

**Commonwealth of Pennsylvania
Department of Environmental Protection
Southwest Region**

**Review of the Environmental Integrity
Project and Earthjustice Report:**

Out of Control: Mounting Damages From Coal Ash Waste Sites

Thirty-one New Damage Cases of Contamination
From Improperly Disposed Coal Combustion Waste Sites

February 24, 2010

**Mitchell Power Station
Phillips Power Station/Landfill
Seward Generating Station
Fern Valley Disposal Site**

**October 13, 2010
Revised October 27, 2011**

Executive Summary

This report is in response to the document prepared by the Environmental Integrity Project and Earthjustice (Out of Control: Mounting Damages From Coal Ash Waste Sites) dated February 24, 2010. Specifically, this report addresses the four facilities located in the Southwest Region of the Department of Environmental Protection (DEP): Mitchell Power Station, Phillips Power Station/Landfill, Seward Generating Station, and Fern Valley Disposal Site.

DEP reviewed and responded to each specific allegation point by point for each of the above-referenced facilities. 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 basis.) 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 sites and their groundwater data and impacts.

Based on the review of the information in the report for each of the Southwest Region's facilities, DEP concludes that the allegations regarding groundwater and surface water contamination by Primary MCL's 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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I. Mitchell Power Station, Allegheny Energy, Washington County

1. Damage Case Claim – Page 65

In 1998, Allegheny Power initiated groundwater investigations at its Mitchell Power Plant CCW wastewater lagoons with the expectation that no impacts would be found and that no ongoing monitoring would be required.

DEP Response

In 1998, Allegheny Power initiated a groundwater investigation pursuant to the 1992 Residual Waste Regulations which required that a groundwater monitoring system be installed at the facility. This requirement applied regardless of the groundwater quality documented in the investigation.

2. Damage Case Claim - Page 65

However, the investigation found degradation of groundwater downgradient from the two lagoons by multiple parameters. Most significantly, concentrations of arsenic were measured at twice the federal primary MCL and concentrations of boron reached more than twice the EPA Child Health Advisory of 3.0 mg/l.

DEP Response

This statement is unsupported. The EIP Report does not provide a list of the monitoring well(s), sample dates, or analytical data that show arsenic levels were at twice the Federal Primary MCL of 10 µg/L or at twice the EPA Child Health Advisory of 3,000 µg/L (3.0 mg/L) for boron. DEP notes that EPA Health Advisories are non-enforceable, guidance-based concentrations based on non-cancer health effects for different exposures in drinking water sources, which cannot serve as the basis for regulatory actions. Comparisons regarding boron concentrations in groundwater at the site to EPA Health Advisories are inappropriate.

The Department's review of the groundwater monitoring data indicates that during the fourth quarter of 1999 arsenic was detected at 58.1 µg/L in downgradient well MW-6. DEP deemed this result to be an anomalous reading on the basis that 30 of the following 38 quarters of sampling at this well show arsenic levels below the current MCL of 10 µg/L. The other 8 values, obtained between 1999 and 2002, ranged between 10.2 and 40.1 µg/L. During the time when the other 8 values were obtained, the EPA Drinking Water Standard for arsenic was 50 µg/L. In regard to boron, the highest reading was 6.4 mg/L in a downgradient well MW-5 during the third quarter of 2003. Since that time, there has been a steadily decreasing trend in boron down to a level of 4.0 mg/L for second quarter 2011. The most stringent Pennsylvania Statewide Health Standard for boron is 6.0 mg/L. Boron is not listed on the National Primary Drinking Water List and is therefore not regulated by EPA.

3. Damage Case Claim – Page 65

Groundwater monitoring data for the year 2007 shows that maximum levels of arsenic and boron are twice as high as the maximum levels found in 1998.

DEP Response

This claim is unsupported in the report. It is not stated to which monitoring wells or quarters of 2007 this statement refers. DEP's review of the data submitted in 1999 (the first year of quarterly data submitted) and 2007 confirmed the following:

- The arsenic level in upgradient well MW-4 was 5.3 µg/L during the third quarter of 1999 and rose to 12.4 µg/L the second quarter of 2007.
- The corresponding downgradient well (MW-6) had an arsenic level of 58.1 µg/L in the fourth quarter of 1999 that decreased to a low of 2.3 µg/L during the third quarter of 2007.
- The highest arsenic level in 1999 was 58.1 µg/L in MW-6 and the highest arsenic level in 2007 was detected in downgradient monitoring well MW-5 at 16.8 µg/L.
- The highest boron level in upgradient monitoring well MW-4 was 0.16 mg/L during the fourth quarter of 1999.
- The highest boron level in MW-4 for third quarter of 2007 was 0.30 mg/L.

DEP's review of the historical groundwater data submitted by the company as required by the permit observed no upward trends in arsenic or boron.

4. Damage Case Claim – Page 65

Determination

Demonstrated damage to groundwater moving off-site toward the Monongahela River.

DEP Response

DEP disagrees with this statement due to the lack of supporting data presented in the Report.

5. Damage Case Claim – Page 65

Test of Proof

In 1997, Allegheny Power initiated preliminary groundwater investigations in the vicinity of the two CCW lagoons in response to a Pennsylvania Department of Environmental Protection (PADEP) letter requiring submission of the groundwater monitoring plan. The intent of the preliminary investigations was to demonstrate that groundwater monitoring was not necessary. However, the initial groundwater investigation found that groundwater was being degraded by the impoundments.

DEP Response

Allegheny Power initiated a groundwater investigation pursuant to the 1992 Residual Waste Regulations which required that a groundwater monitoring system be installed at the facility. This requirement applied regardless of the groundwater quality documented in the investigation. The comprehensive drilling program and investigation demonstrated that groundwater at the station had been affected by deep mining of the Pittsburgh Coal seam upgradient of the site. Elevated levels of secondary parameters such as iron and manganese and sporadic low level hits of the primary parameter arsenic were detected which can be attributed to the acid mine drainage (AMD) created by past mining of the Pittsburgh Coal seam. Low levels of boron were also detected and can be attributed to AMD.

6. Damage Case Claim – Page 65

Arsenic was below the detection limit in upgradient wells, but above the primary MCL in the two downgradient wells of Lagoon #2 (0.011 and 0.013 mg/L).

DEP Response

The monitoring wells and dates from which these arsenic values were taken are not listed. Over a 12 year monitoring period at the station, these are the only numerical values provided for arsenic in the Report. There has been no upward trend documented between 1999 and 2011.

7. Damage Case Claim – Page 65

Boron was detected at 1.9 mg/L and 3.7 mg/L at the two downgradient wells of Lagoon #2.

DEP Response

Over a 12-year period from 1999 to 2011, these two values for boron are the only data points provided in the Report. Over this time period, nearly 230 groundwater samples were collected from the facility's groundwater monitoring system and analyzed. DEP acknowledges that boron is present in the groundwater beneath the facility; which is attributable to past mining (acid mine drainage) of the Pittsburgh Coal seam upgradient of the facility. Boron is not regulated by EPA under the National Primary Drinking Water Regulations.

8. Damage Case Claim – Page 65

Elevated levels of molybdenum and nickel were detected in some downgradient wells.

DEP Response

This statement is correct. The average level of molybdenum of nearly 230 samples in an upgradient or downgradient well was approximately 25 µg/L. Of those same 230 samples, the highest nickel reading was 31.5 µg/L. Molybdenum and nickel are not parameters for which EPA has established a health-based, primary drinking water standard.

9. Damage Case Claim – Page 65

Compared to surface water samples of the Monongahela River along the shoreline near the lagoons, twelve parameters were reported at consistently higher concentrations in the groundwater samples; specific conductance, total alkalinity, chemical oxygen demand, ammonia, chloride, sulfate, total dissolved solids, calcium, iron, potassium, manganese and sodium.

DEP Response

This statement is unsupported. The groundwater monitoring wells, surface water points and analytical data are not listed to validate this claim nor are the sampling periods referenced in the Report. The Department's ongoing review and tracking of the groundwater data concludes that the facility has been and remains in compliance for the referenced parameters.

10. Damage Case Claim – Page 65

As a result of Allegheny Energy's evidence of groundwater degradation by the lagoons, a groundwater monitoring plan was implemented with an upgradient well two downgradient wells for each lagoon.

DEP Response

Allegheny Power initiated a groundwater investigation pursuant to the 1992 Residual Waste Regulations which required that a groundwater monitoring system be installed at the facility. This requirement applied regardless of the groundwater quality documented in the investigation.

