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SCS ENGINEERS

January 13, 2016
SCS Project No. 16215106.00

Mr. Bryan Twitty
Engineering Manager
NAES Corporation
2161 Rattlesnake Road
Riesel, Texas 76682

***Sent via email***

Subject: Sandy Creek Energy Station
Coal Combustion Residual (CCR) Landfill
Annual Inspection Report per 40 CFR §257.84(b)(2)

Dear Mr. Twitty:

SCS Engineers (SCS) is pleased to provide this annual inspection report for compliance with Title 40, Code of Federal Regulation (CFR) §257.84(b)(2), related to annual inspection of a CCR landfill by a qualified engineer. The CCR landfill is located on the Sandy Creek Energy Station (facility) property at 2161 Rattlesnake Road, Riesel, Texas 76682 and is registered with Texas Commission of Environmental Quality (TCEQ) under Registration No. 88448.

## BACKGROUND

The CCR landfill is classified as an existing landfill as defined under §257.53, which was constructed and commenced operation prior to October 14, 2015. The landfill is currently comprised of two CCR disposal cells, Cells 1 and 2, which commenced receiving waste in early 2013 and October 2014, respectively. The approximate area of Cells 1 and 2 are 10.0 and 14.3 acres, respectively.

The primary wastes disposed in the Landfill are dry scrubber ash and bottom ash generated during the coal combustion process at the facility. Incidental wastes generated during the process at the facility may also be disposed in the landfill, as described in the initial registration notification to TCEQ.

## ANNUAL INSPECTION [§257.84(B)(1)]

An annual inspection of the landfill was performed on January 4, 2016 by Mr. Ryan Kuntz, P.E., a Professional Engineer registered in the State of Texas. An annual inspection checklist prepared during the inspection is attached to this report. At the time of the inspection, the facility was not operational and the landfill was not receiving waste. The landfill has not received any CCR waste since October 31, 2015.

It should be noted that primarily the items observed during the inspection were related to erosion of soil intermediate cover and liner protective cover due to unusually high rainfall during calendar

year 2015. Although the items described below and on the attached checklist were observed during the inspection, there were no existing conditions that appeared to have the potential to disrupt the operation or safety of the landfill. Additionally, during the inspection no appearance of actual or potential structural weakness was observed. During the inspection, as noted in the attached checklist, the following items were observed:

- A portion of the south sidelope of Cell 2A was steeper than 3H:1V. This slope extended from the toe of slope up approximately 30 feet to an intermediate top deck elevation. Based on review of this sideslope, no appearance of structural weakness or instability was observed. Based on discussions with operation personnel, this slope will be brought to a 3H:1V slope consistent with designed final grade in the near future.

- Additionally, it was observed that there was small tree growth in the protective cover of Cells 2C and 2D (no waste within these cells at this time), as well as animal borrows on the west slope of Cell 1. Based on the size and location of these items, it does not appear that these features are causing any structural weakness to the landfill. However, based on discussions with operation personnel, these items will be corrected (trees removed and animal borrows backfilled with clean soil) as soon as weather conditions allow.

- Minor erosion was observed of the intermediate cover of Cells 1 and 2.

- Erosion of the perimeter berm of Cell 2C was observed. However, it should be noted, that the observed erosion is located on the berm of Cell 2 where waste placement has not taken place.

- Erosion of the detention basin slope at a culvert discharge into the basin was observed.

- Protective sacrificial plastic was removed/missing from the intercell berms within inactive subcells of Cell 2 and drainage geocomposite is exposed to UV. The sacrificial plastic had deteriorated or blown off during inclement weather. Based on discussions with operation personnel, the sacrificial plastic will be replaced as soon as weather conditions allow.

- Erosion of the protective cover in Cells 2C and 2D (inactive cells without waste) where drainage geocomposite is exposed. Based on discussions with operation personnel, the protective cover will be repaired as soon as weather conditions allow.

