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April 17, 2009

Mr. John Hanger, Acting Secretary
Pennsylvania Department of Environmental Protection
Rachel Carson Office Building, 16th Floor
P.O. Box 2063
Harrisburg, PA 17105-2063

Dear Secretary Hanger:

We apologize for the delay in responding to your requests for clarification on the following matters concerning the management of coal ash in Pennsylvania coal mines that we discussed with you on October 9, 2008: adequate monitoring, outliers, specific violations of law, corrective action standards, and ash characterization and contact with water. This letter addresses these issues as discussed with you on October 9 and in a day long follow-up meeting with Department mining staff on November 13 which you proposed in the October Meeting. It also discusses the sufficiency with which these issues are addressed in the Department's proposed rules for the beneficial use and storage of coal ash in Chapter 290. Environmental Integrity Project is submitting this letter on behalf of the delegation that met with you in October and participated in the November meeting with Department mining staff which included representatives of Mountain Watershed Association, Foundation for Pennsylvania Watersheds, Earthjustice, Residents Against the Power Plant, Pennsylvania Sierra Club, Robert Gadinski, P.G. and Charles Norris, P.G. in addition to EIP.

We can all agree that the policy at the heart of the issues concerning beneficial use of ash at minefills is to protect the waters of the Commonwealth from contaminants and the citizens and environment of the Commonwealth from harm. Two actions at the crux of this program should be prevention of harm and corrective action if harm takes place.

Monitoring

To prevent harm, one must monitor. To effectively monitor one must first characterize the site and the ash involved and then integrate this information. Beyond simply gathering baseline information, the characterization must gather enough site specific information to credibly predict a satisfactory result to a site's water from placement of a particular coal ash at that site. Monitoring is undertaken to confirm that prediction. Without liners or restrictions on placement that reliably avoid contact with groundwater, characterizations for minefill sites

will need to predict reactions that will occur between coal ash and site materials as well as the flow paths that leachate from those reactions will take. Given the excavation, blasting and fractures that have occurred as well as the connections to deep mines and mine pools that exists at many mine sites, migration pathways that must be monitored may be much more numerous. Furthermore additional pathways may be created during the mining and ash placement that will need to be monitored. Monitoring must not only ensure that the ash is not contaminating water but also producing the purported “benefit” that justifies the placement. If the purpose of the “beneficial use” is to use ash as a low permeability barrier or an alkaline addition, changes from the initial hydrologic regime are the expectation. Accordingly as a practical matter, characterization of ash placement sites in coal mines needs to be much more rigorous and ongoing than characterization of landfill sites. Changes in the monitoring system may need to be made as changes in the hydrologic regime occur. Yet the regulation proposed by PADEP’s mining and solid waste staff proposes the opposite approach, examining mine ash placement sites in a one time, initial characterization with no greater rigor than occurs currently for mining alone.

At our meeting with you last October, the first issue you addressed was monitoring. You stated, “There seemed to be a lack of accepted facts for what the data shows. Monitoring systems must collect necessary, factual, objective information. . . . I want to know why five years is enough time to monitor after ash placement. I am totally uninterested in a phony baloney monitoring system.”

Monitoring was the first item on the agenda at the November 13 Meeting. PADEP Mining Staff stated that their experience has shown that five years after the conclusion of mining and ash placement is sufficient for seeing any changes in water quality around mine ash placement sites. However monitoring data from the Pennsylvania mine sites that we have studied indicates the evolution of ash chemistry over time is significant. The lack of isolation from water or mine materials, changing pH of waters draining through the ash and fluctuating water tables can play important roles in that evolution.

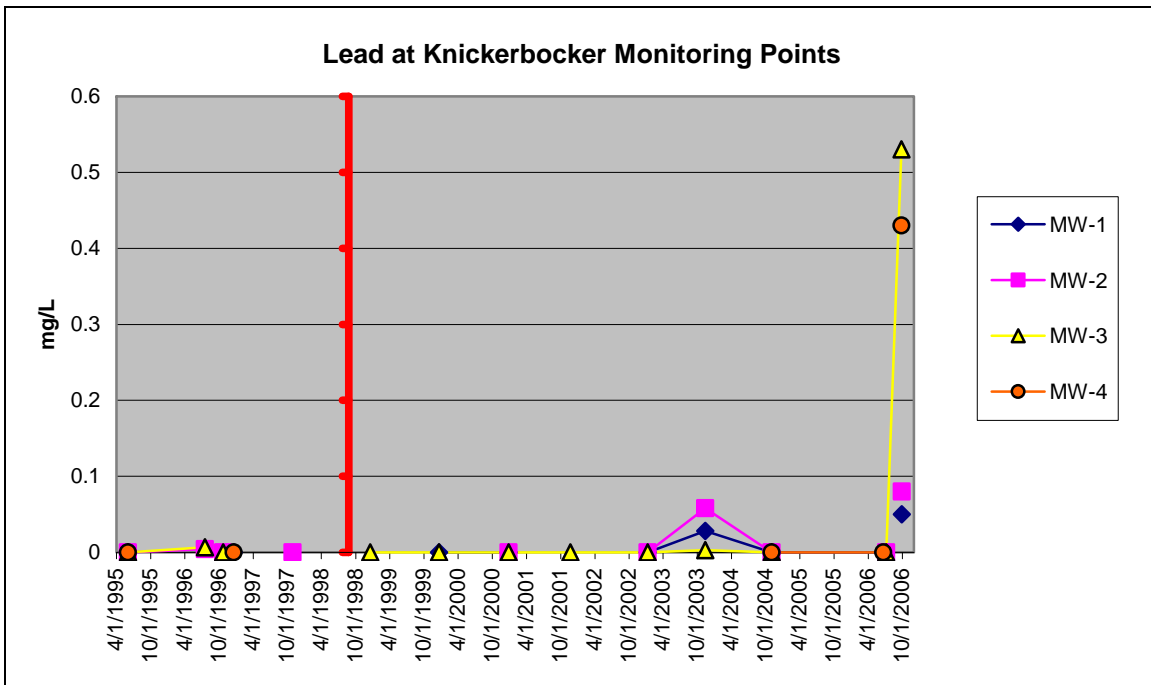
For example the graph below of lead concentrations in wells monitoring the mine pool underneath the Knickerbocker Pit demonstrates that major changes in water quality occurred many years after the start of ash placement at this site that appear to be due to that placement. Three million tons of ash from the Schuylkill Energy Resources Plant were slurried to the Knickerbocker Pit from mid 1998 through the end of 2003 as a “demonstration” that placement of wet ash could be put in a dry pit without adverse impacts to the underlying minepool.

