Inspection Report

To: **Anthony Garaventa (NRG Conemaugh Generating Station)**

From: **Jesse Varsho, P.E.**

Re: **Ash/Refuse Disposal Site – Annual CCR Unit Inspection Report No. 1**

Inspection Date: **October 12, 2015**

Report Date: **January 12, 2016**

INTRODUCTION

Title 40 Code of Federal Regulations (CFR) Part 257 addresses, in part, the management of Coal Combustion Residuals (CCR Rule, or Rule) in regulated units, including landfills. Specific to §257.84(b) of the Rule, existing and new CCR landfills must be inspected on an annual basis by a qualified professional engineer. For the Conemaugh Generating Station (operated by GenOn Northeast Management Company, a subsidiary of NRG Energy, Inc. [NRG]), this inspection requirement applies to the existing Ash/Refuse Disposal Site (Ash Disposal Site). In support of this obligation, Mr. Jesse Varsho (a qualified professional engineer with CB&I Environmental & Infrastructure, Inc. [CB&I]) conducted an on-site inspection of the Ash Disposal Site on October 12, 2015. Prior to the inspection, CB&I personnel under the direct supervision of Mr. Varsho, reviewed the relevant portions of the facility's operating record in relationship to the requirements of §257.84. The findings from this first annual inspection are summarized in the remaining sections of this correspondence.

As required, this report will be placed in the Conemaugh facility's operating record per §257.105(g)(9), noticed to the State Director per §257.106(g)(7), and posted to the publicly accessible internet site per §257.107(g)(7). Placement of this first annual inspection report into the facility's operating record must be accomplished no later than January 18, 2016 per §257.84(b)(3)(i). Deadlines for completion of subsequent annual inspection reports will be tied back to the actual date of placement of the previous year's report into the operating record.

BACKGROUND

The Ash Disposal Site consists of a valley fill located north of the Station proper, and is operated/maintained in accordance with Pennsylvania Department of Environmental Protection (PADEP) Solid Waste Permit No. 300876. The Ash Disposal Site consists of three stages, including Stage I (closed), Stage II (currently active), and Stage III

(permitted contiguous horizontal and vertical expansion currently under construction). The permit modification for Stage III was issued by PADEP on August 26, 2015.

Stage I occupies approximately 160 acres within the northernmost reaches of the valley and was brought online in 1970. Stage I was constructed as an unlined facility and was subsequently closed in 1987. Stage II (brought online in 1985) is presently maintained as the active disposal area, and utilizes a single liner comprised of a 50-mil polyvinyl chloride (PVC) geomembrane with an accompanying leachate collection and detection system. Stage II occupies approximately 120 acres, and its northern side overlies the outslope of the Stage I disposal area (piggy-backs over Stage I); it extends approximately 2,000 feet southward into the valley from its interface with Stage I. Stage III will occupy an area of approximately 110 acres and will have a liner system comprised of 60-mil textured high density polyethylene (HDPE) geomembrane.

When ultimate development conditions are reached, the northern side of Stage III will piggy-back over the Stage II disposal area and it will extend southward 2,100 feet where its outslope will terminate approximately 600 feet north of the existing Ash Disposal Site Leachate Surge Pond. At such time when the permitted disposal capacity has been fully expended and final grades attained, any uncapped areas of the Ash Disposal Site will be capped and closed in accordance with the approved Closure Plan.

As of the October 2015 inspection date, CCR materials were being placed in the active Stage II disposal area, with ongoing activities to support the Stage III construction including those associated with stream relocation.

With respect to the Ash Disposal Site, CB&I's evaluation has focused on the following items as outlined in §257.84(b)(1)(i-ii):

- *A review of available information regarding the status and condition of the CCR unit, including, but not limited to, files available in the operating record; and*
- *A visual inspection of the CCR unit to identify signs of distress or malfunction.*

Specific to CB&I's preparation of the annual inspection report, and per §257.84(b)(2)(i-iv), the following aspects have been addressed:

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

OPERATING RECORDS REVIEW

Principal items included, but were not limited to: various elements of the 2014 Permit Modification Package; Stage III Permit Drawings; and Solid Waste Permit No. 300876. As this was the first annual CCR Rule-derived inspection, the operating record did not contain any prior annual or weekly inspections for review. During the October 12, 2015 site inspection, Mr. Varsho interviewed facility personnel (Mr. Anthony Garaventa) to verify the information contained within the operating record.

