

CLOSURE PLAN

CFR 257.102(b)

CCR Landfill

Turk Plant
Fulton, Arkansas

September, 2016

Prepared for: Southwestern Electric Power Company

Prepared by: American Electric Power Service Corporation

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Columbus, OH 43215



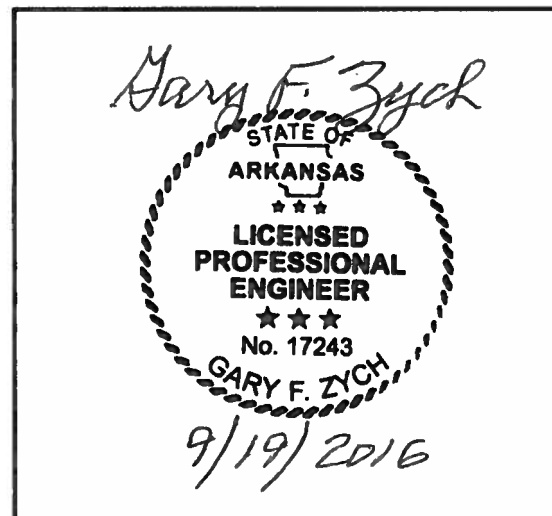
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CLOSURE PLAN
CFR 257.102(b)
TURK PLANT
CCR LANDFILL

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I certify to the best of my knowledge, information, and belief that the information contained in this closure plan meets the requirements of 40 CFR § 257.102

I certify to the best of my knowledge, information and belief that design of the final cover system as described in this closure plan meets the requirements of 40 CFR § 257.102.

Table of CONTENTS

1.0 OBJECTIVE.....	1
2.0 DESCRIPTION OF THE CCR UNIT.....	1
3.0 DESCRIPTION OF CLOSURE PLAN 257.102(b)(1)(i)-(1)(vi).....	1
4.0 CLOSURE IN PLACE 257.102 (b)(1)(iii).....	1
4.1 CLOSURE PERFORMANCE STANDARDS 257.102 (d)(1).....	1
4.2 DRAINING AND STABILIZING OF THE SURFACE IMPOUNDMENT 257.102(d)(2).....	2
4.3 FINAL COVER SYSTEM 257.102 (d)(3)	2
5.0 ESTIMATE OF MAXIMUM CCR VOLUME 257.102 (b)(1)(iv)	2
6.0 ESTIMATE OF LARGEST AREA OF CCR REQUIRING COVER 257.102 (b)(1)(v).....	3
7.0 CLOSURE SCHEDULE 257.102(b)(1)(vi).....	3

ATTACHMENT A - Closure Plan from Existing Landfill Permit

1.0 OBJECTIVE

This report was prepared by AEP- Geotechnical Engineering Services (GES) section to fulfill requirements of CCR 257.102(b) for Closure Plans of Existing CCR Units.

2.0 DESCRIPTION OF THE CCR UNIT

The Turk Power Plant is located near the City of Fulton, Hempstead County, Arkansas. It is owned and operated by Southwestern Electric Power Company (SWEPCO). The facility operates a landfill for the disposal of CCR materials.

The landfill is permitted by the Arkansas Department of Environmental Quality, Class 3N Landfill permit 0311-S3N.

3.0 DESCRIPTION OF CLOSURE PLAN 257.102(b)(1)(i)-(1)(vi)

[A narrative description of how the CCR unit will be closed in accordance with this section]

The Turk landfill will be closed periodically during the life capacity of the facility. The closure activities are further discussed in the ADEQ-approved Closure Plan in Attachment A. This Plan in Attachment A contains all of the pertinent information and requirements of Section 257.102 (b).

4.0 CLOSURE IN PLACE 257.102 (b)(1)(iii)

[If closure of the CCR unit will be accomplished by leaving the 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.]

4.1 CLOSURE PERFORMANCE STANDARDS 257.102 (d)(1)

4.1.1 SECTION 257.102(d)(1)(i)

[Control, minimize or eliminate, the maximum extent possible 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 final cover system is designed to minimize infiltration into the landfill.

4.1.2 SECTION 257.102(d)(1)(ii)

[Preclude the probability of future impoundment of water, sediment, or slurry.]

