

**ENGINEERING REPORT**

**FOR**

**ANNUAL CCR LANDFILL INSPECTION**  
**40 CFR §257.84(b)**

**FAYETTE POWER PROJECT**  
**COMBUSTION BY-PRODUCTS LANDFILL**

**PREPARED FOR**  
**LCRA**  
**FAYETTE POWER PROJECT**

**PREPARED BY**  
**LCRA ENGINEERING SERVICES**  
**January 13, 2017**



*Nathan Matthew Gullo*  
01-13-2017

This document is certified under the authority of the engineer whose seal appears above. **IT IS NOT TO BE USED FOR PERMITTING, BIDDING, OR CONSTRUCTION PURPOSES.**

---

## TABLE OF CONTENTS

1.0	BACKGROUND .....	3
2.0	DOCUMENT REVIEW.....	3
3.0	LANDFILL GEOMETRY & VOLUME.....	4
4.0	INSPECTION OF IMPOUNDING STRUCTURES.....	5
4.1	LANDFILL CELL 1 WESTERN EMBANKMENT SLOPE.....	5
4.2	LANDFILL NORTHERN EMBANKMENT SLOPE .....	5
4.3	LANDFILL CELL 1 EASTERN EMBANKMENT SLOPE .....	6
4.4	CELL 1 TOP TEMPORARY CAP .....	6
4.5	VISIBLE LINERS.....	6
4.6	RUN-ON/RUN-OFF FACILITIES .....	7
5.0	CONCLUSIONS.....	7
6.0	RECOMMENDATIONS.....	8
6.1	OUTSTANDING RECOMMENDATIONS.....	8
6.2	NEW RECOMMENDATIONS .....	8
	APPENDIX A .....	9
	APPENDIX B .....	11
	APPENDIX C .....	13

## 1.0 BACKGROUND

This report is intended to ensure that the design, construction, operation and maintenance of the Fayette Power Project (FPP) Combustion By-products Landfill (CBL) is consistent with recognized and generally accepted good engineering standards in accordance with the Environmental Protection Agency's Coal Combustion Residual (CCR) rules under 40 CFR Part 257. More specifically this report meets the requirements of 40 CFR §257.84(b) Annual inspections by a qualified professional engineer.

As required by 40 CFR §257.84(b), this inspection report documents the annual inspection of the CBL, located at 6549 Power Plant Road, La Grange, Texas 78945. The CBL is registered by the Texas Commission on Environmental Quality (TCEQ) as an on-site nonhazardous industrial waste landfill (TCEQ Registration No. 31575) and as an on-site waste management unit (Notice of Waste Registration No. MU013) at the FPP.

The CBL and associated support facilities are located in the southwest portion of the FPP, south of the power plant and north of the Missouri-Kansas-Texas railroad line (Appendix A). LCRA deed recorded a 123-acre tract located within the FPP site for disposal of Class 2 nonhazardous industrial waste. To date, an approximately 30-acre area has been developed as Cell 1 and a 7.9 acre area has been developed as cell 2D. In a 2013 Notification Revision to TCEQ, LCRA raised the maximum elevation of the CBL from approximately 430 feet mean sea level (ft-msl) to 470 ft-msl and added Cell 2D. The support facilities for the CBL currently include the CBL Cell 2D Pond contained within cell 2D which collects its contact water, the CBL Runoff Pond which collects the CBL Cell 1 contact water, the associated drainage channel that routes contact water from the CBL Cell 1 to the Runoff Pond, and two stormwater drainage channels that route clean non-contact stormwater off-site.

In accordance with 40 CFR §257.84(b)(3), the 2016 annual inspection was performed, document review was conducted, and this report has been prepared to document this work.

## 2.0 DOCUMENT REVIEW

Pertinent record documents were reviewed as part of the development of this year's report to ensure continued adherence to the accepted good engineering standards. This review was intended to capture any revisions or updates to the record documents reviewed in the 2015 annual engineering inspection or addition of new record documents related to design, construction, operation, and maintenance of the CBL.

These records included slope stability and foundation analyses for the proposed final CBL geometry performed by Geosyntec Consultants Inc. Review of the findings within these documents indicate design and construction of the CBL is consistent with recognized and generally accepted good engineering standards.

The “Closure Plan and Post-Closure Plan” for the CBL was completed October 14, 2016 by Geosyntec Consultants based on 40 CFR §257.102(b) and 104(d) requirements and was reviewed.

