

2018 Annual Landfill Inspection Report

CCR Landfill

**Turk Power Plant
Southwestern Electric Power Company
Fulton, Arkansas**

November 2018

Prepared for: Southwestern Electric Power Company – Turk Power Plant

Prepared by: American Electric Power Service Corporation

1 Riverside Plaza
Columbus, OH 43215



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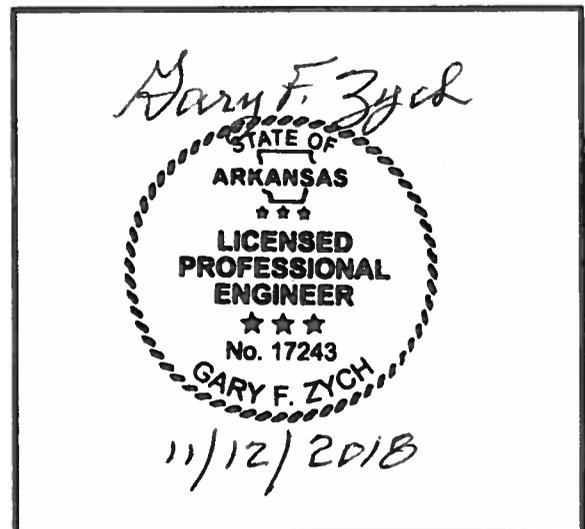
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PREPARED BY Adam L Winebrenner DATE 11/6/2018
Adam Winebrenner

REVIEWED BY Pedro J Amaya DATE 11/12/2018
Pedro J. Amaya, P.E.

APPROVED BY Gary F. Zych DATE 11/12/2018
Gary F. Zych, P.E.
Manager – AEP Geotechnical Engineering



I certify to the best of my knowledge, information and belief the information contained in this report meets the requirements of 40 CFR § 257.84(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 40 CFR 257.84 and to provide the Turk Power Plant an evaluation of the facility.

Adam Winebrenner performed the 2018 inspection of the Landfill at the Turk Power Plant. This report is a summary of the inspection and an assessment of the general condition of the facility. Pedro Amaya, Director of Civil Engineering, Brent Ogden, of the Turk Plant, and Huck Young of AEP Construction Services were present during the inspection. The inspection was performed on October 16, 2018. Weather conditions were cloudy with intermittent rain and the temperature ranged from the 46(°F) to 49(°F) throughout the day. There was a rain event the day prior to the inspection which totaled approximately 0.47-inchs of rainfall and a rain event during the inspection totaling 0.28-inchs. The embankments were mowed during the week of September 23rd.

2.0 DESCRIPTION OF LANDFILL

The overall features of the landfill were categorized into the following components as a means of organizing the inspection and reporting:

- Active Landfill Disposal Area (Cell 1)
- Leachate Collection Pond
- Storm Water Pond and Drainage Ditches
- Perimeter Berm

These features are shown on Figure 1 of Attachment B.

The Active Landfill Disposal Area (Cell 1) is currently where CCR waste is being placed. Cell 1 is 14 acres in size and is 1 of the 5 currently constructed Cells of the planned 73 acre landfill. At the time of the inspection, excavation work and leachate collection system installation were in progress for Cell 2 which is located to the west of Cell 1. The storm water runoff pond is located to the northeast of Cell 1 and collects storm water from the perimeter storm water ditches around the landfill. The Leachate Collection Pond is located to the northwest of Cell 1 and collect leachate generated from the leachate collection system.

3.0 REVIEW OF AVAILABLE INFORMATION (257.84(b)(1)(i))

A review of available information regarding the status and condition of the Landfill which include files available in the operating record, such as design and construction information, previous 7 day inspection reports, 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 of the Landfill.

4.0 INSPECTION (257.84(b)(1)(ii))

4.1 CHANGES IN GEOMETRY SINCE LAST INSPECTION (257.84(b)(2)(i))

No modifications have been made to the geometry of the active Cell 1 since the last annual inspection. The geometry of the landfill has remained essentially unchanged, except for the change in topography of the active disposal area.

