach into the groundwater and travel to exposure points is linked to such factors, it is more appropriate for individual States to have the flexibility necessary to tailor specific controls to the site or region specific risks posed by these wastes.

58 Fed. Reg. at 42477. This logic applies in the context of the proposed Subtitle D program as well. Given that CCR sites “vary widely in terms of topographical, geological, climatological, and hydrological characteristics,” any regulatory regime must have the flexibility to tailor controls to the site-specific characteristics of the individual disposal units. Otherwise, the same concerns with over-regulation that EPA correctly described with respect to a Subtitle C program will arise under a Subtitle D non-hazardous waste program for CCRs. For example, it is not necessary to require the installation of a composite liner system to a lateral extension of an existing CCR landfill in the arid Southwest where the distance to groundwater may be several hundred feet or more.

For example, the Salt River Project’s (“SRP”) Coronado Generating Station, located in St. John’s Arizona, has climatic conditions favorable for CCR disposal. The facility operates a State of Arizona permitted FGD surface impoundment and ash landfill. The FGD unit and the ash landfill have an Aquifer Protection Permit (“APP”)

issued from the Arizona Department of Environmental Quality ("ADEQ") that mandates protection for the underlying regional aquifer by providing for Best Available Demonstrated Control Technology ("BADCT"). The regional aquifer is located more than 300 feet below the bottom of the FGD impoundment. The average annual rainfall for this area is less than 12 inches. The FGD impoundment was excavated into low hydraulic conductivity materials, with permeability values as low or lower than that expected for engineered clay liners, and lower than the values used in EPA's model-based risk assessment.

The FGD impoundment and ash landfill are located on the Chinle Formation, which consists of 150-200 feet thick sequence of bentonitic clay, shale, and siltstone, with a hydraulic conductivity of 1×10^{-7} to 1×10^{-9} cm/sec. The permeability and thickness of the Chinle unit, along with the depth to groundwater, serve as BADCT for the ADEQ APP. The FGD impoundment has been operating with a natural clay liner for over 30 years. Contamination of the regional drinking water aquifer has not occurred in that time frame. Site specific modeling of groundwater flow over an operational period of 10,000 years indicates that the FGD impoundment has not, and will not, contaminate the regional groundwater under scenarios used in EPA's Risk Assessment.

Further, SRP's Navajo Generating Station located on the Navajo Nation land in Arizona operates a CCR landfill for all of its CCRs destined for disposal (*i.e.*, fly ash, bottom ash, and de-watered FGD material). The CCR landfill is located in a dry climate with an average annual rainfall of less than 8 inches. The depth to groundwater in the Navajo Sandstone Formation is 800-900 feet below the bottom surface of the landfill. Neutron logging is conducted at the landfill to detect any moisture in the vadose zone.

Groundwater monitoring is conducted down-gradient of the unit. The Navajo Sandstone Formation forms the principal regional aquifer system for the area.

In both of the above circumstances, a qualified state program can approve, or a registered professional can easily certify, based on site-specific conditions, that a clay liner or some alternative system will ensure that the above-referenced protection standards will not be exceeded at the point of compliance in the upper-most aquifer .

Even in locations where potential risks to groundwater are greater, there are alternate liner systems that can achieve the same level of protection as the composite liner system proposed by EPA. For example, a geosynthetic clay liner (“GCL”) or similar systems can meet or exceed the performance standards of clay liners and certainly are equivalent or superior in some circumstances to two-feet of compacted soil in the lower component of the composite liner systems proposed under the Subtitle D option.⁴³ Therefore, in many circumstances, a liner system using the GCL in lieu of the two feet of compacted soil readily enables a CCR disposal unit to meet the applicable groundwater monitoring standards.

The point is that, depending on the location and physical characteristics of the disposal unit, there is a range of liner systems that may be available to meet the applicable groundwater standards at the point of compliance. EPA should not limit alternative liner design systems and deny owners/operators the ability to utilize systems

⁴³ EPA’s own data support this point. See “Assessment and Recommendations for Improving the Performance of Waste Containment Systems,” R. Bonaparte, D.E. Daniel, and R.M. Koerner, EPA/600/R-02/099, EPA National Risk Management Research Laboratory, Cincinnati, OH, Chapter 5 (available online at <http://www.epa.gov/nrmrl/pubs/600r02099/600R02099.pdf>).

that are equally or more protective as the composite liner system proposed in the Subtitle D option.

There also is no doubt that decisions regarding the use of alternate liner systems under a Subtitle D program can be made in a manner that is fully transparent and subject to the appropriate oversight. As explained above, we would expect any final Subtitle D regulatory program to allow for the administration of the rules by qualified state programs. In these circumstances, any alternate liner systems would be subject to review and approval by a responsible state regulatory agency. In circumstances where there is not a qualified state agency administering the program and the self-implementing model is employed for the Subtitle D rules, qualified professionals could review and approve alternative liner systems. Like other components of the self-implementing approach, these decisions would be included in the facility's operating record, reported to the state and posted on the facility's public internet site. In this way, the states and the public would have access to the reasoning and basis for a facility's decision to employ the alternate liner system and why this alternate is fully protective of human health and the environment.

G. Error In Proposed Leachate Collection System Requirements For CCR Surface Impoundments

USWAG believes that EPA has inadvertently included an error in the regulatory text requiring the installation of a leachate collection system between the upper and lower components of the composite liner system for existing CCR surface impoundments and for new impoundments. Specifically, EPA proposes in the case of existing CCR impoundments that, no later than five years after the effective date of the Subtitle D regulations, CCR impoundments shall be constructed with a composite liner

(as defined below) with “a leachate collection system *between* the upper and lower components of the composite liner.” 75 Fed. Reg. at 35243 (proposed 40 C.F.R. § 257.71(a)(1)) (emphasis added). EPA proposes a similar condition for new impoundments (and lateral extensions to existing impoundments), directing that the leachate collection system shall be installed “between the upper and lower components of the composite liner.” *Id.* at 35244 (proposed 40 C.F.R. § 257.72(a)(1)). This clearly is an error, given that the composite liner systems that CCR surface impoundments are required to employ are required to have the upper flexible membrane liner (“FML”) component “installed in direct and uniform contact with the compacted soil component.” *Id.* at 35243-35244 (proposed 40 C.F.R. §§ 257.70(a)(2), 257.72(a)(2)). In other words, given that both components of the liner system must be in direct contact with one another, there is no way that a leachate collection system can be installed between these two components.

Even in the case of new CCR landfills, the proposed regulatory text makes clear that the leachate collection system is to be installed over the liner. *Id.* at 35243 (proposed 40 C.F.R. § 257.70(a)(2)). Therefore, EPA should eliminate the proposed requirement from the final regulations directing that leachate collection systems in the case of surface impoundments be between the upper and lower components of the liner system when these components must be “in direct and uniform contact” with one another. Indeed, CCR surface impoundments operating in accordance with the proposed composite liner requirements and applicable groundwater monitoring requirements do not need a leachate collection system, as any possible migration of

constituents from the unit will be detected by the applicable groundwater monitoring system.

H. Omission In Defining Scope Of Subtitle D Program

USWAG believes that EPA has inadvertently failed to include the regulatory parameters of the Subtitle D program into the regulatory text making clear that, like the Subtitle C option, the Subtitle D controls apply only to electric-only and combined-heat-and-power plants whose primary business is to sell electricity, or electricity and heat, to the public, *i.e.*, NAICS code 221112 plants. See 75 Fed. Reg. at 35254 (proposed 40 C.F.R. § 261.50(b)). As EPA makes clear in the preamble, the co-proposed options are intended only to apply to CCRs generated by electric utilities and independent power producers and not to non-utility boilers burning coal. *Id.* at 35129. EPA intends to address the appropriate regulatory controls for CCRs from the category of non-utility boilers after completing this rulemaking effort. *Id.*

Therefore, to eliminate any potential confusion on the appropriate regulatory parameters of the proposed Subtitle D option, USWAG recommends that EPA amend the first sentence in the “Applicability” text at proposed 40 C.F.R. § 257.40(a) (*id.* at 35240) to read as follows:

Applicability. (1) The requirements of this subpart apply to owners or operators of CCR landfills and CCR surface impoundments at electric-only and combined-heat-and-power (CHP) plants whose primary business is to sell electricity, or electricity and heat, to the public, *i.e.*, NAICS code 221112 plants.

For similar reasons, USWAG also believes that EPA should clarify in the regulatory text that the proposed Subtitle D controls do not apply to the beneficial use of CCRs. While this is obviously EPA’s intent, it is not expressly spelled out in the proposed regulatory text. To avoid any confusion on this point, USWAG recommends

that EPA add a sentence to the end of the “Applicability” section in proposed 40 C.F.R. § 257.40(a) stating the following: “The requirements of this subpart do not apply to CCRs that are beneficially used.”

I. Definitional Issues Under The Subtitle D Proposal

A number of the proposed definitions in the Subtitle D option require modification and/or clarification. These issues are discussed below.

1. Definition of “CCR Landfill”

EPA’s proposed definition of “CCR landfill” is overbroad to the extent that it attempts to capture *all* operations involving the use of CCRs for “large scale fill operations.” 75 Fed. Reg. at 35163. This definition would inappropriately capture the use of CCRs that are being used for a legitimate functional purpose, and thus are not a “solid waste” because they have not been “discarded.” In addition, the phrase “large scale fill operations” is unlawfully vague and cannot be included in a final regulatory definition without a supplemental proposal setting forth discernible and readily understandable parameters as to what constitutes the type of “large scale fill operations” that would constitute a CCR landfill. Under the Subtitle D option, EPA would define the term “CCR Landfill” as:

A disposal facility or part of a facility where CCRs are placed in or on land and which is not a land treatment facility, a surface impoundment, an underground injection well, a salt dome formation, a salt bed formation, an underground mine, cave, or a corrective action management unit. For purposes of this subpart, landfills also include piles, sand and gravel pits, quarries, *and/or large scale fill operations*. Sites that are excavated so that more ash can be used as fill are also considered CCR landfills.

Id. at 35240 (proposed definition of “CCR landfill,” 40 C.F.R. § 257.40(b)) (emphasis added).

One of the fundamental problems with this definition is that it assumes that all CCR large-scale fill operations involve the “disposal” of CCRs and that these operations therefore constitute CCR landfills. As EPA knows, however, a series of judicial decisions have established the parameters of RCRA’s statutory definition of “solid waste,” which, of course, also limits the regulatory parameters of what can constitute a CCR landfill under RCRA Subtitle D. These cases make clear that the definition of “solid waste” must be interpreted in a common sense manner that extends “only to materials that are truly discarded, disposed of, thrown away, or abandoned,” and that materials destined for legitimate beneficial reuse or recycling are “not part of the waste disposal problem” and thus cannot be characterized as solid waste. *Am. Mining Cong. v. EPA*, 824 F.2d 1177, 1186, 1190 (D.C. Cir. 1987) (“*AMC*”). As the D.C. Circuit reaffirmed in a subsequent opinion, the definition of “solid waste” is predicated on a material being “discarded” and “[s]econdary materials destined for [legitimate] recycling are obviously not of that sort.” *Ass’n of Battery Recyclers, Inc. v. EPA*, 208 F.3d 1047, 1051 (D.C. Cir. 2000), citing, *AMC*, 824 F.2d 1177.

Given the controlling case law, it is simply incorrect to assume that all CCR large-scale fill projects involve the “discard” of CCRs. To the contrary, CCRs have long been used for a wide range of large-scale structural fill projects where they serve the functional purpose of providing structural stability including for, among other things, aboveground structures, road projects, embankments, and reconfiguration of property to meet design standards for run-off controls. When used in these applications, CCRs often are being used in lieu of competing commercial materials, such as soil or gravel that would otherwise have to be excavated and/or mined and purchased by end-users,

including, among others, federal, state and municipal governments who routinely use CCRs in large scale road and embankment projects. In these circumstances, the CCRs are not being “discarded” in any common-sense understanding of the term, but rather are being used for a legitimate beneficial purpose in lieu of competing materials.

Further, there is no record evidence supporting the proposition that all types of “large-scale fill operations” constitute the disposal of CCRs. In fact, the sole basis referenced in the preamble for including these beneficial use activities within the definition of a “CCR landfill” is that “[t]here has also been significant community concern with large-scale fill operations.” *Id.* at 35163. This unsubstantiated and generalized statement of concern cannot support the whole scale classification of a long-standing beneficial use activity as somehow constituting disposal.

EPA does not analyze the criteria typically employed by the Agency in determining whether a particular reuse activity involves legitimate recycling. When these criteria are applied to CCR large scale fill operations, the better argument is that these operations fall squarely with the Agency’s core criteria of what constitutes legitimate “beneficial use.” For example, CCRs used for large scale fill operations provide a “functional benefit” in terms of structural support. In addition, the CCRs often are being used as “substitutes for the use of a virgin material, conserving natural resources that would otherwise need to be obtained through practices, such as extraction.” *Id.* at 35162. These criteria are the hallmarks of a legitimate beneficial use when applied to CCRs used in other contexts, and they are equally applicable to CCRs when used in large-scale fill projects. For the above reasons, EPA’s blanket inclusion of

all CCR “large scale fill operations” in the definition of a CCR landfill is at odds with RCRA’s definition of “solid waste” and is arbitrary and capricious.

The proposed categorization of all “large scale fill operations” as constituting the disposal of CCRs also would be struck down as being “void for vagueness.” Even EPA recognizes that this critical term in the definition of “CCR landfill” lacks any functional or discernable boundaries, explaining that “EPA recognizes that we need to define or provide guidance on the meaning of ‘a large scale fill operation.’” *Id.* at 35163. It is axiomatic, however, that the Administrative Procedures Act (“APA”) requires EPA to seek comment on any proposed definition of “large scale fill project” – which will help define the universe of facilities subject to the final Subtitle D rules – in the instant proposal and not *after* the rule is finalized. 5 U.S.C. § 553(c). Put another way, EPA must do more than make the public guess at what this term may mean in a final regulation and then expect the regulated community to comply with this newly minted definition.

Nor can EPA attempt to provide the critical contours of this key regulatory concept through the subsequent issuance of “guidance.” Such a back-door attempt to define this important term would be in violation of EPA’s obligations under the APA to provide the public with an opportunity to review and comment on proposed regulations. Before attempting to include the concept of whether and under what circumstances CCR large-scale fill operations constitute the disposal of CCRs, EPA must provide the public with an opportunity to review and comment on how EPA proposes to define “large scale fill operations.” The Agency has not done this in the instant proposal.

2. Definition of CCR Landfill and CCR Piles

Another flaw in the proposed definition of “CCR landfill” is that it would include all “piles” of CCRs, with no limitation of any kind (“[f]or purposes of this part, [CCR] landfills also include piles, sand and gravel pits, quarries...”). *Id.* at 35239-40 (proposed 40 C.F.R. §§ 257.2 & 257.40(b)). As is the case with “large scale fill operations,” inclusion of this term in the proposed definition is overbroad and would inappropriately capture CCR management activities that do not constitute disposal.

For example, CCRs often are placed into piles for purposes of staging and/or consolidation *prior* to placement in a CCR landfill. To categorize and regulate the CCR storage pile in these circumstances in the same manner as the actual landfill in which the CCRs are disposed of is illogical and obviously inappropriate. Even in the context of EPA’s hazardous waste rules, the Agency recognizes the distinction between landfills and storage piles, and defines and regulates the two as separate management units; indeed, the Subtitle C regulations expressly exclude “piles” from the definition of a “landfill.” See 40 C.F.R. § 260.10. The term “pile” is defined under the Subtitle C regulations to include “any non-containerized accumulation of solid, nonflowing hazardous waste that is used for treatment or storage and that is not a containment building.” *Id.*

To remedy this problem, EPA should remove the term “piles” from the definition of “CCR landfill,” as piles are not landfills in any ordinary (or existing regulatory) sense of the term. USWAG understands that EPA may be concerned about piles being used inappropriately for sham disposal of CCRs. However, a more appropriate way to address this concern would be to set a limit on the amount of time that the CCRs are

allowed to be maintained in a pile. The storage of CCRs in piles beyond the timeframe established in the regulations would create a rebuttable presumption that disposal, not storage, is taking place and that the pile should be subject to the CCR landfill requirements. A timeframe of 180 days would be an appropriate length for purposes of establishing a rebuttable presumption that the pile be viewed as a “CCR landfill” and not as a storage pile when storage exceeds this time limit. As with any rebuttable presumption, however, the facility would have the opportunity to demonstrate that storage beyond the 180 days is legitimate and necessary to facilitate disposal in a landfill or impoundment (e.g., disposal capacity is limited and/or storage beyond this time period is necessary to facilitate transportation to a disposal facility).

Also, given that the CCRs in piles are often continuously removed and replaced with new CCRs, the 180-day time limit would apply to the CCRs themselves and not to the existence of the pile itself, which will be continually changing in size as CCRs are periodically added and removed from it. This is the approach EPA takes in the case of applying the 90-day accumulation time limit to continuous process flow-through tanks under the Agency’s hazardous waste accumulation rules under 40 C.F.R. § 262.34; the same common-sense approach should be applied here.

3. Definition of CCR Surface Impoundment

EPA’s proposed definition of “CCR surface impoundment or impoundment” is overly broad in that it would inappropriately capture impoundments that are not designed to manage CCRs. To correct this problem, USWAG has proposed a revised definition of “CCR impoundment” at the end of this section to help ensure that the final

definition includes only those impoundments that truly function as CCR surface impoundments at electric utility power plants.

As currently drafted, the definition includes:

A facility or part of a facility which is a natural topographic depression, man-made excavation, or diked area formed primarily of earthen materials (although it may be lined with man-made materials), which is *designed* to hold an accumulation of CCRs containing free liquids, and which is not an injection well. Examples of CCR surface impoundments are holding, storage, settling, and aeration pits, ponds, and lagoons. CCR surface impoundments are used to receive CCRs that have been sluiced (flushed or mixed with water to facilitate movement), or wastes from wet air pollution control devices, often in addition to other solid wastes.

75 Fed. Reg. at 35239-40 (proposed 40 C.F.R. § 257.2 (emphasis added)). A critical limitation in this definition is that it is intended to capture only impoundments “designed” to accumulate CCRs. If applied appropriately, this definition generally would only extend to those impoundments into which CCRs are initially sluiced, as these are the impoundments at power plants that are “designed” to accumulate CCRs.

USWAG is concerned, however, that the definition could inappropriately be interpreted to include downstream secondary and tertiary impoundments – such as polishing, cooling, wastewater and holding ponds – that receive waters containing only *de minimis* amounts of CCRs. For example, many power plants have holding ponds and/or wastewater ponds constructed and used for the management of various water streams that do not contain any CCRs. A wastewater impoundment at a facility that receives non-CCR wastewaters may, however, occasionally receive *de minimis* amounts of CCRs via storm water runoff (for example, from an FGD storage pad) or from wastewater containing *de minimis* amounts of CCRs from an upstream CCR impoundment. In these circumstances, the wastewater impoundment clearly is not

“designed to hold an accumulation of CCRs,” and is not in any practical or technical sense “used to receive CCRs that have been sluiced” to the impoundment. It would be illogical and unnecessary to apply the full array of proposed controls for CCR impoundments, including liner systems, groundwater monitoring, siting restrictions, and related standards, to these impoundments.

The potential for an overly broad application of the proposed definition capturing non-CCR surface impoundments is underscored by EPA’s over-counting of CCR impoundments in the proposal. In particular, EPA explains that, in the mid-1990s, it estimated that there were 286 CCR surface impoundments in use. 75 Fed. Reg. at 35151. EPA now estimates, however, that there are “584 CCR surface impoundments or similar management units in use at roughly 495 coal-fired power plants.” *Id.* The Agency readily acknowledges, though, that this increase in numbers does not reflect an actual change in practices, but that “much of the increase in surface impoundments *likely results from counting units that receive wastewater that has been in contact with even small amounts of coal ash*, and thus includes many units which were not included in EPA’s mid-1990 estimates.” *Id.* (emphasis added).

USWAG believes that this over-counting was the direct result of EPA’s Information Collection Request (“ICR”) distributed to electric utility power plants in 2009 wherein EPA requested that *any* impoundment receiving even *de minimis* amounts of CCRs be identified. It was clearly understood at the time that the breadth of this request could capture impoundments – such as polishing ponds and wastewater ponds – that are not CCR impoundments, but which nonetheless may contain *de minimis* amounts of CCRs through power plant runoff or other sources. Unfortunately, EPA

appears to have incorrectly used the total number of impoundments identified in the ICR responses for purposes of reporting a dramatic increase in the number of CCR surface impoundments used by electric utilities. As a result, EPA's assertion that there are "584 CCR surface impoundments or similar management units" is factually incorrect and inappropriately skews upward the number of CCR impoundments analyzed by EPA for development of the proposal.

This factual mistake cannot be perpetuated through a poorly worded definition of "CCR surface impoundment." To ensure that this does not occur, the definition must be amended to include a more detailed functional element to make clear that downstream secondary and tertiary impoundments at power plants that receive only *de minimis* amounts of CCRs should not be labeled as CCR impoundments. EPA itself acknowledges that it intends for the proposed definition "to capture those surface impoundments that are described in EPA's damage cases and risk assessments." *Id.* at 35196. The final rule should make clear that cooling, polishing, wastewater, and similar ponds are not included in this universe.

In addition to including a more specific functional description within the definition, EPA should incorporate a size limit into the definition. This will ensure that small units that do not pose the potential risks associated with the types of CCR impoundments described in the damage cases and risk assessment are excluded from the definition. EPA has proposed a size threshold of 20-acre-feet or more for purposes of triggering the impoundment structural integrity requirements for CCR surface impoundments. See *id.* at 35243 (proposed 40 C.F.R. § 257.71(b)(1)). Out of an abundance of conservatism, USWAG believes that a size threshold of half this volume – or 10-acre-

feet or more – should serve as the size criterion for classifying a unit as a CCR surface impoundment in the first instance (though USWAG agrees with EPA that the 20-acre-feet threshold should serve as the criterion for triggering the structural integrity requirements for CCR surface impoundments). Finally, the definition should not encompass units that, having once served as impoundments, have been dewatered and closed for purposes of serving as the base for a CCR landfill or other structures. Dewatered impoundments that subsequently serve as the base for CCR landfills are not impoundments and should not be captured by the CCR surface impoundment definition.

Given the above, USWAG suggests that EPA's proposed definition of CCR impoundment be modified to read as follows:

CCR surface impoundment means a facility or part of a facility which is a natural topographic depression, man-made excavation, or diked area formed primarily of earthen materials (although it may be lined with man-made materials), which has a storage volume of 10 acre-feet or more and which is specifically designed for and whose primary function is to hold an accumulation of CCRs containing free liquids and which is not an injection well. Examples of CCR surface impoundments whose primary function is to hold an accumulation of CCRs are primary holding, storage, settling, and aeration pits, ponds, and lagoons that used to receive CCRs that are sluiced (flushed or mixed with water to facilitate movement), or wastes from wet air pollution control devices, often in addition to other solid wastes. This definition is not intended to encompass impoundments whose primary function is not to receive CCRs, but which receive *de minimis* amounts of CCRs through the receipt of waters that contain only incidental amounts of CCRs. Examples of impoundments that are not CCR impoundments include, but are not limited to, cooling, polishing, process water storage, storm water management, recycling, wastewater and holding ponds. CCR impoundments also do not include former impoundments that have been de-watered and closed and/or dewatered and subsequently used as the base for CCR landfills, buildings, or other structures.

These modifications to the definition of CCR surface impoundment will help ensure that only those impoundments that truly function as CCR impoundments are

subsumed within the “CCR impoundment” definition and subjected to the proposed CCR impoundment regulations. This is the most logical approach, as it would make no sense to subject units that contain only *de minimis* or trace amounts of CCRs from incidental sources to the full array of proposed CCR impoundment requirements.

4. Definition of Existing CCR Surface Impoundment

The proposed definition of “existing CCR surface impoundment” needs to be modified to clarify that it does not include impoundments that cease receiving CCRs before the effective date of the rules. The proposed definition includes, in pertinent part, an impoundment that “was in operation ... prior to the effective date of the rule.” See 75 Fed. Reg. at 35240 (proposed 40 C.F.R. § 257.40(b)). EPA should modify this phrase to include an impoundment that “was in operation *and had not yet ceased receiving CCRs* prior to the effective date of the rule” to make clear that the definition does *not* encompass units that are no longer receiving CCRs on the effective date of the rule, even though the unit may not have completed final closure prior to the rule’s effective date. Plainly, units that are no longer receiving CCRs on the effective date of the rule are not “in operation” and therefore should not be subject to the standards applicable to active units.

EPA also should clarify in the final rule that the definition of “existing CCR surface impoundment” *does* include impoundments that are operating on the effective date of the rules and that are periodically dredged out during the operating life of the impoundment. While this may seem self-evident, it is important to clarify this point so that impoundments periodically dredged out during their normal operating life to allow for their continued use are not inappropriately characterized as a “new CCR

impoundment” when the facility reinitiates placement of CCRs in the impoundment after dredging operations are complete.

5. Definition of Existing CCR Landfill

The proposed definition of “existing CCR landfill” should be modified to include lateral expansions of operating units where such expansion is within the site footprint of an area already approved and permitted by the state for the landfill. The proposed definition includes:

A CCR landfill which was in operation on, or for which construction commenced prior to [the effective date of the final rule]. A CCR landfill has commenced construction if the owner or operator has obtained the Federal, State and local approvals or permits necessary to begin physical construction; and either:

- (1) A continuous on-site, physical construction program has begun; or
- (2) The owner or operator has entered into contractual obligations – which cannot be cancelled or modified without substantial loss – for physical construction of the CCR landfill to be completed within a reasonable time.

Id. at 35240 (proposed 40 C.F.R. § 257.40(b)).

While this definition includes undeveloped areas within the footprint of an approved permitted site, it also requires that construction actually have begun at the site or that some type of binding contractual obligation be present for these areas to be considered an “existing CCR landfill.” However, if an undeveloped area within the footprint of a permitted landfill site for which there is a contractual obligation to begun construction is subsumed within the definition, there is no environmental or health-based reason for not including the precise same location within the definition even if there is not a contractual commitment to begin construction. The point is that, under both scenarios, the undeveloped portion of the approved permitted site have undergone

environmental and related technical review by the permitting authorities and have been approved for the location of a CCR landfill. To exclude a location that has otherwise already been permitted for a CCR landfill from the definition of an “existing” landfill merely because there is not a binding contractual commitment to begin construction would unfairly subject these areas to the design and operating standards for “new CCR landfills,” when *identical* locations are considered “existing CCR landfills” subject to different operating standards based merely on the existence of a contract to commence construction. Such a distinction is arbitrary and capricious and provides no practical benefit.

XIII. EPA MUST REFINE THE PROPOSED REGULATIONS TO ENSURE THAT LEGITIMATE BENEFICIAL USES ARE EXCLUDED FROM REGULATION AND THAT CCR MINE PLACEMENT ACTIVITIES ARE NOT CAPTURED BY THIS RULEMAKING

USWAG and its members have long supported the beneficial use of CCRs and have worked with EPA, other federal agencies, states, localities and standard-setting organizations to pursue the environmentally protective and beneficial use of CCRs in a wide variety of industrial, commercial, residential products, and construction activities. USWAG supports the exclusion of beneficial uses from any hazardous or solid waste regulation, provided that the use of CCRs is protective of human health and the environment.

We addressed above the stigma and liability concerns associated with regulating CCRs under RCRA Subtitle C (even if only in the disposal context), which will detrimentally impact the beneficial use of these materials. In this section, we address the revisions that EPA must make to both the Subtitle D and Subtitle C proposals to ensure that CCR beneficial use applications are not improperly regulated as CCR

disposal. Specifically, EPA must (i) revise its proposed definition of CCR landfills and the proposed exclusion for CCR beneficial uses to ensure that the proposed regulations do not sweep in environmentally protective beneficial uses that could be classified as large-scale fill operations and (ii) ensure that the rule's application to mine placement of CCRs is consistent and does not capture CCR mine placement activities that the Agency agrees should be addressed by the Office of Surface Mining ("OSM").

A. EPA Must Ensure That Environmentally Protective Beneficial Use Projects Are Not Subject To Regulation As CCR Disposal Units

Both the Subtitle C and Subtitle D option would encompass CCRs that are disposed of and would not apply to CCRs that are beneficially used. To implement this regulatory distinction, EPA would include in the definition of "disposal units" uses of CCRs that EPA believes are not legitimate "beneficial uses" and instead should be regulated as CCR disposal. In attempting to establish this distinction, however, EPA uses vague undefined terms which are subject to a wide range of possible interpretations, potentially even covering within the concept of "disposal" those types of activities that the Agency believes constitute the safe beneficial use of CCRs, which it explicitly supports in the proposal's preamble.

Under the Subtitle C option, EPA would exclude from Subtitle C regulation CCRs that are beneficially used by retaining such uses within the scope of the regulatory text implementing the Bevill exclusion. See 75 Fed. Reg. at 35254 (proposed 40 C.F.R.

§ 261.4(b)(4)(i). EPA would define "beneficial use" to include:

The use of [Coal Combustion Products or "CCPs"] that provides a functional benefit; replaces the use of an alternative material, conserving natural resources that would otherwise need to be obtained through practices such as extraction; and meets relevant product specifications and

regulatory standards (where these are available). *CCPs that are used in excess quantities, placed as fill in sand and gravel pits, or used in large scale fill projects, such as for restructuring the landscape, are not considered beneficial uses.*

Id. (emphasis added). Uses of CCRs that do not fall within the proposed definition of “beneficial use” would be subject to full Subtitle C regulation.

While EPA does not specifically define what would constitute “beneficial use” under the Subtitle D option, the Agency attempts to draw the same distinction between legitimate beneficial use and disposal by defining what would constitute a “CCR landfill.” Indeed, the proposed definition of CCR landfill is identical under both the Subtitle C and Subtitle D options, suggesting that beneficial uses are intended to be addressed the same way in the two proposals. *See id.* at 35240 (proposed 40 C.F.R. § 257.40(b)) and *id.* at 35255 (proposed 40 C.F.R. § 264.1301).

As mentioned above regarding the scope of the Subtitle D landfill regulations, “CCR landfill” under the Subtitle C option is defined to include typical waste disposal units as well as “piles, sand and gravel pits, quarries and/or *large scale fill operations.*” *Id.* (emphasis added). As discussed above, USWAG believes that large-scale fill operations, if designed appropriately, constitute a legitimate beneficial use; we have long supported the use of industry standards in designing engineered structural fills and other beneficial use projects. In fact, USWAG developed an industry guidance document on how utilities and independent power producers as well as downstream coal ash users should use CCRs in engineered structural fills to minimize any potential threats to human health and the environment. *See* USWAG Engineering and Environmental Guidance on the Beneficial Use of Coal Combustion Products in

Engineered Structural Fill Projects (May 4, 2009) (attached as Appendix 1). USWAG believes that structural fill projects, if developed in accordance with appropriate and accepted industry standards and protections, should be considered a legitimate beneficial use and not be viewed as “disposal” under the proposal.

Notwithstanding USWAG’s support of certain environmentally protective structural fill projects, the terms included in the “CCR landfill” definition, namely “piles, sand and gravel pits, quarries and/or large scale fill operations” are not defined in the regulatory text and are only loosely discussed in the proposal’s preamble. The term “large scale fill operation” is especially vague, suggesting that the critical and troublesome issue for the Agency is the size of the fill rather than whether the fill project was properly designed and is environmentally protective. As addressed earlier in these comments, this undefined term can also apply to above-ground structures, road projects, and embankments. As EPA notes in the preamble, USWAG has worked with EPA, the Federal Highway Administration, DOE and the ACAA to provide guidance and best management practices on the use of CCRs in highway construction. 75 Fed. Reg. 35161. However, the undefined terms “large scale fill operation” (and the similar phrase “large scale fill project”, which would be excluded from the proposed definition of “beneficial use” discussed above) could easily be read to cover certain highway construction projects developed and implemented consistent with this jointly-developed guidance and best management practices. USWAG sincerely hopes that it was not the Agency’s intent to regulate these projects as CCR landfills based on a notion of the risks that they pose, given that EPA was at the forefront in developing guidance on how to safely use CCRs for these projects.

EPA also suggests in the proposal's preamble that it may define or provide guidance on the meaning of "a large scale fill operation" and "large scale fill project" to assist in the assessment of the appropriate criteria to "distinguish between legitimate beneficial uses and inappropriate operations." *Id.* at 35163. The Agency also states that it is considering promulgating regulations to address unencapsulated uses of CCRs. *Id.* at 35164-65. USWAG insists that any such attempt to address the meaning of "large scale fill operation" and "large scale fill project," or to issue regulations addressing un-encapsulated uses of CCRs, requires a supplemental regulatory proposal. EPA has simply not provided sufficient detail for USWAG and others to meaningfully comment on any proposed standards. In fact, for many industries and potentially impacted persons, the applicability of this proposed rule is directly related to whether and how the definition of CCR landfill relates to their facility and/or operations. Persons and facilities that may be subject to the hazardous waste or solid waste regulatory program may not even be aware that they own or operate a covered CCR landfill.

As noted above, EPA proposes to define the term "beneficial uses" under the Subtitle C option, in pertinent part, as "the use of CCPs that provides a functional benefit; replaces the use of an alternative material, conserving natural resources that would otherwise need to be obtained through practices such as extraction; and meets relevant product specifications and regulatory standards (where these are available)." *Id.* at 35254. As an alternative to these criteria, EPA requests comment on whether it should provide a formal listing of all beneficial uses. *Id.* at 35163. USWAG does not believe that EPA should attempt to specifically list all the types of qualified CCR

beneficial uses as any such list will certainly be under-inclusive. Equally important, a formal list will delay the implementation of new and emerging strategies and technologies for using CCRs, because a new rulemaking would be necessary to officially recognize any new and qualified CCR beneficial use. This would unnecessarily restrict the development of new CCR markets and stifle innovation. Rather, USWAG supports the performance criteria as proposed in the regulatory text, and believes (as described above) that structural fills and other projects – including some that may not be developed yet – can and do meet these criteria.

B. EPA Must Ensure That The CCR Regulations Do Not Apply To CCR Mine Placement

In the preamble of the proposal, EPA states that the rule would not apply to “minefilling operations.” *Id.* at 35165. “Minefill” is defined in the preamble to mean “a project involving the placement of CCRs in coal mine voids for use as fill, grouting, subsidence control, capping, mine sealing, and treating acid mine drainage, whether for purposes of disposal or for beneficial use, such as mine reclamation.” *Id.* at 35130-31. In the Subtitle C proposed regulatory text, EPA generally includes placement in “minefilling operations” within the scope of the Bevill exclusion for beneficial uses, but does not provide a definition of this term. 75 Fed. Reg. at 35254 (proposed 40 C.F.R. § 261.4(b)(4)(i)). Additionally, nowhere in the proposed Subtitle D regulations does EPA exempt minefilling operations from coverage by the regulations. In fact, in both the Subtitle D and C proposed regulations, “CCR landfill” is defined, in part, as not including “an underground mine,” suggesting that surface mines could be considered CCR landfills. *Id.* at 35240 (proposed 40 C.F.R. § 257.40(b)) and *id.* at 35255 (proposed 40 C.F.R. § 264.1301).

USWAG is concerned that EPA has not properly excluded mine placement sites from potential regulation as CCR disposal facilities. Mine placement of CCRs can include a wide variety of activities, including the placement of CCRs in underground voids; placement within a strip mine, open pit mine, or an area wide surface mine; or placement of CCRs on a site where coal materials had originally been placed. Only the first of these scenarios is contemplated in EPA's preamble definition of "minefilling operations" and only the underground mine is explicitly excluded from regulation as a CCR landfill in the proposed regulatory text.

In fact, given that the beneficial uses of CCRs in the proposals exclude the use of CCRs that are used in large-scale fill projects, including those for restructuring the landscape, any use of CCRs for surface or open pit mines may be considered an improper use subjecting the site to regulation as a CCR landfill. *Id.* at 35254 (proposed 40 C.F.R. § 261.4(b)(4)(i)). Such a result would be inconsistent with EPA's statement that CCR mine placement operations will be the subject matter of a later rulemaking by OSM. Therefore, USWAG strongly encourages EPA to provide regulatory certainty to CCRs used in mine placement by explicitly exempting CCRs used at coal mine sites from regulation under the proposal, including the use of CCRs in surface mine placement. As EPA correctly acknowledges in the preamble, the Agency should defer to OSM for development of regulations for these activities. *Id.* at 35165.

XIV. USWAG SUPPORTS DEVELOPMENT OF STRUCTURAL INTEGRITY STANDARDS FOR CCR SURFACE IMPOUNDMENTS

USWAG concurs with EPA's proposal to incorporate the surface impoundment integrity and inspection obligations into the RCRA program modeled largely on the standards for coal slurry impoundments regulated by the Mine Safety and Health

Administration (“MSHA”) (at 30 C.F.R. § 77.216). *Id.* at 35176. While the MSHA standards regulate a broader array of materials with differing physical properties than CCRs, the MSHA rules provide a good starting point for developing comparable standards for CCR impoundments.

However, it is critical to ensure that the same applicability criteria triggering the obligation to record impoundment information in the company’s operating record (proposed 40 C.F.R. § 257.71(b)) apply in triggering the related obligation to conduct surface impoundment inspections (proposed 40 C.F.R. § 257.83). In defining the universe of impoundments subject to the recording requirement, EPA properly incorporates the threshold criteria from the MSHA rules: specifically, the obligation to record in a company’s operating record information concerning dam location, construction history, etc., extends only to those impoundments that can “[i]mpound CCRs to an elevation of five feet or more above the upstream toe of the structure and can have a storage volume of 20 acre-feet or more” or can “[i]mpound CCRs to an elevation of 20 feet or more above the upstream toe of the structure.” 75 Fed. Reg. at 35243 (proposed 40 C.F.R. § 257.71(b)(1)-(2)).

In what appears to be a drafting error, there are no parallel threshold criteria for the corresponding obligation to conduct inspections of surface impoundment integrity under proposed 40 C.F.R. § 257.83 (*id.* at 35245-46). Rather, the regulatory text provides that these inspection requirements are to apply to “[a]ll existing CCR surface impoundments,” with no impoundment threshold. *Id.* at 35245. This must be an error. Even the MSHA regulations, upon which the proposed CCR structural integrity rules are based, cross-reference the volume threshold criteria applicable to MSHA dam reporting

requirements into the corresponding MSHA obligations to conduct dam integrity inspections. See 30 C.F.R. § 77.216-3 (cross-referencing the applicability criteria set forth in 30 C.F.R. § 77.216(a), which set forth the same dam elevation and impoundment capacity criteria referenced above in proposed 40 C.F.R. § 257.71(b)(1)-(2)).

Given the above, there is no basis to impose the proposed inspection obligations on impoundments of any size. Therefore, EPA should be certain in the final rule that the same set of minimum criteria that trigger the CCR dam record submission requirements also apply to the obligations to conduct CCR dam inspections to ensure that the universe of impoundments subject to these related obligations is the same (*i.e.*, the specified dam elevation and impounding capacity in proposed 40 C.F.R. § 257.71(b)(1)-(2)).

USWAG also believes that the CCR structural integrity requirements (both the recording and inspection obligations under proposed 40 C.F.R. §§ 257.71(b), 257.83) should be tailored to apply only to those structures that pose a potential threat to human health and the environment. While USWAG appreciates that EPA has modeled the proposed structural integrity standards for impoundments on the MSHA rules, those rules, as noted above, encompass a broader universe of materials that pose a broader array of potential dam integrity issues. In the case of CCRs, the Agency is developing impoundment integrity rules for a group of materials that are more homogenous in nature and thus do not present the same array of potential dam integrity issues that the MSHA rules are designed to regulate.

USWAG recommends, therefore, that the proposed CCR structural integrity requirements not apply to CCR impoundments that have been classified by the appropriate state regulatory body or by an independent third party professional engineer as having a “low hazard potential classification” pursuant to the federal guidelines for dam safety. See “Federal Guidelines for Dam Safety: Hazard Potential Classification for Dams,” Federal Emergency Management Agency (“FEMA”) (reprinted Jan. 2004). Under the FEMA dam safety classification system, a “low hazard potential classification” means that failure or mis-operation of the impoundment “results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to owner’s property.” *Id.* at 5. Given that a failure of a CCR impoundment with a “low hazard potential classification” poses only a low risk for *on-site* economic or environmental losses, USWAG believes that impoundments with this classification should not be subject to the proposed CCR impoundment structural integrity requirements. Despite the fact that any such risks are low, facilities will have ample incentives to prevent economic or environmental losses to on-site operations, and therefore it is not necessary to subject these low-risk facilities to any additional regulatory requirements under the final CCR rule.

Moreover, excluding CCR impoundments with a “low hazard potential classification” from the CCR structural integrity requirements would be consistent with many state dam regulatory programs that apply dam integrity standards *only* to impoundments with a “high” or “significant” potential hazard classification, and therefore will promote consistency with existing state controls. See *e.g.*, New Mexico Rules and Regulations Governing Dam Design, Construction and Dam Safety (*e.g.*, requiring dam

site security, an instrumentation plan for monitoring and evaluating dam performance, and an operation and maintenance manual and emergency action plan only for dams with a high or significant hazard potential); see also NMAC §§ 19.25.12.11(G)-(J).

Under the FEMA dam safety classification system, dams with a “high hazard potential classification” means that “failure or mis-operation” of the impoundment “will probably cause a loss of human life.” *Id.* at 6. Dams with a “significant hazard potential classification” means that failure or mis-operation of the impoundment will “result[] in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or can impact other concerns.” *Id.* at 5. USWAG agrees that CCR impoundments with either a “high hazard” or “significant hazard” potential classification, that also meet the threshold impounding criteria discussed above, should be subject to the CCR dam integrity standards. At the same time, however, because CCR impoundments with a “low hazard potential classification” pose only a low economic and/or environmental threat that is limited to the facility itself, USWAG does not believe these types of units warrant regulation under the CCR impoundment structural integrity rules.

In addition to the above, USWAG believes that the requirement to monitor instrumentation once every seven days under proposed 40 C.F.R. § 257.83(a)(2) (75 Fed. Reg. at 35245) is excessive. A weekly instrumentation inspection obligation is clearly unwarranted for all dams. Even the FEMA Federal Guidelines for Dam Safety do not contemplate a monitoring frequency of this magnitude, suggesting that the frequency of instrumentation monitoring “may be reduced after the project has been in operation for an extended time and performance observation data indicates that

readings have stabilized.” Section III(D)2c(2) of the FEMA Dam Safety Guidelines regarding the frequency of instrument monitoring provide, in relevant part:

The frequency of instrument readings should be established at the time the instrumentation system is designed in order to give a timely warning of possible adverse conditions. Whenever necessary, more frequent readings, sometimes as often as hourly, should be taken to monitor a suspected rapidly changing adverse condition. The frequency or number of readings may be reduced after the project has been in operation for an extended time and performance observation data indicates that readings have stabilized.

The FEMA guidelines appropriately recognize that there is not a one-size-fits-all monitoring frequency for instrumentation, but rather that such an obligation should be tailored to reflect the stage of the dam (e.g., construction, first filling, long-term), its function, and its hazard rating. Therefore, USWAG recommends that EPA amend this condition to require equipment inspections once a month for dams with a dam hazard potential rating of “high” and quarterly for impoundments with a dam hazard potential rating of “significant.”

Finally, USWAG believes that it is extremely unwise from the perspective of homeland security concerns to require internet posting of information regarding an impoundment’s construction history that must be compiled under proposed 40 C.F.R. § 257.71(d). This obligation would arise under the proposed Subtitle D option, where the Agency would require owners/operators of CCR facilities to, among other things, maintain a public website containing documentation showing that applicable Subtitle D requirements have been met. See 75 Fed. Reg. at 35246 (proposed 40 C.F.R. § 257.84(a)). EPA itself recognizes that this obligation has “homeland security implications” and therefore requests comments on whether this obligation should not be required for certain data. *Id.* at 35194.

The information required to be assembled under proposed 40 C.F.R. § 257.71(d) can be extremely sensitive and may contain information that could be used by certain individuals with an intent to destroy a dam (e.g., engineering information on the structure's foundation, detailed information on physical and engineering properties, the basis for the structure hazard classification, slope stability information, etc.). Given the uncensored and anonymous nature of the internet and EPA's insistence that these data be posted on a publicly available website, USWAG is concerned that information made publicly available could be used to deliberately attempt to cause structural failure. This type of information should not be available on the internet.

There are certainly more secure means to make this information available to qualified individuals who have a legitimate interest in ensuring that a facility is meeting its regulatory obligations with respect to any applicable structural integrity obligations. For example, this information would also be required to be included in the owner's/operator's operating record. See 75 Fed. Reg. at 35246 (proposed 40 C.F.R. § 257.84(a)). Persons with legitimate interests in reviewing these data could make a written request to the owner/operator. Prior to disclosing this information to the requesting party, the owner/operator could coordinate with proper federal and state authorities to ensure that the requesting parties are not on any list of interest to federal/state homeland security agencies. Only after this screening measure has been completed would the information be released. This condition would also allow the owner/operator of the facility and federal/state authorities to know the names and identities of all organizations requesting this sensitive information on the construction of

the impoundment. This additional measure would not be overly burdensome and would help protect against the misuse of these data.

* * * * *

CONCLUSION

USWAG supports the development of federal regulations for CCRs under RCRA's Subtitle D non-hazardous waste program. Such an approach, which is the only lawful option available to EPA, would be consistent with EPA's two Reports to Congress and final Regulatory Determinations under the Beville Amendment concluding that CCRs do not warrant regulation under RCRA Subtitle C.

USWAG also believes that the Subtitle D Prime option, with appropriate adjustments, offers the best path forward. USWAG looks forward to working with EPA as the Agency develops Subtitle D non-hazardous waste regulations implementing the Subtitle D Prime option. Please direct your inquiries to James Roewer, USWAG Executive Director (202-508-5645), or to Douglas Green, USWAG counsel (202-344-4483).

**Comments of
The Utility Solid Waste Activities Group,
The Edison Electric Institute,
The American Public Power Association, and
The National Rural Electric Cooperative Association on
Hazardous and Solid Waste Management System;
Identification and Listing of
Special Wastes; Disposal of Coal Combustion Residuals From
Electric Utilities;
Proposed Rule**

75 Fed. Reg. 35128 (June 21, 2010)

**Volume II
Appendices**

**submitted to
The United States
Environmental Protection Agency
Docket No. EPA-HQ-RCRA-2009-0640**

November 19, 2010

**Of Counsel:
Venable LLP
575 Seventh Street, N.W.
Washington, D.C. 20004**

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Appendix 1

Utility Solid Waste Activities Group
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USWAG

May 4, 2009

VIA HAND DELIVERY AND ELECTRONIC MAIL

Mr. Matthew Hale
Director, Office of Resource Conservation and Recovery
United States Environmental Protection Agency
Ariel Rios Building
1200 Pennsylvania Avenue, NW
Mail Code: 5301P
Washington, D.C. 20460

RE: USWAG's Guidance on Engineered Structural Fill Projects

Dear Mr. Hale:

In meetings last Fall and earlier this year, you expressed concern about the use of coal combustion products ("CCPs") in certain structural fill applications. In response to your concerns, USWAG¹ developed the attached guidance document to assist utilities and other users of CCPs in planning and implementing engineered structural fill projects in an environmentally protective manner. The document, the "Engineering and Environmental Guidance on the Beneficial Use of Coal Combustion Products in Engineered Structural Fill Projects," relies on recognized industry standards, including ASTM E2277-03 ("The Standard Guide for Design and Construction of Coal Ash Structural Fills") in laying out key considerations for the use of CCPs in structural fills. The guidance includes provisions on (i) the testing and characterization of the CCPs used in the structural fill, (ii) the suitability of the intended project and site, (iii) communications with regulatory agencies and the affected community, (iv) standards for project operations, (v) contractor requirements, (vi) transportation standards, and (vii) measures to respond to potential releases.

¹ USWAG, formed in 1978, is an association of approximately 80 energy industry operating companies and associations including the Edison Electric Institute ("EEI"), and the National Rural Electric Cooperative Association ("NRECA"). EEI is the principal national association of investor-owned electric power and light companies. NRECA is the national association of rural electric cooperatives. Together, USWAG members represent more than 85% of the total electric generating capacity of the U.S. and service more than 95% of the nation's consumers of electricity.

Mr. Matt Hale
May 4, 2009
Page 2

The development and promotion of the standards contained in the attached guidance will help ensure that engineered structural fill projects are performed in an environmentally responsible manner. The continued use of CCPs in properly managed beneficial use applications including engineered structural fills is critically important to the recycling and conservation opportunities for the electric utility industry.

Please contact me if you have any questions or need additional information about this guidance or USWAG's continued commitment environmentally-protective beneficial use applications.

Sincerely,

A handwritten signature in black ink, appearing to read "J. Roewer", with a large, stylized initial "J" and a long horizontal stroke extending to the right.

Jim Roewer, Executive Director
Utility Solid Waste Activities Group

Enclosure

ENGINEERING AND ENVIRONMENTAL GUIDANCE ON THE BENEFICIAL USE OF COAL COMBUSTION PRODUCTS IN ENGINEERED STRUCTURAL FILL PROJECTS

Purpose Statement:

This document is intended to provide Coal Combustion Product (CCP) Managers with information to ensure that CCP engineered structural fills are planned and implemented in a manner that protects the environment and meets regulatory requirements.

Scope:

This information is intended to be used in planning and implementing engineered structural fill projects associated with the beneficial use of "coal combustion products" including fly ash, bottom ash, boiler slag, or flue gas desulfurization (FGD) material produced primarily from the combustion of coal.¹ Engineered structural fill projects consist of either an engineered fill or an engineered embankment with a beneficial end use.² Engineered structural fills are typically constructed in layers of uniform thickness and, where appropriate, compacted to a desired unit of density in a manner to control the compressibility, strength, and/or hydraulic conductivity of the placed material.

The generic issues and examples in this Guidance are designed solely to be an educational resource for CCP Managers by illustrating the requirements and considerations that may apply to engineered structural fill projects and should be taken into consideration depending on the quantities of ash used at the site. The Standard Guide for Design and Construction of Coal Ash Structural Fills designated ASTM E2277-03 is incorporated herein by reference. Each CCP project should be evaluated for site-specific requirements including all permitting requirements and the project should be appropriately described.

