



Inspection Report

To: Steve Brown (NRG New Castle Generating Station)

From: Jesse Varsho, P.E.

Re: New Castle Plant Ash Landfill – Annual CCR Unit Inspection Report No. 1

Inspection Date: October 13, 2015

Report Date: January 14, 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 New Castle Generating Station (operated by NRG Power Midwest LP), this inspection requirement applies to the existing New Castle Plant Ash Landfill (Ash Landfill). 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 Landfill on October 13, 2015. Prior to the inspection, CB&I personnel under the direct supervision of Mr. Varsho, reviewed the 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 New Castle 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 CCR-regulated Ash Landfill is situated north of the main generating station. Originally in this portion of the property, an impoundment existed (occupying an area of approximately 120 acres) which was used for the disposal of sluiced fly ash and bottom ash; these operations took place from approximately 1939 to 1978. From 1978 to 1984 and following the installation of electrostatic precipitators at the station, "dry" fly ash was

disposed on the dewatered impoundment area. Beginning in 1984, CCR materials (including “dry” fly ash and dredged bottom ash) have been placed in this area.

In 1997, the Pennsylvania Department of Environmental Protection (PADEP) issued Solid Waste Permit No. 300818 for the Ash Landfill, addressing Stages 1, 2, and 3A. In April 2008, a permit modification was issued for Stages 4, 5, 6, and 7, which together comprise a vertical expansion of the Ash Landfill over top of the previous PADEP permitted stages.

From 2008 through 2010, approximately 16.8 acres of layover liner system (liner between Stages 4 and underlying Stages 1, 2, and 3A) was placed within Stage 4. Approximately 17.9 acres of final cover cap liner system was installed over the lower landfill slopes (southern and eastern perimeters) in 2008/2009; approximately 11.6 acres installed over Stage 1, 2, and/or 3A beneath the area designated for Stage 5 (not active) in 2010; and approximately 10.2 acres installed over Stage 1, 2, and/or 3A beneath the area designated for Stage 6 (not active) in 2013. Therefore, Stages 1, 2, and 3A were entirely capped and/or closed by 2013 with the layover liner system installation in Stage 4 and final cover cap placement in the areas designated for Stages 5 and 6.

Stage 4 is currently the active disposal area. The currently permitted Ash Landfill occupies an area of approximately 60 acres (see Figure in Attachment 1), and is operated/maintained in accordance with Permit No. 300818.

With respect to the Ash Landfill, 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: 2007/2008 Application for Major Permit Modification, Design Drawings, 2014 Annual Landfill Operations Report, and Solid Waste Permit No. 300818. 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 13, 2015 inspection, Mr. Varsho interviewed facility personnel (Mr. Steve Brown) to verify the information contained within the operating record.

Environmental Control System Overview

- i. Bottom Liner System
 - a. The active disposal area overlies the previous disposal areas (Stages 1, 2, and 3A). An over liner consisting of the subbase layer, geosynthetic clay liner, and an engineered 60-mil textured HDPE geomembrane with a geocomposite drainage layer and leachate detection system was installed above Stages 1, 2, and 3A prior to placement of CCR materials in Stage 4. The top of Stages 1, 2, and 3A that was beneath the designated areas of Stages 5 and 6 was capped using two feet of final cover soil with vegetative cover; double-sided bonded geocomposite consisting of 220-mil geonet and 6 oz. geonet drainage layer; a 40-mil textured HDPE flexible membrane liner; and compacted subgrade.
- ii. Leachate Collection System
 - a. An underdrain system is used to collect leachate from the Ash Landfill; leachate collected in the underdrain system is routed to the Leachate Pond via dedicated perimeter ditches. From the Leachate Pond, the flows are discharged to the Beaver River via Outfall 009 in accordance with the New Castle Station's National Pollutant Discharge Elimination System (NPDES) Permit. There is a leachate leak detection system in place, located beneath the over liner. At the time of the inspection, there was a minimal flow from the leak detection system which would be considered representative of normal condensation and consolidation effects, and not indicative of a leak.
- iii. Stormwater Management
 - a. "Non-contact" stormwater and surface water is drained downslope. The slopes drain to perimeter stormwater ditches (separate from the leachate ditches) which convey the water to a Sedimentation Pond. From this pond, the waters are discharged to the Beaver River via NPDES-permitted Outfall 006.
 - b. "Contact" stormwater from within the active disposal area is collected in the leachate underdrain system and routed to the Leachate Pond as described above.
- iv. Cover System
 - a. The perimeter slopes have a final cover installed and established vegetation where final cover is present.

