Commonwealth of Pennsylvania
Department of Environmental Protection
Southwest Region

Review of the Environmental Integrity Project, Earthjustice and Sierra Club Report:

In Harm's Way: Lack of Federal Coal Ash Regulations Endangers Americans and Their Environment

Thirty-nine New Damage Cases of Contamination
From Improperly Disposed Coal Combustion Waste
August 26, 2010

Little Blue Run Disposal Impoundment
Hatfield's Ferry Power Station CCB Landfill

January 3, 2011
Revised October 27, 2011

Executive Summary

This report is in response to the document prepared by the Environmental Integrity Project (EIP), Earthjustice and the Sierra Club, In Harm's Way: Lack of Federal Coal Ash Regulations Endangers Americans and Their Environment, dated August 26, 2010. Specifically, this report addresses the two facilities located in the Southwest Region of the Department of Environmental Protection (DEP); FirstEnergy's Little Blue Run Disposal Impoundment, and Allegheny Energy's Hatfield's Ferry Power Station disposal site.

DEP reviewed and responded to each specific allegation point by point for the Little Blue Run facility and the Hatfield's Ferry Power Station disposal site. DEP's responses are based on the methodical, organized and scientific review of the data contained in our regional files (groundwater data is submitted and reviewed by DEP on a quarterly and annual basis). Around the Little Blue Run disposal impoundment, DEP requires FirstEnergy to monitor 48 groundwater wells and 21 surface water points. Around the Hatfield's Ferry disposal facility, DEP requires 14 wells and 4 surface water points to be sampled by Allegheny Energy. Groundwater and surface water are analyzed with the parameters found in Appendix C. Since the EIP report did not contain standard scientific documentation, DEP has responded based on a scientific review of each facility's data and DEP's familiarity of the site and the groundwater and surface water data and impacts.

Based on the review of the information in the report for this facility, DEP concludes that the allegations regarding groundwater and surface water contamination above Primary Drinking Water Maximum Contaminant Levels (MCLs) are unfounded.

- *DAMAGE CASE CLAIMS ARE REFERENCED VERBATIM FROM THE REPORT*

- *THE MCL FOR ARSENIC WAS **50 µG/L** UNTIL 2004 WHEN EPA REDUCED IT TO **10 µG/L** FOR DRINKING WATER SUPPLIES*

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FirstEnergy – Little Blue Run Surface Impoundment

1. Damage Case Claim – Page 161, 162

Determination: Demonstrated damage to off-site groundwater and off-site surface water (in domestic wells and in Marks Run and other surface waters).
"Off-site" means property that is currently beyond the property boundary or was originally beyond the property but has since been bought out by FirstEnergy or Penn Power.

DEP Response

The report defines off-site in differing terms. According to the first part of the definition, the report could be referring to property and groundwater at some indefinite distance from the impoundment, claiming that it has been contaminated by FirstEnergy. With regard to the second definition of 'off-site,' it is illogical that 'off-site' is actually within the current property boundary of a facility.

In addition, specific parameters, and specific locations, including names and addresses of residents with domestic wells around the impoundment and Marks Run that have been allegedly contaminated, are not listed in the EIP report and therefore cannot be verified. However, based on analysis collected by DEP over the last eight years, the parameter of interest, arsenic (As), has not been detected. It is also not clear what the reference to "other surface waters" means or what other parts of the watershed of Marks Run (water wells, domestic wells, springs or surface water) the statement is referencing.

The following table is a list of private water supply sample results collected by DEP over the last six years from around the impoundment.

Table 1 – DEP Private Well Sampling Data

Name/Sample No.		Location	Sample Date	Approximate Distance from Impoundment	Arsenic Data
Beranic	875	Red Dog Rd, Georgetown, PA	8/10/11	1.5 miles	Non-detect (ND)
Byard	845	Lawrenceville, WV	9/3/10	1700'	ND
Carpenter, M	707 833 859	Cullen Dr, Georgetown, PA	08/17/04 07/30/09 7/6/11	1600'	ND ND ND
Campbell	872 882 883	Pyramus Rd, Chester, WV	8/4/11 8/7/11 9/8/11	700'	ND ND ND
Collins	857	Cullen Dr, Georgetown, PA	6/28/11	1200'	ND
Cooper, C	753	Rt 30, Georgetown, PA	08/16/06	1.5 miles	ND
Cooper, J	751	Rt 30, Georgetown, PA	08/16/06	1.5 miles	ND

Name/Sample No.		Location	Sample Date	Approximate Distance from Impoundment	Arsenic Data
Cooper, P	750	Rt 30, Georgetown, PA	08/16/06	1.5 miles	ND
Cooper, T	841 854 880 887	Lawrenceville, WV	09/03/10 6/28/11 8/29/11 9/25/11	2000'	ND ND ND ND
Dear	708	Cullen Dr, Georgetown, PA	08/17/04	500'	ND
Derda	868	Pyramus Rd, Chester, WV	8/1/11	1100'	ND
Flemming	717	Red Dog Rd, Georgetown, PA	09/02/04	2800'	ND
Halisy	711	Cullen Dr, Georgetown, PA	08/24/04 10/18/04	700'	ND ND
Kavals, M	733	Cullen Dr, Georgetown, PA	09/19/05	1200'	ND
Kolmer	700	Cullen Dr, Georgetown, PA	08/02/04	1500'	ND
Longshou	870	Cullen Dr, Georgetown, PA	8/1/11	700'	ND
McCoughlin	843	Lawrenceville, WV	09/03/10	1500'	ND
McHaffery	712 722	Cullen Dr, Georgetown, PA	08/24/04 10/18/04	500'	ND ND
Milliron	706	Cullen Dr, Georgetown, PA	08/17/04	700'	ND
Moore	866	Red Dog Rd, Georgetown, PA	8/1/11	4500'	ND
Moore, B	863A	Red Dog Rd, Georgetown, PA	8/1/11	5000'	ND
Moore, T	873	Georgetown Rd, Hookestown, PA	8/4/11	3250'	ND
Moore, C	874	Georgetown Rd, Hookestown, PA	8/4/11	3000'	ND
Narry	869	Red Dog Rd, Georgetown, PA	1/1/11	1.5 miles	ND
Pollicastro, A	727	Georgetown Rd, Georgetown, PA	04/04/05	3100'	ND
Pollicastro, C	728	Georgetown Rd, Georgetown, PA	04/04/05	3000'	ND
Ponnis	734	Little Blue Run Rd, Georgetown, PA	09/22/05	3500'	ND
Reed	820	Crummit Ln, WV	05/15/09	2000'	ND
Richards	701	Cullen Dr, Georgetown, PA	08/02/04	2000'	ND
Sharp	752	Rt 30, Georgetown, PA	08/16/06	1.5 miles	ND
Skavinski	729	Lawrenceville, WV	04/11/05	400'	ND

Smith	735	Little Blue Run Rd, Georgetown, PA	09/22/05	3500'	ND
Smith, J	853	Pyramus Rd, Chester, WV	6/28/11	700'	ND
Stipec	730 736	Crummit Ln, WV	05/27/05 11/08/05	2800'	ND ND
Spragg	858 862A	Little Blue Run Rd, Georgetown, PA	6/28/11 8/1/11	6400'	ND ND
Stout	718 856	Cullen Dr, Georgetown, PA	09/09/04 6/28/11	1000'	ND ND
Tudor	705	Red Dog Rd, Georgetown, PA	08/17/04	2500'	ND
Walters	749	Rt 30, Georgetown, PA	08/18/06	1.5 miles	ND
Wilkinson	710 855	Cullen Dr, Georgetown, PA	08/24/04 6/28/11	500'	ND ND
Young	709	Cullen Dr, Georgetown, PA	08/17/04	500'	ND

2. Damage Case Claim - Page 161

Probable Cause(s). Leaching, seepage, and discharge of coal combustion waste (CCW) contaminants from Little Blue impoundment into groundwater and surface waters. The additional head pressure created by the expansion of the CCW impoundment in 2006 may also be forcing contaminated water further away from the impoundment.

DEP Response

There is no technical data presented in the EIP report to support the claim that additional head pressures created by the 2006 expansion could be forcing contaminated water away from the impoundment in either groundwater or surface water. DEP acknowledges that the flow in several preexisting springs located between the impoundment and Lawrenceville, WV, has increased in the recent past and the springs appear to be impacted by the impoundment based on the elevated presence of secondary parameter, such as calcium, chloride and sulfate. FirstEnergy has initiated a remediation plan for the affected springs and is currently in the process of installing facilities by which to provide for their collection and conveyance for management as wastewater in the impoundment.

3. Damage Case Claim - Page 161

Discharges to groundwater and surface water from the 1,300-acre 'Little Blue' surface impoundment have exceeded MCLs for arsenic and other parameters in multiple off-site residential drinking wells (prompting several property buyouts by FirstEnergy), exceeded Pennsylvania Water Quality Criteria (PA WQC), including the Criteria Continuous Concentration (CCC) and Criteria Maximum Concentration (CMC), in Mark's Run and other off-site surface water sources, and pervasively exceeded federal Maximum Contaminant Levels (MCLs) at many on-site groundwater monitoring wells.

DEP Response

EIP's statement is unfounded and misleading. First, there have been no confirmed concentrations in off-site residential drinking water wells located near the impoundment in excess of an MCL. Second, EIP improperly concludes that any private water well sampled by FirstEnergy or the DEP is impacted by the impoundment. This conclusion ignores the facts that many of the wells are hydrogeologically separate from the impoundment and/or may be impacted by other sources, including naturally occurring sources such as coal seams and brines, and other man-made sources such as past mining or oil and gas operations. Finally, surface water discharges are monitored and reported under the NPDES permit program, and the facility is in compliance with those permits.

4. **Damage Case Claim - Page 162**

For this site, 'Off-site' means property that is currently beyond the property boundary or was originally beyond the property boundary but has since been bought out by FirstEnergy or Penn Power. This determination was made using the best available data.

DEP Response

As stated in DEP Response No. 1, the definition for 'off-site' in the EIP report is ambiguous and could refer to an undefined distance from the impoundment. With regard to the second definition of 'off-site', it is illogical to claim that 'off-site' is actually within the current property boundary of a facility.

5. **Damage Case Claim - Page 162**

'On-site moving off-site' means the well is on-site but more than 150 feet from the closest part of the impoundment.

DEP Response

This definition says that a well is on-site and off-site at the same time, which is not technically possible.

6. **Damage Case Claim: "For example" - Page 162**

Arsenic has been measured in at least two off-site residential drinking wells above the MCL of 0.01 mg/L, including a reading of 0.0146 mg/L in one family's well in 2008, and a reading of 0.021 mg/L at another family's well.

DEP Response

EIP's statements are misleading and incorrect. One sample collected from a private water supply well in late 2008 did contain arsenic at a concentration of 0.013 mg/L (not 0.0146 mg/L); however, the water from the well was noted to be turbid at the time of sample collection. According to discussions with FirstEnergy, the homeowner, who had just purchased the property, was aware that his well water was muddy and the sample collector suggested that the property owner have his well casing inspected by a water well installer because a poorly sealed surface casing could allow sediment to wash into the well creating turbid water, especially after snow melts and rain. Upon receipt of the analytical results, FirstEnergy's consultant indicated the elevated metals concentrations were likely the result of the sediment present in the sample. With the property owner's permission, the consultant collected another sample from the water well early in 2009 to test this hypothesis by collecting samples for both total and dissolved metals. The sample collected in 2009 was much clearer and the analytical results concentrations of metals were much lower compared to the 2008 sample. Total arsenic was reported at 0.0025 mg/L and dissolved arsenic at <0.0025 mg/L – well below the MCL. The DEP also collected a sample from this well two months later and confirmed these results. Both total and dissolved arsenic were reported as less than <0.003 mg/L the detection limit. In addition, the location and elevation of this water well clearly indicates the well is located upgradient from the impoundment. The property owner was informed of these findings in a letter from FirstEnergy's consultant.

Arsenic was reported at a concentration of 0.021 mg/L in a sample collected from a private water well by the DER (now DEP) in 1993. (The MCL for arsenic at that time was 0.050 mg/L.) FirstEnergy's consultant collected 13 additional samples from this water well from 1994 through 2001. Arsenic was included in the analysis of 6 of these samples. Most of the samples did not contain arsenic at a concentration greater than the laboratory detection limit, and the greatest concentration reported was 0.005 mg/L. In addition, this well did not contain other concentrations of constituents that would suggest any impacts from the impoundment. Arsenic is found in soils of Western Pennsylvania; its presence does not confirm impacts from the impoundment.

7. Damage Case Claim "For example" - Page 162

MCLs for cadmium, barium, fluoride, lead, and turbidity were also exceeded in off-site residential drinking wells, as were Secondary MCLs (SMCLs) for aluminum, chloride, iron, manganese, pH, sulfate, and total dissolved solids (TDS).

DEP Response

This statement is unsubstantiated. There is no reference to specific names, locations or sample dates for the alleged 'off-site' residential drinking water well contamination. As stated above according to EIP's definition, offsite can be measured from any distance from the impoundment. Chemical analyses of the wastes pumped to the impoundment show that the primary MCL constituents of lead, cadmium and barium are only found in trace amounts and could not be the cause of high concentrations in the groundwater.

8. Damage Case Claim: "For example" - Page 162

In off-site surface water, arsenic has exceeded the PA WQC of 0.01 mg/L at least eight times at three locations between 2003 and 2010, with concentrations trending upwards, including a reading of 0.028 mg/L (2.8 times the criteria) in 2010. Thallium, cadmium, hexavalent chromium, lead, antimony, selenium, and boron also exceeded PA WQC in off-site surface water, as did many pollutants with secondary WQC."

DEP Response

The reference that "off-site" surface water contains arsenic at concentrations as high as 0.028 mg/L is incorrect. That concentration was reported for surface water sample point SW-5, which is a sample of the supernatant (wastewater) within the disposal impoundment which is treated and discharged through an NPDES permit and is not "off-site" surface water. Only one "off-site" monitoring point, spring S-31 was found to contain 0.011 mg/L arsenic. This is not surprising because the spring emanates from a coal seam which has naturally occurring arsenic. See response to Claim #19 for additional discussion of S-31.

9. Damage Case Claim "For example" - Page 162

In on-site groundwater that flows off-site, *arsenic exceeded the 0.010 mg/L at least 24 times in 14 wells in 2006, 2009, and 2010,* including concentrations of 0.030, 0.033, and 0.036 mg/L in three different wells. Fluoride, lead, and turbidity MCLs were also exceeded, as well as SMCLs for several other pollutants. On-site groundwater monitoring wells also had exceedances of SMCLs for chloride, iron, manganese sulfate, and turbidity.

DEP Response

FirstEnergy began regularly analyzing water samples for arsenic in 2006 and has collected a total of 924 individual samples at the site's 42 permitted monitoring wells to date. Arsenic was reported in groundwater samples collected in eight monitoring wells in 2006; however, many of these detections were not replicated in subsequent samples from the same wells. Based on DEP's review of the data, the reported arsenic detections appear to be laboratory errors and are statistically anomalous.

Based on the past four and one-half years of arsenic data, only one onsite groundwater monitoring well (MW-16A) appears to contain elevated concentrations of arsenic. This well does show impacts from the impoundment as would be expected by its close proximity to the disposal area (approximately 150 ft). FirstEnergy continues to monitor this well as part of its obligation under the facility's permit and has implemented studies to determine the reason(s) for the elevated arsenic in this well and, if necessary, determine what steps may be taken to address it. It should be noted, however, that monitoring wells immediately downgradient of MW-16A do not contain arsenic above MCLs. Therefore, groundwater leaving the Little Blue Run Impoundment downgradient of the dam does not exceed MCLs. In regards to the other parameters that EIP indicates exceed MCLs and SMCLs, EIP fails to acknowledge that

these parameters occur naturally in the environment. Furthermore, EIP made no attempt to assess if a monitoring well contains water representative of background water quality, shows brine impacts from historic oil and gas exploration and production in the area, or contains concentrations of parameters associated with coal seams. Instead EIP continues to indicate that any detectable concentration of a parameter must be attributable to the impoundment, which is not the case.

10. Damage Case Claim: "For example" - Page 162

On-site surface waters that flow off-site were contaminated with arsenic at 0.013 mg/L, 1.3 times the WQC of 0.01 mg/L, antimony at 0.012 mg/L, more than double the CCC of 0.0046 mg/L. Selenium was also double the PA WQC at on-site surface water monitoring point SW-3. In addition, aluminum exceeded secondary standards in on-site surface water that flows off-site.

