

MEMORANDUM

12 October 2016
File No. 40373-340

SUBJECT: CCR Conceptual Closure Plan
Landfill 9
Dayton Power & Light Company
J.M. Stuart Electric Generating Station
Aberdeen, Ohio

Dayton Power & Light Company (DP&L) operates the coal-fired J.M. Stuart Electric Generating Station (JMSS) located near Aberdeen, Ohio. Landfill 9 is an active lined landfill situated at the far east end of the JMSS facility and will continue to receive CCR generated by the JMSS plant in the future. This written Closure Plan (Plan) addresses the requirements of §257.102 *Criteria for conducting the closure or retrofit of CCR units*, specifically section §257.102(b) for written closure plans, of the USEPA's Final CCR Rule dated April 17, 2015 for the (JMSS) Landfill 9.

This Plan has been developed based upon information provided by DP&L and describes the ash landfill, closure plan design, a schedule for closure, and steps required to amend the Plan in the future if necessary. The landfill will be closed leaving CCR's in-place and a final cover system will be installed.

§257.102(b)(1): The owner or operator of a CCR unit must prepare a written closure plan that describes the steps necessary to close the CCR unit at any point during the active life of the CCR unit consistent with recognized and generally accepted good engineering practices. The written closure plan must include, at a minimum, the information specified in paragraphs (b) (1) (i) through (vi) of this section.

At any point during the active life of the landfill closure may be necessary. Currently, DP&L plans to operate the JMSS facility through the year 2036 and begin closure of the landfill thereafter. Regardless of when the landfill is closed the following steps will be necessary for closure of the unit:

1. Obtain written Professional Engineer (PE) certification that design of the cover system meets the requirements of the Final CCR Rule.
2. No later than the date closure is initiated, prepare a notification of intent to close a CCR unit and place notification in the facility operating record. The notification of intent to close must include the PE certification from Step 1.
3. Commence closure no later than 30-days after known final receipt CCR.
4. Complete installation of final cover system within 6-months of commencing closure activities.

5. Obtain PE certification verifying closure has been completed in accordance with this Plan.
6. Within 30-days of completion of closure of the CCR unit, prepare a notification of closure of a CCR unit and place notification in the facility operating record. The notification of closure must include the PE certification from Step 5.
7. Following closure of the CCR unit, record a notation on the deed to the property or some other instrument normally examined during title search.
8. Within 30-days of recording a notation on the deed to the property, prepare a notification stating that the notation has been recorded and place the notification in the facility operating record.

§257.102(b)(1)(i): *A narrative description of how the CCR unit will be closed in accordance with this section*

DP&L plans to close this unit by leaving CCR in-place with a final cover system designed and constructed to meet the USEPA's Final CCR Rule requirements of §257.102(d)(3)(i)(A-D) and/or §257.102(d)(3)(ii)(A-C). To satisfy the Final CCR Rule requirements, the proposed final cover system will consist of a minimum 18-inch thick soil infiltration layer that will minimize the infiltration of liquids through the CCR unit. The infiltration layer will have a permeability less than or equal to the constructed liner system and/or any natural subsoils present, or no greater than 1×10^{-5} cm/s, whichever is less. An equivalent alternative may also be chosen in the future.

The proposed final cover system will be constructed to satisfy the closure performance standards per the requirements of §257.102(d)(1) and §257.102(d)(3) and as described in the pertinent section below. Erosion of the final cover system will be minimized by the placement of a minimum 6-inch thick soil erosion layer, capable of supporting native plant growth. The top of the final cover will be graded to adequately drain stormwater runoff to a perimeter ditch before discharging off-site.

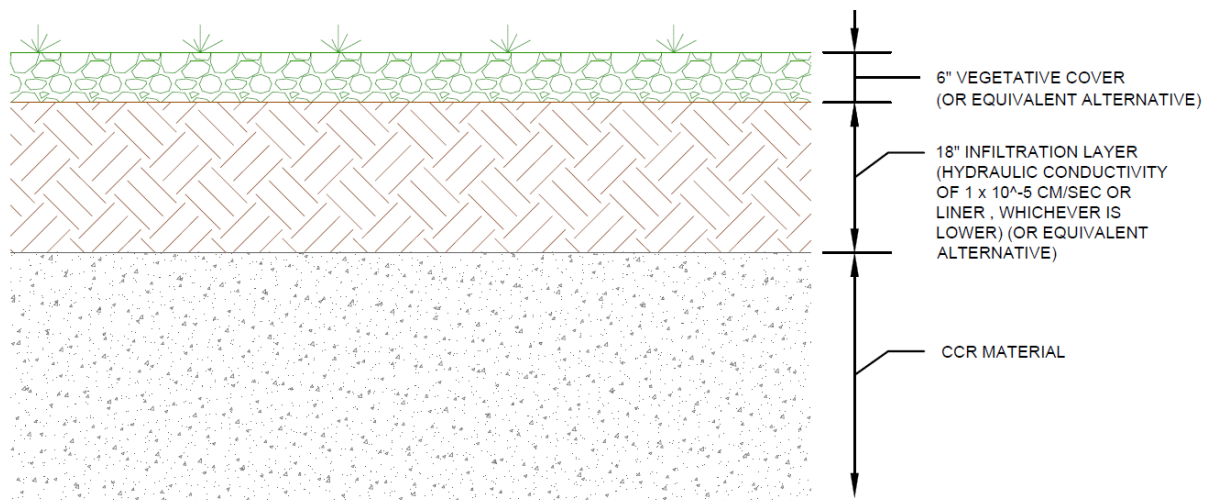
It is anticipated that soils for the final cover system will be imported from adjacent borrow areas proximate to the CCR landfill.