Environmental Control System Overview

i. Bottom Liner System

a. The bottom liner system of the Stage II landfill area is a 50-mil PVC geomembrane.

ii. Leachate Collection System

a. Stage II disposal area leachate collection system utilizes a gravity underdrain/channel that conveys the leachate and “contact” stormwater to the Surge Pond. From the pond, leachate is routed to the Leachate Wastewater Treatment Plant (WWTP), with treated effluent managed in accordance with the Station’s National Pollutant Discharge Elimination System (NPDES) Permit.

iii. Stormwater Management

a. “Non-contact” stormwater run-off from the closed Stage I area is managed in accordance with the current NPDES permit. Stormwater run-off from the Stage I area is discharged into a stormwater channel separate from the “contact” stormwater of the Stage II area.

b. “Contact” Stormwater within the active cell of Stage II is combined with leachate in the underdrain system and is conveyed to the Surge Pond south of the disposal site.

iv. Cover System

a. Stage I disposal area is capped and has established vegetative cover.

b. Portions of the Stage II disposal area currently have an intermediate cover in place with established vegetation. These portions are limited to the southern and western slope areas.

Summary of Landfill Construction

i. The Stage II disposal area is currently accepting CCR. Small portions of the Stage II disposal area have an intermediate cover in place; where intermediate cover has been placed, vegetation has been established. Placement of CCR will continue. Construction of the permitted Stage III expansion will continue as well.

Review of Prior Inspections

i. Weekly inspections: No previous weekly inspections have been conducted; per the Rule, these inspections were to be initiated during the week of October 19, 2015.

ii. Annual inspections: No previous annual inspections have been conducted; this current inspection represents the first performed in accordance with the Rule.

CCR Disposal

i. Based on review of the 2014 Annual Landfill Operations Report (covering operations through December 2014), the total in-place disposal quantity of CCR materials was estimated at approximately 64,052,188 tons.

SITE INSPECTION

The site inspection was performed on October 12, 2015 by Mr. Varsho, and during which time efforts were focused on identification of standard geotechnical signs of distress or malfunction. Specific aspects such as slumping at the toe of slope, tensile cracking, abnormal or excessive erosion on the side slopes, slope bulging, and groundwater/surface water seepage or ponding were assessed. If present, these readily visible signs are potential indicators of structural weakness of the CCR Landfill unit.

Visual signs of distress or malfunction

i. Stage II temporary interior slopes have formed water-eroded drainage paths/gullies within certain areas of active CCR placement. No other visual signs of distress or malfunction were observed for stormwater drainage features, leachate conveyance mechanisms, or overall site conditions.

Review of environmental control systems

i. Stage II disposal area stormwater channels, leachate collection, and intermediate cover areas are functioning as intended. With no evidence to the contrary, the bottom liner system for the Stage II disposal area is believed to be in good operating condition and functioning as intended.

CONCLUSIONS

Changes in geometry

i. As of June 2015, peak fill elevations in the active disposal area were at approximately 1,450 feet mean sea level. Since this is the first annual inspection, comparative changes in geometry were not directly relevant.

In-Place CCR Disposal Quantities

i. The total permitted disposal capacity for the Ash Disposal Site is 98,384,361 tons. As of December 2014, the remaining capacity was estimated at

approximately 34,332,173 tons, thus resulting in the in-place disposal estimate of approximately 64,052,188 tons (cited above).

Appearances of an actual or potential structural weakness of CCR unit

i. At the time of inspection, it was noted that stormwater run-on from the Stage II internal CCR slopes has formed water eroded paths/gullies.

Changes that may affect the stability or operation of the CCR Unit

i. There have been no changes to the inspected areas of the Ash Disposal Site that pose a threat or concern to the stability of the land form.

RECOMMENDATIONS

1. Clean out vegetation on western downslope ditch (see Photograph No. 7 in Attachment 2).
2. Fill in and compact erosion gullies on internal CCR slopes (see Photograph No. 14 in Attachment 2).
3. Establish an all-weather access to western and southern toe of slope or equivalent method to inspect.

There were no deficiencies or releases identified during the 2015 annual inspection that required the owner or operator to perform corrective actions as required under §257.84(b)(5).

PROFESSIONAL ENGINEER'S CERTIFICATION

In accordance with §257.84(b) of the Rule, I hereby certify based on a review of available information within the facility's operating records and observations from my personal on-site inspection (including the photographs contained in Attachment 2), that the Conemaugh Ash Disposal Site does not exhibit any appearances of actual/potential structural weakness that would be disruptive to the normal operations of the Stage II/III CCR Unit. The unit is being operated and maintained consistent with recognized and generally accepted good engineering standards and practices.

Certified by: _____

Date: 1/12/16

Jesse Varsho, P.E., P.G.

Professional Engineer Registration No. PE084004

CB&I Environmental & Infrastructure, Inc.