DEP Response

EIP makes claim that surface waters exceed WQC but fails to indicate that WQC are not applicable because these "surface water" monitoring points include supernatant within the impoundment and are managed through permitted industrial discharges from the facility. (The CCC for antimony is 1.1 mg/L, not 0.0046 mg/L as indicated in EIP's report.) In addition, comparing the results of these points to secondary standards (interpreted as a reference to secondary drinking water standards), is inappropriate and misleading. Industrial NPDES discharges do not need to comply with primary or secondary drinking water standards. The discharge standard is developed through the NPDES permit. In addition, there is no reference to any specific surface water sampling locations 'on-site' which have alleged elevated levels of arsenic, antimony or aluminum. The only specific reference in this claim is to selenium at SW-3.

11. Damage Case Claim – Page 162

FirstEnergy's Little Blue Run ('Little Blue') surface impoundment, the largest impoundment east of the Mississippi River, is an unlined CCW disposal area with a permitted area of *1,694.6 acres* that contains flue gas desulfurization (FGD) sludge and fly ash.

DEP Response

Little Blue Run is the largest surface impoundment east of the Mississippi River containing coal combustion waste. The total permit area is 1,694.6 acres of which approximately 1,000 acres are utilized for waste disposal.

12. Damage Case Claim – Page 162

This CCW surface impoundment has potential environmental and public health impacts in three states, as the impoundment spans Pennsylvania and West Virginia, and its earthen dam retaining wall is immediately across the Ohio River from Ohio.

DEP Response

The site is in West Virginia and Pennsylvania. Little Blue Run is not an earthen dam retaining wall, but rather an engineered rock and earthen dam permitted and inspected by DEP's Bureau of Dam Safety.

13. Damage Case Claim - Page 162

Coal ash slurry from the Bruce Mansfield Power Plant is transported via a seven and a half mile pipe to Little Blue."

DEP Response

This statement is correct.

14. Damage Case Claim - Page 162

Data gathered from private residential well testing results, discharge monitoring reports, Notice of Violations (NOVs), inspection reports, and correspondence files revealed the following evidence of CCW contamination:

"**Off-site**" groundwater – off-site groundwater contamination has been pervasive, including drinking water wells 0.5 mile away or further from the Little Blue impoundment. See Chart 1. These exceedances appear to have increased since the expansion of the impoundment in 2006. Evidence of contaminated off-site drinking water includes arsenic readings in excess of the MCL (0.01 mg/L) in at least eight "off-site" groundwater wells.

DEP Response

DEP disagrees with the statement that 'pervasive' 'off-site' groundwater contamination has occurred from the impoundment. The report's definition of 'off-site' could construe a property and groundwater at which a contaminant was detected as attributable to FirstEnergy despite its location at a distance or location beyond the influence of the impoundment or as paradoxically being within the current property boundary of the facility. There are no specific private water supplies referenced in the report nor dates or times the alleged contaminated water supply was sampled. All groundwater monitoring wells are located on-site.

Regarding Chart 1, the data presented cannot be verified due to the following deficiencies:

A. For every parameter listed in the "Contaminant" column that corresponds to a groundwater monitoring or drinking well, the specific well number(s) or location(s) is not listed. There is also no reference to whether the well(s) is hydrologically upgradient, downgradient or side gradient of the impoundment. The "Exceedances" numbers cannot be correlated to a specific monitoring point.

B. In the "Medium" column, groundwater monitoring wells and drinking wells are undifferentiated, and the "Highest Exceedance Number" is not assigned to one or the other, making it ambiguous and appearing that it is attributed to both a drinking water well and a monitoring well.

C. When the "Medium" column changes to Surface Water, the chart continues to list "# Wells" instead of number of surface water points.

In response to alleged exceedances increasing since the 2006 expansion of the impoundment, there is no time trend data presented to substantiate the claim. Nor are the eight monitoring wells with alleged arsenic contamination identified. Therefore, none of the data in the chart can be substantiated. In fact, between 2004 and 2010, the Department has collected 53 drinking water samples from 40 residents around the impoundment and there has not been a single detection of arsenic in the water. (See Table 1 in the Response to Damage Case Claim 1).

15. Damage Case Claim – Page 162

Two of these wells were residential drinking water wells, with one well containing arsenic at 0.021 mg/L (more than twice the MCL), and another family's well containing arsenic concentrations that increased from 0.013 to 0.0146 mg/L between 2008 and 2009.

DEP Response

EIP's statements are misleading and incorrect. One sample collected from a private water supply well in late 2008 did contain arsenic at a concentration of 0.013 mg/L (not 0.0146 mg/L); however, the water from the well was noted to be turbid at the time of sample collection. According to discussions with FirstEnergy, the homeowner, who had just purchased the property, was aware that his well water was muddy and the sample collector suggested that the property owner have his well casing inspected by a water well installer because a poorly sealed surface casing could allow sediment to wash into the well creating turbid water, especially after snow melts and rain. Upon receipt of the analytical results, FirstEnergy's consultant indicated the elevated metals concentrations were likely the result of the sediment present in the sample. With the property owner's permission, the consultant collected another sample from the water well early in 2009 to test this hypothesis by collecting samples for both total and dissolved metals. The sample collected in 2009 was much clearer and the analytical results concentrations of metals were much lower compared

to the 2008 sample. Total arsenic was reported at 0.0025 mg/L and dissolved arsenic at <0.0025 mg/L – well below the MCL. DEP also collected a sample from this well two months later and confirmed these results. Both total and dissolved arsenic were reported as less than <0.003 mg/L the detection limit. In addition, the location and elevation of this water well clearly indicates the well is located upgradient from the impoundment. The property owner was informed of these findings in a letter from FirstEnergy's consultant.

Arsenic was reported at a concentration of 0.021 mg/L in a sample collected from a private water well by the DER (now DEP) in 1993. (The MCL for arsenic at that time was 0.050 mg/L.) FirstEnergy's consultant collected 13 additional samples from this water well from 1994 through 2001. Arsenic was included in the analysis of 6 of these samples. Most of the samples did not contain arsenic at a concentration greater than the laboratory detection limit, and the greatest concentration reported was 0.005 mg/L. In addition, this well did not contain other concentrations of constituents that would suggest any impacts from the impoundment. Arsenic is found in soils of Western Pennsylvania, its presence does not confirm impacts from the impoundment.

Additionally, the reference that a private water well contained arsenic concentrations that increased from 0.013 to 0.0146 mg/L from 2008 to 2009 is wrong. From DEP's review of groundwater data we cannot determine EIP's source of the 0.0146 value. As stated previously, the 2008 concentration was attributable to sediment entering the well, possibly via a poorly sealed surface casing. The soil and rock beneath the Reed residence contain naturally occurring arsenic.

16. Damage Case Claim – Page 162

MCLs were also exceeded in off-site groundwater wells for cadmium, barium, fluoride, lead, and turbidity. In addition, many SMCLs were exceeded in off-site groundwater. As a result, FirstEnergy has monitored drinking water wells at several nearby homes, and subsequently purchased those homes due to well contamination.

DEP Response

DEP deems this statement to be misleading. EIP fails to consider what parameter concentrations may represent background conditions and does not consider that some of the data may represent outliers. For instance, cadmium only was reported at concentrations that exceed its MCL in 9 samples out of 414 samples analyzed for cadmium collected from monitoring wells. Four of these 9 samples were collected from wells that contain groundwater representative of background conditions; therefore, cadmium was present in the groundwater prior to development of the facility. Barium concentrations for samples collected from supernatant in the impoundment itself were well below the MCL, indicating that the impoundment could not be a source of barium in monitoring wells. Fluoride concentrations are greatest in a well with groundwater that represents background water quality. This is the only well that contains fluoride at concentrations in excess of its MCL. Several other wells contain fluoride concentrations that are slightly above the SMCL for fluoride. Fluoride is the result of the solution of naturally occurring fluoride present within

freshwater limestone units in the bedrock of the disposal area. Lead is not present in the impoundment at appreciable quantities and cannot be the source of lead detected in the monitoring wells. Turbidity in the monitoring wells is not a function of the impoundment but representative of the construction and development of the well. Several of the wells installed around the disposal area have low yields and therefore go dry during purging, causing the sample collected to contain some sediment, accounting for the turbidity.

Several SMCLs are exceeded in groundwater samples collected from the monitoring wells. Many of these parameters are representative of background water quality, including iron and manganese.
EIP implies that FirstEnergy monitors drinking water wells because of exceedances of MCLs and SMCLs for groundwater in monitoring wells. FirstEnergy monitors drinking water wells as required by the residual waste permit. In addition, FirstEnergy has a longstanding policy to sample anybody's drinking water well upon request. DEP has not found any private drinking water wells to contain constituents that exceed primary MCL's.

17. Damage Case Claim - Page 162

Off-Site Surface water – off-site surface water contamination includes exceedances of both continuous/chronic (CCC) and maximum acute (CMC) limits set forth in Pennsylvania Water Quality Criteria (WQC). These exceedances occurred both at FirstEnergy's off-site monitoring points in streams and creeks, including Mark's Run and Little Blue Run, and at seeps located at private residences. See Chart 1 (for brevity, several pollutants in off-site surface water that exceeded MCLs but did not have an associated WQC were not charted). Many criteria have exceeded WQC only after the expansion of the impoundment in 2006.

DEP Response

The claims regarding 'off-site surface water' are unsubstantiated. Specific dates and locations of the alleged exceedances are not listed in the EIP report. The EIP's definition of 'off-site' allows that surface water samples cited as contaminated could have been collected miles away from the impoundment, making the source of pollutants questionable at best. Regarding Chart 1, the data presented cannot be verified due to the following deficiencies:

A. For every parameter listed in the "Contaminant" column that corresponds to a groundwater monitoring or drinking well, the specific well number(s) or location(s) is not listed. There is also no reference to whether the well(s) is hydrologically upgradient, downgradient or side gradient of the impoundment. The "Exceedances" numbers cannot be correlated to a specific monitoring point.

B. In the "Medium" column, groundwater monitoring wells and drinking wells are undifferentiated, and the "Highest Exceedance Number" is not assigned to one or the other, making it ambiguous and appearing that it is attributed to both a drinking water well and a monitoring well.

C. When the "Medium" column changes to Surface Water, the chart continues to list "# Wells" instead of number of surface water points.

18. Damage Case Claim - Page 163

For example, arsenic levels have steadily increased, only exceeding WQC at one point in Pennsylvania, S-17 (a surface water seep about 1,490 feet from the closest part of Little Blue) in 2003, with a reading of 0.016 mg/L.

DEP Response

Seep S-17 has only been monitored for arsenic beginning in 2006 and has not shown an increase in arsenic concentrations as EIP implies. Of the 18 quarterly samples from seep S-17 analyzed for arsenic, only two detections were reported – 0.016 mg/L in the second quarter of 2006 and 0.013 mg/L in the third quarter of 2007. The remaining 16 samples from seep S-17 did not contain arsenic at concentrations above the laboratory detection limit, indicating that these "hits" were anomalies. Furthermore, this spring is not used as a potable water supply but is rather collected in a pipe, treated and discharged per the NPDES permit for the facility.

19. Damage Case Claim - Page 163

Between 2008 and 2010, arsenic was found in two additional surface water points, including exceedances at S-31 (a monitoring point in Mark's Run, in a residential neighborhood in West Virginia) and at SW-5 (a spring over 2,000 feet from Little Blue), with arsenic concentrations of 0.024 and 0.028 mg/L.

DEP Response

Arsenic has been detected at concentrations just over its MCL in three of 18 quarterly samples collected from seep S-31 between 2006 and present. EIP fails to note that seep S-31 emanates from the Brush Creek coal and it is not surprising that there have been occasions of elevated arsenic due to arsenic being present within the coal. Seep S-31 dries up periodically, which is an indication that the impoundment is not a continuous source of water to the seep. Seep S-31 also contains iron and manganese concentrations that are higher than levels found in the impoundment, indicative of offsite influences. In addition, the pH at seep S-31 is substantially lower than the impoundment and is an indication that some of its flow is related to a coal seam which lowers the pH.

Arsenic has been detected at concentrations that exceed its MCL in several samples collected from SW-5. EIP misidentified sampling point SW-5 as a spring over 2,000 feet from the impoundment. SW-5 is a sample of the supernatant (wastewater) collected directly from the disposal impoundment. Samples from the impoundment have contained arsenic concentrations ranging from <0.0046 mg/L to 0.0489 mg/L, and are collected, treated and discharged pursuant to the facility's NPDES permit.

20. Damage Case Claim - Page 163

Other off-site surface water exceedances included an exceedance of the CMC for hexavalent chromium, a lead reading of 0.15 mg/L, far exceeding the CCC of 0.01094 mg/L, at an off-site unpermitted seep, and pervasive boron contamination at least seven wells.

DEP Response

The validity of this claim cannot be verified. The report's definition of "off-site" could construe a property and groundwater at which a contaminant was detected as attributable to FirstEnergy despite its location at a distance or location beyond the influence of the impoundment or as paradoxically being within the current property boundary of facility. With regard to the alleged exceedances of hexavalent chromium and lead, there are no references to where this data was collected. In addition, the comment regarding pervasive boron in seven wells is confusing. It appears this statement is referring to Chart 1. If so, the medium listed for the boron samples is surface water, but the sample locations are noted as wells. Technical correlations cannot be made from the information referenced. Additionally, CMC and CEC levels are used for regulating drinking water sources and not appropriate references for permitted facility groundwater monitoring wells.

21. Damage Case Claim - Page 163

Cadmium, thallium, selenium, and boron also exceeded WQC in off-site creeks, springs, and seeps.

These off-site surface water exceedances occurred in at least 17 downgradient surface water sources, including: SW-5, a surface water source (type marked "other" and likely a seep) in Pennsylvania; S-9A (a spring in Pennsylvania); S-10-MC (a stream in Pennsylvania); S-16-MC (a stream in Pennsylvania); S-17 (a spring in Pennsylvania); S-28 (a spring in West Virginia): S-30 (a spring in West Virginia); S-31 (a spring in West Virginia); S-34 (a spring in West Virginia); S-35 (a spring in West Virginia); LR-1 (a spring in West Virginia); LR-2 (a spring in West Virginia); Mark's Run (a stream in West Virginia); a seep at a private residence in West Virginia; and two springs at two private residences in Pennsylvania.

DEP Response

This information is unsubstantiated. There are 16, not 17 "off-site" surface points referenced. One of them, SW-5, is referenced as a seep and mislabeled on the Google Earth map, and is actually the permitted location of a sampling point of the liquid within the impoundment. No specific analytical data related to alleged exceedances of cadmium, thallium, selenium, and boron is provided for any of the 16 referenced water sources. Therefore , no correlation can be made.

22. Damage Case Claim - Page 163-164

Chart 1. OFF-SITE CONTAMINATION FROM LITTLE BLUE

CONTAMINANT	MEDIUM	STANDARD	SAMPLING DATES	#EXCEED-ANCES	#WELLS	HIGHEST EXCEEDANCE
Arsenic (mg/L)	Groundwater – drinking wells	MCL: 0.01	1993, 2008–2009	5	2	**0.021**
Arsenic (mg/L)	Groundwater	MCL: 0.01	2006–2009	8	6	**0.025**
Barium (mg/L)	Groundwater – drinking wells and tap water	MCL: 2	1993–2005	3	3	**5.98**
Cadmium (mg/L)	Groundwater – drinking well	MCL: 0.005	1996	1	1	**0.85 (total) 0.5 (dissolved)**
Fluoride (mg/L)	Groundwater – drinking well	MCL: 2	2008–2009	3	1	**2.3**
Lead (mg/L)	Groundwater – drinking wells and tap water	Federal Action Level: 0.005	1993–2009	5	5	**1.8 (total) 0.3 (dissolved)**
Turbidity (NTU)	Groundwater – drinking wells	PA MCL: 1	2004-2006	2	2	**40**
Turbidity (NTU)	Groundwater	PA MCL: 1	1993–2009	46	21	**220**
Aluminum (mg/L)	Groundwater – drinking wells	SMCL: 0.2	2009	1	1	**0.711**
Chloride (mg/L)	Groundwater – drinking wells	SMCL: 250	2004–2010	7	7	**1,900**
Chloride (mg/L)	Groundwater	SMCL: 250	2008	5	5	**3,520**
Iron (mg/L)	Groundwater – drinking wells and tap water	SMCL: 0.3	1993–2010	21	10	**29**
Iron (mg/L)	Groundwater	SMCL: 0.3	2008	5	5	**36**
Manganese (mg/L)	Groundwater – drinking wells	SMCL: 0.005	1993–2009	31	19	**2.399**
Manganese (mg/L)	Groundwater	SMCL: 0.005	2008	8	8	**3.27**
pH (standard units)	Groundwater – drinking wells	SMCL: 6.5–8.5	1997–2009	10	2	**8.7**
Sulfate (mg/L)	Groundwater – drinking wells	SMCL: 250	2010	3	1	**910**
Sulfate (mg/L)	Groundwater	SMCL: 250	2007–2009	6	4	**1,710**
TDS (mg/L)	Groundwater – drinking wells	SMCL: 500	1992–2010	15	7	**2,900**
TDS (mg/L)	Groundwater	SMCL: 500	2008	10	10	**7,310**
Antimony (mg/L)	Surface Water	PA Health Criteria: 0.0056	2003	4	1	**0.010**
Arsenic (mg/L)	Surface Water	PA CCC: 0.010	2003-2010	8	3	**0.028**
Boron (mg/L)	Surface Water	PA CCC: 1.6	2008–2010	23	7	**15.200**
Cadmium (mg/L)	Surface Water	PA CCC: 0.00064	2010	1	1	**0.00074**
Hexavalent Chromium (mg/L)	Surface Water	PA CCC: 0.010 PA CMC: 0.016	2003 (average of 3 analyses)	1	1	**0.028**
Lead (mg/L)	Surface Water	PA CCC: 0.01094	2010	2	2	**0.150**

Selenium (mg/L)	Surface Water	PA CCC: 0.0046	1989–2003	2	2	**0.150**
Thallium (mg/L)	Surface Water	PA CCC: 0.00024	2009	1	1	**0.00046**
pH (standard units)	Surface Water	Secondary PA WQC: 6.5–8.5	2007–2010	2	2	**5.5**
Total Suspended Solids (mg/L)	Surface Water	Permit Limit: 60	1989	1	1	**194**

DEP Response

With regard to Chart 1, the data presented cannot be verified due to the following deficiencies:

A. For every parameter listed in the "Contaminant" column that corresponds to a groundwater monitoring or drinking well, the specific well number(s) or location(s) is not listed. There is also no reference to whether the well(s) is hydrologically upgradient or downgradient of the facility. The "Exceedances" numbers cannot be correlated to a specific monitoring point, nor is the specific data provided.