Before the project began, there were only two detections of lead in baseline monitoring, 0.004 mg/L at MW-2 and 0.0069 mg/L at MW-3 in July 1996. All other baseline results were reported at 0.00 mg/L in a PADEP data base of monitoring results. Placement of ash slurry in the pit began approximately in August 1998. Five years and three months of ash placement had passed before

lead was detected again when it was measured at 0.058 mg/L at MW-2 and at 0.028 mg/L at MW-1 in November 2003. More than eight years of ash placement elapsed before the second detections of lead occurred, this time at levels ranging from 0.08 mg/l to 0.053 mg/L at downgradient monitoring points in September 2006. These were approximately 10 to 100 times higher than the two sole lead concentrations measured during baseline monitoring ten years earlier at these points.

Shortly after ash placement started, downgradient monitoring point MW-4 became dry perhaps due to the apparent solidification of nearby ash. Further changes in the hydrologic regime, perhaps from the breakdown of that ash, allowed water to be sampled again at MW-4 starting in November 2004. The sample in November 2004 and another in June 2006 reported lead at <0.05 mg/L. However a third sample in September 2006 at MW-4 reported lead at 0.43 mg/L. Thus lead concentrations were analyzed for but not found at MW-4 until more than 8 years into ash placement and eleven years after monitoring had started at MW-4, by which time lead had jumped from never being detected to a concentration 29 times higher than the DWS.

Aside from the alarming jump in lead concentrations, this data demonstrates that over relatively long periods of time trace metal release and movement through the water can evolve greatly at mine ash sites, that flow paths change in that period, that initial characterizations of no danger may be refuted and that more than annual monitoring is needed to promptly respond to this evolution.



The lengthening of monitoring at coal ash minefills and structural fills in subsection 290.301.(g) of the proposed regulations to ten years after ash placement is concluded should substantively improve the ability of monitoring systems to detect such changes provided they contain sufficient numbers of monitoring points in the right places. However the grounds for reducing sampling from a quarterly basis in the first five years of post placement monitoring to an annual basis in the last five years of monitoring have not been established. We believe that quarterly monitoring should continue for at least 10 years after ash placement and not be terminated until a prediction of satisfactory water quality is sustained in all migration pathways that exist at a site. Characterization of the site initially must be of sufficient depth to document these pathways. Monitoring must be adequate to detect changes in all pathways that may occur which may require necessary adjustments in monitoring to ensure that contaminants do not escape unnoticed in the changing hydrology of the site, objectives which are not met in 290.301-306, the subchapter on monitoring in the proposed regulations.

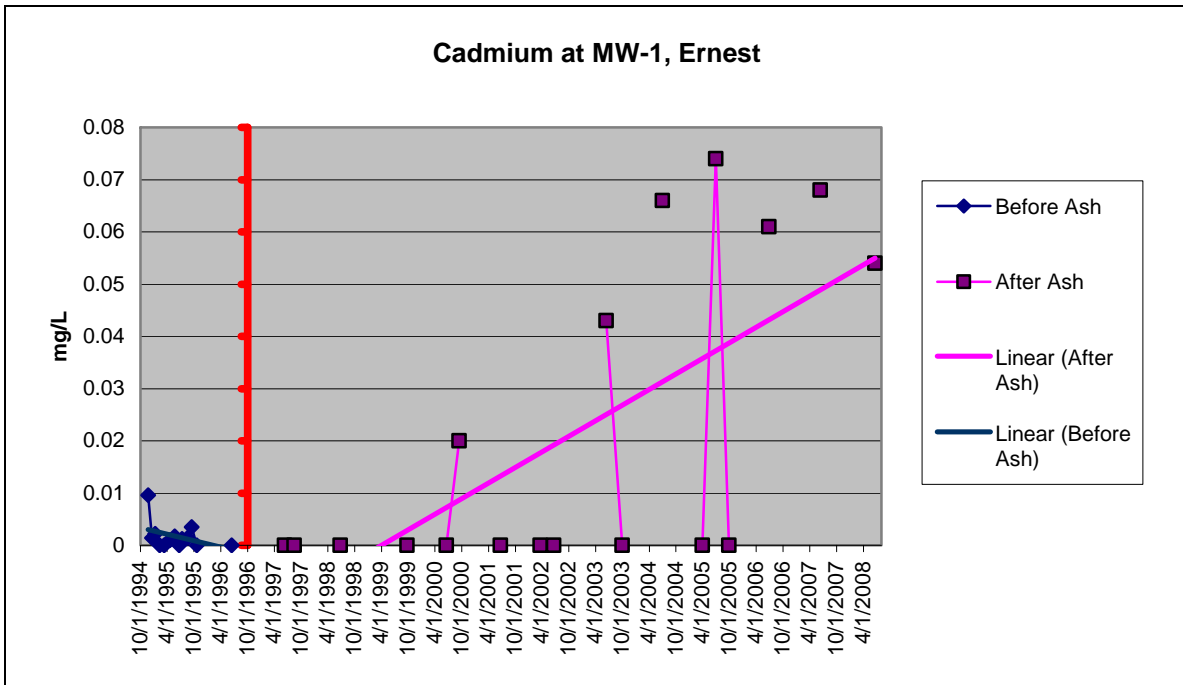
Oddly, despite the requirement for quarterly monitoring initially after ash placement is concluded, the proposed regulations allow for less frequent monitoring during ash placement. Examination of mine ash sites in the CATF Report found that permits usually required only annual monitoring for trace elements such as lead during ash placement. By allowing the Department to approve sampling on a basis less frequent than quarterly during ash placement, subsection 290.301.(a)(3) of the proposed regulations will allow deficient annual levels of monitoring to continue at mine ash placement sites when operations are most likely to be altering the hydrologic regime.

The basis for waiving all monitoring for ash placements in mines and structural fills that involve less than 100,000 tons of coal ash in subsection 290.101. (d) has also not been established. Damage cases documented by USEPA and PADEP monitoring data examined in the CATF Report demonstrate that volumes substantially smaller than 100,000 tons of ash can contaminate water supplies if contact with water is permitted.

