CLOSURE PLAN

CFR 257.102(b)

CCR Landfill

Northeastern 3&4 Power Station
Oologah, Oklahoma

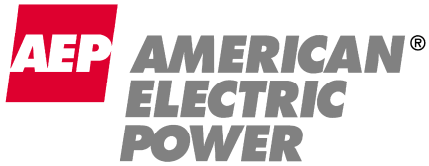
October, 2016

Prepared for: Public Service Company of Oklahoma

Prepared by: American Electric Power Service Corporation

1 Riverside Plaza

Columbus, OH 43215



GERS-16-043

CLOSURE PLAN
CFR 257.102(b)
NORTHEASTERN 3&4 POWER STATION
CCR LANDFILL

PREPARED BY _____ DATE 9/7/2016
Daniel W. Pizzino, P.E.

REVIEWED BY _____ DATE 9-7-16
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APPROVED BY _____ DATE 9/7/2016
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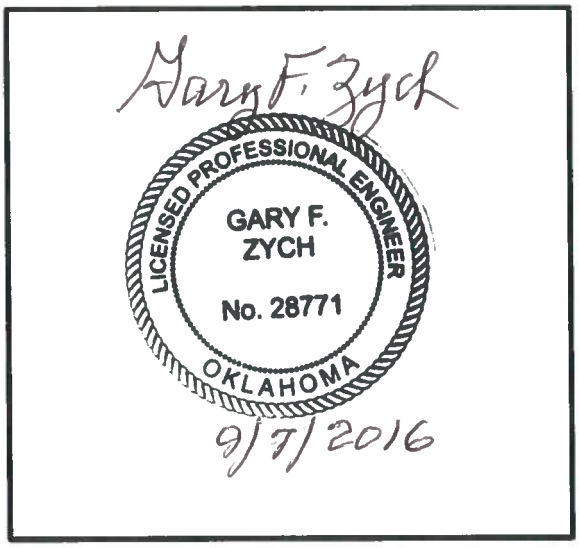
Manager – AEP Geotechnical Engineering



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.

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1.0 OBJECTIVE

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

2.0 DESCRIPTION OF THE CCR UNIT

The Northeastern 3&4 Power Station is located near the City of Oologah, Rogers County, Oklahoma. It is owned and operated by Public Service Company of Oklahoma (PSO). The facility operates one landfill for disposal CCR called the Northeastern Landfill

The landfill is permitted by the Oklahoma Department of Environmental Quality, OSHD Permit No. FA3566010.

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

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

The Northeastern Landfill will be closed periodically during the life capacity of the facility. The closure activities are further discussed in the ODEQ-approved Closure Plan in Attachment A. This Plan in Attachment A contains all of the pertinent information and requirements of Section 257.102 (b). Permit drawings pertaining to the landfill closure are included in Attachment 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.]

The final cover system is described in the ODEQ-approved Closure Plan in Attachment A. This Plan in Attachment A contains all of the pertinent information and requirements of Section 257.102 (b). Permit drawings pertaining to the landfill closure are included in Attachment B.

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 will cover the CCR material is designed to minimize infiltration into the landfill. Details of the closure plan are included in Attachment A.

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 4% 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 4% 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 2,463,000 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 33 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. A milestone estimated closure schedule is provided in the ODEQ-approved closure plan in attachment A. Once the CCR unit requires closure a specific schedule to satisfy this section will be prepared and the closure plan will be amended.

ATTACHMENT A –CLOSURE PLAN

Closure/Post-Closure Care Plan

Public Service Company of Oklahoma
OSHD Permit No. FA3566010
Project No. 35107130
November 2011

PUBLIC SERVICE COMPANY OF OKLAHOMA

A unit of American Electric Power

PREPARED FOR:
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1.0 INTRODUCTION

The following document constitutes a *Closure/Post-Closure Care Plan* for the existing Public Service Company of Oklahoma Northeastern Power Station Ash Landfill, a non-hazardous industrial waste (NHIW) Landfill, and is intended to comply with the requirements of *OAC 252:515-25*. The Closure/Post-Closure Care Plan has been prepared to provide a reference and directive for landfill personnel and regulatory officials while establishing technical requirements and standards to close, stabilize, inspect, maintain, and monitor the NHIW Landfill once waste disposal operations cease in a given area and during the post-closure care period.