B. In the "Medium" column, groundwater monitoring wells and drinking wells are undifferentiated, and the "Highest Exceedance Number" is not assigned to one or the other, making it ambiguous and appearing that it is attributed to both a drinking water well and a monitoring well.

C. When the "Medium" column changes to Surface Water, the chart continues to list "# Wells" instead of number of surface water points.

D. This table provides no substantiated data and cannot be verified. As a matter of scientific standards, a summary table (such as alleged in Chart 2) would also reference sampling numbers and have a compendium of data to verify the summary.

23. Damage Case Claim - Page 165

On-site groundwater moving off-site" – on-site groundwater contamination includes extensive arsenic contamination, with at least 24 MCL exceedances in at least 14 different wells that were more than 150 feet away from the closest part of Little Blue. All of these samples were taken between 2006 and 2010, after FirstEnergy's expansion of Little Blue. See Chart 2.

DEP Response

The reference to this allegation is Chart 2 in the EIP report. Though a general time frame (2006-2010) is given in the chart for "extensive arsenic contamination," specific verifiable information (such as specific well locations and sampling dates) is not provided.

DEP has collected 52 water samples at 40 residential wells over the past six years (see Table 1) from around the impoundment, none of which show evidence of arsenic contamination.

It could be that the report is labeling the groundwater monitoring network installed to provide early detection of impacts and located immediately adjacent to the impoundment as "off-site."

24. Damage Case Claim - Page 165

Fluoride and turbidity MCLs were exceeded 27 and 41 times, respectively.

DEP Response

This claim is unsubstantiated. Of the 68 alleged exceedances referenced, only two data points are reported on Chart 2 (one for turbidity and one for fluoride). Also, there is no reference to which two monitoring wells those data refer. Turbidity is a secondary contaminant related to the appearance of drinking water, not a health-based standard.

Fluoride has an MCL of 4 mg/L and a SMCL of 2 mg/L. Fluoride concentrations are greatest in a well with groundwater that represents background water quality. This is the only well that contains fluoride at concentrations in excess of its MCL. Several other wells contain fluoride concentrations that are slightly above the SMCL for fluoride. Fluoride is the result of the solution of naturally occurring fluoride present within freshwater limestone units in the bedrock of the disposal area. Turbidity in monitoring wells is not a function of the impoundment, but representative of the construction and development of the well. Several of the wells installed around the disposal area have low yields and therefore go dry during purging, causing the sample collected to contain some sediment and result in turbid samples.

25. Damage Case Claim - Page 165

In 1996, lead exceeded the Federal Action Level of 0.015 mg/L with readings of 2.69 mg/L (538 times the MCL) and 1.41 mg/L (282 times the MCL). There were also numerous violations of SMCLs for turbidity, chloride, iron, manganese, and sulfate, and pH was cited for showing an increasing trend at one well in 2003.

DEP Response

These claims are unsubstantiated. In regard to the alleged lead exceedances, there is no identification of which wells were sampled or their physical location in reference to the impoundment. Therefore, it is impossible to make conclusions regarding hydrologic

connection to the impoundment. In addition, two data points over a 30-year monitoring period of 4 times per year do not constitute a trend. Lead is not present in any appreciable amount in the waste within the impoundment and therefore elevated lead in an off-site well is likely from another source, such as the home's plumbing or soil.

Specific monitoring points are not given for alleged violations of secondary parameters, and no data is given regarding an alleged increasing trend of pH for one well in 2003.

26. Damage Case Claim - Page 165

"On-site" surface water moving off-site – on-site surface water contamination moving off-site includes exceedances of PA WQC for arsenic, antimony, hexavalent chromium, selenium, thallium, and boron, with the boron exceedances occurring at least 15 times at 9 downgradient monitoring points: Outfall (001 (discharge to Hayden Run Creek); Outfall 021 (discharge to a stream, Little Blue Run, that discharges to the Ohio River); Outfall 023 (collected seeps/springs to Mill Creek); Outfall 025 (collected seeps/springs to Mill Creek); Outfall 026 (collected seeps/springs to Mill Creek);" "SW-3 (a seep in Pennsylvania just below the earthen dam); SW-4 (a seep in Pennsylvania just below the earthen dam); S-15 (a spring in Pennsylvania about 1,300 feet from the impoundment); and S-18 (a spring in Pennsylvania). See Chart 2.

DEP Response

Of the 9 downgradient surface water monitoring points called out for alleged boron exceedances, 5 are permitted industrial waste discharge points authorized in the facility's NPDES permit. Depending on the receiving stream, each outfall may have a discharge limit for boron that is different than Pennsylvania Water Quality Criteria as specified in the NPDES discharge permit. This is not clarified in the report. PA WQC are not an appropriate comparison as stated previously.

In addition, there are deficiencies with Chart 2 that make technical correlations impossible between the allegations and corresponding data.

27. Damage Case Claim - Page 165

Chart 2. ON-SITE CONTAMINATION MOVING OFF-SITE

CONTAMINANT	MEDIUM	STANDARD	SAMPLING DATES	#EXCEED-ANCES	# WELLS	HIGHEST EXCEEDANCE
Arsenic (mg/L)	Groundwater	MCL: 0.01	2006–2010	24	14	**0.036**
Fluoride (mg/L)	Groundwater	PA MCL: 2	1994–2006	27	1	**6.4**
Lead (mg/L)	Groundwater	MCL: 0.015	1996	2	2	**2.69**
Turbidity (NTU)	Groundwater	PA MCL: 1	1993–2008	41	18	**8,800**
Chloride (mg/L)	Groundwater	SMCL: 250	1998–2009	18	15	**5,190**
Iron (mg/L)	Groundwater	SMCL: 0.3	2007–2008	8	8	**6.41**
Manganese (mg/L)	Groundwater	SMCL: 0.05	2007–2008	12	10	**3.77**
Sulfate (mg/L)	Groundwater	SMCL: 250	2007–2009	11	10	**1,980**

Antimony (mg/L)	Surface Water	PA Health Criteria: 0.0056	1998	1	1	**0.012**
Arsenic (mg/L)	Surface Water	PA CCC: 0.010	2008	1	1	**0.013**
Boron (mg/L)	Surface Water	PA CCC: 1.6	1993–2010	15	6	**11.8**
Hexavalent Chromium (mg/L)	Surface Water	PA CCC: 0.01 PA CMC: 0.016	1993, 1998	2	2	**0.02**
Selenium (mg/L)	Surface Water	PA CCC: 0.0046	1993, 2004	2	2	**0.0939**
Thallium (mg/L)	Surface Water	PA CCC: 0.00024	1998	4	3	**0.005**
Aluminum (mg/L)	Surface Water	Secondary PA CCC: 0.75	1993	1	1	**1**

DEP Response

With regard to Chart 2, the data presented cannot be verified due to the following deficiencies:

A. For every parameter listed in the "Contaminant" column that corresponds to a groundwater monitoring or drinking well, the specific well number(s) or location(s) is not listed. There is also no reference to whether the well(s) is hydrologically upgradient, downgradient or side gradient of the facility. The "Exceedances" numbers cannot be correlated to a specific monitoring point.

B. When the "Medium" column changes to Surface Water, the chart continues to list "# Wells" instead of number of surface water points. The entire chart is confusing and no correlations can be made between the alleged claims or surface water groundwater contaminations. DEP's review of the groundwater and surface water data for the facility does not support the table.

28. Damage Case Claim - Page 165

On-site groundwater – despite the fact that most of the on-site monitoring points and wells are 'moving off-site' (meaning they are more than 150 feet from the boundary of the impoundment), on-site groundwater also had exceedances of MCLs, including multiple turbidity MCL exceedances and a manganese SMCL exceedances. See Chart 3 (for brevity, no SMCL exceedances were included on this chart, although there were many)."

DEP Response

The claims regarding "on-site contamination" are unsubstantiated. Specific dates and locations of the alleged exceedances are not listed in the EIP report and DEP cannot confirm their validity. Turbidity in monitoring wells is not a function of the impoundment, but representative of the construction and development of the well. Several of the wells installed around the disposal area have low yields and therefore go dry during purging, causing the sample collected to contain some sediment and result in turbid samples.

29. Damage Case Claim - Page 166

"On-site" surface water – on-site surface water showed an exceedance of the CCC for selenium at SW-3 (a seep in Pennsylvania just below the earthen dam) (exceedances of nonpriority pollutants under PA WQC, such as aluminum, boron, and barium, were not tracked at on-site points). See Chart 3."

Chart 3. ON-SITE CONTAMINATION

CONTAMINANT	MEDIUM	STANDARD	SAMPLING DATES	#EXCEED-ANCES	# WELLS	HIGHEST EXCEEDANCE
Turbidity (NTU)	Groundwater	PA MCL: 1	1993–2008	6	3	**26**
Manganese (mg/L)	Groundwater	SMCL: 0.05	2008	1	1	**2.37**
Selenium (mg/L)	Surface Water	PA CCC: 0.0046	2004	2	1	**0.0929**

DEP Response

EIP misidentifies sampling point SW-3 as a seep below the dam. SW-3 is a sampling point at the stilling basin and is a permitted discharge from the impoundment. Comparing this sampling point to WQC is not appropriate. (See NPDES discharge notes previous.) With regard to Chart 3, the data presented cannot be verified due to the following deficiencies:

A. For every parameter listed in the "Contaminant" column that corresponds to a groundwater monitoring or drinking well, the specific well number(s) or location(s) is not listed. There is also no reference to whether the well(s) is hydrologically upgradient or downgradient of the facility. The "Exceedances" numbers cannot be correlated to a specific monitoring point.

B. When the "Medium" column changes to Surface Water, the chart continues to list "# Wells" instead of number of surface water points.

C. This table provides no substantiated data and cannot be verified. As a matter of scientific standards, a summary table (such as alleged in Chart 2) would also have a list of sampling points and a compendium of data to verify the summary.

30. Damage Case Claim - Page 166

In addition, a monitoring well that appears to be monitoring surface water of the impoundment itself (SW-7) measured exceedances of the PA CCC for arsenic (0.010 mg/L) twice in 2009-2010, with readings of 0.023 and 0.025 mg/L, and it also measured at least six exceedances of the boron PA CCC (1.6 mg/L), with a high reading of 15.7 mg/L.

DEP Response

EIP is comparing concentrations measured from within the disposal impoundment (prior to discharge) to Fish and Aquatic Life Criteria. This is inappropriate and misleading.

31. Damage Case Claim - Page 166

Outfall 507 measured an exceedance of the hexavalent chromium PA CCC (0.016 mg/L), with a reading of 0.026 mg/L in 1998. In addition, thallium measured 0.015 mg/L in 1998 at Outfall 507, exceeding the PA CCC (0.013 mg/L) and the Health Criteria (0.00024 mg/L).

DEP Response

Permitted NPDES outfalls at Little Blue Run are numbered 021 to 026. The analytical data related to Outfall 507 has no reference.

32. Damage Case Claim - Page 166

"At Risk Population." At least 22 private wells have already been contaminated with CCW pollutants above the primary or secondary MCLs, including the township building's well.

DEP Response

This statement is unsubstantiated. As previously stated, there are no names, dates, specific locations, or specific parameters for 22 private water supplies alleged to be contaminated by the impoundment in the report, except an obscure reference to a township building's well. DEP has no data supporting claims that any private wells have been contaminated. DEP did sample the Greene Township well on October 10, 1993. The well is not hydrologically connected to the Little Blue Run impoundment and no parameters associated with the impoundment were detected at elevated levels. Iron and manganese were present at levels greater than their respective SMCL's. Based on its general elevation and depth, this well penetrates several coal seams/carbonaceous layers that are the likely source of the elevated paramters.

33. Damage Case Claim – Page 166

"FirstEnergy has already purchased several of these contaminated properties and/or supplied the residents thereof with an alternate drinking water supply."

DEP Response

DEP acknowledges properties have been purchased by FirstEnergy over the past 35 years for expansion of the impoundment. FirstEnergy has supplied alternative drinking water supplies or a treatment system to a few residents where samples showed that the wells' water quality may have been changing (indicative of past oil and gas exploration). These include two homeowners who were offered water treatment systems because of brine water in their water

wells – there was no indication of impacts from the impoundment. Another homeowner was provided a treatment system when a slight increase of sulfate was noted over time, even though no parameters exceeded a MCL or SMCL. Shortly after the system was installed, sulfate concentrations returned to its original concentration. This well was noted to contain water quality that would be expected in a drinking water well that intersects a coal seam.

34. Damage Case Claim - Page 166

Because Greene Township has no public water supplies, every single resident – 2,705 people, according to 2000 census data – is drinking private well water. In addition, there are many affected citizens in West Virginia, although comprehensive well data was unavailable for this region. Water degradation may also be migrating across the Ohio River into Ohio, but the community there is on public water.

DEP Response

This claim is unsubstantiated. There is no data presented in the report to demonstrate that any West Virginia citizens' drinking well supply is contaminated by the impoundment. Recent testing by DEP of several private water wells on September 3, 2010, in Lawrenceville, WV (Cooper and McCaughlin) indicated non-detect from Primary MCL's (including arsenic). In addition, there is no technical data presented or modeled that demonstrates that the regional water table flows beneath the Ohio River and discharges on the other side from the impoundment.

35. Damage Case Claim – Page 166

Incident and Date Damage Occurred/Identified.
The Pennsylvania Department of Environmental Protection (PADEP) has long documented the contamination flowing from the Little Blue surface impoundment. From at least 1989 to the present day, FirstEnergy (and previously, Penn Power) has been exceeding permit limits and both State and federal drinking water and surface water standards due to the irresponsible disposal of CCW in the Little Blue impoundment.

DEP Response

DEP cannot verify the validity of this claim. The specific monitoring wells, surface water points, and analytical data, and the dates and times of sample collection, by which to substantiate this claim are not presented. The permitted groundwater monitoring wells and surface points are sampled on a quarterly basis and are currently within the permit limits established in the PA Residual Waste Regulations. In addition, the site is also currently in compliance with its NPDES permits.

36. Damage Case Claim - Page 166

Admitted Damage

On February 16, 2010, PADEP sent a letter to FirstEnergy regarding high arsenic levels at 10 groundwater and surface water monitoring points, stating, 'According to the data, *elevated levels of Arsenic* were detected in Monitoring Wells MW-13A, MW-15B, MW-16C, MW-17A, MW-20B, MW-23B, SW-5, SW-7, S-17, and S-31' (PADEP, 2010) (emphasis added). In a response letter dated February 24, 2010, FirstEnergy acknowledged the arsenic levels and further stated: 'As you will recall, the DEP prepared a similar letter dated December 20, 2007 regarding detectable concentrations of arsenic reported in four monitoring points during the third quarter 2007 sampling event' (FirstEnergy, 2010). FirstEnergy's environmental consultants re-tested arsenic levels to determine whether interference had been causing arsenic spikes, but found that the re-tested 'results were comparable.'

