Inspection Report

To: **Jill Buckley (NRG Cheswick Generating Station)**

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

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

Inspection Date: **October 14, 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 Cheswick Generating Station (operated by NRG Power Midwest LP), this inspection requirement applies to the existing Cheswick Ash 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 14, 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 Cheswick 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 is a captive landfill used for the disposal of CCR materials and other Pennsylvania residual wastes generated at the Cheswick Station, and is operated/maintained in accordance with Pennsylvania Department of Environmental Protection (PADEP) Solid Waste Permit No. 300720. Active operations are ongoing in the South Valley (Phase I; 51 acres), while the North Valley (Phase II; 31 acres) remains as an unpermitted potential future phase within the Solid Waste Permit boundary. If ever constructed, the North Valley would be considered a new CCR Landfill per the Rule.

Construction of the South Valley commenced in 1980 and disposal of CCR materials began in 1982. When ultimate development conditions are reached, the final upper surface elevation of South Valley will be at approximately 1,200 feet mean sea level (ft msl). As of the October 2015 inspection date, CCR lifts were being added to South Valley at approximate elevation 1,115 ft msl.

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: Design Drawings, 2014 Annual Landfill Operations Report, Volume Reports, and Solid Waste Permit No. 300720. 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 14, 2015 site inspection, Mr. Varsho interviewed facility personnel (Ms. Jill Buckley and Mr. Rich Booher [Charah]) to verify the information contained within the operating record.

Environmental Control System Overview

i. Leachate Collection System

a. The South Valley disposal area has a gravity underdrain system. This system consists of a below-grade piping network that facilitates leachate conveyance ultimately for treatment at the Monarch Mine Dewatering Plant (MMDP). Treated effluent from the MMDP is discharged to Little Deer Creek via Outfall 002 in accordance with the Cheswick Station's National Pollutant Discharge Elimination System (NPDES) Permit.

ii. Stormwater Management

a. "Non-contact" stormwater from the South Valley disposal area is routed (via NPDES-permitted perimeter drainage channels) to the sedimentation pond located at the base of the landfill.

b. "Contact" stormwater from within the active disposal area is collected in the leachate underdrain system and routed for treatment in the MMDP as described above.

iii. Cover System

a. The eastern slope and portions of the northern and southern slopes of South Valley have final cover and established vegetation. The final cover system on the slopes includes benches to dissipate energy build-up and reduce erosion from stormwater run-off.

Summary of Landfill Construction

i. As previously noted, the South Valley disposal area was accepting CCR materials at approximate elevation 1,115 ft msl during the October 2015 inspection. Some portions of the exterior slopes have a final cover in place along with established vegetation.

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 2,824,708 tons.

SITE INSPECTION

The site inspection was performed on October 14, 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. No visual signs of distress or malfunction were observed during the inspection. Stormwater drainage features, slope appearance and stability, leachate conveyance mechanisms, and overall site conditions were assessed. Closed portions of the South Valley exhibited well established vegetative cover.

Review of Environmental Control Systems

i. With no evidence to the contrary, the environmental control systems at South Valley are believed to be in good operating condition and functioning as intended. At the time of the inspection, leachate and stormwater conveyance systems were operating as designed.

CONCLUSIONS

Changes in Geometry

i. As of the date of this inspection, peak fill elevations in the active disposal area were at approximately 1,115 feet msl. 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 South Valley area is 7,200,000 tons. As of December 2014, the remaining capacity was estimated at approximately 4,375,292 tons, thus resulting in the in-place disposal estimate of approximately 2,824,708 tons (cited above).

Appearances of an Actual or Potential Structural Weakness of CCR Unit

i. At the time of inspection, there were no signs of distress or malfunction that would indicate actual or potential structural weakness at South Valley.

Changes that May Affect the Stability or Operation of the CCR Unit

i. There have been no changes to the South Valley area that pose a threat or concern to the stability of the land form.