The design of the final cover system is presented along with plans for total, phased (sequential) and unexpected closure of waste disposal areas. In addition, provisions for erosion control, seeding, and stabilization of associated areas are addressed.

1.1 BACKGROUND

The Public Service Company of Oklahoma (PSO) Northeastern Power Station Ash Landfill (Northeastern Landfill or Site) is located at the junction of U.S. Highway 169 and Oklahoma Highway 88 approximately 1 mile south of Oologah, Rogers County, Oklahoma. More specifically, the site is located in the Southeast ¼ of the Northeast ¼ of Section 3, Township 22 North, Range 15 East I.M.

PSO operates two coal-fired power generating units on the property (identified as Units 3 and 4). The NHIW landfill is used for disposal of ash products generated by Units 3 and 4. The landfill permit (Permit No. FA3566010) was issued on July 20, 1978.

1.2 PURPOSE

PSO currently owns and operates the Northeastern Landfill for the disposal of coal combustion byproducts (CCB) that are generated by the Northeastern Power Station. A list of potential wastes that are intended to be placed in the lined landfill is presented in Application Volume 1, Section 12.0 WASTE STREAM INFORMATION.

The purpose of the Closure/Post-Closure Care Plan is to establish standards and requirements for closure, inspection, maintenance, monitoring, certification, and reporting associated with the NHIW Landfill. The Plan is intended to comply *with OAC 252:515-25-1 et. seq.*

1.3 CLOSURE PLAN OVERVIEW

Closure requirements specific to the PSO NHIW Landfill are presented in Section 2.0 of this Closure/Post-Closure Care Plan. More specifically, Section 2.0 addresses the design of the final cover system, grading plans for waste disposal areas, soil budget, survey requirements, phased closure requirements, and contingencies for unexpected closure. Section 2.0 also presents a general closure schedule associated with the planned sequential closure of the NHIW Landfill and estimated costs for closure. Section 3.0 presents the post-closure

requirements for the facility. Section 4.0 summarizes certification and notification requirements pertaining to closure.

2.0 CLOSURE REQUIREMENTS

Once waste disposal operations cease at the Landfill, closure procedures will be initiated as outlined herein. Specifically, final cover will be installed in areas that have received waste and have been filled to the design final contours. Based on owner discretion, the landfill may be closed as a whole at the end of operations, or may be closed under a planned sequential closure scenario for closure of sequential cells as they establish final grade. If the landfill is closed unexpectedly (prior to reaching the design final contours), final cover will be applied in all areas that have received waste after shaping and grading as necessary for proper drainage and maintenance. The final cover system shall be capable of sustaining vegetative cover while minimizing infiltration of stormwater and erosion. In addition to installation of final cover, support and ancillary facilities will be removed and/or stabilized.

2.1 GENERAL LANDFILL DESIGN OVERVIEW

The landfill will be developed in phased cells as shown on the Permit Drawings. The landfill will consist of four (4) lined cells with a total leachate collection area of roughly 33 acres within an overall construction area (including perimeter ditches and outer slope areas) of approximately 41 acres. The maximum inventory of waste ever on-site at the facility is about 2.463 Mcy.

The base of the landfill will include 24" of compacted ash and a 60 mil HDPE flexible membrane liner (FML or geomembrane) that will serve as the intermediate liner system. A double sided geocomposite drainage layer and a 24" drainage / protective cover layer will be placed onto the geomembrane. The drainage / protective cover layer will consist of highly permeable bottom ash overlain by fly ash.

The final cover system for the NHIW Landfill will consist of a 40 mil LLDPE FML, double sided geocomposite and 24" of protective cover / vegetative layer. Processed material and/or off-site material will likely be needed to construct the final cover system. The side-slopes of the completed NHIW landfill will not exceed 4:1 and the top of the landfill will be graded to a minimum slope of 4%.