DEP Response

DEP issued a letter to FirstEnergy on December 20, 2007, that noted elevated arsenic in six monitoring points located adjacent to the impoundment well within FirstEnergy property. FirstEnergy's response demonstrated elevated arsenic concentrations in monitoring points that have shown impacts from the impoundment were comparable to concentrations in background monitoring wells. FirstEnergy continued to monitor the concentrations to see if any trends developed. DEP issued a letter to FirstEnergy on February 16, 2010, that noted elevated arsenic concentrations in 10 monitoring points immediately adjacent to the impoundment. FirstEnergy demonstrated that no trends in arsenic were readily identifiable at that time and continued to monitor arsenic concentrations to determine the reason(s) for the elevated arsenic levels and, if necessary, the steps to be taken to address the issue. While the arsenic levels receded, elevated levels continued to be detected in monitoring wells MW-13A, MW-15B, MW-16C, MW-17A, MW-20B and MW-23B, and surface water point SW-5, SW-7 and SW-31. On January 3, 2011, FirstEnergy was formally informed of its obligation to conducted groundwater assessment pursuant to 25 Pa. Code Section 289.256. FirstEnergy's plan in that regard was originally submitted on March 2, 2011, and revised at DEP's request on July 6, 2011. The cause for the elevated levels of arsenic is being studied.

37. Damage Case Claim - Page 167

In 2009, USEPA and FirstEnergy ranked Little Blue as a 'High' hazard dam on the National Inventory of Dams, meaning that a failure of the dam 'will probably cause loss of human life.' (USEPA, 2009)."

DEP Response

This statement is correct.

38. Damage Case Claim - Page 167

In 2009, an Annual Operations report prepared by environmental consultants for FirstEnergy states: Sharp increases in sulfate, chloride, sodium, and specific conductance at MW-6 indicate early signs of supernatant impacts. This well is located along Lewis Road on the southwestern side of the impoundment, and has served as a background well. Due to the placement of CCB in this portion of impoundment, this well is now located within several feet of the impoundment. Shallow impacted groundwater may be migrating along the soil-bedrock interface or through weathered bedrock in the vicinity of this well and may be short circuiting to deeper zones. Because this well is one of the original monitoring wells installed at the Site (1974), it does not meet current standards for well construction and will be replaced with a new well to prevent the migration of impacted water to deeper zones."

DEP Response

These statements are true. MW-6 is an original monitoring well, that because of its age (1975), was not constructed to today's standards. Other monitoring wells have been replaced as the elevation of Coal Combustion Waste or impoundment water rose to approach or inundate the well. MW-6 was properly abandoned and a new well MW-6 was installed at a slightly higher elevation to replace the original MW-6. Well MW-6 was constructed to monitor the same zone as the abandoned well. Results of samples collected from the new Well MW-6 indicate the water quality in the monitored zone reflects background conditions.

39. Damage Case Claim - Page 167

(CEC, 2009). The same 2009 report states that on the ridge east of the impoundment, 'Monitoring wells MW-3A and MW-14AR continues[sic] to show increasing concentrations of sulfate, chloride, and sodium indicating possible early signs of supernatant impact.' FirstEnergy's consultants go on to state:

On the western side of the impoundment, early signs of supernatant impacts may be evident along Johnsonville Road. At MW-7A and MW-7B, sulfate, chloride, calcium and specific conductance all showed distinct increasing trends in 2008, indicating possible supernatant impacts. . . Similarly, increasing sulfate concentrations and analysis of the Piper diagrams at wells MW-24 and DW69 indicate possible supernatant impacts. Spring S-30 continues to display increases in sulfate, chloride, sodium, calcium, magnesium and specific conductance, further suggesting signs of supernatant impacts. In addition, newly identified springs in Lawrenceville at locations down gradient of springs S-30 and S-31 appear to display impacts from the impoundment."

DEP Response

This statement is true. It should be noted that the impacts from the impoundment are primarily elevated concentrations of sulfate, sodium, calcium, chloride, and magnesium. Of these compounds, only sulfate and chloride have established SMCLs, which are non-enforceable Federal guidelines regarding cosmetic effects or aesthetic effects of drinking

water. Furthermore, FirstEnergy has acknowledged its responsibility with respect to the Lawrenceville springs and is in the process of resolving that concern. FirstEnergy has initiated remediation of the affected springs and is currently installing facilities by which to provide for their collection and conveyance for management as wastewater in the impoundment.

40. Damage Case Claim - Page 167

The 2007 Annual Report prepared by FirstEnergy's environmental consultants labels each of the following as a 'supernatant impacted well': MW-1; MW-2R; MW-3B; MW-9BR; MW12B; MW-12C; MW-13A; MW-13B; MW-15B; MW-16A; MW 17-A; MW-17B; MW-22B; MW-23A; MW-24; SW-3; SW-4; SW-5; S-9A; S-15; and S-17 (CEC, 2007)."

DEP Response

This statement is correct. Wells deemed to be 'supernatant impacted' are those with elevated sulfate, calcium, magnesium, chloride and sodium attributable to the impounded liquid based on the wells' location immediately adjacent to the impoundment. The elevated constituents are secondary contaminants and not health-related.

41. Damage Case Claim - Page 167

In 2003, FirstEnergy's environmental consultants sent a letter to PADEP expressly labeling Monitoring Wells 3B, 13A, and 13B *'Supernatant-Affected Wells'* (CEC, 2003).

DEP Response

This is a true statement. Wells MW-3B, 13A, and 13B contain concentrations of parameters that show they are supernatant-impacted wells. Wells MW-13A and 13B also contain impacts from brine. These wells are located in on-site areas and do not represent a violation.

42. Damage Case Claim - Page 167

In the 1996 Consent Order and Agreement, Penn Power (the owner of Little Blue prior to FirstEnergy) and PADEP admit that 'Existing groundwater monitoring data indicate light groundwater impact from Little Blue Run supernatant. . . relative to background. All quantifiable impacts are of secondary maximum contaminant level ('SMCL') or indicator parameters, including Sodium, Calcium, Chloride, and Sulfate' (PADEP, 1996).

DEP Response

It is true that impacts to groundwater are primarily those of sulfate, sodium, calcium, and chloride and are seen in the monitoring wells closely associated with the impoundment. Of these compounds, only sulfate and chloride have established SMCLs, which are non-enforceable Federal guidelines based on aesthetic effects on drinking water.

43. Damage Case Claim - Page 167

In 1994, FirstEnergy was required to provide a water supply to a private residence, and a PADEP letter to Penn Power admits that the impoundment contaminated and made unusable a private well (PADEP, 1994a):

'This result indicates a *continuing upward trend* in levels of sodium, chloride and sulfate which has persisted since 1991. . . .This trend represents a *measurable increase in the concentration of these contaminants and therefore is defined as groundwater degradation.* Since the groundwater gradient is probably from the impoundment supernatant at elevation of 1050' toward the [XXXX] well water elevation at approximately 985', *it is very probable that the impoundment is responsible for this adverse effect on the water supply.* This letter is notice from the Department that *the operator, Pennsylvania Power Company, is responsible for adversely affecting the water supply of Mr. [XXXX].*'"

DEP Response

This claim, while accurate, is incomplete. DEP's follow-up investigation confirmed the findings associated with the 1994 letter. Concentrations of sodium, chloride and sulfate in the water well referenced in the EIP report showed an increase between November 1993 and March 1994. FirstEnergy's consultant overpumped this well while collecting samples for analysis. The laboratory analyses showed the water quality in this well improved and confirmed that the well had exhibited increases in parameter concentrations after the homeowner used household bleach to treat his well for bacterial contamination late in 1993.

44. Damage Case Claim - Page 168

A 1994 letter from PADEP to the environmental consulting firm states, *'[t]his impoundment is affecting groundwater over a large area with multiple aquifers.'* (PADEP, 1994b) (emphasis added)."

DEP Response

It is true that the impoundment has affected groundwater quality in several different aquifers; however, these impacts were expected based on the fact that the impoundment was designed and constructed as an unlined impoundment in the early 1970s. These impacts are well understood and are comprehensively monitored per requirements in the facility's permit. The impacts are for secondary contaminants and are not health-related.

45. Damage Case Claim - Page 168

As early as 1989, PADEP admitted that chloride measured at 3,530 mg/L (more than 14 times the SMCL of 250) in groundwater is 'abnormally high,' that calcium levels were elevated in three groundwater wells, that both *'can be traced to leaching of surface water through the waste'* at the impoundment, and that 'elevated' levels of calcium 'can be associated with the waste disposed at Little Blue.' (PADEP, 1989) (emphasis added).

DEP Response

DEP's letter dated March 21, 1989 noted monitoring wells MW-1, MW-2, MW-4A, MW-9A, and MW-11A contained high concentrations of chloride. The letter also noted that calcium appeared elevated in well MW-1, MW-2, and MW-9A. Monitoring wells MW-1, MW-2, and MW-9A contain impacts from both supernatant and brine. Wells MW-4A and MW-11A contain impacts solely attributable to brine. The impact of the brine controls the chloride in these wells. Whereas, the elevated calcium in wells MW-1, MW-2, and MW-9A is an indication of supernatant impacts along with sulfate concentrations. These impacts are well understood and are comprehensively monitored per requirements in the facility's permit.

46. Damage Case Claim - Page 168

Other Incidents
In 2009, dry conditions on the surface of the impoundment covered nearby residents' homes in a layer of coal ash fugitive dust, prompting an NOV (PADEP, 2009)."

DEP Response

First Energy notified DEP of a potential dusting problem at the impoundment and initiated actions to quickly address the dusting. DEP immediately responded by issuing an NOV, assessing a civil penalty and mandating that corrective actions be taken. DEP required First Energy to modify its permitted nuisance control plan and submit regular documentation on inspections and corrective actions to reduce dusting potential. FirstEnergy responded to the NOV and corrected the situation.

47. Damage Case Claim - Page 168

In 2007, a PADEP site inspector 'noted a white discharge from spring S-2 on the hillside east of the dam face. Photos were taken of the discharge. There was a rotten egg odor in the vicinity of the open channel next to the main access road' (PADEP, 2007).

DEP Response

The discharge from spring S-2 located along the dam face is collected along with other discharges from the dam into the stilling basin (SW-3) and is ultimately discharged through a permitted NPDES point. At the time the white discharge was noted, the outfall at the stilling basin was in compliance.

48. Damage Case Claim - Page 168

Twenty gallons of lime slurry discharged into the Ohio River from the Little Blue impoundment in June 1994, although the constituents in the discharge are unknown (Penn Power, 1994a).

In January 1994, 800 gallons of scrubber sludge discharged to the Ohio River from the impoundment, although the constituents in the discharge are unknown. There was also a seepage into Mill Creek in March 1994, the size and constituents of which are unknown (Penn Power, 1994B).

DEP Response

These statements are correct. Violations were noted and corrected per the regulations.

49. Damage Case Claim - Page 168

A thick layer of coal ash dust was released from the surface of the Little Blue impoundment as fugitive dust from January 30 to February 4, 1993, and PADEP issued a Notice of Violation for violations of Sections 6.1(a), 6.1(b), and 8 of the Air Pollution Control Act, and Sections 123.1 and 123.2 of 25 Pa. Code SS 123.1(a) and 123.2 (PADEP, 1993).

DEP Response

FirstEnergy responded to the NOV and corrected the situation.

50. Damage Case Claim – Page 168

A 1991 inspection report noted a milky-white discharge from the distilling pond and from NPDES Outfall 001, and marked 'non-compliance' with regard to 'Operation in accordance with approved plans' and for 'Leachate treatment facilities being operated properly.' (PADEP, 1991a). The pH was measured from 8.7 to 9.4. *Id*. A Notice of Violation issued cited violations of sections 302(b)(3), 610(4) of the Pennsylvania Solid Waste Management Act and sections 301 and 307(c) of the Clean Streams Law (CLS) (PADEP, 1991c). The NOV (PADEP, 1991) stated that a:

[W]ater discharge coming from Little Blue Run development area fly ash disposal landfill was discolored and the bottom of the distilling basin was covered with a white sediment. Water samples were taken at the NPDES Permit No. PA0027260, Outfall 001 discharge point. The analysis from these samples showed total suspended solids at 194 mg/L (maximum limit 60 mg/L) and pH 10.5 (maximum limit pH 9), both over the NPDES permit discharge limits and in violation of the above mentioned sections of the PSWMA and the CSL."

DEP Response

The company responded to the NOV, addressing and correcting the situation. Outfall 001 is no longer a permitted discharge point. The currently permitted outfalls are numbered 021-026.

51. Damage Case Claim - Page 168

On August 30, 1991, 100 gallons of CCW slurry from Little Blue spilled into the sewer (PADEP, 1991b).

An unpermitted discharge violation was reported by Penn Power to PADEP in July 1991 (PADEP, 1991d).
A 1989 Consent Assessment of Civil Penalty stated '[L]eakage at the closed valves of the supernatant/river return pumps resulted in a discharge to Outfall 001. Water samples taken at Outfall 001 discharge point showed suspended solids of 194 mg/L and a pH of 10.5, both which exceed the NPDES permit limits of 60 mg/L for suspended solids and 9 pH.' PADEP assessed a $4,000 penalty for this discharge into Mill Creek, but Penn Power paid only $2,500 with a Consent Agreement from PADEP (Penn Power, 1989).

DEP Response

The company responded to the NOV, addressing and correcting the situation.

52. Damage Case Claim - Page 169

Regulatory Actions
PADEP's regulatory actions have not been aimed at a comprehensive solution to address the ongoing contamination and seepage from Little Blue; rather, PADEP's actions have been aimed at patching small seeps throughout the years. Selected PADEP actions for the Little Blue impoundment include:" "February 16, 2010: PADEP sent a letter to FirstEnergy requesting re-sampling of ten groundwater and surface water monitoring points with high arsenic levels and stating, 'According to the data, elevated levels of Arsenic were detected in Monitoring Wells MW-13A, MW-15B, MW-16C, MW-17A, MW-20B, MW-23B, SW-5, SW-7, S-17, and S-31' (PADEP, 2010).

DEP Response

The actions taken with regard to the presence of arsenic in groundwater monitoring wells and seeps has been timely, appropriate and consistent with the requirements of the PA Residual Waste Regulations. DEP issued a letter to FirstEnergy on December 20, 2007, that noted elevated arsenic in six monitoring points located adjacent to the impoundment well within FirstEnergy property. FirstEnergy's response demonstrated elevated arsenic concentrations in monitoring points that have shown impacts from the impoundment were comparable to concentrations in background monitoring wells. FirstEnergy continued to monitor the concentrations to see if any trends developed. DEP issued a letter to FirstEnergy on February 16, 2010, that noted elevated arsenic concentrations in 10 monitoring points

immediately adjacent to the impoundment. FirstEnergy demonstrated that no trends in arsenic were readily identifiable at that time and continued to monitor arsenic concentrations to determine the reason(s) for the elevated arsenic levels and, if necessary, the steps to be taken to address the issue. While the arsenic levels receded, elevated levels continued to be detected in monitoring wells MW-13A, MW-15B, MW-16C, MW-17A, MW-20B and MW-23B, and surface water points SW-5, SW-7 and SW-31. On January 3, 2011, FirstEnergy was formally informed of its obligation to conduct groundwater assessment pursuant to 25 Pa. Code Section 289.256. FirstEnergy's plan in that regard was originally submitted on March 2, 2011, and revised at DEP's request on July 6, 2011. The cause for the elevated levels of arsenic is being studied.

53. Damage Case Claim – Page 169

March 12, 2009: PADEP issued an NOV for a dusting event that covered many residents' properties with a layer of coal ash on March 4, 2009 (PADEP, 2009).

DEP Response

The company responded to the NOV, addressing and correcting the situation, and a $24,500 penalty was paid. In addition, DEP required a modification of the permit requiring more frequent inspections by FirstEnergy to reduce dusting potential.

54. Damage Case Claim - Page 169

October 21, 2008: PADEP sent FirstEnergy a letter stating: 'The Department's results indicate that sodium and chloride levels are elevated indicating that the surface water point has been impacted by leachate from the impoundment,' and required FirstEnergy to select one of three remediation options (PADEP, 2008). As of mid-2010, it is still not clear what remediation option, if any, FirstEnergy has undertaken at Little Blue."

DEP Response

During the third quarter of 2008, additional seepage was noted near spring S-30. Increased flow and parameter concentrations increased as a result of sludge placement along Lawrenceville Road, which caused surface water to pond against road fill materials. FirstEnergy reacted quickly to place material and graded the disposal area to drain the water away from the road. Soon afterwards, the flow at spring S-30 had decreased back to one to two gallons per minute and parameter concentrations decreased considerably. The spring is back to background conditions.

