



ANNUAL INSPECTION OF CCR UNITS

**Oak Grove Steam Electric Station
Robertson County, Texas**

Submitted To: Melvin Mejia
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January 2017

1669251





CERTIFICATIONS

I hereby certify that this report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the state of Texas.



Golder Associates Inc.
F-2578

January 9, 2017
Date

Luminant



EXECUTIVE SUMMARY

The United States Environmental Protection Agency (EPA) promulgated the Resource Conservation and Recovery Act (RCRA) Coal Combustion Residuals (CCR) Rule (Rule) on April 17, 2015. The Rule requires owners or operators of existing CCR surface impoundments and landfills to have those units inspected on an annual basis by a qualified professional engineer in accordance with 40 CFR §257.83(b) §257.84(b). The annual qualified professional engineer inspections are required to be completed and the results documented in inspection reports per CFR §257.83(b)(2) for surface impoundments and §257.84(b)(2) for landfills.

As provided in §257.83(b)(4)(ii), in any calendar year in which both the annual inspection and the quinquennial structural stability assessment of existing surface impoundments are required to be completed, the annual inspection of the CCR surface impoundment is not required. Since the structural stability assessment was recently performed on the surface impoundments, this annual inspection was required for existing CCR landfills only.

Golder Associates Inc. (Golder) was retained by Luminant to perform the 2016 annual inspection of Ash Landfill 1 at the Oak Grove Steam Electric Station located near Franklin, Robertson County, Texas. The inspection of Ash Landfill 1 included the following:

- Review of applicable information regarding the status and condition of the CCR unit; and
- A visual inspection of the CCR unit to identify signs of distress or malfunction of the CCR unit.



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Golder Associates Inc.
F-2578



1.0 INTRODUCTION

The U.S. Environmental Protection Agency (EPA) published the final rule governing the disposal of coal combustion residuals (CCR) as solid waste regulated under subtitle D of the Resource Conservation and Recovery Act (RCRA) on April 17, 2015, with an effective date of October 19, 2015. The CCR Rule establishes national minimum criteria and new CCR management obligations for existing, new, and lateral expansions of CCR disposal units. One of the new obligations pertains to inspections. CCR unit owners/operators must conduct weekly and annual inspections of CCR units. This report presents the results of the second annual inspection of the CCR units at the Oak Grove Steam Electric Station (SES) conducted to comply with §257.83 and §257.84 of the new CCR Rule.

As noted in §257.83(b)(4)(ii), in any calendar year in which both the annual inspection and the quinquennial structural stability assessment [described in §257.73(d) and §257.74(d) (pertaining to existing and new CCR surface impoundment, respectively)] are required to be completed, the annual inspection of the CCR surface impoundment is not required. The structural stability assessment report for the CCR surface impoundments at the Oak Grove facility was prepared by Golder and submitted to Luminant on October 10, 2016; therefore, annual inspections are not required for the three existing surface impoundments at the site (FGD-A, FGD-B, and FGD-C Ponds) and the 2016 annual inspection was limited to Ash Landfill 1.

In accordance with §257.84(b)(1)(ii), a visual inspection of Ash Landfill 1 was conducted on November 16, 2016. The objective of the inspection is to identify signs of distress or malfunction of the CCR unit.

In accordance with §257.84(b)(2), this inspection report has been prepared by a qualified professional engineer documenting the points listed above, and identifying the following:

- any changes in geometry of the structure since the previous annual inspection;
- approximate volume of CCR contained in the unit at the time of inspection;
- any appearances of actual or potential structural weakness of the CCR unit and any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit; and
- any other changes which may have affected the stability or operation of the structure since the previous annual inspection.



2.0 FACILITY DESCRIPTION

The Oak Grove SES is located near Franklin, Robertson County, Texas. The following CCR units are present at the site.

- CCR surface impoundments
 - FGD-A Pond
 - FGD-B Pond
 - FGD-C Pond
- CCR landfill
 - Ash Landfill 1

The locations of the surface impoundments and landfill are shown on Figure 1.

