

2023 ANNUAL DAM AND DIKE INSPECTION REPORT

BOTTOM ASH PONDS

**PIRKEY POWER PLANT
HALLSVILLE, TEXAS**

July, 2023

Prepared for: Southwestern Electric Power Company – H.W. Pirkey Plant

Prepared by: American Electric Power Service Corporation

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Dam & Dike Inspection Report (CCR - Bottom Ash Ponds)

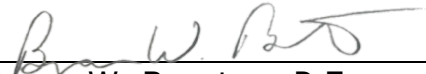
H.W. Pirkey Plant
Hallsville, Texas

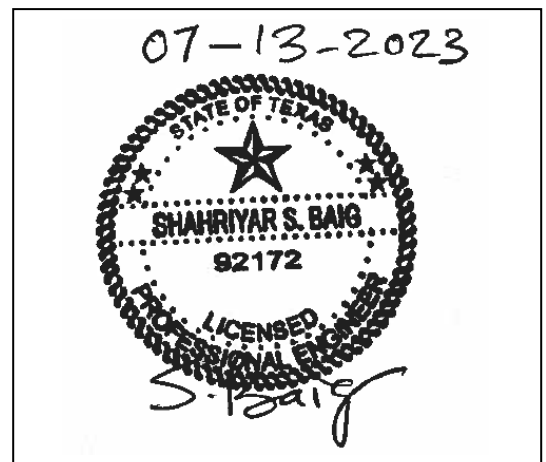
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**PROFESSIONAL ENGINEER
SEAL & SIGNATURE**

I certify to the best of my knowledge, information and belief the information contained in this report meets the requirements of 40 CFR § 257.83(b).

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1.0 INTRODUCTION

This report was prepared by AEP- Geotechnical Engineering Services (GES) section, in part, to fulfill requirements of 30 TAC 352.831 (40 CFR 257.83) and to provide Southwestern Electric Power Company (SWEPCO) and Pirkey Power Plant with an evaluation of the facility.

The AEP H.W. Pirkey Plant is located in southern Harrison County, approximately 5 miles southeast of Hallsville, Texas, and approximately 8 miles southwest of Marshall, Texas as shown in Figure 1 – Vicinity Map in Appendix A.

American Electric Power Service Corporation's Geotechnical Engineering Services section administers the Pirkey Power Plant's Dam Inspection and Maintenance Program (DIMP). As part of the DIMP, staff from the Geotechnical Engineering Services Section annually conducts dam and dike inspections. This report contains the inspection findings, observations, photographic descriptions, conclusions, and maintenance recommendations. This inspection report addresses the Bottom Ash Ponds at the Pirkey Power plant.

Mr. Shah Baig, PE, a staff from the Geotechnical Engineering Services Section, conducted the Ash Ponds Inspection. Mr. Mark Wright of the Pirkey Plant was the facility contact and facilitated the inspection of the ponds. The inspection was performed on June 21, 2023. Weather conditions were mostly sunny with some clouds, with temperatures ranging from upper in 90's (°F). There was 2.34 inches of rainfall over the seven days prior to the inspection and 0.00 inches of rainfall on the day of inspection. Portions of the Bottom Ash Ponds had been recently mowed.

This report has been prepared by Mr. Shah Baig, PE, under the direct supervision of Mr. Bryan Brunton, P.E., AEP's Geotechnical section manager. The report presents: (i) Description of the impoundments, (ii) Summary of Visual Observations; (iii) Conclusions; and (iv) Recommendations. Photographs identifying typical conditions, any problem areas, items that need correction or requiring additional monitoring, have been identified from the inspection and provided in Appendix B of this report.