4.2 VOLUME (257.84(b)(2)(ii))

The total volume of CCR disposed in the landfill as of the inspection date is estimated to be 570,000 cubic yards. [Note: last year's value was in units of tons and not cubic yards.]

4.3 DEFINITIONS OF VISUAL OBSERVATIONS AND DEFICIENCIES

This summary of the visual observations uses terms to describe the general appearance or condition of an observed item, activity or structure. The meaning of these terms is 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/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 identified in the previous inspections, but have not been corrected.
- Excessive:** A reference to an observed item (e.g., erosion, seepage, vegetation, etc.) where the current maintenance condition is above 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.

This document also uses the definition of a “deficiency” as referenced in the CCR rule section §257.84(b)(5) Inspection Requirements for CCR Landfills. This definition has been assembled using the CCR rule preamble as well as guidance from MSHA, “Qualifications for Impoundment Inspection” CI-31, 2004. These guidance documents further elaborate on the definition of deficiency. Items not defined by deficiency are considered maintenance or items to be monitored.

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

1. Uncontrolled Seepage (Leachate Outbreak)
Leachate outbreak is the uncontrolled release of leachate from the landfill.
2. Displacement of the Embankment
Displacement of the embankment (slopes) is large scale movement of Coal Combustion Byproducts, structural fill or other earthen materials associated with the landfill. Common signs of displacement are cracks, scraps, 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.

4.4 VISUAL INSPECTION (257.84(b)(1)(ii))

A visual inspection of the Landfill was conducted to identify any signs of distress or malfunction of the landfill and appurtenant structures. Specific items inspected included all structural elements of the landfill perimeter berms, temporary and final covers, drainage features, leachate ponds, open Cells, and appurtenances.

Overall the facility is in good condition. The landfill is functioning as intended with no signs of potential structural weakness or conditions which are disrupting to the safe operation of the landfill. Inspection photos are included in Attachment A. Additional pictures taken during the inspection can be made available to the Owner upon request.

Active Landfill Area (Cell 1)

1. Cell 1 is the active disposal area. No ponding of surface water was observed in the disposal area of the landfill. The material was well compacted as it was placed and has been moisture conditioned to stabilized in place. The height of the fill was well above the base liner. There was minor erosion of the CCR material in the active area on the northeast side of Cell 1. (Photo #1)
2. No final cover has been constructed over any portion of the active Cell.
3. A perimeter ditch was constructed within Cell 1 to control runoff from the landfill. The ditch is located below the uncovered slopes of the disposal operation. Deposition of CCR material was observed in the ditches as a result of the sediment-laden runoff. (Photo #1 & #2)

Storm Water Pond and Drainage Ditches

4. The storm water pond is located to the east of Cell 1 and receives non-contact storm water runoff from areas outside the active Cells of the landfill. The pond appeared to be functioning as designed. (Photo #3)
5. The storm water ditches are located around the perimeter of the landfill, which a majority of are formed by the landfill perimeter ditch. The storm water ditches were in good condition with no obstructions or erosion observed. These ditches are lined with the artificial turf used on the perimeter berm. The storm water ditch located south of the landfill appeared to be ponding water in some low areas of the ditch. (Photo #4)

Perimeter Berms

6. The crest of the perimeter was in fair condition. There were a no ruts, cracks or settlement observed at the road surface.
7. The perimeter dike was in good condition and was mowed the week of September 23rd. There are sections along the east and south sides with artificial grass cover and this cover appears to be functioning as designed. There was no erosion or signs of structural instability noted. (Photo #5)

Leachate Collection Pond

8. Overall the leachate collection pond is operating as designed. Leachate enters the pond from the Cell 1 leachate collection system through a pipe at the southwest corner of the pond. Leachate

was being generated at the time of the inspection with the previous rain events. The leachate inlet pipe had vegetation growth around the pipe concrete structure and debris near the pipe outlet. The pond surface was at a normal level. (Photo #6 & #7)