§257.102(b)(1)(ii): *If closure of the CCR unit will be accomplished through removal of CCR from the CCR unit, a description of the procedures to remove the CCR and decontaminate the CCR unit in accordance with paragraph (c) of this section.*

N/A - The landfill will be closed-in-place.

§257.102(b)(1)(iii): *If closure of the CCR unit will be accomplished by leaving CCR in place, **a description of the final cover system**, designed in accordance with paragraph (d) of this section, and the methods and procedures to be used to install the final cover. The closure plan must also discuss how the final cover system will achieve the performance standards specified in paragraph (d) of this section.*

A typical section of the minimum required final cover system is presented below.



§257.102(b)(1)(iii): If closure of the CCR unit will be accomplished by leaving CCR in place, a description of the final cover system, designed in accordance with paragraph (d) of this section, and **the methods and procedures to be used to install the final cover**. The closure plan must also discuss how the final cover system will achieve the performance standards specified in paragraph (d) of this section.

The following general installation methods and procedures are expected to be used to construct the final cover system:

Subgrade Preparation

Prior to installation of the infiltration layer, any existing vegetation should be removed and the surface smoothed to provide a suitable working base for cover system installation. Fill soil may be required to shape the subgrade and fill in low areas or repair erosion as necessary. Any soft areas should be under-cut and recompact as necessary to provide a firm, unyielding foundation for placement and compaction of the infiltration layer. The subgrade shall be maintained in a smooth, uniform, and drained condition prior to placement of the infiltration layer.

The subgrade will be surveyed to establish elevations of the surface prior to placement of the infiltration layer.

Infiltration Layer

Soil materials for the infiltration layer will be obtained from an on-site or off-site source, delivered using haul trucks, spread with a dozer, and compacted with soil compaction equipment. Soil will be compacted to achieve compaction and permeability requirements. The final surface of the infiltration layer will be maintained in a smooth, uniform drainage condition.

Upon completion, the infiltration layer will be surveyed to establish elevations and verify the minimum layer thickness is provided.

Erosion Layer

Soil materials for the erosion layer will be obtained from an on-site or off-site source, delivered using haul trucks, and spread with a dozer. The erosion layer does not require compaction control; however, it should be stable for construction traffic. The erosion layer top surface will remain rough to promote the establishment of vegetation. Stabilization and seeding of the erosion layer must begin immediately after placement (weather permitting).

Upon completion, the erosion layer will be surveyed to establish elevations and verify the minimum layer thickness is provided.

Temporary or permanent erosion control materials (mulches, fabrics, rock check dams, soil tackifier) may be used to minimize erosion and aid in establishment of vegetation. Hard armor such as cobbles or rip rap may be used in areas where establishment of vegetation may be difficult or impossible.

§257.102(b)(1)(iii):** If closure of the CCR unit will be accomplished by leaving CCR in place, a description of the final cover system, designed in accordance with paragraph (d) of this section, and the methods and procedures to be used to install the final cover. **The closure plan must also discuss how the final cover system will achieve the performance standards specified in paragraph (d) of this section.

***§257.102(d)(1):** The owner or operator of a CCR unit must ensure that, at a minimum, the CCR unit is closed in a manner that will:*

***§257.102(d)(1)(i):** Control, minimize or eliminate, to the maximum extent feasible, post-closure infiltration of liquids into the waste and releases of CCR, leachate, or contaminated run-off to the ground or surface waters or to the atmosphere;*

The proposed infiltration layer of the final cover system will have a permeability less than or equal to the liner and any natural subsoils present, or no greater than 1×10^{-5} cm/s, whichever is less, which will minimize infiltration of liquids into the waste and inhibit the generation of leachate. The final cover system will minimize releases of CCR and CCR contaminated run-off by completely covering the in-place CCR material and preventing exposure to erosive conditions. The final cover system will minimize the potential for CCR fugitive dust by completely covering the in-place CCR preventing exposure to wind and vehicle traffic.

***§257.102(d)(1)(ii):** Preclude the probability of future impoundment of water, sediment, or slurry;*

The final cover will be graded to promote positive drainage and prevent the impoundment of water, sediment, or slurry. The top of the final cover will be graded at a minimum slope and will direct stormwater to a series of benches that will be graded to low points where inlets and pipes direct runoff to a perimeter ditch. The final grading and stormwater conveyance system will prevent the impoundment of water on the cap.

§257.102(d)(1)(iii): *Include measures that provide for major slope stability to prevent the sloughing or movement of the final cover system during the closure and post-closure care period;*

As part of the landfill design process, slope stability analysis was performed to ensure the slopes of the landfill would be stable against sloughing or movement. The establishment of vegetation and stormwater controls designed for the landfill will help prevent sloughing and ensure stability of the final cover.