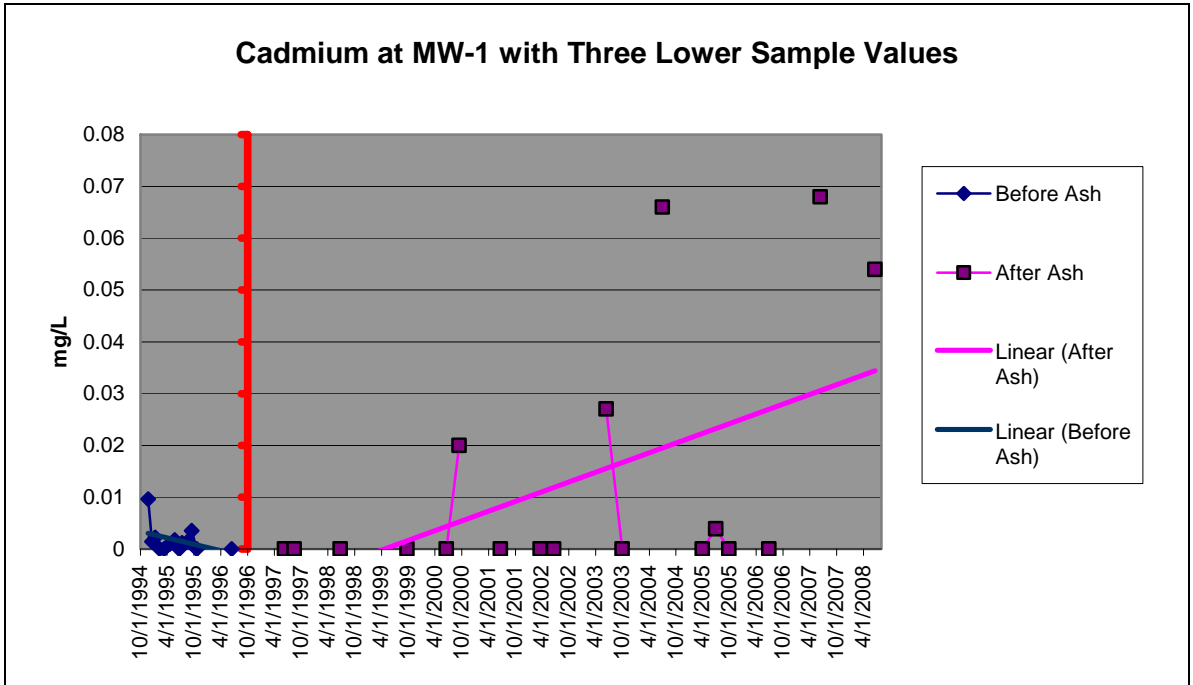
There were disagreements over the most basic aspects of monitoring starting with 'what the data shows' at the November Meeting with mining staff. In October, you stated that our concern that high concentrations of contaminants are being measured that are not occurring in background monitoring, "is legitimate." You added, "You are making factual assertions. I want to know whether your facts are correct."

At the November meeting, we presented the following graph as evidence of high concentrations occurring during ash placement that were not measured during baseline monitoring. We asked your staff if they could agree that this data depicted a trend in rising concentrations of cadmium beyond any concentrations measured during the baseline monitoring period at that monitoring point. They

responded by balking at presentation of the graph and the question as though we had ambushed them with this data and could not be sure that it was not something that we had made up. They never did answer the question. This data is from monitoring reports in the permit files for SMP No. 32950201, for the Ernest Mine in Indiana County. Approximately 1.5 to 2 million tons of FBC ash from burning bituminous waste coal from this site in the Cambria Cogen Plant have been placed in this mine. In this graph, the baseline period, i.e., period before mining and ash placement occurred, is that period to the left of the vertical red line.



The graph below does not include measurements of cadmium at MW-1 at 0.043 mg/L in June 2003, 0.074 mg/L in June 2005, and 0.061 mg/L in June 2006. They were replaced with lower sample measurements found in monitoring reports for those same sample dates of 0.027 mg/L, 0.0039 mg/L and <0.002 mg/L respectively. While the purpose of the duplicate sample results is not explained in the Department’s monitoring reports, we are providing the lower values in this graph to move beyond debate over what values are appropriate to assess in this discussion. Despite the lower values used, three years after mining and ash placement started, a sharp upward trend in average concentrations of cadmium from below the drinking water standard (0.005 mg/L) to more than six times the standard is still very clear in groundwater leaving the Ernest site. This is occurring at a site utilizing ash under the Pennsylvania subchapter F program to clean up “pre-existing” pollution discharges into McKee Run.



Aside from denying the results of their own monitoring data, a primary response that PADEP mining staff have given to statements that ash is polluting groundwater in mines is that high concentrations are due to mining or the effects of acid mine drainage (AMD) that have nothing to do with the ash. There are two standard approaches used by monitoring systems for testing the veracity of this claim. The first is to collect baseline data that allows one to determine what the background concentrations of the pollutants are prior to the operation being permitted. Clearly using that approach, the graphs above suggest that the high cadmium levels were not an artifact of background concentrations. A frequency of sampling during a year of background (also called “baseline”) monitoring at ash points in the Ernest site that was nearly eight times higher than sampling during ash placement reinforces this conclusion.

For this approach to be credible, it is important to ensure that the full hydrologic cycle is characterized by background data. At many sites examined in the CATF Report, background monitoring involved the collection of data spanning less than six months or from only a few samples over many months and thus did not characterize the full hydrologic cycle. Additionally, background monitoring was sometimes stopped in the midst of clearly increasing trends which can further hamper the ability for monitoring during ash placement to discern impacts from that placement. By leaving the minimum requirements for the number and frequency of samples collected in background monitoring up to the Department, the regulation proposed at 290.301(a)(2) fails to assure that the full hydrologic

cycle will be characterized for ash parameters prior to the issuance of mine ash placement permits.

The second approach is to monitor upgradient water. At our meeting last October, you said, "Let's talk about upgradient monitoring. Why is your position correct or incorrect?" We debated this question intensively with Department mining staff on November 13. We maintained that upgradient monitoring points should be required at all mine ash placement sites without exception. Beyond understanding the impact of the overall operation to site waters relative to waters in undisturbed locations, upgradient monitoring must differentiate the impacts that ash placement is causing to site waters from impacts caused solely by mining or re-mining.