2.0 DESCRIPTION OF IMPOUNDMENTS

2.1 EAST BOTTOM ASH POND

The East Bottom Ash Pond (EBAP) CCR unit is located at the north end of the Plant and approximately 2,000 feet north-northwest of Brandy Branch Reservoir. The EBAP is partially incised below the existing natural ground surface with an embankment height of approximately 4 feet. The East BAP embankments are constructed of compacted clay on a 3:1 slope (3 feet horizontal, 1 foot vertical). The elevation of the top of the embankment around the perimeter of the East BAP is approximately 357 feet above msl, and the normal operating level is approximately 354 feet above msl. At the time of inspection, the EBAP was out of service and the pond closure-by-removal activities were in progress and the pond bottom was exposed with no water. The interior bottom elevation of the EBAP is approximately 347.0 feet above msl. All the bottom ash was removed from the pond and over-excavation of the subgrade soil was in progress at the time

inspection. These features, including the approximate limits of each area, are shown on the Site Location Map in Appendix A.

Surface water elevation in the EBAP is controlled by a stop log regulated window cut into a concrete riser and a manually operated gate valve on a 36-inch-diameter discharge pipe at the southwest corner of the pond. Clear water overflow from the EBAP discharges through the 36-inch-diameter corrugated metal pipe into the 2.7- acre Secondary Bottom Ash Pond located directly south of the EBAP. Water in the Secondary Bottom Ash Pond is either pumped (recirculated) back into the boiler ash hopper, or gravity discharged through a pipe at the southwest corner of the Secondary Bottom Ash Pond into an unnamed intermittent tributary of Hatley Creek via Outfall 006 in accordance with Texas Pollutant Discharge Elimination System (TPDES) Permit No. WQ0002496000.

2.2 WEST BOTTOM ASH POND

The West Bottom Ash Pond (WBAP) CCR unit is located at the north end of the Plant and approximately 3,000 feet northwest of Brandy Branch Reservoir. The WBAP embankments have a maximum height of approximately 25 feet and are constructed of compacted clay on a slope ranging from 2.5:1 (2.5 feet horizontal, 1 foot vertical) to 3:1. The elevation at the top of the embankment around the perimeter of the WBAP is approximately 357 feet above msl, and the normal operating level is approximately 354 feet above msl. At the time of inspection, the WBAP was out of service and there was no water inside the pond. WBAP closure-by-removal activities were complete by removing all the bottom ash and additional 1-foot of native soil. The interior original bottom elevation of the WBAP is approximately 347 feet above msl. The present bottom of WBAP is lower than 347 feet because of over-excavation as part of the pond closure. These features, including the approximate limits of each area, are shown on the Site Location Map in Appendix A.

Surface water elevation in the WBAP is controlled by a stop log regulated window cut into a concrete riser and a manually operated gate valve on a 36-inch-diameter discharge pipe at the southeast corner of the pond. Clear water overflow from the West BAP discharges through the 36-inch-diameter corrugated metal pipe into the 2.7- acre Secondary Bottom Ash Pond located southeast of the WBAP. Water in the Secondary Bottom Ash Pond is either pumped (recirculated) back into the boiler ash hopper, or gravity discharged through a pipe at the southwest corner of the Secondary Bottom Ash Pond into an unnamed intermittent tributary of Hatley Creek via Outfall 006 in accordance with Texas Pollutant Discharge Elimination System (TPDES) Permit No. WQ0002496000.

3.0 REVIEW OF AVAILABLE INFORMATION (257.83(b)(1)(i))

A review of available information regarding the status and condition of the CCR Ponds, which include files available in the CCR operating record, such as design and construction information, periodic structural stability assessments, previous 7 day inspection reports, 30-day instrumentation data, and previous annual inspections has been conducted. Based on the review of the data there were no signs of actual or potential structural weakness or adverse conditions.

4.0 CHANGES IN GEOMETRY SINCE LAST INSPECTION (257.83(b)(2)(i))

Since the 2022 Annual Inspection, the West Bottom Ash Pond is permanently out of service and is being closed by removal. The southern berm of the West Bottom Ash Pond is being lowered as a result of the closure activities. The East Bottom Ash Pond is currently being closed-by-removal and planned to be completed by end of 2023.