11. Damage Case Claim – Page 65

Analyses of quarterly monitoring data for samples collected from the two monitoring wells downgradient of Ash Lagoon #2 in 2007 (GW-4 and GW-5) found the following:

- Boron levels were more than twice the EPA's Child Health Advisory of 3.0 mg/L and much higher than boron levels in upgradient wells or at surface water monitoring points.

- Arsenic concentrations have been 1 to 2 times the primary MCL of 0.010 mg/L at downgradient wells and exceeded the highest concentrations for arsenic at upgradient points.
- Levels of nickel, molybdenum, and manganese have also been noticeably higher at downgradient than upgradient points.

DEP Response

The Report's description of groundwater monitoring wells GW-4 and GW-5 are incorrect. The correct designation for these wells is MW-4 and MW-5. The Report states that both these wells are downgradient of Lagoon No. 2, when in fact Well MW-4 is upgradient and Well MW-5 is downgradient of Lagoon No. 2. The following correspond to the bullet points in the EIP Report for this claim:

- Boron is not a federally regulated parameter by EPA. In 2007 the highest boron level in upgradient monitoring well MW-4 was 0.3 mg/L and the highest reading in downgradient monitoring well MW-5 was 6.8 mg/L.
- The references to arsenic are incorrect. The highest arsenic reading in downgradient MW-4 was in second quarter 2007 at 12.4 µg/L. The highest arsenic reading in downgradient MW-6 was 7.3 in second quarter 2007. This date corresponds with the geologic findings that document the Pittsburgh Coal seam has had an upgradient influence on the facility.
- Molybdenum and nickel in groundwater are not regulated by EPA. The typical level of molybdenum of the nearly 230 samples in an up or downgradient well was approximately 25 µg/L. Of the same 230 samples, the highest nickel reading was 31.5 µg/L. Manganese is also present in the up and downgradient monitoring at varying levels. Manganese is a secondary drinking water parameter for which the corresponding standard was adopted for aesthetic rather than health-related purposes.

12. Damage Case Claim – Pages 65 and 66

Allegheny Energy does not monitor groundwater around the ash landfill that lies west of Mitchell Power Plant. Review of a topographic map of the landfill shows that surface drainage from the landfill flows towards Lagoon 1, and the position of the landfill with respect to Lagoon #2 creates the possibility that the upgradient monitoring wells from both lagoons could be affected by groundwater flowing from the ash fill.

DEP Response

These are unsupported and incorrect statements. Allegheny Energy does have an approved groundwater monitoring system around the FGD disposal facility referenced above. Groundwater has been monitored for over 10 years. Topographically, surface water from around the landfill flows in a general direction towards the power station but is diverted around by surface water controls. The Report makes an assumption regarding groundwater flow that is based on a topographic map and not a groundwater flow map, which is based on subsurface data.

13. Damage Case Claim – Page 66

The Utility Solid Waste Activities Group does not dispute the data presented above, but argues the groundwater data should be evaluated relative to Pennsylvania Statewide Health Standards of medium specific concentrations (MSCs) for non-residential, non-use aquifers which have not been exceeded. This argument missed the point that degradation from groundwater moving off-site has occurred, and that this damage would not have been identified if PADEP had not required groundwater monitoring.

DEP Response

All groundwater data is evaluated relative to Pennsylvania Statewide Health Standards of MSCs for non-residential, non-use aquifers according to the 25 Pa. Code Chapter 250 Land Recycling Regulations as required by applicable law. As previously stated, there have been elevated secondary (non-health based) parameters and occasionally low levels of some primary constituents, but no trends have been established. It has been demonstrated through a comprehensive groundwater assessment that past deep mining in the Pittsburgh Coal seam upgradient of the facility has impacted the groundwater around the power station.

14. Damage Case Claim – Page 66

Incident and Date Damage Occurred/Identified

In 1998, an evaluation of groundwater in the vicinity of the two CCW residual waste and storage impoundments found downgradient degradation of groundwater by arsenic above MCLs and boron above EPA's Child Health Advisory Standard. A review of quarterly groundwater monitoring data for the year 2007 shows that levels of arsenic and boron are twice as high as found in the initial evaluation in 1998.

DEP Response

This claim is unsupported in the Report. It is not stated to which monitoring wells or quarters of 2007 this statement refers. DEP's review of the data submitted in 1999 (the first year of quarterly data submitted) and 2007 confirmed the following:

- The arsenic level in upgradient well MW-4 was 5.3 µg/L during the third quarter of 1999 and rose to 12.4 µg/L the second quarter of 2007.
- The corresponding downgradient well (MW-6) had an arsenic level of 58.1 µg/L in the fourth quarter of 1999 that decreased to a low of 2.3 µg/L during the third quarter of 2007.
- The highest arsenic level in 1999 was 58.1 µg/L in MW-6 and the highest arsenic level in 2007 was detected in MW-5 at 16.8 µg/L.
- The highest boron level in upgradient monitoring well MW-4 was 0.16 mg/L during the fourth quarter of 1999.
- The highest boron level in MW-4 for third quarter of 2007 was 0.30 mg/L.

- Boron is not regulated by EPA under the National Primary Drinking Water Regulations.

DEP's review of the historical groundwater data submitted by the company as required by the permit observed no upward trends in arsenic or boron.

15. Damage Case Claim – Pages 66 and 67

Regulatory Actions

In 2001, PADEP issued a Notice of Violation to Allegheny Power for failure to minimize fugitive dust emissions from the landfill northwest of the power plant. Requirements for ongoing monitoring of fugitive dust were discontinued in 2004.

DEP Response

The company addressed the Notice of Violation in 2001 through improved dust suppression methods.

16. Damage Report Claim – Page 67

Waste Present

Flyash, bottom ash (landfill), and CCW residuals in sludge and process water.

DEP Response

This is a correct statement.

17. Damage Report Claim – Page 67

Type or Types of Waste Management Unit

Mitchell Power Plant operates a 70-acre, unlined CCW landfill with a capacity of 5.6 million cubic yards, located northwest of the power plant. In addition, Mitchell Power Plant operates 2 wastewater treatment lagoons located near the power plant that contains CCW. Both lagoons were constructed with concrete sides and compacted in-situ soil base that is covered with one foot of bottom ash. The lagoons discharge water under NPDES permits. The lagoons discharge water under a NPDES permit.

DEP Response

This information is correct.

The lagoons also have an associated groundwater monitoring system.

18. Damage Case Claim – Page 67

Active or Inactive Waste Management Unit

Active

DEP Response

This is a correct statement.

19. Damage Case Claim – Page 67

Hydrogeologic Conditions

Ash landfill: mostly bedded sedimentary rock (alternating sandstone, limestone and shale within soil) and some Monongahela River alluvium with over bank deposits. Ash lagoons: Monongahela River alluvium and over bank deposits.

DEP Response

This is a generally correct statement.

20. Damage Case Claim – Pages 67

Probable Cause or (Causes)

Seepage and groundwater flowing through the lagoons. There is a possibility that upgradient monitoring wells for the lagoon receive contaminants from the ash landfill to the west.

DEP Response

This is an incorrect statement. The Report presents no hydrogeologic data to support that seepage and groundwater are flowing through the lagoons. There is no data presented in the Report to support the statement that the lagoons receive contaminants from the FGD landfill as well.

II. Phillips Power Plant, Orion Power Midwest, Allegheny and Beaver Counties

1. Damage Case Claim – Page 68

In the late 1980's, two coal ash ponds at the Phillips Power Plant contaminated several public water wells operated by the Cresswell Heights Joint Authority with high levels of total dissolved solids (TDS) which were ruining residents' hot water heaters. Legal action initiated by the Pennsylvania Department of Environmental Protection (PADEP) in 1990 led to decommissioning the Ash Ponds and paying a \$50,000 fine.

DEP Response

DEP acknowledges that an issue existed regarding total dissolved solids (TDS) in the 1980's at two ponds at the Phillips Power Station that affected the performance of hot water heaters of residents served by the Cresswell Heights Joint Authority. DEP notes, however, that TDS is not a primary, health-related drinking water parameter. The decommissioning of the ash ponds was due to the closing of the power station and was not required by legal action.

2. Damage Case Claim – Page 68

Groundwater contamination was later identified at the Ash Landfill west of the Phillips Power Plant at sufficient levels to require ongoing groundwater monitoring after the landfill was closed in the 1990s.

DEP Response

This statement is misleading. In accordance with 1992 Residual Waste Regulations, all landfills including the Phillips Landfill, associated with the power station were required to install groundwater wells and perform a hydrogeological assessment.