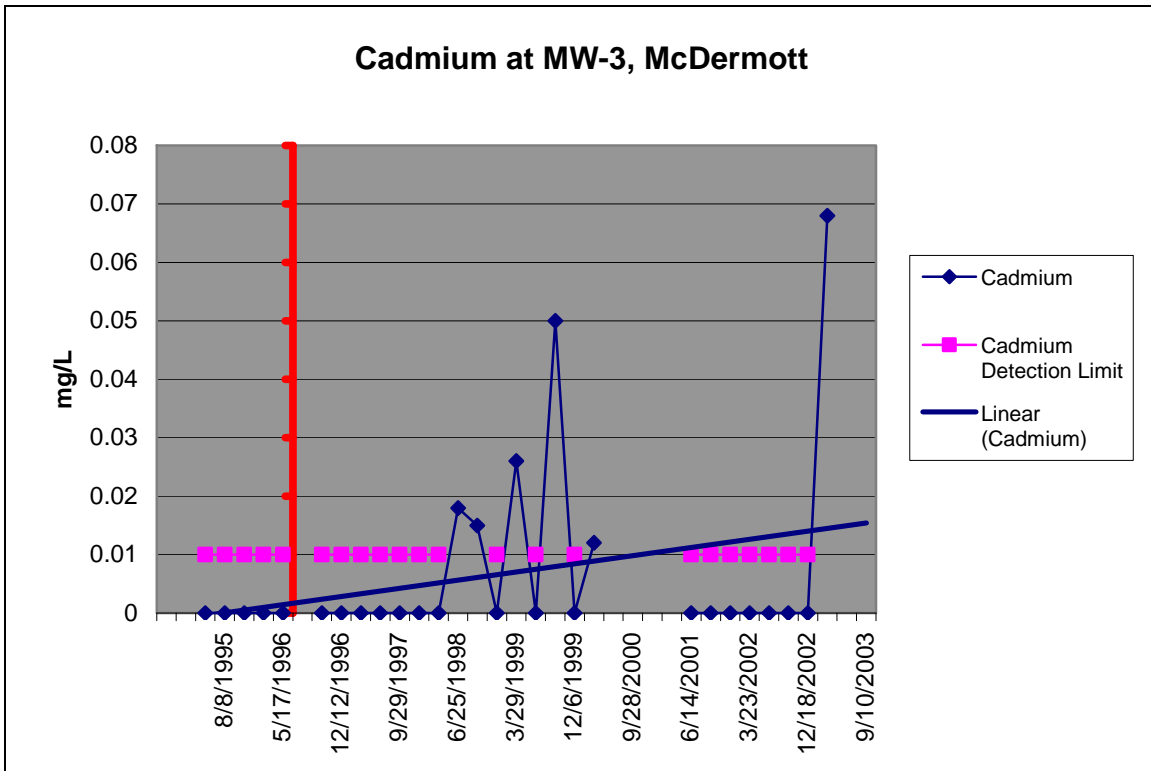
PADEP staff agreed that upgradient monitoring should normally be required, but pointed to situations where they will want the ash placed "at the top of a watershed" in the most upgradient location in a mine. In fact, rather than being an occasional exception, the CATF Report found that such scenarios were common if not the norm in PADEP's mine ash placement program. Eight out of the fifteen mine ash placement sites examined in the CATF Report did not have functional upgradient ash monitoring points. Perhaps because they cannot envision ash contaminating mine water, PADEP mining staff firmly believes that the inability to place a well upgradient to this placement should not prevent the ash placement from occurring. We firmly believe the opposite, that ash placement should never be allowed to trump the installation of a monitoring system that can effectively determine whether that placement is harming groundwater.

Mining staff asked why it would be necessary to monitor upgradient water if they were agreeing that trends measured against baseline water quality at a downgradient point would be sufficient grounds for acting to stop pollution.

The answer we gave is that without upgradient monitoring PADEP will not have sufficient information to determine the source of the problem if rising trends in metals or other pollutants occur at downgradient monitoring points. The Department could conclude that the problem is simply a temporary, AMD-related problem and take no action, as it has done in the face of the evidence from MW-1 and other ash monitoring points at the Ernest site or as the Department has done in the face of similar evidence at many other mine ash sites.

Or the Department may decide that the answer is to dump more ash at the site as it did at the McDermott Mine, SMP No. 11950102, in Cambria County where the operator placed 316,930 tons of FBC ash also primarily from the Cambria Cogen Plant before going bankrupt. The graph below is from a downgradient ash monitoring point in the southern portion of the McDermott Mine. The Department ordered the volume of ash placement to be doubled upgradient of this monitoring point in response to pollution occurring earlier at points in the northern part of the

mine where ash was placed. Like Ernest, there was no functioning upgradient ash monitoring well at the McDermott Mine.



ensures that PADEP will have the information to know what the ash is doing and respond promptly and correctly to pollution trends to stop ash or any other pollution sources from contaminating mine water. For more than the past 8 years, data from downgradient points indicates the Department's "beneficial use" of ash in the Ernest and McDermott mines is polluting waters that the subchapter F program was established to clean up. This regulation should not give regulators the latitude to sit forever in a state of recalcitrance refusing to address pollution that is plainly evident from monitoring data. The Department must produce the data that demonstrates that the ash is not the cause of contamination occurring at these sites as part of an immediate effort to locate and remediate the contamination source. Properly placed upgradient monitoring wells are a basic component that enables a monitoring system to provide this data. Pore water points monitoring water in the ash can assist in this function but should not take the place of wells that characterize the effects of the mining operation without influence from the ash placed in that operation.

Outliers

The Department has also repeatedly dismissed the rising trends documented in the CATF Report as being based on "outliers." At our October meeting, in response to our concern that PADEP should require operators to resample before the Department dismisses a high monitored concentration as an outlier, you stated, "Your concern about resampling is a legitimate point." Obviously, one cannot dismiss a high concentration of a pollutant as "an outlier" simply because it is high. Nearly eight years ago, PADEP's Bureau of Watershed Management developed guidance to identify and respond to outliers in *Groundwater Monitoring Guidance Manual* (dated December 1, 2001). Page 42 of this document states:

5.3.3.4 **Outliers**

Outlier values often result from identifiable analytical or transcription errors. These need to be corrected through careful review of the data. True outlier values need no special treatment and should not be deleted arbitrarily. This is especially true with the lognormal nature of groundwater data, which by definition may contain a few very large values. Resampling can be used as a tool to judge outliers. In addition, good quality assurance/quality control procedures will include data validation (see Section 8.3, item Q).

The EPA Addendum (1992, Section 6.2) lists a test procedure for normal or lognormal data that can be used, typically for outliers that are orders of magnitude above the rest of the data.

