



**Date:** December 17, 2015

**Subject:** Notification of Intent to Initiate Closure of the CCR Impoundment

In accordance with the Coal Combustion Residuals (CCR) standard at 40 CFR 257.100(c)(1), the City of Ames' electric utility, Ames Municipal Electric System, is providing notification of its intent to initiate closure of the CCR surface impoundment for the City's Steam Electric Plant.

The CCR surface impoundment unit is an inactive surface impoundment and is being closed under the requirements of paragraph (b) of section 40 CFR 257.100. The CCR unit ceased receiving CCR prior to October 19, 2015, which qualifies it as an "inactive CCR surface impoundment" according to the definition in the CCR standard at 40 CFR 257.53, as amended in the *Federal Register* at 80 Fed. Reg. 37992 (July 2, 2015).

As a part of the notification requirements of 40 CFR 257.100(c)(1), the "narrative description of how the CCR surface impoundment will be closed, a schedule for completing closure activities, and the required certifications under paragraphs (b)(4) and (6) of this section," will be a separate document attached to this notification.

This memorandum satisfies the CCR standard's recordkeeping requirement at 40 CFR 257.105(i)(1). This memorandum will be "sent to the relevant State Director" to satisfy the CCR standard's notification requirement at 40 CFR 257.106(i)(1), and will be posted on the site's CCR Web site to satisfy the CCR standard's publicly accessible Internet site requirements at 40 CFR 257.107(i)(1).

# Technical Memo



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**To:** Brian Trower, Ames Municipal Electric System  
**From:** Peter Daniels, PE (Iowa PE# 21569)  
Dave Parenteau, PE (MN), Wenck Associates, Inc.  
**Date:** December 17, 2015  
**Subject:** Notice of Intent to Close the CCR Unit at the City of Ames' Steam Electric Plant  
Wenck Project # B3349-0001

I hereby certify that this engineering document was prepared by me or under my direct supervision and that I am a duly registered Professional Engineer under the laws of the State of Iowa.



Dec 17, 2015

Peter Daniels  
PE# 21569 – Expiration Date Dec. 31, 2016

## **Purpose**

This memorandum fulfills the requirements of 40 CFR § 257.100 Closure and Post Closure Care of Inactive Coal Combustion Residuals (CCR) surface impoundments, specifically the requirements in 257.100 (c) (1).

## **Background and Applicability**

As of October 19, 2015, Ames Municipal Electric System (AMES) ceased sluicing of CCR into their ash receiving pond (surface impoundment) system. The surface impoundment is therefore considered "inactive" but is yet to be closed. Figure 1 depicts the layout of the current inactive pond system and CCR storage area.

The remaining sections of this memorandum present each section of 40 CFR § 257.100 (in italics) followed by language demonstrating compliance or non-applicability of each subpart immediately below each subpart.

**Item 1:**

(1) *Closure by leaving CCR in place. If the owner or operator of the inactive CCR surface impoundment elects to close the CCR surface impoundment by leaving CCR in place, the owner or operator must ensure that, at a minimum, the CCR unit is closed in a manner that will:*

- (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;*
- (ii) *Preclude the probability of future impoundment of water, sediment, or slurry;*
- (iii) *Include measures that provide for major slope stability to prevent the sloughing or movement of the final cover system; and*
- (iv) *Minimize the need for further maintenance of the CCR unit.*

**Response 1:**

Ames intends to close the impoundment by leaving residual CCR materials in place and by filling the pond. The pond will be filled with CCR (ash) that is stored adjacent to the pond and was formerly used "beneficially," or landfilled at an offsite permitted disposal facility. If needed, clean fill will then be borrowed from a nearby borrow area or imported from an off-site source to bring the pond to proper grade before construction of the final cover system. Components (i) through (iv) are addressed below:

- (i) The pond will be dewatered and then filled with fill as described above. This, combined with the final cover system, will minimize 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.
- (ii) The area will be sloped and therefore will preclude the probability of future impoundment of water, sediment, or slurry.
- (iii) The perimeter dike system is undergoing a slope stability analysis that is expected to be completed in early 2016. There are no indications that the perimeter dikes have any concerns related to stability and the final cover grades will be relatively flat, therefore it is not expected that there will be a concern related to slope stability or sloughing or movement of the final cover system. Should the stability analysis indicate an unsuitably low factor of safety, the appropriate measures will be incorporated into the final design of the cover system.
- (iv) The vegetated surface of the final cover and mitigation of any potential slope stability or subsidence concerns will minimize the need for further maintenance of the CCR unit.

