Labadie Energy Center
Closure Plan and Post-Closure Plan for CCR Landfill
LCL1

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1.0 INTRODUCTION

LCL1 (Cell 1) at the Labadie Energy Center is a 31.4 acre landfill cell used for managing CCR. LCL1 is one cell in the planned Labadie Energy Center utility waste landfill (UWL) which is permitted by the Missouri Solid Waste Disposal Area Construction Permit No. 0907101 ("MDNR Construction Permit") issued by the Missouri Department of Natural Resources (MDNR) Solid Waste Management Program (SWMP). The UWL will be constructed in 4 phases, and Phase I includes LCL1 and a 5.7-acre stormwater pond.

2.0 CLOSURE PLAN

Pursuant to 40 CFR 257.102, a CCR landfill can be closed by either leaving the CCR material in place and installing a final cover system, or through removal of the CCR (i.e. "closure by removal"). LCL1 at the Labadie Energy Center will be closed by capping and leaving the CCR materials in place as contemplated and authorized by the regulations. Set forth herein is the process by which Ameren Missouri will close LCL1 at Labadie at the end of its useful life. In accordance with 257.102(b)(3), this initial written closure plan will be amended as required to meet the CCR Rules in effect at the time of closure.

LCL1 was constructed with a composite bottom liner system and leachate collection system in accordance with the MDNR Construction Permit, which complies with the liner design criteria in the CCR Rule. Closure of LCL1 will be accomplished by leaving CCR in place and constructing a final cover system in accordance with §257.102(d), *Closure performance standard when leaving CCR in place*. CCR material will be graded to create acceptable slope stability and positive drainage in accordance with the MDNR Construction Permit. The final cover system will then be installed in direct contact with the CCR. Stormwater drains, side slope benches and let downs will be graded and constructed in accordance with the MDNR Construction Permit. The surface of the final cover system will be stabilized to control erosion of the final cover system and the leachate collection system will be operated and maintained throughout the post-closure period.

3.0 PROPOSED FINAL COVER SYSTEM

The final design of the final cover system will comply with the MDNR Construction Permit, and with 10 CSR 80-11.010(14) and 40 CFR 257.102(d)(3). The final cover system will have a permeability less than

or equal to the permeability of the bottom liner system, or a permeability no greater than $1x10^{-5}$ cm/sec, whichever is less. Disruption of the final cover system will be minimized through a design that accommodates settling and subsidence.

The existing Labadie UWL closure plan approved in the MDNR Construction Permit includes an alternative final cover as defined by 257.102(d)(3). The current final cover system includes composite sections consisting of earthen fill and geomembrane liner. The final cover will have a minimum 18-inch thick infiltration layer made of earthen fill, which will underlie a 6-inch thick layer of earthen material capable of sustaining plant growth or an alternative cover system. Ameren Missouri owns the property that contains the required quantity of soil suitable for construction of the final cover system. The final cover will be sloped a minimum of 1% to 2% on the uppermost "flat" area of the completed UWL, and 33% on the exterior side slopes in accordance with the MDNR Construction Permit. A plan showing the final grading at closure of LCL1 is attached.

The CCR Rule authorizes the use of an alternative final cover system for closure, provided such system meets equivalent performance requirements. If an alternative final cover system is implemented, the final engineering design will include a demonstration of the equivalency of the proposed final cover system.

3.1 Stormwater and Erosion Controls

Management of surface water after closure is addressed by dividing the closed UWL into distinct drainage areas to control runoff quantities and velocities from the final UWL surface. Stormwater collected on top of the closed landfill will drain to strategically located perimeter letdown structures that convey it to the base of the landfill in a controlled manner. The stormwater runoff on the side slopes will be intercepted mid-slope by diversion benches and directed to permanent let down structures. The permanent let down structures will convey stormwater into the perimeter ditch or over the top of the perimeter berm for release at the base of the UWL.