Summary of Landfill Construction

- i. The active disposal area (Stage 4) is currently accepting CCR materials; exterior slopes have a final cover in place. Final cover areas have an established vegetative cover layer.

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.

Summary of CCR Volumes

- i. Based on review of the 2014 Annual Landfill Operations Report (covering operations through March 2015), the total in-place CCR volume was estimated at approximately 1,486,758 cubic yards (cy).

SITE INSPECTION

The site inspection was performed on October 13, 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, 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. Capped portions of the Ash Landfill exhibited well established vegetative cover.

Review of Environmental Control Systems

- i. With no evidence to the contrary, the bottom liner system at the active Stage 4 disposal area is 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, CCR materials were being placed within the active disposal areas at approximate elevations between 829 and 840 feet mean

sea level (msl). Since this is the first annual inspection, comparative changes in geometry were not directly relevant.

CCR Volume

- i. The total permitted disposal capacity of the Ash Landfill is 3,586,000 cy. As of March 2015, the remaining disposal capacity was estimated at approximately 2,099,242 cy, thus resulting in the estimated in-place CCR volume of approximately 1,486,758 cy (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 the Ash Landfill.

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

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

RECOMMENDATIONS

1. Continue to perform regular vegetation maintenance on stormwater drainage features to ensure that adequate flow capacity is sustained.

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 New Castle Plant Ash Landfill does not exhibit any appearances of actual/potential structural weakness that would be disruptive to the normal operations of the CCR Unit. The unit is being operated and maintained consistent with recognized and generally accepted good engineering standards and practices.

Certified by: _____

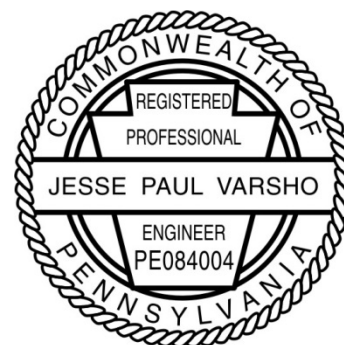
Date: _____

1/14/16

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

Professional Engineer Registration No. PE084004

CB&I Environmental & Infrastructure, Inc.