Coal combustion byproducts such as fly ash, bottom ash, gypsum/scrubber sludge, and process wastewater are being generated during operation. Gypsum/scrubber sludge that cannot be recycled and selected process wastewaters are currently managed in FGD-A, FGD-B and FGD-C Ponds. All flyash and bottom ash generated at the facility is handled in a dry manner and deposited in Ash Landfill 1, other than that amount that is sold/beneficially used in accordance with the CCR regulation.

As noted previously, only Ash Landfill 1 was inspected in 2016. Ash Landfill 1, located near the western portion of the facility, was registered with the Texas Commission on Environmental Quality (TCEQ) as a Class 2 Non-hazardous Waste Landfill in 2008; the registration was updated in 2011 and 2012. The original design of the landfill included five cells, Cells 1 through 5; however, Luminant notified the TCEQ on September 2, 2016 that Cell 5 would not be constructed.



3.0 REVIEW OF OPERATIONAL RECORDS

The CCR Rule (§257.84(b)(i)) requires a review of information regarding the status and condition of each CCR landfill, including the following items.

- Results of weekly inspections by a qualified person
- Results of previous annual inspections

As part of the Ash Landfill 1 annual inspection, Golder reviewed the following documents:

- 7-Day Inspection Checklists; and
- Annual Inspection of CCR Units, Oak Grove Steam Electric Station, Golder Associates Inc., January 2016.

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4.0 VISUAL INSPECTION OF CCR UNITS

In accordance with §257.84(b)(1)(ii), a visual inspection of Ash Landfill 1 was conducted on November 16, 2016 by Jeffrey B. Fassett, a registered professional engineer in the State of Texas. Mr. Fassett has over 25 years of experience with design and construction of waste containment systems. Mr. Fassett was accompanied by Melvin Mejia, Dustin Manthei, Larry Johnston, and Zachery Foster of Luminant.

The weather on the date of the visual inspection was sunny and approximately 75 degrees.

Prior to conducting the visual inspection, Luminant provided checklists from the 7-day inspections on Ash Landfill 1. In addition, the objectives of the visual inspection and safety concerns were discussed.

A field checklist and maps of the CCR landfill were used to record the findings. Photographs were taken to provide an additional record. The checklist and photographs are included in Appendix A and B, respectively.

4.1 Summary of Observations

During the visual inspection of Ash Landfill 1 the following observations were made.

- Construction of Cell 4 is complete.
- Embankments
 - Cell 1
 - Hog damage is prevalent on the south and east slopes.
 - The vegetation below the final cover bench is generally good.
 - Recently reseeded areas on the final cover have eroded due to recent rain.
 - The vegetation along the upper portion of the final cover is good; however, the slopes are poorly vegetated and the vegetative cover layer has eroded in places.
 - Cell 2
 - The southern slope is well-vegetated, with minor rilling in isolated areas.
 - Hog damage is present on the eastern portion of the south slope.
 - The northern slope is used to access the landfill and is in good condition.
 - Cell 3
 - The exterior slopes are well-vegetated.
 - Vegetation is present on the protective cover on the interior slopes. Large vegetation with roots that could reach the underlying clay liner, should be removed.
 - Cell 4
 - The exterior slopes are not vegetated and rills are present.



■ Benches

- Some of the drop inlets on the Cell 1 embankment benches are covered or nearly covered with sediment.
- It appears that ponding due to clogged drop inlets has caused erosion at and below the edge of the benches.

■ Downchutes

- The concrete block downchute on the eastern slope of Cell 1 has been replaced with a textured geomembrane-lined downchute.
- The HDPE geomembrane-lined downchute located on the southern embankment at the western edge of Cell 1 is performing well.
- Surface water flow below the geotextile underlying the concrete blocks has eroded the soil below the end of the downchute along the lower bench of Cell 3.
- The concrete block downchute along the northern slope of the Cell 1 embankment is performing well.

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5.0 INSPECTION REPORT

Table 1 provides information for each of the items listed in §258.84(b)(2), related to the inspection report.

