Addendum to Earthjustice *et al.* Comments (Oct. 15, 2019)

Damage from CCR Placement in Mines

Extensive evidence of health and environmental damage from unencapsulated placement of CCR on the land has been documented at minefill sites. Minefilling was deemed unsafe when the National Academy of Sciences found in 2006 that "*the presence of high contaminant levels in many CCR leachates may create human health and ecological concerns at or near some mine sites over the long term*."[1] Furthermore, in 2007, the Clean Air Task Force found that 2/3 of 15 Pennsylvania minefills examined had degraded surface and/or groundwater.[2] While minefilling was the application that received the most CCRs of any "reuse" – more than 20 million tons, or more than 18 percent of all CCRs reused - in 2017 (the most recently reported year) alone,[3] there is significant evidence of damage at minefill sites. Minefilling is akin to placement of CCRs on the land without safeguards like a liner, and the risks of minefilling are well documented despite a lack of any federal regulations.

The evidence of damage at minefill sites is pervasive, and underscores the need for requiring careful environmental control measures for unencapsulated uses of CCR. The National Academies of Sciences ("NAS") has already determined that minefilling poses grave risks to health and the environment.[4] NAS was directed by Congress to study the health, safety, and environmental risks posed by minefilling. NAS released a report in 2006 detailing that hazardous pollutants from coal ash could leach from unlined minefill sites into groundwater because mines often intercept or are in close proximity to the water table.[5] NAS concluded that disposing of coal ash in mines can cause unacceptable harm if it is not undertaken pursuant to federal safeguards set forth in enforceable regulations.[6]

The NAS Minefill Report further concluded that contaminants entering groundwater can be transported away from the CCR source area, potentially resulting in the degradation of drinking water supplies or surface water quality.[7] Further, the NAS concluded that the presence of high levels of some contaminants in CCR leachates may create human health and ecological concerns at or near some mine sites over the long term, and also cited evidence of adverse impacts on plant growth caused by CCR at a minefill site.[8]

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[1] Comm. on Mine Placement of Coal Combustion Wastes, National Academy of Sciences, *Managing Coal Combustion Residues in Mines* 4 (2006) (emphasis in original).
[2] Jeff Stant, Clean Air Task Force, *Impacts on Water Quality from Placement of Coal Combustion Waste in Pennsylvania Coal Mines* vi (July 2006).
[3] American Coal Ash Association, 2017 Coal Combustion Product (CCP) Production and Use Survey, https://www.acaa-usa.org/Portals/9/Files/PDFs/2017-Survey-Results.pdf (last accessed Nov. 10, 2019)
[4] *See, e.g.*, NAS Minefill Report, at 3, 10.
[5] *Id.* at 3.
[6] *Id.* at 3, 10.
[7] *Id.* at 66.
[8] *Id.* at 87, 77.

EPA has taken the position that it will largely defer the decision to promulgate minefilling regulations and the content thereof to the Department of the Interior's Office of Surface Mining, Reclamation, and Enforcement ("OSMRE"), with EPA serving an advisory role.[9] While EPA has promulgated a rule for disposal sites, neither EPA nor OSMRE has promulgated regulations for this controversial practice, despite OSMRE receiving a petition from environmental groups to promulgate minefilling regulations.[10] This means minefilling remains completely unregulated at the federal level.[11]

In making its decision to defer regulation of minefills, EPA, in its 2015 CCR Rule, noted the NAS's findings and the importance of incorporating the report's recommendations into minefilling regulations. EPA stated:

> The report concluded that the "placement of CCR in mines as part of coal mine reclamation may be an appropriate option for the disposal of this material. In such situations, however, an integrated process of CCR characterization, site characterization, management and engineering design of placement activities, and design and implementation of monitoring is required to reduce the risk of contamination moving from the mine site to the ambient environment." The NRC report recommended that enforceable federal standards be established for the disposal of CCR in minefills to ensure that states have specific authority and that states implement adequate safeguards.[12]

EPA must consider the extensive evidence of damage to health and the environment at CCR minefills when considering regulatory options for CCR fill sites, as this evidence adds to the already and growing body of documented risks posed by unencapsulated placement of CCRs. Neither EPA nor OSMRE has compiled a list of minefill damage cases, and states have largely failed to require extensive monitoring of minefilling, so there is a dearth of monitoring data at many minefill sites. However, there are several sources of information detailing contamination at minefills based on the data that is available. For example, in a multi-year study of 15 coal ash

[9] *See, e.g.,* 2015 CCR Rule, 80 Fed. Reg. at 21,302 ("The U.S. Department of Interior (DOI) and, as necessary, EPA will address the management of CCR in minefills in separate regulatory action(s), consistent with the approach recommended by the National Academy of Sciences, recognizing the expertise of DOI's Office of Surface Mining Reclamation and Enforcement in this area."); *id.* at 21,341 ("Consistent with the recommendations of the National Academy of Sciences, EPA anticipates that the U.S. Department of the Interior (DOI) will take the lead in developing these regulations. EPA will work closely with DOI throughout that process.").

