

2020 Annual Landfill Inspection Report

Landfill

H.W. Pirkey Power Plant
American Electric Power Service Company
(SWEPCO)
Hallsville, Texas

December 29, 2020

Prepared for:



Prepared by:



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2020 Annual Landfill Inspection Report (CCR Landfill)

H.W. Pirkey Power Plant, Hallsville, Texas

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PREPARED BY *Lane Roberts* DATE 12-28-2020

Lane Roberts, P.E.

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Landon Cole Allen, P.E.

APPROVED BY *Lane Roberts* DATE 12-29-2020

Lane Roberts, P.E.



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

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H.W. Pirkey Power Plant
Hallsville, Texas

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1.0 INTRODUCTION

This report was prepared by Akron Consulting, LLC for the AEP - Geotechnical Engineering Services (GES) section, in part, to fulfill requirements of 40 CFR 257.84 and to provide the H.W. Pirkey Power Plant an evaluation of the facility.

Mr. Lane Roberts, P.E. performed the 2020 inspection of the landfill at the H.W. Pirkey Plant. This report is a summary of the inspection and an assessment of the general condition of the facility. Mr. Ron Franklin of the plant was the facility contact for this inspection, which was performed on November 5, 2020. Weather conditions were partly cloudy with light winds, and the average temperature was in the low 70's (°F). Portions of the landfill had been recently mowed.

2.0 DESCRIPTION OF LANDFILL

The H.W. Pirkey Power Plant is located in southern Harrison County, approximately 6 miles southeast of Hallsville, Texas, as shown in Figure 1 – Vicinity Map in Attachment A. The CCR Landfill is located southwest of the main plant, between the Sabine Mine coal pile to the north and the Landfill Run-off Pond to the South. The overall features of the landfill were categorized into the following components as a means of organizing the inspection and reporting:

- Closed Landfill Area (1984, 1987, 1993, 1995, 1997, 1999, and 2005 Cells)
- Inactive Landfill Areas (2012, 1985 Pond Cell and 1993 Cell)
- Active Landfill Disposal Areas (2015 Cell)
- Landfill Construction Area for 2018 Cell
- Storm Water Drainage Ditches

These features, including the approximate limits of each area, are shown on Figure 2 – Site Map in Attachment A. Selected photographs taken during the inspection and used to illustrate the visual observations presented in the report are presented in Attachment B. Additional inspection photos not included in the report can be made available to the plant upon request.

In general, the southwestern area of the landfill is active. The remainder of the landfill area is considered closed and has a grass or turf cover present or is considered inactive. The landfill was developed around an existing oil/gas well known as the Mohan well which is located near the eastern edge of the landfill. Perimeter ditches carry non-contact water to the surrounding natural drainage courses. Multiple catch basins collect and convey non-contact water via “let-down” piping systems. All contact water is directed towards the Landfill Run-off Pond. The four leachate collection discharge pipes outlet on the southern end of the landfill, and all leachate water is conveyed to the Landfill Runoff Pond to the south. There are two parallel ditches on the western boundary of the landfill area, one ditch for contact water and one ditch for non-contact water.

Material to be placed in the active portions of the landfill is hauled via dump trucks on a haul road, which runs along the north and western edge of the landfill area. The active portion of landfill area has vertical chimney drains, which connect to the leachate collection system. Surface water runoff from the active landfill areas is collected and routed to the Landfill Runoff Pond via the chimney drains.

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 includes files available in the operating record, such as design, and construction information, previous 7-day inspection reports, and previous annual inspections have 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 occurred to the geometry of the landfill since the 2019 annual inspection. The only construction that has occurred since the 2019 annual inspection is the installation of a new 2019 Cap and Cover Area with ClosureTurf, along with the installation of additional rain flap, but neither of these activities changed the overall geometry of the landfill.

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

The total volume of ash disposed at the landfill as of November 2020 was estimated to be approximately 15.5 million 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, these are 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, 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 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, open cells, and appurtenances such as chimney drains etc.

Overall, the facility is in good condition. The landfill is functioning as intended with no signs of potential structural weakness or conditions which are disruptive to the safe operation of the landfill. Inspection photos are included in Attachment B. Additional pictures taken during the inspection can be made available upon request. A site map presenting locations of the inspection observations is included as Figure 2 in Attachment A.