Table 1: CCR Unit Information

Item	Ash Landfill 1
Changes in Geometry	Within last year: <ul style="list-style-type: none">• Completed construction of Cell 4• Cell 2 has nearly reached capacity• Replaced concrete block-lined east downchute (Cell 1) with HDPE geomembrane-lined downchute
Approximate Volume of CCR in Unit ⁽¹⁾	Approx. 8.39 million cy
Observed Structural Weakness of the CCR Unit	None
Changes That Affect Stability or Operation of the CCR Unit	None

Notes:

1. Volume of CCR in Ash Landfill 1 provided by Luminant.



6.0 SUMMARY OF FINDINGS AND RECOMMENDED ACTIONS

Based on observations made on November 16, 2016, the overall condition of Ash Landfill 1 is good. No structural weaknesses or safety issues were observed within the landfill.

A summary of the findings and items recommended for repair or maintenance is provided in Table 2.

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7.0 CLOSING

This report has been prepared in general accordance with normally accepted civil engineering practices to fulfill reporting requirements in accordance with 40 CFR 257.84(b). Based on our review of the information provided by Luminant and on our on-site inspection, the overall condition of the Ash Landfill 1 is good.

GOLDER ASSOCIATES INC.

Varenya Kumar, PE
Project Geotechnical Engineer

JBF/VK/jbf



Jeffrey B. Fassett, PE
Associate Geotechnical Engineer

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Table 2: Summary of Findings and Recommendations

CCR UNIT	Component	Condition * (Good/ Fair/ Poor)	Actions Since Last Inspections and Other Observations and Remarks	Photograph	Severity * (Minor/ Moderate/ Severe)	Further Actions and Recommendations
Ash Landfill 1	D/S Slope	Good to Fair	Cell 1: good vegetation below upper bench (i.e. below final cover).	15, 19	Minor	
			Cell 2 and 3: south slope well vegetated; north side vegetation is fair to good.	1, 3,	Minor	
			Cell 4: vegetation not established.	20, 21	Moderate	Fertilize and seed at start of growing season.
			Significant animal burrows present on south slope of Cell 2 and south and east slope of Cell 1.	5, 6, 10, 12	Moderate	Consider animal control program. Identify what the hogs are burrowing for and use herbicide to remove.
			Erosion features due to ponded water present along upper bench on eastern and northern slopes of Cell 1.	13	Moderate	Grade benches to drain to drop inlets. Repair erosion and reseed.
	U/S Slope	Good	Vegetation is present on the protective cover in Cell 3.	4	Minor	Check the root depth of the vegetation. If it exceeds the thickness of the protective cover (1 foot) it should be controlled to prevent damage to the clay liner.
	Benches	Fair	Silt fencing around drop inlets is in need of repair and some of the drop inlets are covered or partially covered with vegetation and/or sediment.		Moderate	Drop inlets likely need more frequent maintenance.
			Rutting affecting drainage along upper bench near southeast corner of Cell 1.	11	Minor	Regrade and confirm that area drains to drop inlet. Monitor for ponding water.
			Erosion features due to ponded water present along upper bench on eastern and northern slopes of Cell 1.	18	Moderate	Grade benches to drain to drop inlets. Repair erosion and reseed.
	Final Cover	Fair	Upper flat portion of the final cover vegetation is good. Vegetation on slopes not well established in areas. Repairs have been made, but rilling is occurring due to inadequate vegetation.	8, 9, 16, 17	Moderate	
	Down-chutes	Good to Fair	The concrete-block downchute on the east slope Cell 1 has been removed and replaced with a temporary HDPE geomembrane-lined downchute. The concrete-block downchute along the northern slope of Cell 1 is performing well.	14		
			The new temporary HDPE geomembrane downchute in Cell 1 and the geomembrane-lined downchute along the southern slope of Cell 2 are performing well.	7, 8		
			Seepage eroding soil below woven geotextile in the concrete block-lined downchute on the southern Cell 3 embankment.	2	Minor	Continue monitoring. If conditions worsen, repair or replace downchute.
Control of Contact Water	Good	Water no longer ponding along south side of Cell 2. Contact water collecting in Cell 3 and Cell 4.				