The “Run-on and Run-Off Control System Plan” for the CBL was completed October 13, 2016 by Geosyntec Consultants based on 40 CFR §257.81(c) requirements and was reviewed. It was noted the “EXISTING STORMWATER CHANNEL CENTERLINE” shown within the “SUBCELL 2D (WASTE STORAGE / PRODUCT PREPARATION AREA)” eastern contours and “SUBCELL 2D CONTACT WATER RETENTION POND” eastern contours on “DRAWING NO: 2 OF 8” does not exist in the field. This stormwater channel begins just to the south of these facilities. This item should be corrected within the plan at the time the 5 year revision or sooner should the opportunity occur. This is not considered a change in conditions that would substantially affect the written plan in effect.

The weekly inspections were performed for this facility in calendar year 2016 as required under 40 CFR §257.84(a). These weekly inspection reports for the period from January 1, 2016 through December 31, 2016 were reviewed.

Review of these documents did not result in findings indicating the CBL design, construction, operations or maintenance activities would result in potential structural weakness of the CBL as currently configured.

### **3.0 LANDFILL GEOMETRY & VOLUME**

This is the second annual inspection report as required under 40 CFR §257.84(b)(2) with the 2015 report serving as a baseline for changes in geometry of the structure and approximate CCR volume.

An aerial survey was conducted on October 10, 2016 and did not show a change in the landfill impounding structure geometry from a September 30, 2015 survey. This was also confirmed during the field inspection. An approximate layout of the impounding structures is included in Appendix B.

Per 40 CFR §257.84(b)(2)(ii), the CCR volume as of the October 10, 2016 survey is approximately 1,353,758 cubic yards.

## 4.0 INSPECTION OF IMPOUNDING STRUCTURES

Inspection of the Fayette Power Project's Combustion Byproducts Landfill was conducted by Mr. Nathan M. Gullo, P.E. and Mr. Samuel C. Brown, P.E. on the morning of November 18, 2016 beginning at 0900 and concluding at 1245 hours. The weather was cloudy with temperatures in the low 70's at the time of inspection. The CBL location had received precipitation amounts of 3.55 inches over the previous 30 days and 56.16 inches since the 2015 inspection. This was again a very wet year with a notable precipitation event resulting in exceedance of the 500-year 24 hour storm event with a recorded precipitation depth of 14.34 inches on April 17th and 18th, 2016. Precipitation data was provided from the LCRA Hydromet rain gauge number 563400 located at the FPP site.

### 4.1 LANDFILL CELL 1 WESTERN EMBANKMENT SLOPE

**Clay Embankment w/ 1 ft. Vertical to 3 ft. Horizontal slope**

**Approximate Length: 350 ft.**

**Approximate Max Impoundment Height: 20 ft. @ 410 ft-msl**

General Condition:  **Good**  Fair  Poor

Problems Noted:  **None**  Poor Grass Cover  Trees or Brush  Animal Burrows or Damage

Standing Water /Ponding  Wet Areas  Erosion  Depressions  Rutting  Cracks  Bulges

Misalignment  Sinkhole  Other:

**Comments:**

(1) Overall grass cover was in good condition at the time of inspection with an approximate height of 12 to 15-inches with very good cover. There were no visual signs of active animal activity or past history of such. The slopes are visually in alignment with the 3:1 design and no visual evidence of structural issues was observed.

### 4.2 LANDFILL NORTHERN EMBANKMENT SLOPE

**Clay Embankment w/ 1 ft. Vertical to 3 ft. Horizontal slope**

**Approximate Length: 1,300 ft.**

**Approximate Max Impoundment Height: 35 ft. @ 420 ft-msl**

General Condition:  **Good**  Fair  Poor

Problems Noted:  **None**  Poor Grass Cover  Trees or Brush  Animal Burrows or Damage

Standing Water /Ponding  Wet Areas  Erosion  Depressions  Rutting  Cracks  Bulges

Misalignment  Sinkhole  Other:

**Comments:**

(1) Overall grass cover was in very good condition at the time of inspection with an approximate height of 12 to 15-inches. There were no visual signs of active animal activity or past history of such. The slopes are visually in alignment with the 3:1 design and no visual evidence of structural issues was observed.

### 4.3 LANDFILL CELL 1 EASTERN EMBANKMENT SLOPE

**Clay Embankment w/ 1 ft. Vertical to 3 ft. Horizontal slope**

**Approximate Length: 550 ft.**

**Approximate Max Impoundment Height: 30 ft. @ 420 ft-msl**

General Condition:  **Good**  Fair  Poor

Problems Noted:  **None**  Poor Grass Cover  Trees or Brush  Animal Burrows or Damage

Standing Water /Ponding  Wet Areas  Erosion  Depressions  Rutting  Cracks  Bulges

Misalignment  Sinkhole  Other:

**Comments:**

(1) Overall grass cover was in good condition at the time of inspection with an approximate height of 12 to 15-inches. There were no visual signs of active animal activity or past history of such. The slopes are visually in alignment with the 3:1 design and no visual evidence of structural issues was observed.