The final surface areas will be graded to a minimum slope of 2% to prevent the ponding of surface water runoff. Drainage features will be designed to have positive drainage.

4.1.3 SECTION 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.]

The final cover system will be gently graded with a minimum of 2% slope. The final configuration of the facility will meet the stability requirements to prevent the sloughing or movement of the final cover system during the closure and post-closure care period.

4.1.4 SECTION 257.102(d)(1)(iv)

[Minimize the need for further maintenance of the CCR unit.]

The facility will be vegetated to prevent erosion. Maintenance of the final cover system will include mowing.

4.1.5 SECTION 257.102(d)(1)(v)

[Be completed in the shortest amount of time consistent with recognized and generally accepted good engineering practices.]

The CCR unit will be closed in a timeframe consistent with recognized and generally accepted good engineering practices. As the fill reaches the approved final grades, periodic closure activities may occur.

4.2 DRAINING AND STABILIZING OF THE SURFACE IMPOUNDMENT

257.102(d)(2)

This section is not applicable to a landfill.

4.3 FINAL COVER SYSTEM 257.102 (d)(3)

[If a CCR unit is closed by leaving CCR in place, 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 (d)(3)(i) of this section, or the requirements of the alternative final cover system specified in paragraph (d)(3)(ii) of this section.

The final cover system must be designed and constructed to meet the criteria in paragraphs (d)(3)(i)(A) through (D) of this section. The design of the final cover system must be included in the written closure plan.]

The final cover system as described in Attachment A meets the requirements of the referenced paragraphs.

5.0 ESTIMATE OF MAXIMUM CCR VOLUME 257.102 (b)(1)(iv)

[An estimate of the maximum inventory of CCR ever on-site over the active life of the CCR unit.]

The maximum CCR volume permitted for this facility is 6,884,200 Cubic Yards.

6.0 ESTIMATE OF LARGEST AREA OF CCR REQUIRING COVER 257.102 (b)(1)(v)

[An estimate of the largest area of CCR unit ever requiring a final cover

The largest area of the CCR unit ever requiring a final cover at any time is 17 acres.

7.0 CLOSURE SCHEDULE 257.102(b)(1)(vi)

[A schedule for completing all activities necessary to satisfy the closure criteria in the 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 the CCR surface impoundment closure, or installation of the final cover system, and the estimated timeframes to complete each step or phase of the CCR unit closure.

At this time, the facility will close upon retirement of the power plant. Once the CCR unit requires closure a schedule to satisfy this section will be prepared and the Plan amended.

ATTACHMENT A

Closure Plan from Existing Landfill Permit

CLOSURE AND POST-CLOSURE PLAN

**SOUTHWESTERN ELECTRIC POWER COMPANY
JOHN W. TURK, JR. POWER PLANT CLASS 3N LANDFILL
HEMPSTEAD COUNTY
Permit No. 0311-S3N
AFIN: 29-00506**

**Terracon Project No. 35107007
January 2011**

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Volume 2, Appendix H

Terracon

ENGINEER'S CERTIFICATION

"I certify to the best of my professional judgment that this document and all attachments properly adhere to established, sound engineering practices. This certification is contingent on the fact that all information supplied to the signatory authority, up to the date of this certification, is unquestionably accurate and was provided in good faith."



David C. McCormick, Arkansas Professional Engineer No. 9199

Date of Certification

TABLE OF CONTENTS

ENGINEER’S CERTIFICATION	i
1.0 INTRODUCTION	1
1.1 Purpose, Scope, and Applicability	1
1.2 Facility Description and design.....	1
2.0 CLOSURE PLAN.....	2
2.1 General Site Layout	2
2.2 Solid Waste Disposal Area.....	2
2.3 Closure Requirements.....	2
2.3.1 Description of Final Cover System.....	2
2.3.2 Estimate of Largest Area	3
2.3.3 Maximum Inventory.....	3
2.3.4 Schedule for Closure	3
2.3.5 Closure Plan Approval	3
2.3.5 Notification Requirements.....	3
2.3.6 Estimated Closure Costs	4
2.3.7 Facility Recordkeeping and Report Requirements	4
2.3.8 Financial Assurance.....	4
2.3.9 Site Survey.....	4
2.4 Closure Documentation	6
2.4.1 Land Use Restrictions.....	6
2.4.2 Closure Certification.....	6
3.0 POST-CLOSURE PLAN.....	7
3.1 Post Closure Monitoring and Maintenance	7
3.2 Contact Persons	7
3.3 Post-Closure Cost Estimate.....	8
3.4 Certification of Completion.....	8
3.5 Site Management and Use	8

