

**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 12, 2018**



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.**

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## 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 above mean sea level (ft-amsl) to 470 ft-amsl 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 2017 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 reviewed as part of the development of past inspections reports were reviewed for updates since the “ENGINEERING REPORT FOR ANNUAL CCR LANDFILL INSPECTION 40 CFR §257.84(b), FAYETTE POWER PROJECT COMBUSTION BY-PRODUCTS LANDFILL” (2016 Report) was issued on January 13, 2017. This review was intended to capture any revisions or updates to the previously reviewed record documents and addition of new record documents related to design, construction, operation, and maintenance of the CBL. In addition to the 2016 Report there were two (2) new documents produced in 2017 that have been posted to the Publicly Accessible Internet Site as required by 40 Code of Federal Regulations § 257.107. These include:

1. “LOCATION RESTRICTIONS CERTIFICATION REPORT FOR EXISTING COMBUSTION BYPRODUCT LANDFILL REGISTRATION NO. 31575” Issued on June 2, 2017 by Geosyntec Consultants, in compliance with §257.64 to “Complete demonstration for placement above the uppermost aquifer Complete demonstrations for wetlands, fault areas, seismic impact zones, and unstable areas” within 42 months after publication of the rule (no later than October 17, 2018).
2. “Annual Coal Combustion Residuals (CCR) Fugitive Dust Control Report – 2017” dated December 5, 2017, by Waste Management National Services, in compliance with 40 CFR 257.80(c) “The owner or operator of a CCR unit must prepare an annual CCR fugitive dust control report that includes a description of the actions taken by the owner or operator to control CCR fugitive dust, a record of all citizen complaints, and a summary of any corrective measures taken.”

This report indicated “No citizen complaints were received for the LCRA Fayette Power Project. Therefore, no records are available to include as an appendix.” However, a review of the Facility Record found a complaint logged on January 22, 2017, that was found to be “dust or pollen stirred up by 25-30 mph winds” with no corrective actions required. This report should be amended to reflect this and added to the Publicly Accessible Internet Site.

All documents reviewed were found to ensure adherence to recognized and generally accepted good engineering standards.

It was noted in the 2016 Report that 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 drawing was updated in the “LOCATION RESTRICTIONS CERTIFICATION REPORT FOR EXISTING COMBUSTION BYPRODUCT LANDFILL REGISTRATION NO. 31575” Issued on June 2, 2017 by Geosyntec Consultants as Drawing No. 2 of 3, “EXISTING SITE CONDITIONS”.

The weekly inspections were performed for this facility in calendar year 2017 as required under 40 CFR §257.84(a). These weekly inspection reports for the period from January 1, 2017 through December 31, 2017 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 third 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 November 8, 2017 and did not show a change in the landfill impounding structure geometry from a October 10, 2016 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 November 8, 2017 survey is approximately 1,377,946 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 8, 2017 beginning at 1000 and concluding at 1130 hours. The weather was cloudy with temperatures in the mid 50's at the time of inspection. The CBL location had received precipitation amounts of 1.57 inches over the previous 30 days and 48.41 inches since the 2016 inspection. This was again a very wet year with a notable precipitation event, Hurricane Harvey, resulting in exceedance of the 500-year 48 hour storm event with a recorded precipitation depth of 17.03 inches between August 26 and the 28th, 2017. 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-amsl**

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 recently mowed and in good condition at the time of inspection with an approximate height of 6-inches and 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-amsl**

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 recently mowed and in good condition at the time of inspection with an approximate height of 6-inches and 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.

### 4.3 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-amsl**

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 recently mowed and in good condition at the time of inspection with an approximate height of 6-inches and 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.

### 4.4 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 recently mowed and in good visual condition at the time of inspection with an approximate height of 6-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: **Culvert pipe damage**

#### Comments:

(1) Minor damage was identified at one of the corrugated metal drainage culverts which convey non-contact runoff from the closed northern slope section beneath the Austin Loop plant road. The mitered end matching the slope was bent and partially blocking the opening which will impede design flow. It is likely the metal culvert inlets were bent inwards during grass mowing activities and should be repaired to ensure proper drainage is maintained. (See Photo 1).

(2) Damage was identified at the two roadway crossing corrugated metal drainage culverts, which convey contact runoff from Existing Cell 1 to the Existing Runoff Retention Pond near the intersection of Future Subcell 2A, 2B and Existing Subcell 2D. The mitered ends matching the slope are bent and blocking the openings on both sides which will impede design flow. These culverts should be repaired to ensure proper drainage is maintained. (See Photos 2 and 3).