RECOMMENDATIONS

1. Continue operation and maintenance as currently performed.
2. Ensure adequate access to the closed portions of the landfill to maintain the ability to perform weekly visual site structural inspections.

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 Cheswick Ash Disposal Site does not exhibit any appearances of actual/potential structural weakness that would be disruptive to the normal operations of the South Valley 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

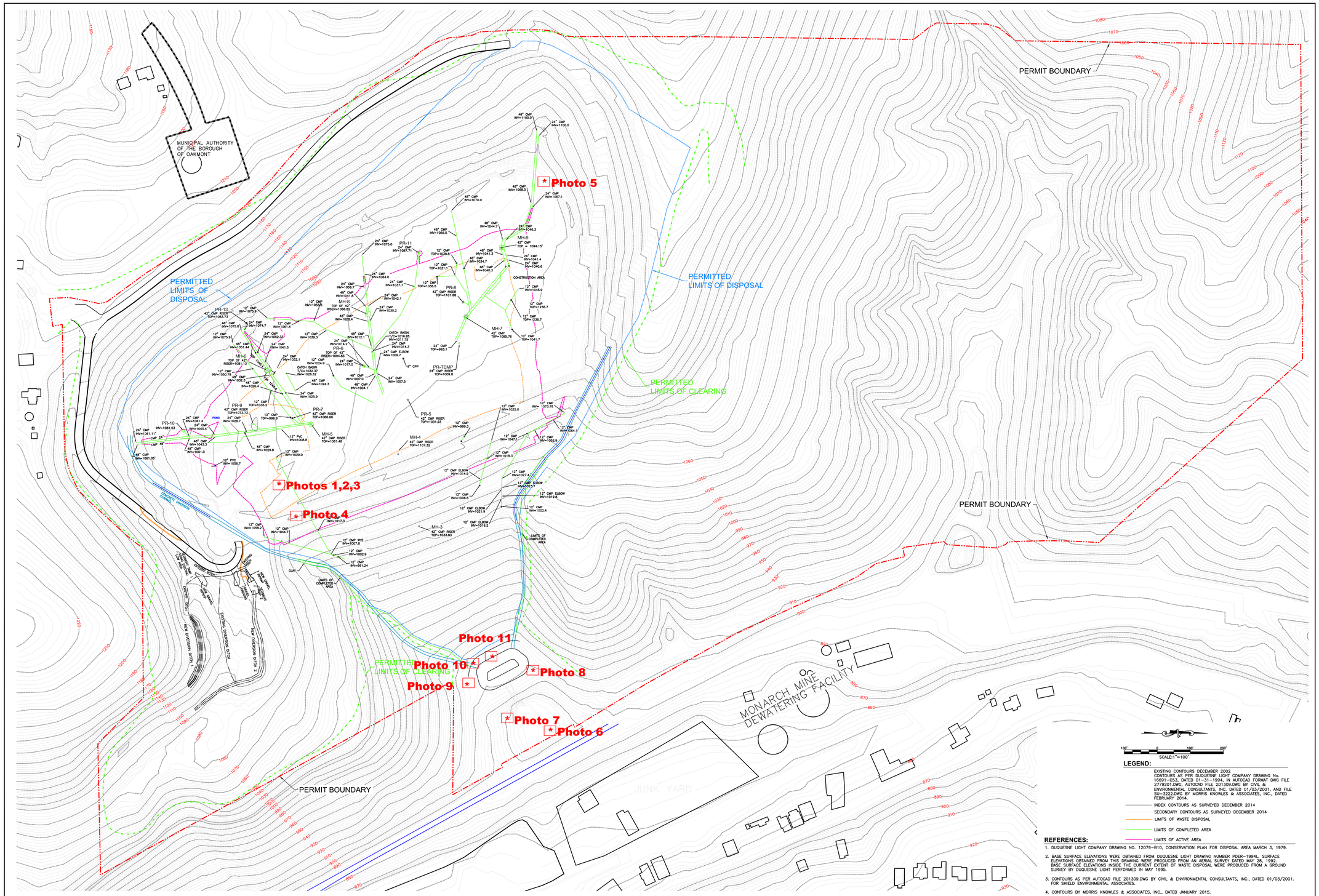
1. Site Map
2. Inspection Photo Log

REFERENCES

1. 2014 Cheswick Generating Station Annual Landfill Operations Report, June 2015.
2. 40 Code of Federal Regulations Part 257.