5.0 CHANGES THAT EFFECT STABILITY OR OPERATION (257.83(b)(2)(vii))

The closure-by-removal activities do not affect the stability since both ponds will be permanently out of service.

6.0 IMPOUNDMENT CHARACTERISTICS (257.83(b)(2)(iii, iv, v))

6.1 EAST BOTTOM ASH POND

Table 1 is a summary of the minimum, maximum, and present depth and elevation of the impounded water and CCR material since the previous annual inspection; the storage capacity of the impounding structure at the time of the inspection; and the approximate volume of the impounded water at the time of the inspection.

Table 1 Summary of Relevant Storage Information for East Bottom Ash Pond

	East Bottom Ash Pond
Approximate Minimum depth of impounded water since last annual inspection	0.0 ft
Approximate Maximum depth of impounded water since last annual inspection	0.0 ft
Approximate Present depth of impounded water at the time of the inspection	0.0 ft
Approximate Minimum depth of CCR since last annual inspection	0.0 ft
Approximate Maximum depth of CCR since last annual inspection	0.0 ft
Approximate Present depth of CCR at the time of the inspection	0.0 ft
Storage Capacity of impounding structure at the time of the inspection	188 acre-ft
Approximate volume of impounded water at the time of the inspection	0.0 Gallons
Approximate volume of CCR at the time of the inspection	0.0 c.y.

6.2 WEST BOTTOM ASH POND

Table 2 is a summary of the minimum, maximum, and present depth and elevation of the impounded water and CCR material since the previous annual inspection; the storage capacity of the impounding structure at the time of the inspection; and the approximate volume of the impounded water at the time of the inspection.

Table 2 Summary of Relevant Storage Information for West Bottom Ash Pond

	West Bottom Ash Pond
Approximate Minimum depth of impounded water since last annual inspection	0.0 ft
Approximate Maximum depth of impounded water since last annual inspection	0.0 ft
Approximate Present depth of impounded water at the time of the inspection	0.0 ft
Approximate Minimum depth of CCR since last annual inspection	0.0 ft
Approximate Maximum depth of CCR since last annual inspection	0.0 ft
Approximate Present depth of CCR at the time of the inspection	0.0 ft
Storage Capacity of impounding structure at the time of the inspection	188 acre-ft
Approximate volume of impounded water at the time of the inspection	0.0 Gallons
Approximate volume of CCR at the time of the inspection	0.0 c.y.

7.0 INSPECTION (257.83(b)(1)(ii))

7.1 GENERAL

The summary of the visual observations uses terms to describe the general appearance or condition of an observed item, activity or structure. Their meaning is understood as follows:

Good: A condition or activity that is generally better or slightly better than what is minimally expected or anticipated from a design or maintenance point of view.

Fair or Satisfactory:

A condition or activity that generally meets what is minimally expected or anticipated from a design or maintenance point of view.

Poor: A condition or activity that is generally below what is minimally expected or anticipated from a design or maintenance point of view.

- Minor: A reference to an observed item (e.g., erosion, seepage, vegetation, etc.) where the current maintenance condition is below what is normal or desired, but which is not currently causing concern from a structure safety or stability point of view.
- Significant: A reference to an observed item (e.g. erosion, seepage, vegetation, etc.) where the current maintenance program has neglected to improve the condition. Usually, conditions that have been previously identified in the previous inspections, but have not yet been corrected.
- Excessive: A reference to an observed item (e.g., erosion, seepage, vegetation, etc.) where the current maintenance condition is below or worse than what is normal or desired, and which may have affected the ability of the observer to properly evaluate the structure or particular area being observed or which may be a concern from a structure safety or stability point of view.