Abbreviations: D/S - Downstream; U/S - Upstream

Inspection Date: November 16, 2016

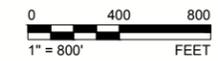
Luminant

FIGURES



REFERENCE(S)
 AERIAL PHOTO SOURCED FROM GOOGLE EARTH PRO DATED OCTOBER 2014

Path: \\nascent\drafting_2016_1648164 - luminant\OakGrove\PRODUCTION\ANNUAL INSPECTION | File Name: 1648164E01.dwg



CLIENT
 LUMINANT POWER

PROJECT
 2016 COAL COMBUSTION RESIDUALS
 ANNUAL INSPECTION

CONSULTANT	YYYY-MM-DD	2017-01-09
	DESIGNED	VK
	PREPARED	TNB
	REVIEWED	WEG
	APPROVED	JBF



TITLE
 OAK GROVE SES
 GENERAL SITE MAP

PROJECT NO. 1669251 REV. 0 FIGURE 1

1 in. IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSI B



REFERENCE(S)
AERIAL PHOTO SOURCED FROM GOOGLE EARTH PRO DATED OCTOBER 2014

CLIENT
LUMINANT POWER
OAK GROVE

PROJECT
2016 COAL COMBUSTION RESIDUALS
ENGINEERING SERVICES

CONSULTANT



YYYY-MM-DD 2017-01-09

DESIGNED JBF

PREPARED TNB

REVIEWED VK

APPROVED JBF

TITLE
SUMMARY MAP OF ANNUAL INSPECTION FINDINGS

PROJECT NO.
1648164

REV.
0

FIGURE
2

**APPENDIX A
INSPECTION CHECKLIST**

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OAK GROVE SES

INSPECTION DATE: 11/16/2016

Ash Landfill 1			CHECK (✓) ACTION NEEDED		
ITEM NO.	CONDITION	OBSERVATIONS	MONITOR	INVESTIGATE	REPAIR
1	SURFACE CRACKING	None			
2	ANIMAL BURROWS	Numerous animal burrows present, particularly on south and east side. Investigate vegetation responsible for increased hog burrowing.	✓	✓	
3	SLIDE, SLOUGH, SCARP	Slough due to ponded water seepage below bench in Cell 1.			✓
4	SETTLEMENT/DEPRESSIONS	None in embankment. Vehicle rutting near southwest corner of Cell 1.			✓
5	VEGETATION CONDITION	Recently repaired sections of final cover have poor coverage. Vegetation not established on outer slopes of recently completed Cell 4.			✓
6	EROSION	Rilling present primarily in recently reseeded areas of final cover in Cell 1 and recently completed Cell 4 downstream slope.			✓
7	DRAINAGE FEATURES	Drop inlets partially or completely covered in vegetation and/or sediment. Ponding water on benches causing erosion below.	✓		✓
8	DOWNCHUTES	HDPE geomembrane downchutes performing well. Erosion observed below concrete block downchute in lower portion of Cell 3 south embankment.	✓		
9	FINAL COVER INTRUSIONS	None			
10	CONTROL OF CONTACT WATER	Contact water collecting in Cell 3 and Cell 4.			
ADDITIONAL COMMENTS: Cell 4 construction complete.					

**APPENDIX B
PHOTOGRAPHS**

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CAMERA LOCATION:
 31.172N, -96.4971W
 (Smartphone GPS)

PHOTO DESCRIPTION:
 Southern slope of Cell 3.

KEY MAP:



	ANNUAL INSPECTION - OAK GROVE SES			
	LUMINANT ENERGY			
	OAK GROVE, TEXAS			
ASH LANDFILL 1				
	PROJECT NO. 1669251		FILE REF. IMG_2924.JPG	
	DESIGN	VK	11/30/2016	SCALE: NTS
	CHECK	VK	11/30/2016	REV: 0
	REVIEW	JBF	11/30/2016	PHOTO 1



CAMERA LOCATION:
 31.1715N, -96.498W
 (Smartphone GPS)

PHOTO DESCRIPTION:
 Seepage below concrete block
 downchute of southern Cell 3
 slope.