ATTACHMENTS

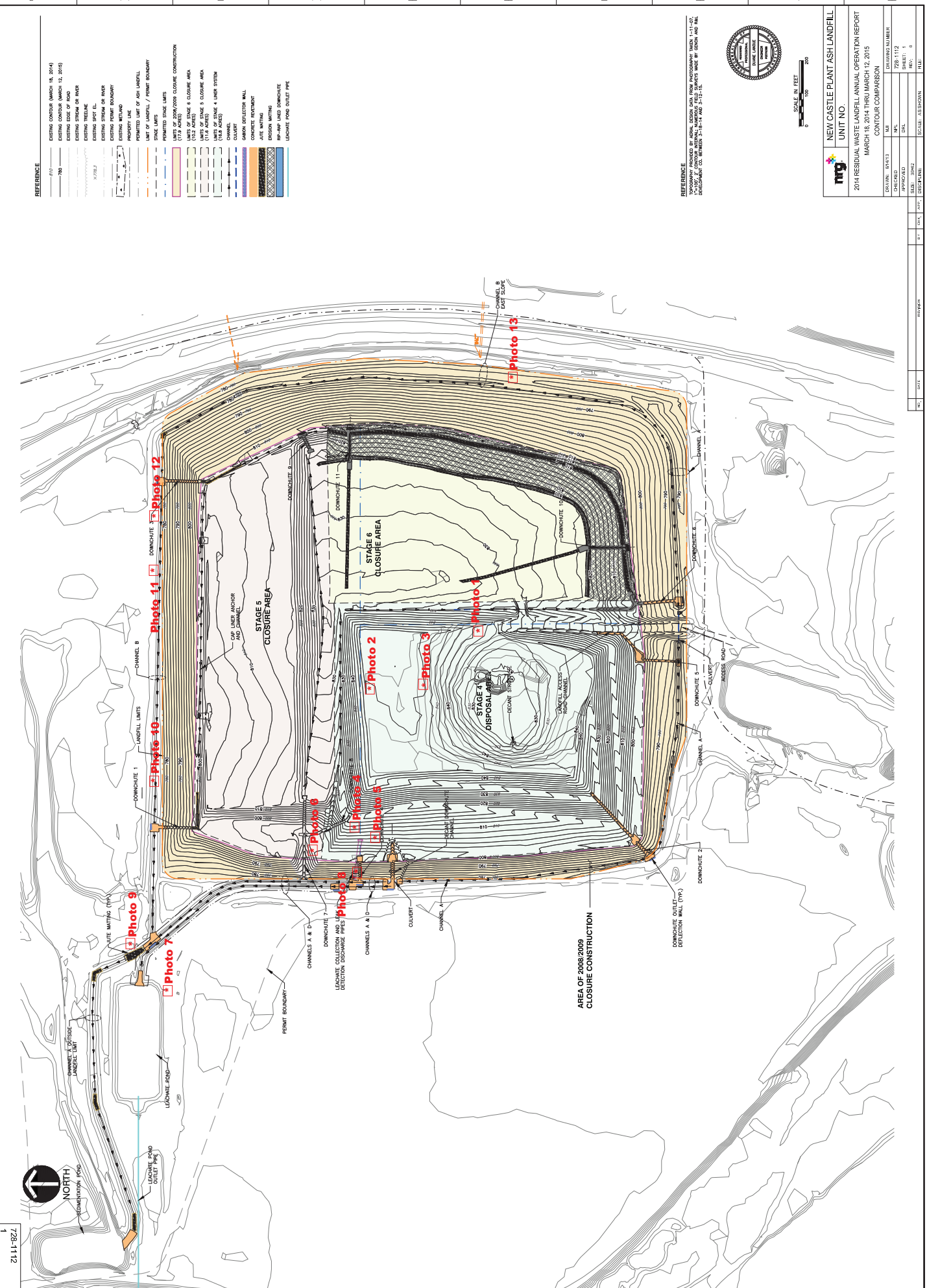
1. Site Map
2. Inspection Photo Log

REFERENCES

1. Application for Major Permit Modification and Permit Renewal, New Castle Plant Ash Landfill, April 2007 (including subsequent revisions).
2. PADEP Solid Waste Permit 300818, New Castle Plant Ash Landfill, April 23, 2008.
3. 2014 New Castle Generating Station Annual Landfill Operations Report, June 2015.
4. 40 Code of Federal Regulations Part 257.

Attachment 1
Site Map

1 2 3 4 5 6 7 8 9 10 11 12 13 14



REFERENCE

810	EXISTING CONTOUR (MARCH 18, 2014)
790	EXISTING CONTOUR (MARCH 12, 2015)
---	EXISTING EDGE OF ROAD
---	EXISTING EDGE OF RIVER
---	EXISTING TRACK
---	EXISTING SPOT EL.
---	EXISTING STREAM OR RIVER
---	EXISTING PERMIT BOUNDARY
---	EXISTING WETLAND
---	PERMITTED LIMIT OF ASH LANDFILL
---	STAGE LIMITS
---	LIMIT OF CONSTRUCTION CLOSURE CONSTRUCTION
---	LIMITS OF STAGE 6 CLOSURE AREA (102 APRES)
---	LIMITS OF STAGE 5 CLOSURE AREA (119 APRES)
---	LIMITS OF STAGE 4 LIMIT SYSTEM (128 APRES)
---	CHANNEL
---	CULVERT
---	CONCRETE RETENTION WALL
---	CONCRETE EXISTENCE
---	UTE MATTING
---	EROSION MATTING
---	RP-RAP LINED DOWNCUTOUT
---	LACRYTE POND OUTLET PIPE

REFERENCE

THIS PLAN, SPECIFICATIONS, AND OTHER INFORMATION, WHICH IS PART OF THE CONTRACT DOCUMENTS, IS THE PROPERTY OF THE ENGINEER. IT IS TO BE USED ONLY FOR THE PROJECT AND SITE SPECIFICALLY IDENTIFIED HEREIN. NO PART OF THIS DOCUMENT IS TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF THE ENGINEER. 3-18-14 AND 3-12-15.