Characterization/Testing:

CCPs should be adequately characterized to ensure that the proposed use of the material does not cause environmental or public health problems and has physical properties that are compatible with the end use. The characterization, at minimum, should demonstrate the physical characteristics, including geotechnical properties, and identify the primary chemical constituents of the CCPs and leaching potential. CCPs should also be sampled and analyzed to verify that the materials meet the applicable regulatory standards for beneficial use. CCP leach testing procedures should be selected based on the material used, hydrogeologic setting, and structural fill application. See Appendix 1 for a reference to guidelines for potentially applicable leaching tests. For assessing engineering properties of the CCP, refer to ASTM E-2777.

¹ Fly ash and bottom ash includes both materials produced by "conventional units" as well as fluidized bed boilers.

² Examples of engineered structural fill projects include use as fill for building sites and foundations, subbase fill for recreational facilities, and as embankments for highways, railroads, dikes and levees.

Samples should be representative of the CCPs supplied for the engineered structural fill. See Appendix 2 for a reference to guidelines for collecting a representative sample. The frequency at which the CCPs should be tested is dependent on the variability of the composition of the CCPs.³

Moisture content of the CCPs should be evaluated in order to determine whether additional moisture is needed to condition the ash to help control fugitive dust and to enhance compaction.

Project Suitability/Qualification:

In addition to meeting all applicable state standards and guidelines, identifying a suitable site for an engineered structural fill using CCPs should include an evaluation of the site commensurate with the leaching potential of the CCPs, considering such factors as local zoning and land use plans, environmental characteristics of the proposed site, engineering aspects, and proximity to and relationship with landowners and neighbors. The historic use of the potential site and adjacent properties should be evaluated to assess whether there is potential for existing contamination at the site. In addition, consideration should be given to the reasonable future uses or planned development of the site and surrounding properties, including the distance between the potential site and adjacent properties.

The soil, geology and groundwater of the proposed site should be evaluated. The site geology should be assessed for the presence of any conditions such as sinkholes, karst, or bedrock outcrops. Groundwater quality and quantity, the location of groundwater users, groundwater flow direction, and depth to the groundwater will be important considerations in the process. The evaluation should be done in a manner consistent with ASTM E 2277-03. See Section 7.2 Site Characterization.

Groundwater modeling is not typically necessary for hydrogeologic characterization in support of a structural fill plan. However, in some cases, particularly larger fills, modeling may be useful in evaluating the potential for groundwater impacts. Screening models such as EPA's IWEM and EPRI's MYGRT are typically sufficient given the nature of the sites and limited availability of hydrogeologic data. Numerical models such as MODFLOW/MT3D are generally not warranted for these applications, except for very large sites in complex hydrogeologic environments. Brief descriptions of these models are provided in Appendix 3.

The site should also be evaluated in relationship to its distance from surface waters, including wetlands, and the location of floodplains and other environmental regulatory constraints that could potentially impact the project.

While site specific factors including size, rainfall, climate and terrain should always be considered, other considerations involving the location of the proposed engineered structural fill project include whether the site is:

- Within floodplain, floodways and drainage areas,
- In or near a wetland area,
- Near an active fault,

³ Additional testing should be conducted when conditions change that could significantly impact constituent concentrations in the CPP such as, for example, through the use boiler additives and/or changes in coal source or type.

- In an unstable area (e.g., in a karst area or areas prone to sinkholes),
- Within a wellhead protection area,
- Near a drinking water well, or near a public water supply, such as a community well, reservoir, or water treatment facility,
- Near a surface-water body, such as a lake, stream, river, or pond, or
- An impact on a critical habitat for an endangered or threatened species or an historic or archaeological site.

The landowner(s) should provide written permission for using CCPs on the site. As appropriate, the presence of CCPs should be acknowledged on the deed to provide notice to subsequent purchasers of the site.

Current site conditions and engineering and economic considerations, as well as the intended future use of the property, should be analyzed to ensure the material can be placed in a manner that will achieve needed structural stability.

The ability of equipment to move on and around the site should be evaluated especially if a project will extend over months in which inclement weather is expected. On and offsite traffic limitations should be considered.

Agency Communications:

The state or local government agency responsible for administering the program for beneficial use of CCPs will vary depending on the nature of the beneficial use. Site requirements for structural fill projects will also vary by locality. Where appropriate, details of the proposed structural fill should be discussed with the appropriate agency for their input.

These steps may be useful during and after any project.

1. Draft a plan for the proposed engineered structural fill and identify the agency responsible for approving the structural fill if approval is required.
2. Contact the appropriate agency staff to discuss the proposed engineered structural fill project when the detailed plan is complete and approval is required.
3. Provide the lead agency and other regulatory bodies with information they require to understand the project.
4. Follow-up to ensure the project is meeting State and local government and community requirements. Maintain an active dialog with all parties and document all material discussions.

Community Outreach:

As appropriate, CCP Managers should contact local community officials and offer to meet with them to provide information and answer questions that they may have about the proposed project.

After the operations commence, the CCP Manager should remain in contact with the local officials and offer to meet with them periodically to provide a project update and to answer questions that may be raised.

Local officials should be provided with a contact name, address and telephone number that they may use to inquire about the ongoing project.

Contractor Performance Standards:

CCP Managers should consider the reliability, performance history, compliance and safety records of any potential contractor. The contractor selected should have proven technical capabilities and experience with CCP placement. The potential contractor's financial resources and financial stability should be assessed prior to signing a contract, to ensure that the contractor has the ability to fulfill the obligations of the contract.

The contract should include conditions requiring the contractor to comply with all local, state and federal highway regulations during hauling of the CCP, and all local, state and federal environmental and occupational safety and health regulations during all of its operations. It should also address how the contractor's performance will be assessed. Oversight of contractor performance should be ongoing.

Transportation on Public Roadways:

Possible community concerns associated with transportation routes should be identified, reviewed and properly addressed prior to project implementation. Access routes to the project site should consider:

- Impact on local communities.
- Road conditions.
- Timing of transportation.
- Volume of traffic.
- Noise.
- Vehicle operational condition and cleanliness (free of dust and dirt).

Drivers or other personnel should ensure that vehicles are loaded and unloaded in a manner that minimizes the generation of dust and should ensure that all trucks are covered while in transit. Vehicles must be operated and maintained in a safe working order and in compliance with all applicable federal, state, and local requirements. They should not negatively impact road conditions or safety, especially at project ingress and egress locations.

For examples, see Appendix 3.

Project Operation Controls and Security:

Site Access Controls – To the extent possible, access controls should be utilized at the placement site to discourage unauthorized entrance to the site. Controls should be implemented to ensure appropriate pickup and delivery of CCPs.

The construction of engineered structural fills should follow the procedures described in Sections 7.7.6 & 8 "Construction" of the ASTM E 2277-03 Standard Guide for Design and Construction of Coal Ash Structural Fills. The ASTM standard includes operating procedures for weather restrictions, dust control, erosion control, source and delivery, on-site storage, site preparation, placement and compaction, cover and quality control. These standards are incorporated herein by reference.

Spill/Off-Site Release Response:

Trucks hauling CCPs on public roadways should have a Material Safety Data Sheet and should be responsible for responding to spills. All CCPs spilled during transit should be cleaned up and either taken to the placement site or returned to the plant of origin.

A plan should be developed for potential off-site releases. The plan should identify the individual who is responsible for implementing response actions and notifying appropriate regulatory officials, contact information for response assistance, procedures to follow in the event of an offsite release, and an inventory of response equipment/services. In the event of an off-site release, all discharges of CCPs should be cleaned up and returned to the placement site.

APPENDIX 1

Characterization/Testing:

Examples of leaching procedures:

- *EPA SW846 Method 1313 - 1316*,
Methods 1313 through 1316 are a recently developed set of procedures designed to fully evaluate leaching potential under a wide range of potential environmental conditions, sometimes collectively referred to as the Leaching Framework. The framework includes batch leaching as a function of pH (1313), column leaching (1314), mass transfer leaching for monolithic materials (1315), and batch leaching as a function of solid-liquid ratio (1316). Selection of tests depends on the CCP material and the expected range of environmental conditions associated with the structural fill application.
- *EPA SW846 Method 1312, Synthetic Precipitation Leaching Procedure (SPLP)*
The SPLP is a single point batch leaching test similar to the TCLP but uses a nitric and sulfuric acid leachant to simulate acid rain. SPLP is commonly used to assess infiltration and leaching at CCP sites.
- *ASTM D3987, Shake Extraction of Solid Waste with Water*
ASTM D3987 is a single point batch leaching test similar to the SPLP but uses a deionized water leachant. ASTM D3987 is commonly used to assess infiltration and leaching at CCP sites.

APPENDIX 2

Collecting Representative Samples:

Examples of reference guidelines for collecting a representative sample.

- EPA SW846 Test Methods for Evaluating Solid Waste, Physical/Chemical Methods
<http://www.epa.gov/epaoswer/hazwaste/test/sw846.htm>
- ASTM D75 Practice for Sampling Aggregates
- ASTM C311 Test Methods for Sampling and Testing Fly Ash or Natural Pozzolans for Use as a Mineral Admixture in Portland-Cement Concrete.

APPENDIX 3

Site Modeling Tools

- **Industrial Waste Management Evaluation Tool ("IWEM")**
IWEM (USEPA, 2002) was developed by EPA as a screening tool to evaluate industrial waste disposal and use applications. IWEM is easy to use and can be run with very little site-specific hydrogeologic data. The core model in IWEM is the EPACMTP (USEPA, 2003) analytical model, which simulates the migration of dissolved constituents through soil and groundwater. The model accepts input values describing geology and infiltration at the site, and then performs a Monte Carlo analysis using a range of values for attenuation parameters and hydrogeologic parameters, producing over 10,000 realizations. For each of the Monte Carlo realization, IWEM allows up to 10,000 years to reach a maximum concentration. Output for individual realizations are not provided. A facility design is deemed "protective" if 90 percent of the IWEM realizations predict maximum concentrations at the compliance point that are lower than the appropriate health-based number or water quality standard.
- **MYGRT**
MYGRT Version 3.1 (EPRI, 2005) is a collection of 22 analytical models that calculate the transport of organic or inorganic constituents in the unsaturated and saturated zone, accounting for the processes of advection, dispersion, retardation, and decay. All of these models are based on analytical solutions to the 1D, 2D, and 3D mass transport equations. Inputs are specified by the user, and output is provided for each set of input parameters

provided. The model will accept time-varying leachate concentrations, and can be run for any length time period. MYGRT is easy to use and requires minimal or estimated site-specific data; it is most appropriate for screening level applications and relatively simple hydrogeologic settings.

- **MODFLOW/MT3D**

MODFLOW is a numerical groundwater flow code developed by the United States Geological Survey (McDonald and Harbaugh, 1988) that uses a finite difference approximation to solve a three-dimensional head distribution in a multi-layered aquifer. The program also calculates water balance at wells, rivers, and drains. MT3DMS (Zheng and Wang, 1998) is a transport code that uses a finite difference solution to calculate concentration distribution for a single dissolved solute as a function of time and space. MT3DMS accounts for advection, dispersion, diffusion, first-order decay, and sorption. Sorption can be calculated using linear, Freundlich, or Langmuir isotherms. MODFLOW/MT3D are relatively time consuming codes to set up and calibrate, and are most applicable for large sites with complex and well characterized hydrogeology.

APPENDIX 4

Transportation on Public Roadways:

Examples to consider:

1. Ensure vehicles, company and contractor, are in safe working order and associated inspections are up-to-date.
2. Ensure contractors are adequately insured.
3. Investigate compliance history of contractors.
4. Ensure proper vehicle washing at loading and unloading areas.
5. Proper vehicle covering:
 - The cover must be made of a solid or close weave mesh material.
 - The cover must be large enough to enclose the top of the entire load.
 - The cover must be sufficiently secured.
 - The cover must be kept in good repair
6. Ensure proper construction and maintenance of access and egress points to public roadways. This could include construction of temporary roadways and use of flagmen or other traffic flow devices.
7. Evaluate whether water must be added to condition the ash to help control fugitive dust.

References

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Appendix 2

UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION 4

IN THE MATTER OF

**TVA Kingston Fossil Fuel Plant
Release Site
Roane County, Tennessee**

Tennessee Valley Authority,
Respondent.

Administrative Order and Agreement on Consent

**U.S. EPA Region 4 and
Tennessee Valley Authority**

**Docket No.: CERCLA-04-2009-3766
Proceeding Under Sections 104(a),
106(a), and 107 of the
Comprehensive Environmental
Response, Compensation,
and Liability Act, as amended**

ADMINISTRATIVE ORDER AND AGREEMENT ON CONSENT

I. PURPOSE

WHEREAS, on December 22, 2008, approximately 5.4 million cubic yards of ash material were released into the environment from the Tennessee Valley Authority (TVA) Kingston Fossil Fuel Plant in Roane County, Tennessee; and

WHEREAS, TVA undertook immediate response actions and worked in close coordination with the United States Environmental Protection Agency (EPA), the Tennessee Department of Environment and Conservation (TDEC), and other agencies to provide for the safety of area residents, to contain released ash and minimize its downstream migration, and to monitor and assess air and water quality; and

WHEREAS, on January 12, 2009, TDEC issued a Commissioner's Order to TVA requiring, among other things, the comprehensive assessment, cleanup and restoration of areas impacted by the release; and

WHEREAS, on February 4, 2009, EPA, pursuant to Executive Order 12088, and TDEC issued a joint letter to TVA wherein TVA was directed to provide all plans, reports, work proposals and other submittals being provided to TDEC, to EPA as well for review and approval by the agencies; and

WHEREAS, TVA is, and has been, responding to the release of ash from an impoundment at the TVA Kingston Fossil Fuel Plant in Roane County, Tennessee, pursuant to the January 12, 2009, Commissioner's Order, and the February 4, 2009, letter, with the oversight of TDEC and EPA and under its authorities, including that delegated by Executive Order No. 12580; and

WHEREAS, TVA is committed to cleaning up the release, protecting the health and safety of the public and workers, protecting and restoring environmentally sensitive areas, and keeping the public and stakeholders informed and involved in the formulation of response activities; and

WHEREAS, TVA recognizes EPA's specialized expertise in responding to large-scale releases; and

WHEREAS, TVA, EPA, and TDEC desire to work cooperatively in all aspects of the cleanup; and

WHEREAS, TVA and EPA agree that in order to ensure that the environmental impacts associated with the release are thoroughly assessed and that appropriate response actions are taken as necessary to protect public health, welfare or the environment, and to ensure that the response actions satisfy all federal as well as state environmental requirements, it is advisable and beneficial for TVA and EPA to enter into this Administrative Order and Agreement on Consent (Order, or Order and Agreement) providing for cooperative implementation of the response actions at the Site pursuant to their authorities under the Comprehensive Environment Response, Compensation, and Liability Act (CERCLA), as amended, and the National Contingency Plan (NCP);

NOW, THEREFORE, EPA hereby orders and TVA agrees as follows:

II. JURISDICTION

1. This Order is issued by EPA pursuant to the authority vested in the President of the United States by Sections 106(a) and 107 of CERCLA, 42 U.S.C. §§ 9606(a) and 9607, and delegated to the Administrator of EPA by Executive Order 12580, 52 Fed. Reg. 2923 (Jan. 23, 1987), and within EPA further delegated to the Regional Administrators by EPA Delegation Nos. 14-14-A and 14-14-B, and re-delegated to the Region 4 Superfund Division Director by Regional Delegations 14-14-A and 14-14-B.

2. This Order and Agreement is entered into by TVA pursuant to the authority vested in the President of the United States by Section 104(a) of CERCLA, 42 U.S.C. § 9604(a), and delegated to TVA by Executive Order 12580, 52 Fed. Reg. 2923 (Jan. 23, 1987), and pursuant to the authority of the Tennessee Valley Authority Act of 1933, as amended, 16 U.S.C. §§ 831-831ee (2006).

3. This Order pertains to the release of ash from the TVA Kingston Fossil Fuel Plant located in Roane County, Tennessee, to the surrounding environment, including

portions of the Watts Bar Reservoir. This Order requires TVA, and TVA agrees, to conduct response actions, described herein, to abate any imminent and substantial endangerment to public health, welfare or the environment that may be presented by the actual or threatened release of hazardous substances, pollutants or contaminants and to otherwise address the impacts of the release at or from the Site in accordance with CERCLA and the NCP.

4. EPA has notified the State of Tennessee of this action pursuant to Section 106(a) of CERCLA, 42 U.S.C. § 9606(a).

5. EPA and TVA agree that this Order and Agreement has been negotiated in good faith and that the actions undertaken by TVA in accordance with this Order do not constitute an admission of any liability. TVA retains the right to controvert in any proceedings, other than a proceeding solely to enforce this Order, the validity of any of the Findings of Fact or Conclusions of Law and Determinations in Sections V and VI of this Order. TVA agrees to comply with and be bound by the terms of this Order, and further agrees in any proceeding solely to implement or enforce this Order that it will not contest the validity of this Order, its terms, or the jurisdiction of EPA to issue it.

III. PARTIES BOUND

6. This Order applies to and is binding upon EPA and upon TVA and TVA's directors, officers, employees, agents, successor agencies or departments, and assigns. Any transfer of the assets or real property of the United States in TVA's custody and control shall not alter TVA's responsibilities under this Order.

7. TVA shall ensure that its employees, contractors, subcontractors and representatives receive a copy of this Order and comply with this Order. TVA shall be responsible for any noncompliance with this Order.

IV. DEFINITIONS

8. Unless otherwise expressly provided herein, terms used in this Order which are defined in CERCLA, or in regulations promulgated under CERCLA, shall have the meaning assigned to them in CERCLA or in such regulations. Whenever terms listed below are used in this Order, the following definitions shall apply:

a. "CERCLA" shall mean the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. §§ 9601 et seq.

b. "Corrective Action Plan" or "CAP" shall mean the Corrective Action Plan, as required by the TDEC Commissioner's Order.

c. "Day" shall mean a calendar day unless expressly stated to be a working day.

d. “Department” or “TDEC” shall mean the Tennessee Department of Environment and Conservation.

e. “Effective Date” shall be the effective date of this Order, as provided in Section XXXIX herein.

f. “EPA” shall mean the United States Environmental Protection Agency and any successor departments or agencies of the United States.

g. “Future Response Costs” shall mean all direct and indirect costs incurred at or in connection with the Site after the Effective Date of this Order, that are not inconsistent with the NCP, that EPA incurs in reviewing or developing plans, reports and other items pursuant to this Order, verifying the Work, providing technical assistance, or otherwise implementing, overseeing, or enforcing this Order, including, but not limited to, payroll costs, contractor costs, travel costs, and laboratory costs.

h. “Interest” shall mean interest at the rate specified for interest on investments of the EPA Hazardous Substance Superfund established by 26 U.S.C. § 9507, compounded annually on October 1 of each year, in accordance with 42 U.S.C. § 9607(a). The applicable rate of interest shall be the rate in effect at the time the interest accrues. The rate of interest is subject to change on October 1 of each year.

i. “National Contingency Plan” or “NCP” shall mean the National Oil and Hazardous Substances Pollution Contingency Plan promulgated pursuant to 42 U.S.C. § 9605, codified at 40 C.F.R. Part 300, and any amendments thereto.

j. “NPDES Permit” shall mean the National Pollutant Discharge Elimination System Permit (#TN0005452), originally issued by EPA to TVA on April 30, 1976, and most recently re-issued by TDEC on September 1, 2003.

k. “Order” or “Order and Agreement” shall mean this document and all documents incorporated by reference, or to be incorporated by reference, into this document. All such documents are integral and enforceable parts of this Order.

l. “Paragraph” shall mean a portion of this Order identified by an Arabic numeral or a lower case letter.

m. “Parties” shall mean EPA and TVA.

n. “Past Response Costs” shall mean all costs incurred by EPA at or in connection with the Site between December 22, 2008, and the Effective Date hereof, that are not inconsistent with the NCP.

o. “RCRA” shall mean the Solid Waste Disposal Act, as amended, 42 U.S.C. § 6901, et seq. (also known as the Resource Conservation and Recovery Act).

- p. "Section" shall mean a portion of this Order identified by a Roman numeral.
- q. "Site" shall mean those areas of the TVA Kingston Fossil Fuel Plant, located in Roane County, Tennessee, where Waste Material from the December 22, 2008, release has been deposited, stored, disposed of, or placed, or has migrated or otherwise come to be located.
- r. "State" shall mean the State of Tennessee.
- s. "TVA" shall mean the Tennessee Valley Authority, and its officers, directors, employees, successors, assigns, contractors, agents and representatives, and any successor departments or agencies of the United States.
- t. "Waste Material" shall mean: 1) any "hazardous substance" under Section 101(14) of CERCLA, 42 U.S.C. § 9601(14); 2) any pollutant or contaminant under Section 101(33) of CERCLA, 42 U.S.C. § 9601(33); and 3) any "solid waste" under Section 1004(27) of RCRA, 42 U.S.C. § 6903(27), related to the December 22, 2008, release of ash at and from the Site, or generated in connection with response actions related thereto.
- u. "Work" shall mean all activities TVA is required to perform under this Order.

V. EPA'S FINDINGS OF FACT

9. TVA operates the Kingston Fossil Fuel Plant located in Roane County, Tennessee, near the confluence of the Emory and Clinch Rivers. The plant was originally built in the early 1950s to provide power for the Department of Energy's facility in Oak Ridge, Tennessee. In approximately 1958, the plant began use of a 244-acre wet settling pond for containment of the ash that remains after coal is burned. This settling pond covered the area where the current settling pond, stilling pond and landfill cells 1, 2, 3 and 4 now reside.

10. On June 29, 1999, TVA submitted an application to TDEC for a Class II landfill permit for the disposal of ash waste from the operation of the Kingston Fossil Fuel Plant. TDEC issued TVA the requested Class II landfill permit on September 26, 2000.

11. On September 1, 2003, TDEC issued TVA its most recent NPDES permit for the Kingston Fossil Fuel Plant. The permit authorizes discharge of water from the ash settling pond to the plant intake channel (the intake draws water from the Emory River) and discharge of cooling water to the Clinch River downstream from the mouth of the Emory River. The permit requires that a certain amount of free water volume be maintained in the settling pond to provide adequate treatment prior to discharge. This requirement necessitates periodic dredging of the ash settling pond. The NPDES permit further includes a general requirement that TVA properly operate and maintain all facilities and systems for collection and treatment, and expressly prohibits overflows of

wastes to land or water from any portion of the collection, transmission, or treatment system other than through permitted outfalls.

12. On December 22, 2008, containment structures surrounding portions of the Class II landfill failed resulting in a release of approximately 5.4 million cubic yards of wet ash which flowed into area waters, including the Emory River, adjacent tributaries and sloughs, and adjoining shorelines. The Emory River is a navigable-in-fact water of the United States. The release also extended to approximately 300 acres of land outside of the ash storage area, almost all of which was owned by the United States and in TVA's custody and control. The Tennessee River is the source of drinking water for the City of Kingston, Tennessee, and the Watts Bar Reservoir is used by several municipalities as a source of drinking water.

13. EPA Region 4 was notified of the incident on December 22, 2008, and an EPA On-Scene Coordinator (OSC) mobilized to the Site that same day for the emergency phase of the cleanup, pursuant to Executive Order 12580. The OSC worked within the Unified Command/Incident Command to coordinate the response as required by the NCP. Subsequently, on January 10, 2009, EPA, in coordination with the Unified Command, declared the emergency phase of the cleanup complete, transferred the lead federal agency role to TVA in accordance with Executive Order 12580, and demobilized from the Site.

14. On January 12, 2009, TDEC issued TVA the Commissioner's Order which directed TVA to undertake numerous response activities at the Site including, but not limited to:

- a. implement measures to prevent the movement of contaminated materials and minimize further down-stream migration of contaminated sediments;
- b. fully cooperate and support TDEC's review of all TVA fly ash impoundments located in the State;
- c. submit all existing studies, reports and memoranda that are potentially relevant to explaining or analyzing the cause of the catastrophic failure of the containment structures;
- d. fully cooperate and provide support for TDEC's initial assessment of the impact of the ash release on all waters of the State;
- e. prepare and submit a Corrective Action Plan (CAP) within 45 days after receipt of the Commissioner's Order, to include:
 - i. a plan for the assessment of soil, surface water and groundwater; remediation of impacted media; and restoration of all natural resources damaged as a result of the release;
 - ii. a plan for monitoring the air and water in the area during the cleanup process;

- iii. a plan to ensure that public and private water supplies are protected and that alternative water supplies are provided if contamination is detected;
- iv. a plan for addressing both the short-term and long-term management of fly ash at the Site, including remediation and stabilization of the failed ash waste cells, proper management of the recovered ash, and a revised closure plan for the Class II ash disposal facility; and
- v. a plan to address any health or safety hazards posed by the ash to workers and the public.

15. On January 21, 2009, TVA submitted written notification to the Tennessee Emergency Response Commission, pursuant to which TVA reported a discharge of 5.4 million cubic yards of ash containing the following constituents: arsenic, beryllium, chromium, copper, lead, mercury, nickel, zinc, antimony, cadmium, silver, selenium, thallium, and vanadium oxide.

16. On February 4, 2009, EPA, pursuant to Executive Order 12088, and TDEC issued a letter to TVA in which EPA provided notice to TVA that EPA considers the release to be an unpermitted discharge of a pollutant in contravention of the Clean Water Act. The letter directed that TVA provide all plans, reports, work proposals and other submittals being provided to TDEC, to EPA as well for agency review and approval. Subject to the reservations contained in Section XXX, by complying with this Order, TVA will be deemed by EPA to have addressed the unpermitted discharge.

17. Pursuant to the Commissioner's Order, on March 2, 2009, TVA submitted a draft CAP to EPA and TDEC for agency review and approval.

18. Since the release, EPA, the State and TVA have conducted extensive sampling of air, water, sediment, and ash material. Sampling results have revealed levels of arsenic in the ash material that exceed Region 4's residential removal action level of 39 mg/kg. In addition, shortly after the release, arsenic was detected in surface water samples at concentrations in excess of the Tennessee Water Quality Criteria (TWQC) for Domestic Water Supply and in excess of the human health aquatic organism consumption criteria. In the days immediately following the release, arsenic, as well as numerous other contaminants, including cadmium, chromium, copper, lead, mercury, nickel, selenium, and zinc, were also detected in surface water at concentrations which exceeded the National Recommended Ambient Water Quality Criteria (AWQC) for protection of aquatic life (based on both the Chronic Continuous Criterion and the Chronic Maximum Criterion). Other than one thallium exceedance in the raw water collected from the river at the intake of the Kingston public water supply system the day after the release, no contaminants have been detected above the Maximum Contaminant Levels (MCLs) in either the raw intake waters or finished water supplies of the Kingston, Cumberland, or Rockwood public water supply systems.

19. EPA has classified arsenic as a known human carcinogen; and long-term exposure of aquatic organisms to high levels of metals like arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium, and zinc may cause decreases in survival,

growth, or reproduction to those aquatic organisms. The levels of these metals detected in the most recent air and surface water sampling events do not indicate an immediate threat to human health or the environment from those metals. However, if the ash material is not properly managed and remediated, the direct impact of the ash material currently in the water on the riverine ecosystem, further suspension of the ash and its constituents within affected waters, and potential exposure from ash on the ground could present unacceptable impacts to human health and/or the environment.

VI. EPA'S CONCLUSIONS OF LAW AND DETERMINATIONS

20. Based on the Findings of Fact set forth above and the Administrative Record supporting this Order, EPA has determined that:

a. The TVA Kingston Fossil Fuel Site is a "facility" as defined by Section 101(9) of CERCLA, 42 U.S.C. § 9601(9).

b. Ash at the Site contains constituents such as arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium and zinc which are "hazardous substances" as defined by Section 101(14) of CERCLA, 42 U.S.C. § 9601(14). Coal ash is not regulated as a hazardous waste under RCRA.

c. TVA is a "person" as defined by Section 101(21) of CERCLA, 42 U.S.C. § 9601(21).

d. TVA is an Executive agency and instrumentality of the United States and as such is charged with fulfilling the obligations of the owner/operator under CERCLA at this facility. TVA is liable under Section 107(a) of CERCLA as an "operator" of the facility as defined by Section 101(20) of CERCLA, 42 U.S.C. § 9601(20), and within the meaning of Section 107(a)(1) of CERCLA, 42 U.S.C. § 9607(a)(1).

e. The conditions described in the Findings of Fact above constitute an actual or threatened "release" of hazardous substances from the facility as defined by Section 101(22) of CERCLA, 42 U.S.C. § 9601(22).

f. The actual or threatened release of hazardous substances from the Site may present an imminent and substantial endangerment to the public health, welfare, or the environment within the meaning of Section 106(a) of CERCLA, 42 U.S.C. § 9606(a).

g. The response actions required by this Order are necessary to protect the public health, welfare, or the environment and, if carried out in compliance with the terms of this Order, will be consistent with the NCP, as provided in 40 C.F.R. § 300.700(c)(3)(ii).

VII. ORDER

21. Based upon the foregoing Findings of Fact, Conclusions of Law and Determinations, and the Administrative Record for this Site, it is hereby Ordered and

Agreed that TVA shall comply with the following provisions, including but not limited to all documents incorporated by reference into this Order, and all schedules and deadlines in this Order, developed pursuant to this Order, or incorporated by reference into this Order.

VIII. DESIGNATION OF PROJECT COORDINATOR, ON-SCENE COORDINATOR, AND REMEDIAL PROJECT MANAGER

22. TVA hereby designates Michael Scott as its Project Coordinator who shall be responsible for administration of all TVA's actions required by this Order. To the greatest extent possible, the Project Coordinator shall be present on Site or readily available during Site work. When the Project Coordinator is not able to be present on Site or readily available he/she may, upon notification to the OSC and RPM, designate another qualified TVA employee to temporarily act in the position of Project Coordinator. Receipt by TVA's Project Coordinator of any written notice or communication from EPA relating to this Order shall constitute receipt by TVA.

23. TVA shall perform the response actions itself or retain a contractor(s) to perform the actions. TVA shall notify EPA of the identity and assigned tasks of each of its contractors performing Work under this Order upon their selection and contract award. TVA shall provide copies of this Order to all contractors performing any Work called for by this Order. TVA shall be responsible for ensuring that its contractors comply with the terms and conditions of this Order. Any contractor that will be performing tasks for which the following guidance has applicability, must demonstrate compliance with ANSI/ASOC E4-1994, "Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs," (American National Standard, January 5, 1995), by submitting a copy of the proposed contractor's Quality Management Plan (QMP). The QMP should be prepared in accordance with "EPA Requirements for Quality Management Plans (QA/R-2)," (EPA/240/B-01-002, March 2001) or equivalent documentation as determined by EPA.

24. EPA has designated Leo Francendese of the Region 4 Emergency Response and Removal Branch as its On-Scene Coordinator (OSC) for purposes of the time-critical removal actions to be conducted under this Order and Craig Zeller of the Remedial and Site Evaluation Branch as its Remedial Project Manager (RPM) for all other response actions to be conducted under this Order.

25. EPA and TVA shall have the right to change their respective designated Project Coordinator and OSC/RPM. The Parties shall notify each other ten (10) days before such a change is made.

IX. WORK TO BE PERFORMED

26. **Statement of Objectives** - The Parties acknowledge that, in order to expeditiously and efficiently prioritize and perform necessary response actions at the Site, it is important to have agreed upon **short-term, mid-term and longer-term strategic**

objectives. The Parties therefore agree that the **short-term strategic objectives** for the Site are to:

- a. prevent the coal ash release from negatively impacting public health and the environment;
- b. contain and remove coal ash from the Emory River and the area east of Dike 2 as appropriate to restore flow and minimize further downstream migration of the ash material; and
- c. ensure that coal ash material recovered during these efforts is properly managed pending ultimate disposal decisions or, to the extent required by limited storage capacity, properly disposed.

The **mid-term strategic objectives** for the Site are to:

- a. remove any remaining coal ash from the Emory River and the area east of Dike 2, as well as the coal ash from embayments and tributaries west of Dike 2, to the maximum extent practicable, as determined by EPA in consultation with TDEC and TVA, pending further Site assessment;
- b. remove the coal ash from impacted surface soils to the maximum extent practicable, as determined by EPA in consultation with TDEC and TVA, pending further Site assessment;
- c. restore area waters impacted by the coal ash release in accordance with the required jurisdictional assessment; and
- d. ensure proper disposal of all coal ash material recovered during these efforts.

The **longer-term objectives** for the Site are to:

- a. perform a comprehensive Site assessment to determine what actions may be necessary to address any residual contamination remaining after previous cleanup activities;
- b. implement any such actions; and
- c. ensure the proper disposal of all ash material recovered during these efforts.

Response actions necessary to achieve short-term strategic Site objectives shall generally be identified as time-critical removal actions. Activities necessary to achieve mid-term strategic Site objectives shall generally be identified as non-time-critical removal actions. Activities necessary to achieve longer-term strategic Site objectives shall generally be identified as remedial actions. The specific actions to be taken to achieve these goals, and the schedules for those actions, shall be governed by the work plans developed and approved pursuant to the remaining paragraphs in this Section. The Parties recognize that, to the extent appropriate, time-critical response actions in furtherance of the short-term Site objectives and non-time-critical response actions in furtherance of the mid-term Site objectives will be carried out simultaneously.

27. EPA acknowledges that TVA has already done considerable work to further the short-term strategic Site objectives set forth in Paragraph 26, above, including extensive work on air, surface water and drinking water monitoring; ash containment;

dust suppression; and initial dredging activities. Portions of that work have been conducted under the TDEC Commissioner's Order and TVA authorities and in accordance with work plans approved by TDEC and EPA pursuant to that Order and EPA's February 4, 2009, letter. It is the intent of the Parties that work done and data generated prior to the Effective Date of this Order be retained and utilized to the maximum extent feasible during implementation of the Work required by this Order and, further, that the issuance of this Order not result in any unnecessary delay in the ongoing cleanup efforts. TVA shall continue to proceed with ongoing response work pursuant to the following deliverables, which have previously been approved by EPA and/or TDEC:

- a. Kingston Fossil Plant (KIF) Interim Drainage and Controls Plan (approved April 3, 2009)
- b. Phase 1 Emory River Dredging Plan (approved March 19, 2009)
- c. KIF Fly Ash Pond Incident Environmental Sampling Plan (February 2009)
- d. Request for Authorization to use Polymers to Enhance Treatment of Dredge Return Water (approved March 23, 2009)
- e. Request for Use of Wick Drains in Ash Processing Area (February 20, 2009)
- f. Long Term Cenosphere Recovery Plan (March 2009)
- g. Ash Processing Area Construction and Operation Plan (approved March 19, 2009)

Each of the foregoing work plans is incorporated by reference into this Order and is enforceable under this Order. Each of these plans shall be subject to revision upon direction by EPA, at which time the plan(s) shall be subject to the approval provisions in Section X, hereto.

28. Time-Critical Removal Action Memoranda and Work Plans -

Within fourteen (14) days of the Effective Date of this Order, TVA shall submit an Action Memorandum for the time-critical removal action. Upon approval of the Action Memorandum by EPA, TVA shall submit, in accordance with the schedule below, the following plans, which may incorporate by reference, or otherwise build upon, plans previously submitted for TDEC and/or EPA review, along with any other work plans necessary to implement the actions selected in the Action Memorandum:

Within five (5) days of Action Memorandum approval, TVA shall submit the following:

- a. Site Storm Water Management Plan
- b. Site Dust Control and Air Monitoring Plan
- c. Schedule for development of a Structural Integrity Evaluation, Recommendations and Maintenance Plan for Existing Site Dikes/Berms being used to contain spilled ash
- d. Schedule for development of a Dredging/Excavation Plan for East of Dike 2 (including Ash Processing Areas)

Within fifteen (15) days of Action Memorandum approval, TVA shall submit the following:

- e. Off-Site Ash Disposal Options Analysis
- f. Financial Expenditure Report (to be updated quarterly)
- g. Schedule for development of any other work plans necessary to implement the actions selected in the Action Memorandum.

Within forty-five (45) days of Action Memorandum approval, TVA shall submit the following:

- h. Information/Data Management Plan
- i. Surface Water Monitoring Plan for the Emory, Clinch and Tennessee Rivers

The approved Action Memorandum may be amended, subject to review and approval by EPA, should circumstances so warrant.

29. TVA shall publish a notice of the availability of the Administrative Record for the selected time-critical removal action(s), including the approved Action Memorandum and any approved work plans, within fourteen (14) days of the approval by EPA of the Action Memorandum. TVA shall update the Administrative Record when additional work plans are approved and if and when any amendments are made to the Action Memorandum. TVA shall provide a public comment period of not less than thirty (30) days beginning at the time the initial Administrative Record file is made available to the public, and upon any updates to the Administrative Record. The public comment period shall not delay initiation of selected time-critical removal actions. A written response to significant comments submitted during the public comment period shall be prepared by TVA and submitted to EPA for review and comment. TVA's final response to comments shall be included in the Administrative Record.

30. Non-Time-Critical Removal Action EE/CAs, Action Memoranda and Work Plans - Within ninety (90) days after the effective date of this Order, TVA shall submit to EPA for approval a draft Work Plan for performing one or more Engineering Evaluation/Cost Analyses (EE/CAs) for non-time-critical removal actions to be taken at the Site. TVA shall conduct the EE/CA(s) consistent with 40 C.F.R. § 300.415(b)(4) of the NCP, and in accordance with OSWER Directive 9360.0-32, Guidance on Conducting Non-Time Critical Removal Actions Under CERCLA (EPA/540-R-93-057, August 1993). The EE/CA Work Plan shall be developed in conjunction with a Sampling and Analysis Plan, and Health and Safety Plan. A detailed schedule for completion of each major work item in the EE/CA process shall also be included in the EE/CA Work Plan.

The EE/CA Work Plan shall include a comprehensive description of the work to be performed in developing the EE/CA, including the media to be investigated (e.g. air, ground water, surface water, surface and subsurface soils, and sediments), and the methodologies for human health and ecological risk assessments. The EE/CA Work Plan shall also include the Jurisdictional Assessment described in Section XII, Paragraph 34(b), below. The EE/CA investigations, human health/ecological risk assessments, and identified non-time-critical removal actions shall address:

- Coal ash not yet removed from the Emory River and the area east of Dike 2;
- Coal ash in the embayments and tributaries west of Dike 2;
- Coal ash on upland areas and surface soils;
- Restoration of area waters impacted by the coal ash release per the Jurisdictional Assessment; and
- Proper disposal of all coal ash material recovered during these efforts.

Following completion of the work in the approved EE/CA Work Plan, TVA shall submit the draft EE/CA Report for EPA's review and approval. Upon issuance of a final EE/CA, as approved by EPA, TVA shall make the EE/CA and the Administrative Record supporting the EE/CA available for public comment in accordance with 40 C.F.R. § 300.415(n), and shall comply with the Administrative Record requirements of 40 C.F.R. § 300.820. Within thirty (30) days of the close of the public comment period on the EE/CA, TVA shall submit for EPA review and approval an Action Memorandum which responds to public comments and describes the selected response actions. Within sixty (60) days of EPA's approval of the Action Memorandum, TVA shall submit to EPA for review and approval a Non-Time-Critical Removal Work Plan for the selected response actions.

Upon approval, TVA shall implement the Non-Time-Critical Removal Work Plan in accordance with the schedule provided therein. Both the Action Memorandum and the Non-Time-Critical Removal Work Plan shall be added to the Administrative Record and an additional public comment period of not less than thirty (30) days shall be provided. This comment period shall not delay initiation of the selected non-time-critical removal actions. A written response to significant comments submitted during the public comment period shall be prepared by TVA and submitted to EPA for review and comment. TVA's final response to comments shall be included in the Administrative Record.

31. Other Response Actions – Within thirty (30) days of the receipt of EPA's approval of the Final OSC Report for the Non-Time-Critical Removal Action described in Paragraph 41, below, TVA shall submit to EPA for review and approval, a Remedial Site Work Plan (RSWP) to address the longer-term strategic Site objectives set forth in Paragraph 26, above, including the performance of a preliminary assessment as required by 42 U.S.C. § 9620(d)(1). Upon EPA approval of the RSWP, TVA shall perform the preliminary assessment and submit to EPA for review and approval a preliminary assessment report which documents whether additional assessment or remedial work is necessary to address any residual contamination remaining at the Site. To the extent that the report, as approved by EPA, indicates that additional Site response action is required, TVA shall revise the RSWP to include a plan and schedule for selecting and conducting such work. Such work shall be governed by the terms of this Order and Agreement on Consent, and shall be performed in accordance with CERCLA and the NCP, including all public participation and Administrative Record requirements.

X. EPA APPROVAL OF PLANS AND OTHER SUBMISSIONS

32. a) After review of any plan, report or other item which is required to be submitted for approval pursuant to this Order, EPA, after consultation with TDEC, shall: (i) approve, in whole or in part, the submission; (ii) approve the submission upon specified conditions; (iii) disapprove, in whole or in part, the submission, directing that TVA modify the submission; or (iv) any combination of the above.

b) In the event of approval or approval upon conditions, pursuant to Paragraph 32(a)(i) or (ii), TVA shall proceed to take any action required by the plan, report, or other item, as approved by EPA, subject only to its right to invoke the Dispute Resolution procedures set forth in Section XXVI (Dispute Resolution) with respect to the conditions established by EPA.

c) Upon receipt of a notice of disapproval pursuant to Paragraph 32(a)(iii), TVA shall, within fourteen (14) days, or such other time as agreed by EPA and TVA, correct the deficiencies and resubmit the plan, report, or other item for approval. Any stipulated penalties applicable to the submission, as provided in Section XXVIII, shall accrue during the 14-day period, or otherwise specified period, but shall not be assessed unless the resubmission is disapproved due to a material defect as provided in Paragraph 32(f).

d) Notwithstanding the receipt of a notice of disapproval pursuant to Paragraph 32(a)(iii), TVA shall proceed, at the direction of EPA, to take any action required by any non-deficient portion of the submission. Implementation of any non-deficient portion of a submission shall not relieve TVA of any liability for stipulated penalties under Section XXVIII (Stipulated Penalties).

e) In the event that a resubmitted plan, report or other item, or portion thereof, is disapproved by EPA, EPA may again require TVA to correct the deficiencies, in accordance with the preceding paragraphs.

f) If upon resubmission, a plan, report, or item is disapproved by EPA due to a material defect, TVA shall be deemed to have failed to submit such plan, report, or item timely and adequately unless TVA invokes the dispute resolution procedures set forth in Section XXVI (Dispute Resolution) and EPA's action is not confirmed pursuant to that Section. The provisions of Section XXVI (Dispute Resolution) and Section XXVIII (Stipulated Penalties) shall govern the implementation of the Work and accrual and payment of any stipulated penalties during Dispute Resolution. If EPA's disapproval is confirmed, stipulated penalties shall accrue for such violation from the date of EPA's initial disapproval. A material defect shall be any element of a submitted plan, report, or item that goes to the fundamental purpose for the plan, report, or item and does not include style or format.

g) All plans, reports, and other items required to be submitted to EPA under this Order shall, upon approval by EPA, be incorporated by reference into and become enforceable under this Order. In the event EPA approves a portion of a plan, report, or

other item required to be submitted to EPA under this Order, the approved portion shall be incorporated into and become enforceable under this Order.

XI. STRUCTURAL INTEGRITY ASSESSMENTS OF OTHER TVA FACILITIES

33. TVA is currently conducting assessments of all of its existing coal ash impoundments located at its eleven (11) coal-fired power plants, including analyses of the structural integrity of such impoundments. EPA is also undertaking its own national assessment of coal ash impoundments throughout the nation. TVA agrees to promptly provide any findings, reports, or other documentation produced as a result of its internal assessments to EPA. TVA has provided EPA its assessment methodologies and agrees to work with EPA with the goal of making the TVA and EPA assessment methodologies consistent. Upon EPA's request, TVA shall make available appropriate TVA personnel and contractors, to work with EPA personnel and contractors, in refining their respective assessment methodologies. EPA will review any reports submitted under this Paragraph and advise TVA if additional structural assessment work is warranted. EPA may conduct its own independent structural integrity assessments of TVA facilities and TVA agrees to cooperate with such effort. Nothing in this Paragraph shall require TVA to delay its ongoing or planned assessments nor shall Sections XXVIII or XXV apply to activities under this Paragraph.

XII. COMPLIANCE WITH OTHER LAWS

34. a) All Work performed under this Order shall be performed in a manner consistent with the National Contingency Plan, including, but not limited to, the public participation requirements of 40 C.F.R. § 300.415. All removal actions undertaken pursuant to this Order, shall, to the maximum extent practicable considering the exigencies of the situation, attain applicable or relevant and appropriate requirements (ARARs) under federal environmental or state environmental or facility siting laws. All remedial activities undertaken pursuant to this Order shall attain ARARs unless a waiver has been approved by EPA pursuant to 40 C.F.R. § 300.430(f)(1)(ii)(C).

b) Although restoration of area waters impacted by the coal ash release has been identified as a mid-term strategic Site objective and a part of the non-time-critical removal actions under this Order, TVA agrees that such restoration will be considered as remedial activity for purposes of complying with ARARs. Therefore, ARARs pertaining to such restoration shall be attained unless a waiver has been approved by EPA. In particular, TVA agrees that it will so comply with Clean Water Act Section 404(b)(1) guidelines to restore waters of the United States to the functional level occurring prior to the ash release. In order to identify the full extent of response activities necessary to meet this ARAR, TVA shall conduct a jurisdictional assessment of the Site, to the extent not previously evaluated, which will identify all waters of the United States impacted by the release. Such assessment shall be performed by an independent environmental management professional or other expert deemed qualified by EPA. The assessment shall include mapping and physical inspection of affected banks, streambeds and

adjoining shorelines of all impacted areas. As part of the assessment, TVA shall identify the mechanisms of mobilization and deposition of the ash material in the surface water bodies and adjacent riparian areas affected by the release and identify locations and depths of the ash in these water areas and the changes in these parameters over an appropriate period of time, as determined by field measurements. This assessment shall also include an evaluation of the impacts to habitats due to the release, and prediction of future impacts to aquatic species upon re-suspension and deposition of ash. Based on the results of this assessment, TVA shall propose, as a part of the EE/CA process outlined in Paragraph 30, above, final cleanup criteria which address removal of ash from stream/slough/river beds, banks, floodplains, adjacent wetlands and the shorelines adjoining navigable waters, replanting of the riparian zone, and compensatory mitigation for any permanent loss to waters of the United States as approved by EPA in consultation with TDEC.

XIII. HEALTH AND SAFETY PLAN

35. Within fourteen (14) days after the Effective Date of this Order, TVA shall submit for EPA review and approval, a plan that ensures the protection of the public health and safety during performance of on-Site Work under this Order. This plan shall be prepared in accordance with EPA's Standard Operating Safety Guide (PUB 9285.1-03, PB 92-963414, June 1992). In addition, the plan shall be consistent with Occupational Safety and Health Administration (OSHA) provisions for response action worker safety and health found in 29 C.F.R. Part 1910. TVA shall incorporate all changes to the plan recommended by EPA, and implement the plan during the pendency of the response actions. The Plan shall also include contingency planning.

XIV. QUALITY ASSURANCE AND SAMPLING

36. a) All sampling and analyses performed pursuant to this Order shall conform with EPA guidance regarding sampling, quality assurance/quality control (QA/QC), data validation, and chain of custody procedures. TVA shall ensure that the laboratories used to perform the analyses participate in a QA/QC program that complies with the appropriate EPA guidance. TVA shall follow "Quality Assurance/Quality Control Guidance for Removal Activities: Sampling QA/QC Plan and Data Validation Procedures" (OSWER Directive Number 9360.4-01, April 1, 1990), as guidance for QA/QC and sampling. TVA shall only use laboratories that have a documented Quality System that complies with ANSI/ASQC E-4 1994, "Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs" (American National Standard, January 5, 1995), and "EPA Requirements for Quality Management Plans (QA/R-2) (EPA/240/B-01/002, March 2001)," or equivalent documentation as determined by EPA. EPA may consider laboratories accredited under the National Environmental Laboratory Accreditation Program (NELAP) as meeting the Quality System requirements.

b) As a part of EPA's oversight of QA/QC and data validation, EPA may request, and TVA shall then require, that any laboratory TVA is using analyze samples submitted

by EPA for QA monitoring. TVA shall provide to EPA the QA/QC procedures followed by all sampling teams and laboratories performing data collection and/or analysis.

c) Upon request by EPA, TVA shall allow EPA or its authorized representatives to take split and/or duplicate samples. EPA shall have the right to take any additional samples that EPA deems necessary. Upon request, EPA shall allow TVA to take split or duplicate samples of any samples it takes as part of its oversight of TVA's implementation of the Work.

XV. POST-REMOVAL SITE CONTROL

37. In accordance with the EPA-approved schedule, TVA shall submit a proposal for post-removal site control consistent with Section 300.415(l) of the NCP and OSWER Directive No. 9360.2-.02. Upon EPA approval, TVA shall implement such controls and shall provide EPA with documentation of all post-removal site control arrangements.

XVI. REPORTING

38. TVA shall submit written progress reports to EPA and TDEC on a weekly basis for all time-critical response actions and on a monthly basis for all non-time-critical response actions undertaken pursuant to this Order until termination of the Order, unless the EPA OSC or RPM and TDEC agree in writing that reports can be less frequent. These reports shall describe all significant developments during the preceding period, including the actions performed and any problems encountered, analytical data received during the reporting period, and the developments anticipated during the next reporting period, including a schedule of work to be performed, anticipated problems, and planned resolutions of past or anticipated problems. During the removal phases of the cleanup, these reports (i.e., Pollution Reports/Situation Reports) shall conform to EPA's Guidance for Preparing POLREPs/SITREPs, OSWER Directive No. 9360.3-03 (Dec. 2007). At the conclusion of all time-critical removal actions, and at the conclusion of all non-time-critical removal actions, TVA shall submit Final Pollution Reports in accordance with the POLREP/SITREP Guidance. At the time they are submitted to EPA and TDEC, TVA shall make all progress reports available to the public by placing them in the local Site Repository and on the established TVA Kingston release website.

39. TVA shall utilize SCRIBE or SCRIBE.Net, as well as ArcMap 9.3, for data management and reporting purposes.

40. During the pendency of this Order, TVA and any successor(s) in title shall, at least thirty (30) days prior to the conveyance of any interest in real property at the Site, give written notice of this Order to the transferee and written notice to EPA and the State of the proposed conveyance, including the name and address of the transferee. The party conveying such an interest shall require that the transferee comply with Section XXII of this Order (Site Access).