KEY MAP:



	ANNUAL INSPECTION – OAK GROVE SES			
	LUMINANT ENERGY			
	OAK GROVE, TEXAS			
ASH LANDFILL 1				
	PROJECT NO. 1669251		FILE REF. IMG_2925.JPG	
	DESIGN	VK	11/30/2016	SCALE: NTS
	CHECK	VK	11/30/2016	REV: 0
	REVIEW	JBF	11/30/2016	PHOTO 2



CAMERA LOCATION:
 31.1715N, -96.4981W
 (Smartphone GPS)

PHOTO DESCRIPTION:
 Southern slope of Cell 3.

KEY MAP:



	ANNUAL INSPECTION – OAK GROVE SES			
	LUMINANT ENERGY			
	OAK GROVE, TEXAS			
ASH LANDFILL 1				
	PROJECT NO. 1669251		FILE REF. IMG_2926.JPG	
	DESIGN	VK	11/30/2016	SCALE: NTS
	CHECK	VK	11/30/2016	REV: 0
	REVIEW	JBF	11/30/2016	PHOTO 3



CAMERA LOCATION:
 31.1714N, -96.4986W
 (Smartphone GPS)

PHOTO DESCRIPTION:
 Cell 3 southern embankment
 and recently completed Cell
 4.

KEY MAP:



	ANNUAL INSPECTION – OAK GROVE SES			
	LUMINANT ENERGY			
	OAK GROVE, TEXAS			
ASH LANDFILL 1				
	PROJECT NO. 1669251		FILE REF. IMG_2927.JPG	
	DESIGN	VK	11/30/2016	SCALE: NTS
	CHECK	VK	11/30/2016	REV: 0
	REVIEW	JBF	11/30/2016	PHOTO 4



CAMERA LOCATION:
 31.1729N, -96.497W
 (Smartphone GPS)

PHOTO DESCRIPTION:
 Southern slope of Cell 2.
 Material place to direct
 contact water away from
 perimeter.

KEY MAP:



	ANNUAL INSPECTION – OAK GROVE SES			
	LUMINANT ENERGY			
	OAK GROVE, TEXAS			
ASH LANDFILL 1				
	PROJECT NO. 1669251		FILE REF. IMG_2929.JPG	
	DESIGN	VK	11/30/2016	SCALE: NTS
	CHECK	VK	11/30/2016	REV: 0
	REVIEW	JBF	11/30/2016	PHOTO 5



CAMERA LOCATION:
 31.1738N, -96.4957W
 (Smartphone GPS)

PHOTO DESCRIPTION:
 Animal burrow on southern
 slope of Cell 2.

KEY MAP:



	ANNUAL INSPECTION – OAK GROVE SES			
	LUMINANT ENERGY			
	OAK GROVE, TEXAS			
ASH LANDFILL 1				
	PROJECT NO. 1669251		FILE REF. IMG_2930.JPG	
	DESIGN	VK	11/30/2016	SCALE: NTS
	CHECK	VK	11/30/2016	REV: 0
	REVIEW	JBF	11/30/2016	PHOTO 6



CAMERA LOCATION:
 31.1738N, -96.4957W
 (Smartphone GPS)

PHOTO DESCRIPTION:
 HDPE geomembrane-lined
 downchute at west end of Cell
 1 southern slope.

KEY MAP:



	ANNUAL INSPECTION – OAK GROVE SES			
	LUMINANT ENERGY			
	OAK GROVE, TEXAS			
ASH LANDFILL 1				
	PROJECT NO. 1669251		FILE REF. IMG_2931.JPG	
	DESIGN	VK	11/30/2016	SCALE: NTS
	CHECK	VK	11/30/2016	REV: 0
	REVIEW	JBF	11/30/2016	PHOTO 7



CAMERA LOCATION:
 31.174N, -96.4958W
 (Smartphone GPS)

PHOTO DESCRIPTION:
 Final cover along top of Cell 1.