(3) It was identified that removal of the cactus and brushy growth partially obstructing the Combustion Byproducts Landfill (CBL) Runoff Pond spillway was completed which was identified during last year's inspection. Some grass has regrown in a joint and should be removed as part of normal vegetation maintenance. (See Photo 4).

(4) Repair was completed of the Subcell 2D rock silt berm synthetic liner transition apron that had come apart at the top of the north slope of the Subcell 2D Contact Water Retention Pond identified during the 2016 inspection. (See Photo 5).

## 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 the November 8, 2017 inspection:

### 6.1 OUTSTANDING RECOMMENDATIONS

- Item 2016-001, It was identified during the 2017 inspection that the cactus and brushy growth blocking the CBL Runoff Pond spillway noted in Section 4.6, Comment 2 has been removed. Continued vegetative controls should be implemented to ensure the spillway channel remains clear.

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

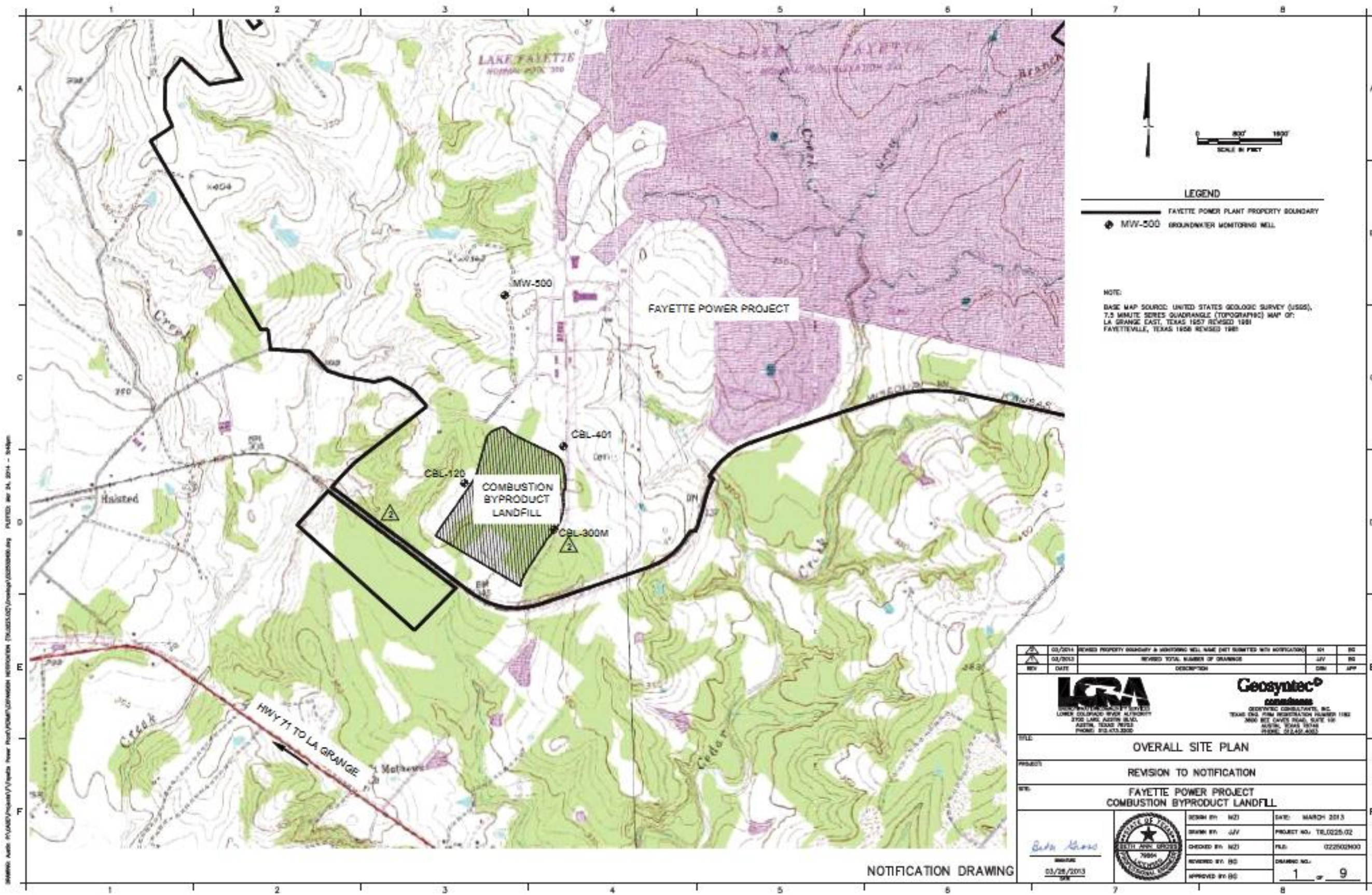
- Item 2016-002, Repairs were completed to the Subcell 2D rock silt berm transition apron. The rock silt berm synthetic liner transition apron had come apart at the top of the Subcell 2D Pond north slope. While synthetic liner was used as part of this silt control measure, this was not a part of the pond liner system and the pond liner remained intact.