41. Final OSC Reports. Within sixty (60) days after completion of all time-critical removal actions, and, again, within sixty (60) days after the completion of all non-time-critical removal actions required under this Order, TVA shall submit for EPA review and approval final reports summarizing the actions taken to comply with this Order. The final reports shall conform, at a minimum, with the requirements set forth in Section 300.165 of the NCP entitled "OSC Reports" and EPA's "Superfund Removal Procedures: Removal Response Reporting," OSWER Directive No. 9360.3-03, June 1, 1994. The final OSC reports shall include a listing of quantities and types of materials addressed, a discussion of response and disposal options considered for those materials, a listing of the ultimate destinations of those materials, and a presentation of the analytical results of all sampling and analyses performed. The final OSC reports shall also include the following certification signed by a person who supervised or directed the preparation of the reports:

Under penalty of law, I certify that to the best of my knowledge, after appropriate inquiries of all relevant persons involved in the preparation of the report, the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

XVII. OFF-SITE SHIPMENTS AND OTHER DISPOSAL OF WASTE MATERIAL

42. TVA shall, prior to any off-Site shipment of Waste Material from the Site to an out-of-state waste management facility, provide written notification of such shipment of Waste Material to the appropriate state environmental official in the receiving facility's state and to the EPA OSC/RPM. However, this notification requirement shall not apply to any off-Site shipments when the total volume of all such shipments will not exceed ten (10) cubic yards.

43. TVA shall include in the written notification the following information: 1) the name and location of the facility to which the Waste Material is to be shipped; 2) the type and quantity of the Waste Material to be shipped; 3) the expected schedule for the shipment of the Waste Material; and 4) the method of transportation. TVA shall notify the state in which the planned receiving facility is located of major changes in the shipment plan, such as a decision to ship the Waste Material to another facility within the same state, or to a facility in another state.

44. The identity of the receiving facility and state will be determined by TVA. TVA shall provide the information required by Paragraphs 42 and 43 as soon as practicable before the Waste Material is actually shipped.

45. TVA shall not permanently dispose of any Waste Material at an off-Site facility, or in a new landfill on-Site, unless that facility or landfill is operating in compliance with RCRA Subtitle D permitting requirements for operation and disposal of industrial wastes which, at a minimum, shall include the use of a synthetic liner, leachate

collection system, groundwater monitoring, financial assurance, and closure and post-closure care. If TVA proposes to permanently dispose of any Waste Material to an existing landfill on-Site, it must satisfy both TDEC and EPA that such disposal complies with all state permitting requirements and is otherwise protective of human health and the environment. EPA may disapprove such disposal if it is not so satisfied. Prior to any off-Site shipment, TVA shall obtain EPA's determination that the proposed receiving facility is operating in compliance with the requirements of 40 C.F.R. § 300.440, as well as appropriate health and safety standards.

XVIII. PERMITS

46. TVA shall be responsible for obtaining all required Federal, State and local permits which are necessary for the performance of all Work under this Order.

47. The Parties recognize that under Sections 121(d) and 121(e)(1) of CERCLA, 42 U.S.C. §§ 9621(d) and 9621(e)(1), and the NCP, portions of the response actions called for by this Order that are conducted entirely on-Site, where such response actions are selected and carried out in accordance with CERCLA, are exempt from the procedural requirement to obtain Federal, State, or local permits. Subject to Paragraph 34 above, all on-Site response actions must, however, comply with all the applicable or relevant and appropriate Federal and State standards, requirements, criteria, or limitations, which would have been included in any such permit unless justification exists for a waiver and EPA, in consultation with TDEC, approves such a waiver.

XIX. EMERGENCY RESPONSE AND NOTIFICATION OF RELEASES

48. In the event of any action or occurrence during performance of the Work which causes or threatens a release of Waste Material from the Site that constitutes an emergency situation or may present an immediate threat to public health or welfare or the environment, TVA shall immediately take all appropriate action. TVA shall take these actions in accordance with all applicable provisions of this Order, including, but not limited to, the Health and Safety Plan, in order to prevent, abate or minimize such release or endangerment caused or threatened by the release. TVA shall also immediately notify the EPA OSC/RPM as appropriate, or, in the event of his unavailability, the Regional Duty Officer at 404-562-8700, of the incident or Site conditions. In the event that TVA fails to take appropriate response action as required by this Paragraph, and EPA takes such action instead, TVA shall reimburse EPA all costs of the response action not inconsistent with the NCP pursuant to Section XXV (Reimbursement of Costs).

49. In addition, in the event of any new release of a hazardous substance from the Site above applicable reportable quantities, TVA shall immediately notify the OSC/RPM as appropriate, the Regional Duty Officer at 404-562-8700, and the National Response Center at (800) 424-8802. TVA shall submit a written report to EPA within seven (7) days after each release, setting forth the events that occurred and the measures taken or to be taken to mitigate any release or endangerment caused or threatened by the release and to prevent the reoccurrence of such a release. This reporting requirement is in addition

to, and not in lieu of, reporting under Section 103(c) of CERCLA, 42 U.S.C. § 9603(c), and Section 304 of the Emergency Planning and Community Right-To-Know Act of 1986, 42 U.S.C. § 11004, et seq., as applicable.

XX. AUTHORITY OF EPA ON-SCENE COORDINATOR/REMEDIAL PROJECT MANAGER

50. EPA and TVA agree that EPA's OSC and/or RPM, shall be responsible for overseeing TVA's implementation of this Order, in consultation with TDEC and TVA's Project Coordinator. TVA and EPA further agree that the EPA OSC and/or RPM, in consultation with TDEC and the TVA Project Coordinator, shall have the authority to halt any Work required under this Order, or to conduct or direct other response action at the Site in an emergency or under circumstances that may present an immediate threat to public health, welfare or the environment. Absence of the EPA OSC or RPM from the Site shall not be cause for stoppage of work unless specifically directed by the EPA OSC or RPM after consultation with TDEC and the TVA Project Coordinator.

XXI. PUBLIC REVIEW OF ADMINISTRATIVE RECORD

51. Upon issuance of this Order, the Administrative Record supporting the issuance of this Order, as well as the Order itself, shall be made available for public comment for a period of thirty (30) days. The Administrative Record will be available for public review during normal business hours at the U.S. EPA Region 4 Records Center, 61 Forsyth Street, SW, 11th Floor, Atlanta, Georgia 30303, and the local Site Repository that is established under the Order. Within thirty (30) days following close of the public comment period, EPA shall provide a written response to significant comments that were received. The public comment period shall not delay the initiation of the Work required by this Order. However, EPA may seek modifications to this Order if public comments received during the comment period disclose facts or considerations which indicate that this Order is inappropriate, improper, or inadequate.

52. Upon selection or proposal of response activities pursuant to this Order, an Administrative Record(s) for such response activities will be established and made available for public review and comment in accordance with Paragraphs 29, 30 and 31, above.

XXII. SITE ACCESS

53. TVA shall use its best efforts to provide and/or obtain access to all areas to which access is necessary to implement this Order. Such access shall be provided to EPA and TDEC as well as their employees, contractors, agents, consultants, designees and representatives. Access provided and/or obtained by TVA shall permit these individuals to move freely on-Site and at appropriate off-Site areas in order to conduct actions which EPA, in consultation with TDEC, determines to be necessary.

54. Where action under this Order is to be performed in areas owned by or in possession of someone other than the United States, TVA shall use its best efforts to obtain all necessary access agreements in a timely fashion. TVA shall immediately notify EPA and TDEC if, after using its best efforts, it is unable to obtain such agreements. TVA shall describe in writing its efforts to obtain access. EPA or TDEC may then assist TVA in gaining access, to the extent necessary, to effectuate the response actions described herein, using such means as EPA or TDEC deems appropriate. TVA shall reimburse EPA and/or TDEC for all reasonable costs and attorneys' fees, if any, incurred by them in obtaining such access.

XXIII. ACCESS TO INFORMATION

55. TVA shall provide to EPA, upon request, copies of all documents and information within its possession or control or that of its contractors or agents relating to activities at the Site or to the implementation of this Order, including, but not limited to, sampling, analysis, chain of custody records, manifests, trucking logs, receipts, reports, sample traffic routing, correspondence, or other documents or information related to the Work. TVA shall also make available to EPA at reasonable times, for purposes of investigation, information gathering, or testimony, their employees, agents, or representatives with knowledge of relevant facts concerning the performance of the Work.

56. TVA may assert business confidentiality claims covering part or all of the documents or information submitted to EPA under this Order to the extent permitted by and in accordance with Section 104(e)(7) of CERCLA, 42 U.S.C. § 9604(e)(7), and 40 C.F.R. § 2.203(b). Documents or information determined to be confidential by EPA will be afforded the protection specified in 40 C.F.R. Part 2, Subpart B. If no claim of confidentiality accompanies documents or information when they are submitted to EPA, or if EPA has notified TVA that the documents or information are not confidential under the standards of Section 104(e)(7) of CERCLA or 40 C.F.R. Part 2, Subpart B, the public may be given access to such documents or information without further notice to TVA.

57. TVA may assert that certain documents, records and other information are privileged under the attorney-client privilege or any other privilege recognized by federal law. If TVA asserts such a privilege in lieu of providing documents, it shall provide EPA with the following: 1) the title of the document, record, or information; 2) the date of the document, record, or information; 3) the name and title of the author of the document, record, or information; 4) the name and title of each addressee and recipient; 5) a description of the contents of the document, record, or information; and 6) the privilege asserted by TVA. However, no documents, reports or other information created or generated pursuant to the requirements of this Order shall be withheld on the grounds that they are privileged.

58. No claim of confidentiality shall be made with respect to any data, including, but not limited to, all sampling, analytical, monitoring, hydrogeologic, scientific,

chemical, or engineering data, or any other documents or information evidencing conditions at or around the Site.

XXIV. RECORD RETENTION, DOCUMENTATION, AVAILABILITY OF INFORMATION

59. TVA shall preserve all documents and information relating to the Work performed under this Order, or relating to the release of fly ash from the Kingston Fossil Fuel Plant, in accordance with federal law and TVA's established document retention policies, but in no event shall such records be preserved for less than ten (10) years. At the end of this document retention period, and thirty (30) days before any document or information is destroyed, TVA shall notify EPA that such documents and information are available to EPA for inspection and, upon request, shall provide the originals or copies of such documents and information to EPA to the extent that they are not subject to any privilege. In addition, TVA shall provide documents and information retained under this Paragraph at any time before expiration of its document retention timeframe at the written request of EPA to the extent that they are not subject to any privilege. TVA shall also instruct its contractors and agents to preserve all documents, records, and information of whatever kind, nature or description relating to performance of the Work.

XXV. REIMBURSEMENT OF COSTS

60. Payment of Past Response Costs. TVA shall pay, within thirty (30) days after TVA's receipt from EPA of a demand for payment, EPA's Past Response Costs. EPA's Past Costs demand will include a SCORPIOS Report, which summarizes direct and indirect costs incurred by EPA and its contractors.

a) Payment shall be made by Electronic Funds Transfer and directed to the Federal Reserve Bank of New York as follows: Federal Reserve Bank of New York, ABA=021030004, Account =68010727, SWIFT address = FRNYUS33, 33 Liberty Street, New York, New York 10045, Field Tag 4200 of the Fedwire message should read "D68010727 Environmental Protection Agency," and shall be accompanied by a statement identifying the name and address of TVA, the Site name, the EPA Region, Site/Spill ID Number A4XP, and the EPA docket number for this action.

b) At the time of payment, TVA shall send notice that such payment has been made to EPA individuals identified in Section XL (Notices and Submissions), with a copy to:

Paula Painter
Environmental Protection Specialist
U.S. Environmental Protection Agency, Region 4
61 Forsyth St., SW
Atlanta, Georgia 30303

and

EPA Cincinnati Finance Office
26 Martin Luther King Dr.
Cincinnati, Ohio 45268

c) The total amount to be paid by TVA pursuant to this Paragraph shall be deposited in the TVA Kingston Fossil Fuel Plant Release Site Special Account within the EPA Hazardous Substance Superfund to be retained and used to conduct or finance response actions at or in connection with the Site, or to be transferred by EPA to the EPA Hazardous Substance Superfund.

61. Payment of Future Response Costs. TVA shall pay EPA all Future Response Costs not inconsistent with the NCP. On a periodic basis, EPA will send TVA a bill requiring payment that includes a SCORPIOS Report, which includes direct and indirect costs incurred by EPA and its contractors. TVA shall make all payments within thirty (30) days of receipt of each bill requiring payment, except as otherwise provided in Paragraph 63 of this Order.

a) Payment shall be made by Electronic Funds Transfer and directed to the Federal Reserve Bank of New York as follows: Federal Reserve Bank of New York, ABA=021030004, Account =68010727, SWIFT address = FRNYUS33, 33 Liberty Street, New York, New York 10045, Field Tag 4200 of the Fedwire message should read "D68010727 Environmental Protection Agency," and shall be accompanied by a statement identifying the name and address of TVA, the Site name, the EPA Region, Site/Spill ID Number A4XP, and the EPA docket number for this action.

b) At the time of payment, TVA shall send notice that such payment has been made to the EPA individuals identified in Section XL (Notices and Submissions), with a copy to:

Paula Painter
Environmental Protection Specialist
U.S. Environmental Protection Agency, Region 4
61 Forsyth St., SW
Atlanta, Georgia 30303

and

EPA Cincinnati Finance Office
26 Martin Luther King Dr.
Cincinnati, Ohio 45268

c) The total amount to be paid by TVA pursuant to this Paragraph shall be deposited in the TVA Kingston Fossil Fuel Plant Release Site Special Account within the EPA Hazardous Substance Superfund to be retained and used to conduct or finance

response actions at or in connection with the Site, or to be transferred by EPA to the EPA Hazardous Substance Superfund.

62. In the event that payment for Past Response Costs or Future Response Costs is not made within thirty (30) days of TVA's receipt of a bill, TVA shall pay Interest on the unpaid balance. The Interest on Past Response Costs and Future Response Costs shall begin to accrue on the date of the bill and shall continue to accrue until the date of payment. Payments of Interest made under this Paragraph shall be in addition to such other remedies or sanctions available to EPA by virtue of TVA's failure to make timely payments under this Section, including but not limited to, payment of stipulated penalties pursuant to Section XXVIII.

63. TVA may dispute all or part of a bill for Past Response Costs or Future Response Costs submitted under this Order, if TVA alleges that EPA has made an accounting error, or if TVA alleges that a cost item is inconsistent with the NCP. Upon request, EPA will make available to TVA detailed documentation of any costs it has billed. If any dispute over costs is resolved before payment is due, the amount due will be adjusted as necessary. If the dispute is not resolved before payment is due, TVA shall pay the full amount of the uncontested costs to EPA as specified in Paragraphs 60 or 61 on or before the due date. Within the same time period, TVA shall pay the full amount of the contested costs into an interest-bearing escrow account. TVA shall simultaneously transmit a copy of both payments to the EPA person(s) identified in Section XL (Notices and Submissions) and in Paragraphs 60(b) and 61(b) above. TVA shall ensure that the prevailing party in the dispute shall receive the amount upon which they prevailed from the escrow funds plus interest within fifteen (15) days after the dispute is resolved.

XXVI. DISPUTE RESOLUTION

64. If a dispute arises under this Order, the procedures of this Section (Dispute Resolution) shall apply. The Parties, in consultation with TDEC, shall make reasonable efforts to informally resolve disputes at the OSC/RPM/Project Coordinator level.

65. If TVA objects to any EPA action or determination, including any EPA disapproval, modification, or other decision taken pursuant to this Order, TVA shall notify EPA in writing of its objections, and the basis thereof, within fifteen (15) days of such action. Such notice shall set forth the specific points of the dispute, the position which TVA asserts should be adopted as consistent with the requirements of this Order, the basis for TVA's position, and any matters which it considers necessary for EPA's determination. For purposes of this Order, EPA actions, orders or determinations will include those actions taken by or on behalf of EPA or any of its employees, agents or designees.

66. EPA and TVA shall have an additional fifteen (15) calendar days from receipt by EPA of the notification of objection (Negotiation Period), during which time representatives of EPA and TVA may confer in person or by telephone to resolve any disagreement. If an agreement is reached during the Negotiation Period, the resolution

shall be in writing, signed by an authorized representative of both Parties. Such agreement shall be incorporated into and become an enforceable part of this Order. The Negotiation Period may be extended at the sole discretion of EPA, although such extensions shall not be unreasonably withheld. EPA's decision regarding an extension of the Negotiation Period shall not constitute an EPA action subject to dispute resolution.

67. If the Parties are unable to reach an agreement within the Negotiation Period, the dispute shall be elevated to the Superfund Division Director of EPA Region 4 and the Senior Vice President of TVA's Office of Environment and Research. The Superfund Division Director and TVA's Senior Vice President shall have an additional five (5) days to resolve the dispute and issue a written decision signed by both Parties. If the Superfund Division Director and TVA's Senior Vice President cannot reach a mutual agreement within the five-day period, the Superfund Division Director will issue a written decision on the dispute to TVA that provides the basis for his or her decision. This decision shall be incorporated into and become an enforceable part of this Order. TVA's obligations under this Order shall not be tolled by submission of any objections for dispute resolution under this Section.

68. Following resolution of the dispute, as provided by this Section, TVA shall fulfill the requirement that was the subject of the dispute in accordance with the agreement reached or in accordance with EPA's decision, whichever occurs.

XXVII. FORCE MAJEURE

69. TVA agrees to perform all requirements under this Order within the time limits established in any EPA-approved schedule or work plan unless the performance is delayed by a force majeure for which an extension of the schedule shall be provided. For purposes of this Order, force majeure is defined as any event arising from causes beyond the control of TVA, or of any entity controlled by TVA, including but not limited to its contractors and subcontractors, that delays or prevents performance of any obligation under this Order, despite TVA's best efforts to fulfill the obligation. For purposes of this Order, force majeure includes, but is not limited to: Acts of God; fire; war; insurrection; civil disturbance; adverse weather conditions that could not have been reasonably anticipated; restraint by court order or order of public authority; or inability to obtain, after exercise of reasonable diligence, any necessary authorizations, approvals, permits or licenses due to action or inaction of any governmental agency or authority other than TVA. Force majeure does not include financial inability to complete the Work or increased cost of performance.

70. If any event occurs or has occurred that may delay the performance of any obligation under this Order, whether or not caused by a force majeure event, TVA shall verbally notify EPA within forty-eight (48) hours after TVA becomes or should have become aware that the event might cause a delay. Within five (5) days thereafter, TVA shall provide to EPA in writing an explanation of the event causing the delay or anticipated delay; the anticipated length of delay, including necessary demobilization and re-mobilization; the measures taken or to be taken to minimize the delay; the timetable

for implementation of the measures; TVA's rationale for attributing such delay to a force majeure event if it intends to assert such a claim; and a statement as to whether, in TVA's opinion, such event may cause or contribute to an endangerment to public health, welfare, or the environment. TVA shall take all reasonable measures to avoid and minimize the delay. Failure to comply with the notice provision of this Paragraph shall waive any claim of force majeure by TVA unless forgiven by EPA in its sole discretion.

71. If EPA determines that the delay in performance of a requirement under this Order is or was attributable to a force majeure event, the time period for performance of that requirement shall be extended as deemed necessary by EPA. Such an extension shall not alter TVA's obligation to perform or complete other tasks required by the Order which are not directly affected by the force majeure event.

XXVIII. STIPULATED PENALTIES

72. EPA may assess stipulated penalties against TVA for violations of this Order in the amounts set forth below, unless excused under Section XXVII (Force Majeure). Compliance by TVA shall include completion of the activities under this Order in accordance with all applicable requirements of law, this Order, and the time schedules and work plans established and approved under this Order.

73. Stipulated Penalty Amounts – Work. For each day TVA is in violation of an established schedule for the Work, EPA may assess a stipulated penalty for each violation up to the identified amounts shown below:

<u>Penalty Per Violation Per Day</u>	<u>Period of Noncompliance</u>
\$1,500.00	1 st through 14 th day
\$2,500.00	15 th through 30 th day
\$5,000.00	31 st day and beyond

74. Stipulated Penalty Amounts – Work Plans and Reports. For each day TVA fails to submit timely or adequate work plans, reports, or other written documents pursuant to this Order, EPA may assess a stipulated penalty for each violation up to the identified amounts shown below:

<u>Penalty Per Violation Per Day</u>	<u>Period of Noncompliance</u>
\$500.00	1 st through 14 th day
\$1000.00	15 th through 30 th day
\$2000.00	31 st day and beyond

In no event shall this Paragraph give rise to a stipulated penalty in excess of the amount set forth in Section 109 of CERCLA, 42 U.S.C. § 9609.

75. Stipulated penalties under this Section shall begin to accrue on the day after performance is due or the day a violation occurs, whichever is applicable, and shall continue to accrue until performance is satisfactorily completed or until the violation

ceases. However, stipulated penalties shall not accrue with respect to an issue subject to the Dispute Resolution provisions hereof, during the period, if any, after the conclusion of the Negotiation Period until the date that EPA issues a final decision regarding such dispute. Nothing herein shall prevent the simultaneous accrual of separate penalties for separate violations of this Order.

76. Stipulated penalties accruing under this Section shall become due and payable to EPA within thirty (30) days after TVA's receipt from EPA of a demand for payment of the penalties. Nothing in this Section is intended to create a debt or payment obligation to EPA unless EPA issues a written demand to TVA. All payments to EPA under this section shall be made by Electronic Funds Transfer as described in Section XXV. Stipulated penalties accruing during any dispute resolution period need not be paid until fifteen (15) days after the dispute is resolved by agreement, or by receipt of EPA's final decision. Only those penalties determined in the agreement or decision to be owing shall be due.

77. The payment of penalties shall not alter in any way TVA's obligations to complete performance of the Work required under this Order. Notwithstanding any other provision of this Section, EPA may, in its unreviewable discretion, waive any portion of stipulated penalties that have accrued pursuant to this Order. In exercising this discretion, EPA recognizes that TVA is an executive federal agency and instrumentality and that it conducts its activities on a not-for-profit basis in accordance with the TVA Act.

XXIX. COVENANT NOT TO TAKE ADMINISTRATIVE ACTION BY EPA

78. Upon issuance of a Notice of Completion by EPA as set forth in Section XXXVIII, EPA covenants not to take administrative action against TVA pursuant to Section 106 and 107(a) of CERLCA, 42 U.S.C. §§ 9606 and 9607(a) for the Work, Past Response Costs and Future Response Costs. This covenant is conditioned upon the complete and satisfactory performance by TVA of its obligations under this Order.

XXX. RESERVATION OF RIGHTS BY EPA

79. Nothing herein shall limit the available power and authority of EPA to take, direct, or order all actions necessary to protect public health, welfare or the environment or to prevent, abate, or minimize an actual or threatened release of hazardous substances, pollutants or contaminants, or hazardous or solid waste on, at, or from the Site.

80. The Covenant Not To Take Administrative Action set forth in Section XXIX does not pertain to any matters other than those expressly identified therein. EPA reserves, and this Order is without prejudice to, all rights against TVA with respect to all other matters, including, but not limited to:

- a. claims based on a failure by TVA to meet a requirement of this Order;

- b. liability for costs not included within the definition of Past and Future Response Costs;
- c. liability for penalties other than for noncompliance with this Order;
- d. liability for performance of response actions other than the Work specifically performed under this Order;
- e. criminal liability;
- f. liability for damages for injury to, destruction of, or loss of natural resources, and for the cost of any natural resource damages assessments; and
- g. liability arising from the past, present, or future disposal, release or threat of a release of hazardous substances, pollutants or contaminants outside of the Site.

XXXI. COVENANT NOT TO SUE BY TVA

81. TVA agrees not to assert any claims or causes of action against EPA, or its agents, contractors or employees, with respect to the Work, Past Response Costs, or Future Response Costs, or any other terms of this Order, including, but not limited to, any direct or indirect claim from or against EPA based on 42 U.S.C. §§ 9606(b)(2), 9607, 9611, 9612 or 9613, or any other provision of law, or any claims arising out of response activities at the Site. This does not prevent TVA from invoking Dispute Resolution pursuant to this Order.

82. Nothing in this Order shall be deemed to constitute approval or preauthorization of a claim within the meaning of 42 U.S.C. § 9611, or 40 C.F.R. § 300.700(d).

XXXII. OTHER CLAIMS

83. By issuance of this Order, EPA assumes no liability for injuries or damages to persons or property resulting from any acts or omissions of TVA. EPA shall not be deemed a party to any contract entered into by TVA or its directors, officers, employees, agents, successors, representatives, assigns, contractors, or consultants in carrying out actions pursuant to this Order. TVA shall bear its own litigation costs and attorneys' fees.

84. Except as expressly provided in Section XXIX (Covenant Not to Take Administrative Action by EPA), nothing in this Order constitutes a satisfaction of, or release by EPA from, any claim or cause of action against TVA or any person not a party to this Order, for any liability such person may have under CERCLA, the Clean Water Act, RCRA, other statutes, or the common law.

85. In any subsequent proceeding initiated by EPA for injunctive or other appropriate relief relating to the Site, TVA shall not assert, and may not maintain, any defense or claim based upon the principles of waiver, res judicata, collateral estoppel, issue preclusion, claim-splitting, or other defenses based upon any contention that the claims raised by EPA in the subsequent proceeding were or should have been raised in the present matter.

86. No action or decision by EPA or TVA pursuant to this Order shall give rise to any right to judicial review, except as set forth in Section 113(h) of CERCLA, 42 U.S.C. § 9613(h).

XXXIII. CONTRIBUTION

87. The Parties agree that TVA is entitled, as of the Effective Date, to protection from contribution actions or claims as provided by 42 U.S.C. §§ 9613(f)(2) and 9622, for “matters addressed” in this Order. For purposes of this Paragraph, the “matters addressed” in this Order are the Work, Past Response Costs and Future Response Costs. Nothing in this Order precludes EPA or TVA from asserting any claims, causes of action, or demands against any persons not parties to this Order for indemnification, contribution, or cost recovery.

XXXIV. INDEMNIFICATION

88. TVA shall indemnify, save and hold harmless EPA, its officials, agents, employees, contractors, subcontractors and representatives from any and all claims or causes of action arising from, or on account of, negligent acts of TVA, its officers, directors, employees, agents, contractors or subcontractors in carrying out actions pursuant to this Order. In addition, TVA agrees to pay EPA all costs incurred by EPA, including but not limited to attorneys’ fees and other expenses, arising from or on account of claims made against EPA based on negligent acts of TVA, its officers, directors, employees, agents, contractors, subcontractors and any persons acting on behalf of or under their control, in carrying out activities pursuant to this Order. EPA shall not be held out as a party to any contract entered into by or on behalf of TVA in carrying out activities under this Order. Neither TVA nor any of its contractors shall be considered an agent of EPA nor shall EPA or any of its contractors be considered an agent of TVA.

89. EPA shall give TVA notice of any claim for which EPA plans to seek indemnification pursuant to this Section and shall consult with TVA prior to settling such claim.

90. TVA waives all claims against EPA for damages or reimbursement or for set-off of any payments made or to be made to EPA, arising from or on account of any contract, agreement, or arrangement between TVA and any person for performance of Work on or relating to the Site, including, but not limited to, claims on account of construction delays. In addition, TVA shall indemnify and hold harmless EPA with respect to any claims for damages or reimbursement arising from or on account of any

contract, agreement, or arrangement between TVA and any person for performance of Work on or relating to the Site, including, but not limited to, claims on account of construction delays.

XXXV. MODIFICATIONS

91. The EPA OSC or RPM, may, after notification to and consultation with TDEC and TVA, require modifications to any plan or schedule under this Order in writing or by oral direction. If EPA's OSC or RPM makes an oral modification, it shall be memorialized in writing within three (3) days thereafter; provided, however, that the effective date of the modification shall be the date of EPA's oral direction. Any other requirements of this Order may be modified in writing by mutual agreement of the Parties.

92. If TVA seeks permission to deviate from any approved plan or schedule, it shall submit a written request to EPA, and provide a copy to TDEC. TVA may not proceed with the requested deviation until receiving oral or written approval from EPA. TVA's written request for modification shall specify: (1) the proposed modification; (2) the basis for the modification; and (3) any related schedule or deadline that would be affected if the modification were granted.

93. No informal advice, guidance, suggestions, or comment by EPA regarding reports, plans, specifications, schedules or any other writing submitted by TVA shall relieve TVA of its obligation to obtain any formal approval as may be required by this Order, and to comply with all requirements of this Order, unless it is formally modified.

XXXVI. ADDITIONAL ACTIONS

94. EPA may, after notification to and consultation with TDEC and TVA, determine that additional actions, not included in an approved plan, are necessary to protect public health, welfare, or the environment at the Site in connection with the December 22, 2008, ash release. Unless otherwise stated by EPA, within thirty (30) days of receipt of notice from EPA that additional actions are necessary to protect public health, welfare, or the environment, TVA shall submit for approval by EPA, a work plan for the additional Work. Upon approval of the plan by EPA, TVA shall implement the plan for additional Work in accordance with the provisions and schedule contained therein. This Paragraph does not diminish or alter the EPA OSC's or RPM's authority to make oral modifications to any plan or schedule pursuant to Section XXXV (Modifications).

XXXVII. COMMUNITY RELATIONS

95. TVA agrees to comply with all applicable laws and regulations, including CERLCA and the NCP, as well as all EPA policy and guidance, concerning community relations programs and public participation requirements, including, but not limited to, 40 C.F.R. §§ 300.415(n), 300.430(c) and 300.155.

96. TVA has developed and is implementing a community outreach plan. This plan responds to the need for an interactive relationship with interested community elements regarding environmental response activities being conducted by TVA at the Site. Within ninety (90) days of the Effective Date of this Order, TVA shall submit a Community Involvement Plan that specifically addresses the requirements of §§ 300.415(n) and 300.430(c) of the NCP to EPA for review and approval and shall provide a copy of the plan to TDEC. Pending EPA approval of the plan, TVA shall continue its community outreach efforts. Any proposed revision or amendment to TVA's Community Involvement Plan shall also be submitted to EPA for review and approval, and a copy of the revision or amendment shall be provided to TDEC.

97. Before issuance of any proposed press release regarding the selection or implementation of removal or remedial actions at the Site, TVA shall advise and consult with the EPA OSC/RPM and TDEC regarding the contents thereof.

98. In addition to any other relevant provisions of this Order, TVA agrees that Work conducted under this Order and any subsequent proposed response actions arising out of this Order shall comply with all the Administrative Record and public participation requirements of CERCLA, including Sections 113(k) and 117, 42 U.S.C. §§ 9613(k) and 9617, the NCP, and all applicable guidance.

99. TVA shall establish and maintain an Administrative Record File(s) at or near the Kingston Plant, in accordance with CERCLA Section 113(k), 42 U.S.C. § 9613(k), Subpart I of the NCP, and applicable EPA guidance. Within five (5) business days of the Effective Date of this Order, TVA shall establish a Site Repository at or near the Site and notify EPA of its location. The Site Repository developed by TVA shall be periodically updated and a copy of the Index to the Administrative Record File(s) will be provided to EPA. TVA will provide to EPA on request any document in the local Site Repository.

100. Within thirty (30) days of a request by EPA, TVA shall provide EPA with a Technical Assistance Plan (TAP) for providing and administering \$50,000 of TVA's funds to be used by a qualified community group to hire independent technical advisors during the response activities performed to address the mid-term and longer-term strategic Site objectives as identified in Paragraph 26 above. If EPA disapproves or requires revisions to the TAP, in whole or in part, other than with respect to the amount of funding to be provided, TVA shall amend and submit to EPA a revised TAP that is responsive to EPA's comments within fifteen (15) days of receiving EPA's comments.

XXXVIII. NOTICE OF COMPLETION

101. Following completion of all Work performed under this Order, TVA shall prepare and submit to EPA and TDEC a Completion Report to show that all required response actions have been completed. The information provided therein shall document compliance with the requirements of this Order and provide a consolidated record of all

response activities at the Site. In order for a Site to be eligible for completion, the following criteria must be met:

- a) Response Objectives specified have been met, and all cleanup actions and other measures identified have been successfully implemented;
- b) The Site is protective of human health and the environment;
- c) Land use controls are in place as appropriate; and
- d) The only remaining activities, if any, at the Site are long-term management activities (which may include long-term monitoring).

Information provided for response action completion shall be signed by TVA's signatory authority or designee, certifying that response activities have been completed in full satisfaction of the requirements of this Order and Agreement.

When EPA determines, after EPA's review of the Completion Report, that all Work has been fully performed in accordance with this Order, all monies owing pursuant to Sections XXV and XXVIII (if any) have been paid, and the Site meets the criteria for completion set forth in this Section, EPA will provide a written Notice of Completion to TVA. Upon issuance of the Notice of Completion by EPA, this Order shall terminate except for the continuing obligations set forth under Sections XV, XXIV, XXIX, XXX, XXXI, XXXIII, XXXIV, and long-term management activities identified in subparagraph "d" above.

XXXIX. EFFECTIVE DATE

102. The Effective Date of this Order shall be the date on which it is signed by EPA. EPA shall provide TVA electronically a fully executed copy of this Order and Agreement in pdf. format as soon as possible after it has been signed by EPA and shall promptly mail to TVA a fully executed copy of the Order and Agreement.

XL. NOTICES AND SUBMISSIONS

103. Whenever, under the terms of this Order, written notice is required to be given or a report or other document is required to be sent by one Party to another, its shall be directed to the individuals at the addresses specified below, unless those individuals or their successors give notice of a change to the other Party in writing.

As to EPA:

Mr. Leo Francendese
U.S. EPA, Region 4
61 Forsyth Street, SW

Atlanta, Georgia 30303
francendese.leo@epa.gov


Mr. Craig Zeller
U.S. EPA, Region 4
61 Forsyth St., SW
Atlanta, Georgia 30303
zeller.craig@epa.gov

As to TVA:

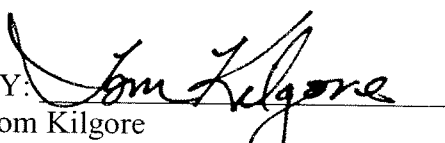
Anda Ray
Senior Vice President, Office of Environment and Research
Tennessee Valley Authority
400 West Summit Hill Drive
WT 11
Knoxville, Tennessee 37902-1401

IT IS SO ORDERED AND AGREED:

DATE: 5/11/2009

BY: 
A. Stanley Meiburg
Acting Regional Administrator
Region 4
U.S. Environmental Protection
Agency

DATE: 5/6/09

BY: 
Tom Kilgore
Chief Executive Officer
Tennessee Valley Authority

Appendix 3

September 21, 2010

PA DEP Testimony to the U.S. Environmental Protection Agency—Hazardous Waste Management System; Identification and Listing of Special Wastes; Disposal of Coal Combustion Residuals from Electric Utilities

Re: Docket ID No. EPA-HQ-RCRA-2009-0640

Thank you for the chance to testify regarding the on EPA's proposed regulatory schemes for Coal Combustion Residues commonly referred to as CCR.

Pennsylvania has more than 30 years experience with CCR management. There are 43 coal-fired electricity producers in PA that generate approximately 20 million tons of CCR annually. Of that 20 million tons, 11 million tons/year are beneficially used in mine reclamation and as structural fill; slightly less than one million tons is used for other beneficial uses; and the remaining 8 to 9 million tons/year are landfilled.

Pennsylvania has residual waste regulations in place that govern the transportation, storage and disposal of CCR. These regulations and the implementation are based on sound scientific and engineering standards, and are similar to the Commonwealth's RCRA Subtitle D-authorized municipal waste regulations and have been in effect since 1992. CCR landfills that have been designed and operated in accordance with these regulations have not resulted in pollution to groundwater, surface water or air, and they are the same residual waste regulations that were used as a template for EPA's existing *Guide for Industrial Waste Management*. According to EPA, that Guide was designed to protect groundwater, surface water and air resources under an industrial Subtitle D-like residual waste program. It is unclear why EPA is now considering regulating CCR under Subtitle C instead of the current Subtitle D-like EPA guidelines, considering the physical and chemical characteristics of CCR present very little potential to adversely affect human health and the environment, compared to many other residual wastes.

Pennsylvania's successful management of CCR including tracking of historical waste analysis data generated over the last 30 years, does not indicate in any way the need for the hazardous waste designation EPA is proposing.

Comparison of Subtitle C and D

According to EPA, the design and performance standards for the proposed regulations will likely be the same no matter what regulatory scheme is chosen. The major differences is that EPA asserts such a designation is necessary for it to retain and exercise appropriate enforcement authority and EPA cannot require States to permit landfills under Subtitle D.

Speaking to the latter, with the requirement for liners, groundwater monitoring and other operational requirements, Pennsylvania regulations already require performance standards that exceed those outlined in the Subtitle C or D proposal. By current regulation, PA also requires facilities to be permitted or authorized to manage CCR.

As to the need for EPA enforcement, Pennsylvania's Solid Waste Management Act authorizes State enforcement authority and PA DEP exercises that authority. Subtitle D requires State programs to have the necessary enforcement authority as part of the federal approval process. This approach has been successful for Pennsylvania, as evidenced by the 96 % compliance rate. In addition, EPA already has broad RCRA 7003 enforcement authority to address Potential Substantial Threats or Endangerments to Human Health and the Environment as well as imminent hazards for releases of solid waste and, therefore, does not need the additional authority under Subtitle C.

The detrimental effects of Subtitle C management are substantial:

Capacity

Pennsylvania has no Subtitle C disposal capacity and changing the CCR designation to HW would require transporting more material away from the power plant site and out of state, thereby causing an increase in carbon foot print and requiring existing facilities to meet unnecessary burdens. These practices are not more protective to the environment or to public health than what is currently in place under Pennsylvania regulations.

Cost

Regulating a non-hazardous waste under Subtitle C will require the addition of staff and resources in Pennsylvania and other states who are already fiscally strapped, thereby diverting resources away from protection from threats to public health and the environment posed by actual hazardous wastes

Beneficial Use

Regulation of CCR under Subtitle C would impede recycling, discourage beneficial use and instead cause a valuable resource to be disposed in landfills and/or surface impoundments simply due to the hazardous waste designation. In addition, some activities that are currently conducted under Pennsylvania's beneficial use program, such as certain structural fill projects, could potentially fall within the disposal regulations and essentially prohibit this very successful program.

When additional requirements are necessary to improve its waste management and beneficial use program, Pennsylvania modifies its regulations. As an example, new regulations regarding the beneficial use of CCR are expected to be finalized later this year. These revised regulations will require more frequent chemical analysis of CCR and, in cases of large quantity unencapsulated uses, groundwater monitoring. Some of these new requirements are based on recommendations from the National Academy of Sciences and are designed to provide further evidence of the efficacy of Pennsylvania's current program.

Conclusion

Pennsylvania does not believe that additional regulations for the management of coal ash beyond RCRA subtitle D are warranted. Classifying coal combustion residues under RCRA Subtitle C would create unnecessary burdens to current management practices without producing any greater degree of environmental or public health protection. The commonwealth opposes the rulemaking for Subtitle C and is in support of a Subtitle D proposal with implementation authorization continuing with the States.

Appendix 4



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

JAN 30 2009

OFFICE OF CONGRESSIONAL AND
INTERGOVERNMENTAL RELATIONS

The Honorable Edward J. Markey
Chairman
Committee on Energy and Commerce
Subcommittee on Energy and Environment
U.S. House of Representatives
Washington D.C. 20515

Dear Mr. Chairman:

Thank you for your letter of January 13, 2009, to the U.S. Environmental Protection Agency's (EPA's) former Administrator Stephen L. Johnson requesting information related to the regulation of the bi-products associated with coal-burning power plants.

EPA respects your role as Chairman and is committed to providing the Subcommittee with information necessary to satisfy its oversight activities to the extent possible, consistent with Constitutional and statutory obligations. We are coordinating with various offices and working diligently to identify, assemble, and review the documents and information requested in your letter. However, because of the extensive information requested, we will need additional time to fully respond to your questions. In the meantime, we are coordinating with your staff to provide a briefing to share information on this issue.

Again, let me assure you that we are working to respond to your request as expeditiously as possible. If you have further questions, please contact me or your staff may contact Amy Hayden in EPA's Office of Congressional and Intergovernmental Relations at (202) 564-0555.

Sincerely,

A handwritten signature in cursive script that reads "Joyce K. Frank".

Joyce K. Frank
Acting Associate Administrator

Responses to Congressman Edward J. Markey's January 13, 2009 letter related to the regulation of the by-products associated with coal-burning power plants.

1. Does EPA believe that coal ash and/or other by-products associated with coal-burning power plants should be designated a hazardous waste? If not, why not? If so, why has it not already done so? Please provide copies of all EPA studies, memos, draft proposals and other correspondence related to any deliberations associated with such designation, or alternate approaches to regulating these materials.

Section 3001(b)(3)(A)(i) of the Resource Conservation and Recovery Act (RCRA) temporarily excluded certain large-volume wastes, including by-product wastes associated with the combustion of coal and other fossil fuels from being regulated as hazardous wastes under Subtitle C of RCRA, pending completion of a Report to Congress and a Regulatory Determination by the Administrator of the Environmental Protection Agency either to promulgate regulations under Subtitle C of RCRA or deem that such regulations are unwarranted. With this legislative mandate, EPA published its Part 1 Regulatory Determination for large-volume utility coal combustion wastes in the Federal Register in August 1993 (see 58 FR 42466). At that time, EPA determined that fly ash, bottom ash, boiler slag, and flue gas emission control dust from coal burning utilities did not warrant regulation as hazardous waste and, thus, remained excluded from regulation under Subtitle C of RCRA §261.4(b)(4). That Regulatory Determination addressed the large-volume utility coal combustion waste streams, but it did not cover co-management of all wastes generated at facilities that combust coal and other fossil fuels. Therefore, EPA conducted additional research regarding the co-management of the large-volume utility wastes with the remaining wastes generated at facilities that combust coal and other fossil fuels.

In May 2000, EPA issued its Part 2 Regulatory Determination ("Regulatory Determination on Wastes from the Combustion of Fossil Fuels" (65 FR 32214)), addressing the remaining wastes that had not been considered under its 1993 Regulatory Determination.¹ In the May 2000 Regulatory Determination, the Agency likewise concluded that these wastes did not warrant regulation as hazardous waste under Subtitle C of RCRA. However, EPA also determined that national non-hazardous waste regulations under RCRA Subtitle D were appropriate for coal combustion wastes disposed of in surface impoundments and landfills and used as fill in surface or underground mines. For disposal in landfills and surface impoundments, EPA based its determination on the following considerations: (1) the constituents present in these wastes include toxic metals that could present a danger to human health and the environment under certain conditions; (2) the Agency identified 11 documented cases of proven dangers to human

¹ The wastes addressed under this Regulatory Determination includes: (1) large-volume coal combustion wastes (i.e., fly ash, bottom ash, boiler slag and flue gas emission control dust) generated at electric utility and independent power producing facilities that are co-managed together with certain other coal combustion wastes; (2) coal combustion wastes generated at non-utilities; (3) coal combustion wastes generated at facilities with fluidized bed combustion technology; (4) petroleum coke combustion wastes; (5) wastes from the combustion of mixtures of coal and other fuels (i.e., co-burning of coal with other fuels where coal is at least 50% of the total fuel); (6) wastes from the combustion of oil; and (7) wastes from the combustion of natural gas.

health and the environment by the improper management of these wastes in landfills and surface impoundments; (3) lack of controls, such as liners and groundwater monitoring, at many sites; and (4) while there had been improvements in state regulatory programs, there also were gaps identified in state oversight. The 2000 Regulatory Determination is enclosed with this letter.

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The supporting technical documents, including the findings of the 1999 Report to Congress (RTC) "Wastes from the Combustion of Fossil Fuel," are quite voluminous and are accessible at: http://www.epa.gov/epawaste/nonhaz/industrial/special/fossil/volume_2.pdf and <http://www.epa.gov/epawaste/nonhaz/industrial/special/fossil/fsltech.htm>. They address the characterization of coal combustion waste (CCW), its management practices as of the mid-1990s, State regulatory programs, damage cases associated with the management of CCW, the economic and cost impact analysis of rulemaking, and human health and ecologic risk analysis of fossil fuel combustion (since superseded by a 2006 study).

Since the May 2000 Regulatory Determination, additional information and data became available, which EPA believed should be noticed for public comment as part of the Agency's evaluation regarding the development of regulations under Subtitle D of RCRA of CCW. Thus, this information was made available for public comment in its August 2007 Notice of Data Availability (NODA) (72 FR 49714; please see enclosure). This included an update of waste management practices—a joint U.S. Department of Energy (DOE) and EPA report entitled, *Coal Combustion Waste Management at Landfills and Surface Impoundments, 1994-2004*, a further assessment of damage cases, and a draft risk assessment.² In addition, the draft risk assessment was subject to peer review, which was completed in September 2008. The 2007 Notice of Data Availability, as well as its accompanying technical documents, the public comments, citizen and industry proposals for the regulation of coal combustion waste, and the results of the draft risk assessment's peer review, are all accessible at the NODA's docket, at http://www.regulations.gov/search/search_results.jsp?css=0&Ntk=All&Ntx=mode+matchall&Ne=2+8+11+8053+8054+8098+8074+8066+8084+8055&N=0&Ntt=epa-hq-rcra-2006-0796&sid=11F141358782.

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We are most willing to discuss any of these documents with you or your staff and provide paper copies of those documents if that will be helpful.

² The NODA also solicited comment on a February 2004 Petition for Rulemaking submitted by the Clean Air Task Force and the Hoosier Environmental Council, jointly with a number of citizens' groups to prohibit the placement or disposal of CCW into groundwater or surface water, and two suggested approaches for managing CCW in landfills and surface impoundments. One approach is a Voluntary Action Plan that was formulated by the electric utility industry; the other approach is a proposed framework prepared by a number of citizens' groups for federal regulation of CCW disposed of in landfills and surface impoundments under Subtitle D or RCRA.

2. Does EPA believe it has sufficient legal authority under existing environmental statutes to regulate coal ash, heavy metals, and other hazardous wastes associated with coal-burning power plants? If so, why hasn't EPA used this authority? If not, what changes in the law would be needed to give EPA the authority to protect public health and the environment from these wastes?

Yes, EPA believes that it currently has sufficient legal authority to regulate such wastes and does not believe that any changes to environmental statutes are required. However, we expect that, if EPA were to pursue regulation of CCW under Subtitle C, some may raise questions about the Agency's legal authority to reconsider its earlier Regulatory Determinations.

With respect to your second question, and as noted in our response above, following the May 2000 "Regulatory Determination on Wastes from the Combustion of Fossil Fuels" (65 FR 32214), EPA collected new data and performed additional analyses, including a draft risk assessment and further evaluation of possible damage cases on the management of CCW in landfills and surface impoundments, particularly since the information on which the May 2000 Regulatory Determination was made was based on information collected prior to 1995. The Agency believed that this additional information and data were important considerations in the development of regulations. EPA made this information available for public comment in its August 2007 NODA and received close to 400 comments. In addition, the draft risk assessment was subject to peer review, which was completed in September 2008. EPA is carefully analyzing the comments and recommendations we have received, including those from the peer reviewers, and will consider this information as we continue to follow up on the regulatory determination on the management of CCW in surface impoundments and landfills.

Deleted: This is in line with the Confirmation hearing testimony by Lisa Jackson, at the time, the Administrator designee, ¶

3. If coal ash and/or other by-products associated with coal-burning power plants was designated as hazardous waste, please detail the potential regulatory steps that would follow such designation.

If the Agency were to decide to regulate CCW as hazardous under Subtitle C of RCRA, then we believe that we would need to revise the Regulatory Determination, which we think may be done at the same time that we propose to remove the existing regulatory exemption. However, as part of this effort, we believe that the Agency would need to describe the facts that cause the Agency now to believe that CCW needs to be regulated under Subtitle C, as opposed to Subtitle D. In addition, while RCRA does not specifically spell out the process by which we revise the Regulatory Determination, we would expect that based on recent cases in other contexts, the Agency would find it advisable to go through the same process we followed to establish it—in other words, "after public hearings and an opportunity for comment." That would require the Agency to develop a proposed regulation, including the needed supporting documentation; publish that proposal in the Federal Register for public comment and hold public hearings; analyze and respond to those comments; and then publish a final regulation. After EPA promulgated the federal rule, States authorized for the RCRA program would then have to adopt those regulations (or regulations no less stringent than the federal ones) and receive authorization from EPA.

4. Has EPA examined the manner in which these materials are stored? For example, last month's accident occurred in a storage pond. Given the dangers that these materials particularly pose to the surrounding water system, has EPA considered the wisdom of allowing them to be stored in this manner in the first place? Please provide copies of all EPA studies, memos, draft proposals and other correspondence related to any deliberations associated with the regulation of the types of facilities that can be used to store these materials.

EPA's May 2000 Regulatory Determination did not specifically address surface impoundment integrity. The discharge of fly ash and bottom ash transport water (i.e., the discharge from ash ponds) is regulated by National Pollutant Discharge Elimination System (NPDES) permits and EPA has issued national effluent limitations that apply to the discharge.

NPDES regulations issued under the authority of the Clean Water Act require that all NPDES permits include standard conditions that include the requirement to "...properly operate and maintain all facilities and systems of treatment and control (and related appurtenances)...to achieve compliance with the conditions of this permit" (See 40 CFR part 122.41(e)). In addition, best management practices can be included in NPDES permits as necessary to achieve limitations or to carry out the purpose and intent of the CWA (See 40 CFR part 122.44(k)). Given the TVA ash pond collapse, EPA is presently reviewing existing permits to assess if additional requirements or guidance are appropriate.

The national effluent limitations, issued by EPA in 1982 and codified at 40 CFR part 423, imposed an effluent limit of "zero discharge" for fly ash transport water from new facilities. As a result, nearly all generating units built after 1982 have avoided using storage ponds for fly ash by using ash handling systems that keep the fly ash dry. The dry fly ash is either disposed of in a landfill or sold for cement manufacturing or other uses. Some plants built before 1982 also use dry handling practices for fly ash, although placing the wet fly ash in storage ponds is commonplace at other plants. Bottom ash is typically stored in ponds at most plants; however, some plants handle the bottom ash with a dry process that avoids the need for a storage pond.