The existing stormwater pond (Basin C) located at the Northeast corner of the Landfill will manage stormwater runoff from the landfill area. All discharges of stormwater from the landfill operations will be via an OPDES permitted outfall located near the Verdigris River. Leachate from active waste disposal cells will temporarily be stored in a leachate impoundment adjacent to the landfill. The leachate will be managed to comply with the plant's water and/or air permits.

2.1.1 Final Grading Plan- NHIW Disposal Areas

The final grading plan of the NHIW Landfill is presented on Permit **DRAWING 6**. The NHIW waste disposal areas will be filled to a maximum elevation of about 650 feet utilizing 4:1

sideslopes, and then will extend to an elevation of no more than about 667 feet. The top surface of the landfill will be graded to drain at a slope of approximately 4% and the final cover system will be applied.

The design of the final cover system includes provisions for mid-slope terraces (berms) and storm-water letdown structures. The mid-slope berms and letdown structures will assist in managing and controlling storm water run-off associated with the final cover system, while minimizing the potential for erosion. The final grading plan for the NHIW disposal area includes provisions for perimeter drainage and access as shown on the Permit Drawings.

2.1.2 Final Cover System Design

The final cover system for the Landfill will include a FML, a double sided geocomposite and a protective/vegetative cover. The FML will consist of textured LLDPE 40 mil liner. Permeability of fluids through the FML is assumed to be 2E-13 cm/sec (HELP model default). The geocomposite will be comprised of two 8 oz. geotextile layers covering each side of a geonet. The protective/vegetative cover layer will be materials that are capable of sustaining vegetation growth.

As discussed in Section 2.4, final cover will likely be placed over the whole landfill after completion. However, the final cover may optionally be placed in stages as the fill progresses and specific areas reach the design elevations. During the installation of the final cover system, the construction methods and material consistency will be monitored, tested, and documented in accordance with the facility Quality Assurance / Quality Control Plan (QAQC). The QAQC is included in the *Permit Application*, **Volume 3, Appendix B**.

2.2 SOIL BUDGET

As addressed in the *Permit Modification Application,* there exists a minimal quantity of material on site that is naturally suitable for use as a soil protective cover layer. As an alternative to on-site soils, soil materials may be imported from off-site for use in constructing the final cover soil protective cover layer. The final cover system will require roughly 124,407 cubic yards of protective cover material. Additional soil may be needed to cover and/or stabilize fill areas outside the lined landfill footprint to minimize erosion while establishing vegetative cover. All property owned by PSO is considered eligible as a borrow source for cover material.

2.3 SURVEY REQUIREMENTS

Upon completion of the final cover system installation associated with the NHIW landfill disposal areas, a topographic survey will be performed by an Oklahoma registered land surveyor (RLS). The topographic survey will be used to prepare a final as-built drawing that will document the final contours, the permit boundary, the disposal boundary, location(s) of drainage features, and access roads. All survey information and as-built drawings will be included as part of the Closure Certification Report and will be maintained as part of the facility permanent operating record during the life of the facility and post closure care period.

2.4 CLOSURE REQUIREMENTS (TOTAL OR PHASED)

OAC 252:515-25-32 outlines requirements and procedures for total or phased closure of landfills. The design of the Landfill as addressed in this Closure/Post-Closure Care Plan as well as the *Permit Modification Application* includes provisions for total, and phased and/or sequential utilization and closure.

For a phased closure scenario, closure would take place over areas filled to final waste grades during sequential filling. A sequential development scenario would involve preparing and installing a liner system in the Cell 1 area. Waste would then be placed within Cell 1 to Interim grades. Prior to depletion of the Cell 1 fill area, the leachate collection system in Cell 2 would be installed. The utilization of Cell 2 would allow for the establishment of final waste grades over the Cell 1 area. In this scenario the owner might elect to close that portion of the landfill that would be at or near the final landfill waste grade design contours. As soon as the design contours are reached in these areas (upon completion of Cell 1), final cover will be applied and vegetative cover will be established. In a similar manner, additional acres of surface area will be ready to receive final cover upon completion of Cell 2. At the Owner's discretion, final cover may be applied to the previous cell as each subsequent cell is being developed. At a minimum, the final cover should begin to be constructed within 90 days after the last waste receipt in the landfill.