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

### 6.2 NEW RECOMMENDATIONS

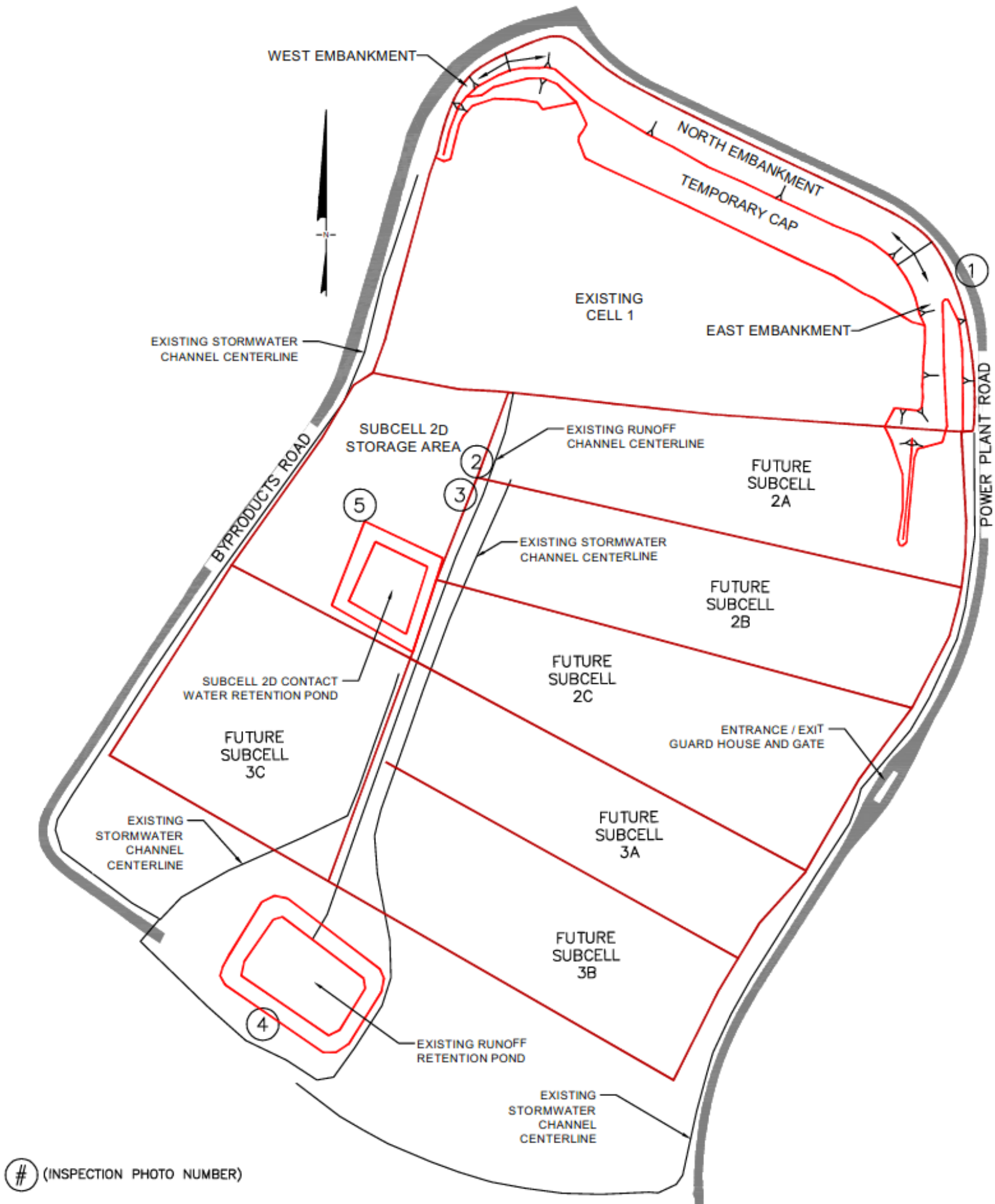
- Item 2017-001, Repair damaged inlet sections of corrugated metal drainage culverts which convey non-contact runoff from the northern embankment section beneath the plant road.
- Item 2017-002, Repair damaged corrugated metal drainage culvert ends near the intersection of Future Subcell 2A, 2B and Existing Subcell 2D, which convey contact runoff via the Runoff Channel from Existing Cell 1 beneath the access road to the Existing Runoff Retention Pond..