In addition, a “deficiency” is some evidence that a dam has developed a problem that could impact the structural integrity of the dam. There are four general categories of deficiencies. These four categories are described below:

1. Uncontrolled Seepage

Uncontrolled seepage is seepage that is not behaving as the design engineer has intended. An example of uncontrolled seepage is seepage that comes through or around the embankment and is not picked up and safely carried off by a drain. Seepage that is collected by a drain can still be uncontrolled if it is not safely collected and transported, such as seepage that is not clear. Seepage that is unable to be measured and/or observe it is considered uncontrolled seepage. [Wet or soft areas are not considered as uncontrolled seepage, but can lead to this type of deficiency. These areas should be monitored frequently.]

2. Displacement:

Displacement of the embankment is large scale movement of part of the dam. Common signs of displacement are cracks, scarps, bulges, depressions, sinkholes and slides.

3. Blockage of Control Features:

Blockage of Control Features is the restriction of flow at spillways, decant or pipe spillways, or drains.

4. Erosion:

Erosion is the gradual movement of surface material by water, wind or ice. Erosion is considered a deficiency when it is more than a minor routine maintenance item.

7.2 VISUAL INSPECTION (257.83(b)(2)(i))

A visual inspection of the CCR Ponds Complex was conducted to identify any signs of distress or malfunction of the impoundment and appurtenant structures. Specific items inspected included all structural elements of the dam such as upstream and downstream slopes, crest, and toe. Figure 3 illustrate the location of inspection photographs and selected photographs taken during the inspection and used to illustrate the visual observations are included at Appendix B. Additional inspection photos can be made available to the Plant upon request.

EAST BOTTOM ASH POND

Currently the East Bottom Ash Pond is being closed-by-removal. In general, the crest, interior and exterior slopes of the dike appear to be in satisfactory and stable condition. No significant change to the exterior slope was noted from the previous inspection. No significant settlement or misalignment was observed. Seeps were not observed during the inspection. No animal burrows were observed during the inspection.

1. Photographs No. 1-3 illustrates the south upstream slope, and crest. The south side appeared in good condition without any signs of settlement, misalignment and cracking observed. An area of the embankment to the west was cutout for the closure-by-removal activities (Photograph No. 3).
2. Photographs No. 6-9 illustrates typical condition of the upstream slope, crest, toe ditch, and interior of the pond. Overall, the north dike is in good and stable condition. A spot was noticed at the crest (Photograph No. 9) with minor rutting from truck traffic. There were no other signs of settlement, misalignment and cracking.
3. Photographs No. 10 shows the general condition of the interior slopes of the west dike of the bottom ash pond. The slope and crest appeared in satisfactory and stable condition. There were some minor erosion gullies on the interior slope but no significant signs of settlement, misalignment, or sloughing.
4. The overflow discharge structure was not functioning at the time inspection due to pond closure work, but the walkway, railings, metal decking, and visible concrete were found to be in satisfactory condition (Photograph No. 11)

WEST BOTTOM ASH POND

The West Bottom Ash Pond is currently out of service and is being closed by removal. Photographs No. 12 and 13 illustrate overall view of the pond interior close area. In general, the crest, interior and exterior slopes of the dike appear to be in satisfactory and stable condition. No significant change to the exterior slope was noted from the previous inspection. The only significant change that has occurred is the excavation and removal of a part of the southern berm as a part of the closure by removal activities. No significant settlement or misalignment was observed. Seeps were not observed during the inspection. No animal burrows were observed

during the inspection. Photographs No. 14-18 illustrate good condition of the supporting dike, slopes, and crest.

SECONDARY BOTTOM ASH POND

Secondary Bottom Ash Pond is located in the southwest corner of the EBAP. Overall condition of this pond is illustrated in Photographs No. 19-22. The pond appeared in good and stable, and functional condition.

Overall, the facility is in good condition. The impoundments during the closure activities are functioning as intended with no signs of potential structural weakness or conditions which may be disrupting to the closure work.

7.3 INSTRUMENTATION (257.83(b)(2)(ii))

The monitoring instrumentation for the West Bottom Ash Pond include open pipe type piezometers (PK-W1 and PK-W3). The piezometers are located at the crest areas and are flush mount design (Figure 2). There is no monitoring instrumentation for the East Bottom Ash Pond.

