

2017 Annual Inspection Report

for Compliance with the Coal
Combustion Residuals Rule
(40 CFR Part 257)

Valmont Station

*1800 North 63rd Street
Boulder, Colorado 80301*

January 18, 2018



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Certification

Valmont Station CCR Unit 2017 Annual Inspection for Compliance with the Federal Coal Combustion Residuals Rule

I hereby certify that the Coal Combustion Residuals (CCR) unit (i.e. the landfill) at Valmont Station meets the inspection and operation standards specified in 40 CFR Part 257.84(b) of the Federal CCR Rule. The Valmont Station is owned by the Public Service Company of Colorado (PSCo), an Xcel Energy Company.

I am duly licensed Professional Engineer under the laws of the State of Colorado.



Brian Brown, PE

Colorado PE License 0041644

License renewal date October 31, 2019

1 Introduction

On April 17, 2015 the U.S. Environmental Protection Agency (EPA) published regulations under Subtitle D of the Resources Conservation and Control Act (RCRA) meant to control the safe disposal of coal combustion residuals (CCR) generated by coal fired electric utilities. The rule defines a set of requirements for the disposal and handling of CCR within CCR units (defined as either landfills or surface impoundments). As specified in 40 CFR 257.84(b), *“Existing and new CCR landfills and any lateral expansion of a CCR landfill must be inspected on a periodic basis by a qualified professional engineer to ensure that the design, construction, operation, and maintenance of the CCR unit is consistent with recognized and generally accepted good engineering standards.”* Valmont Station has one (1) CCR landfill subject to the inspection requirements.

This is the third annual inspection report for the existing Valmont CCR landfill. This report must be completed and placed into the facility operating record no later than January 18, 2018.

The requirements of the annual inspection include:

- A review of available information regarding the status and condition of the CCR unit - §257.84 (B)(1)(i),
- A visual inspection of the CCR unit to identify signs of distress or malfunction - §257.84 (B)(1)(ii),
- An inspection report that includes the following:
 - o Changes in geometry since the last inspection - §257.84 (B)(2)(i)
 - o Approximate volume of CCR in unit at time of inspection - §257.84 (B)(2)(ii)
 - o Appearance of actual or potential structural weakness of the CCR unit - §257.84 (B)(2)(iii)
 - o Any other changes which may have affected the stability or operation of the CCR unit since the last inspection - §257.84 (B)(2)(iv)

2 Site Inspection

In accordance with §257.84(b)(ii), a site inspection of the Valmont CCR Landfill was conducted by an independent Professional Engineer on November 17, 2017. The inspection was conducted by Brian Brown, Doug Decesare, John Ballegeer, all Colorado Professional Engineers of HDR Engineering Inc. (HDR) and John Pierce (Colorado PE), Jennifer McCarter, and Marie Vagher, of PSCo with past and current involvement at the landfill. This site inspection was performed in advance of the CCR submittal deadline to ensure that the inspection was completed prior to snow covering the ground.

The weather during the site visit was sunny with temperatures around 60 degrees Fahrenheit. The site was free of snow cover.

3 Review of Available Information

Numerous documents pertaining to the site operation and structural integrity were reviewed including:

1. Engineering Design and Operation Plan (EDOP), Revision January, 2009 by PSCo. PSCo reported no change in document and still operating under this document. Document not reviewed again since the document is unchanged.
2. Available Weekly CCR Landfill Inspection Forms (per Section 257.84(a)).
3. Topographic Map with Soil Boring Locations: Locations of Exploratory Borings and available cell fill quantity, Check date October 31, 2017, developed by Merrick & Company.

Review of the above documents did not contain any indications of continuing operational, safety, or structural concerns regarding the CCR landfill.

4 Visual Inspection

The site inspection included walking or driving the entire perimeter of the landfill, the interior access road, and select intermediate elevations along the exterior fill embankment.

The site inspection included an evaluation of the following landfill features:

1. landfill side slope toe of slope;
2. Landfill side slope benches;
3. Riprapped stormwater drainage conveyance channels on southwest side (Areas Q-1 and A-3) of landfill and east end (Area B-1) of landfill; and
4. Active CCR fill areas (CCR disposal, spreading, and compaction).