Results of the assessment indicated that some of the groundwater was impacted by secondary non-health related parameters, such as iron, manganese, fluoride, and chloride. The regulations required ongoing monitoring for all permitted landfills regardless of the groundwater quality documented during the assessment. Phillips Landfill stopped receiving ash from the power station prior to 1990.

3. Damage Case Claim – Page 68

Ten years later, samples from wells located where the groundwater is moving off-site regularly exceed secondary Drinking Water Standards (DWS) for TDS, chloride, fluoride, manganese and aluminum.

DEP Response

As previously stated, the original groundwater assessment documented the presence of secondary non-health based parameters in the groundwater.

4. Damage Case Claim – Page 68

Demonstrated off-site damage to public drinking water supply (ash ponds)
Demonstrated damage to groundwater moving off-site (ash landfill)

DEP Response

As previously stated, Total Dissolved Solids is not a primary health-related drinking water parameter, and the original groundwater assessment documented the occurrence of secondary non-health related parameters in the groundwater wells around the landfill.

5. Damage Case Claim – Page 68

Test of Proof

In the late 1980s, several water supply wells of the Cresswell Heights Joint Municipal Water Supply in Beaver County, PA were contaminated with high levels of total dissolved solids (TDS) from two coal ash ponds at the Phillips Power Plant in adjacent Allegheny County. High TDS levels, far exceeding secondary MCLs, ruined hot water heaters and Municipal Water Supply customers had to frequently replace their hot water heaters, (as often as once per year). The Municipal Water Supply undertook considerable monitoring to document the damage being done to its wells. This contamination of public water wells prompted PADEP to file a complaint against the Duquesne Light Company (DLC) claiming violations of total suspended solids (TSS) limits at an NPDES outfall and that the unlined ash ponds at the Phillips Plant were adversely impacting the groundwater aquifer used by the Cresswell Heights Joint Water Authority for public drinking water. A Consent Order and Agreement was signed on October 1990 that provided several options for DLC to remediate the source of contamination and included a \$50,000 penalty for discharge violations (PAEHB, 1990).

DEP Response

DEP acknowledges that an issue existed regarding TDS in the 1980's at two ponds at the Phillips Power Station that affected the performance of the hot water heaters of residents served by the Cresswell Heights Joint Authority. DEP reiterates that TDS is not a primary, health-related drinking water parameter.

6. Damage Case Claim – Page 68

The two coal ash ponds were closed and the ash was reportedly removed from the site (USWAG, 2008). Closure of the coal ash ponds appears to have addressed problems with the Cresswell Heights public water supply.

DEP Response

This statement is correct.

7. Damage Case Claim – Page 68

In addition to the two coal ash ponds, the Phillips Plant placed coal ash and FGD sludge in a landfill west of the Plant from 1969 to 1991. This landfill covered about 157 acres, of which about 50 acres were used for coal combustion waste (CCW) disposal.

DEP Response

This is a correct statement.

8. Damage Case Claim – Page 68

In 1975, DLC received Solid Waste Disposal Permit No. 300440 from PADEP, which included requirements for an underdrain system to collect leachate from the landfill. As part of the decommissioning of the power plant, a landfill closure plan was submitted to PADEP in 1994 (SET, 1994).

DEP Response

This is a correct statement.

9. Damage Case Claim – Page 68

A groundwater assessment was conducted to determine whether the landfill was adversely affecting groundwater. As a result of the groundwater assessment, PADEP required groundwater monitoring to continue after final cover and grading of the landfill.

DEP Response

The Residual Waste Regulations require that groundwater monitoring be conducted for all permitted disposal areas regardless of water quality.

10. Damage Case Claim – Pages 68 and 69

A review of quarterly groundwater monitoring data from 2006 and 2007 found the following (EarthJustice, 2008):

- Groundwater discharging from the closed landfill has noticeably higher levels of chloride, sodium, and fluoride, and generally higher manganese, aluminum, sulfates, TDS and Specific Conductance.
- Levels of chloride frequently exceeded secondary drinking water standards (DWS) and high levels of sodium (exceeding 200 mg/L) were usually found in such samples.

- Levels of manganese, aluminum, and fluoride (2.0 mg/L) exceeded secondary DWS in many samples as well as many exceedances of the secondary DWS for TDS of 500 mg.

DEP Response

DEP acknowledges that a numerical difference existed between upgradient and downgradient concentrations of chloride and sodium for the 2006-2007 time period stated. The data indicates a downward trend in the sodium concentrations in the downgradient wells and that the chloride concentration remained relatively constant. The comprehensive groundwater assessment that was conducted pursuant to the 1992 Residual Waste Regulations concluded that chloride and sodium are not characteristic of the waste deposited at the site and suggested that historic oil and gas drilling activities in the area surrounding the landfill was a possible source of the chloride and sodium observed in the downgradient wells. In all cases, the identified parameters are classified as secondary MCL contaminants for which the corresponding standard was adopted for aesthetic rather than health-related purposes.

11. Damage Case Claim – Page 69

The Utility Solid Waste Activities Group argues that because no primary drinking water standards have been exceeded, this site should not be considered a damage case (USWAG, 2008). However, a public drinking water supply was damaged without any exceedance of primary drinking water standards.

DEP Response

DEP concurs with the statement that no primary drinking water standards have been exceeded at this site. DEP reiterates that TDS is not a primary, health-related parameter and that the impact was limited to hot water heaters.

12. Damage Case Claim – Page 69

Incident and Date Damage Occurred/Identified

DEP Response

DEP acknowledges that an issue existed regarding TDS in the 1980's at two ponds at the Phillips Power Station that affected the performance of the hot water heaters of residents served by the Cresswell Heights Joint Authority. DEP notes, however, that TDS is not a primary, health-related drinking water parameter. Further, an assessment is performed to determine impacts; therefore, they are not "unanticipated."

13. Damage Case Claim– Page 69

Regulatory Actions

In 1990 a Consent Order and Agreement between Pennsylvania Department of Environmental Protection (PADEP) and Duquesne Light Company (DLC) was signed ordering DLC to stop contamination from the coal ash ponds and pay a \$50,000 fine (PAEHB, 1990).

DEP Response

This is a correct statement.

14. Damage Case Claim– Page 69

As part of the closure plan for the Phillips Ash Landfill, PADEP required quarterly groundwater monitoring due to evidence of groundwater degradation.

DEP Response

This statement requires clarification. Regardless of the groundwater quality, all residual waste disposal facilities are required by the 1992 Residual Waste Regulations to conduct quarterly groundwater monitoring. DEP reiterates that the only elevated parameters identified in this report are non-health related secondary contaminants for which the corresponding standard was adopted for aesthetic reasons.

15. Damage Case Claim– Page 70

Type(s) of Waste Management Unit

Two Coal Ash Ponds: Phillips Power Plant site plans dated December 2004 show two closed ash ponds (“No. 1” has a capacity of 13.5 million gallon, and “No. 2” has a capacity of 9 million gallons). Coal ash and FGD Landfill: Covers about 157 acres, 50 acres of which were used for CCW from 1969 to 1991 (SET, 1994). About 75% of the landfill is in Allegheny County; 25% in Beaver County (BCPC, 1994).

DEP Response

This is a correct statement.

16. Damage Case Claim– Page 70

Active or Inactive Waste Management Unit

Inactive. Phillips Power Plant was acquired from Duquesne Light Company in late 1990s and fully decommissioned in 2002. The two coal ash ponds were decommissioned in the early 1990s and the coal ash and FGD landfill was decommissioned in the late 1990s.

DEP Response

This is a correct statement.

17. Damage Case Claim– Page 70

Hydrogeologic Conditions

The coal ash ponds were in Ohio River alluvium and overbank deposits.

DEP Response

This is a generally correct statement.

18. Damage Case Claim– Page 70

Probable Causes(s)

Leaching of coal ash and FGD wastes in groundwater

DEP Response

DEP reiterates that the only elevated parameters identified in this report are non-health related secondary contaminants for which the corresponding standard was adopted for aesthetic reasons, and that the data collected does not display an upward trend in the concentration being reported.

III. Seward Generating Station, Indiana County

1. Damage Case Claim – Page 71

The Seward Generating Station's unlined coal ash and coal refuse pit, as well as its Closed Ash Sites No. 1 and No. 2, have leached and continue to leach many pollutants into the underlying aquifer at levels that far exceed both Pennsylvania and federal primary MCLs, and upgradient concentrations.