The referenced EPA guidance, *Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Addendum to Interim Final Guidance* (Office of Solid Waste, Permits and State Programs Division, USEPA, July 1992) discusses this testing as follows:

6.2 OUTLIER TESTING

Formal testing for outliers should be done only if an observation seems particularly high (by orders of magnitude) compared to the rest of the data set. . . .

If the test designates an observation as a statistical outlier, the sample should not be treated as such until a specific reason for the abnormal measurement can be determined. Valid reasons may, for example, include contaminated sampling equipment, laboratory contamination of the sample, or errors in transcription of the data values. Once a specific reason is documented, the sample should be excluded from any further statistical analysis. If a plausible reason cannot be found, the sample should be treated as a true but extreme value, not to be excluded from further analysis. (pages 82 & 83, emphasis already supplied)

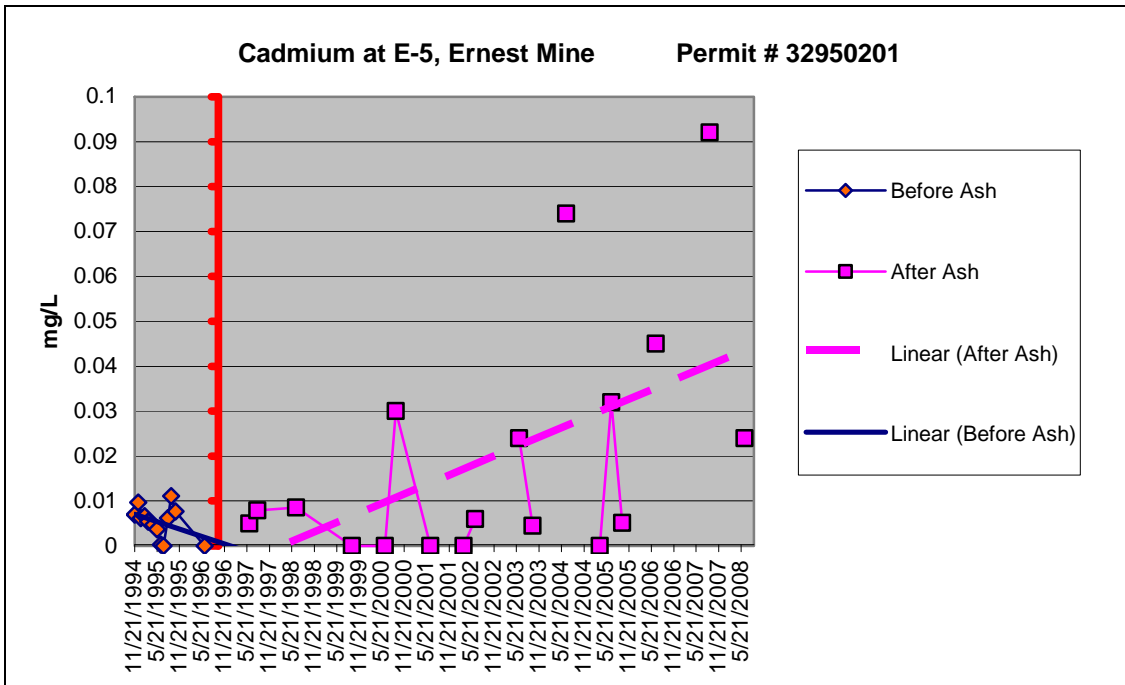
There is no documentation in the PADEP permit files indicating that these monitored concentrations were identified as outliers nor any documentation of statistical tests or resampling to verify high values as correct or dismiss them as outliers. Furthermore mining staff stated at the November meeting that there was no PADEP guidance document that addressed outliers -- apparently unaware of the guidance just cited. While they also stated that they were taking action to "reduce outliers," given the complete failure to adhere to long-established guidance policies on outliers, a clear and legitimate procedure for making determinations on outliers in data should be defined in these regulations.

Illegal Discharges

Monitoring without corrective action to prevent contamination of offsite waters defeats the purpose of the monitoring and violates the law. At our October Meeting, you asked us to outline specific violations of law that are occurring and "where we are seeing them." The accompanying letter from attorneys outlines those violations many of which address the failure by the Department to respond to pollution that is documented by required monitoring at mine ash placement sites.

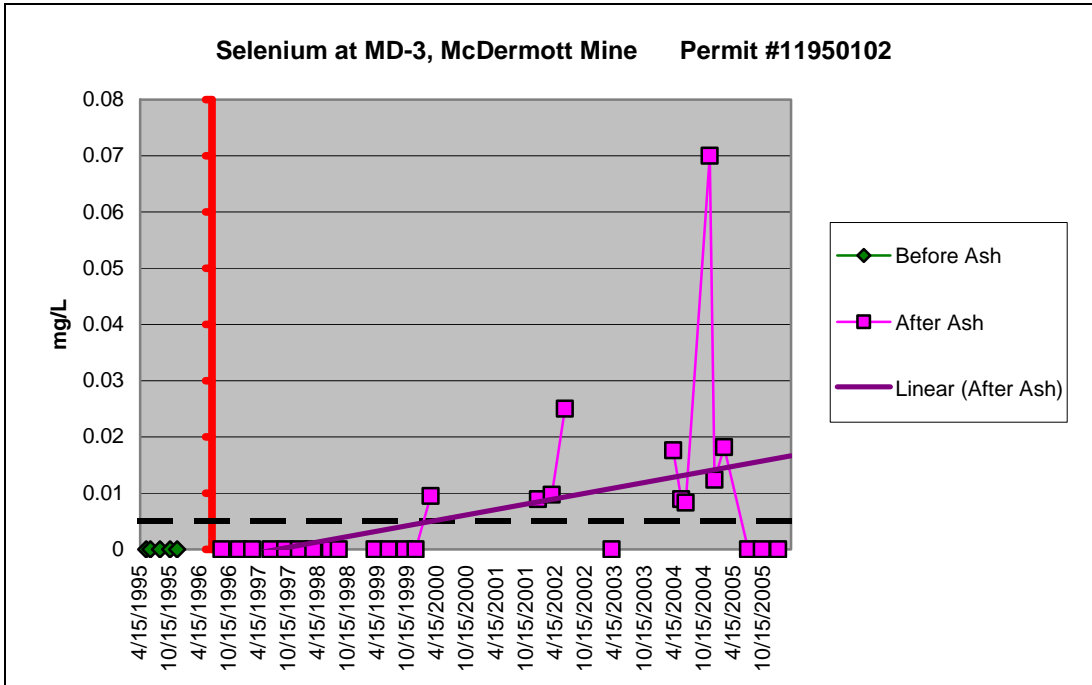
Regardless of whether the Department believes this pollution is emanating from ash, it has a legal obligation to address the pollution. The graph below of monitoring data from downgradient ash monitoring point E-5 was also presented to PADEP Mining staff in the November Meeting. E-5 is monitoring a seep

discharging from the foot of the refuse pile at Ernest into McKee Run. This data strongly corroborates the data in the previous graphs from MW-1 indicating that cadmium levels are rising sharply in the shallow groundwater in the refuse pile downgradient of FBC ash at the Ernest site.