LIST OF TABLES

TABLE 1	Estimated Closure Schedule
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LIST OF ATTACHMENTS

ATTACHMENT A	Cost Estimates
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1.0 INTRODUCTION

1.1 Purpose, Scope, and Applicability

This Closure and Post Closure Care Plan addresses Chapters 13 and 14 of the *ADEQ Regulation 22 (Solid Waste Management Rules)* for the John W. Turk, Jr. Power Plant Class 3N Landfill. The references state the requirements for closure and post-closure care of a Class 3 Solid Waste Facility. Section number references are placed in brackets throughout this plan to identify the applicable section of *Regulation 22* being addressed. This plan includes a description of the steps that will be taken to close each Facility cell, a general schedule for closure, a description of the final cover system and the methods used to install the cover, and a description of post closure care activities. Information supplemental to this closure plan, such as full-scale facility design, is in the facility Permit Application. A copy of the Closure and Post-Closure Care Plan will be placed in the Facility Permanent Operating Record (POR) and notification provided to the ADEQ (**Reg.22.1301(d)**).

1.2 Facility Description and design

John W. Turk, Jr. Power Plant owns and operates the Class 3N Landfill located near Fulton, Arkansas in accordance with solid waste Permit 00311-S3N. The Class 3N landfill site consists of approximately 73 acres as described in Design Basis/Design Analysis in **APPENDIX B, VOLUME 3**.

2.0 CLOSURE PLAN

The following sections describe the general layout, design, and operations of the Landfill. This Closure Plan has been developed as a Facility plan that addresses all waste management and disposal areas at the Landfill.

2.1 General Site Layout

The site consists of approximately 2800 acres of which 73 acres have been designated for a Class 3N Landfill and various support facilities including entrance roads, vehicle/equipment facilities, groundwater monitoring facilities, and surface water drainage systems.

2.2 Solid Waste Disposal Area

The stormwater control system and final cover system designs are described in **APPENDIX B, VOLUME 3** (Design Drawings). As previously described in the Permit Application, the landfill covers approximately 73 acres and also contains a stormwater pond and a leachate pond.

2.3 Closure Requirements

The closure plan for the facility includes all of the information required by **Reg.22.1301** as presented in the sections that follow. The steps that are necessary to close all of the landfill units at any point during its active life in accordance with the proposed cover design are presented. The following sections document the facilities compliance with **Reg.22.1301(c-e, h-j)**, **Reg.22.1402**, and **Reg.22.520(a)(6)**.

2.3.1 Description of Final Cover System

The final cap and cover was designed to prevent uncontrolled infiltration of storm water through the waste column due to large, seasonal precipitation events, which may otherwise create a mechanism for excessive leachate/waste migration to the LCRS and excessive erosion of the cap and cover system. Additionally, the overall design considers accommodation of anticipated settlement, promotion of efficient surface water drainage and runoff, stability on side slopes, and site aesthetics. Design components of the Final Cap and Cover System consist of the following:

Option A	Option B
Low Permeability Clay Layer	Low Permeability Clay Layer
Geomembrane	Geomembrane
Geotextile	Geocomposite
Drainage Layer	
Geotextile	
Protective Cover Layer	Protective Cover layers
Topsoil Layer	Topsoil Layer
Vegetative Layer	Vegetative Layer
Surface Water Management	Surface Water Management

The Landfill cells will be closed individually as each individual cell becomes filled with waste. The largest acreage to be closed will be approximately 17 acres. An estimated closure schedule is presented in **TABLE 1**. The scheduling of interim closure will take into account seasonal weather conditions. Construction drawings and specification will be prepared for each phase of closure in accordance with the approved final closure design and this closure plan. The closure cost estimates for the Facility will be adjusted yearly to account for any modified permit conditions. The landfill site shall be graded prior to installation of the cover system so that stormwater does not run into the landfill and so that there are no depressions in the landfill where water can pond. Erosion control measures shall be implemented as necessary to protect the final cover and prevent off-site sedimentation. Closure construction will be monitored and documented in accordance with the Facility's *Design Basis/ Design Analysis* in **VOLUME 3**. The detailed specifications for the closure are in **APPENDIX A** and the Design Drawings are in **APPENDIX B** of **VOLUME 3**. Documents related to final cover system construction activities will be placed in the POR and the ADEQ will be notified of such activity.