Closed Landfill Areas (1984, 1987, 1993, 1995, 1997, 1999, and 2005 Cells)

1. In general, surface water runoff from the cap was draining as designed. There were no signs of erosion, undermining, scarps or sloughs in the surface vegetation covering the top and side slope areas. Only minor hog rutting damage was found on the north slope of the 2005 Cell.
2. The closed landfill areas were observed to have a thick stand of grass cover over the majority of the capped area. The landfill cover of cells 1984, 1987, 1993, 1995, 1999 and 2005 were well vegetative. Areas with less vegetation had recently been re-seeded and hay mulched.
3. There were no signs of settlement, movement or distress of the landfill area. Access roads on top and adjacent to the landfill area were in good condition.
4. There is ponded water in the perimeter ditch on the north side of the landfill. However, a pump and pump house had recently been installed to pump this water around the landfill.

Inactive Landfill Disposal Areas (2012, 1985 Pond Cell and 1993 Cell)

5. The 36-inch-diameter and 18-inch-diameter leachate collection discharge pipe outlets near the south end of the 2012 Cell were unobstructed and free-flowing.
6. A temporary soil cover consisting of a red sandy-clay material has been placed for an erosion protection measure on the south slope. The vegetation on this area was in good condition. In addition to the soils cover, the lower adjacent area has been recently covered with a geo-membrane rain flap material for erosion protection. All disturbed soil areas were re-seeded and hay mulched as part of this installation.
7. The western-most top portion of the 2012 Cell area was covered with 18-inches of topsoil to complete the 2018 cap system at the end of 2019, and the vegetation is in good condition. As noted previously, a second area to the west was also capped and covered with ClosureTurf at the end of 2019.
8. The 1993 Cell was still covered with a geo-membrane rain flap material that appeared to be in good condition.
9. There is standing water at the surface near the groundwater interceptor drain manhole on the southern side of the landfill. Groundwater is also pushing up on the liner system in the perimeter ditch near the groundwater interceptor drain manhole. According to plant personnel, the groundwater in this area will be lowered once the Landfill Runoff Pond is lowered.

Active Landfill Disposal Areas (2015 Cell)

10. During the inspection, the lower portion of the active area was being re-graded so that a geo-membrane rain flap could be installed. The chimney drains were functioning as designed and there was no evidence of pooling water around the drains. In general, the chimney drain consists of bottom ash placed by filling in a 10-foot-diameter circle with a perforated drainpipe wrapped in filter fabric placed in the center that is connected to the leachate discharge pipes.
11. The CCR materials are being placed and graded in such a manner that any runoff from the active landfill area is collected, contained and drained through the chimney drain system.
12. The lower slopes of the 2015 active cell have been covered with a 20-mil geomembrane rain flap material for erosion protection and to minimize contact water in the perimeter ditches. This will be replaced with ClosureTurf in the near future.

2018 Landfill Cell Construction

13. The 2018 Landfill Cell bottom liner system has not been modified since the 2019 inspection. Once the leachate collection system is installed and a protective cover layer is in place, the cell will be ready for accepting CCR waste.
14. Based on the current conditions, storm water runoff from the liner area and perimeter ditches is considered non-contact water and is diverted around the Landfill Runoff Pond.

Storm Water Drainage Ditches

15. Concrete slope protection installed on the inlet side of two, 36-inch-diameter culverts, which discharge leachate and contact water into the Landfill Runoff Pond was observed to be broken and distressed. The geomembrane landfill liner extends underneath the entire length of the culverts and does not appear to be damaged. An access road is present over the top of the culverts. According to plant personnel, this will be repaired as part of the 2021 cap and cover project.

16. A non-contact water ditch runs along the eastern edge of the landfill area. The vegetation along this ditch was in good condition, with some isolated areas that had recently been re-seeded and hay mulched. There was no evidence of erosion, obstructions or poor drainage conditions.
17. A contact water ditch runs along the western edge of the landfill area and is lined with a geomembrane. The ditch was observed to be clear of any obstructions and will be reclaimed as part of the 2020 cap and cover project.
18. A non-contact storm water ditch which is located along the western edge of the landfill is lined with a geomembrane material. Runoff from the 2005 Cell is collected into a 36-inch-diameter conduit and this conduit discharges into the non-contact water ditch. An earthen berm armored with riprap material has been placed at the end of the non-contact water ditch to divert flow away from the toe area of the Landfill Runoff Pond Dam. Small holes about 2 inches in diameter have been cut into the geomembrane to allow any trapped groundwater under the geomembrane to drain and prevent floating of the geomembrane liner.
19. A non-contact storm water ditch runs along the western edge and southern edge of the landfill that is covered with a rain flap material. Runoff from the lower outside slope of the 2015 Cell is collected into a lined ditch and then discharges into the non-contact water ditch on the western side of the landfill.