Historical piezometric water elevation data is provided in Figure 4. The maximum levels measured since the last inspection of the West Bottom Ash Pond are reported below. Because of the closure and not standing water in the ponds, the readings in the piezometers W-1 and W-3 are constantly same as expected.

Pond Name	Crest Elevation (msl)	Boring/Piezometer	Min/Max/Present WSEL (msl)
WBAP	357.0	PK-W1	323.88/323.88/323.88
WBAP	357.0	PK-W3	318.67/318.77/318.67

8.0 SUMMARY OF FINDINGS

Based on the visual observations during the inspection, the dam and appurtenances are generally in good condition. Specific conclusions related to this inspection include:

- There is no evidence of distress that would indicate the possibility of immediate sliding, slope instability, settlement, misalignment or cracking of the bottom ash pond embankments. As such it is concluded that the pond dikes are performing as designed.
- WBAP is already closed by removal and EBAP is in the process of being closed by removal in 2023.

9.0 RECOMMENDATIONS

- None.

9.1 MAINTENANCE ITEMS

The following maintenance items were identified during the visual inspection:

- None.

9.2 ITEMS TO MONITOR

- No Items to monitor

9.3 DEFICIENCIES (257.83(b)(2)(vi))

There were no deficiencies or signs of structural weakness or disruptive conditions that were observed at the time of the inspection that would require additional investigation or remedial action. There were no deficiencies noted during any of the quarterly inspections. If any of these conditions occur before the next annual inspection contact AEP Geotechnical Engineering immediately.

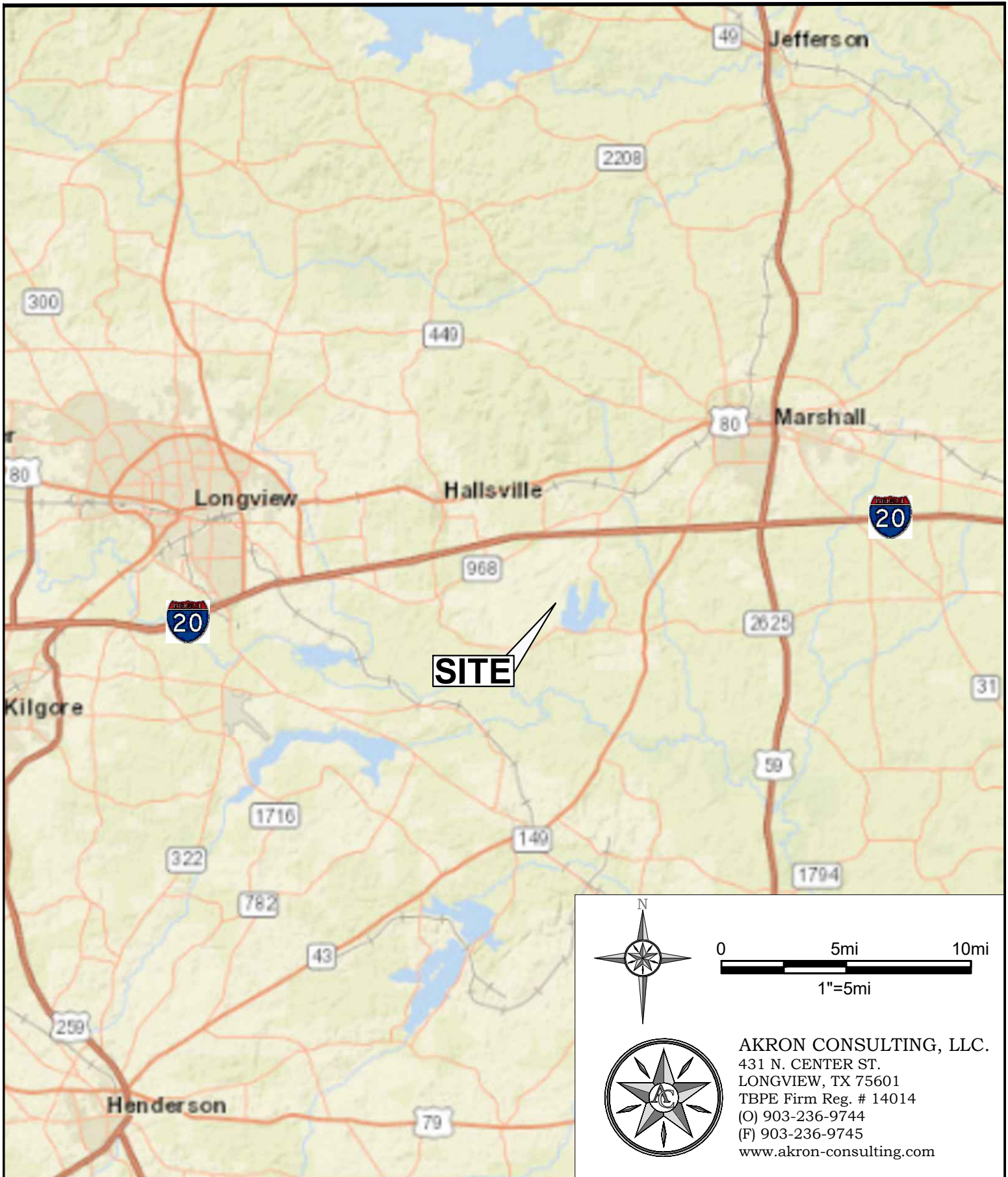
If you have any questions with regard to this report, please contact Shah Baig (Audinet: 200-2241, Phone: 614-716-2241, email: sbaig@aep.com) or Bryan Brunton (Audinet: 200-3090, Phone: 614-716-3090, email: bwbrunton@aep.com).