ATTACHMENTS

1. Site Map
2. Inspection Photo Log

REFERENCES

1. 2014 Conemaugh Generating Station Annual Landfill Operations Report, June 2015.
2. Major Permit Modification Application—Stage III Liner System, April 2014.
3. Conemaugh Stage III Permit Application Drawings. March 2014.
4. 40 Code of Federal Regulations Part 257.

Attachment 1

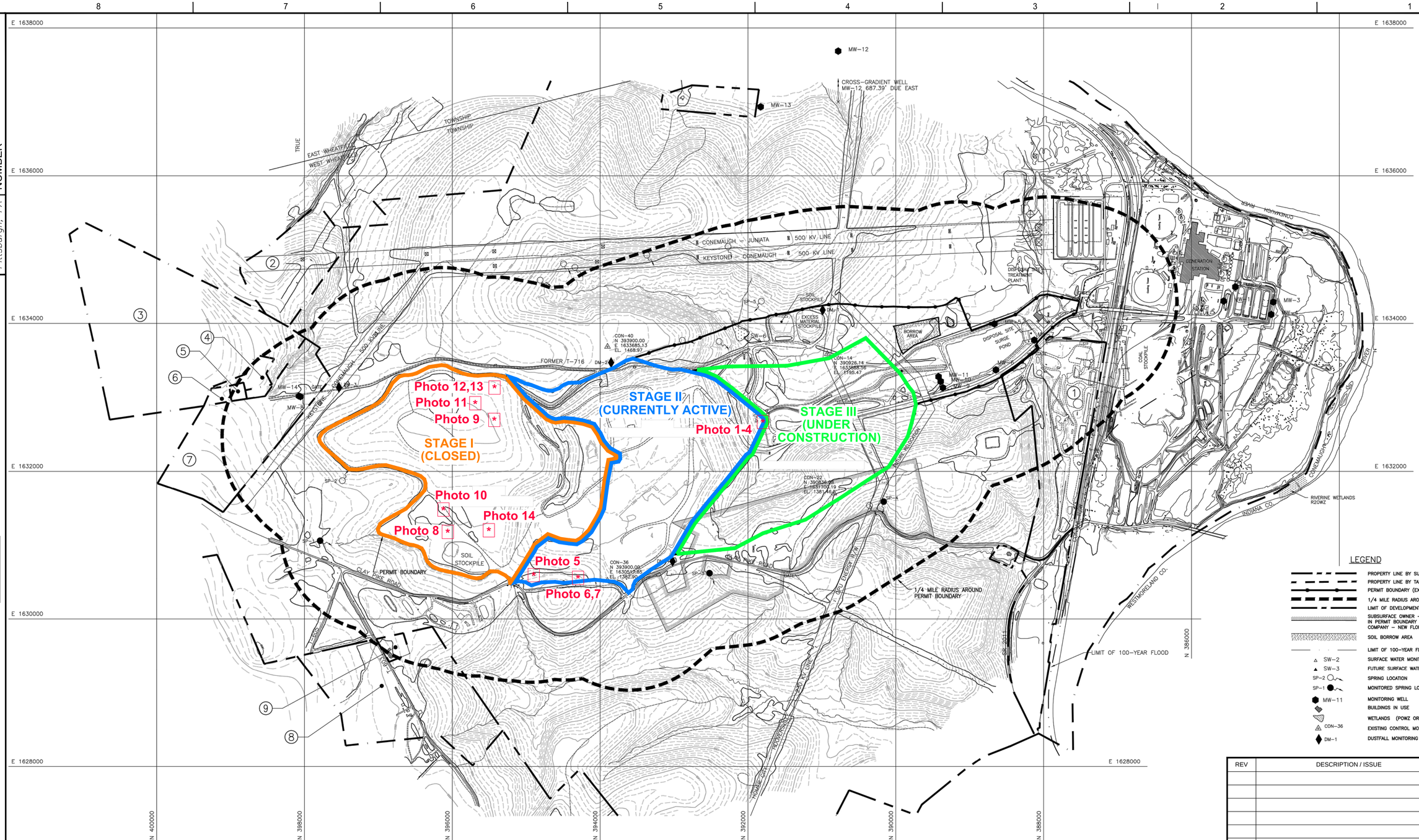
Site Map

OFFICE Pittsburgh, PA

DRAWING NUMBER 1009144001-E9

VERIFY SCALE 0 1"