55. Damage Case Claim - Page 169

Sept. 19, 2003: PADEP inspection report cites FirstEnergy because 'fly ash sludge' was 'disposed outside the permit area' in violation of Pennsylvania law; an NOV was issued on September 23, 2003 (PADEP, 2003)."

DEP Response

The company responded to the NOV, addressing and correcting the situation.

56. Damage Case Claim - Page 169

June 21, 1994: Settlement with PADEP for groundwater contamination; *penalty amount N/A* (PADEP, 1994a).

Jan. 30 – Feb. 4, 1993: PADEP issued an NOV for fugitive dust violations, *no penalty paid* (PADEP, 1993).

Sept. 3, 1991: PADEP issued an NOV for discoloration of discharge; *no penalty paid* (PADEP, 1991c).

July 31, 1989: PADEP issued an NOV for suspended solids and pH exceedances, *$2,500 penalty paid* (Penn Power, 1996)."

DEP Response

The company responded to the NOVs, addressing and correcting the situations.

57. Damage Case Claim - Page 169

FirstEnergy was required to post a $22,219,252 bond for financial assurance in 2006. (PADEP, 2006 (2)).

DEP Response

This statement is correct. This was part of the permit requirements.

58. Damage Case Claim - Page 169

It is important to note that, through a Memorandum of Understanding entered into in 2006 (when the impoundment was expanded) by PADEP and the West Virginia DEP, PADEP is the lead permitting and enforcement agency for Little Blue, including those parts of Little Blue that lie in West Virginia (WVDEP, 2006).

DEP Response

This statement is correct. DEP is the lead, but WV DEP reserved the right to require additional permitting or corrective actions.

59. Damage Case Claim - Page 169

In addition, PADEP allowed First Energy to obtain a solid waste permit without 'mandatory trigger abatement levels' for boron. 'Trigger levels' were also removed and replaced with only monitoring requirements for arsenic, cadmium, chromium, copper, lead, magnesium, mercury, selenium, silver, zinc, ammonia-nitrogen, bicarbonate, calcium, chemical oxygen demand, chloride, iron, manganese, pH, potassium, sodium, specific conductance, sulfate, TDS, alkalinity, total organic carbon, and turbidity by the PADEP. *Compare* (PADEP, 1997b *with* PADEP, 1997c). This was supposedly done 'because the conditions of the site do not reflect the need for abatement.' (PADEP, 1997a).

DEP Response

This statement is incorrect. The DEP issued the permit dated April 5, 2006 based on the fact that FirstEnergy met all applicable regulations in 25 Pa. Code Section 288. In regard to the "trigger levels," the September 14, 2002, revision to the PA Residual Waste Regulations removed the requirement for "Mandatory Abatement Trigger Levels." They were replaced in the Ground Water Comparison Standard outlined in 25 Pa, Code Chapter 250. The impoundment permit reflects the current regulatory requirements.

60. Damage Case Claim – Page 169

Wastes Present
Flue gas desulfurization sludge, fly ash.

DEP Response

This statement is correct.

61. Damage Case Claim – Page 169

Active or Inactive Waste Management Unit.
Active
FirstEnergy disposes of about *1 – 3 million gallons of coal ash a day* into Little Blue."

DEP Response

This statement is incorrect. FirstEnergy disposes 1 - 3 million gallons of scrubber sludge/fly ash slurry into the impoundment daily.

62. Damage Case Claim - Page 170

Type(s) of Waste Management Unit
'High' hazard 900-1,300-acre coal ash surface impoundment without a liner. The liner requirement was waived upon promulgation of PA coal ash regulations in 1992, and again with the expansion of the impoundment in 2006, for which FirstEnergy secured a 'demonstration' permit. The CCW in Little Blue is kept from spilling into the Ohio River by a 400 foot high earthen dam, the largest of its type in the eastern United States.

DEP Response

This statement is misleading. The high hazard designation is a dam safety permit designation and not a waste management determination. Also, the dam is an engineered soil core and rock dam.

63. Damage Case Claim - Page 170

Hydrogeologic Conditions
Groundwater monitoring at the Little Blue impoundment identified eight aquifers:

- Shallow Bedrock: Middle Glenshaw Aquifer; Lower Glenshaw Aquifer; Freeport Aquifer; Worthington Aquifer;
- Intermediate Bedrock: Kittanning Aquifer; Clarion Aquifer;
- Deep Bedrock: Homewood Aquifer; and
- Surficial/Unconsolidated: The Regolith and Alluvium Aquifer

(Penn Power, 1997b, *see also* PADEP, 1996). 'Groundwater flow patterns at Little Blue Run are a complex, three-dimensional field because of the high relief and complex stratigraphy of the area.' *Id*. The company admitted, 'These units are not highly permeable, but are more permeable than other units in the stratigraphic series' (Penn Power, 1997b).

The company also stated, 'the facility could potentially affect water supplies in the Mill Creek Valley to the east, the Lawrenceville area to the west, and Coffey Road to the south' (Penn Power, 1997b).

The depth in the Glenshaw Aquifer, the 'top most saturated stratigraphic unit across the site,' ranged from 944.7 to 1093.47 ft MSL (Penn Power, 1997c). There are also several small mines below the impoundment in the Lower Kittanning and Freeport seams, which were backfilled with soil or fly ash cement during the impoundment's construction. (Penn Power, 1997b)."

DEP Response

These statements are generally correct.

64. Damage Case Claim - Page 170

"Also of note is that Penn Power identified and admitted discharging to three surface water receptors in the vicinity of Little Blue, and stated that groundwater from the impoundment 'discharges to springs, which enter Mill Creek, Little Blue Run, and the Ohio River' (Penn Power, 1997c). The impoundment discharges to Mill Creek about 100 yards before the confluence of Mill Creek and the Ohio River. Id."

DEP Response

It is true that water from the impoundment discharges to the Ohio River and Mill Creek via springs and surface water. EIP fails to note that these discharges are permitted NPDES monitoring and discharge points. Potentially impacted springs that flow into Mill Creek are permitted under the NPDES program even though their flows are typically less than a few gallons per minute. Two larger springs along the hillside of Mill Creek that have shown impacts are captured and pumped back to the impoundment in accordance with a Consent Order & Agreement and are ultimately discharged under the NPDES permit. Likewise, a large spring located just to the northwest of the dam in West Virginia is collected and routed into the impoundment's NPDES discharge pipe that conducts flow to the Ohio River.

65. Damage Case Claim – Page 170

"Sandstone lies 600 feet below the base of the impoundment (Rose, 2004).

DEP Response

This statement is correct.

66. Damage Case Claim - Page 170

Additional Narrative

As of 1996, the 2,460 megawatt Bruce Mansfield plant could generate as much as four million gallons of coal ash a day, all of which is pumped through a seven mile pipeline into the Little Blue surface impoundment (PADEP, 1996). 'Constructed between 1973 and 1977, Little Blue Run comprises approximately 1,300 acres in a steep-walled valley.' *Id*. 'A 9 million cubic yard earth and rockfill dam, the largest embankment dam of its type in the Eastern United States, serves as the enclosure for the waste disposal facility.' *Id*. The impoundment spans two states and its waste permit authorizes a dump area of 1,694.9 acres. (PADEP, 2006a).

The site was expanded in 2006, and, including the buffer areas owned by FirstEnergy, currently occupies over 18% of the landmass of Greene Township (not to mention the many acres in West Virginia). In order to expand the 1,300-acre impoundment, FirstEnergy secured a 'demonstration' permit to determine whether specific uses of coal ash solids and geo-tube technology could stabilize the waste site and extend the life of the unit so as to avoid having to expand into greenfield sites. Despite this statement and despite its already

increased size, a new 200- to 1,200-acre expansion (the 'Little Blue East' site) is being proposed adjacent to the current impoundment (Bauder, 2010c).

DEP Response

This statement is generally correct, except that the permit area is 1694.9 acres, the disposal area is approximately 1,000 acres and the waste is not coal ash but a slurry of scrubber sludge and ash.

67. Damage Case Claim - Page 171

Little Blue has a Clean Water Act National Pollutant Discharge Elimination System (NPDES) and Pennsylvania Clean Streams Law permit, Permit No. PA0027481, and a Solid Waste Permit, No. 300558. However, PADEP has granted this site a waiver of the Pennsylvania Residual Waste Regulations that require liners, leachate collection systems, and siting restrictions (PADEP, 1996). The impoundment was thereby also exempted from the requirement to retrofit for a 25-year 24-hour flood (*Id*.),"

DEP Response

The facility has been granted waivers and/or exceptions to certain regulatory requirements in accordance with applicable law. All of these decisions have been fully documented and subject to the applicable public notice and comment requirements.

68. Damage Case Claim - Page 171

Bottom ash has also been spread on roads for 'dust suppression' since at least 1987 (Penn Power, 1997a; PADEP, 1987).

DEP Response

DEP has no information on this; however, Greene Township and other municipalities routinely use bottom ash for antiskid material.

69. Damage Case Claim - Page 171

As part of its expansion efforts, FirstEnergy is currently asking residents living near Little Blue to sign wavers authorizing FirstEnergy to be excused from setbacks in Pennsylvania regulations (Bauder, 2010a).

DEP Response

FirstEnergy has initiated the process of permitting a new facility for the disposal of the Coal Combustion Byproducts generated at the Bruce Mansfield Plant, which can be deemed an 'expansion' of the existing facility for regulatory purposes. The Phase I portion of the application was received on July 25, 2011, and is currently undergoing the required

environmental assessment review. The design and permitting of this facility will at a minimum meet the requirements as set forth by the current Pennsylvania Residual Waste Regulations for landfills including, without limitation, disposal in a dry landfill with a Class I composite liner system and leachate collection and detection systems. As part of the residual waste regulations, a permittee may be granted waivers from certain set-back criteria if the resident within the set-back distance agrees to the decreased distance and signs a waiver, which is then submitted to DEP as part of a permit application authorized in Section 25 Pa. Code 288.422 of the residual waste regulations.

Allegheny Energy Supply Company - Hatfield's Ferry Power Station CCB Landfill

1. **Damage Case Claim – Page 174**

   Demonstrated damage to groundwater moving off-site and to off-site surface water and aquatic life (in Little Whitely Creek and tributaries).

   DEP Response

   The report fails to provide the documentation and data to demonstrate that the disposal of fly ash at Hatfield is damaging the groundwater, surface water, or aquatic life.

2. **Damage Case Claim – Page 174**

   An unlined CCW landfill located off-property from the Hatfield's Ferry Power Station has contaminated groundwater, polluted surface water, and damaged aquatic ecosystems since at least 2001.

   DEP Response

   This statement is vague. The Hatfield's Ferry Power Station CCB Landfill is located on the property owned by Allegheny Energy and is contiguous with the power station.

   The original disposal area for the Hatfield's Ferry Power Station was constructed on an abandoned, unreclaimed strip mine from the pre-regulation era. In response to the new Residual Waste Regulations promulgated in 1992, Allegheny Energy conducted a comprehensive groundwater and surface water assessment and investigation at the disposal site. For compliance with these regulations, new groundwater wells were installed and updated surface water sampling points were established. After the investigation was completed, DEP concluded that the past unreclaimed surface mining and the resultant acid mine drainage (and not ash disposal) within the watershed of the landfill had negatively impacted the aquifers beneath the landfill. All landfill construction and disposal activities are now in accordance with applicable DEP regulations.

   Allegheny Energy was granted a permit for expansion on May 4, 2009. The design for the expansion area and the leachate storage area includes an extensive groundwater monitoring network and double synthetic liners. The EIP report has not presented any supporting data that coal combustion waste has contaminated groundwater, surface water, or damaged aquatic life.

3. Damage Case Claim – Page 174

Federal groundwater Maximum Contaminant Levels (MCLs) standards for arsenic, aluminum, boron, chromium, manganese, molybdenum, sulfate, and total dissolved solids (TDS) have been exceeded since at least 2001.

DEP Response

This claim is unsubstantiated. The report does not identify any specific sample times, dates, or monitoring locations to support the claim that CCW has contaminated the groundwater with the referenced parameters. Past surface mining activities in the watershed in which the landfill is located have had a negative impact on groundwater and surface water.

4. Damage Case Claim – Page 174

Concentrations of groundwater contaminants mirror those in CCW leachate samples from the landfill collected at the same time. The horizontal extent of contamination has not yet been defined.

DEP Response

There is no data presented in the report to support this claim. Allegheny Energy's comprehensive groundwater and surface water assessment and investigation at the disposal site demonstrated that groundwater is impacted by past surface mining activities and that there is no impact on the groundwater from the disposal of CCW.

5. Damage Case Claim – Page 175

For example, since at least 2005, arsenic has repeatedly exceeded the MCL in three wells hundreds of yards south and east of the landfill, with total concentrations as much as 342 times the MCL and dissolved concentrations more than 11 times the MCL.

DEP Response

There are no specific sampling data or monitoring wells listed relative to this claim. MCLs are standards for comparison for groundwater used for human consumption. Arsenic has been detected above the MCL in several upgradient wells and, as previously stated, the groundwater has been affected by past unreclaimed surface mining and the resultant acid mine drainage (AMD) that occurred in the area currently occupied by the landfill.

6. Damage Case Claim – Page 175

Allegheny Energy's wetland treatment system for CCW leachate is ineffective at treating several parameters indicative of CCW leachate – notably aluminum, boron, manganese, molybdenum, sulfate, thallium, and TDS – resulting in violations of permit limits and

continued harmful discharges to the receiving stream in violation of Pennsylvania Water Quality Criteria (WQC) for boron.

DEP Response

The EIP Report provides no data or sampling dates by which to validate its assertion regarding the effectiveness of the site's wetland treatment system. The discharge from the wetland treatment system and the sedimentation pond are combined into one pipe at Outfall 007. Based on the receiving stream, DEP's regional Water Quality program determined that the parameters requiring numeric effluent limitations are: aluminum, iron, thallium, and manganese. There are no discharge limits for boron, molybdenum, sulfate, or total dissolved solids. The wetland treatment system has successfully treated all the listed constituents in the claim except for boron. A consultant retained by Allegheny Energy to study the feasibility of treatment options concluded that the current wetland system is the best treatment option for boron.

7. **Damage Case Claim – Page 175**

In addition, a stream habitat and macroinvertebrate survey of four streams emanating from the landfill property shows that two streams closest to the CCW landfill are impaired by CCW leachate from the landfill.

DEP Response

This statement is misleading. The low benthic counts were a result of the stream size, bank erosion, and habitat disturbance and not to leachate or other activities related to the Hatfield's Ferry Power Station CCB Landfill.

8. **Damage Case Claim – Page 175**

"The Hatfield's Ferry CCW landfill was permitted as a 40-acre unlined disposal site in May, 1984. From 1984 until 2001, CCW leachate and shallow groundwater that contacted CCW was directed, without any treatment, to an earthen impoundment, and then discharged into an unnamed tributary of Little Whiteley Creek. The Pennsylvania Department of Environmental Protection (PADEP) determined that the CCW leachate discharges were the causes of exceedances of the effluent limitations in the NPDES permit for the landfill. Allegheny Energy began operating a passive wetland treatment system for CCW leachate in Spring 2001."

DEP Response

This statement is unsubstantiated. The claim does not list any specific dates, times or parameters for which there were exceedances of effluent limitations in the NPDES permit for the landfill.

Between the years 1984 to 2001, the referenced earthen impoundment was a settling and treatment basin and in accordance with PADEP regulations, was determined to be the only necessary treatment. In addition, with DEP's approval, Allegheny Energy added magnesium hydroxide into the leachate to precipitate aluminum, iron and manganese. This operation was conducted for a period of time prior to the installation of the wetlands, which now treats and removes these constituents.

9. Damage Case Claim – Page 175

The wetland treatment system was designed to remove or reduce concentrations of iron, aluminum, manganese, and total suspended solids and to control pH – but was not specifically designed to treat other problematic constituents in CCW leachate.

DEP Response

This statement is misleading. The passive wetland treatment system at the disposal site is a state-of-the-art use of passive technologies to treat the discharge of the active landfill. The system was designed to remove iron, aluminum and manganese from landfill leachate. The control of pH and treatment of many other parameters occurs in the system.

10. Damage Case Claim – Page 175

The PADEP issued a Consent Order and Agreement on March 2008 because of continued violations of aluminum, manganese, and thallium NPDES effluent limits from November 2003 to August 2007 associated with the wetland treatment system. Maximum concentrations during that period, compared to the NPDES permit limits, are:

- **Aluminum** – @ 3.459 mg/L concentration versus a daily maximum permit limit of 1.2 mg/L permit limit; @ 0.962 mg/L monthly average concentration versus a 0.6 mg/L permit limit for monthly average (April 2007).

- **Manganese** – @ 2.623 mg/L concentration versus a daily maximum limit of 2.4 mg/L (Feb. 2004); @ 1.45 mg/L monthly average concentration versus a 1.2 mg/L limit for monthly average (January 2004).