DEP Response

This statement is misleading and incorrect. The original Seward Power Station has been demolished and a new Co-Gen plant built on site. As part of the permitting process for the Co-Gen plant, RRI entered into a Consent Order and Agreement (CO&A) in 2000 with DEP's Water Quality and Environmental Cleanup programs to remediate several old coal refuse piles on site which were discharging acid mine drainage into the groundwater and adjacent river.

Through an approval from Water Quality and the Environmental Cleanup programs, the coal refuse piles were pulled back from the river and mixed with alkaline ash from nearby power stations. The coal refuse was thoroughly mixed with the alkaline ash on a 1-to-1 weight basis and then compacted in 18-inch layers. The new Co-Gen plant was constructed on the ash-refuse mix, thus limiting infiltration.

Groundwater modeling was performed, for purposes of remediation, by the consultant on the area from where the coal refuse was removed and it was calculated to take 50-100 years for complete remediation of the groundwater to occur. To monitor the progress of the remediation, a series of up and downgradient monitoring wells were installed around the former coal refuse area.

All of the groundwater data referenced in the EIP Report for this facility is from the monitoring wells around the former coal refuse piles and not from any fly ash disposal sites.

In accordance with a CO&A with the Waste Management Program in 1982, the company closed Ash Sites No. 1 and No. 2 and is required to monitor groundwater and submit the results to DEP on an annual basis. No new fly ash is being disposed at the Seward Generating Station.

The only elevated parameters detected in the groundwater wells around closed Ash Sites No. 1 and No. 2 have been secondary and non-health related (relating to the taste, odor or appearance of the water).

2. Damage Case Claim – Page 71

Department of Environmental Protection (PADEP) has entered into numerous Consent Order and Agreements (COAs) with RRI and its predecessors in interest since at least 1982 to force remediation of groundwater contamination from the coal ash piles as well as surface water contamination from Outfall 012, yet the contamination persists.

DEP Response

This statement is misleading. It was demonstrated through modeling that, based on the chemical characteristics of the acidic coal refuse combined with the alkaline ash, a gradual improvement of the groundwater is expected and could take more than 50 years. The CO&A related to closed Ash Sites No.1 and No. 2 only required the cessation of disposal, capping and installing groundwater monitoring wells, which have only shown elevated secondary parameters.

In regards to the statement pertaining to surface contamination at Outfall 012, no parameters, parameter levels, or specific dates are listed in the report to substantiate this claim. This outfall is related to the remediation project and not closed Ash Sites No.1 and No.2.

3. Damage Case Claim – Page 71

Groundwater levels of antimony consistently exceeded the primary MCL of 0.006 mg/L, including a concentration of 0.1 mg/L (nearly 17 times the standard) at monitoring well MW-7 in the third quarter of 2008. Cadmium exceeded the primary MCL of 0.005 mg/L at 4 different monitoring wells, MW-5R, MW-6R, MW-7, and MW-8R, including a MW-7R reading of 0.041, over eight times the standard, in the second quarter of 2009.

DEP Response

As part of the remediation project for the coal refuse piles, DEP required that wells be installed to monitor the improvement over time. Monitoring wells MW-5R, MW-6R, MW-7, and MW-8R were installed for this purpose. The groundwater data referenced in this statement is related to the past coal refuse disposal and not to closed Ash Sites No.1 and No.2.

4. Damage Case Claim – Page 71

In addition, 13 of 16 quarters for which we have downstream surface water data from 2005 to 2009 contained at least one exceedance of Pennsylvania's Water Quality Criteria for Fish and Aquatic Life. There were 27 exceedances for aluminum, nickel, and zinc, including an aluminum exceedance of 5.3 mg/L (compared to a Criteria Maximum Concentration of .075 mg/L) and a nickel concentration of 30 µg/L (compared to a Criteria Continuous Concentration of 4.05 µg/L).

DEP Response

The report does not reference any data related to the claim that 13 of 16 quarters of surface water quality data between 2005 and 2009 exceeded a Water Quality Standard. In accordance with the CO&A with the Waste Management Program in 1982, the company closed Ash Sites No. 1 and No. 2 and was required to monitor groundwater and submit the results to DEP on an annual basis. No new fly ash is being disposed at the Seward Generating Station. As part of the remediation of the coal refuse piles, the company was required to establish up and downgradient surface monitoring points on the adjacent stream. The background data collected prior to the removal of the coal refuse indicated that piles were impacting the stream. All of the references in this statement to impacted surface water quality data are related to the past coal refuse disposal and not to closed Ash Sites No. 1 and No. 2 as inferred.

5. Damage Case Claim

Also, pollutants including iron, manganese, pH, and aluminum are being discharged from the “remediated” coal ash and coal refuse pile directly into the Conemaugh River through NPDES permitted Outfall 012 in violation of permit limits.

DEP Response

This statement is incorrect. There is not a remediated coal ash pile on site. There was an abandoned coal refuse pile that has been removed and the groundwater is in the process of being remediated. In regard to Outfall 012, the data to substantiate the claim is not presented.

6. Damage Case Claim – Page 71

Determination

Demonstrated off-site damage to surface water

DEP Response

This statement is misleading. The groundwater investigation conducted for the remediation of the coal refuse pile indicated that the adjacent stream had been impacted by the coal refuse pile and not by closed Ash Sites No. 1 and No. 2.

7. Damage Case Claim – Page 71

Demonstrated on-site damage to groundwater moving off-site

DEP Response

This is a vague and incorrect statement. The groundwater data referenced in the report is the result of past coal refuse disposal on site.

8. Damage Case Claim- Page 71

Test of Proof

The No. 1 Ash Disposal Site was forced to be closed due to pollutants leaching from the ash pile. RRI's Final Remedial Investigation Report of the No. 1 Ash Disposal Site (2006) confirms that the ash pile was the source of groundwater contamination: "The source of inorganic constituents above naturally occurring concentrations is ash within the No. 1 Ash Disposal Site. Leachate containing inorganic constituents is produced through surface water infiltration and contact with groundwater in isolated areas." Aluminum, iron, and manganese were identified as the constituents of concern.

DEP Response

This claim is incorrect. Ash Disposal Site No. 1 was closed when the power station shut down. The site was capped and monitoring wells were installed. Based on the groundwater results, the aluminum, iron, and manganese "constituents of concern" are secondary and non-health based. Natural attenuation over time is expected to remediate these constituents.

9. Damage Case Claim - Pages 71 and 72

In addition, groundwater monitoring results continue to exceed Primary and Secondary Drinking Water Standards (MCL). These exceedances have been consistently documented since at least 2004. For example, groundwater monitoring data for only one year (the first two quarters of 2009 and the last 2 quarters of 2008) show that:

- Primary MCL exceedances were documented in downgradient monitoring wells for many pollutants:
 - Antimony exceeded the federal primary MCL of 0.006 mg/L at least nine times, including a concentration of 0.1 mg/L at MW-7.
 - Arsenic was two times higher than the federal primary MCL of 0.01 mg/L at least twice with concentrations of 0.02 mg/L measured at monitoring well MW-6R.
 - Cadmium exceeded the federal primary MCL of 0.005 mg/L in at least 4 different monitoring wells, MW-5R, MW-6R, MW-7, and MW-8R, including a concentration of 0.041 mg/L at MW-7R.
 - Chromium exceeded the federal primary MCL at least four times, including a concentration of 0.33 mg/L, more than triple the primary MCL of 0.1 mg/L, at MW-8R.
 - Lead exceeded the primary MCL/Treatment Technique Action Level of 0.015 at least five times at various wells, including a concentration of 0.05 mg/L at MW-8R.
 - Selenium was detected above the primary MCL limit of 0.05 mg/L four times at MW-6R, MW-7R, and MW-8R.
 - Turbidity was recorded consistently above 5 NTU, including a reading of 75.3 NTU at MW-7R.

- Secondary MCLs were exceeded at very high levels in all downgradient wells in almost every quarter for a host of parameters. These include:
 - Aluminum levels were as high as 426 mg/L (MW-8R) and 403 (MW-7R), despite a secondary MCL of 0.05 mg/L.
 - Chloride was frequently measured well above 500 mg/L, double the secondary MCL of 250 mg/L.
 - Iron levels were over 7,100 times the secondary MCL of 0.03 mg/L, with concentrations as high as 2,120 mg/L (MW-8R) and 2,140 mg/L (MW-8R).
 - Manganese has a secondary MCL of 0.05 mg/L, yet was frequently reported at over 30 mg/L, including two readings over 100 mg/L at MW-5R.
 - Nickel was typically found at double the Superfund Removal Action Level (RAL) of 0.6 mg/L, with three of four MW-8R readings exceeding 3 mg/L.
 - Sulfate also frequently exceeded the secondary MCL of 250 mg/L at every well, including concentrations of 8,260 at MW-7R and 8,390 mg/L at MW-8R.
 - Total dissolved solids were continually found to exceed the secondary MCL of 500 mg/l, including a reading of 12,000 mg/L at MW-8R.
 - Zinc exceeded the secondary MCL of 5 mg/L at MW-7R and MW-8R several times with readings of over 7 and 8 mg/L.

DEP Response

These statements are misleading. Il of the groundwater data referenced in this section appears to have been obtained from the DEP Regional Office files, relates to measuring the performance of the remediation of the coal refuse piles that were disposed on site decades ago and do not correlate to the closed Ash Sites No. 1 and No. 2. In accordance with the CO&A with the Waste Management Program in 1982, the company closed Ash Sites No. 1 and No. 2 and was required to monitor groundwater and submit the results to DEP on an annual basis. No new fly ash is being disposed at the Seward Generating Station. Remediation of these coal refuse piles has occurred to stop/reduce contamination.

10. Damage Case Claim – Page 72

Surface water monitoring downstream of the ash sites contained 27 exceedances of Pennsylvania's Water Quality Criteria for Fish and Aquatic Life, with one or more exceedances occurring in 13 of the 16 quarters in downstream surface water data from 2005 to 2009. Exceedances were identified for aluminum, nickel, and zinc, including an aluminum exceedance of 5.3 mg/L (compared to a Criteria Maximum Concentration of 0.75 mg/L), a nickel concentration of 30 µg/L (compared to a Criteria Continuous Concentration of 4.05 µg/L), and a zinc concentration of 93 µg/L (compared to a hardness-adjusted Criteria Continuous Concentration of 48.5 µg/L).

DEP Response

These statements are misleading. All of the surface data referenced in this section relates to the refuse piles that have been removed and remediated, not to fly ash. In accordance with the CO&A with the Waste Management Program in 1982, the company closed Ash Sites No. 1 and No. 2 and was required to monitor groundwater and submit the results to DEP on an annual basis. No new fly ash is being disposed at the Seward Generating Station.

11. Damage Case Claim – Page 72

In addition, Outfall 012, which flows from the coal ash/coal refuse pile, has been discharging in violation of NPDES permit limits for iron, aluminum, manganese, and pH on a monthly basis for at least five years.

DEP Response

This statement is partly incorrect. Outfall 012 is associated with reclamation of the old coal refuse pile. It is incorrect to say Outfall 012 flows from the “coal ash/coal refuse pile.

12. Damage Case Claim – Page 73

Incident and Date Damage Occurred / Identified

Groundwater monitoring and discharge monitoring reports have shown high concentrations of numerous pollutants discharging from this site consistently for many years. PADEP forced RRI’s predecessor in interest to close the No. 1 Ash Disposal site through a 1982 Consent Order and Agreement to stop the leaching of inorganic constituents from the ash into groundwater that had been occurring before that date. Recent groundwater monitoring data indicate that gross exceedances of primary and secondary MCLs and higher concentrations of ash constituents at downgradient than upgradient monitoring points continue to occur.

DEP Response

This statement is misleading and incorrect. The only exceedances in the groundwater from around closed Ash Site No. 1 have been secondary, non-health based parameters. All references in the EIP report to exceedances to primary MCL’s relate to the removed and reclaimed coal refuse area where groundwater exhibited these characteristics because of the coal refuse which is in the process of being remediated.

13. Damage Case Claim - Page 73

RRI has discharged pollutants in excess of permit limits for iron, manganese, aluminum, and pH from Outfall 012, on a monthly basis for the past five years. A surface water monitoring point downstream of the site has recorded at least 27 exceedances of Pennsylvania’s Water Quality Criteria for Fish and Aquatic Life in the last five years for aluminum, nickel, and

zinc. In addition, this downstream point regularly recorded higher concentrations of sulfate, total dissolved solids and many other pollutants than concentrations of these pollutants recorded upstream of the site in this period.

DEP Response

These statements are misleading. All references to outfalls and surface water data correspond to monitoring around the removed and reclaimed coal refuse piles and not the closed Ash Disposal Sites No. 1 and No. 2.

14. Damage Case Claim - Page 73

Regulatory Actions

In 1982, the Pennsylvania Department of Environmental Protection (PADEP) entered into a Consent Order and Agreement with RRI (then Penelec) in which RRI was ordered to close the Seward No. 1 Ash Site, cease ash disposal at Seward, and pay a \$308,000 fine for violations of the Solid Waste Management Act .

DEP Response

This statement is correct.

15. Damage Case Claim - Page 74

The No. 1 Ash Disposal Site was “remediated” by placement of a cap of three feet of flowable fill in accordance with a 2000 Consent Order and Agreement (COA) with PADEP. RRI filed its Notice of Intent to Remediate the site on November 2, 2001 pursuant to the COA. Along with the remediation, a Deed Restriction was placed on this property prohibiting any person from using any groundwater from the site for “human consumption, irrigation, or other purposes that might cause humans to ingest or be exposed to such groundwater.

DEP Response

EIP’s description of the closure of Ash Disposal Site No. 1 is correct.

16. Damage Case Claim - Page 74

In addition, RRI has been subject to several COAs to cease discharging pollutants from Outfall 012 although these actions have not proven successful because the discharges have not been addressed.

DEP Response

This statement is misleading. All references to outfalls and surface water data correspond to monitoring around the removed and reclaimed coal refuse piles and not the closed Ash Disposal Sites No. 1 and No. 2.

17. Damage Case Claim – Page 74

Wastes Present

Coal combustion waste including more recently (after 2004), CCW from fluidized bed combustion of waste coal which is co-disposed with coal refuse.

DEP Response

This statement is misleading. Coal combustion waste is not being co-disposed with coal refuse. Alkaline ash from the onsite Co-Gen facility has been used to help to neutralize the effect of the acidic refuse disposed of onsite years ago. The ‘old’ coal refuse piles have been removed. There has been no traditional disposal of fly ash at Seward since Ash Sites No. 1 and No. 2 were closed.

18. Damage Case Claim – Page 74

Type(s) of Waste Management Unit

Coal ash has been disposed of on-site since 1954, but the predecessors of RRI never secured a permit for this earlier disposal of ash.

DEP Response

This statement is misleading. In 1954 formal permits for disposal of ash were not required, prior to the Solid Waste Management Act.

19. Damage Case Claim – Page 74

The ash has not been contained in either landfills or surface impoundments.

DEP Response

This statement is vague, misleading and incorrect. The ash disposed and contained in closed Ash Disposal Sites No. 1 and Site No. 2 has not been “moved” since it was deposited. Ash is not and has never been deposited in a surface impoundment. Closed Ash Disposal Sites No. 1 and Site No. 2 have been capped and closed with a groundwater monitoring system.

20. Damage Case Claim – Page 74

There are two unlined “closed” former ash disposal sites, as well as the co-disposed coal ash and coal refuse site, atop of which the “repowered” Seward Generating Station, an FBC plant which also burns waste coal instead of traditional pulverized coal, was rebuilt in 2004.

DEP Response

This statement is misleading. The “repowered” Seward Generating Station was built on coal refuse and beneficially used ash. Closed Ash Sites No. 1, No. 2, and the coal refuse site, which has been remediated, are located on different areas of the facility.

21. Damage Case Claim

There is no evidence of liners beneath any of these ash disposal pits.

DEP Response

This statement is incorrect. The ash produced at the previous Seward Generating Station was not deposited in pits. Both Ash Sites No. 1 and No. 2 were constructed with a compacted soil/clay base.

22. Damage Case Claim - Page 74

Active or Inactive Waste Management Unit

Inactive

DEP Response

This statement is correct.

23. Damage Case Claim - Page 74

Hydrogeologic Conditions

Description as of 1999 (before construction of the Seward Power Plant and its start-up in 2004): Over most of the site where the water table is 4 to 10 feet below the natural ground, the water table is within the silt loam. Closer to the river the depth to the water table below the co-disposed coal ash and coal refuse pile, is at 6 to 19 feet, which is typically in the sandy loam beneath the silt loam.

DEP Response

This statement is generally correct.

24. Damage Case Claim - Page 74

At some of these wells the water table is in the gravelly, sandy loam beneath the sandy loam. The saturated thickness of the alluvial aquifer is approximately 12 feet near the River and up To 20 feet near the railroad tracks at the upgradient, west side of the site. The water table gradient averages 2 percent with groundwater flow generally perpendicular to the river several reports confirm that groundwater at the site discharges directly to the Conemaugh River.

DEP Response

The wells referred to in these statements were installed as part of the remediation of the coal refuse piles on site. There are separate groundwater monitoring wells related to closed Ash Sites No. 1 and No. 2.

25. Damage Case Claim - Page 74

Probable Cause(s)

Pollutants from the No. 1 ash disposal site have leached into groundwater.

DEP Response

The only elevated constituents identified in the wells around Ash Site No.1 have been secondary non-health related such as iron and manganese. No primary constituents have been detected.

26. Damage Case Claim - Page 74

As recently as 2006, the remedial investigation report found that, in some areas on-site, “the upper portion of the water table is within ash.” In addition, leachate from the co-disposed coal ash and coal refuse site beneath the current plant is being discharged to surface water through the plant’s Outfall 012 as well as leaching into the groundwater. This contamination then discharges directly to the Conemaugh River, which is classified as a Warm Water Fishery that is impaired for metals.

DEP Response

This statement is misleading. The contamination and leachate migrating into the groundwater and surface water is from the old coal refuse and not disposal of fly ash in closed Ash Sites No. 1 and No. 2 at the facility.

27. Damage Case Claim - Page 74

Additional Narrative

Hydrogeology reports prepared for RRI in 1999, 2001, and 2005 all confirm that leachate from the refuse pile has polluted groundwater and surface waters, namely the Conemaugh River, with pollutants including pH, iron, aluminum, manganese, and sulfate. Specifically, a 1999 hydrogeological report states that groundwater “in the aquifer beneath the ash pile show[s] very high acidities and dissolved solids” and “discharges into the Conemaugh River and is responsible for reduced water quality in the river.”

DEP Response

These statements are correct. All the contamination of groundwater and surface water by primary constituents (arsenic, cadmium, etc.) identified at the power station is from past coal refuse disposal and not fly ash in closed Ash Sites No. 1 and No. 2.

28. Damage Case Claim – Page 75

Aluminum, antimony, arsenic, cadmium, chloride, chromium, iron, lead, manganese, nickel, selenium, sulfate, total dissolved solids, turbidity and zinc were all present above Pennsylvania/federal primary MCLs (or, for nickel, above the Superfund RAL) in downgradient groundwater wells in 2008 or 2009 and higher in downgradient than upgradient wells. Sodium, calcium, barium, boron, fluoride, and magnesium were also detected in higher concentrations in downgradient monitoring wells than upgradient monitoring wells.

DEP Response

All of the groundwater data referenced in this section relates to the wells that were installed around the coal refuse piles to monitor remedial progress and do not monitor closed Ash Sites No. 1 and No. 2.

29. Damage Case Claim

Many of these constituents have also been regularly detected at higher concentrations at a river monitoring site downstream of the site (CR-2) than at one identified as upstream (CR-1).

DEP Response

All of the surface water data referenced in this report relates to the up and down gradient condition in the stream adjacent to the remediated coal refuse piles and not closed Ash Sites No. 1 and No. 2.

IV. Fern Valley Disposal Site, Allegheny County

1. Damage Case Claim - Page 76

The Fern Valley CCW Landfill, on the west side of the Monongahela River across from Elizabeth PA, received coal ash from the Elrama Power Plant from 1989 to 2003. Arsenic levels 2.8 times higher than primary MCL (0.010 mg/L) were first noted in groundwater monitoring in 1995, and peaked in 2001 when the arsenic concentration was 36 times the primary MCL in one downgradient well and 29 times the primary MCL in another. Concentrations of boron, chloride, sulfate and total dissolved solids (TDS) in monitoring wells regularly exceeded health-based levels or secondary MCLs.

DEP Response

This statement is vague and misleading. The EIP Report does not identify the monitoring wells or specify the monitoring events to which this statement refers. DEP notes that the Fern Valley Disposal Site was constructed downgradient of an abandoned surface coal mine and adjacent to an old, unlined municipal waste landfill (Clairton Landfill). In 1995 a groundwater assessment was conducted and DEP concluded that activities conducted in the past at both the Clairton Landfill and the abandoned mine have had a negative impact on groundwater and surface water upgradient and sidegradient of the facility as evidenced by background groundwater monitoring.

2. Damage Case Claim - Page 76

Leachate from the CCW landfill has degraded surface quality with high levels of arsenic, boron, chloride, sulfate and TDS compared to upstream surface waters.

DEP Response

There is no analytical data presented to substantiate this statement. The leachate being treated is discharged under an NPDES permit. The effluent limits established in the NPDES Permit account for the fact that the receiving stream into which the treated leachate flows discharges to the Monongahela River. The facility's discharge is in compliance with its NPDES permit.

3. Damage Case Claim - Page 76

In 2001 and 2002, selenium levels downstream of the landfill were six to ten times the Pennsylvania surface water quality standard for the protection of aquatic life.

DEP Response

Water quality monitoring data submitted to DEP for this site indicates that selenium was present at monitoring point SW-2; the downgradient surface water monitoring point for the

site. The level in 2001 was 23 µg/L (Total) and 11 µg/L (Total) in 2002. The EPA Primary Drinking Water Standard for selenium is 50 µg/L.

4. Damage Case Claim - Page 76

While concentrations of arsenic have not exceeded water quality standards for aquatic organisms, they have been several times higher than the primary MCL in several measurements, and sulfate and TDS concentrations have commonly exceeded secondary MCLs by two or three times downstream of the landfill. These concentrations have been measured 200 feet downstream of the primary NPDES discharge point for the landfill before flowing into a culvert that drains directly into the Monongahela River.

DEP Response

There is no supporting documentation presented with respect to this claim. The report does not provide specific analytical data for the arsenic, sulfate, and TD Sclaimed to have been collected downstream of the primary NPDES point. In addition, the effluent limits established in the NPDES Permit account for the fact that the stream flows into the Monongahela River. The discharge is in compliance with its NPDES permit.

5. Damage Case Claim - Page 76

The NPDES permit for the landfill has never included limits for arsenic, selenium, or other toxic pollutants that were known to be in surface water and groundwater discharges from the landfill.

DEP Response

This statement is correct albeit misleading. The NPDES permit for the site requires that the discharges be monitored for flow, suspended solids, oil and grease, aluminum, iron, and pH. During the repermitting process for this facility relative to the 1992 Residual Waste Regulations, an extensive benthic invertebrate survey was conducted on the stream adjacent to the site. That survey established that the surface mining upgradient and the Clairton Landfill sidegradient of the site has had an impact on the benthic quality. The NPDES effluent limits and parameters were established based on the fact that the receiving stream discharges into the Monongahela River.

6. Damage Case Claim - Page 76

Determination

Demonstrated damage to groundwater and surface water moving off-site.

DEP Response

This statement is unsubstantiated. The data has not been presented in the report to validate this claim.

7. Damage Case Claim - Page 76

Test of Proof

Arsenic has been a troublesome contaminant in the groundwater at the landfill as have boron, sulfate, chloride, and TDS. (Data from GAI, 2002 and GAI 2002-2007)

- Total arsenic was identified in downgradient MW-20 in June 1995 at 0.028 mg/L, 2.8 times the primary MCL.

DEP Response

This statement is misleading. The MCL for arsenic in 1995 was 50 µg/L, 1.8 times higher than the reported concentration. Sporadic low levels of arsenic have been identified in upgradient wells and it has been documented to have come from acid mine drainage upgradient of the landfill. In addition, with over 10 years of groundwater data collected, this is the only data point presented with an elevated level of arsenic for MW-20. No statistical analysis or trends have been demonstrated.

8. Damage Case Claim – Page 76

- Between 1995 and 2002 detects of total arsenic were sporadic in various monitoring points (or wells) with a peak in March 2001 when concentrations in four downgradient wells ranged from 0.121 to 0.636 mg/L, twelve to thirty-six times the primary MCL.

DEP Response

This claim is misleading and unsubstantiated. Acid mine drainage has affected the groundwater upgradient of the facility which contributes to arsenic detection in the groundwater. In regards to this damage case claim, the specific wells and sample dates have not been referenced. Water quality monitoring data submitted to DEP for this site confirms that the arsenic hits have been sporadic and that no trends have been established.

9. Damage Case Claim – Page 76

- Total arsenic concentrations at MW-12, a purported upgradient well, between 1997 to 2006 either exceeded the primary MCL (0.015 to 0.24 mg/L) or were below the detection limit that was above the primary MCL.

