COMMENTS BY COMITÉ DIÁLOGO AMBIENTAL TO THE PROPOSED AMENDMENTS TO NATIONAL MINIMUM CRITERIA (PHASE ONE) DISPOSAL OF COAL COMBUSTION RESIDUALS FROM ELECTRIC UTILITIES

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Introduction

Comité Diálogo Ambiental, Inc. (Diálogo), is a community environmental group composed of residents of the Municipality of Salinas and the Guayama Region and organized as a nonprofit corporation under the laws of the Commonwealth of Puerto Rico since 1997. The purposes of the organization are to promote the general welfare of the communities it serves through education and capacity building of residents concerning the adverse impacts of human activities on the ecologic balance of natural systems and the importance of restoring the environment and promoting conditions under which human beings and the environment can exist in harmony to fulfill economic, social and other needs of present and future generations.

Recommendation: We recommend that the EPA permanently withdraw the proposed rule amendments as noted in these comments, in light of the imminent and substantial endangerment that the AES coal ash waste poses to the communities and the environment in Puerto Rico.

Context and Test Results

AES Puerto Rico, LLP (AES) owns and operates a 454 MW coal burning power plant in Guayama, Puerto Rico. AES has no disposal facility for the approximately 300,000 tons per year of coal combustion residuals (hereinafter, CCR or coal ash) that it generates. For years, AES has

been accumulating its CCR at the southern end of the plant site in proximity to wetlands and coastal communities, as it fails to dispose of it. Since its planning phase, AES maintained that the plant's CCR were not waste, since AES would mix and compact all CCR into a so-called product, which AES attempted to market as *Agremax*.[1] The Commonwealth had no law, rule or regulation that addressed the management and disposal of CCR, until 2017 when it adopted a law to prohibit the disposal and use of coal ash.[2] That law, however, does not apply to *Agremax*.[3]

The accumulation of CCR located at the AES plant is a "CCR pile" under the CCR rule and is an existing landfill subject to all the requirements applicable to CCR landfills under the CCR rule.[4] The CCR rule specifies that any "non-containerized accumulation of solid, non-flowing CCR that is placed on the land is a CCR pile."[5] This rule applies whether the pile consists solely of CCR or of *Agremax*. A pile of CCR that may someday be used beneficially (whether on-site or off-site) but is not yet beneficially used remains subject to the CCR rule.[6] Yet, hundreds of thousands of tons of *Agremax* have been stockpiled at the AES plant site since the plant started operation in November 2002. The AES coal ash waste continues to be placed directly on the land at the facility without proper containment measures. After Hurricane Maria, community members documented the surficial erosion and removal of surface material, resulting from surface run-off and wind action on the coal ash waste pile at the AES plant site in Guayama, Puerto Rico.

A July 2017 CCR Inspection Report for the AES coal ash waste pile containing 430,000 tons of CCRs notes that, "[l]ocalized rills were observed on the surface of stockpile slopes, they appeared to be related to over-watering by the water sprinkler guns. . . . The water truck was not

[1] *In re: AES Puerto Rico, LLC*, PR Environmental Quality Board Res. Num. R-96-39-1 (Oct. 29, 1996).
[2] Ley para Prohibir el Depósito y la Disposición de Cenizas de Carbón o Residuos de Combustión de Carbón en Puerto Rico, Law 40-2017.
[3] *Comité Pro Salud v. Junta de Calidad Ambiental*, 2018 WL 835044 (2018)
[4] 40 C.F.R 257.53. *See also* 80 Fed. Reg. at 21355-56.
[5] EPA letter dated December 22, 2016in EPA AES file
[6] 80 Fed. Reg. at 21356.

operational at the time. **Some fugitive dust caused by wind was observed on the west slope of the Stockpile at the time of inspection**."[7] Regarding the CCR pile, the Report describes that it had "increased to an estimated height of 120 feet," while its "slopes have become longer and steeper."[8] (emphasis added).