(2) The 2015 inspection area of apparent minor surface erosion leading to blotchy grass coverage on the north end from the crest extending down approximately 20-ft with a width of approximately 20-ft has been repaired by regrading the area. The area has received significant rains over the past year and no evidence of ponding was observed during this inspection due to the regrading (See Photo 1).

### 4.4 CELL 1 TOP TEMPORARY CAP

**Clay Cap with Topsoil & Grass Vegetation**

**Approximate Length: 1,000 ft.**

**Approximate Width: 120 ft.**

General Condition:  **Good**  Fair  Poor

Problems Noted:  **None**  Poor Grass Cover  Trees or Brush  Animal Burrows or Damage

Standing Water /Ponding  Wet Areas  Erosion  Depressions  Rutting  Cracks  Bulges

Misalignment  Sinkhole  Other:

**Comments:**

(1) Overall grass cover was in good visual condition at the time of inspection with an approximate height of 12 to 15-inches and very good cover. No visible evidence of erosion or structural issues was observed.

### 4.5 VISIBLE LINERS

**Clay & Synthetic Liners**

General Condition:  **Good**  Fair  Poor

Problems Noted:  **None**  Tears  Damage  Trees or Brush  Animal Activity  Erosion

Depressions  Rutting  Cracks  Bulges  Other:

**Comments:**

(1) Overall the visible liner systems were intact and functioning as designed with no observed structural issues.

## 4.6 RUN-ON/RUN-OFF FACILITIES

### Open Channels, Culverts, CBL Pond & Cell 2D Pond

General Condition:  **Good**  Fair  Poor

Problems Noted:  None  Poor Grass Cover  **Trees or Brush**  Animal Burrows or Damage

Excessive Sediment Buildup  Blockage  Erosion  Depressions  Rutting  Cracks

Freeboard Exceeded  Misalignment  Sinkhole  **Other: Subcell 2D Pond Rock Silt Berm**

#### Comments:

(1) Overall the hydraulic control and impounding structures were found to be maintained with no observed structural issues.

(2) The Combustion Byproducts Landfill (CBL) Runoff Pond spillway was partially obstructed by cactus and brushy growth. This growth should be removed from the spillway (See Photo 2).

(3) The Subcell 2D rock silt berm synthetic liner transition apron has come apart at the top of the north slope of the Subcell 2D Contact Water Retention Pond. A synthetic liner was used as part of this silt control measure for stormwater flowing from Subcell 2D into the Subcell 2D pond. It is not a part of the pond liner system and the pond liner is intact. (See Photo 3).

## 5.0 CONCLUSIONS

The FPP CBL structure was in good condition at the time of this inspection and does not appear to have an actual or potential structural weakness nor any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CBL. The operation and maintenance of the landfill is currently contracted to a landfill manager believed to have good competency with a plan in place to meet the 40 CFR Part 257 requirements for operation of the facility consistent with recognized and generally acceptable good engineering standards.

The CBL is designed, constructed, operated, and maintained consistent with recognized and generally accepted good engineering standards.

## 6.0 RECOMMENDATIONS

The following recommendations are made based on the document review and November 18, 2016 inspection:

### 6.1 OUTSTANDING RECOMMENDATIONS

- Item 2015-001, It was reported by FPP staff that the debris noted in Section 4.1, Comment 2 has been removed and properly disposed of within the landfill at the time this report was issued. This is also documented in the weekly inspection report dated December 16, 2015. Landfill slopes and capped areas should be kept clear from debris to prevent damage to the vegetative cover and allow for mowing and inspection activities to occur without debris hazards.

**This item has been completed and will be removed from future reports.**

- Item 2015-002, Evidence of ponding and surface drainage over the slope noted in Section 4.3, Comment 2 should be addressed to prevent progression of minor erosion. The area should be graded to ensure positive drainage in the direction of the interior section of the landfill and ultimately to the stormwater runoff collection and detention system. The landfill manager has been notified of the issue by FPP but had not addressed it at the time of this report due to soil moisture conditions. The issue has been communicated and will be addressed as soon as practical.

**This item has been completed and will be removed from future reports. The area has been regraded to prevent ponding and maintain drainage within the CBL storage area.**

### 6.2 NEW RECOMMENDATIONS

- Item 2016-001, Remove vegetation from the CBL Runoff Pond concrete spillway and maintain this area free from brushy obstructions. The spillway was partially obstructed by cactus on the surface and brushy growth in the joints.
- Item 2016-002, Repair the Subcell 2D rock silt berm transition apron. The rock silt berm synthetic liner transition apron has come apart at the top of the Subcell 2D Pond north slope. While synthetic liner was used as part of this silt control measure, this was not a part of the pond liner system and the pond liner is intact.