9. The outlet structure had vegetation growth around the immediate structure, this is a minor maintenance item. (Photo #8)
10. As noted in the 2017 landfill inspection a slip of the cover soil was observed on a portion of the south side slope. A repair was performed to regrade and compact the cover soil over the liner. The slip is currently being monitored by the plant for any future movement. (Photo #9)
11. A significant slip of the cover soil on the west slope was observed in the landfill inspection for 2017. This slip was investigated by a consulting engineer and based on recommendations the plant has repaired the slip. The repair included removal of the cover soil over the liner and placement of rip rap at the transition on the north and south end of the repaired section. (Photo #10)

4.5 CHANGES THAT EFFECT STABILITY OR OPERATION (257.84(b)(2)(iv))

Based on interviews with plant personnel and field observations there were no changes to the Landfill since the last annual inspection that would affect the stability of the Landfill.

5.0 SUMMARY OF FINDINGS

5.1 GENERAL OBSERVATIONS

The following general observations were identified during the visual inspection:

1. In general the landfill is functioning as intended. The landfill area is in fair condition due to sediment buildup in the perimeter ditches inside of Cell 1 and erosion occurring on the north CCR slopes. The perimeter berm and storm water ditches and pond are in good condition. The leachate pond is in fair condition due to repairs are required to the cover soil that has slipped.
2. Specific maintenance and items to monitor are described in the subsequent sections of this report.

5.2 MAINTENANCE ITEMS

3. Cell 1: The perimeter ditch that has been constructed inside of Cell 1 to control runoff is being filled with sediment from the CCR material. The CCR material will need to be removed from the perimeter ditch to maintain the design hydraulic capacity and prevent runoff from overflowing the slopes.
4. Leachate pond: Vegetation growth was noted at the outlet structure to the located at the northwest corner of the pond and the inlet structure at the southeast corner of the pond. The vegetation around these structures will need to be removed to ensure proper operation of the structures.

5.3 ITEMS TO MONITOR

5. Cell 1: minor erosion of the CCR material is occurring on the northeast corner of the CCR material. Cell 1 should be monitored for erosion and as the landfill reaches its final elevation the process should be started to install the final cover.
6. Cell 1: the storm water ditch on the south end of the Landfill Cell 1 appeared to be ponding water. This should be monitored to determine if the artificial turf is being separated from the

subsurface soils or if erosion of the soils under the turf is occurring. Contact Geotechnical Engineering for specific monitoring instructions.

7. Leachate Pond: the cover soil slips located on the south side slope of the leachate pond was repaired earlier this year and should be monitored for any subsequent movement. During the inspections recommendations were given to place stakes (no more than 12" deep) along the slope where the slip occurred. These stakes should be surveyed for movement on a weekly basis between December and May (rainy season) and monthly for the other time of the year.

5.4 DEFICIENCIES (257.84(b)(2)(iii))

There were no 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 this inspection or during any of the periodic 7-day inspection.

ATTACHMENT A

Pictures

Photo # 1

Landfill Cell 1 - View of the northeast side of the active landfill and the perimeter ditch. Minor erosion circled in red.



Photo # 2

Landfill Cell 1 - The perimeter ditch is working as intended to prevent runoff from leaving cell. View of buildup in northeast perimeter ditch.



Photo # 3

Storm water pond - pond functioning as designed.



Photo # 4

Storm water ditches – ditches south side of the landfill, some areas holding water