[10] *See* Letter from Lisa Evans, Earthjustice, *et al,* to Joseph Pizarchik, OSMRE, Re: Petition for Rulemaking Under the Surface Mining Control and Reclamation Act, 30 U.S.C. § 1211(g) (Nov. 6, 2015) (attached).

[11] This is especially troubling because placement in minefills is growing at an alarming rate. In fact, in 2017 (the most recent year with available data), minefilling was the single largest category of CCR placement not in a disposal site, constituting more than 18% of all CCRs used in all so-called reuse applications, with more than 20.2 million tons of CCRs placed in minefills in one year alone. *See* American Coal Ash Association, 2017 Coal Combustion Product (CCP) Production and Use Survey Report, https://www.acaa-usa.org/Portals/9/Files/PDFs/2017-Survey-Results.pdf (last accessed Oct. 11, 2019). In fact, the placement of CCRs in minefills has grown extensively in recent years – in 2007, only 6.7 million tons of CCRs were placed in minefills, meaning placement in mines *tripled* in a decade's time. The 2017 value was the highest value for minefill placement since then, which could also indicate industry's willingness and interest in placing CCRs not in regulated disposal sites or in safe reuse applications that would have to comply with industry standards under the definition of "beneficial use of CCR," but in minefills, which are completely unregulated by the 2015 CCR Rule.

[12] 2015 CCR Rule, 80 Fed. Reg. at 21,341 (citing the NAS Minefill Report).

minefills in Pennsylvania, researchers found that CCR adversely impacted water quality at ten of the sites.[13] At the remaining five sites, there was not enough monitoring data to determine whether adverse impacts were caused by the CCR. A review of the 15 mining permits revealed:

- Levels of contaminants, including aluminum, arsenic, cadmium, chloride, chromium, lead, manganese, nickel, selenium, and sulfate, increased in groundwater and/or surface water after coal ash was dumped in the mines.
- Contaminants increased from background concentrations (measured after mining) to levels hundreds to thousands of times above federal drinking water standards.
- Pollution was found downstream from coal ash disposal areas and sometimes well outside the boundary of the mines.[14]

Below are examples of sites where coal ash dumps atop mine waste resulted in environmental contamination.

Big Gorilla Minefill, McAdoo, Pennsylvania. At Big Gorilla, a 1,400 feet wide by 400 feet long by 90 feet deep pit in Northeastern Pennsylvania, three million tons of coal ash was used to attempt to neutralize a 120-million-gallon pool of acid-mine-drainage polluted water.[15] However, degradation has occurred:

> Data indicate ash is responsible. Sulfate, TDS, aluminum, iron, manganese exceed DWS [drinking water standards] by multiple times at the most downgradient monitoring point, the Silverbrook Discharge. Calcium, magnesium, potassium and specific conductance all high in the Big Gorilla Pit ash pore water and rising at Silverbrook since the Pit was filled with ash. Selenium and lead are 2-3 times higher than the DWS, arsenic is exceeding the DWS and molybdenum has exceeded health advisory levels in the pit pore water by 14 times. Chromium and arsenic found at over 2 times the DWS in the alkaline pit water once ash placement started, higher than ever found in the acidic pit water.[16]

LaBelle, Pennsylvania. At the LaBelle Coal Ash Mine Dump in Fayette County, Pennsylvania, CCR was placed at this site with a history of coal mining and coal preparation activities, and resulting waste has been polluting local streams with extremely high levels of sulfate, iron, manganese and other salts that damage fish and other aquatic life. It has also leaked aluminum, manganese, sulfates, and total dissolved solids into groundwater at levels that are above Pennsylvania drinking water standards, and fugitive particulate matter pollution blowing from trucks hauling coal ash without required covers

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[13] Jeff Stant and Lisa Evans, Clean Air Task Force, Impacts on Water Quality from Placement of Coal Combustion Waste in, Pennsylvania Coal Mines, September 2007, *available at* http://www.catf.us/resources/publications/files/PAMinefill.pdf.
[14] *Id.*
[15] *Id.* at 43, 44 (inset boxes).
[16] *PA Minefill Report*, at 27.

covered nearby residents homes in film of coal ash.[17] Unpermitted discharges from the site into surface waters contain concentrations of pollutants in excess of water quality standards for many parameters including arsenic, sulfate, boron, cobalt, lead, iron, manganese, osmotic pressure, and total dissolved solids.[18]