Moreover, given E-5 is approximately 100 feet from McKee Run at the boundary of the Ernest Permit, its monitoring data demonstrates that the seep is discharging water with increasing concentrations of cadmium, lead, nickel, zinc, and other trace elements far in excess of water quality standards directly offsite into the surface waters of the Commonwealth. The flow at E-5 has ranged from no flow in one sample to as much as 71.8 gallons per minute in another. Whether high metal concentrations in the highly variable but relatively small volume of water in the E-5 seep could actually cause an exceedance of water quality criteria in McKee Run, a perennial stream, can only be revealed by monitoring of McKee Run. The loading of these metals into the sediments of McKee Run may be a greater concern. Therein lays the crux of the problem. The Department staff conceded in the November Meeting that PADEP has never required the waters or sediments of McKee Run to be monitored for levels of cadmium or any other trace elements whose concentrations are rising to more toxic levels in E-5. Yet in the above graph for example, there are seven measurements of cadmium at E-5 that range from 11 to 44 times higher than the state's acute water quality standard for cadmium of 0.0021 mg/L. Exceedance of this Criterion Maximum Concentration or CMC causes immediate lethal impacts to aquatic life. These concentrations also range from 96 to 368 times higher than the chronic water quality standard of 0.00025 mg/L for cadmium.

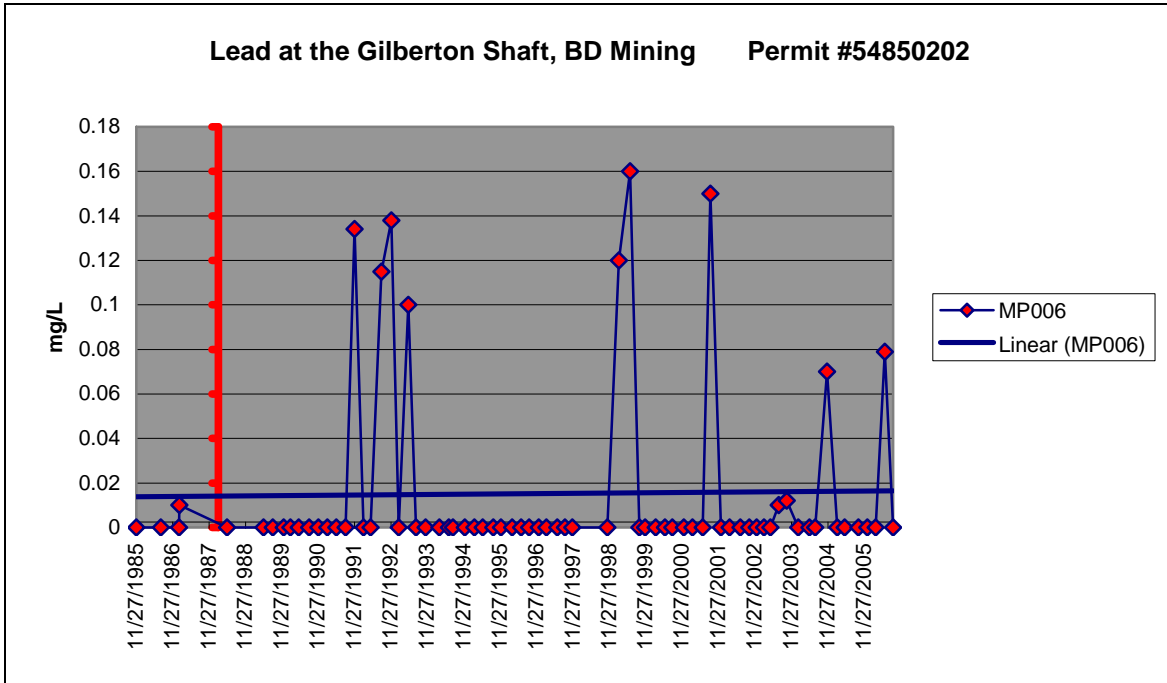
The graph below also presented at the November meeting, presents concentrations of selenium measured at downgradient ash monitoring point MD-3 at the McDermott Mine.



Some ten concentrations at MD-3 since March 2000 have exceeded the chronic water quality standard for selenium of 0.005 mg/L (0.0046 mg/L for the dissolved fraction) denoted by the dashed line. The highest concentration, 0.07 mg/L in November 2004, was 14 times higher than that standard. MD-3 is monitoring a deep mine discharge outside the permit area and approximately 800 feet beyond the property boundary of the mine. A check of its volume from 2000 through 2002 found flow averaging 58 gallons per minute and as high as 127 gallons per minute when several of the higher levels of selenium in the graph were measured. This raises the immediate question of whether the unnamed tributary to Hinckston Run receiving this discharge has safely assimilated the high concentrations of selenium (and cadmium) monitored at MD-3 in amounts sufficient to pose a threat to aquatic life. Yet the Department has never established ash monitoring points on those tributaries or on Hinckston Run.

The graph below was also presented at the November, 2008 Meeting. It depicts lead concentrations measured at MP006 monitoring the Gilberton deep mine discharge to Mahanoy Creek in Schuylkill County. MP006 is an ash monitoring point at the downstream boundary of the BD Mining Permit Site. MP006 is downgradient of more than 16 million tons of FBC ash dumped by the Gilberton and Schuylkill Energy Resource Plants in the BD Mining and Ellengowan Surface

Mines. Concentrations of lead and other metals measured at MP006 and other ash monitoring points in these two mines are being examined by USEPA in a preliminary investigation under Superfund.