Erosion of the final cover, side slope benches, stormwater letdown structures, and perimeter ditches were evaluated. All drainage structures will be protected from erosion using one of several possible materials: an erosion control mat, limestone riprap, or other manufactured erosion control product. Vegetative cover will be used on slopes that are less than 33% and on final stormwater channels with slopes less than 2%.

3.2 Stability and Settlement

The CCR contained in LCL1 will be placed dry with no free liquids. The final grades and stability of LCL1 after closure, including both the CCR fill and final cover system, were designed to accommodate potential settlement, and were evaluated as a condition of the MDNR Construction Permit approval and have acceptable factors of safety for stability.

4.0 CCR UNIT INVENTORY AND AREA ESTIMATE

Set forth in Table 1 is Ameren Missouri's estimate of CCR material that will be deposited in LCL1 at the time of closure.

Table 1 - Estimated maximum CCR inventory and largest areas area of LCL1.

CCR Unit	Maximum Estimated CCR Inventory (CY)	Estimated Final Cover Area (acres)
LCL1	2,300,000	31.4 acres

5.0 CLOSURE SCHEDULE

LCL1 is an active unit that will continue to receive CCR until closure. Closure activities will not begin until the CCR in LCL1 has reached the grades approved by the MDNR Construction Permit. Ameren has developed preliminary work schedules based on project milestones and estimated completion dates that are reflected in Table 2.

Table 2 - Preliminary work schedules based on project milestones and estimated completion dates.

Closure Activity	Estimated Timeframe
Initial Written Closure Plan	October 17, 2016
Closure Activities Commence	2040
Agency Coordination and Permit Acquisition • **Coordinate with state agencies for compliance** • **Acquiring state permits** • **Demonstration of alternative final cover**	 2040 2040 2040
Installation of Final Cover System • **Grading final cover subgrade** • **Installation of final cover**	 2040 2040
Closure Activities Complete	2040

6.0 POST-CLOSURE PLAN

For CCR units closed by capping the CCR material in place, post-closure care is required for a minimum of thirty years. The final cover systems will serve to minimize infiltration of rainfall into the landfill during the post-closure period and provide aesthetic value. Post-closure care will include performance of the following activities and those activities required by the MDNR Construction Permit:

- Maintenance of cover integrity, vegetative growth to protect the cover material, and the surface water control system
- Maintenance, sampling, testing and statistical analysis of the groundwater monitoring wells
- Operation and maintenance of the integrity and effectiveness of the leachate collection and removal system

6.1 Post-Closure Contact Information

Contact Name: Ameren Missouri
Contact Address: 1901 Chouteau Avenue
St. Louis, MO 63103
Contact Phone Number: (800) 552-7583
Contact Email Address: CCR@ameren.com

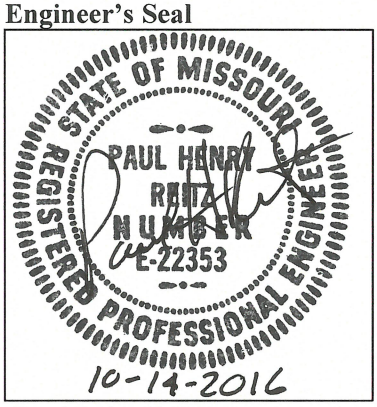
6.2 Post-Closure Land Use

The closure of LCL1 will include turf or native grasses, or an alternative erosion layer. Ameren Missouri's current intent is to maintain the closed the LCPA as a passive, open space.

Engineering Certification – Closure and Post-Closure Plan

The Closure and Post-Closure Plans for active CCR landfill LCL1 at the Labadie Energy Center were prepared for MDNR SWMP Construction Permit No. 0907101, and will be amended to meet the requirements of 40 CFR 257.102(b) and 40 CFR 257.104(d) in effect at the time of closure. Engineering justification for this certification has been placed in the operating record.