McDermott Mine in Cambria County, Pennsylvania. At this site, coal ash contaminated surface and groundwater with toxic levels of cadmium, selenium, sulfate, manganese and other pollutants. Billed as "alkaline addition" to clean up preexisting pollution from acid mine drainage, the Pennsylvania DEP permitted the dumping of approximately 316,000 tons of CCR at the 73-acre surface mine from 1996 to 2004. The coal ash failed, however, to stop the acid mine drainage. Instead, pollution rose precipitously, rendering offsite water unfit for human consumption and forcing the abandonment of a spring used as a drinking water source. After CCR disposal, cadmium and selenium appeared in the groundwater and surface water at levels toxic to humans and aquatic life. Neither of these contaminants had been detected before ash disposal. Cadmium jumped to nearly 14 times the drinking water standard in groundwater and increased in surface water to nearly 4 times the drinking water standard and 76 times the water quality standard. Selenium, a pollutant that is extremely toxic to aquatic life, was measured at a seep at the property boundary at nearly 4 times the drinking water standard and more than 36 times the water quality standard. At a deep mine discharge 800 feet beyond the property boundary, selenium increased to levels grossly exceeding water quality standards.[19]

San Juan Mine in Farmington, New Mexico. Here, substantial damage resulted from the disposal of CCR in the mine. In Farmington, the Shumway Arroyo has long served as a source of drinking water for area residents and their livestock. Since the late 1980s, however, 40 million tons of CCR from the San Juan Generating Station was dumped in the San Juan Mine. Large unlined pits, nearly 200 feet deep and 300 feet wide, were filled with caustic fly ash and scrubber sludge. As a result, the shallow groundwater and surface water in the Shumway Arroyo were contaminated with CCR constituents and the nearby community of ranchers can now use neither as potable water for humans or livestock. Concentrations of lead, selenium, arsenic, cadmium, and boron have risen above drinking water standards in the shallow aquifer underneath the arroyo. Sulfates in the aquifer have reached 55,000 milligrams per liter (mg/L) at the boundary of the mine, 220 times the secondary drinking water standard. The level of total dissolved solids in the groundwater, an indicator of all pollution dissolved in water, now exceeds 80,000 mg/L, 160 times the federal standard. The polluted water from the Shumway Arroyo eventually flows to the San Juan River, a source of drinking water for thousands of residents of New Mexico.[20]

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[17] *See, e.g.*, Letter from Lisa Hallowell, Environmental Integrity Project, to Matt Canestrale Contracting, Notice of Violations and Notice of Intent to Sue (Mar. 13, 2013), *available at* http://publicjustice.net/sites/default/files/downloads/CCCvMCC-NOI-031313.pdf.

[18] Downstream Strategies, S.S. Papadopulos & Associates and Environmental and Molecular Technology, Water Pollution at LaBelle, Fayette County, Pennsylvania (Jan. 20, 2014), *available at* http://www.reginfo.gov/public/do/eoDownloadDocument?pubId=&eodoc=true&documentID=877

[19] *See* Letter from Lisa Evans, Earthjustice, *et al*, to Joseph Pizarchik, OSMRE, Re: Petition for Rulemaking Under the Surface Mining Control and Reclamation Act, 30 U.S.C. § 1211(g) (Nov. 6, 2015), (attached) (citing NAS Minefill Report, at 111–63).

[20] *See id.* (citing Amended Complaint, Sierra Club v. San Juan Coal Company et al., Civil Action No. 10-00332-MCA/LAM, July 6, 2010).

Robinson Run in Monongalia County, West Virginia. Robinson Run drains approximately 7.7 square miles and discharges into the Monongahela River. Robinson Run and Crafts Run, a tributary, are polluted by acid mine drainage ("AMD") from coal mines. Several mines in this watershed accept large quantities of CCR, purportedly placed to ameliorate the AMD. However, monitoring in 2011 of sites in and near Crafts Run and Robinson Run, including outfalls, background and instream locations provide data that indicate pollution from CCR placement. The headwaters of Crafts Run are unpolluted by AMD and trace metals associated with CCR. Data indicate that pollution levels generally increase as Crafts Run flows downstream past coal mining and CCR disposal operations. This was true for AMD parameters as well as several other parameters such as boron, chloride, nickel, and fluoride. Evidence of CCR pollution, including boron, arsenic and selenium, was found in several locations along Crafts Run and Robinson Run. Outfalls discharge both selenium and arsenic in concentrations that exceed state surface water quality criteria. Beryllium concentrations at two instream monitoring locations also exceeded the surface water quality criterion.[21]

Environmental justice. As an additional note, the pollution from minefilling disproportionately threatens low-income populations, as coal mines are typically situated in low-income areas. The placement of coal ash doubles the burden these communities face, as they are subjected to mining pollution as well as coal ash pollution.[22]

[21] *See id.* (citing Downstream Strategies, Water Pollution in Crafts Run and Robinson Run, Monongalia County, West Virginia, at 27 (Oct. 13, 2011), *available at* http://publicjustice.net/sites/default/files/downloads/CORESCO_10_13_2011_FINAL.PDF).

[22] *See, e.g.*, Hendryx, M. and M.M.Ahern, *Relations between health indicators and residential proximity to coal mining in West Virginia*. 98 Amer. J. Pub. Health, 669–71 (2008).