

# CLOSURE PLAN FOR EXISTING CCR SURFACE IMPOUNDMENT

## 40 CFR 257.102(b)

### REV 0 – 10/17/2016

#### SITE INFORMATION

Site Name / Address	Hennepin Power Station / 13498 East 800 <sup>th</sup> Street, Hennepin, IL 61327		
Owner Name / Address	Dynergy Midwest Generation, LLC / 1500 Eastport Plaza Drive, Collinsville, IL 62234		
CCR Unit	East Ash Pond	Closure Method and Final Cover Type	Close In-Place Geomembrane with Soil and Vegetation Cover

#### CLOSURE PLAN DESCRIPTION

(b)(1)(i) – Narrative description of how the CCR unit will be closed in accordance with this section.	The East Ash Pond will be dewatered, as necessary, to facilitate closure by leaving CCR in place. The CCR in the East Ash Pond will be shaped and graded. Existing inlet pipes at the northwest corner of the East Ash Pond and the discharge pipe between the East Ash Pond and the non-CCR leachate pond will be removed from service. The final cover will be sloped to promote drainage and stormwater runoff to drain through a series of drainage channels on the cover system to a perimeter stormwater collection channel. From the perimeter channel, stormwater will flow through an outlet structure into the adjacent, existing (non-CCR) East Polishing Pond. In accordance with 257.102(b)(3), this initial written closure plan will be amended to provide additional details after the final engineering design for the grading and cover system is completed, if the final design would substantially affect this written closure plan. This initial closure plan reflects the information available to date.
(b)(1)(iii) – If closure of the CCR unit will be accomplished by leaving CCR in place, a description of the final cover system and methods and procedures used to install the final cover.	The final cover system will be installed in direct contact with the graded CCR material and will include (from bottom up): 1) a geomembrane, 2) a geocomposite drainage layer, 3) 18" of earthen material; 4) 6" of soil capable of sustaining native plant growth; and 5) planted native grasses. CCR material will be relocated or regraded as fill and supplemented with borrow soils as necessary to achieve design grades. The geomembrane will be installed directly on top of the graded CCR material. A geocomposite drainage layer will be installed directly over the geomembrane. Eighteen inches of earthen material will be placed on the underlying geosynthetics and graded to meet the thickness and slope as discussed above for the cover system. Organic earthen material will be placed on top of the 18" of soils to create a 6" soil layer capable of sustaining native plant growth. The final cover surface will be seeded and vegetated. The final cover slope will have a minimum slope of 2% and will be graded to convey stormwater runoff to the perimeter drainage channels to the adjacent (non-CCR) East Polishing Pond.
(b)(1)(iii) – How the final cover system will achieve the performance standards in 257.102(d).	
(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 permeability of the final cover will be equal to or less than the permeability of the existing liner system present below the CCR material or permeability no greater than $1 \times 10^{-5}$ cm/sec, whichever is less. The existing liner system includes a geomembrane covering the lower half of the inside slope of the embankment. Therefore, a geomembrane layer will be included in the final cover system. The final cover system will be graded with a minimum 2% slope.
(d)(1)(ii) – Preclude the probability of future impoundment of water, sediment, or slurry.	The final cover will be installed with a minimum 2% slope. Drainage channels will be installed with a minimum 0.5% slope.
(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.	The final cover will have a minimum 2% slope and drainage channels will have minimum 0.5% slope. Drainage channels will be lined with turf reinforced mats where required to reduce the potential for erosion. Preliminary geotechnical analysis determined

CLOSURE PLAN DESCRIPTION		
		the final slope of the berms and cover will meet the stability requirements to prevent sloughing or movement of the final cover system.
(d)(1)(iv) – Minimize the need for further maintenance of the CCR unit.		The final cover will be vegetated to minimize erosion and maintenance.
(d)(1)(v) – Be completed in the shortest amount of time consistent with recognized and generally accepted good engineering practices.		Closure is estimated to be completed no later than five years upon commencement of closure activities.
(d)(2)(i) – Free liquids must be eliminated by removing liquid wastes or solidifying the remaining wastes and waste residue.		The unit will be dewatered sufficiently, as necessary, to remove the free liquids to provide a stable base for the construction of the final cover system.
(d)(2)(ii) – Remaining wastes must be stabilized sufficiently to support the final cover system.		Dewatering as necessary and regrading of existing in-place CCR will sufficiently stabilize the waste such that the final cover will be supported.
(d)(3) – A final cover system must be installed to minimize infiltration and erosion, and at minimum, meets the requirements of (d)(3)(i).		The final cover will consist of a geomembrane, geocomposite drainage layer and a minimum 18" earthen material. The existing liner system includes a geomembrane. Therefore, the cover system will include a geomembrane layer. Erosion will be minimized with a soil layer of no less than 6" of earthen material capable of sustaining native plant growth. The final cover surface will be seeded and vegetated.
(d)(3)(i) – The design of the final cover system must be included in the written closure plan.		When the design of the final cover system is completed, the written closure plan will be amended if the final design would substantially change this written closure plan. The design of the final cover system will meet the requirements of §(d)(3)(i)(A)–(D) as described below.
(d)(3)(i)(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 $1 \times 10^{-5}$ cm/sec, whichever is less.		The permeability of the final cover will be equal to or less than the permeability of the existing liner system or no greater than $1 \times 10^{-5}$ cm/sec, whichever is less. The existing liner system includes a geomembrane. Therefore, the cover system will include a geomembrane layer.
(d)(3)(i)(B) – The infiltration of liquids through the closed CCR unit must be minimized by the use of an infiltration layer that contains a minimum of 18 inches of earthen material.		The final cover will include a 40-mil LLDPE geomembrane, a geocomposite drainage layer and a minimum 18" of earthen material. The existing liner system includes a geomembrane. Therefore, the cover system will include a geomembrane layer.
(d)(3)(i)(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.		The final cover will include a minimum of 6" of an earthen erosion layer that is capable of sustaining native plant growth. The final cover will be seeded and vegetated.
(d)(3)(i)(D) – The disruption of the integrity of the final cover system must be minimized through a design that accommodates settling and subsidence.		The final cover will be installed with a minimum 2% slope and will incorporate calculated settlement as well as differential settling and subsidence.
INVENTORY AND AREA ESTIMATES		
(b)(1)(iv) – Estimate of the maximum inventory of CCR ever on-site over the active life of the CCR unit		980,000 cubic yards
(b)(1)(v) – Estimate of the largest area of the CCR unit ever requiring a final cover		21 acres