Engineer's Seal



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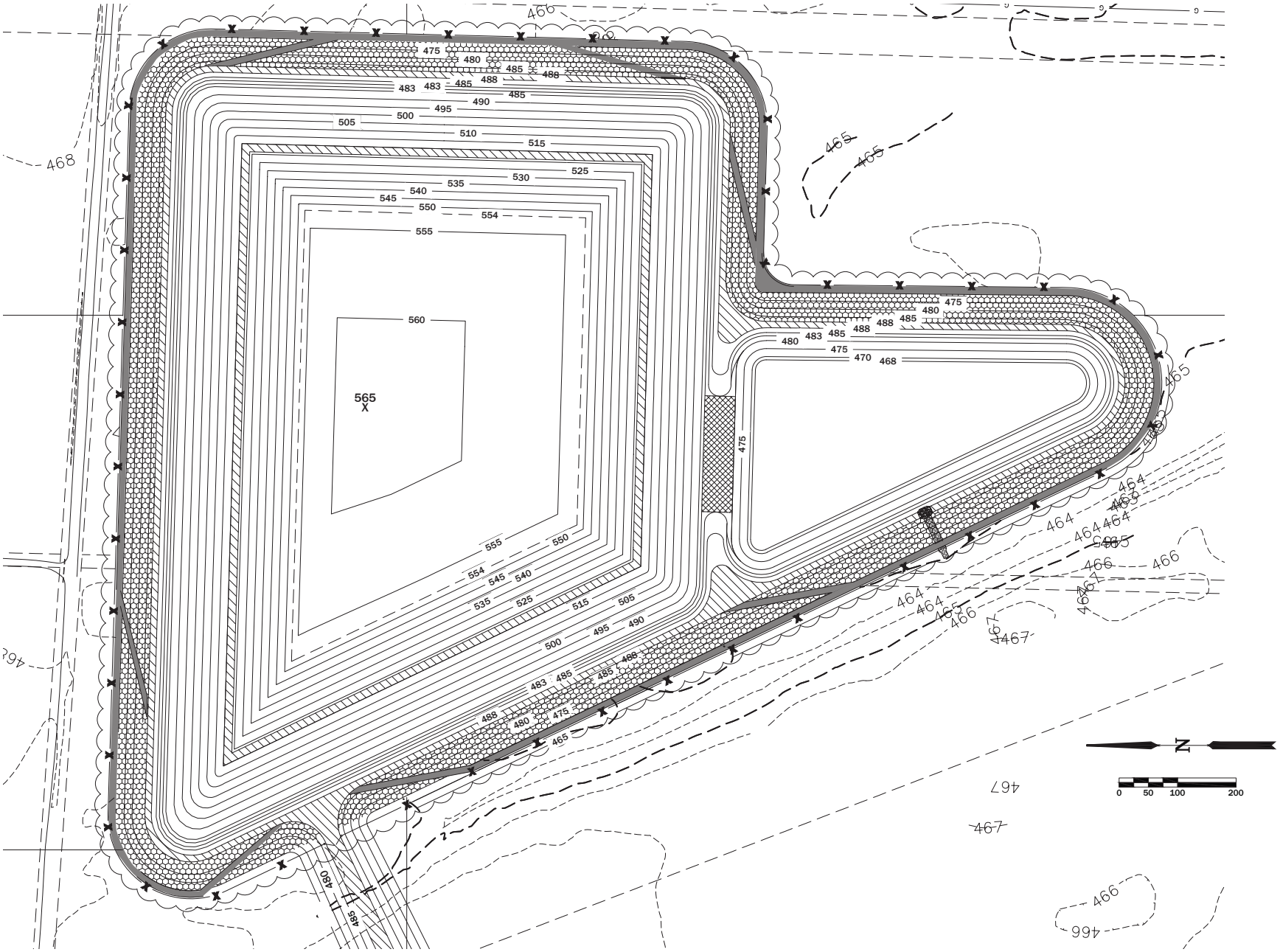

Ameren Missouri
Labadie Energy Center
LCL1 Closure Schematic