**Item 2:**

- (2) *The owner or operator of the inactive CCR surface impoundment must meet the requirements of paragraphs (b) (2) (i) and (ii) of this section prior to installing the final cover system required under paragraph (b) (3) of this section.*
- (i) *Free liquids must be eliminated by removing liquid wastes or solidifying the remaining wastes and waste residues.*
- (ii) *Remaining wastes must be stabilized sufficient to support the final cover system.*

**Response 2:**

The pond will be dewatered and the fill will be compacted in lifts such that it is capable of supporting the final cover system.

**Item 3:**

- (3) *The owner or operator must install a final cover system that is designed to minimize infiltration and erosion, and at a minimum, meets the requirements of paragraph (b)(3)(i) of this section, or the requirements of an alternative final cover system specified in paragraph (b)(3)(ii) of this section.*
- (i) *The final cover system must be designed and constructed to meet the criteria specified in paragraphs (b) (3) (i) (A) through (D) of this section.*
- (A) *The permeability of the final cover system must be less than or equal to the permeability of any bottom liner system or natural subsoils present, or a permeability no greater than  $1 \times 10^{-5}$  centimeters/second, whichever is less.*
- (B) *The infiltration of liquids through the CCR unit must be minimized by the use of an infiltration layer that contains a minimum of 18 inches of earthen material.*
- (C) *The erosion of the final cover system must be minimized by the use of an erosion layer that contains a minimum of six inches of earthen material that is capable of sustaining native plant growth.*
- (D) *The disruption of the integrity of the final cover system must be minimized through a design that accommodates settling and subsidence.*

**Response 3:**

The final cover system will consist of the following layers from the bottom up:

- (3)(i)(A) - 12 inch thick layer of clay or clayey soils with a hydraulic conductivity of no greater than the lower of the natural subsoils present or  $1 \times 10^{-5}$  cm/sec, whichever is lower.

The site construction drawings indicate that the pond is lined with a 1 foot thick clay barrier which overlies a 3 foot thick layer of "impervious fill", however there is some question regarding the existence of the 1 foot thick clay barrier. As part of the design of the final cover system, this will be investigated to determine the appropriate hydraulic conductivity to use as the design basis for the final cover system.

The hydraulic conductivity of the barrier layer/"impervious fill" layer and/or natural subsoils will be determined by a review of available historical hydrogeologic data, and if that data is found to be insufficient, Shelby tubes will be pushed into these soil layers to collect an undisturbed sample for laboratory analysis of hydraulic conductivity.

- (3)(i)(B) The barrier layer will be overlain by an 18 inch thick layer of earthen material that will be placed in one lift and not compacted. This layer will be the infiltration layer.
- (3)(i)(C) The infiltration layer will be overlain by a 6 inch thick layer of topsoil and this will be the vegetative layer. The topsoil will be amended with fertilizer as needed and the final surface will be seeded and mulched.
- (3)(i)(D) The grades of the final surface will be such that settlement can be accommodated without disruption of the integrity of the final cover system. Grades will be a minimum of 5% which is consistent with typical the IDNR requirements for a MSW landfill final cover system. It is also important to note that the pond is relatively shallow (12-15 feet in total depth) and will be filled with compacted ash or fill. This will minimize the settlement potential as settlement is directly proportional to the thickness of the compressible layer, which in this case will be the 12 to 15 feet of material placed back into the pond.

**Item 4:**

- (ii) *The owner or operator may select an alternative final cover system design, provided the alternative final cover system is designed and*

*constructed to meet the criteria in paragraphs (b)(3)(ii)(A) through (C) of this section.*

- (A) The design of the final cover system must include an infiltration layer that achieves an equivalent reduction in infiltration as the infiltration layer specified in paragraphs (b)(3)(i)(A) and (B) of this section.*
- (B) The design of the final cover system must include an erosion layer that provides equivalent protection from wind or water erosion as the erosion layer specified in paragraph (b)(3)(i)(C) of this section.*
- (C) The disruption of the integrity of the final cover system must be minimized through a design that accommodates settling and subsidence.*

**Response 4:**

At this time, the owner is not proposing an alternate final cover system, therefore subpart (b) (3) (ii) does not apply.

**Item 5:**

- (4) The owner or operator of the CCR surface impoundment must obtain a written certification from a qualified professional engineer stating that the design of the final cover system meets either the requirements of paragraphs (b)(3)(i) or (ii) of this section.*

**Response 5:**

The final cover system as described in Response 3 above, meets the requirements of paragraph (b)(3)(i) of this section **A registered professional engineer in the state of Iowa has signed the certification statement on the first page of this memorandum, which addresses this requirement.**

**Item 6:**

- (5) Closure through removal of CCR. The owner or operator may alternatively elect to close an inactive CCR surface impoundment by removing and decontaminating all areas affected by releases from the CCR surface impoundment. CCR removal and decontamination of the CCR surface impoundment are complete when all CCR in the inactive CCR surface impoundment is removed, including the bottom liner of the CCR unit.*

**Response 6:**

Ames does not intend to implement this closure strategy; therefore this subpart does not apply.