During the inspection, SCS also reviewed the weekly inspection reports prepared by a qualified person in accordance with §257.84(a). All required weekly inspections have been completed for calendar year 2015. Items noted during the weekly inspections were similar to the items noted in the annual inspection, which were primarily related to ongoing challenges with erosion due to inclement weather throughout the fourth quarter of 2015.

Lastly during the inspection, SCS also reviewed all other documents in the Site Operation Record. All documents required to be in the Site Operating Record in accordance with §257.105 were present during the inspection.

In summary, based on the above described inspection and improvement plans (noted above), in our opinion the design, construction, operation, and maintenance of the landfill is being performed consistent with recognized and generally accepted good engineering standards.

## VOLUME OF IN-PLACE WASTE [§257.84(B)(2)(II)]

The approximate volume of CCR contained in the landfill at the time of the inspection was confirmed in accordance with §257.84(b)(2)(ii). The landfill has been operational since early 2013. As previously stated above, the landfill has not received any CCR waste since October 31, 2015.

Walker Partners Engineers and Surveyors (Walker Partners) has been preparing ground surveys of the landfill since April 2013, with the most recent survey being performed on September 30, 2015. Based on comparison of the as-built top of liner grades and existing grades at the time of the surveys, the landfill has approximately 442,871 cubic yards (CY) of CCR waste as of September 30, 2015 (provided by Walker Partners). Since that time, the facility produced 417,473 MWh prior to October 31, 2015. Based on a rolling average 0.03 CY disposed/MWh produced, an additional 12,524 CY of CCR waste was disposed in the landfill from September 30 to October 31, 2015. Therefore, as of the date of the annual inspection, it is estimated that the landfill contained approximately 455,395 CY of CCR waste.

## CLOSING

SCS appreciates the opportunity to perform the 2015 annual inspection of Sandy Creek Energy Station, CCR Landfill. Should you have any questions or require additional information on this inspection, please feel free to contract Mr. Ryan Kuntz, P.E. at 817-571-2288.

Sincerely,


Ryan Kuntz, P.E.
Project Manager
**SCS ENGINEERS**
TBPE Registration No. F-3407

Kevin Yard, P.E., BCEE
Vice President
**SCS ENGINEERS**

Attachments: Coal Combustion Residual Landfill Annual Inspection Checklist

cc: Ms. Kathy French, LS Power Development
Ms. Paulette Heuer, LS Power Development
Mr. Darryl Sparks, NAES Corporation

# Sandy Creek Energy Station

Coal Combustion Residual Landfill Annual Inspection Checklist

40 CFR §257.84(b)(4) - Requires inspections on an annual basis by a Qualified Professional Engineer

Date and Time of Inspection: 1/4/2016 10:30 a.m.

Professional Engineer's Name: Ryan Kuntz, P.E.

Weather Summary at time of Inspection: 40˚F clear skies

Precipitation for the previous 7 days: 0

## 1. Landfill Structure and Slope

| Sloughing, Slumping, Sliding | | Surface Cracking | | Excessive Slope | | Toe of Slope Moving | | Inadequate Compaction | |
|---|---|---|---|---|---|---|---|---|---|
| Yes | No | Yes | No | Yes | No | Yes | No | Yes | No |
| | X | | X | X[2] | | | X | | X |

| Inappropriate Vegetative Growth | | Animal Burrows | | Erosion Damage | | Vehicle Damage | |
|---|---|---|---|---|---|---|---|
| Yes | No | Yes | No | Yes | No | Yes | No |
| X[1] | | X[4] | | X[3] | | | X |

Additional Observations [1] Tree growth Cell 2C/2D, [2] south slope 2A near leachate risers steeper than 3H:1V, [3] see section 2, [4] west slope Cell 1 (3 borrows)

## 2. Landfill Cover

| Qualifier | Intermediate Soil Cover | | Final Soil Cover | | Bottom Ash Cover | | Alternative Cover | |
|---|---|---|---|---|---|---|---|---|
| | Yes | No | Yes | No | Yes | No | Yes | No |
| Installed | X | | | X | | X | | X |
| Erosion | X[1] | | | | | | | |
| Location | Cells 1, 2A | | | | | | | |