Xref: Image : CB&I.jpg



LEGEND

- PROPERTY LINE BY SURVEY
- PROPERTY LINE BY TAX MAP
- PERMIT BOUNDARY (EXISTING)
- 1/4 MILE RADIUS AROUND PERMIT BOUNDARY
- LIMIT OF DEVELOPMENT STAGE
- SUBSURFACE OWNER – BERT OVERDORFF (ALL OTHERS IN PERMIT BOUNDARY OWNED BY THE FLORENCE MINING COMPANY – NEW FLORENCE, PA.)
- SOIL BORROW AREA
- LIMIT OF 100-YEAR FLOOD
- SW-2 SURFACE WATER MONITORING POINT
- SW-3 FUTURE SURFACE WATER MONITORING POINT
- SP-2 SPRING LOCATION
- SP-1 MONITORED SPRING LOCATION
- MW-11 MONITORING WELL
- BUILDINGS IN USE
- WETLANDS (POWZ OR R2OWZ)
- CON-36 EXISTING CONTROL MONUMENT
- DM-1 DUSTFALL MONITORING LOCATION

REV	DESCRIPTION / ISSUE	DATE	APPROVED

CB&I
500 Penn Center Boulevard
Monroeville, PA 15146-2792

nrg GENON NORTHEAST MANAGEMENT COMPANY

CCR COMPLIANCE
ASH/REFUSE DISPOSAL SITE
CONEMAUGH GENERATING STATION

DESIGNED BY:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:	SCALE:	DRAWING NO.	SHEET NO.
JAK	GSJ	DJS	JAK	12/7/15	AS SHOWN	1009144001-E9	--

File: O:\PROJECT\1009144001\1009144001-E9.dwg
Plot Date/Time: Dec 16, 2015 – 9:37am
Plotted By: greg.jones

Attachment 2

Photo Log

Photograph No. 1 **Date:** October 12, 2015 **Location of Photograph:** South-central perimeter of Stage II just north of the leachate discharge feature	
Description: Stage II south slope and leachate collection clean-out piping; no evidence of tensile cracking or slumping at toe of slope.	

Photograph No. 2 **Date:** October 12, 2015 **Location of Photograph:** South-central perimeter of Stage II	
Description: Surface discharge location of below grade leachate piping; clear evidence of unrestricted leachate flow.	

Photograph No. 3 **Date:** October 12, 2015 **Location of Photograph:** South-central perimeter of Stage II	
Description of Photograph: Internal "contact" stormwater ditch and energy dissipater basin.	

Photograph No. 4 **Date:** October 12, 2015 **Location of Photograph:** Western perimeter of Stage II	
Description of Photograph: Closed landfill slopes with vegetation and permanent stormwater downslope ditch.	

Photograph No. 5 **Date:** October 12, 2015 **Location of Photograph:** Western perimeter of Stage II on bench of capped slopes	
Description of Photograph: Standing on bench within western slope; no visual evidence of slumping or tensile cracking on surface or evidence of soil movement via vegetation.	

Photograph No. 6 **Date:** October 12, 2015 **Location of Photograph:** Western perimeter of Stage II on bench of capped western slopes, looking south	
Description of Photograph: Standing on bench along western slope; no visual evidence of slumping or tensile cracking on surface or evidence of soil movement via vegetation.	

Photograph No. 7 **Date:** October 12, 2015 **Location of Photograph:** Western perimeter of Stage II within downslope ditch	
Description of Photograph: Potential stormwater blockage due to significant vegetative growth around perimeter of downslope ditch.	

Photograph No. 8 **Date:** October 12, 2015 **Location of Photograph:** North side perimeter of active Stage II area	
Description of Photograph: Looking south at the active filling operations.	

Photograph No. 9 **Date:** October 12, 2015 **Location of Photograph:** Southeast corner of the active Stage II area	
Description of Photograph: Gypsum materials in active filling operations area.	

Photograph No. 10 **Date:** October 12, 2015 **Location of Photograph:** South of the active Stage II area looking north	
Description of Photograph: Active fill operations.	

Photograph No. 11 **Date:** October 12, 2015 **Location of Photograph:** West perimeter of the active Stage II area	
Description of Photograph: Temporary "contact" stormwater runoff ditch.	

Photograph No. 12 **Date:** October 12, 2015 **Location of Photograph:** Western perimeter of Stage II fill area	
Description of Photograph: Perimeter stormwater ditch.	

Photograph No. 13

Date:
October 12, 2015

Location of Photograph:
Western perimeter of Stage II filling operations

Description of Photograph:
Internal "contact" stormwater ditch.

Photograph No. 14

Date:
October 12, 2015

Location of Photograph:
Western edge of active Stage II fill area

Description of Photograph:
Erosion gully forming within temporary slope/benches of active fill area.