KEY MAP:



	ANNUAL INSPECTION – OAK GROVE SES			
	LUMINANT ENERGY			
	OAK GROVE, TEXAS			
ASH LANDFILL 1				
	PROJECT NO. 1669251		FILE REF. IMG_2932.JPG	
	DESIGN	VK	11/30/2016	SCALE: NTS
	CHECK	VK	11/30/2016	REV: 0
	REVIEW	JBF	11/30/2016	PHOTO 8



CAMERA LOCATION:
 31.1747N, -96.4946W
 (Smartphone GPS)

PHOTO DESCRIPTION:
 Erosion of recently repair
 final cover near SW corner of
 Cell1.d

KEY MAP:



	ANNUAL INSPECTION – OAK GROVE SES			
	LUMINANT ENERGY			
	OAK GROVE, TEXAS			
ASH LANDFILL 1				
	PROJECT NO. 1669251		FILE REF. IMG_2936.JPG	
	DESIGN	VK	11/30/2016	SCALE: NTS
	CHECK	VK	11/30/2016	REV: 0
	REVIEW	JBF	11/30/2016	PHOTO 9



CAMERA LOCATION:
 31.1748N, -96.4938W
 (Smartphone GPS)

PHOTO DESCRIPTION:
 Animal burrow on southern
 slope of Cell 1.

KEY MAP:



	ANNUAL INSPECTION – OAK GROVE SES			
	LUMINANT ENERGY			
	OAK GROVE, TEXAS			
ASH LANDFILL 1				
	PROJECT NO. 1669251		FILE REF. IMG_2938.JPG	
	DESIGN	VK	11/30/2016	SCALE: NTS
	CHECK	VK	11/30/2016	REV: 0
	REVIEW	JBF	11/30/2016	PHOTO 10



CAMERA LOCATION:
 31.1751N, -96.4938W
 (Smartphone GPS)

PHOTO DESCRIPTION:
 Rutting on upper bench near
 SE corner of Cell 1.

KEY MAP:



	ANNUAL INSPECTION – OAK GROVE SES			
	LUMINANT ENERGY			
	OAK GROVE, TEXAS			
ASH LANDFILL 1				
	PROJECT NO. 1669251		FILE REF. IMG_2942.JPG	
	DESIGN	VK	11/30/2016	SCALE: NTS
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	REVIEW	JBF	11/30/2016	PHOTO 11



CAMERA LOCATION:
 31.1758N, -96.4935W
 (Smartphone GPS)

PHOTO DESCRIPTION:
 Animal burrow on eastern
 slope of Cell 1.

KEY MAP:



	ANNUAL INSPECTION – OAK GROVE SES			
	LUMINANT ENERGY			
	OAK GROVE, TEXAS			
ASH LANDFILL 1				
	PROJECT NO. 1669251		FILE REF. IMG_2944.JPG	
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	REVIEW	JBF	11/30/2016	PHOTO 12



CAMERA LOCATION:
 31.1775N, -96.4947W
 (Smartphone GPS)

PHOTO DESCRIPTION:
 Slough due to ponded water
 seepage below upper bench in
 Cell 1.

KEY MAP:



	ANNUAL INSPECTION – OAK GROVE SES			
	LUMINANT ENERGY			
	OAK GROVE, TEXAS			
ASH LANDFILL 1				
	PROJECT NO. 1669251		FILE REF. IMG_2948.JPG	
	DESIGN	VK	11/30/2016	SCALE: NTS
	CHECK	VK	11/30/2016	REV: 0
	REVIEW	JBF	11/30/2016	PHOTO 13



CAMERA LOCATION:
 31.1771N, -96.4949W
 (Smartphone GPS)

PHOTO DESCRIPTION:
 Concrete block downchute on
 eastern slope of Cell 1
 removed and replaced with
 HDPE-lining.

KEY MAP:



	ANNUAL INSPECTION – OAK GROVE SES			
	LUMINANT ENERGY			
	OAK GROVE, TEXAS			
ASH LANDFILL 1				
	PROJECT NO. 1669251		FILE REF. IMG_2950.JPG	
	DESIGN	VK	11/30/2016	SCALE: NTS
	CHECK	VK	11/30/2016	REV: 0
	REVIEW	JBF	11/30/2016	PHOTO 14



CAMERA LOCATION:
 31.1775N, -96.4948W
 (Smartphone GPS)

PHOTO DESCRIPTION:
 Upper bench of southern slope
 of Cell 1.