§257.102(d)(1)(iv): *Minimize the need for further maintenance of the CCR unit; and*

Erosion of the final cover system will be minimized by the stormwater conveyance system and establishment of vegetation on the erosion layer minimizing the need for future maintenance. The design grades of the final cover system will accommodate settling and subsidence without disrupting the integrity of the final cover system. By accounting for potential settlement and subsidence the final cover system minimizes the need for future maintenance

§257.102(d)(1)(v): *Be completed in the shortest amount of time consistent with recognized and generally accepted good engineering practices.*

Closure will be completed in the shortest amount of time consistent with generally accepted good engineering practices and industry standard construction methods but will need to include time to accommodate regulatory review and permitting associated with detailed engineering design, potential weather delays due to periodic and seasonal conditions, and the availability of construction materials. These elements have been accounted for in the closure schedule shown below.

§257.102(b)(1)(iv): *An estimate of the maximum inventory ever on-site over the active life of the CCR unit.*

The maximum volume of CCRs ever stored in the unit will occur at closure and is estimated to be approximately 29,300,000 CY.

§257.102(b)(1)(v): *An estimate of the largest area of the CCR unit ever requiring a final cover as required by paragraph (d) of this section at any time during the CCR unit's active life.*

The area of the landfill requiring final cover is approximately 209.3 acres.

§257.102(b)(1)(vi): *A schedule for completing all activities necessary to satisfy the closure criteria in this section, including an estimate of the year in which all closure activities for the CCR unit will be completed. The schedule should provide sufficient information to describe the sequential steps that will be taken to close the CCR unit, including identification of major milestones such as coordinating with and obtaining necessary approvals and permits from other agencies, the dewatering and stabilization phases of CCR surface impoundment closure, or installation of the final cover system, and the estimated timeframes to complete each step or phase of CCR unit closure. When preparing the written closure plan, if the owner or operator of a CCR unit estimates that the time required to complete closure will exceed the*

timeframes specified in paragraph (f) (1) of this section, the written closure plan must include the site-specific information, factors and considerations that would support any time extension sought under paragraph (f)(2) of this section.

An estimated schedule for completing the activities necessary to satisfy the closure in place criteria of the CCR Rule is provided below. The schedule lists the sequential steps that need to be taken to close the landfill.

Item #	Task Item	Completion Timeframe (months)															
		Design and Permitting								Closure							
		-8	-7	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	7
1	Prepare Construction Plans																
2	PE Design Certification																
3	Notice of Intent to Close Landfill																
4	Agency Closure Permit Issuance																
5	Cease placing CCR in Landfill																
6	Commence Closure																
8	Final Cover Installation																
9	PE Closure Certification																
10	Notice of Landfill Closure																
11	Record Deed Notation																
12	Notice of Deed Recordation																

DP&L will need to initiate some activities prior to commencing closure. As indicated on the schedule, DP&L will need to take action on Steps 1-4 as early as 8 months prior to the anticipated final receipt of CCR at the landfill.

Per §257.102(e)(3) closure of the landfill has commenced when DP&L has ceased placing CCR in the landfill and completes any of the following actions or activities: (i) Taken any steps necessary to implement the written closure plan; (ii) Submitted a completed application for any required state or agency permit or permit modification; or (iii) Taken any steps necessary to comply with state or other agency standards that are a prerequisite, or are otherwise applicable, to initiating or completing the closure of the CCR landfill.

DP&L intends to operate the plant through 2036. Closure activities for the CCR landfill are estimated to be completed in 2037.

§257.102(b)(3)(i): The owner or operator may amend the initial or any subsequent written closure plan developed pursuant to paragraph (b) (1) of this section at any time.

DP&L will assess the Plan and amend the Plan whenever there is a change in operation of the CCR landfill that would substantially affect the Plan or when unanticipated events necessitate a revision of the Plan either before or after closure activities have commenced.

The Plan will be amended at least 60 days prior to a planned change in the operation of the facility or the CCR landfill or no later than 60 days after an unanticipated event requires the need to revise the

Plan. If the Plan needs to be revised after closure activities have commenced, the Plan will be revised no later than 30 days following the triggering event.

The amended Plan will be placed in the facility operating record as required by the CCR Rule.


A record of amendments to the Plan will be tracked below. The latest version of the Plan will be noted on the front cover of the Plan.

Version	Date	Description of Changes Made
1	12 October 2016	Initial Issue

Professional Engineer Certification

§257.102(b)(4): *The owner or operator of the CCR unit must obtain a written certification from a qualified professional engineer that the initial and any amendment of the written closure plan meets the requirements of this section.*

I certify that this written Closure Plan for DP&L's Landfill 9 at the J.M. Stuart Electric Generating Station meets the USEPA's Final CCR Rule requirements of §257.102(b).

Signed: 
Consulting Engineer

Print Name: Steven F. Putrich
Ohio License No.: 67329
Title: Vice President
Company: Haley & Aldrich, Inc.

Professional Engineer's Seal and date:

