

2021 ANNUAL CCR LANDFILL INSPECTION REPORT

Ash Landfill

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

November 29, 2021

Prepared for: SWEPCO.

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GERS-21-075

2021 Annual CCR Landfill Inspection Report

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Ash Landfill

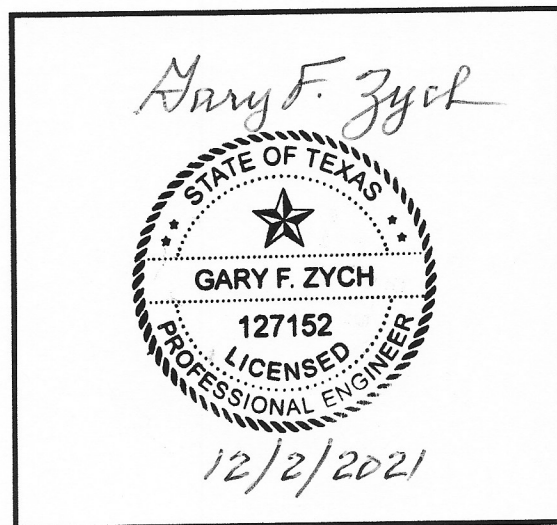
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PREPARED BY Brett A. Dreger **DATE** 12/1/2021
Brett A. Dreger, P.E.

REVIEWED BY [Signature] **DATE** 12-2-2021
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APPROVED BY Gary F. Zych **DATE** 12/2/2021
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).

1.0 INTRODUCTION

This report was prepared by AEP- Geotechnical Engineering Services (GES) section, in part, to fulfill requirements of 30 TAC 352.841 (40 CFR 257.84) and to provide the Welsh Power Plant an evaluation of the facility.

Mr. Brett Dreger, P.E., performed the 2021 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 facility. Mr. Greg Carter, P.E., Regional Engineering for the Plant, was the facility contact. The inspection was performed on October 19, 2021. Weather conditions were mostly sunny, light wind, and the temperature was in the mid 70's° Fahrenheit.

2.0 DESCRIPTION OF LANDFILL

The AEP J. Robert Welsh Plant is located in southern Titus County, approximately 8 miles northeast of Pittsburg, Texas, and approximately two miles northwest of Cason, Texas (Figure 1, Vicinity Map). The CCR landfill is located south of the main plant. The CCR landfill is also located between the bottom ash storage pond to the south and primary bottom ash pond to the north. Figure 2 shows the exact location of the landfill. Figure 1 and 2 are included in Attachment A.

The AEP-SWEPCO Welsh Power Plant has a deed recorded Ash Landfill (also previously known as Fly Ash Storage Area or Phase 1) located in Titus County, Texas. The Welsh Ash Landfill is on record with the Texas Commission on Environmental Quality (TCEQ) as Industrial Solid Waste Facility (Registration Number 31086).

The Welsh Ash Landfill receives bottom ash, economizer ash, and fly ash from two (2) 528 MW coal fired boilers. Typically, 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 fly ash material sluiced to the ash landfill between approximately 1986 and 2000. Since 2000, this area has been the primary disposal area for the landfill and is currently active. An ash marketer is contracted to sell all marketable ash material for beneficial reuse in order to extend the life of the landfill. The ash marketer utilizes the remaining western two-thirds of the landfill as temporary storage and process area.

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 last annual inspection. The overall geometry of the landfill has remained essentially unchanged, except for the change in topography of the active disposal and ash processing areas.

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

In accordance with 257.84(b) the approximate volume of CCR added to or removed from the landfill for beneficial use between November 2020 and October 2021 was estimated by AEP as follows. The CCR Tracking Spreadsheet provided by Landfill staff indicates that approximately 28,292 cubic yards (yd³) of ash by product was added to the landfill while approximately 27,678 cubic yards (yd³) of ash by product (fly ash and flex base) were removed from the landfill. This estimate results in a net additional volume of approximately 614 yd³ of CCR material in the Landfill.

From the 2020 CCR inspection report, the estimated volume was given as 665,242 cubic-yard of the CCR material. Applying estimated net addition of 614 cubic-yards, the total volume of CCR in the Welsh Landfill is estimated to be 665,856 cubic-yards.

$665,242 + 614 = 665,856 \text{ cubic-yards}$

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 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.

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, 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.

4.4 Visual Inspection (257.84(b)(1)(ii))

A visual inspection of the Landfill was conducted to identify any sign 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 satisfactory 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. An inspection photo location map and inspection photographs are included in Attachment B. Additional pictures were taken during the inspection could be made available upon request.

1. The south slope of the landfill and the toe ditch is illustrated in Photograph No. 1. The slope appeared in satisfactory condition with no signs of seepage, erosion, or sloughing. The toe ditch at the time of inspection appeared mostly dry. An area of the top of slope indicated hog rutting activity (Photograph No. 2).
2. Photograph No. 3 illustrates the southeast corner of the landfill where the riprap lined letdown channel is located. The channel appeared in satisfactory and functional condition. There was some overgrown brush and woody vegetation protruding through the rock lined channel.
3. The east slope of the landfill and the toe ditch is illustrated in Photographs No. 4 - 7. The slope appeared in satisfactory condition with no signs of seepage, erosion, or sloughing. The toe ditch at the time of inspection appeared mostly dry. The perimeter ditch below the access walkway on the northern end was bare from vegetation indicating that there had been standing water (Photograph No. 5) in this section of the ditch. Hog rutting activity was noticed on the mid slope near the access walkway on the northern end (Photograph No. 6). The perimeter ditch on the north end showed signs of head cutting activity from erosion (Photograph No. 7).
4. Photograph No. 8 illustrates the HDPE lined letdown channel in the northeast corner of the landfill. The channel appeared to be in satisfactory and functional condition, however there was a small tear in the liner near the anchor trench about midway up the slope (Photograph No. 10). The bottom section of the letdown channel is lined with concrete with energy dissipater blocks to slow water down before it enters the perimeter ditch. There is sediment buildup in the bottom of the ditch near the inlets to the 30 and 36 inch pipes (Photograph No. 9).

5. Photographs No. 11 – 16 illustrates the outer slopes, northern let down channel and perimeter ditch on the north side of the landfill. Most of the slopes appeared in satisfactory condition with no signs of seepage, erosion, or sloughing. Vegetation cover is satisfactory except for a few sparse areas located just west of the northern let down channel (Photograph No. 13 and 14). The west end of the northern berm is in poor condition with overgrown vegetation (Photograph No. 15). Photograph No. 17 shows the view of culvert #2 located in the northwest corner of the landfill. The culvert basin area is in satisfactory condition with some minor overgrown vegetation on the slopes.
6. The outer slopes of the western berm of the landfill are partially constructed of temporary soil cover and CCR material and have overgrown vegetation on the cover. Photographs No. 18 illustrates the condition of the exterior slope and toe ditch. The outer slopes appeared to be in poor, but functioning condition with no signs of seepage, erosion or sloughing. However, excessive vegetation and tree growth was noticed on the slope and in the toe ditch.
7. During the inspection the active disposal area (eastern 2/3 area) was being used for waste placement. The inside perimeter ditches and leachate collection sump drains were functioning as designed and there was no ponding of water in the disposal areas (Photographs No. 19 through 21). All of the storm water inside the landfill is directed to a diversion ditch which leads to a detention basin before it exits the landfill through Pipe Culvert #2 located in the ash processing area (Photographs No. 22 – 24). There is some overgrown vegetation near Pipe Culvert #2 that needs maintenance and clearing.
8. The western 1/3 of the landfill area is primarily utilized for the processing for beneficial use 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. 25 – 28).

9. The low water crossing is constructed of reinforced concrete pavement and was in good and functional condition at the time of inspection (Photograph No. 29). Typically, storm water runoff from the active disposal areas used to be 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. However, since the notice of intent to close the Bottom Ash Storage Pond (April 6, 2021), a clay soil berm has been placed inside the landfill to prevent contact storm water from entering the low water crossing structure. In addition, the south side access road ditch has been plugged with a clay soil berm to prevent non-contact storm water from the access road, low water crossing and the access road ditch from entering the Bottom Ash Storage Pond (Photograph No. 30).

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

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

5.0 SUMMARY OF FINDINGS

5.1 General Observations

In general, the landfill is functioning as intended and the active area, interim cover, final cover, material processing area, runoff control system, and leachate collection sumps 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.

5.2 **Maintenance Items**

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

- 1 The outside slope areas damaged by hog activity on the southern and eastern slopes should be repaired.
- 2 Positive drainage shall be maintained over the landfill and in the perimeter ditches. The low spot in the east side perimeter ditch should be graded and fill in to maintain positive drainage.
- 3 The HDPE liner on the northeast corner let down channel should be repaired to prevent erosion and additional damage to the adjacent area.
- 4 The sediment build up in the northeast corner perimeter ditch near the 30 and 36 inch pipes needs to be cleared to prevent any pipe flow blockage from additional sediment build up.
- 5 Vegetation growth on the newly capped and covered slopes (South, East and North) is satisfactory, but some areas had either sparse vegetation that needs to be re-seeded or overgrown vegetation that needs to be maintained. There were a few areas of vegetation growth on the inside of the landfill needs to maintained as well (culvert #2).
- 6 The inner and outer slopes of the western berm are in poor, but functioning condition. Since this area is primarily an ash processing area, little ash is stacked up against the berm. The west berm will have to be re-built and the slope vegetation cleared and maintained before any active disposal operations can occur in the western end of the landfill.

5.3 **Items To Monitor**

- None identified as part of this inspection.

5.4 Deficiencies (257.84(b)(2)(iii))

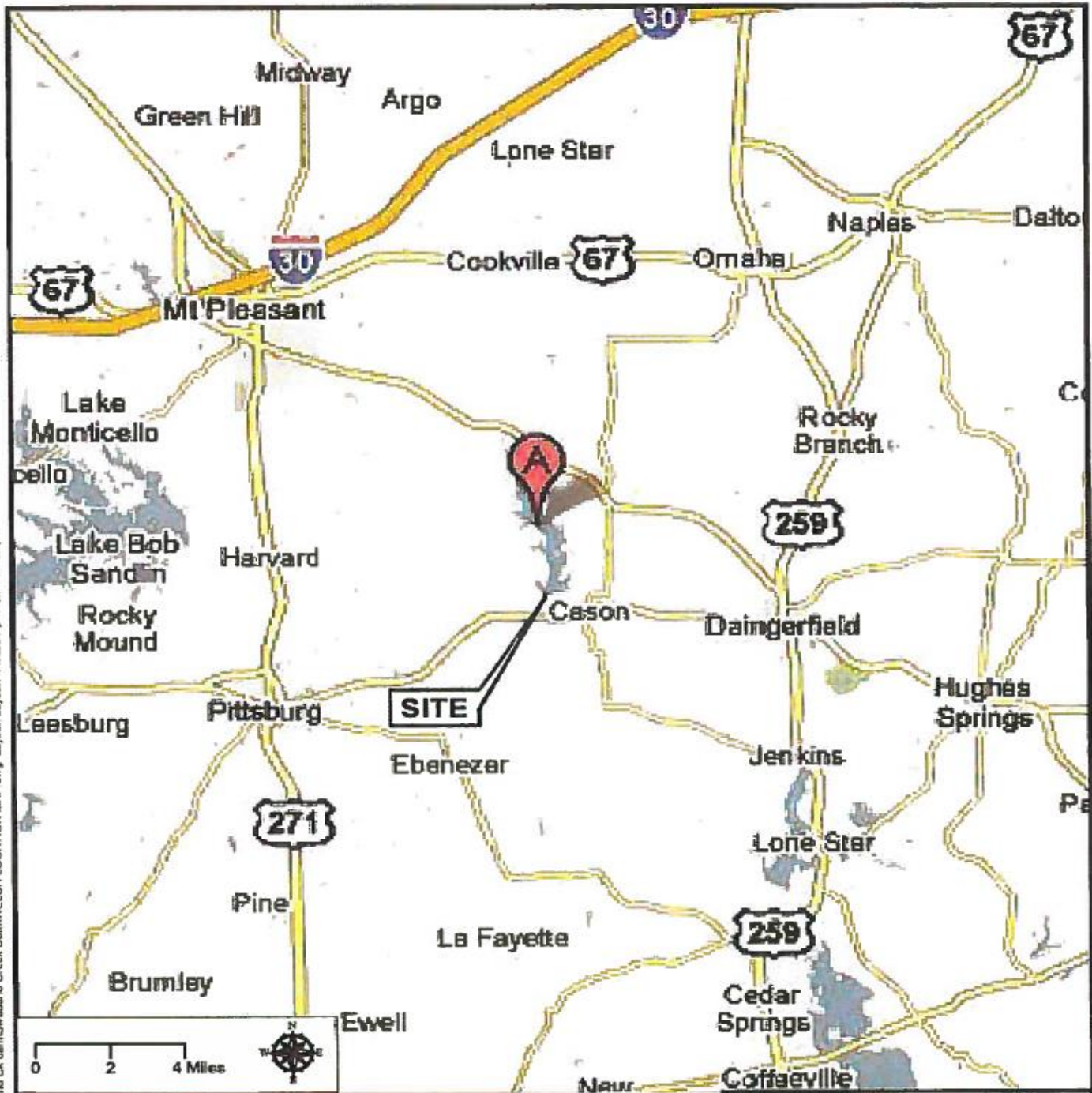
There were no signs of structural weakness or disruptive conditions that were observed at the time of the inspection that would require additional investigation or remedial action. There were no deficiencies noted during this inspection or during any of the periodic 7-day inspections. A deficiency is 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

- **FIGURE 1, VICINITY MAP**
- **FIGURE 2, LANDFILL SITE LOCATION MAP**

FIGURE 1 – VICINITY MAP

CCR LANDFILL, WELSH POWER PLANT, CASON, TX



File: Q:\WEP Dam Inspections\Wep\Drawings\Swauano Ck.dam\Swauano Creek Dam\WELSH LOCATION MAP.dwg, Layout: Layout1, Printed: Apr 14, 2009, 2:45pm

Source: Google Maps

AEP WELSH POWER PLANT SWAUANO CREEK DAM TITUS COUNTY, TX	
 URS Corporation 9400 Amberglen Blvd. Austin, Texas 78729	
DAM & DIKE INSPECTION VICINITY MAP	
DATE: 4/14/2009	SCALE: 1" = 4 MILES
URS JOB NUMBER: 41002103	DRAWN BY: SLC

FIGURE 2 – LANDFILL SITE LOCATION MAP

WELSH POWER PLANT, CASON, TX



ATTACHMENT B

- **FIGURE 3, INSPECTION PHOTOGRAPH LOCATION MAP**
 - **INSPECTION PHOTOGRAPHS**

FIGURE 3 – INSPECTION PHOTOGRAPH LOCATION MAP
CCR LANDFILL, WELSH POWER PLANT, CASON, TX

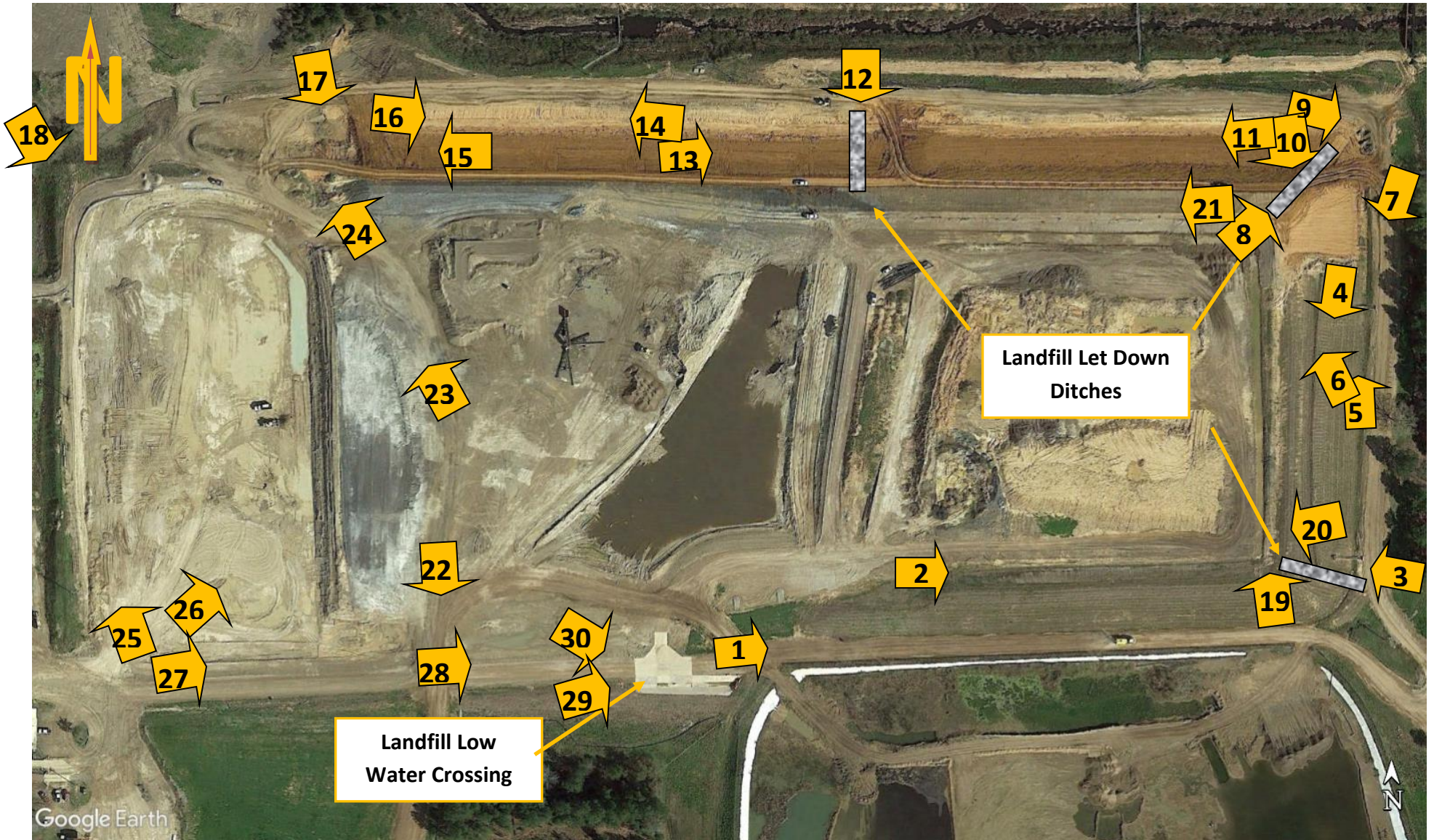


Photo # 1

View of the Southern Berm Outside Slope Looking East.



Photo # 2

View of the Southern Berm Top of Slope looking East. Notice Hog Rutting Activity.



Photo # 3

View of the Southeast Berm Let Down Channel. Notice Some Overgrown Vegetation in Rocks.



Photo # 4

View of the Eastern Berm
Outside Slope Looking South.



Photo # 5

View of the Eastern Berm
Perimeter Ditch. This Section of
Ditch is Flat and Holds Water
After Storm Events.



Photo # 6

View of the Eastern Berm
Outside Slope Conditions. Notice
Hog Rutting Activity.



Photo # 7

View of the Eastern Berm Outside Slope and Perimeter Ditch. Notice Head Cutting in Center of Ditch From Flowing Water.



Photo # 8

View of the Northeast Corner Berm Let Down Ditch.



Photo # 9

View of the 30 and 36 inch Storm Water Pipes Located in Northeast Corner of Landfill Perimeter Ditch. Notice Sediment Buildup in Ditch and In Front of Pipe Inlets.



Photo # 10

View of the Northeast Corner Bern Let Down Ditch. Notice the Tear in the HDPE geomembrane.



