

**ANNUAL INSPECTION REPORT
EXISTING COAL COMBUSTION RESIDUE (CCR) LANDFILL
MUSCATINE POWER & WATER**

REPORT DATE: DECEMBER 23, 2020

A. Rule Requirement – Federal CCR Rule §257.84(b)

Under Federal Rule §257.84(b), existing 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. This document comprises the Inspection Report for 2020 required under this rule.

B. Documents Used to Review Status and Conditions – §257.84(b)(i)

1. This facility is regulated under Iowa Department of Natural Resources (DNR) Sanitary Disposal Project Permit No. 70-SDP-06-82P which was reissued on August 8, 2020. The permit expires August 8, 2030.
2. Water discharge from this facility is regulated under Iowa Department of Natural Resources National Pollutant Discharge Elimination System (NPDES) Permit No. 7000109 which was issued on January 19, 2010 and expired on January 18, 2015. An application for permit renewal was submitted to the DNR on July 18, 2014. DNR ruling on this renewal is pending. This permit requires monitoring of specified constituents at the Farm Pond discharge outfall.
3. Landfill Development, Plans and Specifications, and Reports

	Title
STATE	
11/01/91	-Closure/Post Closure Plan. Original date 11/01/91, revised January 1996 and December 2009
11/21/91	-Supporting Documentation Plans and Specifications (DOPS).
01/29/93	-Supplemental Plan Sheet 16.
Various	-Supplemental information dated 10/02/08, 12/17/09, and 03/30/10.
1/17/12	-CCR Landfill Cell Development – Phase II (Drawings)
10/3/18	-Unstable Areas Determination
Various	-Annual Groundwater and Surface Water Monitoring Report
Various	-Annual Leachate Control System Performance Evaluation Report
4/3/19	-CCR Landfill Cover Improvements –Drawings
10/16/20	- Construction Documentation Report, CCR Landfill Cover Improvements
FEDERAL	
10/19/15	-CCR Fugitive Dust Prevention and Control Plan; updated 12/5/2018
05/18/16	-Groundwater Monitoring System and Sampling and Analysis Program
10/17/16	-Run-on and Run-off Control System Plan
10/17/16	-Closure and Post-Closure Plan
Various	-Annual CCR Fugitive Dust Control Report
Various	-Annual Inspection Report

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C. Visual Inspection of the CCR Landfill – §257.84(b)(ii)

The existing landfill was visually inspected by a qualified person under the direction of a Professional Engineer to identify signs of distress or malfunction of the CCR unit.

CCR Unit Location: SW½, Section 16, T76N R3W, Muscatine County, Iowa

Date of Inspection: November 4, 2020

Weather: Mostly sunny, 65 degrees, wind estimate 15 mph

Field Observation By: Rose Amundson, CGP, HR Green, Inc.

Others Present: Sam Bennet, Muscatine Power and Water

D. Inspection Report – §257.84(b)(2)

§257.84(b)(2)(i) Changes in Landfill Geometry Since Previous Annual Inspection

In addition to the minor changes resulting from ongoing CRR disposal, significant changes to the geometry of the structure occurred since the previous annual inspection. These changes pertain to landfill cover and infrastructure improvements that were initiated in the summer of 2019. Final acceptance of the project was in September 2020. The construction included:

- Re-grading of existing CCR and installation of final landfill cover over 7.7 acres of Phase I. This final covered area is at final grade and will not receive additional CCR.
- Re-grading of existing CCR and installation of temporary soil cover over 6.6 acres of Phases I & II. This temporary covered area is designed to shed storm water off of the landfill while reducing generation of CCR contact water and leachate. Eventually this temporary covered area will return to active CCR disposal as other active areas are filled and covered.
- Grading and contact water drainage improvements in a designated 5.2-acre active operations area.
- New haul roads and service roads.
- Clay lined pond forebay for management of collected CCR contact water.
- Storm water control system for management of runoff from final and temporary landfill cover and surrounding areas.

§257.84(b)(2)(ii) CCR In-Place Volume

The total approximate volume of the unit at the time of the inspection was 785,000 cubic yards. The volume was estimated from cut and fill calculations using updated survey information in 2018 plus additional volume placed since that time calculated from Fee-Exempt Material Quarterly Reports to the Iowa Department of Natural Resources (IDNR). CCR in-place volume will be updated annually based on the best available data (survey, reports, or combination).

§257.84(b)(2)(iii) Structural or other issues affecting operation

There are no obvious appearances of an actual or potential structural weakness of the CCR unit. There are no known existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit.

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§257.84(b)(2)(iv) Other changes

There are no known change(s) which may have affected the stability or operation of the CCR unit since the previous annual inspection.

Other Comments

The following additional comments are based on site inspection, review of pertinent documents, and knowledge of the site and operations.