2.3.2 Estimate of Largest Area

The estimated largest area of a landfill unit ever requiring closure at any time during the active life of the Landfill is 17 acres.

2.3.3 Maximum Inventory

The estimated maximum inventory of wastes on-site over the active life of the Landfill is approximately 6,884,226 cubic yards.

2.3.4 Schedule for Closure

Closure of the Facility will begin following the final receipt of waste; or, if the Facility has remaining capacity and there is a reasonable likelihood that it will receive additional wastes, no later than one year after the most recent receipt of waste. An estimated schedule, based on the largest area of the Facility unit requiring a final cover at any time during the active life, for completing all activities necessary for closure is presented in **TABLE 1**.

2.3.5 Closure Plan Approval

This Closure Plan is placed in the Facility's POR as per **Reg.22.1301(d)**.

2.3.6 Notification Requirements

The ADEQ will be notified when a unit of the Facility stops receiving waste for disposal. The Director of the ADEQ will be notified, prior to the beginning of closure of each unit, that the intent to close the unit has been placed in the POR.

2.3.7 Estimated Closure Costs

In accordance with **Reg.22.1402**, estimated costs for closing the Facility will be developed based on hiring a third party to close the largest area requiring final cover at any given time during the operation of the Class 3 facility. **ATTACHMENT A** of this document presents the estimated closure cost for the Facility.

2.3.8 Facility Recordkeeping and Report Requirements

A copy of the approved closure and post-closure plan will be kept in the POR (**Reg.22.520(a)(6)**). The Director of the ADEQ will be notified that closure and post-closure plans have been prepared and placed in the POR (**Reg.22.1302(e)**). The records will be permanently maintained in the facility POR unless destruction of the records is authorized by the Director of the ADEQ following the completion of the post closure monitoring period (**Reg.22.1301(d)**). The Director of the ADEQ will be provided with updated closure and post closure cost estimates for the Landfill each year with the Annual Engineering Inspection Report. These estimates will also be placed within the POR (**Reg.22.1301(d)**).

2.3.9 Financial Assurance

Evidence of a financial assurance mechanism for closure and post-closure care will be placed in the POR and provided to the ADEQ annually. Financial Assurance will be issued prior to final permit issuance.

2.3.10 Site Survey

Upon completion of the installation of the final cover system over the entire Facility, the site will be surveyed by a registered professional engineer or surveyor to document the final elevations of the Class 3N facility, the location of the surface improvements, site boundaries, and areas that received waste. Final closure of the site will be achieved when the permitted area has been filled and the final cover system installed. Closure will be considered complete after the final cover has been inspected and approved by the ADEQ. The final cover plan and typical final cover details for the Facility are included in the Permit Drawings (**APPENDIX B of VOLUME 3**).

**TABLE 1
 ESTIMATED CLOSURE SCHEDULE**

<u>Closure Activity/Task</u>	<u>Number of days to complete</u>
Notify the ADEQ of intent to perform closure for each cell (cells 1 through 5)	1
Phase 1 (upon initiation of placement of waste in the next cell)	1
Phase 2 (upon achieving final waste grades in each individual cell)	1
Begin closure activities	20
Perform grading of waste	10
Install final cover system	120
Seed and mulch	10
Installation of erosion and sediment control structures	10
Complete certification report	10
ESTIMATED TOTAL TIME TO COMPLETE CLOSURE	180

It is estimated that closure of each cell will be completed no later than 180 days following the beginning of closure activities. If necessary, due to inclement weather or other circumstances (**Reg.22.1301(g)**), a request to extend this schedule may be made to the Director of the ADEQ.