The 2017 Annual Groundwater Monitoring Report (the Report) for the AES Guayama plant site, as required by CCR rule, indicates that the groundwater in downgradient wells, especially wells MW-3 and MW-4, is highly contaminated with coal ash pollutants.[9] When compared with the up gradient wells (MW-1 and 2), the levels of coal ash contaminants in the downgradient wells are orders of magnitude higher, depending on the contaminant.[10] The direction of groundwater flow is away from the coal ash waste pile and towards the sea and a coastal community visible from the satellite photograph in the Report.[11] The Report results indicate the coal ash contaminants present in the groundwater as follows:

Table 1. Concentration of selected contaminants at AES downgradient wells[12]

Contaminant	Well	Concentration	Background level	Increase concentration
Boron	MW-4	3800ppb	160ppb	22 times the background level
Sulfate	MW-4	16,000ppm	7.1ppm	2200 times the background level and 64 times the EPA secondary drinking water standard (SMCL) of 250 ppm

[7] Winston R. Esteves, CCR 2017 Annual Inspection Report AES Puerto Rico, Guayama, PR (July 2017) at p. 3 (*emphasis added*). *Available at*: http://aespuertorico.com/wp-content/uploads/2017/10/2017_Annual-Inspection-Report.pdf (Last visit April 30, 2018).
[8] *Id.*
[9] DNA-Environment, LLC, 2017 Annual Groundwater Monitoring Report AES Puerto RicoLP, Guayama, Puerto Rico (Jan. 31, 2018). *Avaliable at*: http://aespuertorico.com/wp-content/uploads/2018/02/2017_01_31_AES_Groundwater-Monitoring-and-Corrective-Action_Annual-Report.pdf (Last visit April 30, 2018).
[10] *Id.*
[11] *Id*, at p. 11.
[12] *Id.*, at p. 7.

Total Dissolved Solids	MW-4	41,000 ppm	460 ppm	89 times the background level and 82 times the SMCL

Table 2. Concentration of selected metals at AES downgradient wells[13]

Contaminant	Well	Concentration	Federal drinking water standard (MCL)
Selenium	MW-3	98 ppb	50 ppb
Lithium	MW-4	1100 ppb	There is no MCL for lithium. The EPA regional screening level (RSL) for tap water is 40 ppb.
Molybdenum	MW-3	530 ppb	There is no MCL for molybdenum. The EPA regional screening level (RSL) for tap water is 100 ppb.
Chromium	MW-3	31 ppb	
Arsenic	MW-6	6.2 ppb	EPA standard is 10 ppb.
Radium 226 & 228)	MW-3	1.07 pCi/L	California public health goal of 0.07 pCi/L (total radium).

These elevated levels of pollutants indicate the AES coal ash waste pile is releasing hazardous chemicals to the groundwater, which are flowing offsite. Selenium is very toxic to fish at low levels, and selenium bioaccumulates. Its presence in small fish, sediment and plants could endanger the greater population.[14] When ingested, Sulfate will harm the digestive track and is particularly dangerous for infants and the elderly. Sulfate at this level will be dangerous for livestock and wildlife. Chromium from coal ash is primarily hexavalent chromium (Cr6), which is a very potent carcinogen in small doses.[15] There is not yet an EPA MCL for Cr6, but California set a limit of 10 ppb for drinking water.[16] Although chromium is frequently found in coal ash

[13] *See id.*, at p. 8-9.
[14] *See e.g.* Lemly, AD (Apr. 2002). Symptoms and implications of selenium toxicity in fish: the Belews Lake case example. Aquat Toxicol. 57(1-2):39-49.
[15] ATSDR, Toxicological Profile for Chromium. *Available at*: https://www.atsdr.cdc.gov/toxprofiles/tp.asp?id=62&tid=17 (Last visit April 30, 2018)
[16] California Water Boards, Chromium-6 Drinking Water MCL, https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/Chromium6.html (Last visit April 30, 2018)

leachate, [17] it is particularly high in the groundwater at the AES site. The arsenic levels are approaching, but not yet exceeding the EPA's MCL. Dialogo contends that the EPA MCL is not sufficiently protective and that any level of arsenic presents risks. A level of 6.8 ppb is likely to be an unacceptable risk in drinking water, because arsenic is a potent carcinogen for several cancers.

These pollutant levels raise questions regarding the status of all the coal ash fills in Puerto Rico. These fills are not monitored, yet the same dangerous chemicals may be leaching from them. Many of the AES fill sites are near drinking water wells, thus threatening public health. From approximately 2004 to 2012 over two million tons of the AES coal ash waste *Agremax* has been used as fill in various projects in Puerto Rico, including housing, commercial developments and road projects. The vast majority of construction sites where AES CCRs were disposed of are located in proximity to the AES coal combustion plant. The Guayama region, an environmental justice community according to the Toxic Release Inventory, is the most contaminated region in Puerto Rico. The Guayama region was known as the hunger route and has one of the highest percentages of people of African descent, in Puerto Rico. High poverty rates, unemployment and school dropout rates characterize the Guayama region. The AES disposal of CCRs in the Guayama region in proximity to the plant and the AES CCR waste pile impose disproportionate public health risks to this environmental justice community. The AES plant is among the disproportionate number of electric utility plants with high surrounding child population percentages[18]. In Puerto Rico, most local municipal authorities reject the use of AES CCRs within their respective jurisdictions. This form of haphazard regulation, based on personal observation and experiences related to CCR disposal, is not protective of human health and the environment because CCR