EPA is nearing the end of a multi-year study of the steam electric power generating industry to determine whether the national effluent limitations guidelines warrant revision. Upon concluding the study later this year, EPA will determine whether to initiate a rulemaking process. The study has expended substantial effort in reviewing discharges from coal-fired power plants, including ash ponds. EPA's review of operating practices and wastewater management technologies will include an assessment of technologies that enable some plants to manage their fly ash and bottom ash without the need for ash storage ponds.

EPA has compiled a substantial amount of documentation over the course of the study. Most of these documents were made available for public review as part of the docket for EPA's Final 2008 Effluent Guidelines Program Plan.³ The documentation is rather voluminous. We would

³ As required by Section 304(m) of the Clean Water Act, EPA publishes an Effluent Guidelines Program Plan presenting a schedule for the annual review and revision of promulgated effluent guidelines and for identifying industrial categories without effluent guidelines that might need to be regulated to prevent or control pollution. The Plan also presents the results of ongoing and completed industry studies. The Final 2008 Effluent Guidelines

welcome the opportunity for the EPA staff conducting the study to discuss with your staff the specific materials that have been compiled so we can best respond to your request for documents.

Program Plan was published September 15, 2008 (73 FR 53218). The most recent status report for the detailed study of the steam electric power generating point source category was published August 2008 (<http://epa.gov/waterscience/guide/304m/2008/steam-detailed-200809.pdf>). The entire docket for the 2008 Plan is available at <http://www.regulations.gov/fdmspublic/component/main?main=DocketDetail&d=EPA-HQ-OW-2006-0771>.

Appendix 5

Statement of Thomas H. Adams, Executive Director, American Coal Ash Association

House Small Business Subcommittee on Rural Development, Entrepreneurship and Trade

July 22, 2010

“Is Coal Combustion Product Recycling an Endangered Industry?”

Mr. Chairman, my name is Thomas Adams. I am the Executive Director of the American Coal Ash Association (ACAA). I would like to thank you for the opportunity to speak to you and the subcommittee today on a major recycling success story that is solving serious environmental concerns while brining significant economic benefits to the US economy. Founded in 1968, the ACAA’s mission is to encourage the use of coal combustion products (CCP) in ways that simultaneously benefit the environment, are technically appropriate, commercially viable, and contribute to a more sustainable society.

Beneficial use, another term for recycling, means many things to many people. To most people it means finding ways to use as much of our resources in ways that protect human health and the environment at a reasonable cost, and to make finished products that perform as well or better than products made with 100% virgin materials. By maximizing beneficial use of CCP we help preserve virgin resources for use by future generations while minimizing the effects of current economic development on the environment.

The coal combustion product family consists of materials remaining after the combustion of coal in coal fueled power plants. The primary products are fly ash, bottom ash, boiler slag, and flue gas desulfurization (FGD) gypsum. In the most recent Production and Use Survey (1) conducted by the ACAA for 2008, approximately 136 million tons of CCP were generated. CCP is the second largest waste stream in the US following only municipal solid waste. Of this 136 million tons of CCP generated, approximately 44% went into a variety of beneficial uses. This means 60 million tons of CCP was recycled in 2008 rather than being sent to disposal facilities. Since 2000 the recycling rate has risen from 30% to 44%. In its most recent Economic Assessment of the impact of coal ash on the US economy, the American Coal Council determined that the annual benefit to the US economy is in the range of \$9 to \$10 billion.

Today I would like to focus on some important beneficial uses of CCP. Fly ash is a fine powder-like substance with much the same consistency as Portland cement. It is collected in power plants and handled much like Portland cement. Because of its mineral constituency it is a valuable raw material in the manufacture of Portland cement for many producers. Depending on the quality and consistency of the fly ash, it is also a very valuable supplementary cementitious material (SCM) for the manufacture of concrete products, being used to replace and optimize Portland cement in concrete mixtures.

FGD gypsum is produced when flue gases are scrubbed in power plant stacks to remove sulfur dioxide (SOX) and nitrogen oxide (NOX) from emissions into the environment. Scrubbing by using lime or limestone in forced oxidation processes produces a synthetic gypsum which has purity equal to or greater than mined gypsum.

Fly ash is used as a raw material in cement manufacture due to the minerals present, mostly silicates. The use of fly ash as a raw material means that there is less mining of virgin sources to obtain those minerals silicates. Cement manufacturers balance the availability of fly ash with the needed chemical composition with the availability of material from virgin sources. The cement producers consumed 4.2 million tons of fly ash in 2008.

Fly ash is also used in concrete manufacture as a supplementary cementitious material or SCM. The 2008 Production and Use Survey showed that 14 million tons of fly ash went into concrete products. The use of fly ash in concrete mixtures allows for a reduction in the quantity of Portland cement required for achieving desired results. The material is mistakenly called a cement replacement for his use. The reality is that there are performance characteristics in concrete structures that can only be achieved by the use of fly ash or other SCMs. Portland cement is important but cannot always provide the characteristics that create the high-performance and long-term durability in concrete structures. High performance can mean many things such as low permeability reducing water migration which can initiate corrosion of reinforcing steel, high compressive strength which enables structures to carry heavy loads with smaller members, or resistance to aggressive environments which attack the concrete matrix resulting in reduced service life.

Having spent many years in the ready mixed concrete industry, I can personally attest to the importance of having a valuable tool such as fly ash available to solve the performance requirements in a wide variety of construction projects. Today producers are taking the use of fly ash and other SCMs into new and expanded applications. Innovation is on a fast track.

A major benefit from the use of fly ash to optimize concrete mixtures is reduction of carbon dioxide emissions. When fly ash is used in a concrete mixture reducing the amount of Portland cement required, less CO₂ is emitted as the quantity of cement manufactured is reduced. By avoiding 1 ton of cement manufacture, approximately 0.9 tons of CO₂ are not emitted by the cement plant. Since 2000 over 117 million tons of carbon dioxide emissions have been avoided by the use of fly ash in concrete mixtures. There remains a large capacity in the concrete industry to increase the amount of fly ash used. One of the top environmental priorities of President Obama's administration is reduction of green house gases. The concrete industry has been doing its part to achieve reductions for some time. With the proper incentives, this reduction can be maintained and accelerated.

In 2008 8.5 million tons of FGD gypsum went into wallboard products. Approximately 35% of the wallboard manufactured in the United States is made with FGD gypsum. Wallboard manufacturers have intentionally located plants close to utilities to take advantage of logistical benefits. In some cases the material is moved by conveyor from the power plant to the wallboard plant. This process is more sustainable than the use of mined gypsum as mining, handling, and transportation impacts are virtually eliminated. This also results in CO₂ reduction from elimination of mining and handling, and transportation.

There are other important markets for CCP beneficial use that I will not mention today due to time constraints. A common thread among all of these uses is the achievement of the mission of the ACAA in environmental safety, technical performance, economic viability, and contribution to a more sustainable society.

So what would endanger the continued successful beneficial use of these products?

In an effort to create regulations for the disposal of coal combustion products, the US Environmental Protection Agency (EPA) has published a proposal which contains an option which would treat CCP as a hazardous waste when destined for disposal under Subtitle C of the Resource Conservation and Recovery Act of 1976. The agency has expressed a preference for this option since it provides EPA with the authority to enforce disposal regulations. Subtitle D of RCRA, intended for non-hazardous wastes, places enforcement authority with individual states. EPA suggests that certain beneficial uses of CCP could be exempted from hazardous waste regulation. Therefore beneficial use in cement, concrete, and wallboard would continue though the same materials intended for disposal would be considered to be hazardous. We believe this "hazardous" designation would create a stigma resulting in rejection by the market place for the following reasons.

A primary concern in the market is liability exposure. Unfortunately our laws permit tort activity even when there is no evidence of damage. (The concrete industry is particularly sensitive to this having survived a siege of suits in southern California known as the "sulfate wars".) In discussions with engineers, contractors, and concrete producers over the last several months, it is clear that the use of fly ash would be severely curtailed due to fear of tort or class action suits. Many in the concrete industry do not believe EPA's assertion that the exemption would provide all the protection needed. Many do believe that a lawyer could make a simple argument to a jury that the fly ash in the disposal facility has exactly the same physical and chemical characteristics as the fly ash in the concrete in a home, hospital, daycare center, or school. Therefore if it is hazardous in the disposal facility, it must be hazardous in those structures thereby opening the door to financial claims. Even if a claim is found to be minimal, the costs of legal defense are something firms want to avoid.

The stigma of CCP as a hazardous waste also opens the possibility of negative marketing by suppliers of competitive materials. We have already seen examples in markets for shingles, bricks, and concrete blocks of advertising which attacks products containing CCP saying, "Our products do not contain hazardous waste. Do yours?" The public will always opt for materials that do not have the taint of some sort of hazardous status.

By placing CCP for disposal under hazardous waste rules, the efforts of entrepreneurs to bring new products to the market allowing the use of disposed CCP are effectively halted. Once CCP is placed in disposal it is a hazardous waste. New processes are being developed that would use large quantities of CCP some of which could come from disposal sites. The ability of these entrepreneurs to develop commercially competitive products would be crippled if they could not take advantage of the most economically feasible sources. Again, markets given a choice between products containing a hazardous component versus products with non-hazardous components will opt for the non-hazardous option.

Venture capital needed to get new businesses related to CCP beneficial use would be more difficult to obtain. Some ACAA members who have been relying on such funding report hesitation from their financial sources.

The beneficial use of coal combustion products across the country is being affected by the mere shadow of EPA hazardous waste regulations. Many of the affected entities are small businesses and entrepreneurs who are driving the effort to increase recycling. A few examples follow.

- CalStar Products opened a plant in Wisconsin to manufacture bricks and pavers from fly ash. Their process uses fly ash as a primary ingredient and consumes 85% less energy than used in producing traditional clay bricks. The Brick Industry Association has published comments that infer safety concerns because the brick is made with “hazardous wastes”.
- A large manufacturer of shingles for residential roofing, Reed Minerals, a division of Harsco, had to threaten legal action against a proposed advertising campaign of a competitor. The campaign theme was “Our shingles do not contain hazardous waste. Do yours?”
- Colorado State University does research on coal combustion products. A utility that furnishes coal ash samples for this research has informed the university that no samples will be furnished should the EPA promulgate a hazardous waste rule of any kind.
- Anne Arundel County in Maryland has prohibited the use of fly ash in county construction projects pending EPA’s final rule.
- The Los Angeles Unified School District has stopped allowing the use of fly ash in all LAUSD projects pending EPA’s final rule.
- Calera, an emerging technology company based in California, is researching alternatives to fly ash for the manufacture of construction aggregates and cement supplements to avoid the requirements of processing a hazardous waste.

The EPA actually states in their June 21, 2010 proposal that beneficial use will increase under a Subtitle C hazardous waste regulations. The agency believes utility companies will be financially motivated to find ways to treat and handle CCP so market acceptance increases. Again, the markets have told the ACAA that any form of Subtitle C rule will stigmatize CCP and cause users to turn to other materials.

The stigma created by a hazardous waste regulation could have other unintended consequences. For example, insurance underwriters may include exclusion for projects utilizing CCP when renewing professional liability insurance for designers and general liability insurance for contractors. This would have a chilling effect on beneficial use regardless of EPA claims.

Mr. Chairman, the American Coal Ash Association Board of Directors recently passed a resolution (attached) calling for national standards for the regulation of coal ash disposal under Subtitle D of RCRA. The same resolution calls states the association opposition of any form of Subtitle C regulation.

The requirements for disposal facilities receiving coal combustion residuals are virtually identical under either of the EPA’s proposed rules. Therefore it makes sense to avoid designating these materials as hazardous wastes for any reason and risk loss of a major environmental success story which contributes to our economy and helps create a more sustainable society. Subtitle C of the Resource Conservation and Recovery Act of 1976 is for truly hazardous waste. Since coal combustion residuals do not fail the characteristic tests which would qualify them to be labeled as hazardous, and none of the cited damage cases are a result of beneficial use, there is no justification for the assault on the beneficial use that is contained in the EPA proposal. Regulation of disposal under Subtitle D provides sufficient protection to human health and the environment without implying a danger that has yet to be proven.

EPA has stated publically that Subtitle D regulations are sufficient for coal combustion residual disposal (2). However a primary reason the EPA to favors Subtitle C regulations is that enforcement authority lies with the EPA under Subtitle C while enforcement authority under Subtitle D is resides with the states. The answer to resolving this concern is to amend the Resource Conservation and Recovery Act of 1976 to provide enforcement authority for the disposal of coal combustion residuals under Subtitle D to the US Environmental Protection Agency.

Respectfully,

Thomas H. Adams
Executive Director
American Coal Ash Association, Aurora, CO

- (1) 2008 Coal Combustion Product Production & Use Survey Report, American Coal Ash Association
- (2) Matthew Hale, Director, U.S. EPA Office of Resource Conservation and Recovery, to the Environmental Council of the States, September, 2009

Attachment: ACAA Board of Directors Resolution

Attachment

**Resolution of the
American Coal Ash Association**

The Board of Directors of the American Coal Ash Association (“the ACAA”), a trade organization established in 1968 and devoted exclusively to encouraging beneficial uses of coal combustion products (“CCP”) in ways that are beneficial to the environment, economy, and society, conducted a meeting on April 12, 2010, at which time the Directors duly adopted the following resolution.

WHEREAS, the ACAA has considered the salient features of changes to regulation of coal combustion byproducts (“CCB”) under the Resource Conservation and Recovery Act (“RCRA”) of 1976;

WHEREAS, ACAA members are engaged daily in the beneficial use of CCP and thousands of green jobs within the CCP industry depend upon meeting numerous standards and specifications set by ASTM International (“ASTM”), the American Concrete Institute (“ACI”), the American Association of State Highway and Transportation Officials (“AASHTO”), the U.S. Environmental Protection Agency (“EPA”), and other state and local agencies;

WHEREAS, EPA has discussed proposing to regulate CCB under RCRA under either Subtitle C - Hazardous Waste, Subtitle D - Non-hazardous waste, or a “hybrid” approach that would include some form of Subtitle C regulation;

WHEREAS, numerous states, ASTM, ACI and AASHTO have signaled in written correspondence to EPA that a Subtitle C regulatory approach, including a hybrid approach, would have negative impacts upon beneficial uses of CCP;

WHEREAS, ACAA agrees that regulating CCB under Subtitle C of RCRA, including under a hybrid approach, would have negative impacts upon beneficial uses of CCP;

WHEREAS, implementation of CCB rules under Subtitle D would occur sooner than under Subtitle C, thousands of CCP green jobs would be saved and negative impacts to the beneficial uses under Subtitle C would be avoided; and,

WHEREAS, ACAA supports regulation of CCB under Subtitle D of RCRA;

The following resolutions were offered, seconded, and adopted.

BE IT RESOLVED that the Directors of ACAA support federal regulation of CCB under Subtitle D of RCRA; and,

BE IT FURTHER RESOLVED that the Directors of ACAA oppose regulation of CCB under Subtitle C of RCRA

CERTIFICATION

I, the undersigned, Secretary, do certify that the foregoing is a true exact and correct copy of a resolution adopted at a lawfully held meeting of the trade organization on the

12th day of April 2010.

Charles Price
Signature

Charles Price
Print Name

Appendix 6

Testimony of Craig H. Benson, PhD, PE, DGE
Wisconsin Distinguished Professor, University of Wisconsin-Madison

**House Small Business Subcommittee on
Rural Development, Entrepreneurship and Trade**

22 July 2010

Thank you for the opportunity to share with this Committee my experience and opinions regarding coal combustion products (CCPs), and their beneficial use in sustainable construction. My name is Dr. Craig H. Benson, PhD, PE, DGE and I am a Professor of Geological Engineering and Civil & Environmental Engineering at the University of Wisconsin-Madison. I am also Director of the Recycled Materials Resource Center at the University of Wisconsin-Madison and Chair of Geological Engineering. I teach courses that pertain to sustainable construction and management of byproducts, amongst other topics. I also conduct research and development on the safe and wise use of industrial byproducts in sustainable construction as well as the environmentally sound management of wastes. I have been involved in scientific research and engineering practice for more than 25 years.

For 20 years, I have been conducting research on sustainable construction with industrial byproducts, including CCPs such as fly ash, bottom ash, and flue-gas desulphurization (FGD) residuals. Over the last decade, CCPs have become a large part of my research program because of the many ways in which they can be used safely, wisely, and economically in sustainable construction. This research has been supported by a broad distribution of stakeholders, including the US government, state governments, local governments, and industry. I strongly believe that using CCPs for infrastructure construction is advantageous for the nation. The most important advantages include creation of infrastructure that is more resilient and has longer service life while simultaneously reducing the energy consumed, water used, and greenhouse gases emitted for infrastructure construction. The US infrastructure is enormous and constitutes a major portion of our nation's capital investment and energy usage each year. Consequently, changes in regulations that may affect use of CCPs in infrastructure construction should be undertaken with great caution and care.

What are coal combustion products (CCPs)?

Coal combustion products (CCPs) generally consist of fly ash, bottom ash, boiler slag, and flue-gas desulphurization (FGD) residuals. Each is described in the following.

Fly ash. Fly ash is a fine-textured particulate collected from the off gas at coal-fired power plants to control air pollution. Although fly ash is a byproduct of controlling air pollution, scientific research and engineering practice have shown that fly ash has many useful characteristics as a construction material. Many fly ashes are cementitious, meaning that they can be used to bind particles together in a manner analogous to a conventional cement (e.g., Portland cement used in concrete). Fly ashes also are rich in calcium, silicon, and aluminum, and thus can be a good source of these elements in industrial processes such as Portland cement production. Thus, while fly ash may be considered a waste or byproduct from one industrial operation, fly ash is also a useful resource for other industrial operations (e.g., concrete production) that can be used in lieu of conventional materials that need to be mined

and processed. By using fly ash in place of these conventional materials, energy and water are saved and greenhouse gas emissions are reduced. Improved engineering characteristics (e.g., durability, strength, etc.) can also be achieved.

Bottom ash and boiler slag. Bottom ash is a coarse-textured particulate residual of coal combustion that is collected from the bottom of a boiler. Boiler slag is a solid residual that collects on the boiler during combustion that is generally found as a coarse particulate. Bottom ash and boiler slag are generated in much smaller volumes than fly ash. Most bottom ash looks like sand largely because bottom ash is similar chemically to sand. Bottom ash is used in construction in the same manner as sand, i.e., as a foundation material, a backfill material, and as drainage material. Using bottom ash or boiler slag in lieu of sand or other natural aggregates precludes the need to mine sand from the earth and process the sand so that it has suitable engineering characteristics. Consequently, when bottom ash or boiler slag is used in lieu of sand or other coarse aggregate, the energy use and greenhouse gas emissions associated with mining and processing sand are avoided. Additionally, fewer quarries for sand and gravel are needed, which improves land and resource stewardship.

FGD residuals. FGD residuals are created as a byproduct of waters containing lime or limestone that are used to remove sulfur compounds from off gases to reduce air pollution (e.g., reduce 'acid rain' by removing SO_x compounds). FGD residuals consist of gypsum (hydrated calcium sulfate) created when the calcium binds with the sulfur compounds in the presence of water. FGD residuals also contain small amounts of impurities. Because FGD residuals consist almost exclusively of gypsum, they are used in lieu of natural gypsum in industrial processes. The most common use is for manufacturing wallboard for building construction. Using FGD residuals in lieu of mined gypsum reduces energy use, water use, and greenhouse gas emissions. Additionally, fewer gypsum mines are required, which improves land and resource stewardship.

Have the risks changed since CCPs were designated as non-hazardous materials?

The chemical make up of fly ash depends on the coal used for combustion, the method used for combustion, the method used for collection, and ancillary processes that are employed for air pollution control (e.g., carbon injection). These factors change over time with technological innovation. However, the general characteristics of fly ashes have not changed dramatically since CCPs were originally designated non hazardous by Congress. Consequently, the risk of using fly ash in construction today is no different than it was decades ago. Similar statements can be made regarding bottom ash, boiler slag, and FGD residuals.

Fly ashes contain a variety of elements (e.g., calcium, aluminum, selenium, chromium) as do conventional earthen materials used in construction. Some of these elements are present in larger amounts in fly ash than in conventional earthen materials; others are lower. However, none of the amounts typically are high enough (or sufficiently mobile) for fly ash to be deemed "hazardous" as defined in the Resource Conservation and Recovery Act (RCRA). Thus, there is no scientific reason to manage CCPs as hazardous wastes.

Although CCPs have been designated as non-hazardous, and generally would not be considered hazardous when evaluated by the metrics in RCRA, they are not inert materials (i.e., non-hazardous does not imply inert). For example, cement reactions are initiated when many fly ashes are contacted with water in the same manner that cement reactions occur when Portland cement is mixed with water. These reactions create heat and alkalinity as the cements

are formed. In addition, contacting CCPs with water can transfer elements in the CCP solid to the water, where they can be more mobile. Thus, like all construction materials, CCPs should be deployed in properly engineered applications using appropriate safety precautions that result in no adverse impact to the environment. Applications where CCPs are used in a dry environment (wallboard) or in a cemented monolithic environment (e.g., concrete) tend to have very low release and pose virtually no risk to the environment. In most cases, these applications have virtually no measure release.

Even in applications where releases may occur (e.g., stabilized base course in a roadway), the release needs to be considered relative to releases from conventional construction materials and to environmental standards. Because all construction materials are comprised of elements derived from the earth, they have the potential to release elements to the environment when contacted by water. Thus, a CCP may adversely affect the environment relative to a conventional construction material only if the CCP releases elements in a greater amount. Research has shown that some elements are released from CCPs in lesser amounts than from conventional construction materials, which means that CCPs may have *less* impact on the environment than conventional construction materials. In other cases, CCPs can release elements in greater amounts than a conventional construction material. In such cases, an adverse impact to the environment occurs only if elements are released at levels above environmental standards. Research that I have conducted, and the research of others, have shown that CCPs used in properly engineered applications generally do not release elements to the environment in amounts that exceed environmental standards.

Will the “hazardous waste” stigma affect beneficial use?

When we use CCPs as a resource, we realize significant advantages, notably reduced consumption of energy and water and lower greenhouse gas emissions. In some cases we obtain a superior product when fly ash is used in lieu of conventional construction materials. For example, roadway systems constructed with fly ash tend to be more durable and have longer service life.

Despite these advantages, not all industrial byproducts are beneficially used. There are many factors that affect whether an industrial byproduct will be selected in place of a conventional material. One of the most important factors is concern regarding potential environmental impacts and long-term liability. Major inroads have been made to address this concern over the last two decades using scientific principles and engineering methods. Test procedures have been developed, evaluation procedures have been formulated, and computer models have been created to evaluate risks and to alleviate concerns regarding environmental impacts and liabilities. However, none of these science-based principles and tools will overcome the psychological impact of CCPs being deemed a hazardous waste. An exemption for beneficial use will have virtually no effect on this psychological impact. The “hazardous” designation will scare users and incite liability, and thereby decimate beneficial use of CCPs.

Some have proffered that a hazardous designation coupled with a beneficial use exemption will increase the amount of CCPs that are beneficially used in a manner analogous to the reduction hazardous waste volume that occurred when RCRA hazardous waste rules were originally developed. My experience suggests that this outcome is unrealistic. Beneficial use is contingent on infrastructure owners accepting CCPs in their infrastructure, which is influenced strongly by owners’ perceptions of risks. The beneficial use community has struggled for years to overcome owners’ concerns regarding liability for industrial byproducts that are not

designated hazardous. This struggle can only become much more difficult if a hazardous designation is instituted, even with a beneficial use exemption. There is no basis to believe that infrastructure owners will accept that the risks of using CCPs in infrastructure are minimal when essentially the same material is deemed a hazardous waste in a different setting. Indeed, evidence in this regard has already been realized as public works agencies in California and Maryland have banned use of CCPs in their infrastructure projects. Manufacturers of competing products and materials that do not include CCPs have also taken advantage of the hazardous waste stigma by advertising that their products and materials do not include hazardous waste.

I surmise that beneficial use of all industrial byproducts will diminish if CCPs are deemed hazardous waste. The logical inference from the perspective of a potential user is "Will the industrial byproduct I am using today be designated as a hazardous waste tomorrow? How will this affect my long-term liability?" The logical decision from the perspective of the user is to avoid beneficial use of industrial byproducts altogether. The impact on the nation will be greater energy and water consumption, greater greenhouse gas emissions, and poorer resource stewardship.

What effect will diminished beneficial reuse have on energy, water use, and greenhouse gas emissions?

My research group has been conducting a study to assess how cessation of beneficial use of CCPs will affect energy consumption, water usage, and greenhouse gas emissions. Although our study is not yet final, the findings are startling. Using CCPs in sustainable construction results in:

- saving 159 trillion Btu of energy annually,
- reducing water use by 32 billion gallons annually, and
- reducing greenhouse gas emissions by 11 million tons of CO₂ each year.

In more tangible terms, using CCPs in sustainable construction results in:

- saving the energy equivalent of 1.7 million US households annually,
- reducing water use in an amount equivalent to 31% of California's annual water use, and
- reducing greenhouse gas emissions equivalent to 1.9 million passenger cars each year.

Others recognize these savings. For example, the Kyoto Protocol accepts the reduction in greenhouse gas emissions from beneficial use of CCPs.

The stigma of a hazardous designation, even with a beneficial use exemption, will substantially reduce these benefits achieved by using CCPs in sustainable construction. A financial impact will also be realized. My research group estimates that using CCPs in sustainable construction results in a cost savings between \$5 billion and \$10 billion annually.

Are regulations for CCPs needed?

Regulations are needed to ensure that CCPs are managed and used in an environmentally sound manner. A means to ensure that these regulations are enforced uniformly is also needed. However, this does not imply that CCPs should be managed as hazardous waste in

accordance with Subtitle C of RCRA. The containment technologies stipulated in Subtitle D of RCRA (e.g., single composite liners, leachate collection systems, monitoring, etc.) are sufficient to ensure that CCPs that are not beneficially used are managed in an environmentally sound manner. Amending RCRA to permit federal control over CCP disposal using RCRA Subtitle D technologies is a logical solution that would ensure uniform application of regulations, protect the environment, and preclude the demise of beneficial use.

Appendix 7

William H. Gehrman
President
Headwaters Resources, Inc.

Testimony
Before the Subcommittee on Rural Development, Entrepreneurship and Trade
Committee on Small Business
United States House of Representatives

“Coal Combustion Byproducts: Potential Impact of a Hazardous Waste Designation on Small Businesses in the Recycling Industry”

July 22, 2010

Thank you Mr. Chairman. Honorable Members of the Committee, I am Bill Gehrman, President of Headwaters Resources, Inc., on whose behalf I am testifying today. I have more than 25 years experience in the management and marketing of coal combustion products, which are often generically referred to as “coal ash.” My experience includes managing the promotion, sale and distribution of coal ash; development of new products utilizing coal ash, the construction and operation of hazardous and non-hazardous waste landfills, and the design and operation of material handling systems.

Headwaters Incorporated is a New York Stock Exchange company that provides an array of energy services. We are a leading provider of pre-combustion clean coal technologies for power generation, including coal cleaning, upgrading and treatment. We are the nation’s largest post-combustion coal product manager, operating on more than 100 power plant sites nationwide. We have built a construction materials manufacturing business and incorporated coal ash in many of our products. We are currently commercializing technologies for upgrading heavy oil and have entered the biofuels market by constructing an ethanol production facility utilizing waste heat from an existing coal fueled power plant in North Dakota. Headwaters is also active as both a technology provider and a project developer in the field of coal-to-liquid fuels.

As a manager and marketer of coal ash, Headwaters touches every link in the chain of activity that makes beneficial use of the material possible. Small businesses comprise a significant portion of many of the links in this chain. My testimony today is intended to describe that chain of activity and the probable effects of a “hazardous waste when disposed” determination on each.

There are many compelling reasons to use coal ash instead of simply disposing it. The most obvious reason is conservation of natural resources. When coal ash is used rather than disposed, other native natural resources are conserved by reducing the production of materials that coal ash replaces. Additionally, landfill space is conserved.

The effect of off-setting environmental impacts from other industries is especially apparent in the case of utilizing coal fly ash to replace cement in the production of concrete. For every ton of fly ash used to replace a ton of cement, nearly a ton of carbon dioxide is avoided from the cement production process. In this manner, the coal ash reuse industry is currently responsible for well over 10 million tons per year of annual greenhouse gas emissions reductions. (It is important to remember that coal fly ash is a byproduct of generating electricity. The greenhouse gas emissions associated with consuming coal will exist whether or not the fly ash is used to replace cement. Accordingly, fly ash use in concrete has long been recognized by all credible sources as a legitimate and effective large volume approach to reducing greenhouse gas emissions.)

But the benefits of using coal ash are not limited to the environment. Many products made with coal ash are of higher quality than products made without it. For instance, concrete made with coal fly ash is stronger and more durable than concrete made with cement alone. Engineers and builders also use coal fly ash to address specific materials problems, such as the presence of reactive aggregates or soils, to further improve concrete durability.

There are economic benefits to consider, as well. More durable structures last longer, decreasing maintenance and replacement costs, while further conserving natural resources. Additionally, coal fly ash is less expensive than other technologies available to address engineering issues such as reactive aggregates.

Other witnesses will testify regarding the human health and environmental safety of using coal ash, but it is important to emphasize two facts. First, based on its mineral characteristics, coal ash does not approach the levels that would qualify it as a “hazardous waste” under federal law. Second, the mineral characteristics of coal ash are often strikingly similar to that of the materials coal ash is replacing when it is used.

The existence of all of these environmental, performance and economic advantages does not mean that using coal ash is easy. Significant investments must be made to be able to transport and deliver materials to users at the minute they need it. Users must be educated in how to properly utilize the materials and they must understand the materials’ safety and efficacy. Today’s utilization rate for coal ash in the United States is approximately 44 percent and is the product of more than three decades of efforts to identify and meet the needs of the following participants in coal ash use:

1. Ash Producers. Typically utilities that consume coal to generate electricity, ash producers are faced with a decision regarding whether to dispose of coal ash or reuse it. Disposal activities are usually carried out on the power plant site by the utility itself or a contractor. Since reusing coal ash is not considered a core function by most utilities, specialized “ash marketers” are usually engaged to perform those services on behalf of the utilities that desire a reuse program.

If coal ash is designated a “hazardous waste” when disposed, ash producers will be faced with this question: “This material is ‘hazardous’ on my own property, so am I willing to take the risk of turning it over to a third party who will market it into applications where it will be used in thousands of locations in the surrounding community?” Coal ash sales revenues are not a significant source of income for most ash producers and many ash producers will simply pass increased disposal costs on to their customers in the form of higher prices for energy. Rather than risk additional future changes in regulation or lawsuits from enterprising personal injury attorneys, ash producers will likely elect to choose disposal over reuse. If that is the case, all of the small businesses about to be described will be left without a product to use.

2. Ash Marketers. These marketing companies range in size from very small (fewer than 5 employees) to medium sized divisions of larger companies. They carry out a range of activities that includes transporting ash to customer markets and storing it prior to distribution, providing education and technical support to product specifiers and end users, and providing quality control and customer service.

If coal ash is designated a “hazardous waste” when disposed, ash marketers will face significant challenges in both the operations of their businesses and the outlook for customer relations.

From an operational point of view, the U.S. Environmental Protection Agency claims that it will continue to support “legitimate” beneficial uses in the event of a “hazardous when disposed” designation, but cannot answer ash marketer questions such as these: If a small quantity of ash spills during delivery, does it become a ‘hazardous waste’ for disposal purposes? Does ash transportation and handling equipment need to be placarded as ‘hazardous waste?’ What additional training and personal protection equipment will be required for workers handling coal ash? What will happen to insurance and Workers Compensation rates? All of these questions, and there are many more, represent significant challenges for small and mid-sized businesses.

From a customer relations point of view, many of the same operational questions will afflict the concrete producers and manufacturers that purchase coal ash from marketers – making them reluctant to continue using the material. Coal ash users have alternatives to using coal ash and can choose to eliminate its use.

3. Ash Technology Developers and Providers. A segment of the coal ash industry comprised primarily of small businesses can be described as ash technology developers and providers. Some of these companies are concerned with developing and deploying technologies for improving the quality and marketability of coal ash for traditional uses. One example is providers of technologies to remove residual carbon from fly ash in order to make it suitable for use in concrete. Other small companies are engaged in developing and deploying technologies for utilizing coal ash in new applications.

Examples include fly ash brick manufacturers or technologies that may use fly ash in sequestering greenhouse gas emissions.

If coal ash is designated as “hazardous waste” when disposed, ash technology providers and developers will face significant new customer objections and barriers to raising capital for development activities. Even in advance of enactment of any rule, companies in this sector have reported slowdowns in financing activities and customer purchases attributed to the regulatory uncertainty presented by EPA’s draft rulemaking proposal.

4. Product Specifiers. A key link in the coal ash industry chain is comprised of entities that never actually purchase or handle the material, but play a pivotal role in whether or how it gets used. Product specifiers – including architects, engineers and their industry standards setting organizations – create specifications that either require or prohibit the use of coal ash. In determining specifications, these entities consider the effect of the material on finished product performance and human health and safety.

If coal ash is designated a “hazardous waste” when disposed, product specifiers will face the same potential operational and liability concerns previously described for ash producers and marketers. Additionally, standard setting organizations such as the American Concrete Institute and ASTM have already indicated in letters to EPA that their obligations to protect human health would require them to remove from specifications any materials that are determined to be a hazardous substance in another setting.

5. Ash Users. Ash users are the entities that actually use coal ash as an ingredient in other products. Examples include ready mixed concrete producers and other product manufacturers, many of which are small businesses with less than 50 employees.

If coal ash is designated a “hazardous waste” when disposed, ash users will face the same potential operational and liability concerns previously described for ash producers and marketers. In order to avoid added operational costs and potential liabilities, many users may elect simply to quit using coal ash. In almost every example of coal ash use, coal ash replaces another material that is accessible without a hazardous regulatory stigma. In cases where coal ash is used for specific engineering purposes, such as mitigating reactive aggregates in concrete, competitive products are available at much higher costs, but without potential liabilities.

In its proposed coal ash disposal rule, the EPA cites examples of other industries in which materials designated as “hazardous” have been successfully recycled. None of EPA’s examples, however, are analogous to coal ash – which is used without undergoing additional processing and is placed in products that come into direct contact with end users. EPA’s examples also concern materials that are sold to sophisticated users accustomed to handling hazardous materials. Coal ash users do not have this level of experience and capability.

6. End Users. End users are the people who actually purchase and use finished products containing coal ash – in other words, anyone who uses a home, school, office building, driveway, etc. This final link in the coal ash industry chain is the least likely to be informed regarding characteristics of materials and the most likely to become confused and concerned by a “hazardous when disposed” regulatory designation.

If coal ash is designated a “hazardous waste” when disposed, end users will likely demand products that contain no “hazardous” substances. This phenomenon is already being seen even in advance of EPA enacting any new rules. The drumbeat of the phrase “toxic ash” in news stories about EPA’s rulemaking effort has resulted in many ready mixed concrete producers receiving calls from customers asking for fly ash to be eliminated from their concrete. The Los Angeles Unified School District has eliminated coal ash from its concrete specification pending resolution of the EPA rulemaking. New examples are arising every day.

Manufacturers of competitive products are also beginning to step in to fan flames of doubt for end users. Advertisements warning against products containing “hazardous waste” have appeared. Potentially even more damaging is “behind the scenes” misinformation by competitors that will be impossible to identify or rebut.

In meetings with me and with other representatives of the coal ash industry, EPA officials have indicated that they support the beneficial use of ash. But actions speak louder than words and EPA has done precious little to demonstrate support for legitimate coal ash use. To the contrary, EPA has unilaterally and without explanation removed its Coal Combustion Products Partnership program information from its web site. End users seeking information from the EPA about coal ash are now greeted with the single statement: “The Coal Combustion Products Partnerships (C²P²) program Web pages have been removed while the program is being re-evaluated.”

The benefits of coal ash use are well known to EPA and have been presented in detail in two former Reports to Congress. Also contained in those reports were analyses of “barriers” to greater coal ash utilization. “Regulatory barriers” have been identified by EPA itself as one of the key reasons coal ash use rates don’t go even higher.

EPA’s 2010 rulemaking has already become a significant regulatory barrier by introducing the possibility of “hazardous when disposed” regulation. As discussed previously, end users are already reacting negatively to the mere presence of EPA’s proposal. I find it ironic that such a regulatory barrier has been created primarily over a dispute by regulators regarding who should enforce regulations. The actual engineering standards for disposal facilities are essentially the same under EPA’s hazardous and non-hazardous proposals. EPA’s hazardous proposal appears calculated primarily to get federal enforcement authority over the regulatory program. EPA appears to be willing to sacrifice a substantial and beneficial industry merely to obtain greater regulatory influence.

Headwaters and the coal ash industry are not opposed to increasing the regulation of coal ash disposal. Our trade organization, the American Coal Ash Association, has even passed a formal resolution supporting national standards for coal ash disposal. But these increased disposal standards can and must be established without designating coal ash as a “hazardous waste” in any setting.

The best course of action for our nation’s environment is one that encourages safe and beneficial coal ash use as a preferred alternative to disposal. Whatever material remains unused can then be disposed in a safe and effective manner. The “hazardous when disposed” approach proposed by EPA will have exactly the opposite effect – reducing coal ash use activities and thereby creating more waste to be disposed.

Thank you for the invitation to testify and for your interest in this important topic. I would be happy to answer any questions.

Appendix 8



Corporate Office: 5400 N. 124th Street P.O. Box 250847 • Milwaukee, WI 53225-6514 • 414-831-2400 Fax 414-462-8812

The Honorable Lisa P. Jackson
EPA Administrator
USEPA Headquarters
Ariel Rios Building
1200 Pennsylvania Avenue, N. W.
Mail Code: 1101A
Washington, DC 20460

Mr. Matthew Hale, Director
Office of Resource Conservation & Recovery
U.S. EPA (5301P)
1200 Pennsylvania Ave., N.W.
Washington, D.C. 20460

Subject: Fly Ash as a "Hazardous Waste"

Dear Ms. Jackson and Mr. Hale:

My company uses coal combustion products (CCPs) as part of our concrete mixes. We have been encouraged to be good corporate citizens and use where possible this product that would otherwise have to go to landfills as a waste material.

We have heard that EPA is considering classifying coal combustion products as "hazardous" wastes. To even utter this statement is dangerous because who in their right mind would use hazardous waste to build their houses with. The fact that we are even talking about the possibility is frightening to me as a CCP user. I literally cannot guess or even possibly begin to identify the number of jobs such as factories and hospitals and homes where CCP's have already been used. To reclassify this product as "Hazardous waste" would be incalculable damaging. Can you even begin to imagine the number of law suits and class action suits that would be initiated?

I understand that EPA might consider language stating that CCPs being used in certain applications would not be deemed a hazardous waste. Give me a break..., do you really think that motivated reporters would even try to make that distinction, certainly attorneys won't. Not only can you not call this material a hazardous waste, as a producer of a potentially hazardous waste product, I now need to know definitively that it is not now and never will be classified as a hazardous waste to continue to use it. I cannot afford to put a potential hazardous waste into my finished product.

Port Washington Plant
775 Schmitz Drive
Port Washington, WI
262-284-4494
Metro 414-831-2401

Mequon Plant
11050 N. Industrial Drive
Mequon, WI
414-831-2402

Richfield Plant
2707 Scenic Road
Richfield, WI
262-644-9650
Metro 414-831-2403

Silver Spring Plant
5400 N. 124th Street
Milwaukee, WI
414-831-2404

Franklin Plant
3131 W. Elm Road
Franklin, WI
414-831-2405

New Berlin Plant
6565 Crowbar Road
New Berlin, WI
414-831-2406

Grafton Plant
989 Ulao Road
Grafton, WI
262-376-2087

We urge you to seriously consider this impact on our business and hope that EPA can avoid this unfortunate result, so we can continue to beneficially use CCPs. The CO2, green and LEED benefits of utilizing CCPs is a key strategic lever for my business.

Alan Schmitz

A handwritten signature in cursive script that reads "Alan Schmitz". The signature is written in dark ink and is positioned below the printed name.

President

Schmitz Ready-Mix Inc.

Appendix 9



American Concrete Institute®
Advancing concrete knowledge

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September 4, 2009

The Honorable Lisa P. Jackson
EPA Administrator
USEPA Headquarters
Ariel Rios Building
1200 Pennsylvania Avenue, N. W.
Mail Code: 1101A
Washington, DC 20460

Subject: Fly Ash as a "Hazardous Waste"

Dear Ms. Jackson:

As one of the world's leading authorities on concrete technology, the American Concrete Institute (ACI) urges the Environmental Protection Agency (EPA) to consider the technical and sustainability implications of classifying fly ash as a "hazardous waste" under subtitle C of the Resource Conservation and Recovery Act (RCRA). It is ACI's opinion that designating fly ash as a "hazardous waste" will result in little or no fly ash being used in concrete in the US. We anticipate the concrete industry will no longer specify its use; and fly ash producers would not permit its beneficial use due to liability concerns, preferring to impound fly ash rather than allow its use. Further, the designation of fly ash as a "hazardous waste" is counter to the goal of sustainability.

Who is ACI

The American Concrete Institute is a 501(c)(3) non-profit technical and educational society organized in 1904 and is the leading international forum for the discussion of all technical matters related to concrete.

Over the past hundred years, ACI voluntary members have significantly advanced knowledge of concrete materials and structures by developing standards and publishing scholarly manuscripts, technical papers and articles. ACI is an American National Standards Institute (ANSI) accredited Standards Developing Organization (SDO), and maintains national standards in the area of concrete technology and application. ACI currently supports over 100 technical committees whose expert members develop these national standards using the consensus process.

ACI is not a trade organization and has no commercial interest in concrete or concrete products. ACI members seek to advance concrete knowledge for the benefit of the general public.

Fly ash in concrete construction

Fly ash is commonly specified in concrete mixtures to improve durability, thus increasing service life with both environmental and economical benefits. This is important not only to private owners, but also to Federal, State, and Local jurisdictions responsible for the design, construction, maintenance and repair of buildings, bridges, roads, and infrastructure. Hungry Horse Dam, completed in 1953, was one of the first applications in which fly ash was used, and at least 100 major locks and dams using fly ash have been constructed under the direction of the U.S. Army Corps of Engineers, the U.S. Bureau of Reclamation, or private engineering firms.

The durability of concrete can be improved and service life extended by using fly ash. Fly ash can

- lower concrete permeability and thus reduce the rate of ingress of water and aggressive chemicals;
- resist deleterious alkali-aggregate and sulfate reactions;
- increase the compressive strength;
- improve the workability of fresh concrete, enabling more thorough compaction;
- reduce the heat of hydration in mass concrete.

Fly ash is recognized in the US Green Building Council's LEED system as a post-industrial recycled material. The use of fly ash in concrete enhances the recycled material content of a building and is recognized as a beneficial strategy for CO₂ reduction.

The use of fly ash in concrete is an effective and often-used environmentally responsible strategy to promote sustainability since it

- uses a typically land filled industrial by-product (15 million tons diverted from landfills in 2007);
- reduces cement content of concrete, and thus CO₂ generated (15 million ton reduction in CO₂ in 2007);
- reduces the amount of embodied energy in concrete;
- reduces virgin materials extracted from the earth.

Strategically, the effective elimination of fly ash in concrete would be a step backward in the nation's efforts to provide a more sustainable infrastructure.

Impacts of designating fly ash as a "hazardous waste"

ACI's most notable contribution to the construction industry is the *ACI 318 Building Code Requirements for Structural Concrete and Commentary*. The code is adopted by the ICC in the International Building Code. It satisfies ISO 19338 "*Performance and Assessment Requirements for Design Standards on Structural Concrete*," and is used worldwide. This Code recognizes the use of fly ash as an effective supplementary cementitious material, which leads to environmentally responsible construction.

It is not within the purview of ACI to determine whether fly ash is a "hazardous waste." As you know, EPA determined in May, 2000 that these materials "do not warrant regulation under subtitle C of RCRA and is retaining the hazardous waste exemption under RCRA section 3001(b)(3)(c)." Fly ash of any composition that is incorporated into concrete is to a high degree sequestered, and its environmental interaction is significantly reduced. Such sequestering remains even if the concrete is subsequently ground into aggregate-sized particles and recycled.

Designation of fly ash as a "hazardous waste" will likely eliminate its inclusion in future project specifications for fear of possible legal exposure and liability. Such a designation would also likely lead to its removal from future national codes and standards for the same reason.

Summary

ACI is a technical society, and unlike trade organizations does not represent any trades related to or part of the concrete industry. Our concern deals with the impact that designating fly ash as a "hazardous waste" will have on concrete technology, the best use of concrete, and concrete's sustainable impact on society.

Recognizing that

- fly ash is commonly accepted and used world-wide,
- fly ash can contribute to longevity and economy of concrete construction, and
- fly ash use is a key strategy to sustainable construction,

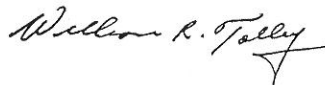
EPA should not risk harm to the environmental and material benefits of fly ash use in concrete when addressing the impoundment requirements for fly ash, nor abrogate the ability to make effective and safe use of this industrial by-product. ACI suggests that a national enforcement program for fly ash impoundment be developed to strengthen the current oversight and reduce the likelihood of another catastrophic release such as occurred in Kingston, Tennessee but without labeling fly ash a hazardous waste.

ACI would be pleased to provide the EPA with technically accurate and credible resources on the use of fly ash in concrete during the EPA's deliberations. A copy of ACI Committee 232 report dealing with fly ash's use in concrete is attached for your reference.

Sincerely,



Florian G. Barth
President



William R. Tolley
Executive Vice President

Enclosure:

ACI Committee 232 Report entitled "Use of Fly Ash in Concrete"

cc: Mathy Stanislaus, EPA Assistant Administrator
Mr. Matt Hale, Director, Office of Resource
John Sager, EPA
Thomas J. Vilsack, Secretary of Agriculture
Gary F. Locke, Secretary of Commerce
Steven Chu, Secretary of Energy
Raymond L. LaHood, Secretary of Transportation
Rahm Emanuel, Chief of White House Staff
Carol Browner, Energy Coordinator
ACI Board of Direction
David Sanders, Chair, ACI Technical Activities Committee

Appendix 10



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Written Testimony

From: Richard D. Stehly, President, American Concrete Institute,
and Principal, American Engineering Testing, Inc.

Re: Coal Combustion Byproducts: Potential Impact of a Hazardous Waste Designation on Small
Businesses in the Recycling Industry

Submitted to: U.S. House of Representatives, Committee on Small Business, Subcommittee on Rural
Development, Entrepreneurship and Trade

July 22, 2010

Chairwoman Nydia M. Velazquez and members of the Subcommittee:

Thank you for the invitation to provide testimony during the hearing on “Coal Combustion Byproducts: Potential Impact of a Hazardous Waste Designation on Small Businesses in the Recycling Industry.” The concrete industry comprises many small businesses, including contractors, design firms, and material suppliers. As the current President of the American Concrete Institute (ACI), I am pleased to represent ACI, one of the world’s leading authorities on concrete technology. ACI is a 501(c)(3) non-profit technical and educational society organized in 1904. ACI is not a trade organization and has no commercial interest in concrete or concrete products. ACI members seek to advance concrete knowledge for the benefit of the general public.

ACI is an American National Standards Institute (ANSI) accredited Standards Developing Organization (SDO), and maintains national standards in the area of concrete technology and application. ACI currently supports more than 100 technical committees whose expert members develop these national standards using the consensus process. ACI maintains more than 400 technical documents, including codes, specifications, reports and guides, references, and the annual Manual of Concrete Practice.

As an ANSI-accredited SDO, two of ACI’s major contributions to the construction industry are the “*ACI 318 Building Code Requirements for Structural Concrete and Commentary*” and “*ACI 530 Building Code Requirements for Masonry Structures and Commentary*”, the latter produced jointly with the American Society of Civil Engineers and The Masonry Society. Both have been used by the major building codes in the past and are currently incorporated by reference in the 2009 International Building Code. ACI 318 contains references to the use of fly ash in concrete construction.

ACI 318 is used worldwide. An official ACI Spanish version is used throughout Central and South America. ACI has also authorized Arabic, Chinese, Korean, and Portuguese translations of ACI 318.

In regard to the beneficial use of fly ash in concrete, I offer the following:



Why is fly ash used in concrete?

Concrete is made by blending sand with crushed stone or gravel, and binding them together in a paste made with water and the powder known as portland cement. The manufacture of portland cement is not only an energy-intensive process, but the production of each ton of cement releases approximately 1 ton of CO₂ into the environment as a result of chemical conversions and the burning of fossil fuels. President Obama pledged at the UN Climate Summit in Denmark, Dec. 2009, to reduce CO₂ emissions 17% by 2020 over a 2005 baseline. Other industrialized nations are looking for U.S. leadership in this effort.

For over 50 years it has been shown that a reduction in the amount of cement required to produce concrete can be achieved by substituting coal fly ash for a significant portion of the portland cement. The resulting concrete not only has a lower embodied energy and CO₂ footprint, but also has improved properties leading to a more durable, longer lasting infrastructure. Fly ash is widely used in concrete produced in the U.S. today, and in this manner an industrial waste product is converted to a valuable resource. According to data from the American Coal Ash Association (ACAA), 15 million tons of fly ash otherwise destined for landfills were incorporated in concrete in 2006, preventing an approximately equivalent amount of CO₂ emissions.

Fly ash contributes to a more sustainable, environmentally responsible infrastructure because its use in concrete can:

- reduce concrete's embodied energy and CO₂ footprint;
- lower coal fly ash landfill volumes;
- increase the service life of concrete;
- tie-up trace metals in ash;
- enable the use of local marginal quality sand, crushed stone, and gravel and thus reduce the need to open new quarries and pits; and
- reduce the need and cost for repairs and maintenance.

Fly ash is vital to concrete performance because it can:

- be an effective ingredient in high-strength and high-performance concrete;
- reduce the porosity and penetrability of hardened concrete;
- be an effective ingredient in minimizing corrosion of reinforcing steel;
- be an effective ingredient in resisting severe environmental exposures;
- reduce the heat produced by chemical reaction of the cement (this is critical in dams, bridge piers, and large foundations);



- increase construction quality by making a more compactable concrete;
- lower concrete's initial and life-cycle cost; and
- reduce the need to import cement

There are no viable replacements for coal fly ash in concrete, in the short term, if its availability is reduced for any reason.

