Comments on AEP SWEPCO Pirkey Power Plant

EPA:

Page 16, last paragraph of Section 3.3.1: Reference to “Dolet Hills”. This needs to be changed to the actual facility being assessed.

State: None

Company: See comment document dated February 23, 2011

Comments on Draft Dam Assessment Report – Pirkey Plant

- February 23, 2011 -

AEP has reviewed the draft report provided by AMEC as part of their assessment of the ash impoundment facilities at the Pirkey Plant and would like to offer the following comments. AEP's comments are denoted in *italic* print after each excerpt from the AMEC draft report. Also included are AEP's more detailed comments on specific inaccuracies in the report.

Section 4.1 - Rating

> The West Ash Pond, Auxiliary Surge Pond, and Landfill Runoff Pond were rated poor due to the lack of critical analyses which would verify the unit's stability under required loading conditions. Namely, for these ponds, sufficient storage or runoff routing ability for the hydrologic event equivalent to the hazard condition specified for the facility.
>
> In addition, although the factors of safety determined in the 2010 Embankment Investigation were acceptable for the Landfill Runoff Pond, Triaxial and Direct Shear values for the Landfill Runoff Pond were not provided in the Investigation.

The POOR rating is based on lack of critical studies as noted above. However, AEP provided, and the consultant reviewed, the original design reports and analyses related to hydraulic capacity and stability. AEP concurs that a revised hydraulic analysis may be beneficial to perform according to the current criteria established by the Texas Commission on Environmental Quality (TCEQ) for small, low hazard dams, for completeness and updating the records. However, AEP would like to note that there are supporting documents for each facility. Therefore the issue is not the "lack of critical analyses" but rather a comparison of current criteria to the original criteria. AEP maintains a minimum freeboard of two feet on all of the ash ponds. This freeboard would provide a significant storage for precipitation events. Therefore, AEP believes that a revised hydraulic analysis for the Pirkey Plant, while desirable, is not "critical" to the integrity of the facilities. AEP respectfully requests that the consultant reevaluate the "poor" rating of the West Bottom Ash Pond and Auxiliary Surge Pond considering the available data provided. We also note that the landfill storm water runoff pond is in the process of being enlarged to accommodate storm events in accordance with the current regulations.

Section 1.2 Background

Based on the site visit evaluation of the impoundments, AMEC engineers assigned a "Low Hazard" potential to the following ponds: East Ash, Secondary Ash, Surge, Auxiliary Surge, and Landfill Runoff. A "Significant Hazard" potential was assigned to the West Ash Pond.

The consultant notes on the site inspection forms contained in the appendix that the West Bottom Ash Pond is Significant Hazard because:

DESCRIBE REASONING FOR HAZARD RATING CHOSEN:

Failure or misoperation would most likely environmentally impact the adjacent Brandy Branch Reservoir.

The "Failure or misoperation" of the West Bottom Ash Pond would not impact the Brandy Branch Reservoir, but would be directed through an unnamed tributary towards Hatley Creek which is over 5,000 feet away. In fact, drainage in this area is generally away from the Reservoir, specifically to the southwest. AEP believes that a hazard rating of "Low" is appropriate because economic damage would be limited to AEP properties and there would be no significant impact to the environment. AEP would like to point out that bottom ash from Pirkey Plant is classified as a "Class 3" waste in accordance with TCEQ regulations. Class 3 waste is defined as "inert and essentially insoluble, and poses no threat to human health and/or the environment. Class 3 wastes include, but are not limited to, materials such as rock, brick, glass, dirt, and certain plastics and rubber, which are not readily decomposable." Bottom ash also has many accepted beneficial uses, such as for structural fills and road bases. Therefore, it would not create a likely environmental impact. The material is granular and its coarseness and ability to drain will prevent it from "flowing" a significant distance if a failure would occur. Some material may slough through the section of dike that may have failed, but that would be confined to a very limited distance and would not enter Hatley Creek, located a significant distance from the nearest section of the dike of the bottom ash pond. Therefore, we reiterate our request that this pond be classified as "Low Hazard."