- **Thallium** – a 0.0062 mg/L concentration versus a daily maximum limit of 0.0042 mg/L; a 0.0028 mg/L monthly average concentration versus a 0.0021 mg/L limit for monthly average (August 2005).

DEP Response

This statement is generally correct. Violations were noted and a consent order and agreement was developed to address and correct these issues. Allegheny Energy is implementing the corrective actions outlined in the order. Exceedances of the thallium limit were due to the limit being set at 0.0001 mg/L above the analytical methods minimum detection limit (MDL). The laboratory doing the analytical work for Allegheny Energy has

switched to a different analytical method which adheres to a lower MDL. There has not been an exceedance of thallium since this change. All previous thallium exceedances were attributed to analytical variability due to the closeness of the permit limit to the analytical MDL.

11. Damage Case Claim – Page 175

The PADEP in-stream Human Health Water Quality Criteria for thallium is 0.00024 mg/L, which is an order of magnitude less than the 0.0021 mg/L monthly average and 0.0042 mg/L daily maximum concentrations allowed in the NPDES permit.

DEP Response

As set forth in Table 5 in 25 Pa. Code Section 93.8c, the Human Health and Fish and Aquatic Life Criteria for toxic substances that DEP's Water Quality program uses in developing effluent limitations in NPDES Permits and other purposes is based on three standards with respect to thallium. These are:

The numbers listed in the damage claim (2.1 µg/L monthly average and 4.2 µg/L daily maximum concentrations) are based on the fact that there is no human consumption of the receiving waters to which the point source discharges. Application of a human health based Water Quality Criterion to a stream in which there is no human consumption is incorrect and misleading.

TABLE 5
WATER QUALITY CRITERIA FOR TOXIC SUBSTANCES

			Fish and Aquatic Life Criteria		**Human Health**
PP NO	*Chemical Name*	*CAS Number*	*Criteria Continuous Concentrations (µg/L)*	*Criteria Maximum Concentration (µg/L)*	**Criteria** *(µg/L)*
12M	THALLIUM	07440280	13	65	0.24

12. Damage Case Claim – Page 175

The wetland treatment system discharge is likely a large percentage of the total flow volume of the unnamed tributary of Little Whiteley Creek, with little dilution afforded in its receiving waters. This raises concern that the concentrations violating the permit limits from 2003 to 2007, if not the permit limits themselves, might allow for thallium to be discharged in concentrations causing regular exceedances of the human health criterion for thallium (0.00024 mg/L) in the unnamed tributary.

DEP Response

The thallium standard being used for comparison is inappropriate. The report also incorrectly implies the sedimentation pond and the wetlands are one treatment system because of their common discharge – Outfall 007. As designed, they are two separate treatment facilities. The sedimentation pond is one system designed to treat runoff and leachate from the landfill. The wetland is a second, separate system designed to treat leachate. The sedimentation pond discharge is the largest contributor to the total flow of the unnamed tributary, not the wetlands as stated in the claim.

13. Damage Case Claim – Page 175

Although the 2008 Consent Order addressed NPDES permit exceedances for thallium, the CCW landfill permit does not require that thallium be analyzed in groundwater, in CCW leachate, or at surface water monitoring points. Thallium testing (weekly) is only required for NPDES monitoring associated with the discharge from the wetland treatment system.

DEP Response

This is a correct statement. Thallium is not analyzed in the groundwater or surface water because it is not required by the regulations.

14. Damage Case Claim – Page 175

Monitoring results for the discharges from CCW leachate collection sumps to the treatment system and surface water monitoring stations were reviewed for April/May 2002 data, one year after the treatment system was installed, and for April/May 2006. The results show that discharges to the unnamed tributary of Little Whiteley Creek from the wetland treatment system are still indicative of inadequately treated CCW leachate."

DEP Response

The EIP Report does not present data by which to substantiate this claim. The wetland system is a permitted NPDES treatment system and is regulated as such. Discharge Monitoring Reports indicate that the facility's discharge complies with the limitations imposed by the NPDES Permit on the discharges to the unnamed tributary of Little Whiteley Creek.

15. Damage Case Claim – Page 176

Background concentrations of CCW parameters in Little Whiteley Creek approximately 200 feet upstream from its confluence with the unnamed tributary that originates at the landfill, the unnamed tributary prior to reaching Little Whiteley Creek, and the combined flow downstream in Little Whiteley Creek, were compared in the chart below". [note: single data entries provided for each of these locations for April/May 2002, April/May 2006 and May 2008 for boron, calcium, magnesium, manganese, molybdenum, sulfate, TDS and alkalinity] "The results showed concentrations exceeding the PA WQC chronic concentration (Criteria Continuous Concentration, or CCC) for boron (1.6 mg/L) in the receiving stream (the unnamed tributary) by 2.6 to 5.3 times which became worse in 2006 and 2008 despite treatment of the leachate in the wetland system."

DEP Response

There are no WQC chronic concentrations established by DEP's Water Quality program for the unnamed tributary because it is intermittent. It is therefore not appropriate to use the PA WQC as a comparison. NPDES permit effluent limits are established on WQC based on the quality of Little Whiteley Creek, which is perennial.

16. Damage Case Claim – Page 176

In addition, all three years of boron measurements in this stream also exceeded the U.S. Environmental Protection Agency's (USEPA) Child Health Advisory for boron (3 mg/L), with the 2006 and 2008 concentrations more than twice as high as this Advisory and also exceeding the Life-time Advisory for boron of 6 mg/L.

DEP Response

This statement is misleading. Comparisons regarding boron concentrations to the EPA Health Advisories are inappropriate. USEPA Health Advisories are non-enforceable, guidance-based concentrations based on non-cancer health effects for different exposures in drinking water sources. The unnamed tributary to Little Whiteley Creek is not a source of public drinking water.

17. Damage Case Claim – Page 176

There were also high and increasing concentrations of molybdenum, sulfate, and TDS (for which there are no PA WQC) in this receiving stream, and there were elevated concentrations of all of these pollutants, including boron, in Little Whitely Creek downstream of the confluence with the unnamed tributary."

DEP Response

This statement is incorrect. With the exception of manganese, the water quality data shows similar concentrations of all the pollutants in Little Whitely Creek upstream of the

confluence with the unnamed tributary from the landfill, and therefore exists in the stream prior to the treated leachate discharge. Acid mine drainage that discharges into Little Whiteley Creek upstream of the confluence also negatively impacts surface water.

18. Damage Case Claim – Page 176

Finally there are increasing concentrations of calcium and magnesium which are highly soluble parameters frequently found in coal ashes.

DEP Response

The EIP Report provides no data or sampling dates by which to substantiate this claim. Calcium and magnesium are commonly found in abundance in the soils and groundwater of western Pennsylvania and are not solely related with coal combustion waste.

19. Damage Case Claim – Page 176

While there are no numeric water quality criterion for molybdenum in Pennsylvania surface waters, the concentrations in the unnamed tributary from the landfill readily exceed USEPA's Health Advisory for ingestion of molybdenum in drinking water. All three years of molybdenum measurements exceed both the Child 10-day (0.080 mg/L) and Lifetime Health Advisory (0.040 mg/L) limits, with the 2006 and 2008 concentrations exceeding the Child Health Advisory by 6 times and the Lifetime Health Advisory by more than 12 times.

DEP Response

This claim is incorrect due to its basis on comparisons to inappropriate standards. There is no PA WQC for molybdenum, and health advisories are non-enforceable guidance values that are not applicable for comparison to surface water quality data. The unnamed tributary is not utilized as a drinking water supply.

20. Damage Case Claim – Page 176

In addition, there are four perennial streams that emanate from shallow groundwater around the CCW landfill and flow off-site into larger streams that have a protected use for aquatic life.

DEP Response

This claim is partially correct. There are four streams that flow to larger streams (two to Little Whitely Creek and two to the Monongahela River) and that have a protected use for aquatic life; but only two emanate from shallow groundwater. One of the remaining two emanates from a sedimentation pond constructed along the landfill's haul road, and the other from the permitted landfill's combined sedimentation pond and treatment wetland discharge point – Outfall 007.

21. Damage Case Claim – Page 176

A 2006 habitat and stream survey shows that CCW leachate from Phases 1 and 2 of the landfill have degraded the two streams closest to the landfill.

DEP Response

This statement is incorrect. First, the survey was conducted in 2001, not 2006. The stream habitat scores were in the suboptimal category for reasons that included: slight to moderate embeddedness, insufficient desirable in-stream cover, moderately eroded stream banks and less than optimal frequency of pool area. The impact of the fly ash landfill was not identified as reason for the suboptimal scores.

22. Damage Case Claim – Pages 176-177

Of the four streams, the stream sections with the healthiest benthic macroinvertebrate community structure were the downstream portions of the unnamed tributary to the southwest (discharges to Little Whitely Creek north of the unnamed tributary that the landfill flows into) and the unnamed tributary to the southeast (discharges to the Monongahela River) – both being the farthest from the landfill. The entire unnamed tributary stream section that receives treated (and historically untreated) leachate for the landfill is impaired, containing only organisms that are tolerant to pollution and having a concreted bottom from an unknown chemical compound.

DEP Response

DEP disagrees with the conclusion stated in this claim. Contrary to the report's implication that the worst conditions are due to the proximity of the streams to the landfill, the low benthic community counts were attributed to small stream size, substrate conditions, and available habitat.

23. Damage Case Claim – Page 177

The unnamed tributary nearest Phase 2 of the landfill and along the landfill haul road was also severely impaired, having only organisms that are tolerant to pollution. GAI Consultants, Inc., concluded that both unnamed tributaries nearest the CCW landfill are indicative of polluted water or disturbed habitat.

DEP Response

This statement is incorrect. The GAI report states: "The macroinvertebrate community observed in Tributary B [the tributary emanating from an existing sedimentation pond along the haul road] was larger and more diverse than in the other streams samples. Nevertheless, both numbers of taxa and individuals were moderately low. The upstream sampling location, immediately below the pond outflow, was dominated by organisms that are tolerant or water

quality and habitat perturbations. The downstream sampling location supported a more balanced and diverse community that included organisms that are relatively intolerant of water quality and habitat disturbance. The limitations observed in the benthic macroinvertebrate community in Tributary B are attributed primarily to the substrate condition." [GAI, Benthic Macroinvertebrate and Habitat Survey Ash Disposal Facility Expansion Site Hatfield's Ferry Generating Station Greene County, Pennsylvania, Sept. 2001, p. 29] This section of the report stated that the unnamed tributary from the landfill contained organisms that were tolerant to water quality disturbances to their habitats and that the area is affected by acid mine drainage.

24. Damage Case Claim – Page 177

Surface water and stream assessment results show that discharges from the landfill violate PADEP regulations setting general water criteria for protecting surface waters. Those criteria do not allow *"point or non-point source discharges in concentrations or amounts sufficient to be inimical or harmful to the water uses to be protected or to human, animal, plant, or aquatic life"* or for a substance to *"to settle or form deposits."*

DEP Response

DEP has reviewed the findings of the above-referenced stream assessment and there are no violations with respect to degraded water quality or condition of the stream bed.

25. Damage Case Claim – Page 177

In addition, Allegheny Energy monitors discharges from each CCW leachate collection sump annually as a condition of its landfill permit.

DEP Response

This statement in incorrect. DEP requires quarterly sampling of general chemistry parameters and annual sampling for metals.

26. Damage Case Claim – Page 177

The data show what parameters and concentrations were likely discharged continually into the unnamed tributary for the beginning of the landfill's operation in 1984 to 2001, before the wetland treatment system was installed.

DEP Response

There is no data presented in the report to substantiate this claim.

27. Damage Case Claim – Page 177

When the leachate sump data are compared to the upstream Little Whiteley Creek upstream reference sample, the concentrations are substantially higher for every parameter at the sumps, as follows: [note: table provided showing April/May 2002, April/May 2006 and May 2009 results in mg/L for boron, calcium, magnesium, manganese, molybdenum, sulfate, TDS and alkalinity].

DEP Response

This statement is generally correct. The leachate from the ash would be expected to have higher levels of certain parameters prior to treatment as compared to Little Whitely Creek. Leachate in the sump is pretreated water and discharge meets NPDES limits.

28. Damage Case Claim – Page 177

For reference, if PA WQC were compared to the leachate sump water (to which PA WQC would not apply), concentrations of boron would be exceeding the CCC by at least a factor of 10 in every single reading in the table below. [noted data]

DEP Response

This statement is fundamentally flawed and incorrect. The report compares PA WQC to leachate sump water and then states PA WQC data would not apply in this situation. The leachate generated at the site is treated and discharged in accordance with the site's NPDES permit. The effluent limits established in the NPDES Permit were developed to achieve the required criteria and are protective of the designated water uses of the receiving streams. The facility's discharge is in compliance with its NPDES permit.

29. Damage Case Claim – Page 177

Allegheny Energy conducts groundwater monitoring on a semi-annual basis; however, it only samples metals once per year.

DEP Response

This claim is incorrect. Groundwater and surface water monitoring, as required by the regulations and permit, occurs on a quarterly basis for general chemistry parameters and annually for metals.

30. Damage Case Claim – Page 177-178

With the exception of molybdenum, the groundwater results are generally similar to the CCW leachate sump data and samples of the tributary downstream from the leachate treatment wetland discharge – indicating that the groundwater has been substantially affected

by CCW leachate. A summary of CCW parameter results for the April/May 2006 and the May 2009 groundwater monitoring event for shallow mine spoil aquifer and rind aquifer wells downgradient of CCW at Phases 1 and 2 is as follows:" [note: a table of data for five wells, including single data entries for 2006 and 2009, for boron, calcium, magnesium, manganese, molybdenum, sulfate, TDS, and alkalinity is provided].

DEP Response

This statement is ambiguous. Allegheny Energy conducted an extensive groundwater assessment in the mid-1990's as required by the Residual Waste Regulations. The results of the groundwater assessment presented detailed data documenting that the unreclaimed, former strip mine that previously operated at the site on which the original landfill was constructed produces mine drainage that is negatively affecting the groundwater.

31. Damage Case Claim – Page 178

Concentrations of boron exceeded the U. S. Environmental Protection Agency's (USEPA) Health Advisory; manganese exceeded the SMCL in four of five shallow wells in two aquifers; and sulfate and TDS exceeded the SMCLs in all five of the wells.

DEP Response

There is no analytical data or time frames presented in the report to support this claim. US EPA Health Advisory Standards in groundwater are non-enforceable, recommended standards, and manganese, sulfate and TDS are secondary constituents and not health related parameters. These constituents are associated with the coal mining that was conducted in the area.

32. Damage Case Claim – Page 178

Groundwater results for five Benwood Limestone aquifer wells for the same years (the deepest aquifer on-site, MW-201C, MW202C, MW203C, MW-5C, and MW-208C) were not tabulated above but they contained no boron concentration greater than 0.268 mg/L; no sulfate concentration greater than 171 mg/L; and the highest TDS concentration was 1,766 mg/L – all three parameters at average concentrations substantially less than those in the overlying rind and shallow mine spoil aquifers.

DEP Response

DEP acknowledges that the lower aquifers at the site have a lesser concentration of boron and sulfate. This circumstance is consistent with the conclusions reached in the groundwater assessment performed by Allegheny Energy in the 1990's. Groundwater, particularly the shallow "mine spoil" aquifer, shows the effect of past unreclaimed surface mining in the watershed of the landfill.

33. Damage Case Claim – Page 178

Allegheny Energy has concluded that shallow groundwater flow directions mimic the ground surface. The only wells installed in the mine spoil aquifer, MW-206A and MW-207A, are located just south of the Phase 1 and 2 disposal areas but north of the Phase 3 and the former Hartley mine ash disposal area, and are used as "upgradient" wells for the landfill monitoring program. Although Allegheny Energy has concluded, according to their hydrogeologic characterization, that groundwater in the mine spoil aquifer flows south-to-north and intermixes with the rind aquifer to the north (wells MW-202B, MW-203B, and MW-204B), wells MW-206A and MW-207A are actually situated downgradient of Phase 3 of the landfill and at least in part, downgradient from Phases 1 and 2 of the landfill.

DEP Response

This claim is generally correct. However, monitoring wells MW-200A and MW-207A have been abandoned in preparation for Phase 3 construction in accordance with the May 4, 2009, modification to Solid Waste Management Permit No. 300558.

34. Damage Case Claim – Page 178

Allegheny Energy, also the generator of the coal ash placed in the Hartley mine on the south side of the CCW landfill, stated in an August 20, 1997 revision to an application to modify the permit for the landfill, that the elevated concentrations of boron in MW-206A and MW-207A were "due to the fact that fly ash has been co-disposed with mine spoil in the upgradient area, in addition to the permitted disposal area.