[17] Earthjustice, EPA's Blind Spot: Hexavalent Chromium in Coal Ash Coal ash may be the secret source of cancer-causing chromium in your drinking water (Feb. 1., 2011). *Available at*: http://earthjustice.org/sites/default/files/CoalAshChromeReport.pdf (Last visit April 30, 2018)
[18] Docket No. EPA–HQ–OLEM-2017-0286 at 35288.

generators and secondary users relocate to municipalities that are unaware of the risks posed by land filling or application of CCRs.

In 2012, Vanderbilt University completed a study on the leaching potential of Agremax from the AES plant in Guayama.[19] The study concludes that Agremax tends to leach high concentrations of arsenic, boron, chloride and chromium, and secondly fluoride, lithium, molybdenum, selenium, sulfate and thallium depending on the pH of the medium. Regarding the relationship between liquids and solids, the leaching tendency of Agremax in the first instance is arsenic, boron, chloride, chromium, fluoride, lithium, molybdenum and secondly, aluminum nitrate, selenium, sulfate and thallium. The selenium concentration in the L / S test reached 3.6 mg / L. This is approximately 720 times the National Recommended Water Quality criteria of 5 µg / L for chronic selenium concentrations. Likewise, chloride levels exceed the same criteria by a factor of 13 for the acute criterion and 50 for the chronic criterion. Lead levels exceeded the same criteria by a factor of 9 for the acute criterion and 250 for the chronic criterion. The chronic criteria of aluminum and cadmium were exceeded by factors of 7.5 and 25 respectively. The maximum sulfate concentration in the L / S test was 21,000 mg / L. Sulfate is considered a definitive stressor when it exceeds 290 mg / l. Therefore, the sulphate levels in the AES coal ash waste -Agremax leachate reaches fifty times the definitive stressor criterion. A boron concentration of 1 to 2 mg / L is toxic to vegetation. The boron concentration in the LEAF Report reached 12 mg / L, 6 to 12 times the hazardous level.[20]

A previous sample of the CCRs from the AES coal combustion plant in Puerto Rico indicated an alpha radiation concentration of 9.9 pCi/g, nearly twice the levels of applicable or

[19] Susan A. Thorneloe, David S. Kosson, Florence Sanchez, Andrew C. Garrabrants, and Gregory Helms, Evaluating the Fate of Metals in Air Pollution Control Residues from Coal-Fired Power Plants, 44(19) ENTL. SCI. & TECH. 7351, 7354-55 (2010)
[20] *See id.*

relevant and appropriate requirements (ARARs) under CERCLA, in addition to 5.7 pCi/g of beta radiation and high levels of arsenic and other metals.3 A sample of CCRs from a construction site in Salinas, Puerto Rico revealed the presence of 23 mg/kg of arsenic 720 mg/kg of barium, 140 mg/kg of boron, 310 mg/kg of manganese, 6500 mg/kg of magnesium, 19 mg/kg of selenium, 130 mg/kg of vanadium, among other elevated levels of metals. In addition, the sample of AES CCRs indicates gross alpha pCi/g of 9.9 and gross beta pCi/g of 5.727.41

AES Coal Ash Waste in the Dominican Republic

The original Power Purchase Agreement between AES and the Puerto Rico Electric Power Authority (PREPA) as well as the Siting permit and the Environmental Impact Statement specified that any "waste or by-product" that "cannot be used for beneficial commercial purposes" could not be disposed of in Puerto Rico.' Because of these provisions, from October 2003 until March 2004, thousands of tons of AES coal ash waste was dumped at the Arroyo Barril port in the Dominican Republic's Samaná Province, located near communities. [21]The AES coal ash waste was represented to residents and officials of the Dominican Republic as an innocuous substance, and that it could even be considered a "beneficial product that might be profitably utilized by the residents of Samaná as construction material." [22] In 2005, the Government of the Dominican Republic sued AES asserting that Samaná Bay and Manzanillo were contaminated from the dumping of AES coal ash waste. More specifically, the Dominican Republic alleged that the AES coal ash waste wrecked the beach, caused nearby residents to suffer physical injuries that required the state-run healthcare system to provide medical care, hampered tourism, and caused business in the region to suffer.[23]

[21] *Gov't of Dominican Republic v. AES Corp.,* 466 F. Supp. 2d 680, 683 (E.D. Va. 2006).
[22] *Gov't of Dominican Republic v. AES Corp.,* 466 F. Supp. 2d 680, 683 (E.D. Va. 2006).
[23] *Id.* at 684.