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



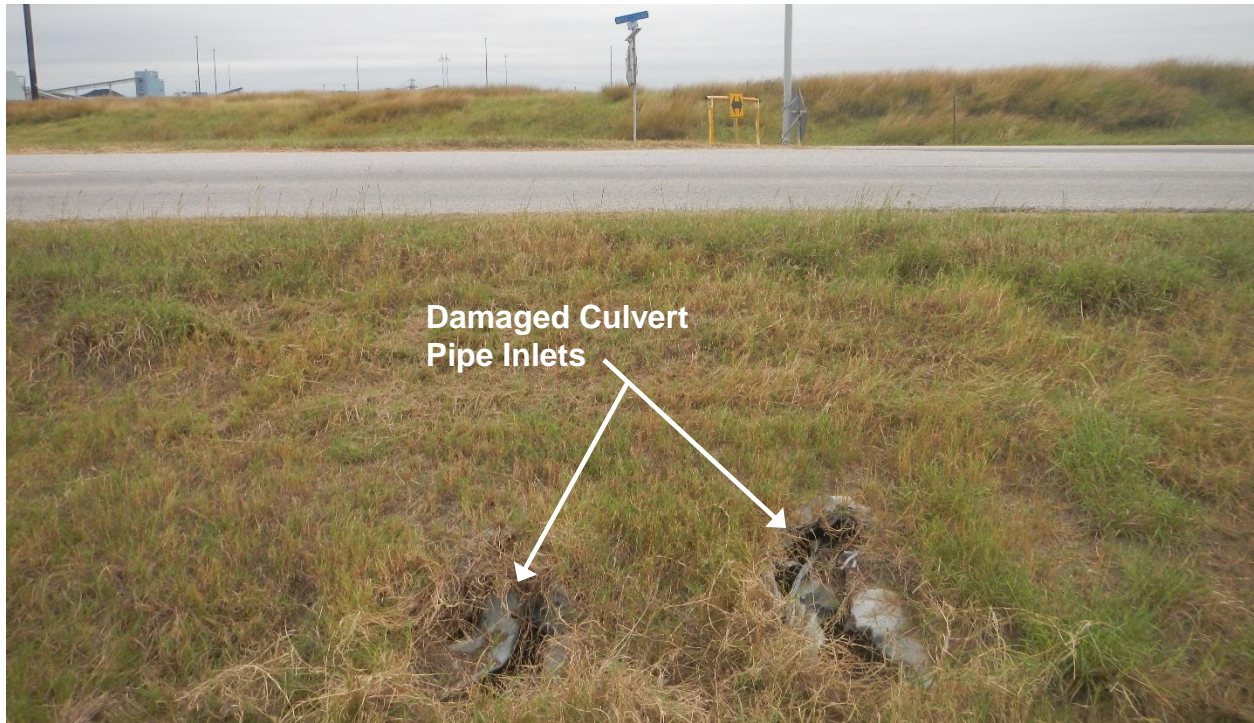
**APPENDIX B**  
**FPP COMBUSTION BY-PRODUCTS LANDFILL**  
**INSPECTION DRAWING**

## FPP COMBUSTION BY-PRODUCTS LANDFILL INSPECTION DRAWING



# **APPENDIX C**

## **INSPECTION PHOTOS**



**PHOTO 1 – View of North Embankment drainage culverts looking Northeast (11-8-2017)**



**PHOTO 2 – View of Cell 1 Stormwater Channel culverts looking Southeast (11-8-2017)**





**PHOTO 3 – View of Cell 1 stormwater channel culverts looking Northeast (11-8-2017)**



**PHOTO 4 – View of cleared CBL Runoff Pond Spillway Looking South (11-18-2017)**



**PHOTO 5 – View of repaired Subcell 2D Pond North Slope Rock Silt Berm (11-8-2017)**