Photo # 5

Perimeter berm - berm with artificial grass cover



Photo # 6

Leachate pond - inlet structure, vegetation growth occurring above structure



Photo # 7

Leachate pond - inlet structure, vegetation growth and debris near pipe outlet



Photo # 8

Leachate pond - outlet structure, vegetation growth occurring around structure



Photo # 9

Leachate Pond – South slope slip repair

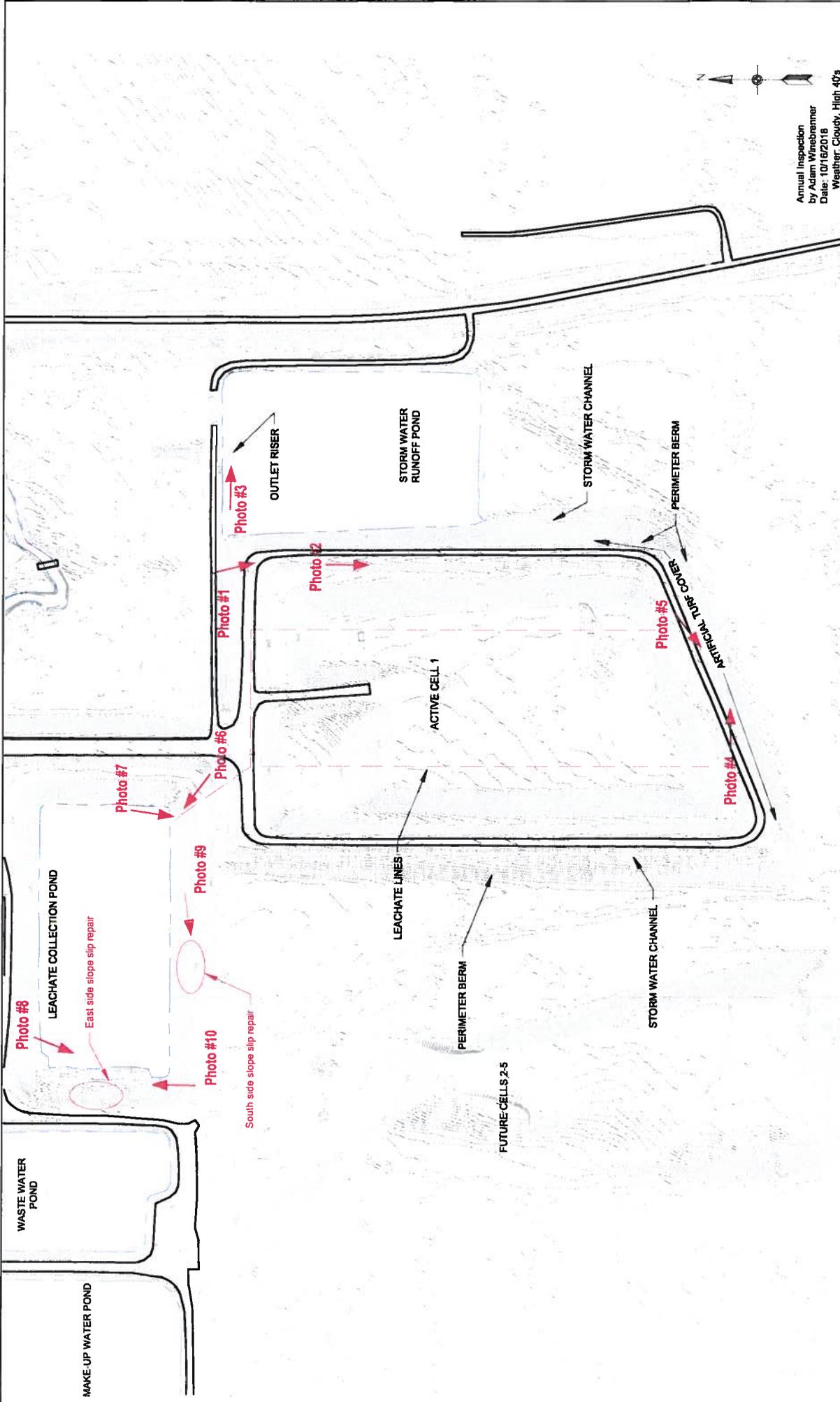


Photo # 10
Leachate pond – West slope
slip repair



ATTACHMENT B

Location Map



Annual Inspection
 by Adam Wirebrammer
 Date: 10/16/2018
 Weather: Cloudy, High 40's



SCALE: 1"=200'

DRNBY:	DATE:	SCALE: 1"=200'
GEO TECHNICAL		
AEP SERVICE CORP		
LANDFILL		
JOHN W. TOWN JR. POWER PLANT		
COLUMBUS, OHIO		

FIGURE 1