Disposal costs for the approximately 1000 tons of coal ash generated by the AES plant each day would have been substantial, approximately $100-200U.S. per ton.[24] AES created AES Aggregate Services, Ltd., a Cayman Islands subsidiary, to enter into a contract with AES Puerto Rico. The Dominican Republic alleged that AES used this approach to create the illusion that the Puerto Rico plant's coal ash waste would be disposed of in accordance with applicable law. When the initial contract between AES Puerto Rico and AES Aggregate Services to dispose of the ash in the Bahamas failed (because the Bahamas refused to accept it), AES allegedly hired Silver Spot Enterprises to dump the AES waste in the Dominican Republic.[25] Initially, the AES waste was rejected due to lack of permits and Silver Spot allegedly dumped the AES waste in Haitian coastal waters.[26] Thereafter, from October 2003 to March 2004, ten (10) barge-loads of compacted coal ash waste were transported from Puerto Rico to the Dominican Republic.[27] The Dominican Academy of Sciences found that the coal ash waste had high levels of arsenic, cadmium, nickel, beryllium, chromium, and vanadium. Four barges left approximately 30,000 tons of coal ash in Manzanillo, exposed to the elements. The fugitive dust from the coal ash waste allegedly harmed nearby residents of the Manzanillo area; who complained of skin lesions, and several elderly residents and children informed of difficulty breathing. Several residents were hospitalized. Allegedly, the dumping contributed to, or resulted in, six (6) deaths and five *(5)* serious illnesses.[28] Samaná Bay allegedly also suffered major damage from the AES coal ash pollution. Importantly, in that litigation AES obtained dismissal of a product liability claim against it, claiming that the AES waste was not a product.[29] Despite the representations that the coal ash waste was beneficial,

[24] *Id.*
[25] *Id.*
[26] *Id.* at *685.*
[27] *Id.* at 684.
[28] *Id.*
[29] *Id.* at 693.

on February 28, 2007, the case was settled for $6 Million in damages, a cleanup of the area, and an agreement from AES not to dump further coal ash waste in that country. In the settlement the government withdrew its allegations regarding bribery, toxicity of the waste, violation of laws, and other misconduct. Subsequently, residents of the Dominican Republic filed a separate lawsuit seeking damages for various health problems including miscarriages and birth defects.[30] In 2016, Bloomberg News reported a settlement of those claims for an undisclosed amount.

Imminent and Substantial Endangerment from AES Coal Ash Waste in Puerto Rico

As noted in the proposed amendments, AES Puerto Rico LLP requested that EPA initiate rulemaking to reconsider provisions of the 2015 final rule, particularly with respect to the coal ash pile at the AES plant site in Guayama.[31] AES seeks to avoid groundwater monitoring and corrective action requirements set forth in the current rule.

The AES coal ash waste pile and the fill sites are analogous to unlined or clay lined waste units. EPA previously acknowledged that, "management of CCRs in unlined or clay lined waste management units result in risks greater than the risk criteria of 10-5 for excess cancer risks to humans or an HQ greater than 1 for non-cancer effects to both human and ecological receptors."[32] The 90th percentile risk estimates for arsenic that leaks from clay-lined landfills are as high as 1 in 5000 individual lifetime excess cancer risk. Unlined landfills pose risks for antimony, molybdenum and arsenic. The later pose risks as high as 1 in 2000 individual lifetime excess cancer risk. Clay lined FBC landfills presented estimated 90th percentile risks above criteria for arsenic and antimony.[33]

[30] *Id.*
[31] 86 FR 11586
[32] Docket, *supra* note 18, at 35144
[33] *Id.*, at 35145

EPA previously recognized that "[i]ngestion of groundwater with CCRs (according to the risk assessment) poses estimated trivalent arsenic cancer risk of 4 in 10,000 for unlined landfills and 2 in 10,000 for clay-lined landfills at the 90th percentile[34]. Unlined landfills pose risks of three times the reference dose for thallium and three times the reference dose for antimony at the 90th percentile[35]. Unlined FBC waste landfills pose a three in 100,000 cancer risk for arsenic at the 90th percentile[36].

