

2017 Annual Landfill Inspection Report

Ash Landfill

**Welsh Plant
American Electric Power Service Corporation
(SWEPCO)
Cason, Texas**

November 17, 2017

Prepared for: SWEPCO.

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2017 Annual Landfill Inspection Report

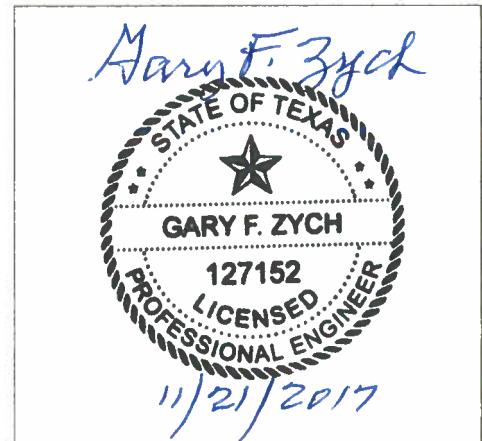
Welsh Power Plant Ash Landfill

Document No. GERS-17-049

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I certify to the best of my knowledge and belief, the information contained in this report meets the requirements of 40 CFR 257.84(b).

2017 Annual Landfill Inspection Report

Welsh Power Plant

Cason, Texas

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- Attachment A – Photos
- Attachment B – Site Map

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 Welsh Power Plant an evaluation of the landfill facility.

Mr. Brett a. Dreger, P.E. performed the 2017 inspection of the Landfill at the Welsh Power Plant. This report is a summary of the inspection and an assessment of the general condition of the landfill facility. Mr. Greg Carter, P.E., Regional Engineering for the Plant, was the facility contact. The inspection was performed on October 25, 2017. Weather conditions were sunny and the temperature was in the mid 60's(°F). There was 1.5-inch of rainfall over the seven days prior to the inspection.

2.0 DESCRIPTION OF LANDFILL

The AEP_SWEPCO Welsh Power Plant has a deed recorded Ash Landfill (also previously known as Fly Ash storage Area and/or Phase1) located in Titus County, Texas. The Welsh Ash Landfill is on record with the Texas Commission on Environmental Quality (TCEQ) as Industrial Solid Waste Registration Number 31086.

The Welsh Ash Landfill receives bottom ash, economizer ash, and fly ash from two (2) 528 MW coal fired boilers. The Welsh Power Plant annually produces approximately 150,000 cubic yards of fly ash and 37,000 cubic yards of bottom and economizer ash.

The Welsh Ash Landfill is generally operated in two sections. The eastern one-third of the landfill is primarily composed of dredged bottom ash, economizer ash, and possibly fly ash material sluiced to the ash landfill between approximately 1986 and 2000. Since 2000, this area has been primary disposal area for the landfill and is currently active. The contract ash marketer utilizes the remaining western two-thirds of the landfill as temporary storage and process area. The ash marketer is contracted to sell all marketable ash material for beneficial reuse in order to extend the life of the landfill.

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.

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 Landfill since the 2016 annual inspection. However, in 2016/2017 the Eastern and Southern perimeter containment berms were re-constructed to address seepage and sloughing issues and to improve stability for long term disposal operations. The geometry of the landfill has remained essentially unchanged.

4.2 Volume (257.84(b)(2)(ii))

In accordance with 257.84(b) the approximate volume of CCR added to/removed from the landfill between October 2016 and October 2017 was estimated by AEP as follows. The CCR Tracking Spreadsheet provided by Landfill staff indicates that approximately 29,363 tons (29,363 cubic yards (yd^3)) of ash by product was added to the landfill while approximately 96,454 tons (69,391 yd^3) and fly ash and flex base were removed from the landfill. This estimate results in a net reduction of volume of CCR in the Landfill of approximately 40,028 yd^3 of material.

From the 2016 annual CCR inspection report, the estimated volume was given as 760,786 yd^3 of CCR material. Applying the estimated reduction of material of 40,028 yd^3 , the total volume of CCR in the Welsh landfill is estimated to be 720,758 yd^3 of material as shown below:

$$760,786 \text{ yd}^3 - 40,028 \text{ yd}^3 = 720,758 \text{ yd}^3$$

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 is large scale movement of part of 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, disposal cells and appurtenances such as leachate collection systems.

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 upon request. A location map presenting the site is included in Attachment B.

Final Cover Areas

1. The final cap/cover system has been placed on the lower portions of the east and southern berm outside slopes. This final cover extends along the eastern berm for approximately 680 linear feet and along the southern berm for approximately 750 linear feet. In general, the final cover was in good condition with vegetation growth and minimal erosion. The most recent areas of final cover placement cover have been seeded and mulched and vegetation is starting to develop (Photographs No. 1 through 7).
2. The perimeter ditch along the toe of the southern and eastern berm was in good shape with no signs of erosion or debris build up. The installation of riprap let down channels in the southeast corner and the northeast corner were in good condition with no signs of erosion or instability (Photographs No. 2, 4 and 5).

Leachate Collection Sumps

3. The leachate collection is handled by two leachate collection sumps installed on the inside slope area of the eastern berm. At the time of the inspection the leachate collection system were operating and appeared to be in good and functioning condition. No photograph was taken of the leachate collection sump outlet pipes.

Temporary Cover Areas

4. The northern berm and western berm outer slopes of the landfill are partially constructed of soil and CCR material with no engineered cover system and sparse vegetation cover. The outer slopes appeared to be in satisfactory and functioning condition with no signs of seepage, erosion or sloughing (Photographs No. 8, 9 and 12, 13, 14).
5. The perimeter ditch along the toe areas of the northern berm and western berm appeared to be in satisfactory condition. There were signs of minor erosion and sediment build up causing the relatively flat ditch to pond water (8, 9 and 12, 13).
6. The culvert pipe located in the north outer berm appeared to be in satisfactory and functional condition. The opening to the culvert pipe located on the inside area of the north berm appeared to be overgrown with vegetation, but flow was able to reach to the outlet channel. (Photographs No. 10 and 11).

Ash Processing Area

7. The western 2/3 of the landfill area is primarily utilized for the processing and sales of CCR materials. At the time of inspection the area was being used for ash processing. The areas are bound on the north and west sides by berms constructed out of soil and ash and have a temporary cover system. The area is bound on the south by a series of

perimeter ditches, driveways and culverts to collect the storm water runoff and direct it towards the low water crossing to exit the landfill (Photographs No. 15 through 20).

Active Landfill Disposal Area (Phase 1)

8. During the inspection the active disposal area (eastern 1/3 area) was being used for waste placement. The leachate collection sump drains were functioning as designed and there was no ponding of water in the disposal area (Photographs No. 21 through 23).

Low Water Crossing

9. The Storm water runoff from the disposal areas is directed towards the western end of the disposal area where it is channeled into a low water crossing on the south side that flows into the Bottom Ash Storage Pond (Photograph No. 24).
10. The low water crossing is constructed of reinforced concrete pavement and was in good and function condition at the time in inspection.

4.5 Changes That Effect Stability or Operation (257.84(b)(2)(iv))

Since the last inspection, the re-construction of the south stability berm, east stability berm, perimeter ditches on the east and south sides and the construction of the low water crossing have been completed. The construction activities completed since the last inspection will improve the overall stability of the landfill outer slopes and provide better storm water runoff collection for operations.

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 and the active area, interim cover, final cover, leachate collection sums and low water crossing are in good condition. The Plant is performing regular maintenance and inspections as required. Some maintenance items have been noted and are described in Section 5.2.
- 2) The vegetation in the newly constructed areas is good, but there are a few erosion rills that have formed and will need to be addressed.

5.2 Maintenance Items

The following maintenance items were identified during the visual inspection. Contact GES for specific recommendations regarding repairs:

- 1 Vegetation growth on the newly capped and covered slopes is good, but several erosion

rills have developed where the vegetation is still sparse. These erosion rills need to be re-graded and seeded as needed.

- 2 Ponding water was observed along the flow line sections of north berm perimeter ditch. The sediment in the ditch needs to be cleaned out and a positive flow line established to prevent future ponding of water.

5.3 Items To Monitor

The following items were identified during the visual inspection as items to be monitored, see inspection map for locations:

- 1 None identified as part of the inspection.

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 inspections. A deficiency is defined as 1) uncontrolled seepage (leachate outbreak), 2) displacement of the embankment, 3) blockage of control features, or 4) erosion, more than minor maintenance. If any of these conditions occur before the next annual inspection contact AEP Geotechnical Engineering immediately.

ATTACHMENT A

Photos

October 25, 2017
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Page 1

<p>Photo # 1</p> <p>View of the Eastern Berm Outside Slope Looking North. Final Cover Has Just Been Placed.</p>	 A photograph showing a grassy hillside with a rocky retaining wall at the bottom. A small white structure is visible on top of the hill. In the background, a tall white industrial chimney stands against a clear blue sky. A car is parked on a dirt road to the right.
<p>Photo # 2</p> <p>View of the Southeast Corner Berm Outside Slope. Notice Rock Let Down Ditches.</p>	 A photograph showing a grassy hillside with a rocky retaining wall at the bottom. A white car is parked on a dirt road to the right. In the background, a tall white industrial chimney stands against a clear blue sky. The hillside shows some exposed soil and rock.
<p>Photo # 3</p> <p>View of the Eastern Berm Outside Slope Looking South. Notice Final Cover Has just Been Placed.</p>	 A photograph showing a grassy hillside with a rocky retaining wall at the bottom. The hillside is mostly covered in green grass. The sky is clear and blue.

<p>Photo # 4</p> <p>View of the Northeast Berm Let Down Ditch.</p>	
<p>Photo # 5</p> <p>View of the 30 and 36 inch Storm Water Pipes Located in Northeast Corner of Landfill Perimeter Ditch.</p>	
<p>Photo # 6</p> <p>View of the South Berm Outside Slope Looking East.</p>	

Photo # 7	 A photograph showing a grassy hillside with distinct erosion rills running down its surface. The ground appears dry and textured.
Photo # 8	 A photograph of a grassy hillside looking towards a flat, open field. The slope shows signs of erosion and sparse vegetation.
Photo # 9	 A photograph of a grassy hillside looking towards a flat, open field. A small stream or ditch runs along the center of the slope, with water visible in its bed.

<p>Photo # 10</p> <p>View of Culvert #2 Outlet Pipe. Located on the Outside Slope in the Northwest corner of the Northern Berm</p>	
<p>Photo # 11</p> <p>View of Culvert #2 Pipe From Inside the Landfill Ash Processing Area.</p>	
<p>Photo # 12</p> <p>View of the Western Berm Outside Slope and Perimeter Ditch Looking North.</p>	

Photo # 13	<p>Typical of the Western Berm Outside Slope and Perimeter Ditch Looking South.</p> 
Photo # 14	<p>View of the Western Berm Outside Slope Looking North.</p> 
Photo # 15	<p>View of the Ash Processing Area. Typical Conditions.</p> 