2.5 CONTINGENCY FOR UNEXPECTED CLOSURE

If for some reason the landfill must close prior to reaching the landfill final grades, the following procedures and standards shall apply.

- Areas that have received waste shall be shaped and graded to a minimum slope of 4% and a maximum slope of 4:1.
- Final cover shall be applied to all areas that have received waste to a minimum thickness of 24" inches including the 24" of protective cover soil and geosynthetics.
- Mid-slope drainage diversion berms should be installed on the 4:1 side slopes. The drainage diversion berms should divert storm water run-off to let-down structures as described in previous sections.
- All areas disturbed by landfill activity shall be graded, shaped, and seeded.
- Erosion control mechanisms such as hay bales, silt fence, rip-rap, rolled erosion control products, and channel lining shall be installed as needed and required to minimize erosion while stabilizing surface soils.
- The final cover system will be placed during the earliest available dry weather construction season following the last receipt of waste.
- Notification, certification, and reporting requirements shall apply to the unexpected closure scenario.

2.6 ANCILLARY FACILITIES AND MONITORING SYSTEMS

In conjunction with the final closure of the NHIW Landfill, existing portable offices and associated sanitary facilities will be removed and/or relocated, if applicable. Access roads will be improved as necessary to provide all-weather access for maintenance of the landfill final cover system. Drainage improvements and erosion control mechanisms will be improved and/or installed to manage run-off from the final cover system. The drainage systems are to be constructed as shown on *the Permit Modification Drawings*. All storm water and groundwater monitoring systems are to be protected and maintained during closure and post-closure.

2.7 CLOSURE SCHEDULE

As designed, the Landfill should provide useful waste disposal capacity for the Northeastern Power Station for approximately 14.7 years from the April 2011 survey date (based on an annual utilization rate of 56,000 cy). Final cover installation activities will be applied to the entire landfill beginning within 90 days after final receipt of wastes at the facility. Should this activity happen to fall during the wet, winter months, PSO will petition that the schedule be extended until the next available dry weather construction season following the last receipt of waste. An estimated schedule, based on the largest area of the Facility requiring a final cover at any time during the active life, for completing all activities necessary for closure is presented in **TABLE 1**.

TABLE 1
ESTIMATED CLOSURE SCHEDULE

Closure Activity/Task	Number of days to complete
Notify the ODEQ of intent to perform closure for each cell (cells 1 through 4)	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
Installation of erosion and sediment control structures	10
Complete closure certification report	17
ESTIMATED TOTAL TIME TO COMPLETE CLOSURE	**180**

2.8 COST ESTIMATES FOR CLOSURE

As per *OAC 252:515-27 Part 3*, cost estimates for closure of the PSO Northeastern Landfill have been prepared and are included in the *Permit Modification Application (Volume 3.*

APPENDIX G). As required by the regulations, the financial assurance cost estimates are to be updated on a regular basis to consider inflation and/or changes to the landfill design/operation.

3.0 POST-CLOSURE REQUIREMENTS

3.1 FINAL COVER SYSTEM MAINTENANCE

During the designated eight-year post-closure care period, the NHIW Landfill will be inspected on a quarterly basis. As part of the inspection, the condition and integrity of the final cover system will be evaluated and documented. Repairs will be made immediately or as weather conditions permit to address or correct effects due to settlement, subsidence, ponding of surface water and erosion.

Vegetation shall be periodically mowed (at least semi-annually) to control the growth of undesirable vegetation that may interfere with the integrity of the landfill final cover system or establishment of perennial vegetative cover. All cracked, eroded, and uneven areas will be filled and reseeded. All mid-slope berms will be checked and repaired. Erosion control measures such as silt-fence, hay bales, channel lining, rolled erosion control products, and/or rip-rap will be installed as needed and/or necessary to control problem or persistent erosion areas.