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 and the active cell, inactive cells, closed areas, and storm water ditches are in good condition. The Plant is performing regular maintenance and inspections as required. Several 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, see site map for locations. Contact GES for specific recommendations regarding repairs:

- 1) Remove the broken and distressed concrete slab slope protection at the inlet of the two, 36-inch-diameter culverts. After removing the concrete slab, inspect this area for any damages. After inspection, replace the inlet of the culverts.
- 2) Drain the ground water pipes at the south end of the landfill into the Landfill Runoff Pond.
- 3) The hog rutting damage on the north slope of the 2005 Cell should be repaired. Any bare areas should be re-seeded. The ponded water in the north perimeter ditch should be pumped around the landfill with the recently installed pump.

5.3 ITEMS TO MONITOR

The following items were identified during the visual inspection as items to be monitored:

- 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 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 either:

- 1) Uncontrolled seepage (leachate outbreak),
- 2) Displacement of the embankment,
- 3) Blockage of control features, or
- 4) Erosion, more than minor maintenance.

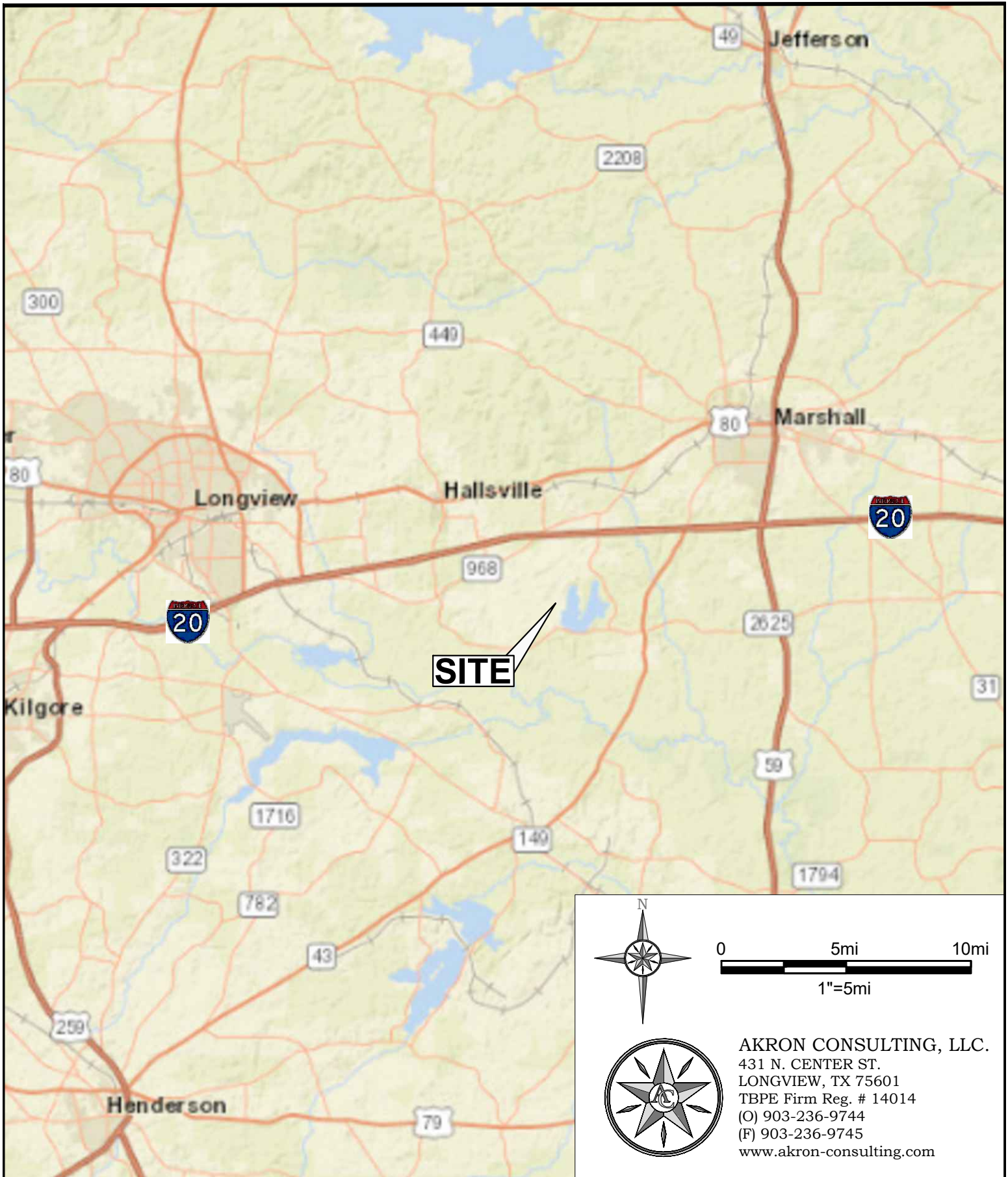
If any of these conditions occur before the next annual inspection, contact the Geotechnical Engineering Services (GES) section immediately.