SCALE IN FEET

0 100 200

NEW CASTLE PLANT ASH LANDFILL

UNIT NO.

2014 RESIDUAL WASTE LANDFILL ANNUAL OPERATION REPORT

MARCH 18, 2014 THRU MARCH 12, 2015

CONTOUR COMPARISON

DESIGNED	DATE	BY	REVISION NUMBER
DRAWN	12/11/13	ML	1
CHECKED	02/11/14	ML	1
APPROVED	02/11/14	ML	1
DATE	02/11/14	BY	1
SCALE	AS SHOWN	FILE	

7111-182L




Attachment 2
Photo Log



<p>Photograph No. 1</p> <p>Date: October 13, 2015</p> <p>Location of Photograph: Plateau of active area</p>	A wide-angle photograph showing a large, flat, grassy plateau. The grass is a mix of green and brown, suggesting some dry patches. In the background, there is a dense line of trees with autumn foliage in shades of yellow, orange, and green. The sky is overcast with grey clouds.
<p>Description: Looking southeast at closed portion of the landfill (Stage 6).</p>	

<p>Photograph No. 2</p> <p>Date: October 13, 2015</p> <p>Location of Photograph: Plateau of active area</p>	A wide-angle photograph showing a large, flat, grassy plateau. The grass is a mix of green and brown. In the background, there is a dense line of trees with autumn foliage. The sky is overcast with grey clouds.
<p>Description: Looking north at closed portion of the landfill (Stage 5).</p>	




<p>Photograph No. 3</p> <p>Date: October 13, 2015</p> <p>Location of Photograph: Plateau of active area</p>	
<p>Description of Photograph: Looking southwest at active portion of the landfill (Stage 4).</p>	

<p>Photograph No. 4</p> <p>Date: October 13, 2015</p> <p>Location of Photograph: Western side slope of the landfill (Stage 4)</p>	
<p>Description of Photograph: Stormwater ditch (Downchute 8).</p>	



<p>Photograph No. 5</p> <p>Date: October 13, 2015</p> <p>Location of Photograph: Western side slope of the landfill (Stage 4)</p>	
<p>Description of Photograph: Clean-out access for underdrain system.</p>	

<p>Photograph No. 6</p> <p>Date: October 13, 2015</p> <p>Location of Photograph: Western side slopes</p>	
<p>Description of Photograph: Stormwater ditch (Downchute 7).</p>	



<p>Photograph No. 7</p> <p>Date: October 13, 2015</p> <p>Location of Photograph: Adjacent to Leachate Pond</p>	
<p>Description of Photograph: Looking west at Leachate Pond, discharge structure in far back.</p>	

<p>Photograph No. 8</p> <p>Date: October 13, 2015</p> <p>Location of Photograph: Western perimeter of landfill</p>	
<p>Description of Photograph: Leachate discharge to separate perimeter ditch that routes to Leachate Pond.</p>	



<p>Photograph No. 9</p> <p>Date: October 13, 2015</p> <p>Location of Photograph: East of Leachate Pond</p>	
<p>Description of Photograph: Separate channel (Channel A) for “non-contact” stormwater that routes to Sedimentation Pond; regular maintenance needed to control vegetative growth.</p>	

<p>Photograph No. 10</p> <p>Date: October 13, 2015</p> <p>Location of Photograph: Northern perimeter of the landfill</p>	
<p>Description of Photograph: Looking east along perimeter ditch and toe of final capped and vegetated slopes; no evidence of sloughing at toe of slope.</p>	



<p>Photograph No. 11</p> <p>Date: October 13, 2015</p> <p>Location of Photograph: Northern perimeter of landfill</p>	
<p>Description of Photograph: Looking west along perimeter ditch and toe of final capped and vegetated slopes; no evidence of sloughing at toe of slope.</p>	

<p>Photograph No. 12</p> <p>Date: October 13, 2015</p> <p>Location of Photograph: Northern perimeter of landfill</p>	
<p>Description of Photograph: Looking south at capped and vegetated final slopes.</p>	



Photograph No. 13

Date:

October 13, 2015

Location of Photograph:

Eastern perimeter of the landfill

Description of Photograph:

Looking south along perimeter ditch and toe of final capped and vegetated slopes; no evidence of sloughing at toe of slope.