**Item 7:**

- (6) *The owner or operator of the CCR surface impoundment must obtain a written certification from a qualified professional engineer that closure of the CCR surface impoundment under either paragraphs (b)(1) through (4) or (b)(5) of this section is technically feasible within the timeframe in paragraph (b) of this section.*

**Response 7:**

Given the small size of this pond (approximately 5 acres) it is anticipated that the selection of a consultant, and preparation of the design and construction bid documents will occur in 2016, and that closure activities can be achieved during the 2017 construction season. There are several qualified contractors within reasonable proximity of the site and the soil volumes anticipated are such that the project should take no longer than 6-8 weeks to complete, including turf restoration.

Anticipated schedule is as follows:

Present to August 2017	-	Dewater pond
May/June 2017	-	Determine hydraulic conductivity of pond liner/"impervious soil" layer
August/September 2017	-	Place Fill in pond
September 2017	-	Construct Final Cover System

The closure of the CCR surface impoundment under paragraphs (b)(1) through (4) of this section is technically feasible within the timeframe in paragraph (b) of this section. **A registered professional engineer in the state of Iowa has signed the certification statement on the last page of this memorandum, which addresses this requirement.**

**Item 8:**

- (7) *If the owner or operator of the CCR surface impoundment fails to complete closure of the inactive CCR surface impoundment within the timeframe in paragraph (b) of this section, the CCR unit must comply with all of the*

*requirements applicable to existing CCR surface impoundments under this subpart.*

**Response 8:**

Ames will comply with all requirements applicable to existing CCR impoundments under this subpart if the closure is not completed within the time frame given in paragraph (b) of this section (By April 17, 2018).

**Item 9:**

- (c) *Required notices and progress reports. An owner or operator of an inactive CCR surface impoundment that closes in accordance with paragraph (b) of this section must complete the notices and progress reports specified in paragraphs (c) (1) through (3) of this section.*
  - (1) *No later than December 17, 2015, the owner or operator must prepare and place in the facility's operating record a notification of intent to initiate closure of the CCR surface impoundment. The notification must state that the CCR surface impoundment is an inactive CCR surface impoundment closing under the requirements of paragraph (b) of this section. The notification must also include a narrative description of how the CCR surface impoundment will be closed, a schedule for completing closure activities, and the required certifications under paragraphs (b)(4) and (6) of this section, if applicable.*
  - (2) *The owner or operator must prepare periodic progress reports summarizing the progress of closure implementation, including a description of the actions completed to date, any problems encountered and a description of the actions taken to resolve the problems, and projected closure activities for the upcoming year. The annual progress reports must be completed according to the following schedule:*
    - (i) *The first annual progress report must be prepared no later than 13 months after completing the notification of intent to initiate closure required by paragraph (c)(1) of this section.*
    - (ii) *The second annual progress report must be prepared no later than 12 months after completing the first progress report required by paragraph (c)(2)(i) of this section.*
    - (iii) *The owner or operator has completed the progress reports specified in paragraph (c) (2) of this section when the reports are placed in the facility's operating record as required by § 257.105(i) (2).*



**Brian Trower**  
Ames Municipal Electric  
December 17, 2015



- (3) *The owner or operator must prepare and place in the facility's operating record a notification of completion of closure of the CCR surface impoundment. The notification must be submitted within 60 days of completing closure of the CCR surface impoundment and must include a written certification from a qualified professional engineer stating that the CCR surface impoundment was closed in accordance with the requirements of either paragraph (b)(1) through (4) or (b)(5) of this section.*

**Response 9:**

Ames will comply with these notification requirements and place these records in their operating record as required by § 257.105(i)(1) for the initial report. Subsequent progress reports will meet the criteria set forth in § 257.105(i)(2).

**Item 10:**

- (d) *The owner or operator of the CCR unit must comply with the recordkeeping requirements specified in § 257.105(i), the notification requirements specified in § 257.106(i), and the internet requirements specified in § 257.107(i)*

**Response 10:**

Ames will comply with the recordkeeping requirements as required by § 257.105(i)(1), notification requirements of § 257.106(i)(1), and internet requirements of § 257.107(i)(1). It is understood that in order to meet the Notice of Intent to Close deadline of December 17, 2015, all three of these requirements will be met.

Figure

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DEC 2015  
 Figure 1

**WENCK**  
 ASSOCIATES

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AMES MUNICIPAL ELECTRIC SYSTEM  
 Site Map