APPENDIX A:

- **Figure 1 - Vicinity Map**
- **Figure 2 - Site Location Map**

FIGURE 1 - VICINITY MAP

BOTTOM ASH POND, H.W. PIRKEY POWER PLANT, HALLSVILLE, TX



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FIGURE 2 – SITE LOCATION MAP
Pirkey Plant, Hallsville, Texas



APPENDIX B:

- **Figure 3 – Inspection Photograph Location Map**
 - **Inspection Photographs**

Figure 4 – Water Elevation Piezometric Historical Data

FIGURE 3 – INSPECTION PHOTOGRAPH LOCATION MAP
Pirkey Plant, Hallsville, Texas



Photograph No. 1
The upstream of the south dike (looking east).



Photograph No. 2
View of the south dike crest and upstream slope (looking west).



Photograph No. 3
Portion of the dike excavated due to pond closure activities.



Photograph No. 4
View of typical north crest of the east pond.



Photograph No. 5
Upstream slope and pond inside.



Photograph No. 6
View of the crest and toe ditch area.



Photograph No. 7
Pond closure work in progress.



Photograph No. 8
Typical view of the crest.



Photograph No. 9
Minor rutting at the crest.



Photograph No. 10
The west dike between the ash ponds (looking north).



Photograph No. 11
Overflow discharge structure.



Photograph No. 12
Interior of the closed West
Bottom Ash Pond.



Photograph No. 13
Another view of the closed
West Bottom Ash Pond.



Photograph No. 14
East dike (looking north).



Photograph No. 15
East dike (looking south).



Photograph No. 16
Typical view of the south dike of the upstream slope.



Photograph No. 17
Typical view of the west dike.



Photograph No. 18
Typical view of the north dike.



Photograph No. 19
View of the secondary bottom ash pond (looking north).



Photograph No. 20
South dike of the pond (looking west).



Photograph No. 21
East dike of the pond (looking north).



Photograph No. 22
North dike of the pond.22



Figure 4 - Water Elevation Piezometric Historical Data