Section 1.2.1 State Issued Permits

1.2.1 State Issued Permits

The Texas Commission on Environmental Quality has issued Texas Pollutant Discharge Elimination System (TPDES) Permit No. 02496 to AEP-SWEPCO. This TPDES Permit authorizes AEP-SWEPCO to discharge CCW related materials from Pirkey to unnamed tributuaries of Hatley Creek, which flow to Hatley Creek and on to the Sabine River above the Toledo Bend Reservoir. The effective date of the permit is May 14, 2007. The permit expires at midnight on April 1, 2011.

This section should be reworded to state that the TPDES Permit authorizes discharge of treated wastewater from Pirkey Plant facilities to unnamed tributaries. AEP does not discharge CCW into the receiving streams, as written. The CCW settle out in the impoundments and only water is released, no solids.

Section 3.2.1 Long Term Hydrologic Design Criteria

3.2 Hydrologic and Hydraulic Design

3.2.1 Long Term Hydrologic Design Criteria

The Mine Safety and Health Administration provides minimum hydrologic criteria relevant to CCW impoundments in Impoundment Design Guidelines of the Mining Safety and Health Administration (MSHA) Coal Mine Impoundment Inspection and Plan Review Handbook (Number PH07-01) published by the U.S. Department of Labor, Mine Safety and Health Administration, Coal Mine Safety and Health, October 2007.

We are concerned that AMEC has confused design criteria for <u>coal mine wastes</u> with those for <u>coal combustion wastes</u>. The Pirkey Power Plant and its facilities, including the ash impoundments are not under the jurisdiction of MSHA. As such, AEP follows the design criteria established by the Texas Commission on Environmental Quality (TCEQ) which has jurisdiction over the facilities. Therefore, all reference to MSHA and its design criteria should be replaced with the appropriate criteria required by TCEQ.

As discussed with the inspectors during the site visit, all of the ponds, excluding the landfill runoff pond, were approved by TCEQ Waste Water Division since they function as waste water treatment facilities. The ponds, excluding the landfill runoff pond, are essentially upground reservoirs because all inflows other than direct precipitation are pumped into the facilities. The hydraulic design criteria for each pond, as noted in the report, were appropriate for the type of ponds at the time of design and permitting. It should be noted that there is a minimum of 2 feet of freeboard capacity for each pond between the maximum operating level and the top of dike.

Section 3.3.1 Comparative Stability Factor of Safety Standards

3.3 Structural Adequacy & Stability

3.3.1 Comparative Stability Factor of Safety Standards

Two well regarded sources for embankment design and evaluation criteria include The United States Army Corps of Engineers (USACE) and the United States Mine Safety and Health Administration (MHSA). Minimum recommended factors of safety for different loading conditions can be found in those agency publications, as shown in Table 4 below.

AEP would like to clarify that the information provided in the above referenced manuals are related to criteria for <u>newly</u> designed dams. Based on the USACE Engineering Manual 110-2-1902, Section 3.3 of the manual provides guidance related to the stability

evaluation of existing dams and embankments. This Section states that computed factors of safety less than the preferred values for new dams (FS = 1.5 static conditions) may be acceptable based on past performance and current condition of the dam. It should be pointed out that the Factors of Safety for the facilities presented in the report of the independent consultant, ETTL, (Table 6.1.2) meet or exceed the minimum requirement for new dams.

Section 3.3.2 October 2010 Embankment Investigation

The report notes that the "four native clayey sands (SC), three native clays (CL/CH), [and] two fill clays (CH) in the table were averaged and used in several of the analyses." Relatively undisturbed sandy soil samples were not obtained; therefore, "these soils were modeled using conservative estimates of the friction angle based on the SPT blow counts according to published data." No parameter results from Triaxial and Direct Shear Tests were reported for the Landfill Runoff Pond (L-1 and L-2). Clarification of these Landfill Runoff Pond parameters should be provided. Additionally, clarification should be provided regarding the steps taken as well as the calculations and assumptions that were utilized to determine the values provided in Table 6.