In July 2016, the University of Puerto Rico, Graduate School of Public Health conducted an epidemiological study of communities in Guayama, downwind from the AES plant and other industrial facilities. The research project emerged as a response to residents' claims of environmental conditions present in their communities, in particular, the exposure to ash from the burning of coal to generate electric power, that were adversely affecting public health.[37] The purpose of the study was to determine if the prevalence of respiratory and skin diseases were higher in the communities in Guayama, in comparison with the communities in Fajardo. Information was collected on sociodemographic characteristics, housing, vulnerability factors to environmental pollution, perception of environmental pollution, reproductive health and respiratory, skin, cardiovascular diseases and cancer.

The most relevant findings of the epidemiological study carried out in the communities of Guayama and Fajardo are as follows: More than two thirds of the population of Guayama considers environmental pollution and poor or bad air quality as severe; 1 of every 3 people in Guayama has been diagnosed with respiratory disease; 1 of every 4 people in Guayama has been diagnosed with

[34] *Id.* at 35169.
[35] *Id.* at 35169-70.
[36] *Id.* at 35170.
[37] Universidad de Puerto Rico, Recinto de Ciencias Médicas, Escuela Graduada de Salud Pública - Departamento de Bioestadística y Epidemiología, Estudio Epidemiológico en las Comunidades de Puente de Jobos y Miramar en Guayama y Santa Isidra y Rafael Bermúdez en Fajardo.

cardiovascular disease; pediatric asthma is approximately 5 times greater in Guayama; Severe asthma in children is 6 times higher in Guayama; The prevalence of urticaria is 7 times higher in Guayama; The prevalence of spontaneous abortions is more than 6 times higher in Guayama; The probability of suffering from chronic bronchitis in the larger population of 45 years is 9 times higher in Guayama; The probability of suffering from pediatric asthma is approximately 6 times greater in Guayama[38].

The transport and use of AES coal ash as a daily cover for garbage, and disposal and accumulation in landfills in Peñuelas and Humacao, Puerto Rico has created a problem of fugitive dust that exposes communities to the toxic metals contained in the waste. A peer-reviewed study found that the combined direct and indirect costs of fish and wildlife being poisoned by coal ash disposal is over $2.3 billion nationally[39]. Contamination of fish and the marine environment and the public health is a concern because the DNA Report notes that the plume under the AES site is moving away from the plant site towards the coast nearby.

Specific Comments to the Proposed Amendments to the CCR Rule

A. Amendments to notice requirements for remediation actions

Diálogo asserts that the notice requirements in the CCR Rule are compatible with the rapid remediation requirements. We disagree with EPA's proposal to, "establish a subset of the corrective action procedures currently found in §§ 257.96-257.98 that would apply to non-groundwater releases that can be completely remediated within 180 days from the time of detection" which would, "compress the reporting requirements into two steps: the initial

[38] *See id.*

[39] *See* A. Dennis Lemly and Joseph P. Skorupa, *Wildlife and the Coal Waste Policy Debate: Proposed Rules for Coal Waste Disposal Ignore Lessons from 45 Years of Wildlife Poisoning*, 46 (16) Environ. Sci.Technol., 8595-8600 (2012).

notification of a release and the documentation that the release has been remediated."[40] Here the EPA is proposing to compress the reporting requirements of non-groundwater releases into two steps: the initial notification of a release and the documentation that the release has been remediated. The EPA's contention is that compressing the reporting requirements for non-groundwater releases that are not of a "catastrophic" nature or otherwise minor, would expedite the response to a release from a CCR unit operator or owner and mitigate the damage done by the release. The EPA considers that the size and magnitude of the release for example, the volume of harmful constituents released is directly related to the time required to remedy the release.