The Clean Air Task Force Report graphed these lead levels in its 2007 Report and pointed out that ash from both of these plants has released high levels of lead in numerous permit leach tests (from 0.09 to 0.520 mg/L). Department mining staff claims that lead levels at these monitoring points are a normal artifact of anthracite mine drainage and not from the FBC ash. However, the Department has never presented a credible basis for this claim. It required no upgradient monitoring point to be installed at either of these mines that has measured such lead levels. It required very few samples to be analyzed for lead in baseline monitoring at the BD Mining site and failed to require permit characterizations of the BD Mining or Ellengowan sites to address the effects of prior placement of coal ash and other industrial wastes in the area on mine pools. It has no leaching studies demonstrating that site materials leach lead at these high levels. And it has no data base demonstrating that high lead levels are found in anthracite mine drainage not contaminated by waste disposal activities.

Most importantly however, Department staff conceded again at the November Meeting that despite the existence of this data documenting such high levels of lead spanning more than fifteen years in a discharge of millions of gallons per day, they have never required monitoring of lead in the waters or sediments of Mahanoy Creek downstream of MP006. There are eleven measurements of lead in the graph above that have exceeded the chronic water quality standard for

lead of 0.0025 mg/L (shown by the line just above the horizontal axis) by 4 to 64 times during ash placement. Nine measurements during ash placement also exceeded the acute standard of 0.065 mg/L. Department Mining staff have no idea whether these lead levels caused water quality standard exceedances or other adverse effects in Mahanoy Creek.

We note that state and federal water quality standards are based on dissolved not total concentrations and vary for lead and cadmium based on water hardness. However, when both total and dissolved values are reported in the data at these points, there is usually little difference between them. Furthermore the water hardness in most cases is lower than the hardness on which these standards are based (100 mg/L) making the concentrations above even more toxic to aquatic life. The reality is that higher concentrations in these graphs are many times above the relevant standards and often in water volumes that equal or exceed the volumes of receiving waters.

These examples demonstrate that the Department is not meeting its affirmative obligation under the law to show through monitoring that permitted ash placement in mines is not illegally polluting offsite waters. To meet that obligation, beyond merely monitoring three downgradient monitoring points, the proposed regulations should ensure regular monitoring of all surface and groundwater waters draining off site from ash placement areas and streams downstream of such discharges for ash parameters to ascertain that pollution is not escaping from the site. Rather than waiting until major offsite pollution is occurring, the regulations must require swift corrective action from monitoring points further inside the permit area to prevent illegal offsite discharges. Being less vigilant allows illegal discharges to occur in violation of the Clean Water Act, material damage to offsite waters to occur in violation of the Surface Mining Control and Reclamation Act, and imminent and substantial endangerment to health or the environment to occur in violation of the Resource Conservation and Recovery Act and their state counterpart laws.

Corrective Action

To prevent offsite pollution the proposed regulations also need corrective action standards that are as clear and simple as possible, an objective which is lost in the vague and complex assessment and abatement plans proposed in sections 290.304 and 290.305. Prior to 2000, the Module 25s in permits for ash placement at mine sites contained such standards. When concentrations of trace metals and other ash parameters at ash monitoring points exceeded "trigger" levels, the pollution was to be investigated and contamination abated. Trigger levels were listed for each parameter in the permits. They were equal to the higher of the state drinking water standard or highest concentration measured at a downgradient monitoring point during baseline monitoring.

Section 290.304 in the proposed regulations requires a “groundwater assessment plan” to investigate pollution if data “indicates a significant change in the quality of groundwater or surface water from background levels.” This ambiguous threshold leaves ample discretion for the arbitrary decision-making and lack of action to continue. What constitutes a “significant change” will be left up to PADEP’s mining staff who, faced with the data presented above at the November Meeting, still questioned whether further investigation much less any abatement steps were warranted. Indeed, our examination of the Ernest monitoring data found that triggers were exceeded 370 times at ash monitoring points without the first response by the operator or the Department to investigate the high concentrations. This lack of response also occurred for hundreds of exceedances of ash triggers in other minefill permits examined in the CATF Report. Department mining staff repeated their dismissal of the data from the Gilberton discharge at the November Meeting with the statement that there are no clearly increasing “trends” in lead concentrations. While the graph above does reveal a relatively flat trend in average concentrations, the inescapable reality is that after ash placement started, nine samples of this discharge reported lead levels ranging from 7 to 16 times higher than the highest lead measured in baseline monitoring of this discharge.

Thus an explicit definition of the standard that will require investigation must be put into these regulations to comply with the law and give the affected public confidence that corrective action responses will occur when contamination is measured at ash monitoring points. An effective (and therefore preventative) corrective action standard cannot be based on the measurement of trends much less arbitrary judgments about when those trends might be “significant.”

To avoid degrading mine water from ash placement, the corrective action standard must be equal to the highest background concentration measured at downgradient ash monitoring points during baseline monitoring. The regulations should state that monitoring data exceeding this “trigger” will require immediate resampling. Absent documentation of mistakes in sampling, analysis or transcription of data, high values must be accepted as valid and not dismissed as outliers. Replication of the high value with a second result exceeding the highest baseline concentration should result in prompt preparation of the groundwater assessment plan within a specified time period to determine the source of the higher concentrations and implement abatement measures. Such assessment plans should be required also if there are several occurrences of values exceeding the trigger level for a parameter at a monitoring point even if resampling in each of those instances produces a value below the standard. This will ensure adequate investigation and response to exceedances at monitoring points with high flow volumes such as mine pool discharges where contaminant pulses can be very transient.

Detection Levels

This regulation must also require monitoring results to be reported at detection levels that will allow reviewers to ascertain whether appropriate standards are being exceeded. Results for trace metals at ash monitoring points are frequently reported as below detection levels that exceed drinking water standards or water quality standards sometimes by many times. The Department treats a result below detection as though there is no metal in the water.

For example, the Department has also asserted that lead contamination at the Gilberton shaft is not indicated by monitoring data because high lead levels are spread between numerous results that are below detection. This assertion flagrantly ignores the majority of results that were reported below high detection limits or simply as zero (“0.00”). Of 68 results reported during ash placement in the graph above, some 57 were reported as zero, giving no indication of the result reported by the laboratory, or reported below a detection limit that was above the relevant protection standard. Nineteen of the results were reported at detection limits ranging from 20 to 40 times the relevant water quality criteria and 3 to 7 times the drinking water standard.

These regulations must require laboratories to use analytical methods with detection limits that are below relevant water quality criteria when analyzing surface water samples and below relevant drinking water standards or health advisories when analyzing groundwater samples. Monitoring reports must reflect those detection limits and be readily accessible to the public in PADEP permit files.