2.4 Closure Documentation

2.4.1 Land Use Restrictions

Following placement of final cover over the entire Facility, a notation will be recorded on the deed to the property in accordance with **Reg.22.1301(j) and (k)**. The Director of the ADEQ will be notified that the notation has been recorded and a copy has been placed in the POR. The notation on the deed must inform any potential purchaser of the property of the following:

1. The past use of the land was as a solid waste disposal facility
2. Future use shall comply with the ADEQ regulations and shall not disturb the integrity of the final cover system or any other components of the containment or monitoring system
3. It shall be unlawful for any person, partnership, company, corporation or other entity to build, erect, or construct any house, home, or building to be used for residential purposes

The restriction of residential construction applies only to the areas actually used for solid waste disposal. The owner may request permission from the Director of the ADEQ to remove the notation from the deed if all wastes are removed from the facility.

2.4.2 Closure Certification

Following closure of the Facility, the Director of the ADEQ will be provided a certification, signed by a registered professional engineer, verifying that closure has been completed in accordance with the closure plan, and that this certification has been placed in the POR. A final closure report shall accompany the certification that includes:

1. The final survey, in accordance with **Reg.22.1301(i)**
2. Quality control and quality assurance data documenting proper construction and installation of the cover system
3. A copy of the deed notation required under **Reg.22.1301(j)**
4. Other information that the ADEQ may deem necessary to making the certification described in **Reg.22.1302(m)**

3.0 POST-CLOSURE PLAN

The post closure period shall be two years following the date of written confirmation by the ADEQ that the Facility has been closed in accordance with the approved closure plan, unless the period is decreased or increased by the Director of the ADEQ (**Reg.22.1302(c)(4)**). The period may be decreased if the Facility demonstrates that the reduced period is sufficient to protect human health and the environment and this demonstration is approved by the Director of the ADEQ (ADEQ **Reg.22.1302(c)(4)(i)**). The period may be increased if the Director determines that the lengthened period is necessary to protect human health and the environment (ADEQ **Reg.22.1302(c)(4)(ii)**). During the post-closure care period, the closure cover shall be maintained and monitoring activities will be performed as described in the following subsections.

3.1 Post Closure Monitoring and Maintenance

Access to the site after closure will be controlled through maintenance of existing fencing and signs, and all access gates will be locked to discourage unauthorized entry.

The integrity of the final cover shall be maintained, including the repair of the cover, as necessary to correct the effects of settlement, subsidence, and erosion, and prevent runoff and run-on from damaging the cover. Vegetation shall be mowed at least annually to control the growth of unwanted vegetation that may interfere with integrity of the final cover. All cracked, eroded and uneven areas must be filled and reseeded and ditches maintained (**Reg.22.1302(b)(1)**).

The Facility will continue to monitor the ground water in accordance with the requirements of Chapter 12 and maintain the groundwater monitoring system (**Reg.22.1302(b)(3)**).

The surface water control systems will be operated and maintained in accordance with **Reg.22.419** and **Reg.22.1302(b)(1)** or until such time as a permanent erosion control measures have been established at the site.

3.2 Contact Persons

In accordance with **Reg.22.1302(d)(2)** the name, address, and telephone number of the person to contact about the Facility during the post-closure period will be provided upon notice of closure.

3.3 Post-Closure Cost Estimate

To comply with **Reg.22.1402** an estimate of the cost of performing post-closure activities is based on the estimated cost of hiring a third party to conduct the activities. The cost estimate is based on the most expensive costs of post closure care during the post-closure care period. **ATTACHMENT A** of this document presents the estimated post-closure cost for the Facility. The post-closure cost estimate will be revised annually during the life of the Facility to account for inflation.

3.4 Certification of Completion

Following the completion of the post-closure care period for the Facility, the Director of the ADEQ will be notified that a certification has been placed in the POR. The certification, signed by an independent registered engineer and approved by the Director of the ADEQ, will verify that post-closure care has been completed in accordance with the post-closure plan and **Reg.22.1302(f)**.

3.5 Site Management and Use

It is anticipated that upon completion of post-closure care, that this site will become open grassland. The actual long-term use of the land will be determined upon notice of closure. The final Facility cover will not be disturbed without prior approval from the Director of the ADEQ in accordance with **Reg.22.1302(h)**.