

## Response to Comments on “Wildlife and the Coal Waste Policy Debate: Proposed Rules for Coal Waste Disposal Ignore Lessons from 45 years of Wildlife Poisoning”

On the surface, the comments<sup>1,2</sup> appear to be about technical issues with our paper. However, they are really about protecting an underlying corporate agenda to maintain the status-quo of minimal regulations governing coal ash disposal in the United States, which the electric utility industry has exploited to their benefit for decades. Importantly, we note that both comments were solicited and paid for by the Utility Solid Waste Activities Group (USWAG), a consortium of some 110 electric utilities and affiliates that have a vested economic interest in maintaining the status-quo of little or no regulations.<sup>3</sup>

We also note that neither comment disputes the occurrence of any of the 21 surface impoundment damage cases we reported on, just the dollar value we calculated for damages and the “newness” of those damages and associated costs. Mr. Dunford contends that our valuations are too high. That is a categorically incorrect assertion...we have certainly not exaggerated our numbers and we went to great lengths to ensure that did not happen. For example, by simply changing the fish replacement cost from our ultraconservative \$1 dollar (U.S.) per fish to the penalty of \$5–20 per fish that was being levied by states even way back in the early 1990s (e.g., ref 4), our annual damage value estimates per site and aggregate total per case would increase dramatically. Also, we used only half of the affected aquatic area in many calculations, which cuts the dollar cost of spatially related damages at those sites in half. We capped real estate values at \$250,000, which is less than one-third of actual tax values for many properties affected since the mid-1990s. Most biological effects studies were limited to fish so many of our valuations grossly underestimated total wildlife impacts and resultant damage costs (i.e., no damage value included for frogs, toads, salamanders, snakes, lizards, turtles, birds, mammals, etc.). A recalculation of damage values using the adjusted numbers mentioned above would easily double to quadruple our annual and total aggregate cost for many sites.

Mr. DeForest et al. suggest that damages from coal ash are an old 1980s problem that has been largely fixed due to advances in regulatory and management policies for coal combustion waste (CCW) surface impoundments. We respectfully disagree and note that they provide no case study evidence to support that claim by illustrating how even one damage site has been improved by anything other than complete elimination of the impounded ash. We call their attention to a report by the United States Environmental Protection Agency (USEPA) that gives an evaluation of conditions that existed in 2009:<sup>5</sup>

*“Despite current regulatory controls and wastewater treatment methods, pollutants from power plant wastewater still make their way into the environment...EPA found that coal combustion wastewater {from surface impoundments} has caused a wide range of environmental effects to aquatic life.”*

Based on this commentary by the USEPA, and the repeated occurrence of wildlife damage cases since the 1980s, we see no

indication of meaningful advances by the industry Mr. DeForest et al. defend or the regulatory community in which it operates. We also note that Mr. DeForest et al. state “Our understanding of selenium fate and effects in aquatic systems has grown immensely over the last 30 years”. We strongly agree. One might reasonably expect those advances in understanding to have found their way into regulatory policy and utility operations but they have not. The regulatory controls imposed by governing authorities and the operational policies practiced by the utility industry have not kept pace with the science. As further supporting evidence of “no advances”, we note that our paper was published in July of last year and since that time a substantial amount of new information has emerged which shows that the aggregate damage value we listed for active, ongoing post-2000 cases is far too low, and is growing each year. For instance, Duke University researchers have documented numerous additional sites in an “example” survey of a single state (NC) that are actively discharging coal ash pollutants at levels exceeding both state and nationally designated toxic thresholds for aquatic life. Those discharges are causing cumulative, long-term environmental degradation.<sup>6</sup> The effects of riverbed contamination that resulted from the 2008 Kingston TN spill are more serious and pervasive than originally thought, and will likely persist for decades according to studies by Duke University.<sup>7–9</sup> Based on this new information, a recalculation of damage values at the TN site alone would add over \$1 million (U.S.) annually to the aggregate amount. The total dollar cost of post-2000 environmental damages is increasing rapidly.

As a final point, we take exception to the statement by Mr. DeForest et al. “Since 1982 the USEPA has prohibited the wet disposal of CCWs to surface impoundments for new power plants.” They give no literature citation by which the reader can check the validity of this assertion and we know of no such controlling regulation. However, we would ask that Mr. DeForest et al. consult the most recent policy proposal by the USEPA regarding surface impoundment disposal of coal ash.<sup>10</sup> That proposal clearly indicates an option to use surface impoundment for new power plants constructed after 2012 and it explains the fact that all power plants constructed prior to 2012 could have used impoundments. We find it very contradictory and difficult to believe that USEPA would have prohibited surface impoundment in 1982, yet propose new regulations that suddenly allow the practice some 30 years later, despite the documented environmental damage cases that have been linked to it in the intervening decades.

Protection of fish and wildlife has not been a priority of the Electric Power Research institute (EPRI), USWAG, or the electric utility industry in general. Back in the days when some of the early coal ash damage cases were happening, that is,

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Belews Lake and Hyco Reservoir NC in the 1970s and 1980s, EPRI sponsored conferences and workshops to hear and expose the emerging science in order to understand and address the pollution problem (e.g., ref 11). USWAG, which was chartered in 1978, was there alongside learning about the environmental dangers of surface ash disposal. That was the opportune time for EPRI and USWAG to have stepped forward and asserted some electric power industry leadership with a firm policy recommendation to immediately shift operations away from surface impoundment disposal of ash. That did not happen and both EPRI and USWAG have remained silent for decades. Our paper offered a science-based policy analysis that culminated with a challenge to the U.S. Office of Management and Budget and the U.S. Environmental Protection Agency...no more surface impoundment disposal of coal ash and no more resultant fish and wildlife body counts. We reissue that challenge here, this time directed at USWAG.

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### Notes

The authors declare no competing financial interest.

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