Isolation From Water

The failure of the proposed rules to require coal ash to be isolated from water in coal mines to the maximum extent, particularly given the loopholes in monitoring and lack of specific corrective action standards is a crippling deficiency. The “General Requirements” subchapter at 290.101(e) states:

Coal ash may not be placed within 8 feet of the water table, unless the Department approves placement within 8 feet at a coal mining activity site based upon a demonstration that groundwater contamination will not occur.

This is virtually identical to current language in 25 PA Code 287.663. The Clean Air Task Force examination of mine ash sites found that placement of ash within locations that will be below post-mine water tables occurs more often than not and is permitted without any such “demonstration.” While there is discussion in permit applications routinely asserting that coal ash placement will be “beneficial” to groundwater in mines, there is never any site specific data or other similar

evidence presented to substantiate these assertions. Furthermore, the proposed regulations continue to avoid defining what such a “demonstration” must show. Given the continued insistence by Department officials that there is no evidence that coal ash has ever contaminated groundwater in a coal mine, without any change in the Department’s requirements there is little reason to expect that the 8 foot separation requirement will actually be enforced instead of the loophole.

There are volumes of data and information from across America documenting the harm that coal ash has done to groundwater when placed in the water table or in close proximity to it. Placement of coal ash too close to groundwater is the common characteristic found in the expanding list of “damage cases” from coal combustion wastes maintained by USEPA. In its 1999 Report to Congress and 2000 Regulatory Determination, USEPA emphasized a concern that coal ash could contaminate groundwater in mines if not isolated from the water. The following statement is one of several made in the National Research Council 2006 Report, *Managing Coal Combustion Residues in Mines*, which highlighted the need to isolate coal ash from groundwater in mines:

Given the known impacts that can occur when CCRs react with water in surface impoundments and landfills, CCR placement in mines should be designed to minimize reactions with water and flow of water through CCRs. Regardless of whether the CCR is placed in an active or an abandoned coal mine, the issue of limiting the interactions of CCRs with groundwater should be a priority. (page 162)

USEPA’s 2007 Draft Risk Assessment on coal combustion waste models unacceptably high human cancer and wildlife risks from disposal of CCW in surface impoundments and clay lined landfills that are above the water table. The highest risks are found in units that co-manage coal ash with acid-producing coal wastes. According to the risk assessment, these risks are reduced to acceptable levels if CCW is disposed in composite-lined units to prevent the migration of its leachate to groundwater.

Indeed, a substantial emphasis is placed in the proposed regulations in subchapters 290.401-414 on isolating coal ash from groundwater. These provisions address the storage of coal ash outside of mines in surface impoundments and other sites. They require coal ash storage sites to install composite liners and leachate collection systems and prohibit, without exception, their placement of ash within 8 feet of the water table or in floodplains.

In stark contrast, to demonstrate whether a coal ash will be suitable for placement in groundwater in a coal mine, the Department will continue to rely on the Synthetic Precipitation Leaching Procedure in Subsection 290.201(c)(5)(i) of the proposed regulation. There is a consensus of opinion among experts in the National Research Council, USEPA and it’s Science Advisory Board, academia,

and in most regulatory agencies that single condition laboratory leach tests such as the SPLP and TCLP cannot predict how metals in coal ash will behave in the mine environment. Even the Department's Mining staff would not defend the effectiveness of these tests for this purpose at the November Meeting or in previous meetings. Yet inexplicably, these proposed regulations will use the SPLP to deem an ash as acceptable for placement in unlimited quantities in mines. If the Department will not or cannot use the USEPA Science Advisory Board's newly developed protocol for leach tests that varies the pH and liquid to solid leaching ratios, knowing that the present testing is not protective of the Commonwealth's water resources and communities, the ash must be isolated by these regulations from contact with groundwater in mines without exception. The requirements in SMCRA to isolate or otherwise treat "toxic forming material" to avoid "toxic mine drainage" and the prohibitions in RCRA to avoid "imminent and substantial endangerment" from wastes and "open dumping" require it. Despite its longtime promotion of ash placement in mines, the Department has produced no credible set of monitoring data from a mine ash placement site that suggests such isolation is not needed.

Maximum Acceptable Leachate Concentration

Further, absent a requirement for composite liners, the Pennsylvania Drinking Water Standard should be used as the "Maximum Acceptable Leachate Concentration" (MALC) for metals in any leach test used by the proposed regulation. Even if the loophole in the 8 foot separation from groundwater is removed, the standard of 25 times the drinking water standard in 290.201(a)(1)(i) is too high given that there are no characterization requirements to demonstrate the existence of sufficient amounts of site materials such as clays with specific capacities to bind or attenuate metals in ashes to safe levels (under the drinking water standard) in groundwater leaving mine ash sites.

Conclusion

As they are currently proposed these rules allow unlimited volumes of coal ash leaching metals at many times over safe standards in insufficient tests to be dumped into groundwater that flows directly from coal mines into nearby human receptors such as private or public drinking water wells. The rules do not ensure that this groundwater will even be monitored much less that unsafe concentrations of metals will result in prompt responses by operators or the Department to address contamination.

In addition to these basic deficiencies, there are no provisions in the proposed rules requiring financial assurance to be set aside by site operators to address contamination with enhanced monitoring and abatement measures. And solicitation of input from those living near ash beneficial use sites is not improved in the proposed rules despite the considerable, legitimate controversy that large scale beneficial uses without safeguards have created. Thus as currently written,

we strongly believe that the proposed rules in Chapter 290 governing the beneficial use of coal ash are unacceptable not only for the Department and citizens of the Commonwealth of Pennsylvania, but also as an example for the rest of the nation to follow.

We have been discussing our concerns about the lack of safeguards followed in the “beneficial placement” of coal ash in coal mines, structural fills and other sites in Pennsylvania for many years with officials in the PADEP. We believe that the body of monitoring data collected by the Department strongly suggests that ash placement in mines is contaminating groundwater and surface waters in Pennsylvania. We have endeavored to present this data to the Department repeatedly. We note that the Department has yet to produce a credible set of monitoring data that confirms its assertion that coal ash placement is abating degraded water quality caused by mining operations. Accordingly, we ask that the Department step back to sincerely examine its monitoring data and the repeatedly-voiced, common sense concerns that were outlined in our meeting with you and explored in this letter so that they may be finally resolved in the proposed rules in Chapter 290. We look forward to discussing these concerns with you at our pending meeting.

Respectfully,

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