- Development and Operations
 - MP&W's operator is proceeding in accordance with approved plans and specifications, including fill areas, slopes, height, access roads, monitoring wells, etc.
 - The landfill is operated in accordance with existing permits and amendments.
 - Construction of permanent and temporary soil cover was completed in 2020. These site improvements are intended to simplify operations and improve management of precipitation, leachate, sedimentation, and fugitive dust. These improvements have reduced the operating area (exposed CCR) from 19.5 acres in 2019 to 5.2 acres in 2020.
 - Summary status of landfill development - 2020
 - Total Landfill Area: 33.5 acres
 - Currently Permitted and Under Development: (Phase I & II): 22.7 acres
 - Final Cover Constructed Pre-1991: 3.2 acres (Phase I)
 - Final Cover Constructed 2019-2020: 7.7 acres (Phase I)
 - Current Active Operations Area 2020: 5.2 acres (Phase I & II)
 - Current Temporary Covered Area 2020: 6.6 acres (Phase I & II)

- Fugitive Dust Prevention and Control
 - Dust is controlled as described in the *CCR Fugitive Dust Prevention and Control Plan* dated October 19, 2015, updated December 2018, and in the most recent Annual CCR Fugitive Dust Control Report.

- Groundwater Monitoring System
 - During the 2019-2020 construction project, monitoring wells MW-4A and MW-25 were damaged by construction equipment. Both were properly sealed and abandoned. Monitoring well MW-4A was replaced with MW-4B at the same general location. Two additional new monitoring wells (MW-26 and MW-27) were installed at other preferred locations approved by Iowa DNR.
 - Semi-annual sampling of both groundwater monitoring wells and surface water points were completed in 2020 as required by the site permit. Under Federal Rule Part 257.93, groundwater sampling events were completed for a different list of federal constituents as required.

- Leachate Collection System
 - The system appeared to be operating as designed. During this inspection, there were no apparent changes to this operation. The system is evaluated and reported annually in the Annual Water Quality Report (AWQR) to the IDNR by January 31.

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- Erosion Control and Storm Water Management
 - The goal of the 2019-2020 construction project was to establish a combination of final and temporary vegetated soil cover over most of the current active area, leaving a smaller portion open (uncovered) to sustain CCR filling operations at any point in time.
 - With a couple exceptions listed below, the new vegetative cover is generally well established over the landfill with minimal bare spots. These minor areas are expected to fill in with grass cover naturally over future growing seasons. MP&W should monitor this to assure that minor bare spots do not develop into erosional areas that would require more extensive repairs.
 - One larger area of poorly established vegetative cover (about 2,500 sf) was noted on the temporary covered slope located southwest of manhole cleanouts CO-1 and CO-2. Since this not a final cover slope and all runoff from this area is managed down slope within the landfill footprint, less than ideal vegetation may well be tolerated. However, MP&W should monitor this area and take appropriate measures if it appears that significant erosion is occurring. A proactive approach could be installation of one or more additional lines of silt fence across the slope to slow down runoff and over-seed the area or allow grass to fill in naturally.
 - Portions of the ditch that is located parallel to the south boundary of Phase I & II has experienced erosion in the areas of the existing silt fence ditch checks. It appears that the rate of runoff flow overwhelmed some of the ditch checks, increasing velocities and resulted in erosion. These areas should be repaired and reseeded. The existing silt fence may still provide some benefit in stabilizing the ditch as long as the fabric is not undercut, overtopped, or bypassed by future flow events. To allow for larger flows, we recommend that small holes be made (with a knife, screw driver, etc.) throughout the height and width of each silt fence ditch check. The intent is to provide some retardation of the ditch flow but still allow sufficient flow through the material to limit backup of water upstream.

- Undesirable Vegetation: The presence of woody vegetation on landfill cover is generally not desired. Left unchecked, woody plants will grow, shade out grasses, promote presence of borrowing animals, and increase permeability (and infiltration) of cover soil. Our inspection noted the presence of saplings growing on the north slope of Phase I. This is the area that was filled and covered in the early 1990's. We recommend that this woody vegetation be eradicated. This is typically accomplished with application of herbicide or possibly a brush mower.

A copy of this report will be placed in the operating record as required under §257.105(g)(9).

Under §257.84(c) Muscatine Power & Water intends to comply with the recordkeeping requirements specified in §257.105(g)(9), the notification requirements specified in §257.106(g)(7), and the public internet site requirements specified in § 257.107(g)(7).

As required under §257.84(b)(4), the deadline for completing the next annual inspection report is established as no later than one year following the Report Date on this document.

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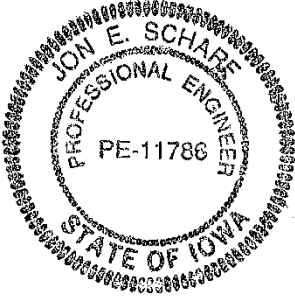
CERTIFICATION

ANNUAL INSPECTION REPORT

CCR LANDFILL

Permit No. #70-SDP-06-82P-CCR

**MUSCATINE POWER & WATER
MUSCATINE, IOWA**

	<p>I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.</p>
	<p><u><i>Jon E. Scharf</i></u> Date: <u>12/23/2020</u></p>
	<p>Jon E. Scharf, P.E.</p>
	<p>License No. 11786</p>
	<p>My renewal date is December 31, 2021</p>
	<p>Pages or sheets covered by this seal: ENTIRE DOCUMENT</p>

Reviewed By:

Name: Rose Amundson, CGP
Certified Groundwater Professional

Signature: *Rose Amundson*

Date: December 23, 2020

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