Attachment 1

Site Map



NO	DRWN	DATE	REVISION	CHKD	DATE	APPVD	DATE
5							
4							
3							
2							
1							
0							

NO	DRWN	DATE	REVISION	CHKD	DATE	APPVD	DATE
11							
10							
9							
8							
7							
6							

GenOn Power Midwest, L.P.
CHESWICK ASH DISPOSAL SITE
ALLEGHENY COUNTY, PENNSYLVANIA

CURRENT DATE	DATE	CADD FILE	2014/ANNUAL_REPORT

TOPOGRAPHICAL MAP UPDATE - CONTOURS
JANUARY 2014 THRU DECEMBER 2014

DRAWING NO.		SCALE	

Morris Knowles & Associates, Inc.
Consulting Engineers and Land Surveyors
443 Athena Drive, Belmont, PA 15620
Telephone: (724) 468-4622/Fax: (724) 468-8940

REVISION

Attachment 2

Photo Log

Photograph No. 1 **Date:** October 14, 2015 **Location of Photograph:** Southeast corner of the active fill operations area	
Description: Ongoing CCR placement, grading and compaction.	

Photograph No. 2 **Date:** October 14, 2015 **Location of Photograph:** Southeast corner of the active fill operations area	
Description: Ongoing maintenance of existing perimeter stormwater ditch.	

Photograph No. 3 **Date:** October 14, 2015 **Location of Photograph:** Southeast corner of the active fill operations area	
Description of Photograph: Leachate manholes (surrounded by bottom ash) connected to base piping system. Stormwater manholes (surrounded by gypsum) to manage stormwater once final cover is placed.	

Photograph No. 4 **Date:** October 14, 2015 **Location of Photograph:** Southeast corner of the active fill operations area	
Description of Photograph: Looking north along crest of final waste slopes; no evidence of tensile cracking along crest.	

Photograph No. 5 **Date:** October 14, 2015 **Location of Photograph:** Along access road	
Description of Photograph: Looking southeast along active fill area.	

Photograph No. 6 **Date:** October 14, 2015 **Location of Photograph:** Near eastern limits of solid waste permit boundary	
Description of Photograph: Leachate conveyance point to the Monarch Mine Dewatering Plant; both visual and audible evidence of leachate flow were noted during the inspection.	

Photograph No. 7 **Date:** October 14, 2015 **Location of Photograph:** Discharge side of sedimentation pond	
Description of Photograph: Looking west at emergency and principal discharge pipes for the existing sedimentation pond.	

Photograph No. 8 **Date:** October 14, 2015 **Location of Photograph:** Adjacent to sedimentation pond	
Description of Photograph: Looking south across existing sedimentation pond.	

Photograph No. 9 **Date:** October 14, 2015 **Location of Photograph:** Adjacent to southern side of sedimentation pond	
Description of Photograph: "Non-contact" stormwater channel along closed portions of South Valley; also noted is the landfill transition into the existing topography, thus minimizing stability concerns.	

Photograph No. 10 **Date:** October 14, 2015 **Location of Photograph:** Adjacent to southwestern corner of sedimentation pond	
Description of Photograph: Looking west at the toe of slope for South Valley.	

Photograph No. 11 **Date:** October 14, 2015 **Location of Photograph:** Sedimentation pond	
Description of Photograph: Principal discharge structure; both visual and audible evidence of stormwater flow was noted during the inspection.	