Photo # 11

View of the Northern Berm Outside Slope Conditions Looking West.



Photo # 12

View of the Northern Berm Central Let Down Channel.



Photo # 13

Typical View of the Northern Berm and Perimeter Ditch Slope Conditions Looking East. Notice the Areas of Sparse Vegetation.



Photo # 14

View of the Central Area of the Northern Berm Perimeter Ditch Conditions. Notice the Area of Sparse Vegetation.



Photo # 15

View of the West End of the Northern Berm. Notice Vegetation is Overgrown and Berm is in Poor Condition.



Photo # 16

Typical View of the West End Northern Berm Outside Slope Conditions Looking East.



Photo # 17

View of Culvert #2 Outlet Pipe. Located on the Outside Slope in the Northwest corner of the Northern Berm.



Photo # 18

View of the Western Berm Outside Slope Conditions. Notice the Overgrown Vegetation and Mature Tree on the Slope Areas.



Photo # 19

View of the South Interior Perimeter Ditch for the Active Disposal Area Located on the East Side of Landfill.



Photo # 20

View of the East Interior Perimeter Ditch for the Active Disposal Area Located on the East Side of Landfill.



Photo # 21

View of the North Interior Perimeter Ditch for the Active Disposal Area Located on the East Side of Landfill.



Photo # 22

View of the Active Disposal Area Storm Water Diversion Ditch Located in the Middle Section of the Landfill.



Photo # 23

View of the Active Disposal Area Storm Water Detention Area Located in the Middle Section of Landfill.



Photo # 24

View of Culvert #2 Pipe From Inside the Landfill Ash Processing Area.

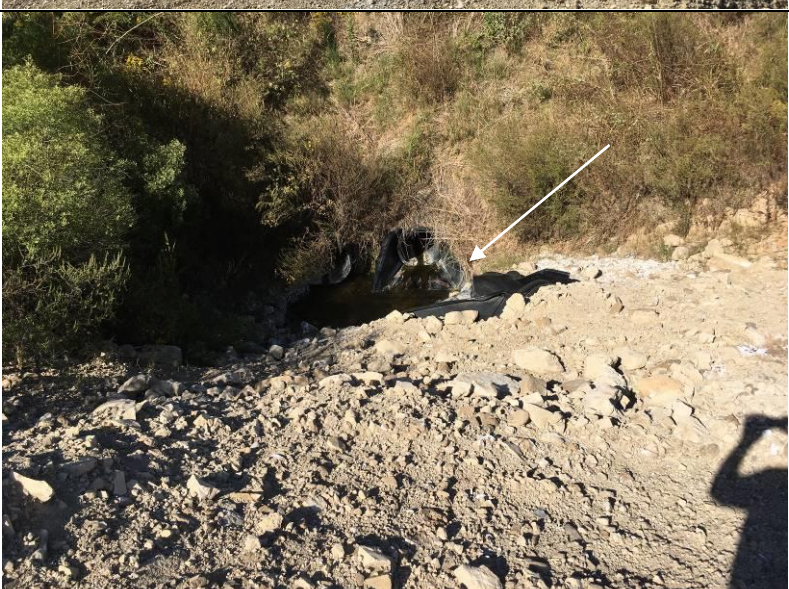


Photo # 25

View of the Interior Western Berm of the Ash Processing Area. Looking North.



Photo # 26

View of the Ash Processing Area Typical Conditions. Looking East.



Photo # 27

View of the South Interior Perimeter Ditch Located Along the Ash Processing Area.



Photo # 28

View of the South Interior Perimeter Ditch Along the Mid-Section of the Landfill.



Photo # 29

View of the Low Water Crossing Located on South Side of Landfill Active Disposal Area. A Soil Berm has Been Placed Along the Interior of the Landfill to Divert Contact Storm Water Away from the Low Water Crossing.



Photo # 30

View of the South Side Low Water Crossing and Access Road Ditch Looking East. The Access Road Ditch Been Plugged with Soil to Prevent Non-Contact Storm Water From the Low Water Crossing and Access Road Ditch from Entering the Bottom Ash Storage Pond.