DEP Response

Boron is a prominent surface coal mining indicator parameter in groundwater. The coal refuse and mine spoil present at the site is the most likely source of boron. A causal relationship between the elevated concentrations of boron in MW-206A and MW-207 and co-disposal of fly ash cannot be inferred.

35. Damage Case Claim – Page 178

Molybdenum, a classic coal ash indicator metal, has been found in on-site wells near the CCW landfill and downgradient from the former Hartley mine coal ash disposal site – in addition to being in surface waters leaving the permitted landfill and in leachate. The concentration of molybdenum in MW-1, located downgradient of the mine disposal site, was 0.190 mg/L in September 1998 and 0.0115 mg/L in MW-207A in August 1997.

DEP Response

DEP disagrees that the molybdenum detected in monitoring wells MW-1 and MW-207A is a result of residual waste disposal operations at the Hatfield's Ferry Power Station CCB Landfill. Monitoring wells MW-1 and MW-207A are located downgradient from abandoned surface mines, including the former Hartley mine which is primarily filled with coal refuse,

on which the landfill was constructed. EIP's claim is based on a statistically insignificant, and possibly anomalous, single data point in each well.

36. Damage Case Claim – Page 178

Given that the groundwater at MW-206A and MW-207A has been contaminated with ash constituents, there is no unaffected upgradient background well with which to compare downgradient landfill well results.

DEP Response

The monitoring results at the referenced wells are indicative of impacts attributable to abandoned surface mining and the resultant acid mine drainage that predated ash disposal. This is consistent with the conclusion drawn in the groundwater assessment of the facility that was conducted in the 1990's. Monitoring wells MW-200A and MW-207A have been replaced by monitoring wells MW-212A, MW-213A and MW-215A in accordance with the May 4, 2009, modification to Solid Waste Management Permit No. 300558.

37.Damage Case Claim – Page 178

MW-206A and MW-207A are situated where groundwater flows radially to the west, north, and east from the crest of the landfill property, in addition to being downgradient from a portion of the strip mine were ash was placed. Neither the easterly nor westerly groundwater flow component is completely monitored.

DEP Response

Monitoring wells MW-206A and MW-207A have been abandoned and replaced with wells MW-212A, MW-213A, and MW-215A. Groundwater elevation data maps from the replacement wells have been reviewed and approved by DEP. All groundwater flow regimens are properly monitored in accordance with the Residual Waste Regulations.

38. Damage Case Claim – Page 178-179

As a condition of the Phase 3 landfill expansion, six additional aquifer monitoring wells, were installed downgradient of a new lined leachate storage impoundment northeast of Phases 1 and 2, near the landfill haul road, and south of Phase 3 near the former Hartley Mine coal ash disposal area.

DEP Response

This statement is correct.

39. Damage Case Claim – Page 179

None of the new wells were located east or west of Phase 3 in the indicated direction of groundwater flow that mimics the ground surface, according to Allegheny. A summary of the data collected in December 2009 for the new wells shows that the highest contamination in the new wells is downgradient of Phase 1 and 2 of the landfill and the new lined leachate collection sump for Phase 3 as follows:" [note: a data table is provided showing analytical results from December 2009 for wells MW-212A, MW-213A, MW-215A, MW-216A, MW-217A and MW-218A along with an undefined standard for aluminum, arsenic, boron, calcium, chromium, magnesium, manganese, molybdenum, sulfate, TDS and alkalinity].

DEP Response

This statement is vague and misleading. The siting of the monitoring wells to which this claim refers was based on a comprehensive analysis of surficial and subsurface structural geologic data at the site. In addition, several of these wells were located to meet the regulatory requirements of proper upgradient and downgradient monitoring around the new leachate storage impoundment as opposed to additional landfill wells. Several of the wells around the new leachate storage impoundment are screened in mine spoil and their water quality correspondingly reflects mining-related impacts.

The data table referenced in this claim is irrelevant because it only lists data for one sampling event (December 2009). No attempt is made to plot or analyze the trends over time and the undefined standards lack measurement units for each parameter.

40. Damage Case Claim – Page 179

Samples collected from well MW-213A, downgradient of coal ash in the Hartley Mine and more than a thousand yards south of Phases 1 and 2 of the landfill and from MW-217A, and MW-218A, more than 500 yards east of waste placement areas in the landfill, show that arsenic concentrations well above the MCL have been measured beyond the site in downgradient groundwater since at least 2005.

DEP Response

This statement is misleading. The claim that "multiple samples" showed arsenic in well MW-213A is inconsistent with the contents of the data table. There is 'one' sampling event from the referenced well in which arsenic is reported. This cannot be the basis for a trend. Allegheny Energy conducted an extensive groundwater assessment and documented that the abandoned surface mining on the site and surrounding area had already negatively impacted groundwater Also, MW-213A is an upgradient well for the disposal area and MW-217A and MW-218A are downgradient wells for the new leachate storage impoundment. Groundwater wells M -217A and MW-218A were constructed to monitor the first water-bearing zone beneath the new Phase 3 Leachate Storage Impoundment. These wells were screened in the mine spoil, and the resulting water quality reflects acid mine drainage from the surface mining that occurred at the site.

41. Damage Case Claim – Page 179

Total arsenic concentrations exceeded the MCL in 19 of 19 sampling events from 2005 to 2010 for these three wells; dissolved arsenic concentrations in MW-213A exceeded the MCL 17 of 19 events; and dissolved arsenic in MW-217A and MW-218A exceeded the MCL 19 of 19 events. The range of arsenic concentrations in these wells from September 15, 2005 to the March 3, 2010 sampling event is as follows:" [note: a data table is provided showing a range of arsenic results, both total and dissolved, for wells MW-213A, MW-217A and MW-218A along with the MCL standard].

DEP Response

DEP disagrees that the arsenic detected in the cited monitoring wells is a result of residual waste disposal operations at the Hatfield's Ferry Power Station CCB Landfill. The original disposal area at the site was constructed on an abandoned, unreclaimed strip mine that operated prior to adoption of the Residual Waste Regulations in 1992. Pursuant to those regulations, Allegheny Energy conducted a comprehensive groundwater and surface water assessment and investigation at the disposal site. Accordingly, new groundwater wells were installed and updated surface water sampling points were established. The assessment concluded that the past unreclaimed surface mining and resultant acid mine drainage (and not ash disposal) within the watershed of the landfill had negatively impacted the aquifers beneath the landfill. In addition, the referenced monitoring wells are partly screened in old mine spoil and well MW-214A is an upgradient well that documents an off-site source for arsenic.

42. Damage Case Claim – Page 179

The concentrations of CCW parameters in MW-217A and MW-218A and their locations show an easterly groundwater flow direction beyond the landfill a flow direction that was not monitored until 2005. This easterly flow is still not monitored for the newest phase of the landfill (Phase 3). Further, there are no wells downgradient from MW-217A and MW-218A defining the horizontal extent of the contamination towards the Monongahela River from Phases 1 and 2.

DEP Response

The original disposal area at the Hatfield's Ferry Power Station CCB Landfill was constructed on an abandoned, unreclaimed strip mine from the pre-regulation era. In response to the new Residual Waste Regulations promulgated in 1992, Allegheny Energy conducted a comprehensive groundwater and surface water assessment and investigation at the disposal site. To be in compliance with these regulations, new groundwater wells were installed and updated surface water sampling points were established. The assessment concluded that the past unreclaimed surface mining and the resultant acid mine drainage (not ash disposal) within the watershed of the landfill had negatively impacted the groundwater beneath the landfill.

Wells MW-216A, MW-217A, and MW-218A monitor the new Leachate Storage Impoundment (LSI) and are designed to monitor the groundwater zone associated with the impoundment to provide early detection for this specific structure. Surface monitoring point SP-1, located downgradient of wells MW-217A and MW-218A, also monitors the new LSI. The surface elevation of SP-1 is close to the well depth elevations for MW-217A and MW-218A.

43. Damage Case Claim – Page 179-180

There are 7 private drinking water wells and one public drinking water well within a two-mile radius of the Hatfield's Ferry CCW disposal areas. Well log locations were obtained from Pennsylvania's Groundwater Database (PAGWIS). This data set is updated on a county by county basis once every six months and only includes well records with latitude and longitude coordinates assigned to the well. Because many private wells in Pennsylvania may be registered with a township but not necessarily the Commonwealth, this data is likely incomplete.

DEP Response

Pursuant to the Residual Waste Regulations, Allegheny Energy was required to identify public and private water supplies within a one-quarter mile radius of the perimeter of the disposal area. Based on the private water supply survey conducted by GAI/Allegheny Energy in 2005, three individual property owners indicated they have private water supplies (three wells and one spring) on their property. Public water supply information provided by the DEP Bureau of Water Supply indicated that Masontown Borough has a surface water intake along the Monongahela River approximately one-quarter mile away from the landfill. The intake water is treated prior to being distributed to residents.

44. Damage Case Claim – Page 180

Violations of NPDES permit limits were first cited in November 2003, exceedances of the PA WQC for boron have been recorded since at least 2001, and exceedances of MCLs and health advisories in groundwater have been measured from at least as far back as April 2001.

DEP Response

This claim is unsubstantiated. The report does not cite any specific data values for any NPDES violations. The Hatfield's Ferry Power Station CCB Landfill is permitted, operated, and monitored in accordance with all State and Federal requirements applicable to NPDES permitting. All compliance and monitoring records are provided to the DEP and the site is in compliance. The reference to MCLs is irrelevant in the context of permitted industrial waste discharges as they would apply to instream concentrations at a drinking water source. Health advisories are estimates of acceptable drinking water levels for chemical substances

based on health effects information. Health advisories are not legally enforceable Federal standards, but serve as technical guidance to assist Federal, State and local officials.

45. Damage Case Claim – Page 180

PADEP entered into a Consent Order and Agreement (COA) with Allegheny Energy in March 2008 because of NPDES permit violations. Specifically, from November 2003 to August 2007, Allegheny Energy violated permit effluents limits for aluminum, manganese, and thallium in its discharge to an unnamed tributary of Little Whiteley Creek from its wetland treatment system. The COA required that Allegheny Energy submit a corrective action plan within 180 days to achieve permit limitations in all affected outfalls. The COA also allows Allegheny Energy two years to implement corrective actions for the wetland discharges once the proposed corrective action is approved or once the Phase 3 landfill expansion is issued, whichever is later.

DEP Response

This statement is generally correct. Pursuant to the COA executed between Allegheny Energy and DEP, a corrective action plan was submitted on September 24, 2008, and is currently being implemented. The thallium limit violations were attributed to the proximity of the effluent limit to the method detection limit (MDL) of the analytical procedure. Allegheny Energy has subsequently employed a more sensitive analytical method with a lower MDL. There have been no further thallium limit violations since that time.

46. Damage Case Claim – Page 180-181

PADEP received a corrective action plan from Allegheny Energy on September 24, 2008, which stated that the permit exceedances were due to leachate overflows from the sedimentation basin due to force main malfunctions, stormwater containing fly ash during heavy rains, and the inherent "analytical result variance" of the thallium analytical method itself. None of the corrective actions were blamed on the inability of the wetland treatment system to treat CCW. The substance and effectiveness of Allegheny Energy's measures to stop continued violations of NPDES permit limits are still unclear.

DEP Response

The submitted corrective action plan is currently being implemented.

47. Damage Case Claim – Page 181

Fly ash, bottom ash, pyrites, wastewater treatment sludges, pond sediments, refractory materials, and sandblasting media from Hatfield's Ferry Power Plant. In addition, flue gas desulfurization (FGD) sludges from the plant have been disposed in the landfill beginning in approximately 2007.

DEP Response

The list of wastes approved in the permit is generally correct. FGD wastes were not produced at the station until the scrubbers were installed in 2009 and were not disposed at the Hatfield's Ferry Power Plant CCB Landfill prior to the certification of the construction of the Step 1 portion of the Phase 3 expansion area in January 2011.

48. Damage Case Claim – Page 181

The Hatfield's Ferry plant began operating in 1969, and PADEP issued the first CCW landfill permit for the site on May 7, 1984. The landfill permit authorized the disposal of CCW within a 40-acre unlined area designated as Phase 1 and Phase 2. Allegheny Energy also disposed of CCW in the Hartley strip mine, located on adjoining property to the south.

CCW Landfill Phases 1 and 2 were constructed with a leachate collection system to gather water infiltrating through the CCW and an under-drain system to remove groundwater from the coal ash. The underdrain system was designed to "collect and segregate springs and seep flow from the former strip mine area from the CCB (coal combustion byproduct) leachate." Leachate and shallow groundwater collected from Phases 1 and 2 are discharged into a tributary to Little Whiteley Creek after treatment in the wetland treatment system which consists of one equalization basin, four geosynthetic clay lined wetland cells, five rock drain cells, and a sedimentation pond. In 1998, the PADEP re-permitted the site, expanding it to 187 acres, allowing additional waste streams to be disposed there, expanding the monitoring system, and authorizing operation of the landfill through March 2008."

DEP Response

The statement is generally correct, with the clarification that the sedimentation pond into which the wetland treatment system discharges is not considered to be a component of the wetland treatment system.

49. Damage Case Claim – Page 181

The Hatfield's Ferry Plant added FGD units (scrubbers) in 2007, resulting in 1.8 million tons of CCW being sent annually to the landfill. PADEP approved the Phase 3 expansion on May 4, 2009 with a design that includes a geocomposite liner for the expansion. The footprint of Phase 3 is 110 acres, almost 17 acres of which will overlie unlined portions of Phase 1 and 2.

DEP Response

This statement is incorrect. The scrubbers did not come on-line until the fall of 2009. FGD disposal at the Hatfield's Ferry Power Plant CCB Landfill did not occur prior to the certification of the construction of the double-lined, Step 1 portion of the Phase 3 expansion area in January 2011.

50. Damage Case Claim – Page 181

Four aquifers have been identified at the landfill: a mine spoil aquifer located to the south of Phases 1 and 2; a rind aquifer consisting of weathered bedrock; a deeper Uniontown Sandstone aquifer; and an even deeper Benwood Limestone aquifer. Groundwater flow directions within the mine spoil and rind aquifers are generally the same direction as the ground surface topography – discharging to the west, north, and east along the top of bedrock and along a covered stream valley that discharges to the Monongahela River south Phases 1 and 2. Groundwater within the Uniontown and Benwood formations generally flows to the northwest towards bedrock outcrop areas and eventually mixes with mine spoil and rind aquifer groundwater. Shallow groundwater flow in the bedrock is due to natural stress fractures in the bedrock and from secondary fractures from strip mining. The groundwater flow rates are reportedly very high, especially near stream valleys and bedrock outcrop areas – with maximum seepage velocities of 149 feet per ear for the mine spoil aquifer, 735 feet per year for the rind aquifer, 735 feet per year for the Uniontown Sandstone aquifer, and 137 feet per year for the Benwood Limestone aquifer. The landfill site is a recharge area for each underlying aquifer.

DEP Response

These statements are generally correct.

51. Damage Case Claim – Page 182

Four streams around the landfill perimeter originate from shallow groundwater that emanates at springs or wetlands. Those streams are located to the north, northeast, southeast, and southwest - indicating that groundwater flow emanates radically from the landfill that is located on higher ground elevations. All of the streams are perennial streams classified as Warm Water Fisheries (WWF) under PADEP regulations and have a protected use for aquatic life.

DEP Response

The four referenced unnamed tributaries are defined as WWF pursuant to 25 Pa. Code Chapter 93. Their location has no specific relation to the flow of groundwater. The September 2001 GAI Consultants' Benthic Macroinvertebrate and Habitat Survey footnoted in the EIP report only mentions that the tributaries are all headwater streams whose upper

watersheds extend into the landfill area. The report does not indicate their locations or origins are in any way tied to a radial flow of groundwater.