The following are the findings of the site inspection:

The landfill side slopes showed no signs of operational or functional concerns. Areas of erosion are noted below:

- The landfill side slopes along the southwest and west side of Area Q-1 have minimal vegetation cover. Despite the presence of regular benches to slow the stormwater flow, these areas show signs of rill and some gully erosion. These areas require continued monitoring and may require additional topsoil cover and revegetation to minimize future rill erosion.
- The western side slopes of the landfill also had numerous prairie dog burrows. These burrows should continue to be monitored as they can impact local slope stability and

become conduits for stormwater flow. PSCo reported that it has implemented measures to minimize prairie dog burrow impacts in the soil cover, with limited success. PSCo has indicated that ongoing maintenance will be implemented to will continue to address this issue.

- The southern slopes of Area Q-1 had some apparently inactive rill erosion near the top of the slope that should be monitored.
- The inactive southeastern and eastern side slopes have a continuous grade that generally ranges from approximately 2 horizontal to 1 vertical (2H:1V) to 3H:1V with some steeper sections, no benches, and a dense stand of vegetation.
 - o There is a riprap run down on the east slope (Area B-1) with no visible erosion or stability concerns.
 - o The south slope is an area where sloughing and localized instability is visible about one quarter down from the top plateau (against a degraded line of straw bales). This area is heavily vegetated but should be monitored for future sloughing or movement. The consensus of the HDR engineers was to continue monitoring the area. No additional movement, including surface tension cracks, or sloughing was observed since the prior annual inspection.
- The interior access road leading to the active landfill fill area has steep soil embankments. The level of erosion observed during the inspection indicates that the access road embankments do not receive enough surface water run-on flow to create excessive rill or gully erosion. The roadway embankments should be monitored for localized or general sloughing, though none was observed.
- The north facing landfill embankment of areas D1, E1 and B1 are graded to a uniform slope. This slope does not have benches but does have a dense cover of vegetation. No erosion or sloughing was noted.
- The active fill area (Area D-1) was observed to have minimal areas of exposed ash. The recently soil covered CCR landfill work areas on the western side of Area D-1 appeared to have adequate soil cover. Side slopes for the cell excavation between the two fill areas were steep but showed no signs of instability or erosion.
- No ash disposal or compaction was observed during the site visit.
- There was no standing water observed in the active ash fill area.

5 Changes in Geometry

The Federal CCR Rules require that site geometry changes be identified since the last inspection. The site footprint remains the same since the prior site visit. The eastern face of the active area within Area D-1 has moved west due to the continued CCR disposal.

No structural or safety concerns were observed due the continued site geometric filling. Fill is expected to continue in a similar manner for 2018 as well as place material on top of cell.

6 Approximate CCR Volume

The CCR within the disposal area as of November 2015 was estimated by PSCo based on volume estimates that utilized topographic surveys, disposal records, ash generation volumes, and extrapolation of generation volumes. The total combined volume of CCR deposited within the landfill through October 2016 is estimated to be 1,344,200 cubic yards. The additional CCR deposited from November 1, 2016 through November 30, 2017 is estimated to be 71,510 CY, assuming one cubic yard of CCR material equates to one ton. The total CCR volume in the landfill as of November 30, 2017 is estimated to be 1,415,710 CY. Disposal in 2017 included material from the coal unit operations and cleanout of baghouses and the silo after operations ceased. The landfill will remain active in 2018, receiving dry bottom ash from cleanout of the on-site temporary storage ponds.

7 Appearance of Structural Weakness

Based on the site inspection, no apparent or potential structural weaknesses were observed. Per Section 4 above, continued monitoring and minor repairs should be considered to address rill erosion and prairie dog burrows before these issues become a structural landfill weakness. Much of the site's exterior rill erosion will be addressed as the recent lifts are covered in topsoil, seeded, and vegetation is established. Further erosion impacted areas may require additional mitigation measures.