Diálogo contends that public notice of the proposed remediation actions should be required in these cases. The proposed 180-day time limit to complete remediation of the non-groundwater releases such as fugitive dust emissions, do not "have limited potential for harm to human health and the environment" as claimed in the proposed rule[41]. Fugitive dust emissions from coal ash waste is one of the principle pathways for coal ash waste particulates to enter into lungs. These emissions should not be allowed reduced procedures. Although fugitive dust emissions from coal ash waste may seem small in comparison with rupture of the CCR surface impoundments from the Tennessee Valley Authority's (TVA) Kingston Fossil Plant catastrophe in Harriman, TN, and the Duke Energy Dan River contamination, fugitive dust emissions expose communities, wildlife and the environment to constant deposition of the toxic constituents of concern in the coal ash waste. Diálogo contends that fugitive dust emissions are not necessarily incidental or non-catastrophic. The assumption in the proposed rule that these releases, "do not typically constitute a substantial release of constituents to the environment in and of themselves,"[42] is unwarranted because fugitive

[40] 86 FR 11593
[41] 86 FR 11593
[42] *Id.*

dust emissions are a function of the amount of coal ash waste, wind and rain, lack of adequate controls and other factors. As noted in the Inspection Report, in July 2017, the AES coal ash waste pile stood at 120 feet high[43]. This height rivals the elevation of other structures at the plant site except the stack. The AES coal ash waste pile is accumulated outside with no cover and is totally exposed to the Caribbean breeze and tropical rainstorms. The Inspection Report documented the fact that the water truck was not in service.[44] Nearby communities have observed that AES uses a sprinkler system sporadically but not enough to control fugitive dust emissions. EPA should consider the cumulative effects of fugitive dust emissions rather than categorize them as small and non-catastrophic. The public interest in understanding the practices occurring at the site that have the potential to affect their exposures warrants the notice provisions in the current rule. Expeditious remediation of non-ground water releases and public notice is not an exclusive binary. The fugitive dust emissions from the AES coal ash waste pile and coal ash waste transport should trigger public notice.

Diálogo further contends that the use of coal combustion waste as cover at a disposal facility augments the risks of fugitive dust emissions and therefore, opposes EPA's proposal to allow the use of CCR in construction of the cover system. The impacts of not promptly implementing environmental regulations can potentially affect human health and the environment as is evidenced by the DNA-AES Report and other references cited above.

Moreover, it is important for the EPA to consider that detection and notification of a release to the public is a method of keeping CCR unit owners/operators accountable for close monitoring of facilities and thus creates an added safeguard to protect the health and well-being of the public from toxic releases.

[43] Esteves, *supra* note 7.
[44] DNA-Environmental LLC, *supra* note 9.

As noted by EPA in the CCR rule docket, the potential and extent of adverse health effects due to fugitive dust from CCR disposal has been demonstrated[45]. EPA also previously noted that CCR dust can be carried over long distances and settle on ground or water. Effects can include alteration by CCRs of nutrient balance of coastal waters, depletion of soil nutrients, damages to ecosystems and farms[46]. Thus, operators should comply with the §257.96 requirements to complete a written assessment of corrective measures within 90 days of detecting a release, include it in the operating record, hold a public meeting to discuss the results of the corrective action assessment at least 30 days before selecting a remedy, and post the corrective action assessments to the publicly accessible facility website because the proposed rule grants 180 to complete remediation. If an operator requires additional time to complete the remediation work the public should be notified and have the ability to comment. The §257.97 requirement of a semiannual report describing the progress in selecting and designing a remedy, and a report on the selection of a remedy, describing the selected remedy and how it meets the standards in the regulation does not impede remediation work. Neither does the §257.98 requirement of a report stating that the remedial action has been completed, impede an operator from expeditious completion of remediation.

Diálogo asserts that an owner or operator that discovers a non-ground water release should report the violation within 24 hours and disagrees with the proposed 15-day reporting period. The public's right to information about releases of constituents of concern in coal ash waste warrants requiring the operator to promptly prepare a notification of discovery of a non-groundwater release, and place it in the facility's operating record as required by section 257.105.Requiring the facility to provide details about the release and the planned remediation in the form of a brief

[45] Docket, *supra* note 18, at 35215.
[46] *Id.*

interim report is necessary to ensure that the population affected are made aware of their exposure to the health hazards. Anything less creates a bulwark to transparency of the practices occurring at the site and has the potential to affect public's risk of exposure.

B. Amendments related to the WIIN Act

The assessment monitoring program under section 257.95 that requires monitoring at 90-day intervals is necessary to promote early access to information that will allow for prompt remediation action if leaching of constituents of concern from coal ash waste is detected. The proposed rule indicates that it sets a target risk based on a risk range of 1×10-4 to 1×10-6 for carcinogens and an HQ = 1 for non-carcinogens and that states would not be precluded from setting more stringent standards.[47] Jurisdictions with weak regulatory frameworks such as Puerto Rico have not availed themselves of the discretion to apply more stringent standards, even when needed to protect against potential groundwater contamination and exposure threats to sensitive environmental receptors. Rather, the objective of attracting cheap electric generation has led to a weakening of the standards.