KEY MAP:



	ANNUAL INSPECTION – OAK GROVE SES			
	LUMINANT ENERGY			
	OAK GROVE, TEXAS			
ASH LANDFILL 1				
	PROJECT NO. 1669251		FILE REF. IMG_2951.JPG	
	DESIGN	VK	11/30/2016	SCALE: NTS
	CHECK	VK	11/30/2016	REV: 0
	REVIEW	JBF	11/30/2016	PHOTO 15



CAMERA LOCATION:
 31.1786N, -96.4956W
 (Smartphone GPS)

PHOTO DESCRIPTION:
 Upper bench of southern slope
 of Cell 1. Note vegetation
 around drop inlet.

KEY MAP:



	ANNUAL INSPECTION – OAK GROVE SES			
	LUMINANT ENERGY			
	OAK GROVE, TEXAS			
ASH LANDFILL 1				
	PROJECT NO. 1669251		FILE REF. IMG_2953.JPG	
	DESIGN	VK	11/30/2016	SCALE: NTS
	CHECK	VK	11/30/2016	REV: 0
	REVIEW	JBF	11/30/2016	PHOTO 16



CAMERA LOCATION:
 31.1785N, -96.4963W
 (Smartphone GPS)

PHOTO DESCRIPTION:
 Final cover along top of Cell 1.

KEY MAP:



	ANNUAL INSPECTION - OAK GROVE SES			
	LUMINANT ENERGY			
	OAK GROVE, TEXAS			
ASH LANDFILL 1				
	PROJECT NO. 1669251		FILE REF. IMG_2955.JPG	
	DESIGN	VK	11/30/2016	SCALE: NTS
	CHECK	VK	11/30/2016	REV: 0
	REVIEW	JBF	11/30/2016	PHOTO 17



CAMERA LOCATION:
 31.1785N, -96.497W
 (Smartphone GPS)

PHOTO DESCRIPTION:
 Erosion below upper bench of
 northern Cell 1 slope.

KEY MAP:



	ANNUAL INSPECTION – OAK GROVE SES			
	LUMINANT ENERGY			
	OAK GROVE, TEXAS			
ASH LANDFILL 1				
	PROJECT NO. 1669251		FILE REF. IMG_2957.JPG	
	DESIGN	VK	11/30/2016	SCALE: NTS
	CHECK	VK	11/30/2016	REV: 0
	REVIEW	JBF	11/30/2016	PHOTO 18



CAMERA LOCATION:
 31.1782N, -96.4974W
 (Smartphone GPS)

PHOTO DESCRIPTION:
 Northern slope of Cells 1 and 2.

KEY MAP:



	ANNUAL INSPECTION – OAK GROVE SES			
	LUMINANT ENERGY			
	OAK GROVE, TEXAS			
ASH LANDFILL 1				
	PROJECT NO. 1669251		FILE REF. IMG_2959.JPG	
	DESIGN	VK	11/30/2016	SCALE: NTS
	CHECK	VK	11/30/2016	REV: 0
	REVIEW	JBF	11/30/2016	PHOTO 19



CAMERA LOCATION:
 31.171N, -96.4997W
 (Smartphone GPS)

PHOTO DESCRIPTION:
 Erosion on recently completed
 Cell 4 – SW corner of
 embankment.

KEY MAP:



	ANNUAL INSPECTION – OAK GROVE SES			
	LUMINANT ENERGY			
	OAK GROVE, TEXAS			
ASH LANDFILL 1				
	PROJECT NO. 1669251		FILE REF. IMG_2960.JPG	
	DESIGN	VK	11/30/2016	SCALE: NTS
	CHECK	VK	11/30/2016	REV: 0
	REVIEW	JBF	11/30/2016	PHOTO 20



CAMERA LOCATION:
 31.1716N, -96.5022W
 (Smartphone GPS)

PHOTO DESCRIPTION:
 Erosion on recently completed
 Cell 4 – western embankment.

KEY MAP:



	ANNUAL INSPECTION – OAK GROVE SES			
	LUMINANT ENERGY			
	OAK GROVE, TEXAS			
ASH LANDFILL 1				
	PROJECT NO. 1669251		FILE REF. IMG_2961.JPG	
	DESIGN	VK	11/30/2016	SCALE: NTS
	CHECK	VK	11/30/2016	REV: 0
	REVIEW	JBF	11/30/2016	PHOTO 21