8 Changes Affecting Stability or Operation

The Federal CCR Rule requires that changes that affect site stability or operation be identified since the last inspection. Since the last annual inspection, there were no observed nor reported operational changes or site conditions that indicate issues of stability or safety.

Appendix A – Landfill Site Map

Burrows and limited rill erosion.

Rill erosion

Area of inactive soil sloughing.

Open pit

Access with steep side cuts.

Approx edge of CCR Lanfill

Notes in red added by HDR Engineering for CCR Annual Inspection Report, January 2017.

COLORADO COORDINATE SYSTEM, NORTH
DATUM = NAVD 29
LATITUDE = N 40° 01' 38.8958"
COMBINED FACTOR = 0.999713726
RECIPROCAL FACTOR = 1.000286356
To get STATE PLANE NORTH ZONE coordinates, multiply the MODIFIED STATE PLANE coordinates shown in this electronic file (or which are shown hereon) by 0.999713726
Accuracy Classification: NOAA THIRD ORDER-CLASS 1
US SURVEY FEET.

BORE HOLE TABLE				
BOREHOLE#	ELEVATION	GROUND NORTHING	GROUND EASTING	GRID NORTHING
11	5299.12'	1253570.0182	3082593.8848	1253211.1537
12	5300.62'	1253380.9334	3082713.1174	1253022.1230
13	5301.16'	1253355.4008	3082547.4910	1252996.5977
14	5295.91'	1253498.9296	3082272.7370	1253140.0854
15	5292.07'	1253367.6485	3082073.4947	1253008.8419
16	5293.94'	1253353.6148	3082286.5948	1252994.8122
17	5296.43'	1253284.5847	3082445.6995	1252925.8019
18	5284.84'	1253240.5354	3082252.1853	1252881.7652
19	5279.80'	1253184.1666	3082050.4361	1252825.4125
20	5276.06'	1253033.1457	3082163.1556	1252674.4349
21	5273.82'	1253081.0579	3082476.3424	1252722.3333
22	5284.13'	1253156.1648	3082542.6267	1252797.4187
23	5285.88'	1253207.4886	3082704.9680	1252848.7278
24	5278.92'	1252878.4240	3082868.6311	1252519.7575
25	5278.95'	1252952.3266	3083010.6179	1252593.6389
26	5282.04'	1253107.3200	3083030.0984	1252748.5879
27	5280.78'	1253064.7289	3083190.6187	1252706.0090
28	5286.18'	1253199.9192	3083270.1228	1252841.1606
29	5283.30'	1253116.0997	3083386.0272	1252757.3651
30	5288.07'	1253270.0894	3083492.7002	1252911.3107
31	5283.57'	1253144.8372	3083532.6036	1252786.0944
32	5287.29'	1253215.6463	3083719.5890	1252856.8832
33	5293.08'	1253350.9428	3083762.6789	1252992.1410
34	5287.41'	1253226.3636	3083942.5851	1252867.5974
35	5291.01'	1253333.5053	3084052.3456	1252974.7085
36	5288.00'	1253453.0793	3084208.1370	1253094.2482
37	5283.95'	1253465.7793	3084400.9958	1253106.9446
38	5285.80'	1253254.7990	3084239.0571	1252896.0247
39	5284.26'	1253289.6482	3084455.3229	1252930.8639
40	5281.80'	1253320.2024	3084699.9943	1252961.4094
41	5278.51'	1253345.1658	3084944.7577	1252986.3656

VALMONT ASH PILES
OCTOBER 2017 ASH QUANTITIES
AND BOREHOLE LOCATIONS

PUBLIC SERVICE
COMPANY
OF COLORADO
A Xcel Energy Company

DWN: SCB DATE: 10/31/2017
CHK: JF DATE: 10/31/2017

SHEET 1 REV

MERRICK
& COMPANY

DWG NO MANUFACTURER
REFERENCE DRAWINGS

E M C MF
REVISION

NO ZONE DATE BY CHK
NO ZONE DATE BY CHK

ELEVATION: Valmont Ash Topsoil Type 2017
R-CODE: 011578
SCALE: 1" = 200'

NO