Appendix A

Historical Arsenic Data

Historical Arsenic Data collected from all permitted monitoring points around Little Blue Run Impoundment

Monitoring Points	2006				2007				2008				2009				2010				2011	
	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2
Monitoring Wells																						
MW-1	11	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	33	7.9	<4.6	<4.6	<4.6	12.1	19.0
MW-2R	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	6	1	<4.6	<4.6	<4.6	1.0	2.4
MW-3A	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	1	<10	<4.6	<4.6	<4.6	<1	<1
MW-3B	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	6	1.8	<4.6	<4.6	<4.6	3.0	2.3
MW-4A	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<9	<10	<10	N/A	5.1	<4.6	<4.6	<4.6	3.6	3.5
MW-4B	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<1	<1	<4.6	<4.6	<4.6	<1	<1
MW-5R	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	5	1.6	<4.6	<4.6	<4.6	2.4	3.0
MW-6	12	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	2	2.	<4.6	<4.6	<4.6	1.9	2.0
MW-7A	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	3	2.4	<4.6	<4.6	<4.6	2.5	2.6
MW-7B	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	2	<1	<4.6	<4.6	<4.6	<1	<1
MW-8	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<1	<1	<4.6	<4.6	<4.6	<1	<1
MW-9BR	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	3	<1	<4.6	<4.6	<4.6	1.9	1.2
MW-10R/R2	15	<10	<10	<10	N/A	N/A	2.46	16	<10	<10	<10	<10	<10	<10	<10	5	20	<4.6	<4.6	<4.6	2.3	1.7
MW-11A	25	<10	<10	<10	<10	<10	<10	<10	N/A	<10	<10	<10	<10	<10	<10	11	6	<4.6	<4.6	<4.6	9.0	7.3
MW-11B	14	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<1	<1	<4.6	<4.6	<4.6	<1	<1
MW-12B	13	<10	<10	<10	<10	<10	<10	12	<10	<10	<10	<10	<10	<10	<10	4	1.8	<4.6	<4.6	<4.6	2.6	1.6
MW-12C	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	4	1.4	<4.6	<4.6	11.9	2.4	1.2
MW-13A	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	16	30	<4.6	<4.6	<4.6	8.9	14.0
MW-13B	11	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	16	25	<4.6	<4.6	<4.6	9.7	10.0
MW-14AR	23	12	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	3	2	<4.6	<4.6	<4.6	2.4	2.1
MW-14BR	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	12	<10	<1	<1	<4.6	<4.6	6.24	<1	<1
MW-15A	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	8	12	<4.6	<4.6	<4.6	5.2	3.6
MW-15B	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	26	8.4	<4.6	<4.6	<4.6	11.4	13.0
MW-16A	28	16	<10	25	15	15	29.8	83.6	33	<10	<10	<10	23.9	**<10**	**<10**	17	23	24.4	15.9	5.59	20.8	14.0
MW-16B	<10	<10	<10	<10	<10	<10	<10	<2.5	<10	<10	<10	<10	<10	<10	<10	3	36	<4.6	<4.6	<4.6	2.2	1.8
MW-16C	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	13	17	8.1	<4.6	<4.6	7.1	5.7
MW-17A	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	8	6.9	<4.6	<4.6	<4.6	3.0	2.9
MW-17B	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	7	7.8	<4.6	<4.6	<4.6	2.0	2.0
MW-18A	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<1	<1	<4.6	<4.6	<4.6	<1	1.1
MW-18B	<10	<10	<10	<10	<10	<10	<10	12	<10	<10	<10	<10	<10	<10	<10	3	<1	<4.6	<4.6	<4.6	<1	1.3
MW-19A	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<1	<1	<4.6	<4.6	<4.6	<1	<1
MW-19B	<10	14	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<1	<1	<4.6	<4.6	<4.6	<1	<1
MW-20A	14	24	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	2	2.9	<4.6	<4.6	5.67	2.8	1.9
MW-20B	21	33	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	23	7.5	<4.6	<4.6	<4.6	10.7	11.0
MW-21A	Not Sampled; Dry Well																					
MW-21B	<10	<10	14	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	4	<1	<4.6	<4.6	<4.6	1.5	1.7
MW-22B	14	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	2	<1	<4.6	<4.6	<4.6	1.6	<1
MW-23A	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	4	1.6	<4.6	<4.6	<4.6	2.7	2.5
MW-23B	15	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	18	7.4	<4.6	<4.6	<4.6	8.6	15.0
MW-24	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<1	1.2	<4.6	<4.6	<4.6	2.1	1.2
MW-25	14.2	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	3	<1	<4.6	<4.6	<4.6	<1	<1
MW-26	18	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<1	<1	<4.6	<4.6	<4.6	<1	<1

Notes: Data provided by Civil and Environmental Consultants, Inc.
Results are for total As concentrations reported in µg/L

Legend: As concentrations > MCL
Background monitoring point
Supernatant impacted monitoring point
Brine-dominated well
Brine/supernatant affected monitoring point

Historical Arsenic Data collected from all permitted monitoring points around the Little Blue Run Impoundment

Monitoring Points	2006				2007				2008				2009				2010				2011	
	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2
Domestic Wells																						
DWQ-3	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	2.9	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	2.9	4.2	<2.5	3.5	N/A	N/A	<4.6	1.3	1.1
DWQ-69	<2.5	<2.5	<2.5	<2.5	N/A	N/A	N/A	<10	<10	<10	<10	<10	<10	<10	<10	6	<10	<4.6	<4.6	<4.6	<1	<1
DWQ-04-1	<10	<10	<10	<10	<10	<10	<10	<10	<10	11.5	<10	<10	<10	<10	<10	2	<10	<4.6	<4.6	<4.6	<1	<1
DWQ-04-2	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<1	<1	<4.6	<4.6	<4.6	<1	<1
DW-72	2.6	4.1	4.5	<5.1	4.99	7.9	4.2	4.5	6.1	9.2	8.2	6	6	5.5	6.2	3.3	<2.5	<2.5	5.3	3.5	<2.5	<2.5
DW-74	<25	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5
Stipec Well	N/A	N/A	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	N/A	N/A	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5
Springs																						
S-8A	<10	12	Dry	Dry	<10	Dry	Dry	<10	<10	<10	Dry	Dry	<10	Dry	Dry	Dry	<1	<4.6	Dry	Dry	<1	Dry
S-9A	<10	19	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	4	2.2	<4.6	<4.6	<4.6	<1	2.1
S-15	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	4	4.9	<4.6	<4.6	<4.6	1.7	2.4
S-17	<10	16	<10	<10	<10	<10	13	<10	<10	<10	<10	<10	<10	<10	<10	16	1.6	<4.6	<4.6	<4.6	7.4	11.0
S-21	<10	18	<10	<10	<10	<10	<10	<10	<10	<10	N/A	N/A	<10	<10	<10	<1	<1	<4.6	Dry	6.56	<1	3.1
S-23	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<1	<1	<4.6	<4.6	7.03	<1	<1
S-28	Dry	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<1	<1	<4.6	<4.6	<4.6	<1	<1
S-29	Dry	Dry	Dry	Dry	Dry	Dry	Dry	Dry	<10	Dry	Dry	Dry	<10	Dry	Dry	Dry	<1	Dry	Dry	Dry	<1	Dry
S-30	<10	NS	NS	<10	<10	<10	<10	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	3.1	<2.5	2.9	<2.5	<2.5	<2.5	<2.5
S-31	Dry	Dry	Dry	Dry	Dry	<10	<10	<2.5	<2.5	<2.5	<2.5	11	<2.5	14	<2.5	11	<2.5	<2.5	3.4	<2.5	<2.5	<2.5
S-32	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	N/A	<10	<10	<10	N/A	<1	<1	<4.6	Dry	<4.6	<1	<1
S-33	<10	<10	<10	<10	<10	<10	NS	<10	<10	<10	N/A	N/A	<10	<10	N/A	<1	<1	<4.6	Dry	<4.6	<1	<1
S-34	<10	<10	<10	<10	<10	<10	NS	<10	<10	<10	N/A	<10	<10	<10	N/A	<1	<1	<4.6	Dry	<4.6	<1	<1
S-35	<10	<10	<10	<10	<10	<10	<0.01	<10	<10	<10	N/A	<10	<10	<10	<10	<1	<1	<4.6	Dry	<4.6	<1	<1
Stipec	N/A	N/A	<2.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	Dry	N/A	N/A	N/A
Surface Water																						
SW-1	<10	Dry	Dry	Dry	<0.01	Dry	Dry	Dry	<10	Dry	Dry	Dry	<0.01	Dry	Dry	Dry	Dry	<4.6	Dry	Dry	<1	Dry
SW-3	<10	43	10	10	<10	<10	13	63.1	<10	<10	<10	<10	<10	<10	<10	6	3.5	10.6	<4.6	<4.6	16.3	10.0
SW-4	<10	43	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	5	3.6	<4.6	<4.6	<4.6	<1	2.0
SW-5	<10	<10	<10	<10	<10	<10	23	48.9	<10	<10	<10	<10	<10	11	<10	24	28	14.4	21.4	<4.6	17.1	12
SW-6	<10	11	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	5	8.4	<4.6	<4.6	N/A	N/A	N/A
SW-7	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	<10	<10	<10	<10	<10	<10	<10	25	23	11.3	17.9	46.9	17.4	11.0
S-10MC	<10	14	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	1	<1	<4.6	<4.6	6.2	<1	<1
S-11MC	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<1	<1	<4.6	<4.6	<4.6	<1	<1
S-16MC	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	2	<1	<4.6	<4.6	<4.6	<1	<1

Notes: Data provided by Civil and Environmental Consultants, Inc.
Results are for total As concentrations reported in µg/L

Legend: As concentrations > MCL
Background monitoring point
Supernatant impacted monitoring point
Brine-dominated well
Brine/supernatant affected monitoring point

Appendix B

Private Well Information

Reed Well Summary

Summary of John Reed's Alleged Contaminated Well

As background information, John Reed bought a piece of property with a partially constructed home that came with a preexisting ground water well for drinking consumption. The well is next to the home and both are located approximately 2100 feet south west (up gradient) to the closest part of the impoundment. It is not known if Mr. Reed ever occupied the dwelling.

On October 2, 2008, the Reeds requested that FirstEnergy collect and analyze a sample from her son's well. FirstEnergy's consultant, Civil and Environmental Consultants (CEC) collected the sample. The initial results showed an arsenic level of 13 µg/l total ("unfiltered"), and the sample was turbid. **The drinking water standard is 10 µg/l.**

The following year, on March 17, 2009, CEC collected another groundwater sample from John Reed's well. The results came back showing arsenic at 2.5 µg/l (total) and <2.5 µg/l (dissolved)(non-detect). Both results are below the drinking water standard.

On April 14, 2009, CEC sent a letter to John Reed summarizing the results.

"It is CEC's opinion that the elevated arsenic concentration identified during the October 2008 sampling event is likely attributable to the presence of sediment (soil particles) in this water sample. The water sample collection in October 2008 was noted to have high turbidity, which is a measure of the degree to which water loses its transparency due to the presence of suspended solids. The more total suspended solids in the water sample, the higher the turbidity and the cloudier the water appears. Because the water sample collected in October 2008 was analyzed for only total metals, both the amount of arsenic dissolved in the groundwater and contained in the soil particles was reported."

It was CEC's opinion (with which DEP concurs) that the one elevated arsenic concentration detected in October 2008 can be attributed to naturally occurring arsenic found in the soil and particulate matter in the well.

Around the beginning of May 2009, DEP was contacted by Barbara Reed and asked to collect and analyze another groundwater sample from her son's well. **A field visit was arranged and the requested sample was collected on May 15, 2009.** The sample was collected from the same well as CEC and analyzed for general chemistry, total and dissolved metals. DEP's results came back showing arsenic **(<3.0 µg/l total and <3.0 µg/l dissolved)** both non detect. The results were sent to Barbara Reed.

It is DEP's opinion that, based on all the data collected from John Reed's well, the geology and location of his well in the watershed, the impoundment is not influencing his groundwater well and arsenic is not a constituent in Mr. Reed's well above the safe drinking water standard.

ADDITIONAL FACT

FirstEnergy and DEP regularly sample a private water well owned by Mr. Stipec whose residence is located approximately 900 feet northwest of John Reed's well and approximately the same linear distance from the impoundment as John Reed's well. All the data ever collected from the Stipec well has been non detect for arsenic and all other primary drinking water standards.

Appendix C

Form 14R, Groundwater and Surface Water Monitoring Parameters

2540-PM-BWM0373 6/2005

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WASTE MANAGEMENT

Date Prepared/Revised
DEP USE ONLY
Date Received

FORM 14R
RESIDUAL WASTE LANDFILLS AND DISPOSAL IMPOUNDMENTS
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

This form must be fully and accurately completed. All required information must be typed or legibly printed in the spaces provided. If additional space is necessary, identify each attached sheet as Form 14R, reference the item number and identify the date prepared. The "date prepared/revised" on any attached sheets needs to match the "date prepared/revised" on this page.

General References: Section 288.254, 289.264

SECTION A. SITE IDENTIFIER

Applicant/permittee:

Site Name:

Facility ID (as issued by DEP):

SECTION B. FACILITY INFORMATION

Monitoring wells must be designed and constructed in accordance with Department standards. **INDICATE THE LATITUDE AND LONGITUDE TO THE NEAREST ONE TENTH OF A SECOND (DDº MM' SS.S").**

Monitoring Point Number: _____ ☐ Well ☐ Spring ☐ Stream ☐ Other

☐ Upgradient/Upstream ☐ Downgradient/Downstream

Location: County _____ Municipality: _____

Sampling Point: Latitude: ___º ____' ____.____" Longitude: ____º _____'_____.____"

Depth to Water Level: _____ ft. Measured from: ☐ Land Surface ☐ TOC

Casing Stick Up: _____ ft. Elevation of Water Level: _____ ft./MSL

Sampling Depth: _____ ft. Volume of Water Column: _____ gal.

Total Well Depth: _____ ft. Sampling Method: ☐ Pumped ☐ Bailed ☐ Grab

Well Purged: ☐ Yes ☐ No Well Volumes Purged: _____

Sample Field Filtered (must be 0.45 micron)? ☐ Yes ☐ No

Spring Flow Rate: _____ GPM

Sample Date (mm/dd/yy): _____ Sample Collection Time: _____

Sample Collector's Name: _____

Sample Collector's Affiliation: _____

Laboratory(ies) Performing Analysis: _____

Were any holding times exceeded? ☐ Yes ☐ No. If yes, please explain in comments field.

Lab Certification Number(s): _____

Lab Sample Number(s): _____ Final Lab Analysis Completion Date: _____

Name/Affiliation of Person who Filled out Form _____

Comments: _____

I.D. No. _____
Monitoring Point No. _____
Sample Date _____

FORM 14R
QUARTERLY AND ANNUAL WATER QUALITY ANALYSES

ANALYTES

1-Q. Inorganics (Enter all data in mg/l except as noted)

ANALYTE	VALUE†	ANALYSIS METHOD NUMBER
Ammonia-Nitrogen		
Bicarbonate (as $CaCo_3$)		
Calcium, Total		
Calcium, Dissolved		
Chemical Oxygen Demand		
Chloride		
Fluoride		
Iron (µg/l), Total		
Iron (µg/l), Dissolved		
Magnesium, Total		
Magnesium, Dissolved		
Manganese (µg/l), Total		
Manganese (µg/l), Dissolved		
Nitrate-Nitrogen		
pH (standard units), Field		
pH (standard units), Laboratory		
Potassium, Total		
Potassium, Dissolved		
Sodium, Total		
Sodium, Dissolved		
Specific Conductance (µmhos/cm), Field		
Specific Conductance (µmhos/cm), Laboratory		
Sulfate		
Total Alkalinity		
Total Dissolved Solids		
Total Organic Carbon		
Turbidity (NTU)		

† Please indicate detection limit if analyte is not detected.

I.D. No. _____
Monitoring Point No. _____
Sample Date _____

FORM 14R
ANNUAL WATER QUALITY ANALYSES

1-A. Organics (Enter all data in µg/l)

ANALYTE	VALUE†	ANALYSIS METHOD NUMBER
Benzene		
1,2-Dibromoethane		
1,1-Dichloroethane		
1,1-Dichloroethene		
1,2-Dichloroethane		
Cis-1,2-Dichloroethene		
Trans-1,2-Dichloroethene		
Ethyl Benzene		
Methylene chloride		
Tetrachloroethene		
Toluene		
1,1,1,-Trichloroethane		
Trichloroethene		
Vinyl chloride		
Xylene		

† Please indicate detection limit if analyte is not detected.

I.D. No. _____
Monitoring Point No. _____
Sample Date _____

FORM 14R
ANNUAL WATER QUALITY ANALYSES

2-A. Metals (Enter all data in µg/l) If initial background analyses or four consecutive annual analyses show essentially identical (within 5%) dissolved and total analyses, dissolved analyses may not be required, subject to written DEP approval.

ANALYTE	VALUE†	ANALYSIS METHOD NUMBER
Arsenic, Total		
Arsenic, Dissolved		
Barium, Total		
Barium, Dissolved		
Cadmium, Total		
Cadmium, Dissolved		
Chromium, Total		
Chromium, Dissolved		
Copper, Total		
Copper, Dissolved		
Lead, Total		
Lead, Dissolved		
Mercury, Total		
Mercury, Dissolved		
Selenium, Total		
Selenium, Dissolved		
Silver, Total		
Silver, Dissolved		
Zinc, Total		
Zinc, Dissolved		
, Total		
, Dissolved		
, Total		
, Dissolved		
, Total		
, Dissolved		
, Total		
, Dissolved		

† Please indicate detection limit if analyte is not detected.