Diálogo opposes EPA's proposal to allow State Directors to establish alternative risk-based groundwater protection standards for constituents that lack MCLs; to determine that remediation of a release of an Appendix IV constituent is not necessary; to determine that groundwater monitoring requirements under sections 257.91-257.95 may be suspended if there is evidence that there is no potential for migration of hazardous constituents to the uppermost aquifer during the active life of the unit and post-closure care; to establish an alternative length of time to demonstrate that remedies are complete; to modify the length of the post-closure care period; and to decide to

[47] 86 FR 11599

certify that the regulatory criteria have been met in lieu of the exclusive reliance on a qualified professional engineer.

The Battlefield Golf Course case is an example of the fact that presumably protective state provisions did not prevent contamination of an aquifer from CCR land filling. In spite of the fact that the Virginia Administrative Code required that CCRs be placed at least two feet above the ground water level and be covered by an 18-inch soil cap, onsite wells were contaminated by CCRs[48]. A requirement that fill or land application of CCRs be placed two or more feet from the upper limit of the natural water table is not sufficiently protective of human health and the environment because it does not take into account rainy periods where aquifer water levels rise above the natural water table.

In the Battlefield Golf course case groundwater was contaminated with coal ash waste constituents of concern and exceeded potable water limits in spite of the fact that the Virginia Administrative Code required that the coal combustion residuals be placed at least two feet above the water table. Tropical rainstorms often contribute significant amounts of water to aquifers increasing the water table dramatically. This is particularly so in wetland areas such as the site of the AES coal power plant. Studies commissioned by AES attest to the need for further research on the use of coal ash in tropical environments.[49] Thus, Diálogo objects to alternative, risk-based location restrictions in lieu of the location restrictions found in sections 257.60-257.64. Protections shouldn't be limited to the upper most aquifer. There is evidence that Jobos Bay receives flows from the deep aquifer to the barrier islands/cays that ring the southern boundary and hydrologic connection between the upper and lower aquifer. There is evidence that heavy rainfall exacerbates CCR contamination. As

[48] Docket, *supra* note 18, at 35231

[49] *See* S. Kochyil & D. Little, 2004 Physical, Mechanical and Chemical Evaluation of Manufactured Aggregate, Texas A&M University, pgs. 1, 47.

was documented in the Emory River, elevated levels of arsenic, cadmium, chromium and lead were detected after heavy rainfall[50].

C. Alternative closure provisions

Currently, an owner or operator of a unit closing for cause pursuant to § 257.101, must cease depositing CCR and non-CCR wastestreams in the unit within six months of an event triggering closure. The EPA's proposal to allow facilities to qualify for alternative closure provisions based on "continued need" is overly vague and leaves room for facilities which may not have a need, or a substantial need, to continue to operate under alternative closure provisions which could potentially harm people and the environment. The provision should include terminology which would require more substantive proof of the need to manage both CCR and non-CCR waste streams. While it is beneficial to establish that the ceasing of operation of the coal-fired boilers will commence on a specified date, there should be additional reporting requirements to ensure that there is no unforeseen contamination to the areas within and around the CCR facilities.

The argument that the risks to the wider community from the disruption of power over the short-term outweigh the risk associated with the increased groundwater contamination from continued use of these units is not well founded. On the one hand, the disruption of power for a short period of time can potentially be less harmful than groundwater contamination. However, when considering the fact that the period of disruption cannot be accurately specified along with the risk of unforeseeably higher amounts of contamination, it appears that these alternative closure provisions present greater risk.

Furthermore, using Puerto Rico as an example, coal produces about $1/6^{th}$ of the island's energy (as of 2017 according to the U.S. Energy Information Administration). Requiring AES in

[50] Docket, *supra* note 18, at 35233.

Puerto Rico to eliminate the onsite coal ash pile and implement wastewater treatment systems would not cause power disruptions or risk meeting energy demand on the Island as current installed capacity is almost twice the peak energy demand. The PREPA Integrated Resource Plan (IRP) establishes that the Island's installed generating capacity is 5839 MW, including AES' 454 MW and peak demand is approximately 3000 MW and energy demand has dropped significantly after Hurricane Maria.