Fly ash used by the concrete industry is specified to meet the requirements of ASTM C618 and AASHTO M295, and as such is well understood. The use of coal fly ash is recognized for improving concrete durability in ACI's reference Code and Specification, and coal ash is discussed in over 100 of ACI's technical documents.

How does beneficial use impact CO₂ emissions for the concrete industry?

Life-cycle assessment research published by the Portland Cement Association (PCA) reported that 96% of the CO₂ embodied in concrete is derived from the manufacture of portland cement. Replacing a portion of the cement with an equivalent amount of fly ash can reduce the CO₂ footprint of concrete by up to 1 ton of CO₂ emissions for every 1 ton of cement replaced. Tracking cement use gives an indication of the concrete industry's CO₂ emissions. By using fly ash, the concrete industry could stay under the pledged target for CO₂ emissions reduction. This is true for every year including the target date of 2020.

How does beneficial use impact the need to import cement?

According to the statistics on cement use compiled by the U.S. Geological Survey since 1900, cement use peaked at 128 million tons in 2005. In that year, approximately 100 million tons of cement was produced domestically requiring the importation of approximately 30 million tons of cement.

Based on industry trends and estimates from PCA, in 2009, approximately 75 million tons of cement was used, a 40% reduction from the 2005 level. ACAA's most recent data show that 15 million tons of fly ash was used in concrete construction in 2006. ACAA estimates that for 2008, 12 million tons of fly ash was used, with an additional 42 million tons available. When the economy recovers, fly ash could reduce the need to import cement and improve the balance of trade.



How might “stigma” impact beneficial use?

The title of the *Engineering-News Record* article “Fly Ash Looms as the ‘New Asbestos’” (by Nadine Post, Apr. 7, 2010) points out the potentially harmful impact to the public perception toward the use of fly ash. But the EPA has had success in driving the use of materials labeled hazardous waste that have been reconditioned for reuse. Spent sulfuric acid is one example.

What is different about the concrete industry compared with other industries is the many different audiences it encompasses, and each has a stake in the use of fly ash. Fly ash generators have to assent to its use; otherwise, they can simply dispose of it. We Energies, a Wisconsin utility, has embraced the beneficial use of fly ash to the extent that in 2009 they recovered additional fly ash destined for disposal over what they produced that year. Ready mixed concrete suppliers have to be convinced that the improvements that might be needed at their facilities, such as additional silos for fly ash, will represent a return on the investment.

Concrete contractors also have to be in agreement. They are concerned with how fly ash impacts rate of strength gain and setting. The Engineer of Record has to approve the mixture design and must be convinced that fly ash will meet the requirements of the design. And the Owner of the project would question why fly ash is in the structure if it is hazardous. If EPA designates fly ash as special waste, but requires hazardous waste regulations, acceptance throughout the different audiences in the concrete industry will be difficult to maintain.

The American Concrete Institute is pleased to have worked with governmental agencies and industrial practitioners for over 100 years to develop building codes, specifications, standards, and guides that protect human safety and guide the design and construction of concrete infrastructure in the U.S. and around the world. As President of ACI, I am prepared to assist decision makers in selecting the best choices for the effective and responsible use of coal fly ash.

Appendix 11



James A. Thomas
President

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Phone 610.832.9598
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e-mail jthomas@astm.org
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23 December 2009

The Honorable Lisa P. Jackson
EPA Administrator
USEPA Headquarters
Ariel Rios Building
1200 Pennsylvania Avenue, N. W.
Mail Code:1101A
Washington, DC 20460

Subject: Fly Ash as a "Hazardous Waste"

Dear Ms. Jackson:

Enclosed please find a letter from ASTM International Committee C09 on Concrete and Concrete Aggregates and its Subcommittee C09.24 Supplementary Cementitious Materials. The letter was unanimously approved by the members in attendance at the C09 Main Committee and C09.24 Subcommittee at their meeting in Atlanta, GA, this month, and subsequently approved by the C09.90 Executive Subcommittee.

ASTM Committee C09 on Concrete and Concrete Aggregates was formed in 1914. The Committee, with current membership of approximately 1200, currently has jurisdiction over 155 standards, published in the Annual Book of ASTM Standards, Volume 4.02. These standards are essential to the integrity of the Nation's civil infrastructure

If you have any questions, please contact the C09 Staff Manager, W. Scott Orthey at sorthey@astm.org, 610-832-9730.

Sincerely,

A handwritten signature in cursive script that reads 'James A. Thomas'.

James A. Thomas

cc: The C09 Executive Subcommittee



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PO Box C700
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Committee C09 on CONCRETE AND CONCRETE AGGREGATES

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(847) 687-4516, e-mail: tony@fiorato.com
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Secretary: SCOTT M SCHLORHOLTZ, Iowa State Univ, Materials Analysis Res Lab, Town Engrg Bldg-rm 68, Ames,
IA 50011, United States (515) 294-8761, Fax: (515) 294-4563, e-mail: sschlors@iastate.edu
Membership: JENNY L HITCH, Full Circle Solutions, Inc., 2834 Somerset Springs Dr, Henderson, NV 89052, United
States (702) 321-2114, Fax: (702) 446-8205, e-mail: jhitch@fcsi.biz
Staff Manager: W SCOTT ORTHEY, (610) 832-9730, Fax: (610) 832-9666, e-mail: sorthey@astm.org

December 22, 2009

The Honorable Lisa P. Jackson
EPA Administrator
USEPA Headquarters
Ariel Rios Building
1200 Pennsylvania Avenue, N.W.
Mail Code: 1101A
Washington, DC 20460

Subject: Fly Ash Classification as a "Hazardous Waste"

Dear Ms. Jackson:

On behalf of ASTM Committee C09 on Concrete and Concrete Aggregates and Subcommittee C09.24 on Supplementary Cementitious Materials, we are writing in regards to the proposed classification by the Environmental Protection Agency (EPA) of fly ash as a "hazardous waste".

We strongly encourage the EPA to consider the negative implications of classifying fly ash as a "hazardous waste" under subtitle C of the Resource Conservation and Recovery Act (RCRA). Designation of fly ash as a "hazardous waste" will require that the ASTM standard for use of fly ash in concrete be revised to reflect this classification. A "hazardous waste" designation, even with an exclusion for beneficial use, would cause the ASTM standard for fly ash to be removed from project specifications due to concerns over legal exposure, product liability, and public perception. This will likely result in little or no fly ash being used beneficially in concrete or other applications that support sustainability objectives.

ASTM International

ASTM International is one of the largest voluntary standards development organizations in the world and is a trusted source for technical standards. Originally known as the American Society for Testing and Materials, ASTM was formed over a century ago and has been assisting industry, government and environmentalists by creating consensus standards that have made products and services safer, better and more cost-effective.

ASTM International is recognized globally as the premier developer and provider of voluntary consensus standards as well as related technical information and services that promote public health and safety. ASTM International supports the protection and sustainability of the environment and the overall quality of life while contributing to the reliability of materials, products, systems and services in order to facilitate international, regional and national commerce.

ASTM International is a not-for-profit organization with over 30,000 members from more than 100 countries around the world. The members who serve on ASTM's 130-plus technical committees include producers, users, consumers, and general interest parties, such as academicians and government representatives.

ASTM committees develop and oversee more than 12, 000 ASTM standards that are used by individuals, companies, and agencies around the world. Purchasers and sellers incorporate standards into contracts; scientists and engineers use them in their laboratories and offices; architects and designers use them in their plans; government agencies around the world reference them in codes, regulations, and laws; and many others refer to them for guidance.

ASTM standards are voluntary in the sense that their use is not mandated by ASTM. However, government agencies often give voluntary standards the force of law by citing them in laws, regulations, and codes.

ASTM Committee C09 on Concrete and Concrete Aggregates

ASTM Committee C09 was formed in 1914 and has grown to a membership of approximately 1,200 members. The Committee is composed of 29 technical subcommittees that maintain jurisdiction over 155 standards that provide test methods and specifications for concrete-making materials. These standards provide a means of quality assurance by purchasers, a basis for training and certification of testing personnel, and protection against liability through their use in contracts. Committee C09 standards, together with the standards developed by ASTM Committee C01 on Cement and committees of the American Concrete Institute (ACI), are essential to construction of the nation's civil infrastructure. Collectively, these standards have been assisting the construction industry with sustainable objectives through use of fly ash and other coal combustion by-products.

Standards for Fly Ash

ASTM Subcommittee C09.24 on Supplementary Cementitious Materials is responsible for creating and maintaining standard test methods and specifications relating to fly ash for use in concrete. Certain types of fly ash are currently used as supplementary cementitious materials in concrete, that is, they replace a portion of the portland cement. The beneficial uses of fly ash are well documented as contributing to the long-term strength and durability of concrete. This leads to more sustainable structures.

ASTM C618 "Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete" and ASTM C311 "Test Methods for Sampling and Testing Fly Ash or Natural Pozzolans for Use in Portland-Cement Concrete" have been in existence for over 40 years and have been cited in countless concrete construction specifications. The procedures and requirements contained within these two standards are based on many years of field experience and research data. They are constantly reviewed for accuracy and updated with the latest technical information. ASTM C618 is the primary standard used for specifying fly ash by the concrete construction industry. It provides requirements for the chemical and physical

characteristics of fly ash, as well as natural pozzolans. Fly ash meeting the requirements of ASTM C618 is routinely used in construction of concrete buildings, bridges, pavements and other structures. Fly ash has historically been an integral part of concrete construction, improving the characteristics of concrete in both the fresh and hardened states.

In order to meet ASTM C618, fly ash must conform to the prescribed chemical and physical requirements. However, it is not within the scope of ASTM C618 to establish whether a fly ash is "hazardous" or not. Should the EPA decide that fly ash will be regulated as a "hazardous waste", Committee C09 will need to modify ASTM C311 and ASTM C618 to properly reflect this classification, even if the EPA specifies that fly ash used in concrete would not be considered a hazardous waste. We anticipate that changes in ASTM C618 to reflect the EPA action will result in the standard being removed from construction specifications due to liability concerns and the "hazardous waste" connotation. Specifiers and users will simply reject use of fly ash.

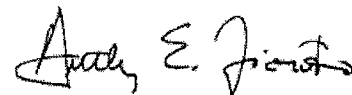
In closing, as a technical organization ASTM International, and specifically Committee C09, is concerned about the impact of classifying fly ash as a "hazardous waste" and the effect that it will have on materials standards and concrete construction, irrespective of an exclusion for beneficial use. The label of "hazardous waste" will likely have the unintended consequence of ensuring that fly ash will no longer be specified for use in concrete construction. We urge the EPA to consider the fact that fly ash is commonly used and accepted throughout the world, and it is an important ingredient for making concrete construction sustainable.

Thank you for your consideration of this matter.

Sincerely,

Handwritten signature of Jenny Hitch in black ink, with a stylized flourish at the end.

Jenny Hitch, ASTM C09.24 Chair

Handwritten signature of Anthony E. Fiorato in black ink, with a stylized flourish at the end.

Anthony E. Fiorato, ASTM C09 Chair

CC:

The Honorable Cass Sunstein
Administrator, Office of Information and Regulatory Affairs
Office of Management and Budget
725 17th Street N.W.
Washington, D.C. 20503

Ms. Courtney Higgins
Office of Management and Budget
725 17th Street N.W.
Washington, D.C. 20503

Mr. Mathy Stanislaus
Assistant Administrator for Solid Waste and Emergency Response
U.S. Environmental Protection Agency
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Mr. Matthew Hale
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Appendix 12

Association of State and Territorial

ASTSWMO

Solid Waste Management Officials

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April 1, 2009

Matt Hale
Director
Office of Resource Conservation and Recovery
USEPA Headquarters
Ariel Rios Building
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Mail Code: 5301P
Washington, DC 20460

Dear Matt,

ASTSWMO has a demonstrated track record of active interest in the management of coal combustion by-products (CCB). ASTSWMO's Fossil Fuel Combustion Waste (FFCW) Work Group gathered information about State regulation of CCB in late 2006 – early 2007. The results of that effort indicated that the majority of the responding States had regulatory programs in place for the management of CCB. On February 11, 2008, the FFCW Work Group provided comments on USEPA's "Notice of Data Availability (NODA) on the Disposal of Coal Combustion Wastes in Landfills and Surface Impoundments." Comments were based in part on the 2006-2007 survey results. The FFCW Work Group recommended a more flexible regulatory approach that allows consideration by the permitting authority of the waste type, climate, site geology and environment, and encourages a scientific and engineering approach to minimize potential risks to acceptable standards. They stated that this approach was the current practice in many States. The FFCW Work Group questioned the need for additional federal regulations related to CCB materials.

The Tennessee Valley Authority (TVA) spill in December 2008 brought renewed attention to the question about the need for federal regulation of CCB. In response to EPA's fast-track regulatory process for coal combustion waste, the ASTSWMO Board of Directors formed a CCB ad hoc Workgroup in January 2009 to review and respond to EPA's proposed regulatory schemes.

The first action of the group was to modify and reissue the 2006 survey of States initially designed by the FFCW Workgroup. In February 2009, ASTSWMO's CCB ad hoc Workgroup surveyed State waste and water program managers, working in conjunction with ECOS and ASIWPCA. There were three parts to the survey: general information about CCB management, questions specific to landfills and questions specific to surface impoundments. The survey has been completed by 44 States. Eight States do not have CCB. Fourteen States do not have CCB surface impoundments. Enclosed as an attachment to this letter are the summary results from the survey for States that have CCB.

The Workgroup also called on States to provide comments on EPA's possible regulatory proposals. A compilation of State responses is also enclosed as an attachment to this letter.



There is no question that releases, such as the December 2008 TVA Impoundment Failure in Kingston, Tennessee, should be prevented to the extent practical though appropriate engineering, design, and operating standards. However, it is also critical that all relevant factors be considered in deciding the appropriate course of action.

Presented below are the pros and cons of the possible regulatory proposals for CCB prepared by the CCB ad hoc Workgroup, based on the survey results and State comments.

Justification of preference for Subtitle D regulation of CCB:

USEPA should implement an approach to coal combustion by-product (CCB) regulations similar to the approach that is taken with municipal solid waste pursuant to 40 CFR Part 258, commonly referred to as RCRA Subtitle D. Using the lessons learned by States since the adoption of 40 CFR Part 258 and historical CCB data collected by States, RCRA Subtitle D could be modified to specifically address CCB waste disposal facility requirements and is the framework that the USEPA should build upon.

Most States regulate CCB. Thirty-six out of 42 States that have CCB have permit programs for CCB landfills (86 percent). Only 3 States responded "no" and 3 States did not respond. Twenty-five out of 36 States that have CCB surface impoundments have permit programs for those impoundments (69 percent). Only 3 States responded "no" and 8 States did not respond. Most States regulate CCB under general solid waste regulations (43 percent) and general industrial waste regulations (43 percent). Several States use regulations specifically designed for CCB (29 percent). According to USEPA, the design and performance standards will likely be the same no matter what regulatory scheme is chosen. Many States voluntarily impose minimum performance standards for both landfills and surface impoundments under Subtitle D, demonstrating that minimum federal Subtitle D requirements will be sufficient to ensure that States properly regulate CCB.

Percentage of States with CCB landfills and surface impoundments with specific regulatory requirements		
Regulatory Requirement	Landfills	Surface Impoundments
Bottom Liner	64%	33%
GW Monitoring	81%	39%
Leachate Collection	52%	14%
Final Cover System	79%	36%
Post Closure Care	79%	39%
Siting Controls	83%	39%
Corrective Action	86%	42%
Structural Stability	69%	36%
Financial Assurance	69%	31%

The fact that more than half the States already require each of the technical standards identified above for landfills demonstrates that minimum federal Subtitle D requirements will be sufficient to ensure that States properly regulate CCB. A considerable number of States have these requirements for surface impoundments as well, although we acknowledge that more States may have to upgrade their surface impoundment requirements than will have to for landfills. Establishing federal minimum standards under Subtitle D will provide the impetus needed for all States to conform. It is also important to note that currently, 36 percent of States with CCB are contemplating changes to their CCB regulations and 27 percent of those already have draft revised regulations.

State experiences

Michigan - "Michigan currently regulates coal ash as a solid waste under Part 115, Solid Waste Management, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA) ... in 1993 when Michigan became an approved State under the Resource Conservation and Recovery Act (RCRA) Subtitle D program. Based on the analytical information that we have seen on coal ash, we believe that the levels of contaminants contained in coal ash are similar in nature to those found in cement kiln dust, wood ash, foundry sands, paper mill wastes, or steel mill waste. With the promulgation of the 1993 rules, we consider all these waste to be low-hazard industrial waste (i.e. they leach less than ten percent of the hazardous waste limits when using the appropriate leaching tests)."

West Virginia - "I have been regulating coal ash facilities for 26 years for the State of West Virginia. I have never found a TCLP [Toxicity Characteristics Leaching Procedure] or other chemical characterization that would indicate that coal ash could be labeled as a hazardous waste. Most of the time the metal concentrations, which would be the main characteristic that could be considered hazardous, are at or below MCL for drinking water."

Iowa - "The Department understands that the USEPA is considering options to regulate [CCB] as a hazardous waste under RCRA Subtitle C. This option is not supported by the historic data that has been collected from generators of [CCB] in Iowa which shows that [CCB] does not exceed RCRA Subtitle C hazardous waste characteristics."

Arguably, municipal solid waste (MSW) presents more extensive environmental concerns than CCB. Municipal waste streams contain not only heavy metals, but also organic, acidic and alkaline materials. The organics in MSW can be more problematic than industrial wastes, which are generally inorganic in nature. Logically, if Subtitle D is adequate for MSW, then it certainly should be sufficiently protective for CCB.

Based on federal minimum standards for location, design, environmental monitoring, operation, closure, post-closure care, corrective action, and financial assurance, the States have established federally approved Subtitle D State programs. These programs have proven successful dealing with municipal solid waste, including household

hazardous wastes and Conditionally Exempt Small Quantity Generator (CESQG) waste at the State's option. A substantial number of damage cases supported the federal adoption of minimum national Subtitle D municipal solid waste landfill standards. A similar Subtitle D approach can successfully implement minimum federal standards for coal combustion waste disposal facilities. The Subtitle D approach can address any concern regarding the stability of a CCB disposal facility through establishing minimum federal design standards and routine inspection and evaluation.

Most States have some mechanism to recognize and regulate the beneficial use of Subtitle D wastes. According to the **2006 ASTSWMO Beneficial Use Survey Report**, 34 out of the 40 reporting States (85 percent) indicated they had either formal or informal decision-making processes or beneficial use programs relating to use of non-hazardous solid wastes.

The Subtitle D approach, with minimum federal standards, will facilitate the continued beneficial use of CCB. As the anticipated volume of CCB produced is expected to increase or even double in many States as the Clean Air Act requirements for installation of scrubbers for flue gas desulfurization (FGD) are implemented, it is vital that the recycling of those materials which can be safely used in products or as raw materials be so used. Adopting a Subtitle D approach to the regulation of high volume, low toxicity coal combustion by-products would offer the best fit with existing and developing State beneficial use programs.

Explanation of opposition to Subtitle C regulation of CCB:

State experiences

Iowa – "Declaring CCB a hazardous waste creates an even greater hardship in Iowa because of the amount that is generated and the fact that there is no RCRA C permitted disposal facilities in the State. The likelihood of siting such a facility borders on the impossible. The implications of this action are that CCB generators would be forced to ship materials to surrounding States for disposal. That could become very costly for Iowans and extremely difficult to justify when there is little scientific data supporting such drastic measures."

Michigan – "RCRA Subtitle C wastes in Michigan are currently regulated under Part 111, Hazardous Waste Management, of the NREPA. The regulation of coal ash under full RCRA Subtitle C would end the current beneficial uses of coal ash. Existing surface impoundments and landfills would be subject to more stringent design standards and would require either 1) retrofitting of existing landfills (if even possible) or 2) closure of those disposal facilities. Neither of these options could be implemented immediately."

Florida – "If USEPA decides to call coal ash a hazardous waste under Subtitle C, then current Florida law (Section 403.7222, Florida Statutes) would prohibit the disposal of this coal ash in landfills unless it was first treated to be non-hazardous. This could add tremendous costs to the power industry for managing this material. They would either have to treat their ash before disposal or ship it out of State for disposal. It is also likely that if existing disposal areas were disturbed after USEPA determined coal ash was a hazardous waste, then these old disposal sites could become hazardous waste disposal units too."

Virginia – "If USEPA was to regulate CCB as a hazardous waste under the RCRA Subtitle C authorities, Virginia would no longer allow these materials to be beneficial reused under our CCB Regulations (9 VAC 20-85) and, also, there would be no beneficial reuse exclusions/exemption under our Virginia Solid Waste Management Regulations (9 VAC 20-80), as well."

As noted above, the vast State experience with testing CCB shows that it is generally not characteristically hazardous. Coal combustion by-products rarely if ever fail the criteria by which materials are determined to be hazardous waste. To artificially classify them as hazardous will needlessly limit the management options for both the CCBs and other wastes legitimately classified as hazardous which will be competing with CCBs for limited hazardous waste disposal capacity, while not producing any greater degree of environmental protection. Transportation, manifesting and licensing requirements for CCBs as a listed hazardous waste are excessively burdensome without sufficient evidence of a benefit. It would be more appropriate to regulate and manage CCBs using design and operation standards specified for Subtitle D programs except in the cases where a particular source material is deemed hazardous upon testing for characteristics.

The prospect of adding a significant new waste stream to

be managed by severely underfunded State hazardous waste programs is unconscionable unless a significant amount of new sustained funding is included. ASTSWMO's Hazardous Waste Subcommittee conducted a pilot program to determine the cost to States for implementing a complete and adequate RCRA Subtitle C Program (hereafter referred to as "RCRA C" or "RCRA") in 2006. The report entitled ***State RCRA Subtitle C Core Hazardous Waste Management Program Implementation Costs - Final Report (January 2007)*** revealed that the cost to States of implementing a complete and adequate RCRA Program (converted to 2008 dollars) is, at a minimum, \$367M in State and federal funding. The State share should be \$92M (25 percent) with the remaining \$275M in State Hazardous Waste Financial Assistance grants. However, the FY 2008 federal appropriation was only slightly more than half of what States needed. Congress appropriated \$101M rather than \$175M. States are making up the difference for these federally mandated programs from already strained State budgets. These programs are already stretched to the breaking point. Expectations should not be high for a successful incorporation of CCB into State Subtitle C programs without the guarantee of commensurate increases in State grant funding.

USEPA should avoid a "one size fits all" approach that will unnecessarily divert limited technical resources away from existing permitting or compliance and enforcement work. Instead, USEPA should recognize that many States have adequate controls in place and allow them to maintain their programs. USEPA could then focus its efforts on correcting any deficiencies identified by their investigations.

The most compelling reason not to impose Subtitle C regulations is that the beneficial use of CCB has been very successful. The "hazardous" label of Subtitle C would be detrimental to State CCB beneficial use programs, as discussed below. Regulation under RCRA Subtitle C has the potential to put an end to many beneficial uses for CCB. In most States, a primary requirement for a beneficial use determination is that the waste not be hazardous. RCRA Subtitle C wastes in Michigan are currently regulated under Part 111, Hazardous Waste Management, of the NREPA. The regulation of coal ash under full RCRA Subtitle C would end most of the current beneficial uses of coal ash. Existing surface impoundments and landfills would be subject to more stringent design standards and would require either 1) retrofitting of existing landfills (if even possible) or 2) closure of those disposal facilities. Neither of these options could be implemented immediately.

Implications for beneficial use if CCB is regulated under Subtitle C:

The American Coal Ash Association reports that 43 percent of CCB is currently used in a beneficial way rather than disposed in a landfill. About 20 percent of CCB is used in products – 14 percent is bound in concrete and cement; 6 percent is used to make gypsum wallboard. Currently, 56 percent, or 75 million tons, is not beneficially used. States are concerned that designating CCB as a hazardous waste under Subtitle C or a hybrid Subtitle D/C regulation would prevent beneficial use of CCB and result in all 134 million tons of CCB being shipped to hazardous waste landfills that in many States have insufficient capacity. As the anticipated volume of CCBs produced is expected to increase or even double in many States as requirements for FGD are implemented, it is vital that the recycling of those materials which can be safely used in products or as raw materials be so used.

Not only do many State regulations prohibit the beneficial use of CCB if it is declared hazardous (see State experiences insert), such a designation will stigmatize the material in a way that will

State experiences

Michigan – “Michigan currently has regulations in place governing the reuse and disposal of coal ash that are protective of public health and the environment. If coal ash were determined to be subject to regulation under Subtitle C, it would necessitate considerable changes to Michigan solid and hazardous waste statutes and regulations. Such changes would likely be subject to considerable opposition from any industry and/or municipality that generates coal ash waste, and would likely lead to increased costs for energy generation.”

Missouri – “Given the current State of CCB management activities in Missouri there does not appear to be a compelling reason, from a human health or environmental protection standpoint, to manage these materials as hazardous waste under RCRA Subtitle C. To do so would be an undue disruption to current State CCB and UWLF management practices and would likely result in a significant increase in the cost of CCB management without a corresponding increase in human health or environmental improvement/protection.”

adversely affect beneficial use. The stigma issue also applies to the proposed hybrid Subtitle D/C approach. The uncertainty that a presumed non-hazardous material could be deemed hazardous as a result of a determination that a generator failed to follow the Subtitle D requirements will create too much uncertainty and liability concerns for the beneficial user.

Coal combustion by-products or residue generally consists of fly ash, bottom ash, or wet slurry depending on the combustion unit and associated air pollution control devices. The character of the end stream varies and is dependent upon several factors. However, all seem to be lumped together in this regulatory analysis without discussion of

segregate characteristics or potential for beneficial use.

States require testing of beneficially reused materials. Testing can include initial analysis of the material and additional testing when sources of fuel change or when there is a change in plant processes, if such changes cause a change in the constituents generated. States report that their beneficial programs do not allow the use of coal ash in road construction if the material fails the Toxicity Characteristics Leaching Procedure (TCLP). Many States report that they do not have any data to suggest that coal ash projects that have been reviewed have failed TCLP.

Examples of the beneficial use of CCB

- a component of concrete, grout, mortar, or casting molds
- a raw material in asphalt for road construction
- aggregate or road or building material which will be stabilized or bonded by cement, limes or asphalt
- road base or construction fill that is covered with asphalt, concrete, or other material approved by the State
- a soil amendment or for soil stabilization provided the materials meet State criteria

States have incorporated technical standards in their regulations and approvals for storage of CCB. For example, in Missouri, a waste to be beneficially reused is kept above the seasonal high groundwater table, unless a variance is obtained from the department's Water Protection Program (WPP.) This requires an interpretation by a geologist registered in the State. A 3-foot cap of clean soil is required unless the material is placed under a structure or a paved/concreted area.

Recycling this waste material into new products, rather than having to mine additional virgin material, is integral to sustainable development and sustainable infrastructure. To disallow the

beneficial use of coal combustion by-products (CCB) would cause an increase in the use of valuable mineral resources rather than reusing a waste product. This would in turn increase disposal costs for the utilities which would be passed on to the consumer. Counties and municipalities which use bottom ash as snow and ice control would instead have to purchase chemicals or salts to treat the roads. State transportation departments and other entities using CCB would have to purchase soil to use in place of the fly ash currently used for structural fill, road base, as a soil amendment or for soil stabilization. This could impact the number of miles of roads that can be constructed or repaired and increase costs. In other cases, specific beneficial use projects limit the amount of transportation that would otherwise be needed if the material were considered a hazardous waste. Some coal-fired power plants are co-located near gypsum wallboard manufacturers. The FGD sludge is transported by conveyor belt directly to the wallboard facility for beneficial use. These operations result in safe uses and minimal transport of the FGD sludge.

Concerns about existing facilities:

An issue that has not been addressed adequately in discussions is whether USEPA plans to address existing facilities, and if so how. If USEPA pursues the Subtitle C regulatory route, it might subject all existing facilities in a State to RCRA corrective action. Additionally, bringing existing facilities under Subtitle C raises resource-intensive permitting issues. States generally have legislatively prescribed staffing levels based upon workload, mission, funding, and statutes passed to implement federal RCRA authority or delegation. As noted previously, ASTSWMO's report entitled ***State RCRA Subtitle C Core Hazardous Waste Management Program Implementation Costs - Final Report (January 2007)*** demonstrates that State Subtitle C programs are already seriously underfunded. Additionally, retrofitting of existing Utility Waste Landfills (UWLFs) to meet Subtitle C standards is likely to be technically impracticable. Even if technically feasible, the cost of retrofitting UWLFs to meet current RCRA Subtitle C standards would likely be prohibitively expensive. Any additional compliance costs borne by the utility companies in retrofitting existing UWLFs or permitting new ones would undoubtedly be passed along to consumers at a time when economic conditions in the U.S. are less than ideal.

Enforcement:

There have been suggestions that Subtitle C is necessary so that USEPA will have enforcement authority. States are held accountable by their citizens through State statutes and obligations to regularly inspect landfills and investigate complaints, and to utilize State enforcement authority as warranted. Subtitle D requires State programs to have the necessary enforcement authority as part of the federal approval process. This approach has been successful for over a decade as evidenced by the relative absence of federal citizen suits or demonstrated failure of State Subtitle D programs. The States are not aware of USEPA expressing concerns regarding this State based enforcement approach in the municipal solid waste landfill program. A similar Subtitle D approach can successfully ensure compliance with minimum federal standards for coal combustion waste disposal facilities.

Applicability of Federal Regulations:

Based upon discussions to date with USEPA and States, it appears that the intended coverage of any federal CCB regulations would be limited to CCBs generated by coal-fired utilities, and not extended to CCBs generated by other industries. If this is correct, then the federal regulations should clearly make this distinction. Otherwise, an unreasonable burden will be placed upon the States to individually sort out the applicability issue, likely resulting in uneven application of the base federal requirements.

State Program Authorization:

Regardless of the regulatory approach selected, the States request that the procedures for authorization of State programs to implement the CCB rules be streamlined and designed to operate in harmony with existing Subtitle D (and/or Subtitle C) program authorization procedures. Where there are existing State programs in place regulating these materials, considerable deference should be given to the State program in the authorization process. States with CCB programs in place should be provided the option to 1) demonstrate that their programs are consistent with and not less stringent than the federal program, and 2) be more stringent than the federal program if they so choose. Further, authorization for any new CCB regulations should be treated as an amendment to a State's existing Subtitle D (or Subtitle C, as applicable) program authorization, as opposed to considering the CCB program as separate and distinct from existing authorizations.

Funding:

Federal funding may be necessary to help build State program capacity in the few States that do not have CCB programs if USEPA mandates standards under Subtitle D. It should be noted that some State Subtitle D programs would likely not seek federal funding for a Subtitle D program because of the impact that would have on current State solid waste program financing structures. As the ASTSWMO survey demonstrates, many States already have Subtitle D CCB programs and would not incur a financial hardship. On the other hand, State Subtitle C programs, which are supposed to be funded at a level of 75 percent federal funding, would require significant new appropriations. Thus, the federal funding needs for a Subtitle D approach would be much less than a Subtitle C regulatory approach.

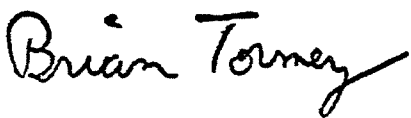
Any decisions to regulate the management and disposal of coal ash will likely have an implication for State regulatory programs including: the need to undertake regulatory action; authorization/approval for implementation (if necessary); budgetary impacts; and staffing/workload resource issues related to implementation (i.e., possible permitting/compliance/enforcement program impacts). The implications could have a dramatic impact on the already strained budgets of many State environmental agencies. It is hoped that USEPA's decision will include review of the work that many States have undertaken to regulate coal combustion by-products.

Summary:

The ATSWMO ad hoc CCB Workgroup, based on results of a survey of States and State comments, recommends that if it is determined that federal regulation of CCB is necessary, Subtitle D regulations would be the preferred approach. Most States already regulate CCB under Subtitle D regulations. Furthermore, a Subtitle D approach would foster the beneficial use of appropriate CCB rather than inhibit it, as would a Subtitle C or hybrid Subtitle C/D approach.

On behalf of ASTSWMO, we thank you for your diligence in ensuring that the most efficient and effective regulatory approach to CCB is proposed.

Sincerely,



Brian Tormey (IA)
Chair
ASTSWMO Solid Waste Subcommittee



Stephen Cobb (AL)
Chair
ASTSWMO Hazardous Waste Subcommittee

cc: Rick Brandes (USEPA ORCR)
Rich Kinch (USEPA ORCR)
ASTSWMO Board of Directors
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Steve Brown (ECOS)
Linda Eichmiller (ASIWPCA)

Appendix 13



Solid Waste Management Officials

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November 4, 2009

Matt Hale
Director
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Washington, DC 20460

Dear Matt,

Previously, we forwarded the results of the ASTSWMO's CCW Ad Hoc Workgroup survey of State waste and water program managers (Phase I), working in conjunction with ECOS and ASIWPCA. The Phase I survey sought information about State management practices for disposal of CCW. The survey revealed that, contrary to claims from environmental groups and the media, most States regulate the disposal of CCW. Thirty-six out of 42 States that have facilities producing CCW have permit programs for CCW landfills (86 percent).

Beginning August 27, 2009, the ASTSWMO CCW Ad Hoc Workgroup conducted a follow-up survey (Phase II) to its February 2009 Coal Combustion Waste Survey of State management practices. The purpose of the Phase II survey was to obtain information regarding the costs, workload, and expertise impacts on State programs of regulating CCW under the RCRA Subtitle C and RCRA Subtitle D regulatory options.


All 50 States and the District of Columbia responded to the Phase II survey. Obtaining 100% participation of States in a survey with such a short turnaround is remarkable and demonstrates how important this issue is to the States.

Enclosed is ASTSWMO's final report on the results of the Phase II State survey. All State respondents oppose EPA regulation of CCW under RCRA Subtitle C, with the exception of two States (one State that by statute does not regulate CCW as a solid waste and one that does not generate coal combustion waste). States have serious concerns about the impact of federal regulation on waste program resources, particularly if CCW is regulated as a hazardous waste under Subtitle C.



As noted, this is an issue of great concern to the States. We appreciate your continued interest in the States' position on this issue.

Sincerely

A handwritten signature in black ink, appearing to read "Stephen A. Cobb", written over a horizontal line.

Stephen A. Cobb (AL), Chair
Hazardous Waste Subcommittee

Cc: Robert Dellinger
James Berlow



FEDERAL REGULATION OF DISPOSAL OF COAL COMBUSTION WASTE FROM COAL FIRED POWER PLANTS

COST ISSUES AFFECTING STATE ENVIRONMENTAL PROGRAMS

BACKGROUND

Federal Regulation of Disposal of Coal Ash

Coal combustion waste (CCW) was initially temporarily excluded from federal regulation as a hazardous waste under the 1980 Solid Waste Disposal Act Amendments to RCRA. In 1999, the U.S. Environmental Protection Agency (EPA) issued a Report to Congress indicating the preliminary decision that coal combustion waste disposal should remain exempt from Subtitle C (hazardous waste regulation). In 2000, after considering designating some CCW as hazardous waste under Subtitle C, EPA published a final regulatory determination that the regulation under Subtitle C was not warranted but that national regulations under Subtitle D (non-hazardous waste) would be appropriate for coal combustion wastes disposed in landfills and surface impoundments. However, EPA indicated in the regulatory determination that in developing/reviewing future regulations, it would look at the extent to which CCW caused actual or potential damage to human health and/or the environment, the environmental effects of filling mines with CCW, the adequacy of existing regulations, and the effects of mercury exposure from these activities. EPA also indicated that it would assess new information on risks associated with managing fossil fuel combustion wastes as it became available and monitor trends in protective management to see if regulation under Subtitle D would close the gaps it identified; if not, the Agency indicated it may re-examine its decision not to regulate the wastes under Subtitle C. In August 2007, EPA issued a Notice of Data Availability (NODA) on the Disposal of Coal Combustion Wastes in Landfills and Surface Impoundments. In February 2008, ASTSWMO's Fossil Fuel Combustion Waste Work Group submitted comments on the NODA based in part on the results of a survey in which 33 States responded. Generally, the States have argued that State regulations are sufficient for managing CCW. ECOS took this position in a resolution passed in 2008. However, at the end of 2008, EPA still had not made a determination about federal regulation of CCW. In deciding on an appropriate regulatory course of action, a central question which must be addressed relates to the basic regulatory underpinning of Subtitle D versus Subtitle C regulation – that being, “Does

10/28/09

CCW routinely meet the established criteria for regulation as a hazardous waste?" The vast experience of State programs is that CCW does not routinely meet the criteria.

The Tennessee Valley Authority (TVA) spill in December 2008 brought renewed attention to the question about the need for federal regulation of CCW from coal fired power plants. In response to EPA's fast-track regulatory process for CCW, the ASTSWMO Board of Directors formed a CCW Ad Hoc Workgroup in January 2009 to review and respond to EPA's proposed regulatory schemes.

In February 2009, ASTSWMO's CCW Ad Hoc Workgroup surveyed State waste and water program managers, working in conjunction with ECOS and ASIWPCA. The Phase I survey sought information about State management practices for disposal of CCW. The survey revealed that, contrary to claims from environmental groups and the media, most States regulate the disposal of CCW. Thirty-six out of 42 States that have facilities producing CCW have permit programs for CCW landfills (86 percent).

EPA has indicated that it is considering 3 possible regulatory scenarios – regulation as a non-hazardous waste under Subtitle D; regulation as a hazardous waste under Subtitle C; or a hybrid Subtitle C/D approach. According to EPA, the design and performance standards for the proposed regulations will likely be the same no matter what regulatory scheme is chosen. Many States voluntarily impose minimum performance standards for both landfills and surface impoundments under Subtitle D, demonstrating that minimum federal Subtitle D requirements will be sufficient to ensure that States properly regulate CCW.

On August 27, 2009, the ASTSWMO CCW Ad Hoc Workgroup conducted a follow-up survey (Phase II) to its February 2009 Coal Combustion Waste Survey of State management practices. The purpose of the Phase II survey is to obtain information regarding the costs, workload, and expertise impacts on State programs of regulating CCW under the RCRA Subtitle C and RCRA Subtitle D regulatory options. Both Phase I and Phase II surveys sought information from States about the beneficial uses of coal ash. An example of a beneficial use that is important to States is the use of CCW in State highway projects. This use is not only cost-effective for State Departments of Transportation but also diverts these wastes from landfills. The American Coal Ash Association reports that 43 percent of CCW is currently used in a beneficial way rather than disposed in a landfill. If EPA decides to regulate CCW as a hazardous waste, most experts agree it will have a detrimental effect on the beneficial use of CCW. This is only one of the negative effects on States of the potential federal regulation of CCW as a hazardous waste. ASTSWMO's State surveys reveal a number of other likely adverse impacts.

All 50 States and the District of Columbia responded to the Phase II survey. Obtaining 100% participation of States in a survey with such a short turnaround is remarkable and demonstrates how important this issue is to the States.

10/28/09

ASTSWMO PHASE I AND PHASE II SURVEY RESULTS

STATE OPPOSITION TO SUBTITLE C REGULATION

All State respondents oppose EPA regulation of CCW under RCRA Subtitle C, with the exception of two States (one State that by statute does not regulate CCW as a solid waste and one that

State experience demonstrates CCW
is not a hazardous waste under federal regulations

"I have been regulating coal ash facilities for 26 years for the State of West Virginia. I have never found a TCLP [Toxicity Characteristics Leaching Procedure] or other chemical characterization that would indicate that coal ash could be labeled as a hazardous waste. Most of the time the metal concentrations, which would be the main characteristic that could be considered hazardous, are at or below MCL for drinking water."

"[Regulating CCW] as a hazardous waste under RCRA Subtitle C is not supported by the historic data that has been collected from generators of [CCW in this State] which shows that CCW does not exceed RCRA Subtitle C hazardous waste characteristics."

"Municipal solid waste ash contains higher levels of contaminants [than CCW]"

does not generate coal combustion waste). A major objection to listing CCW as a hazardous waste is that the vast State experience with testing CCW using the standard EPA test for determining if a waste is hazardous under the Resource Conservation and Recovery Act (RCRA) (the Toxicity Characteristic Leaching Procedure (TCLP)) shows that it is generally not characteristically hazardous. As demonstrated by the State

survey results this is a critical point because regulating CCW as a hazardous waste is burdensome on federally underfunded State waste programs and it also diverts precious resources from protecting threats to health and the environment posed by actual hazardous wastes. As one State put it, "this would detract from regulation of real hazardous waste." EPA acknowledges that technically, CCW can be safely regulated as a non-hazardous waste under Subtitle D with the appropriate management standards. This Administration's stated policy that regulatory decisions will be based on scientific evidence purports that CCW should not be regulated a hazardous waste under RCRA Subtitle C.

"The Department's position is that classifying coal combustion residues under RCRA Subtitle C would create unnecessary barriers to the current management options without producing any greater degree of environmental or public health protection."

IMPACT ON EXISTING HAZARDOUS WASTE REGULATION

If CCW meets the established scientific threshold criteria for regulation as a hazardous waste, then the question of Subtitle D versus Subtitle C is moot – the material should be regulated under Subtitle C. However, this determination has not been made, and in fact the opposite determination was made by EPA in its 2000 regulatory determination.

A major concern with adding lower risk, high volume wastes which do not meet the threshold criteria to the Subtitle C inventory is that those higher threat wastes which do meet the criteria and legitimately warrant Subtitle C controls will become lost in the shuffle due to the staggering difference in volume (2 million tons versus 134 million tons per year) and will divert attention and vigilance from the higher threat waste streams.

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STATE WASTE PROGRAM CAPACITY

The fiscal impact on States of EPA's proposed regulations cannot be ignored, particularly in light of the budget crises so many States are experiencing. Adding the unnecessary burden of regulating a non-hazardous waste (i.e., one that does not meet RCRA hazardous waste testing standards) under Subtitle C, which is already severely underfunded, when so many States are imposing staff furloughs, hiring freezes and layoffs is unthinkable. Regulating CCW as a hazardous waste under Subtitle C will impose a significantly greater resource burden on State waste programs than regulating it as a non-hazardous waste under Subtitle D, which many States are already doing.

When asked how many facilities that could be affected by the new regulations have a Subtitle C disposal permit, all 43 States that responded to this question said "none." The capacity to regulate those facilities under Subtitle C does not exist in most States. At least 38 States will need additional Full Time Equivalents (FTEs) staff if EPA regulates CCW as a hazardous waste under Subtitle C. The increased workload will require additional technical expertise for the various Subtitle C program elements: Permitting, Inspections (including storage and record-keeping requirements), Financial Assurance, Facility-wide Corrective Action, Closure (Interim Status), Post-Closure Permits, Generator/Transporter Requirements, and Siting Controls. Several States could not even guess what impact regulating CCW under Subtitle C would have on their programs, but 29 States estimated that at least 140 FTEs would have to be hired at a cost of \$12M, or an estimated \$414K per State.

By contrast, only 18 States will need additional FTEs if EPA regulates CCW under Subtitle D. In other words, twice as many States will be impacted financially under Subtitle C regulation – a full three quarters of the States in this country. That vast majority of States indicated that no new FTEs will be needed if CCW is regulated under Subtitle D. The cost estimate is significantly less as well. The 18 States that could estimate how many additional FTEs would be needed if EPA regulates CCW under Subtitle D estimated that 40 FTEs would be needed at a cost of \$3.8M/year or an estimated \$211K per State.

There is no doubt that adding CCW to the wastes that are regulated as hazardous wastes will be devastating to State Subtitle C programs that are already underfunded. ASTSWMO's Hazardous Waste Subcommittee conducted a pilot program to determine the cost to States for implementing a complete and adequate RCRA Subtitle C Program (hereafter referred to as "RCRA C" or "RCRA") in 2006. The report entitled ***State RCRA Subtitle C Core Hazardous Waste Management Program Implementation Costs - Final Report (January 2007)*** revealed that the cost to States of implementing a complete and adequate RCRA Program (converted to 2008 dollars) is, at a minimum, \$275M in State and federal funding. The State share should be \$69M (25 percent) with the remaining \$206M in State Hazardous Waste Financial Assistance grants. However, the FY 2008 federal appropriation was slightly less than half of what States needed. Congress appropriated \$101M rather than \$206M. States are making up the difference for these federally mandated programs from already strained State budgets. These programs are already stretched to the breaking point. Expectations should not be high for a successful

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incorporation of CCW into State Subtitle C programs without the guarantee of commensurate increases in State grant funding.

The difference in cost to the States between Subtitle C and Subtitle D is a significant factor in the current climate of substantial State budget revenue shortfalls. Either way, nearly all States (94%) will not be able to add FTEs to accommodate the additional workload without financial support from EPA.

TRAINING COSTS

A significant majority of States (79%) indicated staff training will be needed if CCW is regulated under RCRA Subtitle C. That is another cost that is not accounted for in the survey results. Not only will training be needed, it will also be costly to develop. There have been few if any new Subtitle C facilities permitted for 15-20 years, and most Interim Status facility closures were performed and Initial Operating Permits issued in the 1980's. Expertise and training is a significant issue because it has been that long since some States have gone through the process needed for permitting a new facility, issuing an initial permit to an Interim Status facility, or overseeing closure/post-closure activities and issuing initial Post-Closure permits for Interim Status facilities.

Fewer States (31% of responding States) will need staff training if CCW is regulated under RCRA Subtitle D.

BENEFICIAL USE

A compelling reason not to impose Subtitle C regulations is that the beneficial use of CCW has been very successful. As noted above, the vast State experience with testing CCW shows that it is generally not characteristically hazardous. Coal combustion wastes rarely if ever fail the criteria by which materials are determined to be hazardous waste. Regulation under RCRA Subtitle C has the potential to put an end to many beneficial uses for CCW. In most States, a primary requirement for a beneficial use determination is that the waste *not* be hazardous. Labeling CCW a hazardous waste will have a detrimental on its beneficial use.

This concern is also supported by the on-going controversy and legal challenges over the recent changes to the Definition of Solid Waste (DSW), which are primarily related to concerns over the appropriateness of relaxing regulatory controls on defined hazardous wastes for the purpose of encouraging reuse and recycling.

State experts agree – designating CCW as a hazardous waste will end beneficial use

“Regulation under Subtitle C would likely discourage beneficial uses of coal ash in concrete and Portland cement type applications.”

“Regulation of coal ash under RCRA Subtitle C would impede recycling and discourage its beneficial use and instead cause the disposal of a valuable resource in landfills and/or surface impoundments.”

“Coal ash has been beneficially reused in our state. Regulation under Subtitle C would likely stop this.”

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DISPOSAL CAPACITY

The American Coal Ash Association reports that 43 percent of CCW is currently used in beneficial way rather than disposed in a landfill. Currently, 56 percent, or 75 million tons, is not beneficially used. States are concerned that designating CCW as a hazardous waste under Subtitle C will prevent beneficial use of CCW (as was the case with “Iron Rich” noted above) which will result in 134 million tons of CCW being shipped to hazardous waste landfills annually. According to EPA’s National Biennial RCRA Hazardous Waste Report, in 2007 (the most recent data published) 1.6 million tons of hazardous waste was received by off-site hazardous waste landfills and surface impoundments

(<http://www.epa.gov/epawaste/inforesources/data/br07/national07.pdf>, Exhibit 3.9). Using a conservative estimate that 2 million tons of hazardous waste is disposed at off-site facilities annually, disposing of CCW as a hazardous waste will result in as much as sixty-seven times more waste being disposed in landfills. Even if beneficial use continues at its current rate, an additional 75 million tons per year (or thirty-eight times) more waste will have to be disposed in hazardous waste landfills annually.

Even more alarming is the fact that disposing of CCW in hazardous waste landfills will consume the Commercial Subtitle C Management Capacity projected for the year 2013 in a matter of months. EPA’s expected maximum capacity for Subtitle C landfill capacity for 2013 is 34 million tons (http://www.epa.gov/osw/hazard/tsd/capacity/appb_1f.pdf). Assuming all CCW will be disposed in commercial Subtitle C landfills, the 2013 capacity will be exhausted within 3 months. Even if beneficial use continues at its current rate, the 2013 capacity will be exhausted in less than 6 months. In the unlikely event that beneficial use continues at its current rate *and* half of the coal fired utilities seek Subtitle C permits for the disposal facilities that they manage, the 2013 capacity will be consumed in less than one year. Consuming the commercial hazardous waste landfill capacity not only means that CCW will begin to pile up unmanaged at utilities, the current 2 million tons of hazardous waste generated by industry and hazardous waste site remedial activities will also begin to accumulate on-site. This will bring a halt to Superfund cleanups that require disposal of hazardous wastes as well as having a devastating impact on vital industries and facilities generating nearly half of the country’s electrical power. It can take years to permit a new hazardous waste landfill.

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States already know that there is not sufficient hazardous waste landfill capacity if CCW is designated a hazardous waste, as reflected in the Phase II survey.

- **91%** of States responding to the question ***do not have sufficient existing permitted Subtitle C disposal capacity*** for all CCW in-State.

Siting hazardous waste landfills is onerous - it has been 15-20 years since new hazardous waste landfills have been permitted

"The Massachusetts statute governing hazardous waste has onerous siting standards that would make it very difficult to site any facility to dispose of coal ash."
"Kansas state law prohibits the landfilling of hazardous waste so our laws would either need to be changed or all waste would need to be exported which is totally impractical."

- **86%** of States responding to the question ***will need new off-site capacity*** to be sited if CCW is regulated as a hazardous waste.

Conversely, a majority of States have sufficient permitted non-hazardous waste disposal capacity for CCW. More

than half of that permitted capacity is located on-site at the generator facility which significantly reduces the amount of coal ash that must be transported for disposal.

- **Only 31%** of States responding to the question ***do not have sufficient existing permitted non-hazardous waste disposal capacity*** for all CCW in-State.
- **Only 35%** of States responding to the question ***will need new off-site capacity*** to be sited if CCW is regulated as non-hazardous waste.