CLOSURE SCHEDULE	
(b)(1)(vi) – 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 major milestones and the estimated timeframes to complete each step or phase of CCR unit closure.	
The milestone and the associated timeframes are initial estimates. Some of the activities associated with the milestones will overlap. Amendments to the milestones and timeframes will be made as more information becomes available.	
Written Closure Plan	October 17, 2016
Notification of Intent to Close Placed in Operating Record	No later than the date closure of the CCR unit is initiated. Closure to commence in accordance with the applicable timeframes in 40 CFR 257.102(e).
Agency coordination and permit acquisition <ul style="list-style-type: none"> <li>Coordinating with state agencies for compliance</li> <li>Acquiring state permits</li> </ul>	Year 1 – 5 (estimated) Year 1 (estimated)
Mobilization	Year 1 (estimated)
Dewater and stabilize CCR <ul style="list-style-type: none"> <li>Complete dewatering, as necessary</li> <li>Complete stabilization of CCR</li> </ul>	Year 2 (estimated) Year 2 (estimated)
Grading <ul style="list-style-type: none"> <li>Grading of CCR material in pond to facilitate surface water drainage</li> </ul>	Year 2 - 5 (estimated)
Installation of final cover	Year 2 - 5 (estimated)
Estimate of Year in which all closure activities will be completed	Year 5
AMENDMENT AND CERTIFICATION	
(b)(3)(i) – The owner or operator may amend the initial or any subsequent written closure plan developed pursuant to 257.102(b)(1) at any time.	This initial closure plan will be amended as required by 257.102(b)(3) and, as allowed by 257.102(b)(3), may be amended at any time, including as more information becomes available.
(b)(3)(ii) – The owner or operator must amend the written closure plan whenever: (A) There is a change in the operation of the CCR unit that would substantially affect the written closure plan in effect; or (B) Before or after closure activities have commenced, unanticipated events necessitate a revision of the written closure plan.	
(b)(3)(iii) – The owner or operator must amend the closure plan at least 60 days prior to a planned change in the operation of the facility or CCR unit, or no later than 60 days after an unanticipated event requires the need to revise an existing written closure plan. If a written closure plan is revised after closure activities have commenced for a CCR unit, the owner or operator must amend the current closure plan no later than 30 days following the triggering event.	
(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 40 CFR 257.102.	Certification by a qualified professional engineer will be appended to this plan.

**Certification Statement 40 CFR § 257.102 (d)(3)(iii) – Design of the Final Cover System for a CCR Surface Impoundment**

**CCR Unit: Dynegy Midwest Generation, LLC; Hennepin Power Station; East Ash Pond**

I, Victor Modeer, being a Registered Professional Engineer in good standing in the State of Illinois, do hereby certify, to the best of my knowledge, information, and belief, that the information contained in this certification has been prepared in accordance with the accepted practice of engineering. I certify, for the above referenced CCR Unit, that the design of the final cover system as included in the initial written closure plan, dated October 17, 2016 meets the requirements of 40 CFR § 257.102.

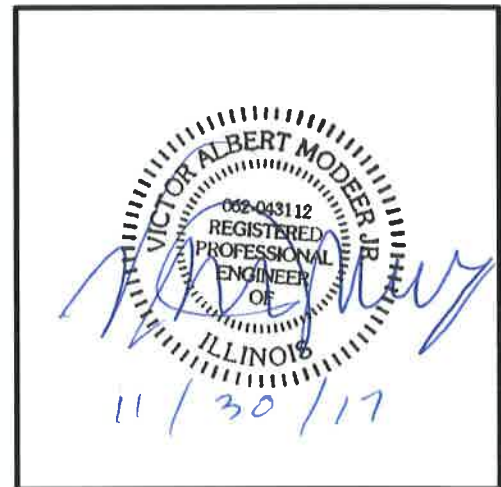
Victor Modeer, PE, D.GE

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*Printed Name*

10/11/16

*Date*



**Certification Statement 40 CFR § 257.102 (b)(4) – Initial Written Closure Plan for a CCR Surface Impoundment**

**CCR Unit: Dynegey Midwest Generation, LLC; Hennepin Power Station; East Ash Pond**

I, Victor Modeer, being a Registered Professional Engineer in good standing in the State of Illinois, do hereby certify, to the best of my knowledge, information, and belief, that the information contained in this certification has been prepared in accordance with the accepted practice of engineering. I certify, for the above referenced CCR Unit, that the information contained in the initial written closure plan, dated October 17, 2016, meets the requirements of 40 CFR § 257.102.

Victor Modeer, PE, D.GE

*Printed Name*

10 / 11 / 16

*Date*