The October 12, 2010 ETTL report on the site investigation and stability analyses of the impoundments describes the soils, laboratory testing and selection process for the strength parameters used in the analyses. It is common practice and accepted professional standards that soil properties are selected based on a combination of the results of site specific drilling and testing programs as well as published data and local knowledge of the subsurface conditions. AEP believes that the selection of design parameters for the facilities is well documented in the ETTL report. Additional testing seems to be unwarranted given the Factor of Safety calculated for the facilities.

Section 3.4 Operations and Maintenance

According to AEP's response to EPA's Request for Information, the next safety assessment is scheduled for the year 2012. AEP considers the Pirkey facility to be Low Hazard.

It should be noted that "the next scheduled safety assessment is scheduled for the year 2012" is based on the size and hazard rating of the facilities as per the TCEQ inspection guidelines which relates to an inspection performed by a professional engineer. This time period of 3 years is the maximum frequency. AEP has a well developed program in the area of dam safety, inspections and maintenance, referenced as Dam Inspection and Maintenance Program (DIMP). As part of the DIMP, AEP has established minimum frequency and criteria for inspections. Quarterly inspections of the facility are performed by Plant personnel and AEP Engineering conducts periodic inspections.

Section 4.5 Inspection Recommendations

4.5 Inspection Recommendations

Although AEP/SWEPCO believes Pirkey to be a low hazard facility, that does not minimize the need for a more detailed and documented record of inspection activities. AMEC recommends that an inspection program be completed monthly by the plant, as well as being expanded to identify observation date, describe the conditions of crests, embankments, and other areas that are observed, identify potential problems, remark on maintenance response to previous concerns, and note conditions of monitoring instrumentation and pond levels. Inspections of the ponds should be performed after significant rainfall events.

AMEC understands a Professional Engineer performed an inspection in March 2009, and the next inspection is planned for 2012. We recommend this type of inspection program and report by a Professional Engineer be continued at least annually, in addition to the recommended monthly inspections by facility personnel.

As noted in AEP's comment on Section 3.4, the company has a well developed, formal inspection program of all dams and dikes owned by AEP and its affiliates. The program is consistent with State and FEMA guidelines. In 2009 the Facility was inspected by an independent consultant professional engineer and in December 2010 the facilities was inspected by an AEP professional engineer. Additionally, documented quarterly inspections by plant personnel are performed and the plant staff provides visual observation of the facilities at least weekly, if not daily, as part of normal operations. In 2010, AEP recommended that these visits be documented in a written log that includes the day/time and any conditions noted. AEP believes that this is a sufficient level of inspections for the size and hazard facilities at the Pirkey Plant. Below is a portion of the inspection form prepared by the consultant that highlights the inspections as well as freeboard:

Inspection Issue #	Comments
1.	SWEPCO conducts daily inspections (visual); AEP Geotechnical conducts annual inspections (written)
2.	Two (2) feet of freeboard is maintained on all ponds

Plant:	Pirkey Plant
Project:	US EPA Inspection Report – Ash Impoundments
Consultant:	AMEC
Document:	Draft Assessment of Dam Safety
Document Date:	November 2010
Review Comments By:	AEP (general comments)
Review Date:	February 11, 2011

#	REFERENCE	COMMENT
1.	1.2.1/p. 4	The CCW Ponds are covered by the TPDES wastewater permit.
2.	1.4	For a complete description of the ash ponds, AEP is providing the following table that lists the crest elevation of the dikes and the maximum operating levels

Ash Pond	Crest Elevation	Max. Operating Elev.
West Bottom Ash	357.00	354.6
East Bottom Ash	357.54	354.6
Secondary Bottom Ash	357.54	354.0
Surge Pond	358.00	355.0
Aux Surge Pond	376.00	374.0
Landfill runoff pond	296.00	292.5

#	REFERENCE	COMMENT
3.	1.4/p. 4	First paragraph states that the ash is dredged and excavated. The Bottom Ash is excavated, and then trucked to the landfill or the nearby mine operation.
4.	1.4/p. 5	First paragraph also states that sludge produced from the FGD process is sent to the ponds. The FGD scrubber sludge is sent to the landfill. The excess process water (filtrate) from the scrubber process is sent to the surge pond.
5.	2.4.2/p. 10	First sentence – surge pond is incorrectly used – it should be "discharge from the secondary ash pond".
6.	2.5.1/p. 10	First sentence – the surge pond is "entirely" incised, not "primarily."
7.	2.7.2/p. 11	Second last sentence – "AEP – SWEPCO personnel responded that the flow was most likely from leachate underdrains" is incorrect. The flow is likely from the pond's under liner drains as indicated on Drawing HP 69-21 (AEPPRK000150.pdf). This drawing indicates the locations of the drains are below the liner and that they exit the embankment at elevation 280.6 feet MSL.
8.	3.2.2/p. 14	Ash ponds second paragraph – Regarding AMEC's note – Per Drawing HP 119 (AEPPRK000384.pdf) that the east and west pond discharge pipe diameter is 36 inches and the secondary ash pond discharge pipe is 12 inches diameter.
9.	3.2.2/p. 15	Second paragraph – This paragraph is not clear whether the landfill runoff pond does or does not include the 19 acre pond.
10.	3.3.1/p. 16	There is reference to SWEPCO's Dolet Hills Power Plant. This should be Pirkey Plant?

11.	4.2.1/p. 22	Sargent and Lundy recommended maintaining a 2.35 feet freeboard in their design drawings. Since the west bottom ash receive almost no runoff and the PMP for this area is 48.45 inches, the west bottom ash pond could handle the ½ PMP of 2.02 feet. Additionally MSHA does not apply to these ponds.
12.	4.2.5/p. 22	Auxiliary Surge Pond – The TP40 indicates that the 100 year 24 hour event is about 10 inches. By maintaining a two feet freeboard, the auxiliary surge pond would be OK. However, we do not believe the MSHA criteria apply to these ponds.
13.	4.3/p. 23	The triaxial and direct shear test results and graph are presented in the appendix of the ETTL report.
14.	4.5/p. 23	Per the AEP Civil (Maintenance) DIMP Guidelines, Inspections are performed on a quarterly basis by plant personnel and once a year by an engineer.
15.	EPA Form West Bottom Ash Pond, Jan 09, p.2	A failure of the West Bottom Ash Pond berm would flow to Hatley Creek through an unnamed tributary, not Brandy Branch reservoir.
16.	EPA Form West Bottom Ash Pond, Jan 09, p.4	See comment number 8 above.
17.	Surge Pond Checklist Form and Inspection Form, p. 4	The surge pond does not have a TPDES outfall, the outfall is pumped as makeup water to the scrubber.
18.	Landfill Stormwater Pond Checklist, Inspection Issue #20	See comment number 8 above.
19.	Landfill Storm Water Pond Inspection Form, p.1	The TCEQ solid waste permit regulates the landfill storm water pond.
20.	Appendix B-12	Picture EAP-8 depicts a water line at the northeast corner of the east ash pond, and not a gas line.
21.	Appendix B-13	Picture EAP-9 depicts a gas line marker at the northeast corner of the east ash pond.
22.	Appendix B-27	Picture LRP-4 shows the approximate location of the landfill pond underdrain discharge point, not seepage.
23.	Last Page, Monitoring Well Water Elevations	The report indicated that no frequency was provided regarding the frequency of taking measurements in the monitoring well – yet the last two pages of the report includes semiannual measurements.