Transportation issues associated with CCW designated as hazardous waste is another cause for concern. According to EPA's most recent data, 7 million tons of hazardous waste was shipped in one year by 16,258 shippers (<http://www.epa.gov/epawaste/inforesources/data/br07/national07.pdf>, Exhibit 3.1). Each State has rigorous standards for licensing hazardous waste transporters. Most CCW is currently managed on-site at the generation facility. If the material becomes regulated as a hazardous waste, it is likely that much of this material will then be managed off-site, which will increase hazardous waste transportation by up to 20 times more waste than the current annual rate. The impact on transportation infrastructure and communities through which this new "hazardous waste" will be transported will be overwhelming. Only a handful of States have commercial Subtitle C landfills, which means that most CCW will have to be shipped out of State.

Only a handful of States have commercial Subtitle C facilities
"We do not have any Subtitle C capacity. All waste would need to be shipped out of state."

"There is only one commercial Subtitle C landfill in the state and it only receives hazardous waste treated by the owner of the site."

"Michigan only has one commercial subtitle C permitted facility, which is reaching capacity."

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REGULATORY BURDEN

Drafting, proposing and finalizing regulations is a labor intensive and costly process. Currently, 36 out of 42 States have CCW solid waste permit programs for CCW landfills (86 percent). Only 3 States responded “no” and 3 States did not respond. Most States regulate CCW under general solid waste regulations (43 percent) and general industrial waste regulations (43 percent). Several States use regulations specifically designed for CCW (29 percent). Many States voluntarily impose minimum performance standards (such as those being considered by EPA for regulation of CCW), demonstrating that minimum federal Subtitle D requirements will be sufficient to ensure that State regulation of CCW is protective of human health and the environment.

Percentage of States with CCW landfills with specific regulatory requirements	
Regulatory Requirement	Landfills (%)
Bottom Liner	64%
GW Monitoring	81%
Leachate Collection	52%
Final Cover System	79%
Post Closure Care	79%
Siting Controls	83%
Corrective Action	86%
Structural Stability	69%
Financial Assurance	69%

If EPA designates CCW as a hazardous waste, all forty-eight RCRA authorized States will have to develop new Subtitle C regulations, despite the fact that regulation under Subtitle D will provide sufficient protection of health and the environment. This is a very costly and unnecessary burden that will divert resources from more productive activities.

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FEDERAL VERSUS STATE AUTHORITY

EPA acknowledges that CCW can be safely regulated under Subtitle D. EPA suggests there are 2 primary reasons that EPA may propose Subtitle C regulation: 1) Subtitle D does not allow Federal enforcement except under citizen suits; and 2) EPA cannot require States to permit landfills under Subtitle D.

Enforcement

EPA suggests that Subtitle C is necessary so that EPA will have direct enforcement authority. States are held accountable by their citizens through State statutes and obligations to regularly inspect landfills and investigate complaints, and to utilize State enforcement authority as warranted. Subtitle D requires State programs to have the necessary enforcement authority as part of the federal approval process. This approach has been successful for over a decade as evidenced by the relative absence of federal citizen suits or demonstrated failure of State Subtitle D programs. The States are not aware of EPA expressing concerns regarding this State based enforcement approach in the municipal solid waste landfill program. A similar Subtitle D approach can successfully ensure compliance with minimum federal standards for coal combustion waste disposal facilities.

Permitting Requirement

While EPA cannot require that States permit Subtitle D facilities, most States do so without a federal mandate. ASTSWMO's Phase I survey revealed that thirty-six out of 42 States in which CCW is generated have permit programs for CCW landfills (86 percent). Only 3 States responded "no" and 3 States did not respond. Imposing the more stringent requirements of Subtitle C regulation on States to ensure that they permit facilities is not justified when most States already do so.

LEGISLATIVE ISSUES

EPA's proposed regulation of CCW will have a significant impact on both State Executive and Legislative branches. Whether EPA proposes regulation as hazardous (Subtitle C) or non-hazardous (Subtitle D), funding State environmental agency programs will become even more difficult. The budget impact will be more substantial if EPA proposes regulating CCW as a hazardous waste not only because the cost will be greater for Subtitle C regulation, but also as noted above, federal funding for State hazardous waste programs is already only half of what States need from the federal government to fund adequate Subtitle C core programs. Mandating another significant federal standard for these programs without commensurate guarantees of increased and sustained federal funding support will be devastating to State environmental program budgets.

In the ASTSWMO survey, States also commented on other legislative impacts of EPA's proposed regulation of CCW. For example:

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Florida

"If USEPA decides to call coal ash a hazardous waste under Subtitle C, then current Florida law (Section 403.7222, Florida Statutes) would prohibit the disposal of this coal ash in landfills unless it was first treated to be non-hazardous. This could add tremendous costs to the power industry for managing this material. They would either have to treat their ash before disposal or ship it out of State for disposal. It is also likely that if existing disposal areas were disturbed after USEPA determined coal ash was a hazardous waste, then these old disposal sites could become hazardous waste disposal units too."

Kansas

"Kansas state law prohibits the landfilling of hazardous waste so our laws would either need to be changed or all waste would need to be exported which is totally impractical."

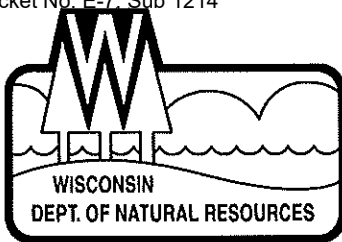
Michigan

"RCRA Subtitle C wastes in Michigan are currently regulated under Part 111, Hazardous Waste Management, of the Natural Resources and Environmental Protection Act (NREPA). The regulation of coal ash under full RCRA Subtitle C would end the current beneficial uses of coal ash. Existing surface impoundments and landfills would be subject to more stringent design standards and would require either 1) retrofitting of existing landfills (if even possible) or 2) closure of those disposal facilities. Neither of these options could be implemented immediately."

CONCLUSION

Most States believe that federal regulation of CCW is not necessary, but do recognize that, particularly since the TVA incident, it is inevitable that EPA will promulgate some form of federal regulation of coal combustion waste. Considering the anticipated State fiscal impacts, the existing status of State CCW regulatory efforts, and the disposal capacity issues, Subtitle D regulation is the more appropriate course.

Appendix 14



State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Jim Doyle, Governor
Matthew J. Frank, Secretary

101 S. Webster St.
Box 7921
Madison, Wisconsin 53707-7921
Telephone 608-266-2621
FAX 608-267-3579
TTY Access via relay - 711

March 16, 2009

Matt Hale, Director
U.S. Environmental Protection Agency
1200 Pennsylvania Ave. NW
Mail Code 5301P
Washington, D.C. 20460

SUBJECT: State Implications of Regulatory Options for the Management of Coal Combustion Waste

Dear Mr. Hale,

Thank you for the opportunity to provide input regarding the U.S. Environmental Protection Agency's re-evaluation of regulatory options for the management of coal combustion wastes (CCW) and the potential implications for State regulatory programs.

The State of Wisconsin has formally provided testimony and submitted comments on this issue in the past, but we wish to reiterate our opposition to regulation of CCW as a listed waste under RCRA Subtitle C, or to a hybrid approach, such as has been used with cement kiln dust (CKD). Copies of our responses are attached to this letter along with a summary table of our estimated rate of beneficial reuse of CCW in 2006.

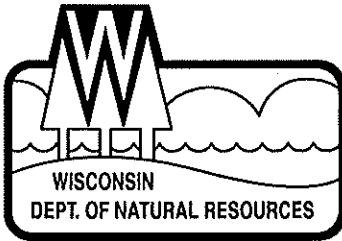
To summarize, we believe that regulation of CCW under the current structure of RCRA Subtitle C is inappropriate given the level of environmental hazard posed by these materials. We remain deeply concerned that such a categorization would have a significant adverse impact to our ongoing successful efforts to beneficially reuse these materials. This beneficial use program avoids the need for landfill space with its associated impacts, reduces greenhouse gas emissions, provides for water conservation and reduces energy consumption. We recommend that if federal regulation of CCW is determined to be necessary, these wastes be regulated using the existing regulatory model for municipal solid waste under Part 258 of RCRA Subtitle D.

If you have any further questions, please contact Gene Mitchell, Chief of our Recycling and Solid Waste Section at (608) 267-9386 or gene.mitchell@wisconsin.gov

Sincerely,

Allen K. Shea, Administrator
Air and Waste Division
Wisconsin Department of Natural Resources

cc: Gene Mitchell/ Phil Fauble - WA/5
Kerry Callahan - ASTSWMO



State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

Jim Doyle, Governor
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March 9, 2009

Via E-mail

Susan Mooney
Land and Chemicals Division, U.S. EPA
77 W. Jackson
Chicago, IL 60604

Subject: State Implications of Regulatory Options for Coal Ash

Dear Ms. Mooney:

Thank you for the opportunity to provide input regarding EPA's re-evaluation of regulatory options for coal ash, and the potential implications for State regulatory programs.

Wisconsin utilities generate more than one million tons of coal ash per year. Approximately 86% of this ash is beneficially used or reused. Fly ash is substituted for lime in the production of concrete, and used as a substrate material in highway construction. Fly ash and bottom ash are also used as geo-technical fill for building construction projects and in mine reclamation, and as a daily cover at municipal solid waste landfills. In addition, one utility has been 'mining' its ash landfill and using it as a fuel, because there is sufficient BTU value left in the ash.

Our experience has been that contaminant levels in ash are generally not high enough to trigger a characteristic determination, and therefore we do not believe it warrants regulation as a hazardous waste. If coal ash were to be regulated under RCRA subtitle C, the options for beneficially using or reusing the ash would be significantly impacted and severely limited. Under both the federal and Wisconsin's hazardous waste rules, many hazardous wastes that are reused as products or that are legitimately recycled are exempt from regulation or have significantly reduced regulation. However, recyclable hazardous wastes that are 'used in a manner constituting disposal' (applied to or placed on the land, or used to produce products that are placed on the land) are more stringently regulated. This would be the case if coal ash were to be regulated under RCRA subtitle C, and it would effectively eliminate the beneficial uses of the ash in our state.

Although some uses of the fly ash may still be allowed under the hazardous waste rules (e.g. in concrete production), due to the liability and stigma attached to using a hazardous waste as a product, we predict that the utilities will choose to dispose of the ash instead of trying to reuse it. Since Wisconsin does not have any active permitted hazardous waste landfills or surface impoundments, the only option for the material would be to send it out of state for hazardous waste disposal.

As stated in our February 11, 2008 comments to U.S. EPA regarding the *Notice of Data Availability on the Disposal of Coal Combustion Wastes in Landfills and Surface Impoundments* (Docket ID No. EPA-HQ-RCRA-2006-0796), we also do not agree with direct regulation of coal ash disposal facilities under Subtitle D of RCRA. This is impractical, given the staffing levels in the solid waste programs at the Regional level and the physical separation that the staff would have from regulated facilities. It is also duplicative of the functions that already exist in state environmental regulatory agencies.

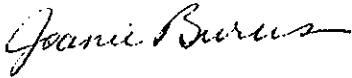
Ms. Susan Mooney
March 9, 2009
Page 2 of 2

We agree that there should be minimum national standards promulgated by EPA for the proper storage, management and disposal of coal ash; however, we recommend using the model provided by the municipal solid waste (MSW) landfill regulatory structure in Part 258 of Subtitle D of RCRA. This program includes setting basic contents in federal rules and having the EPA regions review and authorize state rules for adequacy. This would take advantage of the resources that the states have to offer and the procedures and precedent set by the Part 258 MSW landfill rules.

Given Wisconsin's history with the management and reuse of coal ash, we believe that we have demonstrated a successful program which protects human health and the environment, while reusing materials that reduce costs and address energy and climate change issues as well. This demonstrated success could serve as a model for regulation at the federal level.

Again, thank you for the opportunity to submit comments on this important issue. If you have any questions about our comments, please do not hesitate to call me at 608-267-0545.

Sincerely,



Joanie Burns
Bureau of Waste and Materials Management
Wisconsin Department of Natural Resources

Cc: Margaret M. Guerriero – U.S EPA Region 5 Director, Land and Chemicals Division
Gene Mitchell – WA/5



State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

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June 6, 2008

The Honorable Jim Costa, Chair
Subcommittee on Energy and Minerals
Committee on Natural Resources
U.S. House of Representatives
1626 Longworth House Office Building
Washington, D.C. 20515

SUBJECT: Beneficial Use and Disposal of Coal Combustion Wastes in Wisconsin

Dear Representative Costa:

I would like to thank you and the members of the House Subcommittee On Energy and Minerals for the opportunity to provide information regarding our experience with the beneficial reuse and disposal of coal combustion wastes (CCWs) in the State of Wisconsin. I regret not being able to testify to the Subcommittee in person, but trust that these written comments will assist you in your deliberations on this important topic.

We have previously provided the U.S. Environmental Protection Agency (EPA) with related comments in response to the Notice of Data Availability (NODA) for the Disposal of Coal Combustion Wastes on February 11, 2008 and presented a summary of our environmental data regarding coal ash disposal sites to the National Research Council (NRC) for inclusion in their March 1, 2006 report *Managing Coal Combustion Residues in Mines*.

Under Wisconsin statutes, CCWs are considered solid wastes and their use and disposal have been regulated by the state accordingly since the early 1970's. Current regulations limit land disposal to licensed, engineered disposal facilities under our NR 500 series of administrative rules. Since 1998, use of CCW material for productive geotechnical and civil engineering purposes has been governed by a new rule, ch. NR 538, Wis. Adm. Code, developed specifically to regulate the beneficial reuse of industrial byproducts.

We believe some level of regulation of these materials is necessary. Our administrative rules have grown out of our firsthand experience with numerous CCW disposal sites and the collection of decades of groundwater and other environmental data. We have observed that CCWs can cause significant adverse environmental impacts when improperly managed. Two of the most serious damage cases were profiled in detail in the NRC report; a number of other disposal sites in Wisconsin have caused significant environmental impacts as well. Documented impacts have included threats to human health and welfare due to contamination of aquifers providing water to private water supply wells, impacts to surface waters, and direct toxicity to plant life.

Although contaminants and concentrations have varied considerably from location to location due to differences in coal sources, combustion methods and disposal practices, we have identified boron and

The Honorable Jim Costa, Chair
House Subcommittee on Energy and Minerals

2

sulfate as the two most common CCW constituents exceeding Wisconsin's groundwater quality standards. Additional contaminants exceeding groundwater standards at or near CCW disposal sites have included arsenic, selenium, manganese and, to a lesser extent, molybdenum and lead. Other changes to groundwater quality caused by CCW constituents, such as increased hardness or alkalinity, can diminish the acceptable end uses of groundwater even if specific health-based standards are not exceeded.

Abundant evidence exists to show that uncontrolled CCW disposal can cause environmental harm. In Wisconsin it is the older, unlined CCW landfills and ash sluicing facilities that have been responsible for the vast majority of the documented adverse impacts. By contrast, substantial monitoring and performance data affirm that Wisconsin's current regulatory requirements for lined CCW landfills with leachate collection systems have been very effective in protecting groundwater and surface water resources, as have engineered final cover systems on the older, unlined CCW landfills.

Our monitoring data support, that CCWs can be safely and effectively reused in a variety of different projects, especially as an active ingredient in cement manufacture and as geotechnical fill in highway embankments, airport runway improvements and other civil engineering applications. In fact, of the approximately 1,131,000 tons of CCWs produced in Wisconsin in 2006, over 974,000 tons were beneficially reused under our regulations. That is an effective recycling rate of 86 percent. One major utility was able to achieve a CCW recycling rate of over 100 percent by beneficially reusing not only virtually all of their CCW as it was generated, but also coal ash previously disposed of in a nearby landfill. The reuse of CCW materials in Wisconsin, subject to the design and monitoring standards we have implemented, has not caused discernible environmental impacts. Based on our experience, we are convinced that a responsible and environmentally protective regulatory framework can be developed that encourages the beneficial reuse of CCWs, and establishes sensible minimum criteria to safely dispose of CCW material if landfilling is unavoidable.

While we support the creation of a basic national framework on the disposal and use of CCWs, we caution that there are too many variables at work to justify a set of detailed, one-size-fits-all regulations or approaches for the entire country. For instance, groundwater monitoring for the chemically conservative elements boron and selenium works very well in Wisconsin due to our temperate climate and abundance of high quality groundwater near the surface. States in more arid climates with high natural backgrounds of these elements may not find this monitoring system very effective. Most importantly, the states vary considerably in their dependence on groundwater as a drinking water supply and in existing groundwater and surface water regulatory structures. States and regions also differ with respect to available use markets for CCW materials. Federal regulations should not preempt states from providing additional necessary protections to their groundwater and surface water resources, and should account for the variability that does exist amongst states.

We believe any broad national approach developed under the auspices of U.S. EPA for the proper management and monitoring of CCW disposal sites should reserve to the states the ability to regulate CCWs beyond the federal minimums in a manner they feel is most appropriate given their particular circumstances. The U.S. EPA should continue its efforts to work with the states and other stakeholders to find appropriate beneficial reuses for these materials, thereby minimizing the long-term environmental costs of maintaining landfills.

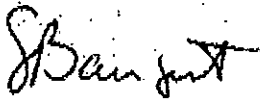
One way to establish such a framework might be through a federal/state effort to develop and actively disseminate CCW landfill and beneficial use design guidelines upon which specific state requirements could be superimposed. U.S. EPA could convene such an effort and also facilitate discussions on markets for beneficial reuse of these materials. Alternatively, the U.S. EPA could establish federal rules that set out certain minimum requirements for disposal and reuse. If federal rule making for CCW disposal is

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pursued, we suggest using as a model the existing municipal solid waste (MSW) landfill regulatory structure in Part 258 of Subtitle D of RCRA. This program includes setting basic rule contents in federal rules and having the EPA regions review and authorize state rules for adequacy. This would take advantage of the resources that the states have to offer and the procedures and precedent set by the Part 258 MSW landfill rules.

Again, thank you for the opportunity to provide information to this Committee. We look forward to engaging in a cooperative effort on this important topic with the U.S. EPA and other states. We think we have a particularly effective program in place to manage and beneficially reuse CCWs and we would be glad to share further details of our experiences as well as our environmental data.

Sincerely,



Suzanne Bangert, Director
Bureau of Waste and Materials Management
Wisconsin Department of Natural Resources

cc: Holly Wagenet - via email
Wendy VanAsselt - via email
Margaret Guerriero - EPA Region 5
Gene Mitchell - WA/5

2006 Coal Combustion Byproducts Production and Beneficial Reuse

	FLY ASH PRODUCED (TONS)	BOTTOM ASH (SLAG) PRODUCED (TONS)	TOTAL PRODUCED	BENEFICIALLY REUSED FLY ASH (TONS)	BENEFICIALLY USED BOTTOM ASH (SLAG) (TONS)	TOTAL BENEFICIALLY USED
Alliant	250,000	115,000	365,000	145,000	65,000	210,000
WE Energies	443,760	90,890	534,650	443,760	90,890	534,652
WI Public Service Corp. (WPSC)	148,806	45,672	194,478	148,806	45,672	194,478
XCEL Energy ¹	11,905	3,095	15,000	11,905	3,095	15,000
Madison Gas & Electric (MG&E) ²	9,618	246	9,864	9,618	38	9,656
State of Wisconsin			12,113			10,385

¹ Bayfront Power Plant burns tires, wood waste, RR ties, etc. in addition to coal

² Blount Street Plant only produces Class "F" ash; will be phased out in 2011

Total Coal Combustion Byproduct Production in 2006: 1,131,105 tons (approximate)
Total CCB Beneficially Reused in 2006: 974,171 tons (approximate)
2006 Recycling Rate: 86 percent

Appendix 15



Larry L. "Butch" Brown, President
Executive Director, Mississippi Department of Transportation

John Horsley, Executive Director

444 North Capitol Street NW, Suite 249, Washington, DC 20001
(202) 624-5800 Fax: (202) 624-5806 • www.transportation.org

November 23rd, 2009

Ms. Lisa Jackson, EPA Administrator
Environmental Protection Agency
Ariel Rios Building
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460

Dear Ms. Jackson,

The American Association of State Highway and Transportation Officials (AASHTO) Board of Directors urge you to take the steps necessary to protect and maintain the ability to use Fly Ash in Highway Construction, and is against any proposed ruling that would impede its use for such purposes. The purpose for this letter is to notify the Environmental Protection Agency (EPA) and Department of Transportation (DOT) of the adverse impact to the nation's infrastructure, if the proposed Coal Combustion Byproduct (CCB) regulations issued by EPA in spring 2009, were imposed.

Fly Ash is a Coal Combustion Byproduct (CCB) commonly used in highway construction such as bridges, pavements and sub-grades. In the spring 2009 EPA proposed to regulate CCBs as "hazardous waste" for disposal purposes, with the exception for certain beneficial uses.

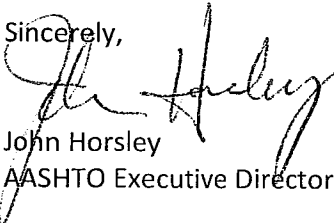
The AASHTO Board of Directors would like to inform the EPA of the consequences of such a regulation. In our view, the stigma and legal ramifications associated with using a "hazardous waste" material could effectively eliminate the ability to use Fly Ash in highway construction, even if exceptions are made to allow its use for beneficial applications.

With proper controls and in appropriate applications, Fly Ash serves as a tremendous engineering benefit in an environmentally responsible manner. The use of Fly Ash in concrete improves durability, increases ultimate compressive and flexural strengths, reduces permeability and mitigates Alkali Silica Reactivity (ASR). The use of Fly Ash in highway construction measurably reduces greenhouse gas emissions through the reduced consumption of Portland cement in concrete and promotes recycling of a Byproduct that would otherwise require disposal in landfills.

Fly Ash has been used in highway construction for many years without documented adverse environmental impacts. No research exists which conclusively provides scientific argument to designate Fly Ash as a hazardous waste.

The AASHTO Board of Directors requests to be notified by the EPA of any future revisions to the proposed regulations regarding CCB, and will coordinate responses on behalf of the Departments of Transportation nationwide.

Sincerely,



John Horsley
AASHTO Executive Director

Cc: Matt Hale, EPA

Appendix 16



INDIANA DEPARTMENT OF TRANSPORTATION

Driving Indiana's Economic Growth

100 North Senate Avenue

Room N758

Indianapolis, Indiana 46204-2216 (317) 232-5533 FAX: (317) 232-0238

Mitchell E. Daniels, Jr., Governor

Michael W. Reed, Commissioner

09/02/2009

Honorable Lisa Jackson
Administrator
United States Environmental Protection Agency
Ariel Rios Building
1200 Pennsylvania Ave NW
MC 1101A
Washington, DC 20460

Dear Administrator Jackson,

We are writing to express our views on next steps currently under consideration by the U.S. Environmental Protection Agency (EPA) regarding the regulation of coal combustion products (CCPs). The Indiana Department of Transportation (INDOT) strongly opposes any designation of CCPs as hazardous waste. Such action would have significant and long lasting adverse effect upon our ability to beneficially use fly ash and other CCPs in highway transportation projects.

Coal fly ash, a byproduct of coal combustion for electric generation, has been a crucial element in highway construction projects in Indiana. The regulation of coal ash as a hazardous waste threatens the recycling of this valuable material. The total production of CCPs in Indiana exceeds eight million tons per year. The INDOT has worked with the Indiana Department of Environmental Management (IDEM) to develop specifications and procedures to use CCPs for engineered fills and as a replacement for a portion of the cement used in concrete mixtures. We have been able to use approximately 42% of the material generated annually as a recycled construction material.

Fly ash improves durability in concrete construction in highway transportation projects by reducing damaging chemical reactions, reducing concrete permeability, and improving concrete strength, which results in improved durability and longer service life. Transportation engineers rely on fly ash to help solve challenges to creating concrete structures that are both economical and durable. Typically fly ash is substituted for up to 20% of the cementitious material required.

While there are other materials – silica fume, metakaolin, blast furnace slag – that can be used to enhance concrete durability, these materials are not as readily available, can be 4 – 6 times more expensive, and are not as effective as fly ash. The effect would be to increase construction costs and reduce performance of highway projects. Increasing costs to state governments would further strain limited state resources.

www.in.gov/dot/

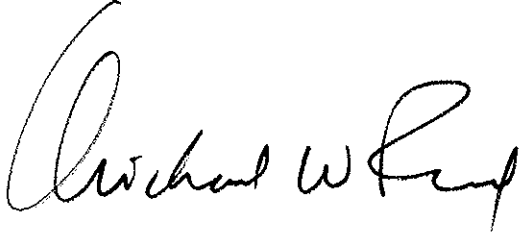
An Equal Opportunity Employer

We are also concerned about how the proposed reclassification would impact the status of highway pavements and constructed fills that have incorporated coal combustion byproducts. We routinely recycle old concrete pavements by crushing them to make base material for new roadways. The opportunity to recycle concrete pavements would be unavailable in the future.

We believe we have established adequate procedures to ensure the safe use of CCPs as construction materials. Fly Ash may only be used from the Department's approved list of fly ash sources. In order to remain on the approved list, monthly test results must be submitted to verify the chemical content and engineering properties of the material. In addition the monthly report must identify the source of the material and the concrete plants it is being shipped to. Projects that will use CCPs as engineered fill material are approved after a thorough geotechnical engineering review. The contractor must provide an erosion and dust control plan. The contract special provisions place strict limits on the construction practices on the jobsite, how much material is allowed to be stored on site and how long it may be in storage before it is encased.

The regulation of fly ash as non-hazardous waste would ensure the continued safe management of fly ash while allowing for its continued beneficial use, including the enhancement of the concrete construction in our nation's highway systems.

Sincerely,

A handwritten signature in black ink, appearing to read "Michael W. Reed". The signature is fluid and cursive, with a large initial "M" and "R".

Michael W. Reed, Commissioner

Indiana Department of Transportation

Appendix 17



STATE OF MICHIGAN
DEPARTMENT OF TRANSPORTATION
LANSING

JENNIFER M. GRANHOLM
GOVERNOR

KIRK T. STEUDLE
DIRECTOR

November 10, 2009

Mr. Victor Mendez, Administrator
Federal Highway Administration
1200 New Jersey Avenue SE
Washington, D.C. 20590

Dear Mr. Mendez:

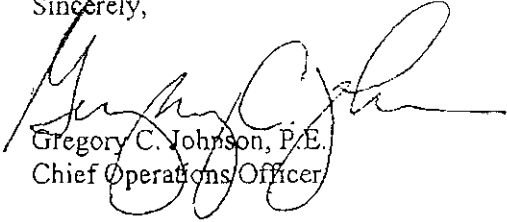
We are writing you on behalf of the Michigan Department of Transportation (MDOT) to express our concerns with an anticipated proposed rule being prepared by the Environmental Protection Agency (EPA) pertaining to the regulation of coal combustion residue (fly ash) as a hazardous waste material. It is our understanding that your agency, per a request from the Office of Management and Budget, is reviewing potential EPA determinations that these materials warrant regulation as hazardous waste.

MDOT relies on fly ash to enhance the performance and durability of concrete, and is, therefore, interested in the proposed rule. Fly ash has been a crucial element in infrastructure construction projects across the United States for decades as it improves longevity, increases strength, enhances durability, and improves cost-effectiveness. The types of infrastructure projects where fly ash has tremendous benefits include highway pavements, highway and railroad bridges, tunnels, transit structures, airport runways, and pipelines. Increasing the longevity of our concrete infrastructure alone has huge positive implications for natural resource conservation and energy savings. There is also a greenhouse gas savings that is realized with the use of fly ash in concrete mixtures. A more complete discussion of the beneficial use of fly ash can be found in the joint Federal Highway Administration (FHWA)-EPA publication titled *Using Coal Ash in Highway Construction: A Guide to Benefits and Impacts* EPA-530-K-05-002 April 2005.

Our agency is concerned about our continued ability to beneficially reuse this material in the construction and rehabilitation of our nation's critical infrastructure. We believe that regulating fly ash as a hazardous waste would have significant unintended negative consequences on its beneficial reuse. Even if EPA plans only to regulate the disposal of fly ash as a hazardous waste, the stigma associated with such an approach will have a chilling effect on the use of the material for our infrastructure.

We hope that your agency takes our concerns into consideration during your ongoing review of the proposed rule. Please do not hesitate to contact me at your convenience if we can be of any help to you or your staff in this matter. I can be reached at (517) 373-4656

Sincerely,


Gregory C. Johnson, P.E.
Chief Operations Officer

cc: John Horsley, Executive Director, AASHTO

bcc: Kirk Steudle, Jackie Shinn, Leon Hank, John Friend, Mark Van Port Fleet, Brad Wierich
Brenda O'Brien

Appendix 18

Hello, I am Craig Shamory, Environmental Manager with PPL Corporation. PPL owns or controls nearly 12,000 megawatts of merchant power generation in 5 states, including 4 coal plants in Pennsylvania and Montana. Annually, we generate about 3 million tons of coal combustion residuals – CCRs – and of that total we beneficially use about 2 million tons. CCRs from our Pennsylvania plants have been regulated effectively since 1992 as a non-hazardous waste under Pennsylvania's Residual Waste Regulations. Furthermore, Pennsylvania and Montana recognize that properly implemented beneficial uses are an environmentally responsible option for managing these materials.

A federal subtitle D, non-hazardous waste regulation, along the lines of Pennsylvania's successful program, would support beneficial use of this large volume mineral resource. Conversely, federal subtitle C hazardous waste regulation would severely limit — and most likely eliminate — beneficial uses, including cement industry applications and mine reclamation. Beneficial uses create thousands of jobs and provide their own significant environmental benefits.

The impact to beneficial uses from the stigma of labeling CCRs a hazardous waste is real — and is already occurring. One of PPL's largest marketers of coal ash for cement products has had one of its main customers stop using coal ash. WHY? Potential product liabilities if EPA actually regulates CCRs as a hazardous waste. Furthermore, many companies have told our marketers that they will not use coal ash in their products if CCRs are classified as a hazardous waste, regardless of any use exclusion by EPA. WHY? They don't want their products to contain an ingredient that would otherwise be subject to hazardous waste regulation. Based on EPA's own economic analysis, if a subtitle C regulation eliminates beneficial uses, the financial impact on our struggling economy will be in the billions of dollars.

So if beneficial use is eliminated, we will have forced to dispose of all CCRs, which is very problematic, if even possible, under a subtitle C approach. Both Pennsylvania and Montana do not have any commercial subtitle C landfills. Therefore, PPL would either have to permit on-site subtitle C landfills—which is an uncertain proposition—or be forced to find, among the very small number of subtitle C landfills nationwide, facilities that have the capacity and permits to accept such large volumes of waste—another uncertain proposition.

PPL strongly opposes federal subtitle C regulation, and instead requests that EPA regulate CCRs under the subtitle “D prime” option, including a modification that integrates with current state regulatory programs such as Pennsylvania’s Residual Waste and Dam Safety Regulations. This approach will create a reasonable and effective regulatory program that protects the environment, retains options for beneficial use, and preserves jobs, while not adversely impacting our economy.

Craig S. Shamory
Environmental Supervisor
PPL Service Corporation
2 North Ninth Street, GENPL6
Allentown, PA 18101

Appendix 19

Cost Estimates for the Mandatory Closure of Surface Impoundments Used for the Management of Coal Combustion Byproducts at Coal- Fired Electric Utilities

INTRODUCTION

This report generates a reasonable estimate of the cost of eliminating surface impoundments as a legal alternative for the management of coal combustion residuals (CCR) at commercial electric generating facilities. The paper focuses on real marginal increases in cost resulting from this change in waste CCR management opportunities. It seeks to ignore transfer payments and costs that would have occurred in the absence of a de facto ban on surface impoundments for CCR management (except as related to the timing of these expenditures relative to the baseline).

The estimates derived in this paper were based on the best, most current, reasonably available information. The estimates are not intended to be overly precise given the information available, but rather are intended to represent a reasonable estimate of the cost rather than any best or worst case estimate.

These estimates do not include the costs of compliance for all the components of EPA's proposed CCR rule. Significant costs – such as corrective action costs associated with obtaining a RCRA Subtitle C permit and upgrading and/or retrofitting CCR management units (*e.g.*, tanks and silos) to meet Subtitle C design standards – are not included in the analysis, and benefits are not addressed at all. This report focuses solely on the estimated costs specifically associated with the transition from wet to dry management of CCRs from a welfare economics perspective rather than as an engineering cost exercise.

In the summer of 2009, the EOP Group, Inc. prepared an estimate of the costs associated with the phase out of the use of surface impoundments for the management of CCRs by electric utilities. This report updates this information based on more recent data and a better understanding of the EPA CCR proposal – now that it has been published for public comment. Where no new information was available, we continue to rely on the information and conclusions of this earlier report.

Consistent with the earlier analysis, the EPA is proposing cessation of the use of surface impoundments for the management of CCRs. However, the EPA is proposing a much more aggressive timeline than we used in generating our estimates in 2009. As a result, we are updating this analysis to reflect this change. We have also received additional information from utilities with experience in converting from wet to dry management of CCR. We have used this information to update our estimates of conversion cost. In addition, we are updating the analysis to reflect the 2008 data that is now available through the Energy Information Agency.

The generation of CCR related to electricity generation fell slightly between 2005 (the data from EIA form 767 used by both EPA's Regulatory Impact Analysis and our 2009 report) and the most recent data reflecting utility operations in 2008 (EIA form 923). Total generation of CCR fell by roughly seven million tons from 141 million tons to 134 million tons. While the quantity of CCRs that went to beneficial uses continued to increase from 2005 to 2008 – to about 42 percent of total generation – the quantity managed in surface impoundments stayed remarkably consistent (staying at just over 22 million tons). Therefore, a regulatory mandate to close CCR surface impoundments would still affect a significant number of electric utility power plants. From an operational perspective, a CCR surface impoundment closure rule would require electric utilities currently using surface impoundments for CCRs to convert from the wet handling to the dry handling of these materials. This report also assesses the potential wastewater management implications to the electric utility industry of no longer being able to employ CCR surface impoundment for ancillary wastewater management and treatment at the affected facilities.

The cost estimates used in this report are derived from engineering cost estimates from power plants believed to be representative of the portion of the industry that uses CCR impoundments and the estimated conversion costs that these power plants would incur in converting from the wet to dry handling of CCRs. The data used in this report reflect further input from utilities where available. When developing these high level cost estimates, feasibility and implementation studies were not completed. The estimates in this report assume that land – and the permits to construct landfill capacity on that land – is available. This is a significant limitation in assessing the costs associated with the siting requirements in the proposed rule.

As discussed in the body of this report, a requirement that electric utilities close CCR surface impoundments would result in significant operational costs. Based on representative engineering and cost data, the report estimates that the present value cost to the electric utility industry of a regulation mandating the closure of CCR surface impoundments would be approximately \$43¹ billion. Annualized over 20 years, this represents a cost of approximately \$2.9 billion per year². In some cases, these costs could be sufficiently high to render a facility, or some smaller generating units at facilities, uneconomic and result in facility or generating unit closure. Closure of this generating capacity could potentially affect system reliability as well as energy prices. Assuming that only one-third of this at-risk capacity needed to be replaced, the gross replacement costs could range from \$12 to \$37 billion. These costs are in addition to the \$43 billion in present value costs to the electric utility industry of complying with a mandatory CCR surface impoundment closure rule³. While these numbers are not strictly additive (since the replacement cost numbers are in nominal rather than discounted

¹ At a discount rate of three percent. The NPV cost of conversion is \$35 billion using a discount rate of seven percent.

² At a discount rate of three percent. The annualized cost at seven percent is \$3.3 billion.

³ These numbers are not completely additive. First, the replacement costs for at-risk generation are presented in nominal rather than discounted dollars. Second, facilities that close rather than convert will not incur the full cost of compliance with the rule.

dollars), it is fair to conclude that any rule that requires the accelerated phase out of surface impoundments on a five year timeframe will cost at least \$50 to \$70 billion⁴.

METHODOLOGY

The report uses both engineering estimates and recent historical data from a sample of facilities representative of facilities that rely on surface impoundments to manage some or all of their CCRs. The report used estimated component costs to derive estimates of the overall unit costs involved in a conversion to dry management of waste. For example, the report uses these estimates to derive a unit cost associated with installation of equipment to allow the dry management of bottom ash at each generating unit requiring conversion.

This report applies these unit costs to data from the 2008 Energy Information Agency (EIA) Form 923 database. Form 923 is used to collect information on plant design and pollution control equipment and expenses.

CAVEATS

There are two additional caveats that must be noted in interpreting these results.

First, our analysis assumes that conversion is technically, physically, administratively, and politically possible. We inherently assume that all facilities meet the siting requirements for both new landfills and, in the case of our Subtitle D analysis, new surface impoundments. EPA's analysis acknowledges that this is not the case, but estimating the extent of this cost was beyond the scope of this analysis. Similarly, facilities may have other difficulties (such as a lack of available land) in expanding onsite disposal capacity that have nothing to do with the regulatory requirements, but make it equally impossible for facilities to comply in the way assumed in this analysis

More importantly, this analysis also assumes that the state and EPA permitting capacity is up to the task of permitting all of the new units required under this rule with sufficient time to have them all online in five years time. In addition, it assumes that the public will be willing to allow siting of new "special waste" landfills onsite after all the negative publicity regarding the potential dangers of coal ash. Responses to the public hearings EPA is holding on this rule appear to suggest that the public does not support management of CCR in ponds, landfills, or beneficial uses. This suggests a quick permitting process may be unlikely.

If new management capacity is not available by the five year deadline, facilities will have to risk noncompliance or shut down generation until such capacity is available. If facilities have to shut down due to lack of CCR management capacity, the costs estimated in this report will seem trivial in comparison to the real costs of the rule.

⁴ See caveat section for a discussion of why costs could be much higher than estimated here.

Second, this analysis does not account for any potential adverse impact to the beneficial use market. It is beyond the scope of this paper to address whether or not designation of CCR as a special waste will decrease its attractiveness on the beneficial use market. However, this report assumes that there will be no significant reduction in demand for CCR as a result of the rule. If this is not the case, more capacity will be required – at both wet and dry facilities – resulting in much higher costs than estimated here.

REGULATORY IMPACT

It should be noted at the outset that the EIA Form 923 database was not designed to provide a complete and comprehensive inventory of all surface impoundments used to manage CCRs. Therefore, use of this database is necessarily under-inclusive with respect to assessing the potential economic impact on the utility industry of complying with a mandatory CCR surface impoundment closure rule. Nonetheless, as noted above, the EIA database is being used in the report because it contains the best data available at this time.

The 2008 EIA Form 923 database reports 145 facilities that manage CCR in surface impoundments. Of these facilities, 100 report managing fly ash in surface impoundments, 121 report managing bottom ash in surface impoundments, 14 report managing gypsum, and five report managing FGD sludge in surface impoundments.

REGULATORY TIMING

The cost estimate calculated in our 2009 report was based on a ten year implementation period for complying with a mandatory CCR surface impoundment closure rule. This time period was based on several factors.

First, there are currently only a few domestic companies that manufacture the equipment necessary to convert wet ash handling systems to dry systems. Supply and demand for these system conversions, including design and supply for equipment, may result in new or expanded company capabilities, but vendor qualification will likely be an issue for adequate manufacturing capacity. Given the limited manufacturing capacity of key conversion equipment, the report estimates that it would take approximately ten years to manufacture and provide equipment sufficient to convert the affected components of the electric utility industry from wet to dry CCR handling.

A second significant timing factor involves the time necessary for constructing and permitting the dry units necessary to accommodate the CCRs that are diverted from wet to dry handling. As a general rule this will require constructing new landfills (onsite if possible) to replace the lost management capacity from the closed surface impoundments. Importantly, the construction and – more importantly – permitting of a landfill cannot be accomplished in short order. When considering siting studies, land options, land purchase, design, engineering, permitting, construction and quality assurance, it generally takes between five and six years under the best of circumstances. If state regulators are

confronted with multiple permit applications associated with a sudden change in regulatory requirements, or there is significant public opposition to the proposed site, this process will slow even further.

For these reasons, it is unreasonable to assume that the mandatory closure of all CCR surface impoundments could occur any faster than within ten years of promulgation of a mandatory closure rule. Therefore, the cost estimates in our previous report assumed a ten year implementation period.

EPA's proposed rule – both the Subtitle D option and the Subtitle C “special waste” option – on the other hand, requires phase out of ponds within five years of the final rule. This has significant implications for the cost of compliance with a phase out of surface impoundments. First, it presumes that the regulatory infrastructure exists within the states and regions to permit over 100 new landfills in five years. If this is not the case, facilities will be left in a position where it is illegal to use their existing CCR management system with no alternative system in place. Second, accelerating the closure of ponds requires a fundamentally different approach to pond closure –relying on mechanical dewatering rather than dewatering in place. This increases the cost of closure above what was assumed in our 2009 analysis. Third, accelerating closure increases the stranded capacity of the existing system; it also increases the net present value cost of the phase out by shifting more spending into the short-term.

COST COMPONENTS

The costs presented in this report are associated with the following components:

- Capital Costs
 - There are changes in equipment required to shift from wet management of CCRs to dry management of these wastes. These capital costs occur in five areas:
 - Conversion of bottom ash handling systems from wet to dry
 - Conversion of fly ash handling systems from wet to dry
 - Conversion of FGD byproduct handling systems from wet to dry
 - Increased capital cost associated with rapid pond closure
 - Installation of waste water treatment capacity to replace services provided by surface impoundments
- Operating Costs
 - The dry handling of these waste streams is more reliant on mechanical equipment than the wet management of the same waste streams. As a result, the operations and maintenance costs associated with dry management of these streams is higher.
 - Operation and management costs associated with replacement waste water treatment.
- Stranded Capital
 - Capital expenditures on surface impoundments were made with an expectation of a certain useful life.

- A premature phase-out of the use of surface impoundments requires replacement of that capacity with landfill capacity sufficient to manage the CCRs that would have gone into impoundments. Essentially requiring the same capacity to be built twice.
- Opportunity and Other Costs
 - The fixed costs associated with conversion may be sufficiently high to make some smaller affected units uneconomic – there is simply not enough capacity and useful life remaining in these units to be able to recover the cost of conversion.
 - Closure of these units will reduce revenues to the operators who own them and decrease reserve margins of the regional grids where such facilities are located.
 - In the medium to long term lost generating capacity will have to be replaced. The cost of this new capacity likely exceeds the cost of operating the closed units. This additional cost would be attributed to the regulatory change forcing the closure of these units.
 - Surface impoundments often provide environmental benefits in addition to management of CCR. They may provide storm water runoff surge capacity, other waste water benefits, and they can affect the ability to meet other environmental regulatory obligations and goals. Loss of the surface impoundments results in a loss of these benefits. Additional costs will be incurred replacing these services.
 - Some facilities may require additional space to facilitate new equipment, landfill space, and waste water treatment surface impoundments.

CAPITAL COSTS

Conversion to Dry Management of Bottom Ash

The EIA Form 923 database indicates that there are 121 facilities that manage some or all of their bottom ash in surface impoundments. There are 391 coal-fired boilers at these facilities. Management of bottom ash in surface impoundments does not necessarily indicate that the boilers at the facility are wet-bottom boilers. Management in surface impoundments may simply be more convenient if there are other significant high-volume CCRs managed in impoundments at the site. It is also possible that bottom ash streams from different boilers at the same site are managed in different ways.

There are two potential components to the cost of conversion of a boiler to facilitate dry management of bottom ash. One is the conversion of the bottom of the boiler itself to a dry removal system and the other is the conversion of the existing equipment to facilitate the dewatering and transporting of the waste stream to the dry waste management unit (i.e., a landfill). Even if a boiler is set up as a dry bottom boiler the wastes are hydraulically sluiced to a surface impoundment for final disposal. If this is the case, elimination of surface impoundments will not only require additional equipment to collect the bottom ash dry, but also to transport the dry wastes to a landfill for disposal.

Whether or not the boiler itself is a wet or dry bottom boiler, there are significant costs associated with modifying the ash handling system to facilitate dry management. Wet management involves simply hydraulically transporting the ash into a system that uses the water to carry the ash to the surface impoundment. A dry system relies on mechanical systems (such as augers) to move the ash out of the boiler; the ash then has to be conveyed to a centralized location where it can be transported to a landfill.

Based on engineering estimates across a number of affected utilities, capital costs associated with modifying these generating units, including the information provided in EPA's RIA on the estimates of the conversion of TVA facilities from wet to dry, averages approximately \$20 million per unit. This is a reduction in ten million dollars per unit from our 2009 estimate. The total cost across all electricity generating units is, therefore, estimated at approximately \$8 billion over five years.

Conversion to Dry Management of Fly Ash

Like bottom ash, the cost associated with conversion to dry management of these wastes is associated with the modification of solids collection and handling systems. However, fly ash from multiple boilers may be collected and managed together. As a result, our 2009 report computed a cost based on an average capital cost per ton of fly ash. However, we now realize that each unit will require modification to work with whatever overarching management system is installed. Both the initial engineering estimates supporting the 2009 paper and information we have received subsequently better support estimation of fly ash conversion costs on a per unit basis.

Engineering estimates from potentially affected utilities and those who have recently constructed dry fly ash management systems estimate that costs associated with wet to dry fly ash conversion average about \$23 million per unit. There are 328 units that reported wet management of fly ash in 2008. Therefore, we estimate a total capital cost to utilities of \$8 billion for the conversion from wet to dry fly ash handling systems

The average cost per unit represents a simple average of the estimates and historical data received. As one would expect, there was a significant variation between facilities, ranging from \$6 million to \$56 million⁵. It should be noted that the higher numbers used in the average tend to be from larger utilities that represent more of the potentially affected population, and the data based on real world experience rather than engineering estimates. In addition, two units with an estimated cost of conversion of \$127 million were not included in the average because the conversion was addressing fly ash and FGD ash simultaneously and we did not have a way of separating out the costs attributable to each. For these reasons, it is reasonable to view \$23 million as a conservative (on the low side) estimate of the unit cost of conversion of fly ash handling systems.

Conversion to Dry Management of FGD Solids

⁵ This \$56 million estimate was itself an average per unit cost from a utility with costs ranging as high as \$90 million dollars at its most costly conversion.

Conversion of FGD solids handling systems to dry management involves the same capital intensive conversion. In 2005, only four facilities reported wet disposal of FGD solids. In 2008, however, 18 facilities reported managing FGD wastes (sludge or saleable gypsum) in surface impoundments. As a result, this report updates the cost numbers to include the capital costs associated with conversion of these FGD systems. The report continues to include the operations and maintenance costs associated with these solids in its O&M calculation.

Capital costs of converting to dry management of FGD wastes are estimated at \$35 million per facility⁶. The total capital cost of converting these systems is estimated at \$600 million.

Another important issue related to FGD operations is the use of surface impoundments to help manage FGD dewatering waste streams. Waters from gypsum dewatering and other processes are treated and augmented by other process water treated in surface impoundments. Closure of surface impoundments will require a significant change in the size and type of wastewater treatment equipment which means a significant increase in capital cost to manage the existing FGD wastewater streams. We have received no additional information that would enable us to reestimate these costs.

Wastewater Treatment

Surface impoundments are an integral part of overall site wastewater compliance for facilities that use surface impoundments. Loss of these impoundments will require additional capital and operating expenses to replace this lost capacity.

This cost is affected by whether or not the facility has an FGD impoundment. The costs of managing certain constituents in the FGD dewatering waste significantly increase the cost of the wastewater treatment system required to replace the functionality of the surface impoundments.

Using cost estimates developed from data provided by utilities, the average capital cost for a facility without a FGD is \$80 million, and increases to \$200 million for a facility with an FGD. The difference in cost is attributable to the fact that new FGD systems remove soluble salts and other constituents that are more expensive to treat prior to discharge.

Based on 2005 EIA Form 767 data, 155 facilities would require new wastewater treatment capacity, and of these 39 were FGD facilities. This translates into additional capital cost requirements of approximately \$17 billion. This estimate remains unchanged from our previous paper.

OPERATING COSTS

⁶ Again, this estimate does not include the estimate of \$127 million per unit submitted by a facility that co-manages fly ash and wet scrubber solids.

Dry Handling

As noted above, wet management involves using gravity and water to move the solids into surface impoundments for management. Dry handling involves the use of mechanical systems such as silo, augers, trucks, and conveyors to get the wastes from point A to point B. These mechanical systems are inherently more expensive to operate and maintain.

Based on information received from utilities, the report estimates that the operating costs associated with dry management are approximately \$2.00 per ton higher than the costs associated with wet management.

In 2008 facilities managed 12.9 million tons of fly ash, 5.1 million tons of bottom ash, and 4.1 million tons of gypsum (FGD solids) in surface impoundments. The 2008 data confirms our suspicion that the amount of FGD solids managed in surface impoundments had increased since 2005 due to the increased installation by coal-fired power plants of new pollution control equipment. The annual increase in operating costs associated with managing these wastes dry is, therefore, conservatively estimated to be \$44.2 million.

Waste Water Treatment

The additional waste water treatment capacity that would be required to convert to dry handling systems would also result in increased operations and maintenance costs. For facilities without a FGD annual operating expenses are estimated to be approximately \$3 million, and for a facility with an FGD this cost estimate increases to \$4.5 million annually.

As noted above, the 2005 EIA Form 767 indicates that 155 facilities would require new wastewater treatment capacity, and of these 39 were FGD facilities. The resulting operating costs are roughly \$525 million per year.

STRANDED COSTS

Accelerated Closure of Surface Impoundments

The long term management of landfills and surface impoundments are similar. A unit with a given capacity is constructed, CCRs are managed in the unit until the capacity is reached, and the waste unit is then capped and enters long term management and monitoring.

Construction costs for the two types of units are roughly similar. Operation costs for the landfill are slightly higher than for surface impoundments due to the need for dust control, the cost to transport the waste to the landfill as compared to wet sluicing and other issues related to dry wastes, but these costs are accounted for in the \$2.00 per ton

O&M increase already discussed. Costs of closure of the units are already required whether the surface impoundments are allowed or not in the future.

Therefore, if a facility reached the capacity of its surface impoundments before the surface impoundment was required to be closed, there would be no additional closure costs attributable to the phase out of surface impoundments. However, if the surface impoundments are required to be closed before they reach capacity, the cost of new capacity and accelerated closure costs would be attributable to the change in regulation.

Put another way, any capacity remaining in surface impoundments when they are closed represents a stranded cost equal to the cost of replacing that capacity with landfills. In addition, the rapid acceleration of the closure of surface impoundments is likely to result in changes to the procedure used to close those impoundments that are more costly than originally planned for that unit. This change in closure cost and the acceleration of the timing of expenditures will both increase the present value of closure costs of surface impoundments relative to the baseline.