EPA is proposing to revise the current regulations to allow the use of CCRs in the construction of final cover systems for CCR units closing pursuant to § 257.101 that are closing with waste-in-place. EPA is also proposing specific criteria that the facility would need to meet to allow for the use of CCR in the final cover system. Using CCRs for final closure is problematic because it can cause ingestion of CCR fugitive dust. Moreover, it has been reported that CCR covers (along with other uses) can be inadequate when exposed to certain conditions. For example, in Puerto Rico, CCR covers can be inadequate when exposed to the heat and humidity which is common in the tropics. Moreover, structures comprised of CCR's have been found to be susceptible to higher probability of breaking down than other materials based on an EPA study[51].

D. Non-CCR wastestreams

The inclusion of non-CCR wastestreams such as boiler blowdown, boiler cleaning wastes, demineralizer regeneration washwater, cooling tower blowdown, air, heater washwater, stormwater, and water treatment plant waste with coal combustion waste for alternative closure or otherwise will generate cross contamination and potentially complicate remediation actions.

[51] Thorneloe, *supra* note 18.

Municipal solid waste (MSW) and CCRs differ considerably in chemical and physical characteristics and consequently, in the potential threat they represent to human health and the environment. These two waste streams pose different threats to human health and the environment. Enforcement of MSW under subtitle D regulations has been very lax in Puerto Rico. Most landfills have a history of noncompliance including lack of liners or groundwater monitoring, piggy backing wastes and many other regulatory violations. In one case, when selenium and other constituents of concern were detected in groundwater monitoring wells, the Puerto Rico government authorized relocation of the wells rather than require any type of remediation.[52] Puerto Rico permitting regulations curtail public participation in siting processes and other activities requiring permits. At least one study has shown that the percentage of environmental impact statements required by the Commonwealth government for projects has steadily declined over the years.[53] Jurisdictions with weak regulatory frameworks and/or a history of lax environmental or subtitle D enforcement, such as Puerto Rico, Alabama and others, will not achieve safe handling of CCRs under MSW subtitle D regulation. The race to the bottom phenomenon posits that jurisdictions that seek to attract "low cost" energy generators or industries will forego environmental protection and regulation. Often, these jurisdictions lack the resources needed to monitor operations that entail potentially significant environmental impacts.

The landfill (MSWLF) regulations in 40 CFR part 258 are not based on current scientific knowledge of the leaching risks posed by coal combustion residuals as noted in the Vanderbilt University Report referenced above. The concept of "differential protection of groundwater" as a

[52] Environmental Quality Board File for the Salinas Municipal Landfill

[53] Carmen M. Concepción, *El ocaso del proceso de Evaluación de Impacto Ambiental en Puerto Rico: un examen de la práctica a partir de 1990*, 68 REV. COL. ABOG. PR 755 (2007)

basis for allowing regulatory "flexibility" depending on the quality of the groundwater source predates scientific evidence of the leaching potential of coal combustion waste.

The proposed application of provisions akin to 40 CFR 258.55(i), similar to MSWLFs that would allow the Director of a state permitting authority in a state with an approved MSWLF permitting program to establish an alternative GWPS for constituents without an MCL, based on a health based level allows for subjective regulation in a field where scientific criterion are required. The potential liability for remediation work creates a perverse incentive for owners and operators to abuse the alternative risk-based GWPS that would be established by a technical expert paid by the owner or operator because that alternative standard could be implemented by an owner or operator without the intervention of a permitting authority, through the use of a certified technical expert(s) or by reliance on state groundwater standards or other risk-based approach. Such a scheme would not meet the standard of no reasonable probability of adverse effects on health or the environment from disposal of solid waste at a facility.

E. Proposed addition of Boron to Appendix IV

The addition of Boron to Appendix IV,[54] which requires that when detected, a facility must initiate remedial actions to clean up the contamination and, in some cases, to close the unit is an appropriate remedial measure. Because Boron travels quickly and is likely to reach potential receptors before other constituents, it is considered a "signal" constituent that would indicate that waste stream releases to ground water are occurring. Although Boron lacks a Maximum Contaminant Level (MCL), Boron is a contaminant of concern (COC) with more damage cases than any other constituents. Boron poses a risk to both human health and ecological receptors. Including Boron in Appendix IV would ensure that corrective action occurs soon after a release

[54] 86 FR 11598

and potentially before any other constituents move downstream from the source of contamination. The 2014 risk assessment shows that Boron can pose developmental risk to humans that can result in stunted growth or death to sea life and aquatic plants. Having a mechanism for early detection and remediation would better protect human health and the environment. Therefore, we urge the EPA to move forward with adding Boron to Appendix IV and in the absence of a more recent study, consider it appropriate to rely on the 2014 risk assessment to substantiate the health hazards associated with exposure to Boron.