**APPENDIX A**  
**FPP COMBUSTION BY-PRODUCTS LANDFILL**  
**LOCATION DRAWING**

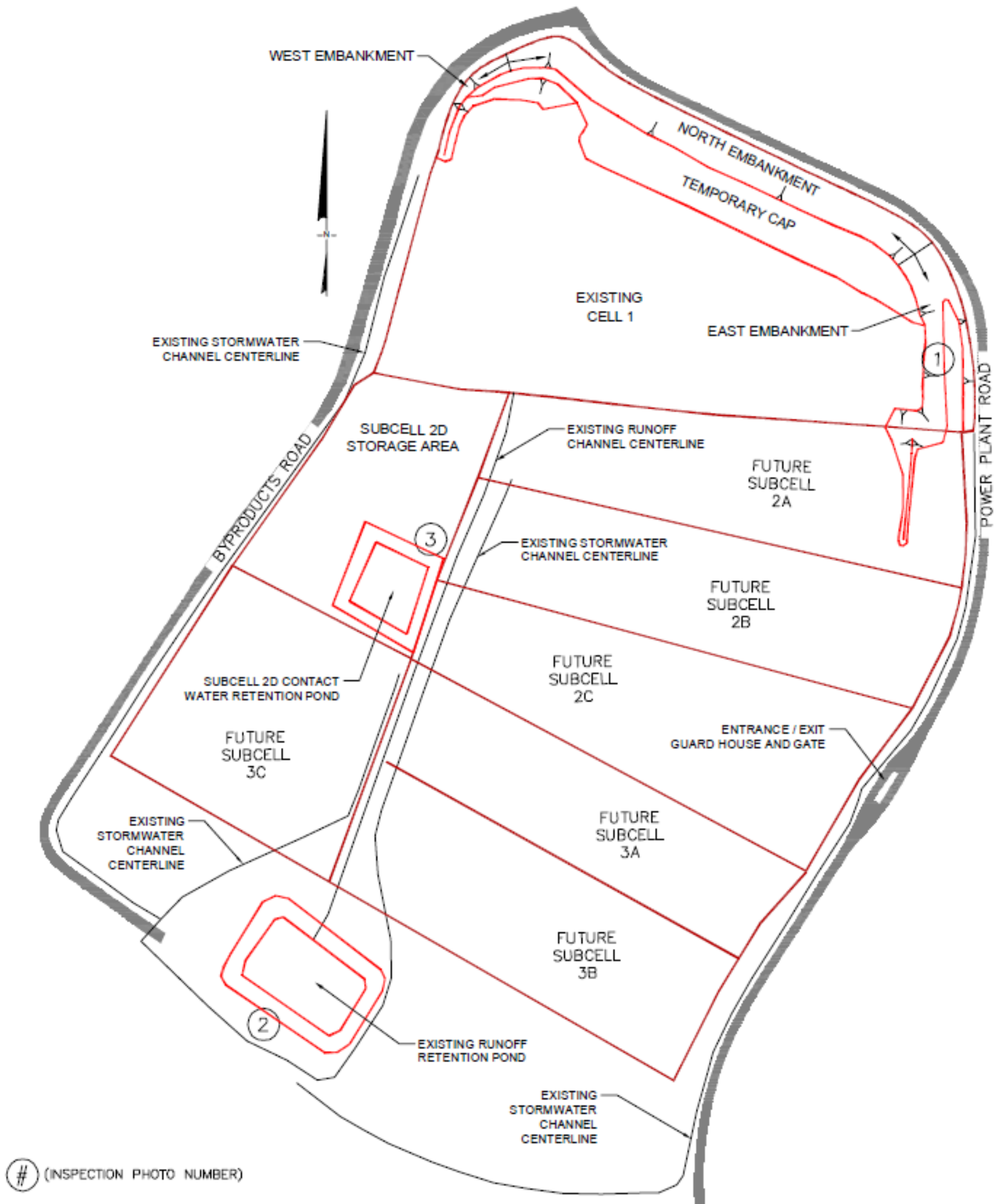


**APPENDIX B**  
**FPP COMBUSTION BY-PRODUCTS LANDFILL**  
**INSPECTION DRAWING**

---



# FPP COMBUSTION BY-PRODUCTS LANDFILL INSPECTION DRAWING



**APPENDIX C**  
**INSPECTION PHOTOS**



**PHOTO 1 – View of East Embankment from Crest Looking North (11-18-2016)**



**PHOTO 2 – View CBL Runoff Pond Spillway Looking South (11-18-2016)**





**PHOTO 3 – View of Subcell 2D Pond North Slope Rock Silt Berm (11-18-2016)**