Looking across a variety of units, the report estimates that one acre of landfill capacity is required for every 75,000 tons of CCR. As noted previously, about 22 million tons of CCR are currently managed in surface impoundments each year. Therefore, there is an annual requirement for 290 acres of landfill capacity to manage these wastes.

In 2005 DPRA Incorporated conducted an analysis for the EPA evaluating potential costs associated with management of CCRs under the municipal solid waste landfill rules under Part 258 of RCRA. In this analysis, DPRA assumed that surface impoundments had an expected useful life of 40 years. Assuming this to be true, the current fleet has an average remaining life of approximately 20.5 years of capacity. Our 2009 report assumed a ten year phase in period, the existing fleet would be expected to have 15.5 years of remaining capacity still in use at the time surface impoundments were closed – assuming no new surface impoundments built in the interim⁷.

If all existing surface impoundments were closed within ten years, the amount of unused capacity that would be stranded equates to about 4,500 acres of landfill space. At a cost of roughly \$1 million per acre, this represents a stranded cost of \$4.5 billion in year ten. A more rapid phase in would increase nominal costs by \$280 million for each year closure is accelerated. A full phase out in year five would strand 18 years of capacity valued at approximately \$5.2 billion.

Acceleration of closure also results in two additional costs that were not estimated in the 2009 report. First, both closure cost and construction of new landfill capacity are accelerated in time. This is likely to have a significant impact on the NPV of costs to operate the CCR management system relative to the baseline. The acceleration of construction spending relative to the baseline adds \$2 billion to the present value cost of

⁷ This assumption already includes movement away from the baseline in anticipation of regulatory action. In a true baseline, surface impoundments would be rebuilt as they are retired such that stranded capacity always remains at 20.5 years irrespective of the effective date of the rule.

the rule under a ten year phase out and \$3 billion under a five year phase out⁸⁹. Second, accelerated closure is likely to result in fundamentally different technical approaches to closure that will be more expensive. As a sensitivity analysis we estimated how large an effect on the final cost of pond phase out a 30 percent increase in costs would have. This presumed increase in cost shifted the total cost of the rule by less than \$100 million, which in the context of this particular rule is not significant. As a result, we did not pursue a more detailed analysis of these costs.

TOTAL QUANTIFIED COSTS

For purposes of calculating present value and annualized costs, our 2009 report assumed that the capital costs were incurred evenly over the ten year implementation period, and that surface impoundment stranded costs were incurred in year 10. The report used a 20 year annualization period and a discount rate of three percent.

In this update, we assume that the majority of capital expenditures take place in year five. We make this assumption because it is not reasonable to assume that surface impoundments and systems associated with their operation will be able to be closed until a legally permitted alternative exists. While we still believe it quite possible that states and regions will be incapable of permitting replacement capacity within five years (especially under a Subtitle C regime), we have to make the assumption that they will do so to avoid shutting down the production of electricity. Nevertheless, five years is the soonest possible date that we can imagine permits will be in place.

The present value cost to the electric utility industry of a mandatory CCR surface impoundment closure rule is \$43 billion. If annualized over 20 years at a discount rate of three percent, this represents a cost of approximately \$2.9 billion per year.

It is also worthy to note that the cost estimates were developed in absence of engineering feasibility studies. The cost estimates, however, include contingency factors to reflect the unknown costs and variables associated with any conversion program of this magnitude.

UNQUANTIFIED AND OTHER COSTS

Loss of Additional Environmental Benefit

Existing surface impoundments also provide storm water surge capacity that assists facilities in the management of runoff. If the ash management surface impoundments are closed at these facilities, new surface impoundment or tank capacity will be required to

⁸ Assuming a uniform rate of replacement, a 40 year useful life and a three percent discount rate.

⁹ Some states allow surface impoundments to remain open even after they have stopped receiving wastes. Also the useful life of surface impoundments can be extended through dredging. This analysis assumes that all surface impoundments are operated as traditional waste management units (i.e. they close when they reach capacity). As a result, the accelerated closure cost estimate may be low relative to actual operation.

replace lost volume treatment capacity. The size of these replacement surface impoundments will, of course, vary by a number of factors such as facility footprint, rainfall, site topography, existing controls, etc. Facilities that provided information on the amount of necessary replacement capacity stated needs ranging from zero to 70 acres of new surface impoundment capacity. These facilities also estimate a cost of one million dollars per acre for construction and operation of these surface impoundments. This adds an additional \$4.5 billion in costs to the phase out of CCR management surface impoundments.

Land Acquisition

A significant number of facilities evaluated would have to acquire additional land to facilitate the installation of equipment or the construction of landfill or wastewater surface impoundment capacity. The cost of such land acquisition is, of course, location specific. Some facilities have adequate space at the facility; others are in rural locations where land adjacent to the facility may be available and relatively inexpensive. Facilities in urban areas, on the other hand, may face absolute constraints on growth or very expensive land prices. It must be noted that even if suitable land is currently owned by facility operators, the value of its current use will be lost if converted to landfill space, so its use cannot be considered free. Another key point is that if land use restrictions require new off-site landfill capacity, the associated CCR management costs will be even higher.

In addition, it is not always obvious what portion of these costs would be attributable to a rule requiring phase out of surface impoundments. Facilities that were originally designed with surface impoundment capacity sufficient to accommodate the full useful life of the facility face a real economic cost if a rule would require them to acquire new land to accommodate landfill construction. On the other hand, facilities that would have to acquire additional land to facilitate the next expansion of waste storage capacity (wet or dry) can not legitimately argue that the next purchase is a result of the new rule.

For these reasons, the report does not attempt to derive a national estimate of the cost of land acquisition associated with the rule, though it is important to note that these acquisition costs for individual facilities could be in the millions of dollars.

The report did a screening level analysis of potential land acquisition costs by looking at a variety of individual facilities in different circumstances – rural locations, urban locations, sufficient existing space, moderate additional land requirements, significant new land requirements, etc. – and standardized the estimated requirements for these facilities to annual tons of CCR managed in existing surface impoundments (the only variable for which data were available for all facilities). Using this methodology, the reports estimates total costs to all facilities at roughly \$100 million dollars over the ten year implementation period. While this cost does not change the overall estimate of costs, it is not insignificant and tends to be concentrated at a small subset of individual facilities with much higher than average costs.

At-Risk Capacity

For some smaller units and/or units with limited remaining useful life, the fixed costs associated with the conversion to dry management of CCRs may, depending on a range of factors, be too high to allow the facility to recover the conversion costs given the limited capacity of these units. The most cost-effective compliance solution for generators with such units may be to terminate operations and purchase replacement power from elsewhere. Based on discussions with utilities, the report concludes that units with below 230 MW of generating capacity have the greatest potential risk of ceasing operations if required to undertake the mandatory closure of CCR surface impoundments. This does not mean that such units will close, but rather that units below this MW generating capacity cutoff are at greater risk of no longer being economically viable.

The report looks at this potential on a per unit basis due to the significant capital cost associated with converting bottom ash handling systems. There are 397 generating units operating at facilities that manage bottom ash in surface impoundments. As much as 20 percent (~35,000 MW) of the generating capacity of at these facilities is below 230 MW and thus face the greatest potential risk of ceasing operations if required to undertake the mandatory closure of CCR surface impoundments.

Units that are at-risk were responsible for the generation of 18 percent of all coal-fired generation in 2005. This represents over four percent of all electricity generated in the United States.

Costs of Replacement Power

Another cost is that of utilities having to purchase replacement power for those plants that would be at risk of ceasing operations due to the economic burdens of complying with a mandatory surface impoundment closure rule. For example, if older plants are retired before they are fully depreciated, regulated utilities will need to request rate increases to recover the un-depreciated portion of the plants, including any uncollected removal costs. The cost of retiring these older, smaller units (<~230 MW) prematurely could be significant. Replacement capacity would have to be built to supply the lost generation and to maintain generating capacity margins required of regulated electric utilities by the state Public Utility Commissions. Those new units would be added to the rate base and would increase the price of electricity to the customer, so the rate payer would be paying twice; once for the remaining, stranded cost of the older unit being retired early and then for construction of the replacement capacity.

New, base-loaded generation to replace the lost units could be added at capital costs ranging between \$1,186 per installed kW for natural gas combined cycle to \$2,485 per installed kW for supercritical, pulverized coal. Other generating technologies that would be practicable in the 600 MW size units would include nuclear at a capital cost of \$3,682 per installed kW and perhaps Integrated Gasification Combined Cycle at \$3,359 per installed kW, depending on the timing. (*Congressional Research Service Report for Congress, Power Plants: Characteristics and Costs*, Stan Kaplan, November 13, 2008). Using those government cost figures, the capital cost for a replacement 600 MW unit

would be in the \$0.7 billion to \$2.2 billion range. If only 10,000 MW of the 35,000 MW at-risk capacity needed to be replaced, the gross replacement costs would be in a range of between \$12 and \$37 billion. These costs are in addition to the \$43 billion in quantified costs discussed above.

If the lost generating capacity were replaced with technologies having a lower capacity factor than the 230 MW units they were replacing, then wind (at \$1,896 per installed kW), solar thermal (at \$2,836 per installed kW) and solar photovoltaic (at \$5,782 per installed kW) plants /cells could come into play. However all of these alternatives necessitate increasing costs for customers. (Capacity factor is the ratio of the amount of power generated by a unit for a period of time - typically one year - to the maximum power output of the unit if it were to run all the time and at full power. Capacity factor ranges from about 20% for solar photovoltaic to about 90% for nuclear.)

COMPARISON TO EPA COST ESTIMATES

One must be cautious in comparing these estimates to those generated by the EPA in their RIA. EPA chose to compare the total cost from our 2009 report to their initial estimate of conversion costs. This somehow suggests that EPA is measuring the same costs and that our number was just twice as high as EPA's cost number. In fact, the EPA analysis leaves out a number of important costs that more than account for the difference between the two estimates.

EPA's estimate is intended to account for the conversion cost and the increase in future operating costs associated with the shift to dry management. Their initial present value estimate of these costs was approximately \$23 billion. Our present value estimate for these same costs is only about \$15 billion. However, EPA's estimate accounts for the value of the stranded asset differently from ours and does not account for the wastewater treatment implications of its proposal at all (it is unclear whether EPA's analysis appropriately assesses the timing of investment relative to the baseline, but we give them the benefit of the doubt). These missing costs account for \$27 billion of our cost estimate. A comparison of the estimates in this report to the EPA's without understanding the differences in what they measure would be a mistake and is inaccurate.

EPA further muddies the water by trying to account for an overall trend toward dry conversion in the industry. However, EPA uses 2005 data that reported 22.4 million tons of CCR disposed of in surface impoundments that year. EIA form 923 reports that in 2008 22.3 million tons were disposed of in surface impoundments, suggesting that the trend may have slowed down or stopped. In fact, as a proportion of the total CCR managed, wet disposal actually increased over this time period. This may suggest that the facilities for which conversion made sense have already undertaken such conversions and those facilities still managing CCR in surface impoundments face higher than average conversion costs or other restrictions.

IMPLICATIONS OF EPA'S THREE REGULATORY ALTERNATIVES FOR THESE COST ESTIMATES

The \$50-80 billion estimate of costs of pond closure applies to any rule that would mandate closure of current surface impoundments and prohibit future management of CCR in surface impoundments. Of the three options in EPA's proposal only the Subtitle C option effectively prohibits the future use of surface impoundments to manage CCR through application of the Subtitle land disposal treatment standards for CCRs wastewaters.

Both Subtitle D approaches would make it less likely that facilities would continue to operate surface impoundments in the future due to increased costs and potentially prohibitive siting restrictions. However where the cost of conversion to dry management was sufficiently high, wet management would remain a legal option, provide the CCR surface impoundment meet the applicable Subtitle D operating standards.

The Subtitle C proposal would require the conversion of all facilities from wet to dry management, closure of all existing ponds, acceleration of landfill construction to provide necessary capacity for management of the dry waste stream, and addition of new wastewater treatment capacity to address wastewater stream from scrubbers and provide other environmental services currently provided by surface impoundments. As stated earlier, we estimate these costs at a net present value of \$43¹⁰ billion.

The Subtitle D approach, on the other hand, would allow for the continued use of surface impoundments, if those surface impoundments met the ground water performance and design criteria proposed in the rule¹¹. As a result, fly ash, bottom ash, and FGD residuals would only be converted to dry management if doing so was more economical in the long run than continued wet management. Similarly, wastewater treatment costs would only be incurred if doing so reduced costs relative to reconstruction of compliant surface impoundments. Under the Subtitle D option, facilities would still be required to close existing surface impoundments¹², stranding the remaining capacity in existing ponds. As with Subtitle C, we estimate the value of this stranded asset at four billion dollars. In addition, the acceleration of the construction of new capacity and pond closure costs results in an increase in present value cost of three billion dollars. So, we estimate the total incremental cost of the Subtitle D option at about seven billion dollars – with an annualized estimate of \$500 million at a discount rate of three percent. This is \$36 billion (\$2.4 billion per year) lower than the Subtitle C alternative.

This seven billion dollar estimate represents the lowest allowable compliance cost attributable to the Subtitle D option because it assumes, as does EPA's analysis of Subtitle D, that all facilities choose to replace existing surface impoundment capacity with new or retrofitted ponds. However, plant operators have argued that there are a number of non-quantified costs and other factors (e.g. land availability, ease of permitting, local public concern, long-term liability, etc.) that also affect the decision of

¹⁰ Not including any costs associated with replacement of at risk capacity.

¹¹ Surface impoundments would be allowed in the future under this alternative. However, existing impoundments would still need to close or retrofit within five years.

¹² EPA's RIA assumes that no surface impoundments currently in use meet the Subtitle D design requirements proposed in the rule.

whether to construct new surface impoundments or convert to dry management. Discussions with plant operators and environmental managers suggest that mandatory closure of surface impoundments under either the Subtitle C or D options will be the precipitating event that causes them to convert to dry management of CCR. In fact, they suggest that all facilities would choose to convert to dry management of fly ash and 50 percent of facilities would choose to convert to dry management of FGD residuals and bottom ash. The primary driver of this decision appears to be the availability of sufficient land to allow construction of replacement surface impoundments.

Under this alternative set of assumptions, the costs of the Subtitle D option are much closer to the costs of the Subtitle C option. Wet to dry conversion capital costs for fly ash, bottom ash, and FGD residuals would be \$8 billion, \$4 billion, and \$0.3 billion respectively. Greater wet to dry conversion also increases the estimated operations and maintenance costs of the Subtitle D option to \$39 million per year. This is based on 100 percent of the 2008 fly ash generation being managed dry and 50 percent of FGD residual and bottom ash being managed dry. Under this set of assumptions 19.5 million of the 22.1 million tons of ash managed wet in 2008 would be managed dry as a result of the rule.

Estimation of wastewater treatment costs under this alternative set of assumptions is slightly more complicated. We assume that all facilities that convert to dry management of fly-ash will incur the same wastewater treatment costs under the Subtitle D option that they would under the Subtitle C option. Facilities that continue to manage FGD residuals or bottom ash in surface impoundments avoid the increase in wastewater treatment costs only if fly ash is not currently managed wet at the same facility. Of the nine facilities expected to continue using surface impoundments to manage FGD residuals, seven are facilities that manage no fly ash in surface impoundments. This results in a potential savings of \$1.4 billion relative to the Subtitle C option. The remaining two FGD plants would lower their capital cost requirements for wastewater treatment from \$200 million to \$80 million, resulting in a total savings of \$1.6 billion relative to Subtitle C for all FGD plants. Similarly, there are 38 facilities where bottom ash is managed in surface impoundments and fly ash is not. This results in a potential savings of \$760 million relative to the Subtitle C alternative. The reduction in wastewater treatment operations and maintenance costs associated with the reduction in wet to dry conversions under the D option is approximately \$155 million per year.

Using this alternative set of assumptions, the 20 year net present value costs of the Subtitle D option are \$34 billion at a discount rate of three percent (roughly \$2.4 billion per year)¹³.

Due to some of the assumptions made in this analysis, this estimate for Subtitle D (and for Subtitle D prime discussed below) may be slightly lower than it should be. Specifically, our assumption that costs for future landfill and surface impoundment capacity are equal and based on the design requirements included in the rule masks any marginal increases in the cost of constructing surface impoundments relative to the

¹³ The estimates using a seven percent discount rate are \$29 billion and \$2.8 billion respectively.

baseline. In some cases, additional design and construction costs may be incurred to engineer a surface impoundment that complies with all of the siting criteria – the incremental costs of such a surface impoundment would be attributable to the rule. Also, we do not account for those instances where location makes it impossible to construct a compliant surface impoundment on site.

The Subtitle D prime alternative discussed in the notice of proposed rulemaking would, according to our methodology, impose no additional costs relative to the baseline. As with the Subtitle D option, conversion from wet to dry would only occur where it reduced costs (including permitting or public goodwill costs) relative to construction of new surface impoundments. In addition, by allowing a natural phase out of existing capacity, there are no stranded assets and no acceleration of construction spending. The costs of the D prime proposal would not actually be zero. Existing surface impoundments would only be allowed to remain open if they could demonstrate compliance with groundwater protection performance standards. Undoubtedly, there will be facilities that cannot make such a demonstration – these facilities would still face the costs associated with premature closure of existing capacity. The cost for the D prime option is therefore somewhere between zero and \$34 billion dollars.

We do not attempt to assess the relative impact of these three alternatives on at risk capacity. However, it is obvious that lower costs will put less pressure on these at risk facilities, reducing the number of premature closures

**Comments of Duke Energy to the United States Environmental
Protection Agency**

**Submitted to
Docket No. EPA-HQ-RCRA-2009-0640**

**Hazardous and Solid Waste Management System;
Identification and Listing of Special Wastes;
Disposal of Coal Combustion Residuals from Electric Utilities;
Proposed Rule;**

75 Federal Register 35128; Dated June 21, 2010

November 19, 2010

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**Comments of Duke Energy
on the
Hazardous and Solid Waste Management System;
Identification and Listing of Special Wastes;
Disposal of Coal Combustion Residuals From Electric Utilities; Proposed Rule;**

75 Fed. Reg. 35128; (June 21, 2010); Docket ID No. EPA-HQ-RCRA-2009-0640

November 19, 2010

A. Introduction and Summary.

Duke Energy Business Services LLC (“Duke Energy”), on behalf of Duke Energy Carolinas, LLC, Duke Energy Indiana, Inc., Duke Energy Ohio, Inc., Duke Energy Kentucky, Inc., and Duke Energy Generation Services (“DEGS”), submits the following comments in response to the U.S. Environmental Protection Agency’s (“EPA” or “Agency”) “Hazardous and Solid Waste Management System; Identification and Listing of Special Wastes; Disposal of Coal Combustion Residuals From Electric Utilities; proposed rule” (“Proposed Rule”).

Duke Energy owns and operates over 18,000 megawatts of coal-fired generation that produce coal combustion residuals (“CCR”) which will be subject to the requirements of this rulemaking. As such, the outcome of this rulemaking proceeding is very important to Duke Energy and its customers. In addition to the following comments, as a member of the Utility Solid Waste Activities Group (“USWAG”)¹, Duke Energy supports the comments submitted to EPA by USWAG at public hearings, in

¹ USWAG is an association of over 110 energy industry operating companies and associations, including the Edison Electric Institute (“EEI”), the American Public Power Association (“APPA”), and the National Rural Electric Cooperative Association (“NRECA”).

meetings with EPA personnel, and in detailed written comments.² Duke Energy also supports the comments submitted to EPA by the Utility Water Act Group (“UWAG”).³

Duke Energy supports the development of sensible federally enforceable⁴ regulations for CCR under a Resource Conservation and Recovery Act (“RCRA”) Subtitle D non-hazardous waste program. More specifically, Duke Energy believes that the “Subtitle D Prime” option offered by EPA, with appropriate adjustments as outlined in these and the USWAG comments, is the best approach for regulating CCR. Any Subtitle D regulatory program for CCR, however, must include a mechanism for the administration and implementation of the Subtitle D rules by the states. As EPA itself has concluded, many states already have well-established and protective regulatory controls for CCR. Furthermore, EPA must ensure that legitimate beneficial uses of CCR are excluded from regulation under any final rule.

Duke Energy believes the Subtitle D regulatory option enables EPA to develop an environmentally protective program for CCR without the accompanying adverse consequences of a Subtitle C option, including: devastating the CCR beneficial use market; imposing excessive and costly controls on ancillary power plant operations; and creating a serious short-fall in disposal capacity. EPA has readily acknowledged that it can develop non-hazardous waste rules for CCR under RCRA’s Subtitle D framework

² Duke Energy’s present comments on the Proposed Rule are intended to emphasize certain issues that may be more relevant to Duke Energy’s operations. Generally, Duke Energy’s comments are consistent with the positions outlined by USWAG.

³ The Utility Water Act Group is a voluntary, *ad hoc*, non-profit, unincorporated group of 214 energy company systems, which own and operate over fifty percent of the nation’s total generating capacity. Duke Energy is a UWAG member, as are EEI, APPA, and NRECA.

⁴ Duke Energy refers EPA to the USWAG comments for a thorough treatment of the issue of federal enforceability under a Subtitle D option, including options available to EPA to achieve this result.

that will be fully protective of human health and the environment.⁵ In addition, the development of Subtitle D CCR regulations is the appropriate outgrowth of EPA's two Reports to Congress and two final Regulatory Determinations under the Bevill Amendment declaring that CCR does not warrant hazardous waste regulation under RCRA Subtitle C.

Duke Energy also supports the development of structural integrity standards for CCR surface impoundments. Since the ash release at the Tennessee Valley Authority's Kingston Fossil Fuel Plant in December of 2008, EPA has been conducting comprehensive structural integrity assessments of the CCR surface impoundments at many coal-fired electric generating facilities across the country, including Duke Energy facilities. None of the inspections at Duke Energy facilities has resulted in any of the impoundments receiving an "unsatisfactory" rating, meaning that not a single impoundment is considered unsafe or requires immediate or emergency remedial action.

Duke Energy is adamantly opposed to the proposed regulation of CCR under RCRA Subtitle C. Under this approach, EPA would subject CCR destined for disposal to the full range of RCRA Subtitle C hazardous waste regulations. 75 Fed. Reg. at 35173. The Subtitle C option is not legally authorized, would cripple the beneficial use of CCR, and would impose huge and unnecessary costs on power plants that would ultimately be paid for by consumers in higher electricity prices – all while providing no greater protection to human health and the environment than a properly structured Subtitle D Prime regulatory program.

⁵ See the discussions on pages 7 and page 42, *infra*.

While under its Proposed Rule EPA would label CCR subject to hazardous waste regulation as “special wastes,” this label appears to be proposed by EPA solely for the purpose of attempting to deflect liability concerns and the stigmatic effects on beneficial use which will result from the regulation of CCR under EPA’s hazardous waste regulations. *Id.* at 35185. However, this labeling would not mitigate the devastating impacts that regulation of CCR under Subtitle C would have on the CCR beneficial use market. Testimony and comments from an array of third-parties, including CCR marketers and end-users, the states, independent standard setting organizations, and the utility industry unambiguously show that regulating CCR under RCRA’s hazardous waste regulations will cripple the beneficial use market. Indeed, the docket already contains record evidence identifying specific examples of how the mere specter of Subtitle C hazardous waste regulation is already adversely impacting CCR beneficial use projects across the country.

Duke Energy is not alone in its adamant opposition to the Subtitle C option. A bipartisan group of 165 members of Congress, including a majority of the House Energy and Commerce Committee, 45 U.S. Senators, virtually all the states, other federal agencies, municipal and local governments, CCR marketers and beneficial users, unions, state Public Utility Commissions, and many other third-parties have made clear to EPA during this rulemaking process that regulating CCR under RCRA’s hazardous waste program would result in excessive regulation, and, in fact, would be counter-productive because it would cripple the CCR beneficial use industry. In short, the record is clear that regulating CCR as a listed hazardous waste under RCRA Subtitle C,

the most burdensome and extreme option under federal law, is not authorized or warranted.

In addition to the devastating impact that regulation under Subtitle C would have on the beneficial use of CCR, the Subtitle C option would constitute an impermissible reversal of EPA's final 2000 Regulatory Determination that CCR does not warrant hazardous waste regulation. It would also be in direct contravention of RCRA's plain language establishing an unambiguous statutory process by which EPA can determine whether and how to regulate CCR under RCRA. EPA is, at a minimum, obligated to adhere to the statutory procedures that Congress prescribed for making the original regulatory determination, including providing a Report to Congress setting forth its recommendation.⁶

With regard to EPA's Regulatory Impact Analysis, EPA substantially overstates the economic benefits of the Proposed Rule while significantly underestimating the electric utility industry's cost of compliance with proposed Subtitle C and Subtitle D requirements. Assigning more realistic compliance costs and benefits to the proposed regulatory options makes it clear that the Subtitle D Prime option is the appropriate path forward for regulating CCR.

B. Duke Energy Supports the Regulation of CCR under a Subtitle D Regulatory Structure.

Duke Energy supports federally enforceable regulation for CCR as a non-hazardous waste under the Subtitle D regulatory structure, including the D Prime option,

⁶ Duke Energy refers EPA to the USWAG comments for a complete discussion of the legal and policy reasons why EPA cannot regulate CCR under the Subtitle C option.

and it recommends some additional important amendments to that option as discussed below. The RCRA Subtitle D framework provides the appropriate legal structure under which EPA may develop federal regulations for CCR. Moreover, by adopting the Subtitle D option, EPA would not reverse its final 2000 Regulatory Determination for CCR, but instead would support that determination by promulgating consistent federal non-hazardous waste rules for the disposal of CCR.

1. EPA Should Promulgate a Subtitle D Regulatory Program for CCR that Can Be Implemented by the States.

Duke Energy does not believe that a self-implementing regulation as outlined in the Proposed Rule is a workable solution. The uncertainty associated with the compliance and reporting requirements of the self-implementing regulatory structure proposed by EPA under the Subtitle D option would add an undue regulatory burden with no corresponding environmental benefit. Rather, it is essential that EPA provide a mechanism for states with qualified programs to administer the CCR rules and standards.

Duke Energy recommends that in adopting the Subtitle D regulatory option, the Agency amend the proposed Subtitle D framework so that the final rules are fully implementable by state environmental regulatory agencies. Many states currently have robust non-hazardous regulatory programs in place for CCR that either mirror 40 C.F.R. § 258 or are even more stringent than what EPA has proposed under the Subtitle D option in the Proposed Rule. As indicated by the written comments on the Proposed Rule submitted to EPA by states such as Indiana and Kentucky, EPA is encouraged, to the extent it deems necessary, to request from Congress the statutory authority

necessary to propose non-hazardous regulations under Subtitle D that are implemented by the states and provide federal enforceability. If such a mechanism is not utilized by EPA for states to be able to implement these rules, the electric utility industry and CCR beneficial users will be faced with having to comply with duplicative and potentially inconsistent state and federal regulations, an undue regulatory burden with no corresponding environmental benefit.

It is also noted that while the 2000 Regulatory Determination for CCR identified areas where some state regulatory programs were lacking appropriate controls, EPA determined at the time that those concerns could be addressed under a federal Subtitle D regulatory structure. Thus, it follows that a state-implemented regulatory structure would ensure adequate management of CCR.

2. EPA Has the Enforcement Authority it Needs to Promulgate Rules that May Be Administered by the States and Be Subject to Direct Federal Enforcement.

Duke Energy concurs with USWAG's legal analysis that EPA already has the authority to promulgate rules under RCRA §§ 4005(c) and 4010(c) that may be administered through state permitting programs and be subject to direct federal enforcement in states that fail to adopt and adequately administer the federal rules. Specifically, EPA can utilize a combination of the RCRA statutory authorities it employed in promulgating federally enforceable Subtitle D rules for municipal solid waste land disposal facilities ("MSWLFs") and non-MSWLFs under 40 C.F.R. §§ 257 and 258 to establish controls for CCR disposal units.

This approach provides EPA with the enforcement authority it desires under a Subtitle D CCR regulatory program, while also giving the states the opportunity to take a

prominent role in the administration of any Subtitle D CCR program. Again, this would prevent the duplication of potentially conflicting federal and state requirements. If, for whatever reason, EPA does not agree that the use of RCRA §§ 4005(c) and 4010(c) are legally defensible, it can and should seek congressional authorization to develop such a rule for managing CCR under a state authorized program similar to that developed for MSWLFs under 40 C.F.R. § 258, rather than promulgate a CCR rule that does not provide for state implementation.

3. Amendments are Needed with Respect to the Subtitle D Regulatory Option.

As noted above, Duke Energy supports appropriate federally enforceable regulations under the Subtitle D option that includes the D Prime component. However, there are fundamental flaws with certain provisions of the Subtitle D proposed regulatory structure that require revision. The significant issues that must be addressed include:

- The applicability provisions for the rule;
 - The inappropriate closure requirements for CCR disposal units;
 - The unwarranted application of all location restrictions to *existing* CCR surface impoundments and landfills;
 - The requirement for run-on controls for some surface impoundments;
 - The failure to allow for alternate liner systems;
 - The proposed liner criteria;
 - The allowance of state approved alternative groundwater monitoring programs;
- and

- The overly broad definitions for CCR landfills and CCR surface impoundments.

Each of these issues is discussed below.

a. EPA Must Amend the Proposed Rule's Applicability Section.

In the preamble to the Proposed Rule, EPA clearly states that the Proposed Rule only applies to CCR generated by electricity or combined heat and power plants whose primary business is to sell electricity or electricity and heat to the public (i.e. NAICS Code 221112 plants). EPA also states that placement of CCR in minefills is not being addressed in the Proposed Rule, and that the United States Department of Interior ("DOI") and EPA will address the management of CCR in minefills in a separate regulatory action. Moreover, even under the Subtitle C option, EPA has acknowledged that the Proposed Rule should not apply to beneficially used CCR that is placed in mine filling operations, generated by facilities outside the electric power sector (i.e. not included in the NAICS Code 221112), or activities associated with cleanups authorized by state or federal agencies.

As currently proposed in 40 C.F.R. § 257.40, however, Duke Energy believes that *all CCR* would arguably be subject to the rule. EPA must revise the proposed regulatory applicability language in 40 C.F.R. § 257.40(a) to clearly state that the rule only applies to electricity generators that are managing CCR and whose primary business is to sell electricity or electricity and heat to the public (i.e. NAICS Code 221112 plants) as EPA intended. Left unchanged, the regulatory language would subject entities outside of the electric sector to the rule's requirements, including many small businesses, which would be inconsistent with EPA's determination that small business review was not required.

b. Surface Impoundment Closure Requirements Should Be Modified.

(i) The Closure Requirements for Unlined Surface Impoundments are Inappropriate; EPA Should Implement the Subtitle D Prime Component in the Non-Hazardous Waste Option.

There is no reasonable basis for requiring an electric utility to discontinue the use of and close any surface impoundment that has been demonstrated to be in full compliance with all groundwater quality standards and all dam stability requirements proposed in the rule. Likewise, EPA should not force the closure of surface impoundments solely because an owner cannot demonstrate that the impoundment was constructed with a composite liner as proposed under 40 C.F.R. § 257.65. Instead, Duke Energy recommends that EPA remove the arbitrary and capricious requirement that surface impoundments be closed within five years of the effective date of the Proposed Rule unless it can be demonstrated the impoundment was constructed with a composite liner or has been retrofitted with one.

Notably, Duke Energy continues to manage CCR in surface impoundments to ensure the impoundments are operating in a manner that is protective of human health and the environment. The tools for the proper assessment of the performance of a surface impoundment include evaluating groundwater monitoring data, performing stability analysis, and conducting routine inspections. Duke Energy recommends that EPA only require the closure of existing surface impoundments if a groundwater monitoring program detects significant impacts to groundwater quality that cannot be corrected or satisfactorily addressed through other measures, or if any of a surface

impoundment's dikes or dams are determined to be unstable and cannot be corrected safely.

Duke Energy also notes that it has significant experience in converting wet fly ash handling systems to dry handling systems, and it has experience in closing surface impoundments. However, the *premature* closure of surface impoundments will result in lost assets (storage and treatment capacity) and will therefore needlessly require utilities that are in compliance with current regulations to install and operate alternative water treatment systems. As a result, EPA should amend the Subtitle D option for 40 C.F.R. § 257.65 to eliminate mandatory closure for existing unlined surface impoundments within five years of the rule's effective date. Instead, EPA should only require the closure of surface impoundments that cannot demonstrate compliance with the performance-based standards in the Proposed Rule. However, if EPA does impose a mandatory closure requirement, the effective date for implementation of the closure plan and completion of construction should be determined case by case, based on best engineering practices. Otherwise, the closure requirement will significantly hamper compliance flexibility and may lead to premature unit shut-down, thereby jeopardizing electric reliability and driving up the cost of electricity – all in return for little or no environmental benefit when compared to closure based upon performance-based standards.

(ii) Initiation and Completion of Closure Should Be Based on an Approved Schedule, Not the Imposition of Unrealistic Closure Deadlines.

Duke Energy agrees that existing surface impoundments that are not operating in accordance with performance-based standards (and cannot otherwise be brought within

the standards), or have reached their maximum storage capacity and where no dredging can occur, should be closed. Duke Energy also agrees with the design standards proposed by EPA for the final cap of such surface impoundments. However, one of the most significant flaws identified by Duke Energy in the Subtitle D proposal is the requirement for closure of CCR surface impoundments that do not meet the specific liner design standards as proposed in the rule, *regardless* of how the unit is performing.

Duke Energy has constructed two CCR surface impoundments using high density polyethylene ("HDPE") synthetic liners where the sub-base component of the composite liner does not meet the proposed requirement for two feet of clay with permeability less than or equal to 1.0×10^{-7} cm/sec. These surface impoundments are safe and functioning as designed. However, under the Proposed Rule, these surface impoundments would be required to be closed before either of them reaches their maximum storage capacity. Therefore, EPA must include the D Prime component when it promulgates a Subtitle D non-hazardous regulation such that it does not mandate the closure of surface impoundments simply because they do not meet EPA's proposed liner design standards regardless of how the facility is performing.

In addition, EPA proposes to require a utility to begin closure of surface impoundments within 30 days of receipt of final CCR placement and complete closure within 180 days of the start of closure. With this requirement, EPA appears to be applying the closure requirements designed specifically for landfills to the closing of CCR surface impoundments. The problem is that surface impoundments cannot be held to the same closure time periods that are generally accepted for landfills because of the way surface impoundments are designed, constructed, and operated.

Generally, landfills are brought to near final grade and covered with temporary cover as the facility is filled. Thus, final closure of landfills can be completed in approximately 180 days from final placement of waste. Because of their specific design and operation, however, surface impoundments by their very nature do not utilize temporary cover as they are being filled and are therefore not covered until after the final placement of CCR. At that time, the impoundment must be dewatered prior to the commencement of further closure activities while complying with National Pollutant Discharge Elimination System ("NPDES") permit requirements. The dewatering step alone can take far longer than 180 days so as to protect the environment. The construction of the final surface cap or cover after dewatering can take even longer to complete.

All aspects of a CCR surface impoundment closure must be conducted in a manner that is both technically feasible and protective of the environment with respect to the construction of the final cap. The closure process must also take into account the fact that CCR surface impoundments are often part of a complex wastewater treatment process that serves a critical function for other plant systems (such as boiler blowdown, stormwater runoff, and laboratory drains) that are essential activities associated with the generation of electricity. If a surface impoundment must be closed, adequate time must be allowed for the addition of an alternate (and costly) wastewater treatment process to avoid forcing electric power plants off-line unnecessarily with potential impacts to electric reliability and cost.

Even the smallest surface impoundment cannot be closed properly within the time frame currently proposed by EPA. Duke Energy therefore recommends that EPA

eliminate all references to initiating closure within 30 days of the final receipt of CCR and completing closure within 180 days of the start of closure. Instead, the closure schedule should be addressed in a unit-specific closure plan that includes a reasonable and technically feasible closure schedule developed in conjunction with and agreed to by the state environmental agency having jurisdiction.

Duke Energy recommends that EPA require closure and post-closure plans be developed and approved for all active surface impoundments. The closure plan would be initiated and implemented according to an approved schedule upon the final receipt of waste. The schedule for starting and completing closure should be based on best engineering management practices as they relate to the size of the impoundment and availability of the materials (including wastewater treatment) necessary to close the impoundment properly. As referenced above, Duke Energy contends that existing state regulatory agencies should be utilized to facilitate and implement these closure plans.

(iii) Closure Requirements Should Be Flexible to Allow the Construction of Brownfield Development to Include New Compliant CCR Disposal Units and Other Structures.

Duke Energy encourages EPA to include provisions in the closure requirements that allow for Brownfield development, including new CCR disposal units that are compliant with the proposed Subtitle D rules. In the preamble to the Proposed Rule, EPA discusses its belief that disposal patterns will not change under the various regulatory options. That belief is mistaken. Many of Duke Energy's generating stations are land-locked and have minimal amounts of undeveloped properties available for any type of expansion. For stations such as these, the Proposed Rule would require utilities

to permit and construct new disposal units off-site. Thus, disposal patterns for these stations would be greatly affected.

The electric utilities have demonstrated that the use of fly ash and bottom ash as sub-base in construction of new CCR disposal units is a beneficial use application of CCR. In addition, Duke Energy has constructed air pollution control equipment, haul roads, and other pertinent plant buildings and facilities on top of previously closed surface impoundments with no negative impacts.

Along with these permanent structures, Duke Energy has also designed landfills to be constructed on top of closed surface impoundments. The first landfill Duke Energy permitted and constructed on top of a dewatered surface impoundment was in Indiana. Its design was permitted through the Indiana Department of Environmental Management with instrumentation (i.e. piezometers, settlement plates, and inclinometers) to monitor and measure stability. The data collected from that instrumentation has confirmed that the practice is safe when appropriately designed. Duke Energy has also designed and permitted landfills on top of surface impoundments, with liner systems that function both as a final cap for closure of the impoundment and the liner system for the landfill. Duke Energy conducts detailed stability analyses that are included in the permit application to demonstrate the safety of the design. This design has been also permitted by the Department of Environmental and Natural Resources in North Carolina.

Likewise, Duke Energy has demonstrated that it can safely design, construct, and operate lined surface impoundments on top of inactive impoundments. Once again, the liner for the new impoundment can be designed to function as both a cap for

the old impoundment and the liner system for the new impoundment. All of the landfills and surface impoundments discussed above have been inspected by independent consultants (i.e. civil engineers with professional engineer certifications and expertise in dam and dike stability). These Brownfield applications reusing closed or dewatered surface impoundments for development and expansion of plant facilities should remain a viable option for electric utilities.

Duke Energy encourages EPA to consider modifying the proposed closure regulations to provide a mechanism to allow a variety of Brownfield projects to be located over surface impoundments being closed under the Subtitle D option. New landfills and closure plans for surface impoundments can be designed to incorporate a protective cap over the coal ash in the surface impoundment and also function as the landfill liner system. It is inevitable that required closure of some existing surface impoundments will impact NPDES wastewater treatment systems for all plant wastewater systems, not only coal ash sluice water. The construction of new, smaller impoundments with composite liner systems will be required for the alternative water treatment systems to manage the remaining plant wastewaters and stormwater. If there is no flexibility to redevelop surface impoundments, utilities will be required to use green-field properties off-site with consequent property acquisition, permitting, cost, and other major uncertainties.

As detailed below, it is critical that EPA also allow alternative groundwater monitoring systems. Duke has successfully designed and installed alternative groundwater monitoring systems, approved by state solid waste regulatory agencies, to monitor both the performance of closure of the impoundment and the landfill. This is yet

another example why it is important for EPA to develop a non-hazardous waste regulatory framework under Subtitle D that can be adopted and implemented by the state environmental agencies. These agencies can provide local oversight and expertise in approving alternative closure plans for surface impoundments and landfills constructed on Brownfield areas.

c. The Location Restrictions for Existing CCR Surface Impoundments and Landfills Should Be Modified.

EPA states in the preamble of the Proposed Rule that it intends to subject existing surface impoundments to *all* of the new location restrictions due to the risks posed by these units. *Id.* at 35198-99. In the corresponding proposed regulatory text, however, existing surface impoundments are only subject to the location restrictions related to floodplains and unstable areas. Duke Energy disagrees with EPA to the extent that it intends to subject existing CCR surface impoundments to *all* of the additional location restrictions found in 40 C.F.R. § 257, consistent with the preamble.

Duke Energy agrees with EPA that the location restrictions should apply for all *new* surface impoundments and landfills, and that compliance with these restrictions should be documented. However, Duke Energy disagrees with EPA's proposal to subject *existing* CCR surface impoundments and landfills to the proposed location restrictions. EPA should instead provide a mechanism for a facility to demonstrate that any environmental or stability concern associated with a specific location restriction has been or can be adequately mitigated.

Duke Energy notes that the pre-construction siting of many of the existing surface impoundments and landfills at Duke Energy stations has been conducted with

oversight and review from various state agencies with respect to the same location restrictions that EPA proposes to apply to existing surface impoundments. As such, if Duke Energy had encountered a location restriction at the time it sought approval to construct one of these existing impoundments or landfills, the state would have required mitigation steps to address the restriction. Alternatively, the state would have simply denied the initial request to construct.

There were some surface impoundments constructed at Duke Energy stations prior to these location restrictions being promulgated into state regulations. However, as previously noted, none of the inspections at Duke Energy facilities has resulted in any of the impoundments receiving an “unsatisfactory” rating, meaning that not a single impoundment is considered unsafe or requires immediate or emergency remedial action. It would be problematic if Duke Energy were required to retroactively comply with all of the location restrictions or close surface impoundments and landfills, leading to the significant loss of storage capacity. Any requirement to satisfy the location restrictions, without the option to mitigate any environmental or stability concerns, could force Duke Energy to unnecessarily transport CCR significant distances for disposal. Consequently, with respect to the Proposed Rule, EPA must not subject existing CCR surface impoundments to location restrictions if those units satisfied all siting requirements in effect at the time of construction and have been operating safely without a demonstrated adverse impact to human health and the environment. Instead, the decision whether to subject existing surface impoundments to the new location restrictions should be based upon an evaluation (from a third-party professional engineer) of the specific risks posed by such facilities at each location. Where the

location restrictions are applied to an existing impoundment, the facility should be allowed to mitigate any environmental concerns or demonstrate that the environmental concerns have already been mitigated in lieu of closure.

The seismic zone location restriction is one example of a restriction that could affect many existing facilities. Most of Duke Energy's stations in the state of Indiana are within a seismic zone. Without the ability to demonstrate that the facility is safe, Duke Energy would be required to transport CCR a significant distance off-site for disposal. EPA therefore must provide a mechanism that allows an electric utility to demonstrate that it has addressed any location/siting concerns through engineering controls or other best management practices if such demonstration had not already been made prior to construction.

Furthermore, it must be noted that most existing state environmental regulatory programs provide that all applicable state agencies (e.g., Department of Natural Resources or other state and local agencies with jurisdiction over specific siting restrictions) be part of the siting and permitting process for new surface impoundments and landfills. EPA should consequently provide a mechanism for states to adopt these regulations to ensure all location restrictions are addressed before approvals are issued for new facilities. Again, it is evident that any self-implementing rule would create an excessive burden by requiring compliance with duplicative and potentially conflicting requirements with no corresponding human health or environmental benefit.

d. Run-on Control is Not Appropriate for All CCR Surface Impoundments.

Duke Energy agrees with EPA that run-on and runoff controls are necessary for most surface impoundments and landfills. However, Duke Energy also points out that there are certain exceptions that EPA needs to recognize in the proposed regulatory language. For example, 40 C.F.R. § 257.81 requires a "control system to prevent flow onto the active portion of the CCR landfill or surface impoundment" during peak discharge events. While this requirement may be appropriate for CCR landfills and surface impoundments that are constructed with above-ground dikes on all sides, it is a wholly inappropriate requirement for CCR surface impoundments that have been specifically designed to retain stormwater from an adjoining watershed, including those impoundments that have been formed by damming a ravine. Such impoundments have already received regulatory review/approval, have been designed with capacity and outlets that are sufficient to deal with the water flow into the impoundment from the natural watersheds during peak discharge events, and have operated safely.

Duke Energy recommends that EPA eliminate the proposed prohibition of run-on into impoundments. Instead, EPA should require that impoundment designs appropriately address the additional flow contributed by stormwater which discharges into the impoundment during peak discharge events. In this manner, impoundments that have been designed as described above, and which have been engineered to address peak discharge events, will not be confronted with a restriction that is both unnecessary and effectively impossible to satisfy.

e. EPA Should Allow for Equivalent Alternative Liner and Final Cap Design Standards.

While the Proposed Rule currently does not allow for any deviation from the specified liner or cap requirements for CCR units, EPA appropriately asks whether the Subtitle D option “should allow facilities to use an alternative design for new disposal units,” provided that an independent, registered professional engineer or hydrologist certifies that an alternate design system would ensure that the appropriate concentration values for typical constituents will not be exceeded in the uppermost aquifer at the relevant point of compliance.

Duke Energy contends that it is absolutely essential that the Subtitle D option allow for the use of alternative liner and cap systems for CCR disposal units. A liner design constructed from alternative materials (as compared to the prescriptive proposed composite liner system under the design criteria of 40 C.F.R. § 257.70) that is equally protective of groundwater must be allowed. EPA already acknowledges that there are alternative liner systems that can provide equal, if not greater, protection to groundwater. Indeed, EPA has consistently recognized throughout the Bevill Amendment regulatory determination process that, given the vastly different site-specific characteristics of CCR disposal units across the country, there is not a “one-size-fits-all” approach when it comes to regulatory design standards for these units. Thus, there is no good reason why alternate – but equally effective – liner systems should not be available for utility CCR unit designs. The same is true for alternative cap designs in closure. Consideration of the climatic conditions of the area must be taken into account when designing final caps. The use of various types of vegetation and

non-cohesive soil covers can function more effectively in arid areas, and synthetic caps with drainage controls can function more effectively in areas with significant rainfall.

f. The Proposed Liner Technical Design Criteria Also Should Be Modified.

EPA must revise its proposed technical design criteria for new and retrofitted liners for CCR impoundments. Pursuant to proposed 40 C.F.R. § 257.71(a)(1), CCR impoundments shall be constructed with a composite liner consisting of an upper component of a 30 mil flexible geomembrane liner ("FML") and a lower component consisting of two (2) feet of clay with a hydraulic conductivity of no more than 1.0×10^{-7} cm/sec, with a leachate collection system *between* the upper and lower components of the composite liner. As currently proposed, placing an FML directly over a leachate collection or leak detection system will make the proposed design very inefficient. Specifically, this situation could result in a significant leakage rate through the FML because it will not be supported by the clay liner typically required pursuant to best engineering practices. In other words, given that both components of the liner system must be in direct contact with one another, it is impossible for any leachate collection or leak detection system to be successfully installed between these two components. Duke Energy contends that composite liner systems would provide more than adequate groundwater protection for surface impoundments. A groundwater monitoring program should be employed to monitor performance of the surface impoundment.

g. EPA Should Allow for State Approved Alternative Groundwater Monitoring Programs.

Duke Energy supports appropriate groundwater monitoring standards for CCR surface impoundments and landfills and the development of such standards under a RCRA Subtitle D framework. Indeed, Duke Energy has been an industry leader in implementing groundwater monitoring programs for its active surface impoundments in accordance with the Industry Action Plan (“Plan”) that was initially developed by USWAG at the request of EPA and in conjunction with the Association of State and Territorial Solid Waste Management Officials. The groundwater monitoring program in the Plan was modeled after the EPA Industrial D guidance issued in 2003. As such, the Plan contains all the key components that are outlined in the groundwater monitoring requirements in 40 C.F.R. § 258.

The groundwater monitoring provisions in the Subtitle D option are taken largely from the MSWLF requirements outlined in 40 C.F.R. § 258. However, some key components are missing. Unlike the groundwater monitoring programs under 40 C.F.R. § 258 and the Industrial D guidance, EPA’s Proposed Rule does *not* allow for state-approved alternate groundwater monitoring programs for CCR landfills and surface impoundments.

Given the extreme range of natural variations in site geology and groundwater at CCR disposal units across the country, it will often be necessary for technical experts to adjust the specific groundwater monitoring standards that EPA establishes to account for various site-specific conditions and factors. The states are in the best position to accomplish this task. For example, when Duke Energy implemented groundwater monitoring around its surface impoundments in Indiana, it worked with the Indiana

Department of Environmental Management to obtain approval of an alternative method for evaluating groundwater quality without using standard inter-well or intra-well comparison. Likewise, it is noted that groundwater in many areas of Indiana and the Carolinas, for example, naturally exceeds current groundwater standards due to influence from surrounding soil and rock (i.e. arsenic, manganese, and iron). Alternative groundwater monitoring programs and methods will take into account local and regional natural occurrences and allow a facility to continue to operate in full compliance with the standards and regulations that are protective of human health and the environment.

Duke Energy recommends that EPA include provisions for the Subtitle D option groundwater monitoring rules applicable to CCR disposal units that are similar to those in 40 C.F.R. § 258. This would allow for the state (or a professional engineer or hydrologist, in the context of a self-implementing Subtitle D rule) to be authorized to establish an alternative, but equally effective, groundwater monitoring program. Once again, EPA should include a mechanism in the Subtitle D option that will authorize the states to adopt these rules so that region-specific issues can be properly addressed.

h. Definition Issues Under the Subtitle D Proposal Must Be Corrected.

(i) The Definition of CCR Landfill – 40 C.F.R. § 257.40(2)(b).

In the Proposed Rule, “CCR Landfill” is defined as:

A disposal facility or part of a facility where CCRs are placed in or on land and which is not a land treatment facility, a surface impoundment, an underground injection well, a salt dome formation, a salt bed formation, an underground mine, cave, or a corrective action management unit. For purposes of this part, landfills also include piles, sand and gravel pits, quarries, and/or large scale fill operations. Sites that are excavated so that more ash can be used as fill are also considered CCR landfills.

Duke Energy recommends that EPA make multiple changes to the proposed definition of “CCR Landfill” because it is overly broad to the extent that it attempts to capture all operations involving the use of CCR. As the term “CCR Landfill” is defined in the Proposed Rule, it will have significant detrimental impacts upon legitimate beneficial use. For example, the proposed definition would inappropriately include CCR that is being used for a legitimate functional purpose and thus is not a solid waste in the first place (because CCR has not been discarded).