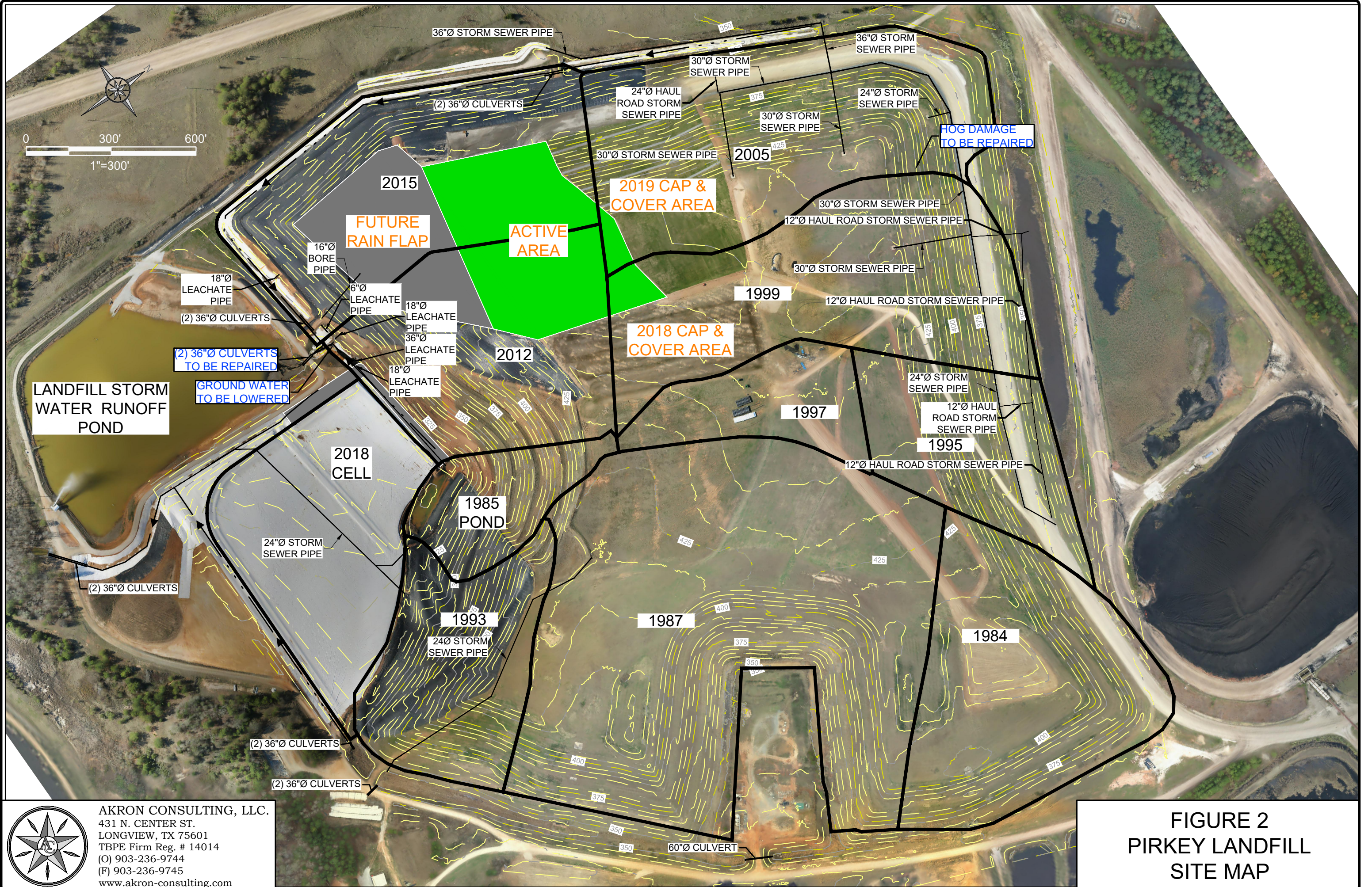
ATTACHMENT A

Figure 1 – Vicinity Map
Figure 2 – Landfill Site Map

FIGURE 1 - VICINITY MAP

CCR LANDFILL, H.W. PIRKEY POWER PLANT, HALLSVILLE, TX





LANDFILL STORM WATER RUNOFF POND

(2) 36"Ø CULVERTS TO BE REPAIRED

GROUND WATER TO BE LOWERED

HOG DAMAGE TO BE REPAIRED

2019 CAP & COVER AREA

2018 CAP & COVER AREA

ACTIVE AREA

FUTURE RAIN FLAP

2015

2005

1999

1997

1995

2018 CELL

1985 POND

1993

1987

1984

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FIGURE 2
 PIRKEY LANDFILL
 SITE MAP

ATTACHMENT B

Figure 3 – Inspection Photograph Location Map
Inspection Photographs

FIGURE 3 - INSPECTION PHOTOGRAPH LOCATION MAP

CCR LANDFILL, H.W. PIRKEY POWER PLANT, HALLSVILLE, TX



INSET 1
SCALE 1" = 100'

PHOTO #1

View of the contact water ditch along the west side of the 2015 Cell



PHOTO #2

View of the non-contact water ditch along the west side of the 2015 Cell



PHOTO #3

View of the non-contact water rain flap ditch along the south side of the 2015 Cell



PHOTO #4

View of the 18" Leachate Pipe Outlet
from the 2015 Cell

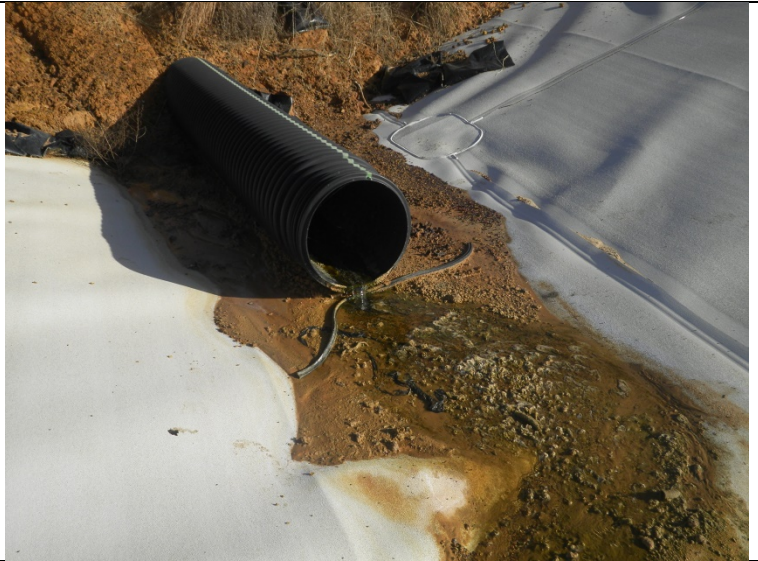


PHOTO #5

View of the 6" Leachate Pipe Outlet
from the 2015 Cell



PHOTO #6

View of the 18" Leachate Pipe Outlet
from the 2012/2015 Cell



PHOTO #7

View of the 36" Leachate Pipe Outlet
from the 2012 Cell



PHOTO #8

View of the 18" Leachate Pipe Outlet
from the 2012/2018 Cell



PHOTO #9

View of the high groundwater under
the perimeter ditch liner



PHOTO #10

View of the broken concrete near the inlet of the dual 36" culverts that drain into the Landfill Runoff Pond



PHOTO #11

View of the downstream end of the dual 36" culverts that drain into the Landfill Runoff Pond



PHOTO #12

View of the recently installed rain flap below the southern slopes



PHOTO #13

View of the rain flap in the 1993 and 2012 Cells, alongside the 2018 Cell



PHOTO #14

View of the eastern slopes



PHOTO #15

View of the southern top of the landfill
(typical condition)



PHOTO #16

View of the energy dissipater of the letdown in the northeast corner with maintained vegetation



PHOTO #17

View of the recently installed pump house to pump water from the north side of the landfill around the landfill



PHOTO #18

View of the north slope and access road



PHOTO #19

View of the 2018 cap and cover area with topsoil and vegetation in good condition



PHOTO #20

View of the top of the 2019 cap and cover area with ClosureTurf



PHOTO #21

View of the slopes of the 2019 cap and cover area with ClosureTurf



PHOTO #22

View of west slopes



PHOTO #23

View of active area