DEP Response

DEP does not accept this statement as supporting EIP's contention that arsenic present in the groundwater is attributable to the Fern Valley Disposal Site. The EIP Report does not present a data tabulation of the monitoring events to which this statement refers. DEP notes that the Fern Valley Disposal Site was constructed downgradient of an abandoned surface coal mine and adjacent to the old, unlined Clairton Landfill. As explained in the response to Damage Case Claim No. 12 below, monitoring well MW-12 is upgradient to the disposal area. EIP's assertion that the MCL exceedances are proof that the facility has impacted groundwater quality is invalid.

10. Damage Case Claim – Page 76

- From 1997 to 2006 boron in MW-12 regularly exceeded 1 mg/L. Throughout this period, 1 mg/L was equal to EPA's health advisories for boron. Although EPA relaxed those advisories to 3 mg/L in 2009, 1 mg/L is at or above health based standards for boron in drinking water used by other regulatory agencies such as the European Union (1.0 mg/L), World Health Organization (0.5 mg/L) and Minnesota Department of Health (1.0 mg/L). During the same time period concentrations of chloride, sulfate and TDS also regularly exceeded the secondary MCL in this well.

DEP Response

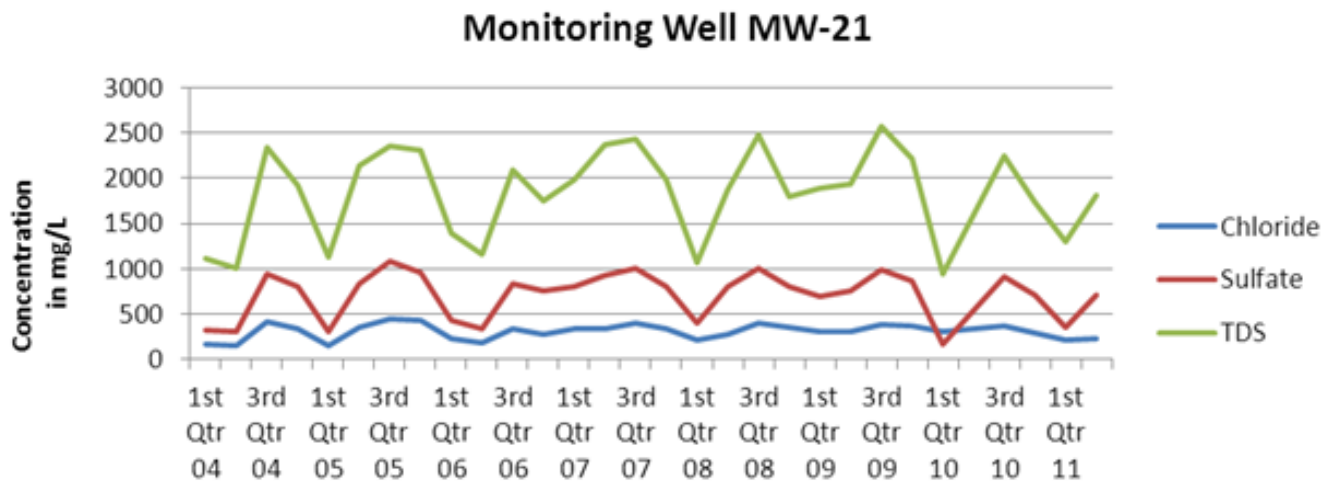
This statement is misleading. Monitoring well MW-12 is an upgradient well and has been affected by acid mine drainage. As stated by the EIP, the measured levels of upgradient boron are less than the current EPA's advisory level of 3 mg/L. It should be noted that EPA health advisories are non-enforceable, guidance-based concentrations based on non-cancer health effects for different exposures in drinking water sources. The drinking water standards established by the World Health Organization and the Minnesota Department of Health are irrelevant to this discussion as this facility is not required to address those limits. Chloride, sulfate and TDS are secondary drinking water parameters which address aesthetic issues and are not health based.

11. Damage Case Claim – Page 77

- From March 2006 to September 2007 chloride, sulfate and TDS concentrations in downgradient MW21 (near the NPDES discharge point) increased dramatically. Chloride increased from around 20 mg/l (levels measured since 1996) to 396 mg/l, well above the secondary DWS of 250 mg/l. Sulfate increased fivefold to 1010 mg/l, four times the secondary DWS. TDS increased four-fold to 2440 mg/, almost five time the secondary DWS. These values of chloride, sulfate and TDS are among the highest values measured at any monitoring well since 1996.

DEP Response

DEP does not accept that the assertion made in this claim represents a valid proof of groundwater impacts attributable to the Fern Valley Disposal Site. DEP does not dispute that the data reported for the selected parameters between the selected dates show an apparent upward trend, but maintains that the limited data set on which EIP's claim is based does not accurately reflect the overall trend in the data for these parameters. As evident from the graphical representation below of groundwater monitoring data submitted to DEP over a longer time frame (1st Quarter 2004 to 2nd Quarter 2011), there is no discernible trend in the data collected from Monitoring Well MW-21. Furthermore, the effect of offsite sources of these parameters precludes a definitive statement as to the extent of the disposal site's contribution to any individual data point.



DEP reiterates that the elevated parameters identified are non-health related secondary contaminants for which the corresponding standard was adopted for aesthetic reasons.

12. Damage Case Claim – Page 77

Interpretation of groundwater monitoring data at the site is hampered by apparent mischaracterization of several monitoring wells as “upgradient” when a closer examination of the hydrogeology of the site indicates that they are probably receiving groundwater inflow from the CCW landfill. For example, “upgradient” MW-12 is located on the ridge between Fern Valley and the Monongahela River. This well is installed at a surface elevation of about 980 feet, 300 feet south of the lower constructed wetland, on the side of a sub-drainage into Fern Valley. It is completed at a depth whose elevation is between 838 feet and 853 feet, about 50 feet below the elevation of the original Fern Valley stream level. In other words, ash has been placed at elevations starting at least 50 feet above the level of the well screen. Water elevations in this well average 919 feet, about even with the elevation of the original Fern Valley stream level and below the level of the ashfill. MW-12 is completed in the Morgantown Sandstone at structural elevations below the nearest drainage in Fern Valley and above the Monongahela. The Morgantown Sandstone outcrops in the floor of Fern Valley and on the side of the ridge above the Monongahela River. Structural dip of the unit

is toward the river. (Norris, 2002). The information on elevations and the likely mounding effect of groundwater moving outward from the landfill clearly do not support the identification of MW-12s an upgradient well, nor has the data gathered from this well which suggests it is picking up contaminants draining from the landfill.

A review of the Fern Valley Disposal Site maps (DPL, 1996) and the recent satellite photographs of the final fill area, reinforces the concern that none of the designated “upgradient” monitoring wells (MW12, MW15 and MW5A) can be reliably considered upgradient. The closeness of these wells to the margins of the ash disposal area and the elevations of groundwater in the wells below the level of the filling created the potential for groundwater flow through the fill to the wells from the inception of filling.

DEP Response

DEP evaluated the existing groundwater monitoring system at the Fern Valley Disposal Site during the First Quarter of 2010 and concluded that wells MW-12, MW-15 and MW-5A are positioned upgradient of the disposal area. The following describes that analysis:

1.
 - The water level in upgradient well MW-15 went down about 115 feet between September 1993 and October 1995 and then started back up and, as of the March 2010 reading, has risen about 66 feet to an elevation of about 955 feet;
 - The water level in upgradient well MW-5A has not changed more than a foot or so since the first reading in September 1993. The March 2010 reading was at an elevation of about 857 feet.
 - The water level in downgradient wells MW-6 and MW-7 varied on the order of 10 feet or so between September 1993 and April 1997, but since that time the water levels have varied by no more than a few feet. In March 2010 the water levels were at about elevations 745 feet and 734 feet respectively.
 - The water levels in downgradient wells MW-20 and MW-21 have only varied a few feet since the first reading in June 1995 and as of March 2010 were at about elevations 751 feet and 754 feet respectively.

In comparing the water elevations in the seven wells, the upgradient wells have higher water level elevations than the downgradient wells. The difference in elevation between the upgradient wells and the downgradient wells is about 100 feet for MW-12 and MW-5A and about 200 feet for MW-15. This data supports the conclusion that the upgradient wells are in fact in upgradient positions.