Additional Observations [1] Minor erosion east slope Cell 1, south slope Cell 2A, southwest slope Cell 1, west slope (mid-point) Cell 1

## 3A. Run-on and Run-off Control System

Uncontaminated Surface Water Management System

| Qualifier | Diversion Berms | | Downchutes | | Perimeter Drainage Channels | | Culverts | | Detention Basins | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Yes | No | Yes | No | Yes | No | Yes | No | Yes | No |
| Inspection | | NA | | NA | X | | X | | X | |
| Damage | | NA | | NA | X[1] | | | X | X[2] | |
| Type | | | | | | | | | | |
| Location | | | | | | | | | | |

Additional Observations [1] North of landfill entrance at Cell 2C, perimeter berm erosion, [2] Northwest slope at culvert drainage into basin

## 3B. Run-on and Run-off Control System

Contact Water Management System

| Qualifier | Diversion Berms | | Drainage at Perimeter Berm | | Drainage at Separation Berm | | Culvert | | Ponding of Contact Water | | Release of Contact Water | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Yes | No | Yes | No | Yes | No | Yes | No | Yes | No | Yes | No |
| Inspection | **X** | | **X** | | **X** | | **X** | | **X** | | **X** | |
| Damage | | **X** | | **X** | | **X** | | **X** | | **X** | | **X** |
| Type | | | | | | | | | | | | |
| Location | | | | | | | | | | | | |

Additional Observations _____

## 4. Exposed Liner and Leachate Collection and Removal System

| Qualifier | Intercell Berm Sacrificial Plastic | | LCRS Riser Pipes | | Leachate Sump Pump/Control | | Leachate Evaporation Pond | | |
|---|---|---|---|---|---|---|---|---|---|
| | Yes | No | Yes | No | Yes | No | Yes | No | Freeboard (ft) |
| Inspection | **X** | | **X** | | **X** | | **X** | | 7.5 |
| Damage | **X** | | | **X** | | **X** | | **X** | NA |
| Type | Missing/Removed | | | | | | | | NA |
| Location | Cell 2 | | | | | | | | NA |

| Qualifier | Protective Cover | | Exposed Geosynthetics | |
|---|---|---|---|---|
| | Yes | No | Yes | No |
| Inspection | **X** | | **X** | |
| Damage | **X** | | | **X** |
| Type | Erosion | | | |
| Location | 2C/2D[1] | | | |

Additional Observations [1] West side slope

## 5. Dust Emissions

| Landfill | | Haul Trucks | | Ash Silo | |
|---|---|---|---|---|---|
| Yes | No | Yes | No | Yes | No |
| | **X** | | **X** | | **X** |

Additional Observations _____

## 6. Leachate Evaporation Pond Underdrain System

| Sediment | | Vegetation | | Debris | | Water Flow | |
|---|---|---|---|---|---|---|---|
| Yes | No | Yes | No | Yes | No | Yes | No |
| | **X** | | **X** | | **X** | **X** | |

Additional Observations _____

## 7. Groundwater Monitoring System

| Damage | | Excess Vegetation | | Lock Working | | Housing Lid Functional | | Insects in Housing | | Housing Paint Peeling | | Label Adequate | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Yes | No | Yes | No | Yes | No | Yes | No | Yes | No | Yes | No | Yes | No |
| | X | | X | X | | X | | | X | | X | X | |

Additional Observations: _____

## 8. Document Review

| Description | Yes | No |
|---|---|---|
| Weekly Inspection Checklists Reviewed: | X | |
| All Weekly Inspections Completed: | X | |
| Site Operating Record Reviewed: | X | |
| All necessary documents maintained in Site Operating Record: (see attached Site Operating Record Checklist) | X | |

Additional Observations: _____

**Additional Comments/Observations/Recommendations:** _____


**Professional Engineer's Signature and Seal**

1/4/16

**Date**