Likewise, the phrase “large scale fill operations” cannot be included in a final regulatory definition without setting forth discernible and readily understandable parameters as to what type of large scale fill operations would constitute a CCR landfill. One of the fundamental problems with the proposed definition is that it assumes all CCR placed in large scale fill operations constitutes the “disposal” of CCR (and that these operations therefore constitute CCR landfills). This assumption is incorrect. CCR is often used in engineered fills, such as road base and road embankments, and is incorporated into the design of Department of Transportation road and highway construction projects. Simply put, the definition should *not* subject legitimate beneficial use of CCR in any engineered fill application to the CCR landfill regulations.

EPA must also set forth discernible and readily understandable criteria concerning what constitutes a “pile.” CCR is commonly stored temporarily in piles in multiple applications, all of which do *not* constitute disposal. For example, electric utilities have stack-out areas where CCR is staged before it is shipped as legitimate product for beneficial use or disposed in a CCR landfill. Thus, temporary storage in

piles does not constitute “disposal.” Therefore, the term “pile” must be more narrowly defined.

Duke Energy has recommended that EPA provide a mechanism to allow states to adopt the Subtitle D Prime option with permitting and compliance oversight. Under that scenario, Duke Energy recommends the following definition of “CCR Landfill”:

A CCR landfill means a permitted land disposal facility that accepts CCR from the combustion of coal for deposit and covering in and on the ground surface.

- The term does not include CCR processing or land application facilities or activities.
- The term does not include CCR placed in: a surface impoundment; a surface or underground mine regulated by the Office of Surface Mining; a land treatment unit; or a corrective action management unit.

For purposes of this part, CCR placed in sand pits, gravel pits, quarries, or sites that are excavated so that more ash can be used as fill are considered open dumps.

(ii) The Definition of CCR Surface Impoundment or Impoundment – 40 C.F.R. § 257.40(2)(b).

The Proposed Rule defines “CCR Surface Impoundment” as:

A facility or part of a facility which is a natural topographic depression, man-made excavation, or diked area formed primarily of earthen materials (although it may be lined with man-made materials), which is designed to hold an accumulation of CCRs containing free liquids and which is not an injection well. Examples of CCR surface impoundments are holding, storage, settling, and aeration pits, ponds, and lagoons. CCR surface impoundments are used to receive CCRs that have been sluiced (flushed or mixed with water to facilitate movement), or wastes from wet air pollution control devices, often in addition to other solid wastes.

If applied appropriately, Duke Energy notes that this definition should only include impoundments into which CCR is initially wet sluiced, hydraulically applied from air pollution control devices, and/or applied to other surface impoundments that are

hydraulically connected and designed for disposal of CCR. Duke Energy is concerned, however, that the currently proposed definition might be subject to misapplication. For example, a wastewater treatment impoundment at a facility that receives non-CCR wastewaters may occasionally receive small amounts of CCR via stormwater runoff (for example, from an FGD storage pad) or from the transfer of wastewater containing small amounts of CCR from an upstream CCR impoundment designed for disposal. Under these circumstances, the wastewater treatment impoundment's primary function is clearly *not* to hold an accumulation of CCR. Moreover, it is not in any practical or technical sense receiving CCR that has been wet sluiced to the impoundment. Therefore, it would be illogical to consider this to be a CCR surface impoundment and apply the full array of correspondingly proposed regulatory requirements.

The problem is also illustrated by EPA's own inconsistency in what structures it considers to be surface impoundments. As EPA is aware, its 2009 Information Collection Request ("ICR") distributed to electric utility power plants resulted in a broad interpretation of what constitutes a surface impoundment used to accumulate CCR. EPA's ICR requested that *any* impoundment receiving even small amounts of CCR be identified. It was clearly understood at the time that the breadth of this ICR would include impoundments that are not CCR impoundments used for disposal, but which nonetheless may contain small amounts of CCR through power plant runoff or other sources. This expansion in defining CCR surface impoundments in the ICR context cannot, and should not, be perpetuated through a definition of "CCR surface impoundments" in the Proposed Rule. To ensure that this does not occur, EPA must

amend the definition to include a more detailed functional element that excludes impoundments at power plants that receive only small amounts of CCR.

In addition to including a more specific functional description within the definition, EPA should incorporate a size limit into the definition. This will ensure that small units that do not pose the potential risks associated with the types of CCR impoundments described in damage cases are excluded from the definition. In the Proposed Rule, EPA used a size threshold of 20 acre-feet or more for purposes of triggering the structural integrity requirements for CCR surface impoundments. See 75 Fed. Reg. at 35243. Conservatively, Duke Energy recommends that a size threshold of half this volume – 10 acre-feet or more – should serve as the size threshold for classifying a unit as a CCR surface impoundment in the first place. However, Duke Energy agrees with EPA that 20 acre-feet should serve as the threshold for triggering the structural integrity requirements for CCR surface impoundments.

Finally, the definition should not encompass units that, having once served as impoundments, have been dewatered and closed for purposes of serving as the base for a CCR landfill or as the base for equipment or building expansion for power plant facilities. Dewatered impoundments that subsequently serve as the base for CCR landfills or property developments are not impoundments in the first place, and should therefore not be inadvertently captured by the “CCR surface impoundment” definition.

Given the above, Duke Energy recommends that EPA’s proposed definition of “CCR Surface Impoundment” be modified to read as follows:

CCR surface impoundment means a facility or part of a facility which is a natural topographic depression, man-made excavation, or diked area formed primarily of earthen materials (although it may be lined with man-made materials), which has a storage volume of 10 acre-feet or more and

which is specifically designed for and whose primary function is to hold an accumulation of CCR containing free liquids and which is not an injection well. Examples of CCR surface impoundments are those impoundments whose primary function is to hold a significant amount or accumulation of CCR, such as primary holding, storage, settling, and aeration pits, ponds, and lagoons that are used to receive CCR that is wet sluiced (flushed or mixed with water to facilitate movement) directly from wet air pollution control devices, often in addition to other solid wastes. This definition is not intended to encompass impoundments whose primary function is not to receive CCR, but which receive small amounts of CCR from the receipt of waters that have come in contact with CCR or other wastewaters. Examples of impoundments that are not CCR impoundments include, but are not limited to, cooling, polishing, process water storage, stormwater management, recycling, wastewater and holding ponds. CCR impoundments also do not include former impoundments that have been dewatered and closed and/or dewatered and subsequently used as the base for CCR landfills, buildings, or other structures, or have otherwise been developed to accommodate additional power plant facilities.

The above modifications to the definition of CCR surface impoundment will help ensure that only those impoundments that truly function as CCR impoundments are captured within the “CCR surface impoundment” definition and subject to the proposed CCR impoundment regulations.

**(iii) The Definition of Existing CCR Surface Impoundments –
40 C.F.R. § 257.40(2)(b).**

Duke Energy recommends that EPA modify the proposed definition of an “Existing CCR Surface Impoundment” to clarify that it does not include impoundments that have ceased receiving CCR before the effective date of the final rule. The proposed definition currently includes, in pertinent part, an impoundment that “was in operation ... prior to the effective date of the rule.”

Duke Energy recommends that EPA modify this definition so that it only applies to an impoundment that “was in operation *and had not yet ceased receiving CCRs* prior to the effective date of the rule.” This is necessary to make it clear that the definition

does *not* encompass surface impoundments that are no longer receiving CCR on the effective date of the rule. Plainly, units that are no longer receiving CCR on the effective date of the rule are not “in operation” and therefore should not be subject to the standards applicable to active units.

EPA also should clarify in the final rule that the definition of “Existing CCR Surface Impoundment” *does* include impoundments that are operating on the effective date of the rules and that are periodically dredged out during the operating life of the impoundment to maintain storage capacity. While this may seem self-evident, it is important to clarify this point so that an impoundment periodically dredged out during its normal operating life to allow for its continued use is not inappropriately characterized as a “New CCR Impoundment” when the facility reinitiates placement of CCR in the impoundment after dredging operations are complete.

(iv) The Definition of Existing CCR Landfills – 40 C.F.R. § 257.40(2)(b).

The proposed definition of an “Existing CCR Landfill” should be modified to include lateral expansions of operating units where such expansion is within the site footprint of an area already approved and permitted by the state for the landfill. While the currently proposed definition includes undeveloped areas within the footprint of an approved permitted site, it also requires that construction actually commence at the site or that some type of binding contractual obligation be present for these areas to be considered an existing CCR landfill. However, regardless of whether construction has commenced or there is a contractual obligation present for expansion, such undeveloped areas pose no additional risk since they are already approved and

permitted. Moreover, there is no health-based or environmental-based reason to support such a distinction. Under both scenarios, the undeveloped portion of the approved permitted site must undergo environmental and related technical review by the permitting authorities and be approved for the location of a CCR landfill. To exclude a location that has otherwise already been permitted for a CCR landfill from the definition of an “existing” landfill merely because there is not a binding contractual commitment to begin construction would unfairly subject these areas to the design and operating standards for new CCR landfills, especially where *identical* locations are considered existing CCR landfills but are subject to different operating standards based merely on the existence of a contract to commence construction. Such a distinction is arbitrary and capricious and provides no practical benefit.

4. EPA Must Ensure that the Legitimate Beneficial Use of CCR is Excluded from the Regulations.

EPA’s Proposed Rule, even under Subtitle D, will inhibit the beneficial use of CCR, a result which is entirely unnecessary and provides no benefit to human health or the environment. Duke Energy recommends all legitimate beneficial use of CCR be excluded from the proposed regulations. Legitimate beneficial use of CCR actually provides a benefit to the environment in addition to product benefits. It prevents valuable land from being unnecessarily used for CCR landfills. It reduces the need to mine natural materials such as gypsum or soil. The agricultural application of synthetic gypsum provides better crop yields and reduces water demand for crops. In addition, commercially engineered structural fills that comply with all of USWAG best management guidelines provide significant benefit. Indeed, as discussed below, CCR

is a readily available resource that, when used properly, preserves finite resources and provides economic benefit for agricultural, road building, and structural fill development projects.

a. EPA Should Not Limit the Exclusion of the Bevill Regulatory Determination to Only Encapsulated Beneficial Use of CCR.

In the Proposed Rule, EPA states it is considering promulgating regulations to address unencapsulated uses of CCR. 75 Fed. Reg. at 35164-65. However, EPA has not provided sufficient detail as to what these regulatory provisions might be, thereby precluding meaningful public comment on any proposed standards. For many industries, the impact of the Proposed Rule is directly related to whether and how the definition of “CCR landfill” is applied to particular facilities and operations. Significantly, persons and facilities that may be subject to the hazardous waste or solid waste regulatory program may not even be aware that they own or operate a potentially covered CCR landfill.

As noted above, EPA proposes to define the term “beneficial uses” under the Subtitle C option, in pertinent part, as “the use of CCPs that provides a functional benefit; replaces the use of an alternative material, conserving natural resources that would otherwise need to be obtained through practices such as extraction; and meets relevant product specifications and regulatory standards (where these are available).” *Id.* at 35254. As an alternative to these criteria, EPA requests comment on whether it should provide a formal listing of all beneficial uses. *Id.* at 35163.

Duke Energy recommends EPA avoid attempting to specifically list all the types of qualified CCR beneficial uses because any such list will certainly be under-inclusive.

Equally important, a formal list will delay the implementation of new and emerging strategies and technologies for using CCR because a new rulemaking would be necessary to officially recognize each and every new and qualified CCR beneficial use. This would unnecessarily restrict the development of new CCR markets and stifle innovation. Significantly, delays in the development of new technology and new beneficial use of CCR are already occurring in the marketplace pending this proposed regulatory change. Instead, EPA should use the performance criteria proposed in the regulatory text to define beneficial use. It is also Duke Energy's position that certain structural fills and other unencapsulated uses – including some that may not be developed yet – can and do meet these criteria.

In addition, it is important to note that it would be detrimental for EPA to classify encapsulated uses of CCR as non-hazardous waste, while regulating unencapsulated uses as hazardous waste. Doing so will only cause confusion to end-users and incite litigation. For example, lawsuits will likely challenge any determination that fly ash is acceptable as a component of concrete in a residential structure, but is somehow hazardous when used in road base construction. Such litigation will cost the rate payers, will undermine the regulatory process, and create more uncertainty within the beneficial use industry. Consequently, CCR should be regulated under a Subtitle D framework that allows beneficial use for encapsulated and unencapsulated forms where certain criteria are satisfied.

b. The Agricultural Application of Synthetic Gypsum Should Be Authorized.

Agricultural applications of synthetic gypsum have been proven to be valuable soil amendments, increasing crop yields and moisture retention. Many states already regulate the use of synthetic gypsum in agricultural applications and require permits and periodic testing of synthetic gypsum going into the agricultural use market. For example, Ohio and Indiana (in the Duke Energy service area) require permits and have specific testing, distribution, and use requirements.

Research has shown that synthetic gypsum has a profound positive effect on crop yields, particularly when applied to the same farm field for years. Consequently, it also provides economic benefit for farmers. Duke Energy is building a robust agricultural use market for synthetic gypsum and utilizes this legitimate, supplemental market when demand for synthetic gypsum in the wallboard market is low. In addition, Duke Energy, TVA, and Southern Company Services are working very closely with the U.S. Department of Agriculture (“USDA”) to develop additional uses for synthetic gypsum in the agricultural and soil stabilization markets. The USDA is very supportive of the ongoing research and potential utilization of synthetic gypsum in the agricultural markets. If, for whatever reason, synthetic gypsum is prohibited from being used in agricultural applications or other beneficial use applications, it will end up as a wasted resource, taking up limited and valuable landfill space.

c. Commercially Engineered Structural Fills Using CCR that Meet All of USWAG Best Management Guidelines Should Be Authorized.

The EPA should allow for commercially engineered structural fills using CCR that meet all the USWAG best management practices guidelines.⁷ Large-scale fill operations, if designed appropriately, are both economic and environmentally beneficial because they prevent the use of valuable clay or soil as fill material. Such structural fills provide a legitimate, environmentally protective use of material that would otherwise needlessly waste landfill space and unnecessarily deplete soil resources. When properly engineered with appropriate and accepted industry standards and protections, CCR structural fills provide an important and legitimate beneficial use and do not constitute disposal in any fashion.

Significantly, the mere threat of CCR being regulated as hazardous waste has abruptly ended CCR structural fill projects in Duke Energy's service territory. Developers in the midst of certain fill projects have decided to discontinue the use of CCR. As a result, Duke Energy has had to send additional CCR to a landfill, taking up valuable landfill space for a product that could have been put to beneficial use.

d. Use of CCR in Road Base and Embankments as Applied by the State Departments of Transportation Should Be Authorized.

The EPA must ensure that it is not inadvertently prohibiting the use of CCR in road base and embankments for use in state Department of Transportation ("DOT") projects. As EPA notes in the preamble to the Proposed Rule, USWAG has worked

⁷ USWAG has developed a detailed industry guidance document regarding the proper engineering of structural fills in order to minimize any potential threats to human health and the environment. See USWAG Engineering and Environmental Guidance on the Beneficial Use of Coal Combustion Products in Engineered Structural Fill Projects (May 4, 2009).

with EPA, the Federal Highway Administration, the United States Department of Energy, and the American Coal Ash Association (“ACAA”) to provide guidance and best management practices on the use of CCR in highway construction. 75 Fed. Reg. at 35161.

Given this fact, the Proposed Rule’s undefined terms “large scale fill operation” (and the similar phrase “large scale fill project”) are problematic. These terms could be inappropriately interpreted to apply to certain highway construction projects developed and implemented consistent with this jointly-developed guidance and best management practices. Duke Energy does not believe it is EPA’s intent to regulate these projects as “CCR landfills,” especially since EPA was at the forefront in developing guidance on how to safely use CCR for these projects. As a result, EPA should clarify that highway construction projects implemented under this joint guidance are not subject to regulation to avoid any potential confusion or avoidance related to these projects.

In addition, Duke Energy notes that Subtitle C regulation (even with a beneficial use regulatory exemption) would significantly harm the use of CCR in highway construction projects. As EPA knows, the state DOTs have been clear that resulting legal, stigma, and worker issues will eliminate the use of fly ash in highway construction projects if it is designated as hazardous waste, regardless of any beneficial use exemption EPA is proposing. Specifically, in Duke Energy’s service area, the Indiana DOT has advised EPA that it “strongly opposes any designation of CCPs as hazardous waste. Such action would have a significant and long lasting adverse effect upon the ability to beneficially use fly ash and other CCPs in highway construction projects.” See

Letter to EPA Administrator Lisa Jackson from Indiana Department of Transportation, dated September 9, 2009.

C. Duke Energy Supports the Development of Structural Integrity Standards for Surface Impoundments.

Duke Energy agrees with the development of structural integrity requirements for surface impoundments modeled after the Mine Safety and Health Administration (“MSHA”) standards (30 C.F.R. § 77.216). However, in developing these standards, it is important that the same MSHA applicability criteria are also utilized in defining the impoundment inspection requirements. Specifically, the inspection requirements should extend only to those impoundments that can “[i]mpound CCRs to an elevation of five feet or more above the upstream toe of the structure and can have a storage volume of 20 acre-feet or more” or can “[i]mpound CCRs to an elevation of 20 feet or more above the upstream toe of the structure.”

In addition, Duke Energy believes that the structural integrity requirements for surface impoundments should not apply to CCR impoundments that have been classified by the appropriate state regulatory body or by an independent third-party professional engineer as having a “low hazard potential classification” pursuant to the federal guidelines for dam safety. Because CCR impoundments with a “low hazard potential classification” pose only a low economic and/or environmental threat that is limited to the facility itself and does not extend offsite, Duke Energy does not believe these impoundments warrant regulation under the federal CCR impoundment structural integrity rules. State structural integrity rules provide sufficient protection.

Duke Energy also believes that the requirement to perform inspections and monitor instrumentation once every seven days under proposed 40 C.F.R. § 257.83(a)(2) is excessive for most dams. Clearly, there are times when frequent (weekly) inspections and instrumentation monitoring is advisable (such as during initial filling of an impoundment). However, as a general requirement throughout the life of an impoundment, it is unnecessary. Instead, Duke Energy favors a general required inspection and equipment inspection frequency of once a month for dams with a dam hazard potential rating of “high” and quarterly for impoundments with a dam hazard potential rating of “significant.” The rule should also provide that the general required equipment inspection frequency should be variable based on site-specific conditions and upon the recommendation of an independent professional engineer.

Duke Energy agrees with the proposed language in 40 C.F.R. § 257.83(e), which provides that the “qualified person” performing periodic inspections be “trained to recognize specific signs of structural instability and other hazardous conditions by visual observation.” This allows for those who will be performing inspections to have training which is specific to the facility they are inspecting, as well as the frequency and thoroughness of the inspections they will be performing. For example, an individual performing a routine monthly inspection would not require the depth of education, experience, and training that an individual performing an annual inspection would require.

With respect to the required internet posting of the information regarding an impoundment’s construction history that must be compiled under proposed 40 C.F.R. § 257.71(d), Duke Energy believes that this requirement is unwise from the perspective

of homeland security. This information (e.g., engineering characteristics of dam/dike foundations, the basis for the dam/dike hazard classification, and slope stability information) is of little value to the general public, and other provisions can be made for providing this information to those with a legitimate public interest through a mechanism that does not pose the same homeland security concerns.

D. It is Inappropriate to Make Any Regulatory Decisions Based upon Unsubstantiated Damage Cases.

Duke Energy participated in the public hearings for the Proposed Rule and heard certain special interest groups allege that there are dozens of new damage cases, including some Duke Energy facilities. These groups have even published so-called reports on this topic. However, a close examination of the facts reveals many flaws in these recent allegations, as many of the assertions are based on extremely flimsy evidence, with unfounded conclusions. EPA cannot rely on these assertions in any final rulemaking without conducting its own factual, independent review of the alleged sites and allowing for public notice and comment on their findings. Significantly, an EPRI analysis of the EPA damage case report in the 2008 Notice of Data Availability (“NODA”) shows only a handful of these cases actually involve circumstances where off-site contamination exceeded a primary drinking water standard or primary MCL.

Of the 54 proven or potential damage cases cited by EPA in the NODA involving groundwater contamination, only three involved off-site contamination exceeding primary MCLs. The lack of, or low level of, off-site contamination is likely true with the alleged new damage cases. In fact, during their press conference when the reports were released, the special interest groups acknowledged that many of these cases do

not involve off-site contamination; instead, they speculated that certain contaminants may migrate off-site at some point in the future.

Another significant flaw is that the allegations have been made without prior consultation with the very states whose programs the groups allege are deficient. Not surprisingly, states are contesting these allegations and charging that the special interest groups have improperly characterized the effectiveness of their state controls.

Duke Energy supports a Subtitle D program that will involve groundwater monitoring controls specifically designed to detect any contamination from the CCR waste management units before any contamination potentially moves off-site. If Duke Energy determines an impact to groundwater has occurred at one of its facilities, the appropriate federal and/or state regulatory agency is notified. Duke Energy then works with those regulators in determining the appropriate steps to be taken to mitigate any impact to groundwater. Duke Energy has been involved and worked with the North Carolina Department of Environment and Natural Resources, Indiana Department of Environmental Management, Ohio EPA, and Kentucky Department of Environmental Protection in determining the appropriate remediation steps to be taken when an impact to groundwater has been detected. Further, Duke Energy has taken measures to help reduce or eliminate any potential future groundwater impacts at other Duke Energy facilities. Duke Energy has voluntarily initiated groundwater monitoring around active CCR surface impoundments used to dispose of coal ash in all of the states in which it operates. The involvement and interaction that Duke Energy has with the various regulatory agencies in the states in which it operates demonstrates how a state-

implemented, non-hazardous waste program for CCR under Subtitle D will be protective of human health and the environment.

E. Duke Energy Opposes any Regulation of CCR under Subtitle C Hazardous Waste Regulations.

Duke Energy strongly opposes any proposal to list CCR as “special waste” under a Subtitle C hazardous waste regulation. Simply put, listing CCR as special waste would be counterproductive because it would cripple the beneficial use industry and devastate the CCR market, along with imposing arbitrary, costly, and unnecessary regulatory burdens on CCR operations and handling. Duke Energy agrees with the positions outlined by virtually all the states, federal agencies, municipal and local governments, CCR marketers and beneficial users, unions, state PUCs, and many other third-parties. These entities, along with Duke Energy, have consistently maintained and demonstrated that regulating CCR under RCRA’s hazardous waste program would not provide significant additional protection to human health or the environment when compared to a Subtitle D non-hazardous regulatory structure. As such, there is simply no reasonable basis for EPA to pursue a Subtitle C regulatory approach.

1. Subtitle C Regulation of CCR is Inconsistent with the Bevill Amendment and the 2000 Regulatory Determination.

A fundamental purpose of the Bevill Amendment is to ensure that any final regulatory option selected for CCR utilizes cost-effective controls, avoids the imposition of undue costs on the utility industry, and does not discourage the use of coal. The Subtitle C regulatory option is inconsistent with congressional intent. Indeed, EPA readily acknowledges that one of the express purposes of the Subtitle C option is to

increase the costs of CCR, relying on the misguided impression that this increased cost will somehow increase CCR beneficial use. As discussed below, this is simply wrong.

The Subtitle C option in the Proposed Rule represents a reversal of EPA's two Reports to Congress and EPA's corresponding 1993 and 2000 Final Regulatory Determinations under the Bevill Amendment. In those instances, EPA concluded that the disposal of CCR does not warrant hazardous waste regulation. Indeed, in its 2000 Final Regulatory Determination, EPA concluded that regulating CCR as non-hazardous waste under Subtitle D of RCRA would be fully effective in protecting human health and the environment. Nothing substantial in the Bevill studies has been identified since 2000 to change this conclusion. Moreover, it is significant that EPA completed the Bevill regulatory process for CCR in 2000, and that the statute does not authorize EPA to reverse that decision now. Therefore, Duke Energy endorses and concurs with USWAG's assertions that the Subtitle C option in the Proposed Rule is legally flawed, and EPA is not at liberty to independently scuttle that statutory process.

2. Subtitle C Regulation will Significantly Harm the Beneficial Use of CCR.

Duke Energy disagrees with any assertion that regulating CCR under the RCRA Subtitle C option will actually increase CCR beneficial use. Such an assertion completely ignores the facts outlined by key end-users of CCR. The end-users have unanimously indicated that a Subtitle C hazardous waste listing will cripple the beneficial use of CCR. This fact was outlined to EPA prior to the publication of the Proposed Rule via meetings with the Office of Management and Budget, and it was continually referenced throughout the public hearings. In fact, the actual marketplace

evidence uniformly indicates that CCR beneficial use has already declined merely from the threat of listing CCR as a special waste.

In addition, EPA has heard the views of standard-setting organizations, such as the American Concrete Institute, that have no economic, political, or other vested interest in the outcome of this rulemaking process. The American Concrete Institute has acknowledged that [if CCR were regulated under Subtitle C] its organization could not endorse the use of fly ash in concrete because of the exposure and product liability risks associated with such a CCR regulatory label. Likewise, ASTM International, one of the largest voluntary standards development organizations in the world and a trusted source for technical standards, cautions that a "hazardous waste" designation for CCR, even with an exclusion for beneficial use, would cause the ASTM standard for fly ash to be removed from project specifications due to concerns over legal exposure, product liability, and public perception.⁸

To its credit, EPA has identified the array of valid concerns raised by the CCR beneficial use industry, utilities, the states, standard-setting organizations, and others that Subtitle C regulation will effectively cripple the CCR beneficial use market in the preamble of the Proposed Rule. However, EPA offers little, if any, response to these points. Instead, EPA persists in advancing its position that it somehow understands the economic drivers in the CCR beneficial use market better than those actually engaged in the business. EPA's unilateral disbelief of the overwhelming evidence is troubling and provides no justification for a Subtitle C regulatory approach. Moreover, if EPA's

⁸ See *also* comments submitted by the American Coal Ash Association ("ACAA"). Duke generally agrees with ACAA's comments on the devastating effects that Subtitle C regulations will have on beneficial use of CCR.

unilateral belief was true, end-users would be *supporting* the Subtitle C regulatory option, but that support has not materialized.

Assertions by special interest groups that regulating coal ash as a hazardous waste will lead to increased recycling are speculative and contrary to the facts. Those with the actual responsibility for regulating and managing coal ash, including state environmental experts, coal ash users and recyclers, and technical organizations responsible for establishing coal ash beneficial use standards, *unanimously* agree that regulating coal ash under any hazardous waste label will effectively end most coal ash beneficial use practices due to liability, stigma, and marketing concerns. EPA is well aware of this fact. Indeed, the public record is replete with letters from many federal agencies and from the state environmental protection agencies where Duke Energy operates concerning this issue. In fact, some special interest groups at the public hearings publicly celebrated this regulatory opportunity to limit or end beneficial use, basing their views on unfounded fears of health risks of recycling CCR into wallboard, roof shingles, or other proven and safe applications.

3. Compliance and Disposal Requirements will Impose Significant Burdens while Providing No Greater Protection of Human Health or the Environment.

The Subtitle C option would also impose serious and often intractable compliance problems for coal-fired generating stations given the physical nature of CCR and the volume of CCR generated in the course of operations. At many generating stations, Duke Energy would have to manage CCR much differently than it would under a Subtitle D option. Duke Energy's analysis indicates that it will not be cost effective (or sometimes physically possible given impacts to beneficial use) to attempt to permit and

operate Subtitle C landfills at all its coal-fired generating stations. This conclusion is based on a review of the history of the RCRA Subtitle C Treatment Storage and Disposal Facility (“TSDF”) permits that have actually been approved and issued in the states where Duke Energy currently operates.

It is important to note that in the final 2000 Regulatory Determination, EPA recognized that the inflexible, one-size-fits-all nature of the Subtitle C hazardous waste program was simply inappropriate for the diverse nature of CCR disposal facilities. EPA cited this recognition as one of the deciding factors for its decision not to regulate CCR as a hazardous waste. Setting aside the regional differences of managing CCR in waste management units with various geological, climatological, and hydrological characteristics, the sheer volume and the physical composition of CCR makes compliance with Subtitle C requirements extremely burdensome – with no greater human health or environmental benefit.

EPA is wrong in its position that, under the Subtitle C option, “disposal patterns will remain generally the same” and that Subtitle C commercial disposal capacity will not be overwhelmed by introducing at least 76 million tons of CCR (the approximate amount of CCR currently disposed of on an annual basis) per year to this disposal market. 75 Fed. Reg. at 35158. EPA also erroneously assumes that obtaining TSDF permits in all states will not be a problem, as evidenced by the unrealistic compliance timelines proposed in this rule. Notably, both Indiana and Kentucky have submitted comments to EPA on the Proposed Rule. In their comments, they discuss how the permitting process for a RCRA Subtitle C program in their states will cause a significant burden on their programs.

a. The Subtitle C Compliance Costs of Containing Small Releases of CCR Inherent in Power Plant Operations Cannot Be Justified.

It is virtually impossible to prevent the small or incidental amounts of CCR inevitably released during normal power generation and subsequent handling operations. Nonetheless, because RCRA Subtitle C contains no exemption, no matter how small or inconsequential the release, if CCR is regulated as a listed “special waste” subject to full hazardous waste regulation, even these small releases would constitute improper hazardous waste disposal, exposing coal-fired power plant owners to liability for what would likely be a perpetual state of RCRA non-compliance. Significantly, manufacturers of fly ash collection, transport, and storage equipment (i.e. precipitators, screw or belt conveyors, silos, and unloading mixers or spouts) have indicated that they do not even produce or design any equipment that would meet RCRA Subtitle C requirements for preventing any release of CCR.

In addition, retrofitting secondary containment to all of the collection, transport, and storage systems used to manage CCR before it reaches the disposal unit is not feasible. Significant outages would be required for coal-fired boilers in order to retrofit secondary containment to many of the systems discussed above. The costs associated with this type of compliance requirement cannot be justified because there is no evidence that current methods of handling CCR under state non-hazardous programs have caused harm to human health and the environment.

The prospect of Subtitle C liability for any release or spill of CCR during handling operations prior to placement into a disposal unit (constituting improper hazardous waste disposal) is also a significant compliance concern, even though there is no

human health or environmental risk associated with such releases. Duke Energy strives for full compliance with all applicable environmental laws and regulations, but managing CCR under the Subtitle C option would make this objective virtually impossible for anyone to achieve.

b. The Costs of Workforce Hazardous Waste Training for CCR Handling in Order to Comply with a Subtitle C Program Cannot Be Justified.

Taking Duke Energy's compliance concerns one step further, the Subtitle C option would place a significant burden on utilities to comply with the HAZWOPER training requirements for coal-fired power plant personnel, potentially requiring significant amounts of overtime in order to require continued compliance training. This would also create a significant shortfall in the contract maintenance workforce that Duke Energy (and other utilities) often rely upon during unit outages and other related maintenance events. This contract labor force would also need the HAZWOPER training since they would be exposed to CCR during maintenance work on CCR process system equipment. However, many of the labor trades do not even have personnel with this type of training.

The costs associated with this type of training requirement cannot be justified, as there is no evidence that current workforce safety programs concerning CCR (that would be implemented under a state non-hazardous program) are inadequate to protect human health. Indeed, Duke Energy has already implemented significant worker safety programs, not only for its own employees, but also for all contract labor. These programs are updated regularly and have been protective of human health under the

current non-hazardous waste regulatory structure. As such, no additional Subtitle C training requirements are warranted.

c. The Costs of Complying with Transportation Requirements Imposed by a Subtitle C Program Cannot Be Justified.

Another compliance concern with the Subtitle C option is the additional cost to comply with transportation requirements. Heavy equipment used to load CCR, and the trucks or other mobile transport equipment used to move CCR to the disposal units, are generally not designed to manage hazardous waste and completely prevent the release of even the smallest amounts of materials they are hauling. Thus, under a Subtitle C approach, each and every truck or piece of equipment that is used to transport CCR would need some type of sealed container (such as disposable plastic truck bed liners or some other containment method/product design) to completely prevent the release of CCR during transportation to the disposal units.⁹

In addition to the logistics of transporting CCR as a hazardous waste, there is the administrative burden of managing manifests, and the associated record-keeping and reporting requirements – for the generator, transporter, and owner/operator of the disposal unit alike – related to the movement of high volumes of CCR from the generation point to its final disposal destination. The administrative time required to deal with manifest compliance issues will also cause a corresponding increase in trucking costs, again with no additional benefit to human health and the environment.

⁹ Even with these measures, small amounts of CCR may still be released, exposing utilities to potential civil and criminal penalties.

d. Subtitle C Disposal Requirements will Result in a Significant Lack of Disposal Capabilities.

In addition to the compliance problems discussed above, the regulation of CCR under Subtitle C would create significant disposal capacity shortfalls for electric utilities. For example, there is only one RCRA Subtitle C TSDF permitted facility in the state of Indiana, none in North Carolina, and none in Ohio. This will not meet the needs of the Duke Energy generating stations if on-site TSDF permits cannot be approved in a timely fashion (assuming there is adequate space). Duke Energy also has serious concerns that permitting its existing landfills as Subtitle C TSDF permits will be delayed by various stakeholders involved in the public process of obtaining permits. It is very difficult and time consuming to permit new green-field non-hazardous waste landfills, often taking five years or more. The timeline for filing for interim status and permitting existing landfills as TSDF could be up to 10 years. Duke Energy is also concerned that it would not be able to permit regional landfills in central locations as TSDF due to the difficulty of navigating the permitting and public hearing process.

4. EPA's Regulatory Assessment is Flawed and Underestimates the Full Cost of Subtitle C Regulation.

To support the Proposed Rule, EPA conducted a Regulatory Impact Analysis ("RIA") of the various options being considered in the rulemaking. This analysis attempted to examine the economic costs and benefits for each of the regulatory options related to four principal areas. Duke Energy will briefly comment on these areas. As an initial matter, Duke Energy refers EPA to the comments submitted by

USWAG¹⁰ and the Electric Power Research Institute (“EPRI”) – which provide detailed evaluations of the costs of EPA’s Proposed Rule. Additionally, the following Duke Energy comments identify areas where it believes the industry costs provided by EPRI may not fully reflect the entire cost of compliance with the proposed Subtitle C option. Indeed, there are some significant differences in certain estimated compliance costs.

a. EPA Overstates the Benefits of Purportedly Avoided Future Groundwater Contamination.

Duke Energy and electric utilities have a proven track record in mitigating any existing groundwater impacts that occur from CCR waste management activities. Also, each of the states in which Duke Energy operates has non-hazardous CCR regulations with which Duke Energy has a consistent record of compliance. These state regulatory programs, along with the proactive measures taken by Duke Energy to conduct additional groundwater monitoring, have resulted in an effective program for the early detection of groundwater impacts, thereby minimizing any potential future groundwater contamination. Duke Energy has also worked with state regulators in appropriately addressing and taking corrective measures, when necessary, such as the expedited closure of CCR surface impoundments, to reduce and remediate even the non-health based impacts to groundwater from its CCR surface impoundments.

In its risk assessment, EPA does not account for the facts that municipal water is often readily available where groundwater contamination has occurred, and there are typically far fewer receptors around coal-fired power plants than EPA projected. Thus, EPA overstates the benefits of purportedly avoided future groundwater contamination.

¹⁰ The appendix of the USWAG comments includes a report by EOP Group, Inc, “Cost Estimates for the Mandatory Closure of Surface Impoundments Used for the Management of Coal Combustion Byproducts at Coal-Fired Electric Utilities” (November, 2010).

State-implemented Subtitle D regulations (including closure and post-closure requirements, along with groundwater monitoring) will further reduce the concerns of future contamination.

b. EPA Overstates the Purportedly Avoided Cleanup Costs from Future Catastrophic Surface Impoundment Structural Failures, and Its Analysis is Based on an Erroneous Assumption Concerning Such Failures.

The design and construction of the dike that failed at the TVA Kingston facility is not typical or representative of the utility industry's construction history associated with surface impoundments used to manage CCR. The recent initiative of EPA to inspect many of the CCR surface impoundments across the country confirmed this fact.¹¹ As a result, EPA's RIA overstates the purportedly avoided cleanup costs associated with what are speculative and highly unlikely future catastrophic surface impoundment structural failures. EPA's assumption that there will be future failures simply because of the TVA failure is completely without any basis. Duke Energy and USWAG support the requirements that CCR management units continue to demonstrate stability in compliance with requirements in the Subtitle D option.

c. EPA's Methodology for Calculating Regulatory Costs to Electric Utilities for the Various Options in the Proposed Rule is Flawed.

To fully understand the cost of the various regulatory options proposed by EPA, USWAG engaged the EOP Group, Inc. ("EOP") to review the RIA and assess whether EPA's conclusions of the overall costs/benefits of the proposed regulatory options were

¹¹ EPA inspected the surface impoundments at all but one of Duke Energy's coal-fired power plants. None of Duke Energy's surface impoundments received an "unsatisfactory" rating, meaning that not a single impoundment is considered unsafe or requires immediate or emergency remedial action.

accurate.¹² Duke Energy agrees with EOP's findings that the RIA is fatally flawed and invalid. This is based upon EPA's use of inputs and assumptions that have no connection with real-world industry data and practices.¹³

Specifically, Duke Energy disagrees with EPA's assessment of the regulatory cost to the electric utilities for the various options in the Proposed Rule that is used in the RIA. EPA uses unit costs in constant 2009 dollars, at a 7% discount rate over a 50 year future period of analysis. As discussed in more detail below, these inputs and assumptions are flawed. If EPA is going to use constant dollars in its cost analysis, using a 3% discount rate is more appropriate than a 7% discount rate. In addition, based upon real-world electric utility industry facts and conditions, a 20 year¹⁴ future period is much more appropriate than a 50-year future period, regardless of the discount rate used.

First, the RIA relies upon a flawed assumption that the current coal-fired utility fleet has an average life expectancy of an additional 50 years. It is axiomatic that capital costs should be assessed over the life expectancy of the project. The EPA's analysis seeks to determine the costs to the current fleet of generating units, which on average is already 42 years old per the EPRI comments. As such, the RIA is incorrectly assuming a fleet life expectancy (from initial construction to retirement) of 92 years. It is

¹² The complete EOP report "Cost Estimates for the Mandatory Closure of Surface Impoundments Used for the Management of Coal Combustion Byproducts at Coal-Fired Electric Utilities" (November 2010) is included in the appendix of the USWAG comments on the Proposed Rule.

¹³ Duke also agrees with EOP's findings that EPA failed to properly value the alleged increase of CCR for beneficial use. See Appendix 25 of the USWAG Comments EOP RIA Report November 2010.

¹⁴ For a detailed report as to why a 20 year future period of analysis is more appropriate, see EPRI Final Report 1022296 entitled "Cost Analysis of Proposed National Regulation of Coal Combustion Residuals from the Electric Generating Industry," page 1-3.

completely unreasonable to assume that the coal-fired fleet will operate on average for another 50 years. It is far more reasonable to utilize a 20 year period for purposes of regulatory analysis.

Second, the RIA's application of a discount rate of 7% to a constant dollar basis cash flow results in an over-discounting of compliance costs. Duke agrees that a 7% discount rate may be a reasonable representation of an electric utility capital structure resulting in a weighted average cost of capital ("WACC"). However, such a discount rate can only be applied to a nominal cash flow (i.e. an escalated cash flow). To discount a constant dollars basis cash flow, inflation must be factored out of the discount rate in order to form a "real" discount rate. Consequently, the EPA's discounting of a constant dollar cash flow with a WACC results in an excessive reduction of the present value figure.

Simply put, EPA's flawed methodology results in a significant underestimation of the compliance costs associated with the Proposed Rule options. It is more appropriate to use a 3% real discount rate if the costs are going to be held in constant year 2009 dollars. This discount rate represents a reasonable range of expected electric utility cost recovery and forward escalation expectations for the relevant types of capital expenditures that may be triggered by the Proposed Rule.

(i) EPA Significantly Underestimates Subtitle D Compliance Costs.

USWAG engaged EOP to determine the regulatory cost of the Subtitle D option, and EPRI determined the incremental increase in the regulatory cost of the Subtitle C option. Notably, Duke Energy assisted EOP in determining unit costs for the various

components of the cost studies conducted. These unit costs, along with those provided by other utilities, were the basis for the range of cost in the EOP Report. Duke Energy also assisted EPRI contractors (who visited multiple power plants) to fully understand all the various processes and how they would be impacted by the CCR Subtitle C rule option.¹⁵

Duke Energy generally agrees with the cost data found in the EOP study “Cost Estimates for the Mandatory Closure of Surface Impoundments Used for the Management of Coal Combustion Byproducts at Coal-Fired Electric Utilities,” dated November 11, 2010 (“EOP Report”),¹⁶ and believes it better represents the regulatory costs than what EPA used in the RIA for the Subtitle D option. The EOP Report outlines a reasonable estimate of the costs of eliminating surface impoundments as a legal alternative for the management of CCR at electric generating stations under the Subtitle D option.

The Subtitle D regulatory cost to the electric utilities developed by EOP is \$43 billion using a 3% discount rate over a 20 year future period of analysis. The EOP cost basis is understood to be constant year 2010 dollars, so a 3% discount is appropriate. This estimate dwarfs the regulatory cost used by EPA in the RIA of \$8.1 billion at a 7% discount rate over a 50 year future period of analysis. It is also significantly higher than the EPA estimate as adjusted to a basis of a 3% discount rate and a 20 year future period of analysis. With this correction, Duke Energy estimates the EPA RIA value to be approximately \$22 billion for the Subtitle D option – which is significantly higher than

¹⁵ This information is captured in the EPRI Final Report 1020557 Technical Update October 2010, entitled “Engineering and Cost Assessment of Hazardous Waste Designation of Coal Combustion Residuals.” This report is attached to USWAG’s comments to the Proposed Rule.

¹⁶ The EOP Report is attached to USWAG’s Comments to the Proposed Rule.

EPA's \$8.1 billion cost, but is still only about half of the industry cost of \$43 billion. It is clear that EPA's \$8.1 billion cost estimate is completely incorrect, and the above identified problems with the RIA emphasize that it is EPA's underpinning cost estimates that are inaccurate, not just its financial assumptions.

The EOP study also correctly identifies that older, smaller units (<230 megawatts) are at risk of premature shutdown and that the cost of replacement power was not included in EPA's total cost. Finally, the EOP Report notes that a 5 year mandatory closure requirement could cause the regulatory cost to soar to the \$50 to \$70 billion range. To ensure that industry is not subject to these enormous costs, EPA must include the Subtitle D Prime component in the Subtitle D option and not mandate any closure for surface impoundments that are performing in an acceptable manner.

(ii) EPA Significantly Underestimates Subtitle C Compliance Costs.

Duke Energy generally agrees with the regulatory cost data presented in the EPRI Final Report 1022296 entitled "Cost Analysis of Proposed National Regulation of Coal Combustion Residuals from the Electric Generating Industry" for the Subtitle C option in the Proposed Rule ("EPRI Report"). The EPRI Report determined the incremental cost to comply with the Subtitle C components that were not included with the EOP Report (which strictly focused on Subtitle D costs). EPRI determined that the incremental regulatory cost for the Subtitle C option in the Proposed Rule is in the range of \$78.9 billion to \$110.0 billion using a 3% discount rate over a 20 year period. The EPRI cost basis is understood to be constant year 2010 dollars, so a 3% discount rate is appropriate.

When EPRI's incremental regulatory cost to comply with Subtitle C is coupled with the baseline regulatory cost to comply with Subtitle D as outlined in the EOP Report (again, \$43 billion at a 3% discount rate over a 20 year future period of analysis), the total cost, once again, dwarfs the regulatory cost used in the EPA RIA for the Subtitle C option (\$20.3 billion at a 7% discount rate over a 50 year future period of analysis). It is also again significantly higher than the EPA estimate as adjusted to a basis of a 3% discount rate and a 20 year future period of analysis. Thus, with the appropriate correction, Duke Energy estimates the EPA RIA value to be approximately \$55 billion for the Subtitle C option.

Duke Energy, however, also believes that the EPRI incremental cost may not capture the total regulatory cost of a Subtitle C framework for some utilities. In preparing its cost estimate, EPRI assumed that all surface impoundments could be closed *in place* under the Subtitle C option. Duke Energy agrees that most surface impoundments could be closed with the CCR remaining in place. However, some older surface impoundments in the industry that were constructed based on engineering standards prior to RCRA or Clean Water Act regulation, or under a regulatory structure that did not include location restrictions, could require clean-closure under the Proposed Rule. Moreover, Duke Energy does not believe that it will be able to re-permit the closure of all of its surface impoundments under the Subtitle C program. Thus, given the interim status requirements, the location restrictions, and other components of the Subtitle C program, Duke Energy may be forced to clean-close these facilities, at a much greater cost than closing in place.

Duke Energy estimates that the cost to clean-close a surface impoundment will increase the closure cost significantly – by at least 5 to 8 times the cost to close in place. The proposed closure completion time frame requirements would also be impossible to satisfy. Clean-closure would require: permitting and construction of an appropriately lined landfill to receive the impoundment CCR inventory; dewatering and excavation of the CCR; and then transportation and placement of the CCR in the new landfill. The completed landfill would then have to be appropriately capped at some point. This entire process would obviously be significantly more expensive and take much longer to complete than just placing a cap on the impoundment, in place.

Even for closures in place, the EPRI costs are understated. The in place closure costs estimated by Duke Energy are 3 times the cost per acre outlined by EPRI. Duke Energy believes this difference may be attributable to several critical design features, including requirements for stormwater controls (e.g., for the procurement and placement of fill material to achieve an adequate slope that must be developed on the flat surface of the impoundment when it is closed).

Duke Energy encourages EPA to reconsider the significant cost differences in the Subtitle D and Subtitle C options. The current RIA for the Proposed Rule uses flawed regulatory costs and assumptions, does not accurately reflect the impact of a Subtitle C regulation, and cannot be used to justify the promulgation of the Subtitle C option. Moreover, the significant increase in the cost to comply with a Subtitle D option warrants the inclusion of the Subtitle D Prime component in a final rule. This will help utilities control the cost of electricity to consumers, while still being protective of human health and the environment.

d. EPA Miscalculates the Purported Economic and Environmental Benefits from Future Increases in CCR Beneficial Use by Other Industries.

In the RIA, EPA assumes that if, as the Agency maintains, beneficial use of CCR increases due to the significantly higher disposal costs of CCR under a Subtitle C program, the Subtitle C option will result in the greatest net benefits. However, as discussed above, EPA cannot rely on this mistaken assumption, especially given the reaction already occurring in the commercial markets as a result of a *proposed* option to regulate CCR as a hazardous waste. As demonstrated in Duke Energy's comments above, and from all the testimony provided by the end users of CCR at the public hearing, the CCR beneficial use markets will be significantly and adversely impacted, if not completely eviscerated, by a hazardous waste listing of CCR.

The RIA also does not take into account that some utilities will be extremely risk averse and will not allow their CCR to be distributed into commerce because of the threat of legal action by certain uninformed parties. This risk aversion for allowing CCR to enter any commercial and residential markets will significantly reduce or eliminate many of the types of beneficial CCR use that have improved products, reduced manufacturing costs, and provided economic and environmental benefits to consumers.

e. The Subtitle C Proposal to Regulate Inactive or Previously Closed Surface Impoundments is Unlawful.

Finally, one of the many significant problems with the Subtitle C option is the unprecedented and unlawful proposal to extend RCRA Subtitle C jurisdiction to previously closed and/or inactive CCR surface impoundments. *Id.* at 35177. Even if such impoundments do not receive CCR after the effective date of the rule, EPA would

require these impoundments to meet certain closure requirements. This would mean that previously closed and inactive surface impoundments - many of which Duke Energy properly closed decades ago under the existing state solid waste programs, have changed owners, and/or now have structures built on top of them - would be regulatorily resurrected as “active” CCR disposal units. Consequently, they would be subject to full Subtitle C hazardous waste regulation. Such a requirement would be illogical and exceedingly costly.

F. Conclusion.

Duke Energy supports the development of sensible federally enforceable regulations for CCR under a RCRA Subtitle D non-hazardous waste program, specifically under the Subtitle D Prime option offered by EPA. As indicated in the above comments, however, many changes must be made to the proposed Subtitle D option to make it a workable program. Having a Subtitle D program that can be administered and implemented by the states is of critical importance. Without it, the regulated community could be subject to multiple and potentially conflicting CCR regulations which would add to the cost of compliance but would provide no additional protection to human health or the environment. In addition, any final rule must not regulate the legitimate beneficial use of CCR, and as detailed in the above comments, Duke Energy supports the development of appropriate structural integrity standards for CCR surface impoundments.

Duke Energy is adamantly opposed to the proposed regulation of CCR under RCRA Subtitle C. The Subtitle C option is not legally authorized, would cripple the beneficial use of CCR, and would impose huge and unnecessary costs on power plants

that would ultimately be paid for by consumers in higher electricity prices – all while providing no greater protection to human health and the environment than a properly structured Subtitle D Prime regulatory structure.

Testimony and comments from an array of third-parties, including CCR marketers and end users, the states, independent standard setting organizations, and the utility industry unequivocally demonstrate that regulating CCR under RCRA's hazardous waste regulations will cripple the beneficial use market. Indeed, the docket already contains record evidence identifying specific examples of how the mere specter of Subtitle C hazardous waste regulation is already adversely impacting CCR beneficial use projects across the country. Simply labeling CCR subject to hazardous waste regulation as “special waste” would not mitigate the inevitable implosion of the CCR beneficial use market.

The Subtitle C option would constitute an impermissible reversal of EPA's final 2000 Regulatory Determination that CCR does not warrant hazardous waste regulation. It would also be in direct contravention of RCRA's plain language establishing an unambiguous statutory process by which EPA can determine whether and how to regulate CCR under RCRA.

Finally, EPA must revise its RIA to reflect more realistic estimates of the costs and benefits of the Proposed Rule. Doing so will make it clear that the Subtitle D Prime option is the appropriate path forward for regulating CCR.

Questions regarding Duke Energy's comments may be directed to Mr. Jim Meiers (317-838-1955).

CERTIFICATE OF SERVICE

DOCKET NO. E-7, SUB 1214
DOCKET NO. E-7, SUB 1213
DOCKET NO. E-7, SUB 1187

I hereby certify that a copy of the foregoing **LATE FILED EXHIBIT NO. 13** was served electronically or by depositing a copy in United States Mail, first class postage prepaid, properly addressed to the parties of record.

This the 25th day of September, 2020.

/s/ Kiran H. Mehta

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