Upgradient Wells 1st Quarter 2010 Static Water Elevations

MW-5A - 857'
MW-15 – 955'
MW-12 – 856'

Downgradient Wells 1st Quarter 2010 Static Water Elevations

MW-6 – 745’
MW-7 – 734’
MW-20 – 751’
MW-21 – 754’

2. There is a statement in the text regarding “...*the likely mounding effect of groundwater moving outward from the landfill...*”. The landfill was built with a low permeability layer overlying the rock rubble in the lower portion of the valley to cap the very permeable material. A bottom ash blanket drain was installed on top of the low permeability layer and original ground. This drain would direct any water in it downslope and to the mouth of the valley to be discharged and would prevent mounding of groundwater in the valley. The drain would tend to maintain groundwater flow that is similar to the flow regime that existed before the landfill was built. Therefore, due to engineered and constructed drainage features there should not be groundwater mounding underneath the landfill site.
3. The topographic position of the monitoring wells is either inside the valley, on the valley walls (MW-12 and MW-5A) or on the ridge surrounding the valley (MW-15). It would be expected that groundwater flow would mimic the original topography of the valley so that the highest groundwater levels should be found beneath the ridge surrounding the site. The groundwater levels should be less on the hillsides head of the valley and be lower going down valley to the mouth. This would result in groundwater flow from the ridges to the valley bottom and then down valley to the mouth. Therefore, based on the original topography of the valley, the upgradient wells are in upgradient positions and the downgradient wells are in downgradient positions.

Based upon the above, it is apparent that the monitoring wells designated as upgradient wells at the Fern Valley Disposal Site are, in fact, upgradient of the site.

13. Damage Case Claim – Page 77

An analysis of leachate data from the site as of 2002 concluded the following (Norris, 2002):

- Leachate that develops in the field and is collected in the underdrain system of the site routinely or episodically exceed use or health-based standards such as primary and secondary MCLs or health advisories for some constituents. These include pH, total dissolved solids, sulfate, chloride, iron, manganese, arsenic, boron, and selenium. Others that were untested, or tested at inappropriate detection limits (e.g., Pb), may also be present above such standards. Field leachate concentrations frequently exceed, sometimes many-fold, the lab-test leachate concentrations.

DEP Response

This statement is not substantiated. No specific analytical leachate data or monitoring time frames, (quarters or years) are provided to support this claim. Furthermore, an impact attributable to the Fern Valley Disposal Site cannot be inferred on the basis of leachate quality. The facility's leachate is collected and managed in compliance with the site's NPDES permit, the parameters and limitations of which were established based on discharge to the Monongahela River.

14. Damage Case Claim – Page 77

- The discharge of leachate from the Fern Valley CCW landfill were allowed by the NPDES permit without chemical treatment (except for pH) and without monitoring or discharge limits for any chemical constituents except pH, aluminum, iron, oil and grease. The pH of the discharge would routinely exceed standards if not continuously treated and does so when treatment systems have failed.”

DEP Response

No specific analytical leachate data or monitoring time frames (quarters or years) are provided to support this claim. The facility's leachate is collected and managed in compliance with the site's NPDES permit, the parameters and limitations of which were established based on discharge to the Monongahela River.

15. Damage Case Claim – Page 77

The discharges from the CCW disposal site that are anticipated or already observed by the operator exceed, or may exceed, use-based or health-based standards such as primary and secondary MCLs or health advisories for some constituents. These include, at least, total dissolved solids, sulfate, iron, aluminum, arsenic, lead, boron, and selenium.

DEP Response

DEP deems this claim to be speculative and without merit. No specific analytical leachate data or monitoring time frames (quarters or years) are provided to support this claim. The facility's leachate is collected and managed in compliance with the site's NPDES permit, the parameters and limitations of which were established based on discharge to the Monongahela River.

16. Damage Case Claim – Pages 77 and 78

Surface water quality (SW-2) has significantly degraded downstream from the CCW landfill compared to upstream water quality (SW-1). SW-2 is located well beyond the waste boundary of the landfill on a tributary 200 feet downstream of NPDES Outfall 001, the principal spillway for the leachate pond. This sampling location is also right before the tributary enters a culvert that empties into the Monongahela River. From around 1997 to

2006 chloride, sulfate and TDS levels generally ranged two to five times higher at SW-2 than at upstream sampling locations (SW-1 and SW-3), and sulfate and TDS concentrations at SW-2 commonly exceeded the secondary MCL by two or three times.

DEP Response

DEP does not agree that the basis for this claim is attributable to the Fern Valley Disposal Site. Data submitted to DEP indicates that chloride, sulfate and TDS levels in the downstream surface water monitoring point (SW-2) between 1997 and 2006 fluctuates above and below the secondary MCLs. As previously noted and documented, the upstream surface water has been affected by past strip mining of coal and an old unlined municipal waste disposal facility adjacent to the site. The untreated leachate from the tow of municipal waste landfill flows directly into the stream, which flows adjacent to the Fern Valley Disposal Site.

17. Damage Case Claim – Page 78

Arsenic concentrations were measured in three samples at SW-2 in 2001 and 2002 at levels from 2 to 9 times the primary MCL.

DEP Response

DEP does not agree that the basis for this claim is attributable to the Fern Valley Disposal Site. As previously noted and documented, the upstream surface water has been affected by past strip mining of coal and the old, unlined Clairton Landfill located adjacent to the site. The untreated leachate from the tow of Clairton Landfill flows directly into the stream which flows adjacent to the Fern Valley Disposal Site.

18. Damage Case Claim – Page 78

Selenium was measured at SW-2 at 0.047 mg/L in March 2001 and 0.028 mg/L in February 2002, 10 times and 6 times higher respectively than the Pennsylvania water quality criteria for the protection of aquatic life from chronic toxicity effects of selenium (0.0046 mg/L). These concentrations were also many times over arsenic and selenium levels measured upstream of the landfill which were below levels of detection.

DEP Response

Water quality monitoring data submitted to DEP for this site indicates that selenium was present at monitoring point SW-2, the downgradient surface water monitoring point for the site. The level in 2001 was 23 µg/L (Total) and 11 µg/L (Total) in 2002. The EPA Primary Drinking Water Standard for selenium is 50 µg/L. Characterization of these analytical results as ‘many times’ over the measured upstream levels is meaningless given the absence of upstream detection.

19. Damage Case Claim – Page 78

The degradation of surface water quality downstream from the CCW landfill has had an adverse impact on aquatic organisms. A benthic study commissioned by the operator in 1995 found that for two key environmental indexes, mean species diversity and equitability, the downstream location (SW-2) was degraded relative to the upstream sampling location near SW-1 (Norris, 2002).

DEP Response

DEP does not agree that the basis for this claim is attributable to the Fern Valley Disposal Site. As previously noted and documented, the upstream surface water has been affected by past strip mining of coal and an old, unlined municipal waste disposal facility adjacent to the site discharges untreated leachate upstream of surface sampling point SW-2.

20. Damage Case Claim – Page 78

Norris (2002) noted a number of serious deficiencies in the NPDES permit and monitoring system for discharge from the Fern Valley CCW landfill:

- More than 90 percent of the water discharging from this site does not pass through controlled or monitored outlets.
- Neither the storm water system, nor the underdrain and runoff system for the CCW disposal area convey close to the amount of water they should.
- The storm drain system does not even convey to its mouth all of the water that enters it allowing water to infiltrate into the landfill and add to the leachate load.
- For water that does discharge from the controlled outlets, there are no discharge limits for arsenic, selenium, lead and other toxic pollutants known to be present at concentrations of concern, and there are many more toxic pollutants that may be present but have never been monitored.

DEP Response

DEP disagrees with the statements made in this claim. The Fern Valley Disposal Site meets all applicable Environmental Regulations regarding erosion and sedimentation controls, leachate management and NPDES requirements.

21. Damage Case Claim – Page 78

Incident and Date Damage Occurred/Identified

Higher arsenic, boron, chloride, sulfate, and TDS levels exceeding health and use-based standards have been measured in downgradient groundwater and downstream of the landfill from at least 1995 onward.

DEP Response

This statement is vague and misleading. The EIP Report does not identify the monitoring wells or specify the monitoring events to which this statement refers. DEP notes that the Fern Valley Disposal Site was constructed downgradient of an abandoned surface coal mine and adjacent to an old, unlined municipal waste landfill. In 1995 a groundwater assessment was conducted and DEP concluded that activities conducted in the past at both the municipal waste landfill and the abandoned mine have had a negative impact on groundwater and surface water upgradient and sidegradient of the facility as evidenced by background groundwater monitoring.