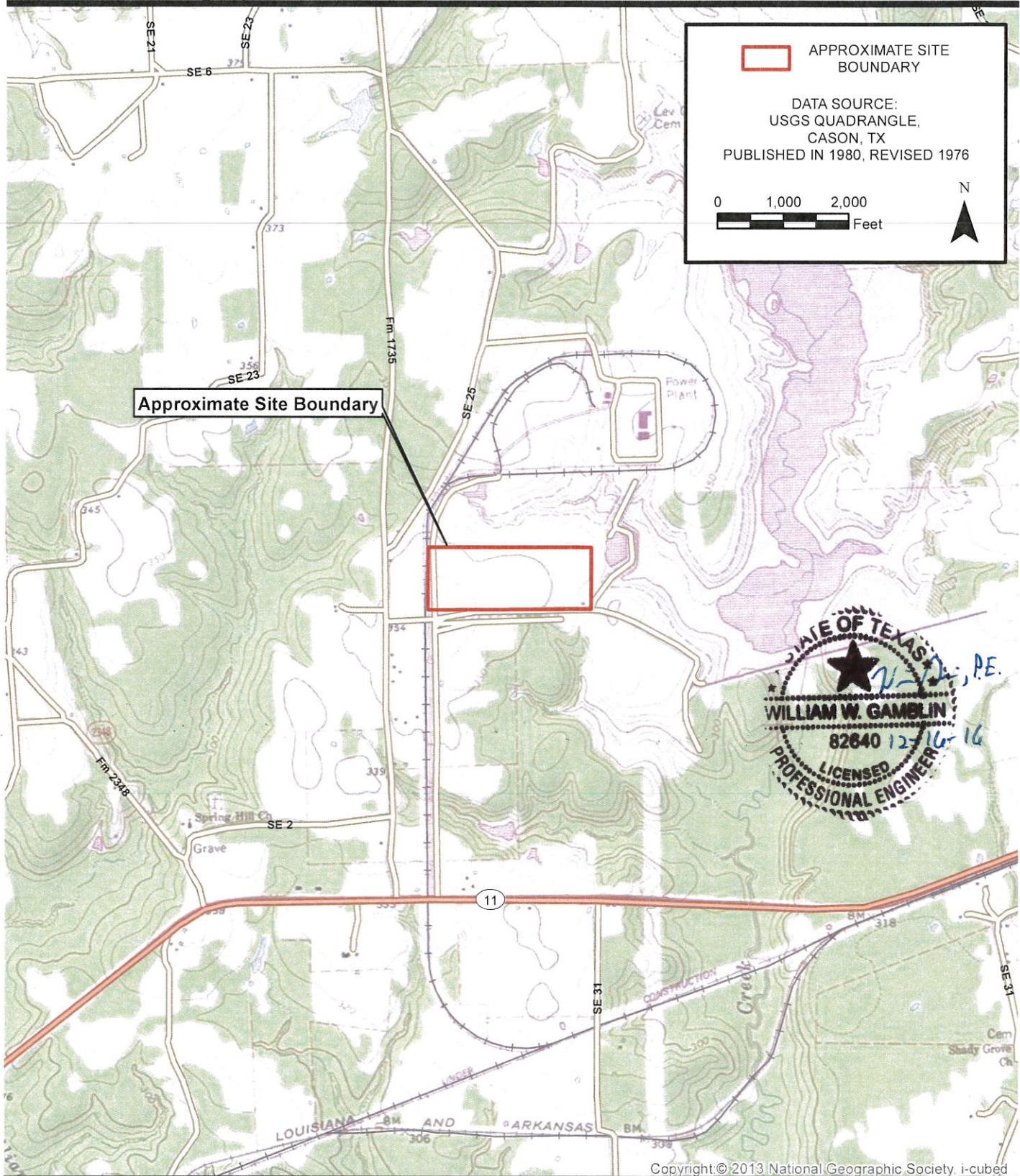
<p>Photo # 16</p> <p>View of the Bottom Ash Dewatering Pit Located in Ash Processing Area.</p>	
<p>Photo # 17</p> <p>View of the Bottom Ash Sluicing Lines Located in the Ash Processing Area.</p> <p>These Line were Out of Service at Time of Inspection.</p>	
<p>Photo # 18</p> <p>View of the Ash Processing Access Driveway with Culvert.</p>	

<p>Photo # 19</p> <p>View of the South Interior Perimeter Ditches for the Ash Processing Area.</p>	
<p>Photo # 20</p> <p>View of the South Side Access Road Ditch Looking East.</p>	
<p>Photo # 21</p> <p>View of the Active Disposal Area Located on the East Side of Landfill. Looking West.</p>	

<p>Photo # 22</p> <p>View of the Active Disposal Area Located on the East Side of Landfill. Looking south.</p>	
<p>Photo # 23</p> <p>View of the Active Disposal Area Located on the East Side of Landfill. Looking West.</p>	
<p>Photo # 24</p> <p>View of the Low Water Crossing Located on South Side of Landfill Active Disposal Area.</p>	

ATTACHMENT B

Site Map



Sheet:	1 of 1
Project No:	B1606473.00
Drawing No:	B1606473.00_LocMap
Scale:	1 in = 2,000 ft
Drawn By:	CMF
Date Drawn:	10/14/15
Checked By:	HR
Last Modified:	12/16/16

SITE LOCATION MAP
AEP WELSH POWER PLANT
AEP ANNUAL CCR INSPECTION
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