3.2 GENERAL SITE MAINTENANCE

During the post-closure care period, the site will be maintained in a neat and orderly manner. On a quarterly basis, PSO personnel will police the site while documenting and addressing areas needing repair or maintenance. General site maintenance may include but is not limited to the following:

- Regrading and reshaping of landfill access/service roads;
- Placement of road base materials;
- Removal of accumulated sediment from stormwater conveyances;
- Correction of drainage in areas where water is ponding; and
- Mowing or brush-hogging of ditches, levees, and drainage conveyances.

3.3 STORMWATER AND LEACHATE MANAGEMENT

Once the landfill has been filled to the design final grades and final cover is in place, leachate generation and accumulation will be significantly decreased. Discharges of stormwater from the stormwater pond must comply with the facility OPDES permit. Monitoring and reporting associated with discharges from a permitted outfall are addressed in the facility OPDES Permit.

Leachate outcrops or seeps through the final cover system should be documented and immediately repaired. If leachate seeps are persistent, some form of corrective action may be necessary. Any corrective action that involves major impacts to the final cover system must be reviewed and approved by the ODEQ.

3.4 GROUND WATER MONITORING

During the designated post-closure care period, PSO will continue to sample ground water monitoring wells located around the perimeter of the site. Samples will be collected on a semi-annual basis and submitted to a qualified laboratory for analysis. Samples are to be collected and handled in accordance with the facility *Sampling and Analysis Plan*. Ground-water quality will be statistically evaluated in accordance with the groundwater monitoring plan presented in the *Permit Modification Application* ***Volume 2***.

3.5 LAND USE RESTRICTIONS

During the post-closure care period, no significant land use is planned associated with the site. PSO will notify the ODEQ in writing should a need arise in the future which would require use of the Northeastern Power Station landfill site for some purpose other than those described herein or in the *Permit Modification Application*.

3.6 SECURITY AND ACCESS CONTROL

During the post-closure care period, access to the site will be restricted and controlled. Only PSO personnel, regulatory officials, and/or authorized maintenance contractors will be allowed at the facility.

3.7 POST-CLOSURE SCHEDULE

The planned post-closure care period for the NHIW Landfill is eight (8) years from the date of final closure certification by the ODEQ. Because the projected life of the site as designed is approximately 14.7 years, post-closure activities are not planned or scheduled for several years.

3.8 POST-CLOSURE COST ESTIMATES

Cost estimates for closure and post-closure care have been prepared for the Landfill and are included in the *Permit Modification Application* ***(Volume 3, APPENDIX G)***. The cost estimates are intended to comply with *OAC 252:515-27* and will be reviewed and updated (if necessary) on an annual basis to consider changes in design, operations, and/or regulatory requirements.

4.0 NOTIFICATION AND CERTIFICATION REQUIREMENTS

PSO will notify the ODEQ in writing prior to beginning final closure of the site. As per *OAC 252:515-25-33(b)*, final closure shall begin within 90 days after the last receipt of waste. Should this activity happen to fall during the wet, winter months, PSO will petition that the schedule be extended until the next available dry weather construction season following the last receipt of waste. Additionally, if the ODEQ approves amendments in the closure plan, a later date may be acceptable. Closure will be accomplished within 180 days, in accordance with the regulation. Although final cover placement, quality control, and certification may occur in stages, final closure of the site will not occur until all phases have been filled to the design contours or if waste disposal operations cease at the site (whichever comes first).

Upon completion of final closure for the entire site. PSO must submit a signed certification to the ODEQ, that the site was closed in accordance with the approved closure plan. the permit, and applicable regulations. The certification shall include a closure report with related drawings, plans, or specifications which describes how closure was performed and completed. The certification shall also include a summary of the monitoring required as outlined in the *Permit Application*. The certification shall be signed by PSO and sealed by an Oklahoma licensed professional engineer.

Once the closure has been approved by the ODEQ, a notice shall be recorded with the facility property deed in Rogers County giving notice to any potential purchaser or lessee that the site was used for the disposal of solid waste and has been closed. The notice shall specify the type, location, and quantity of waste disposed. A file-stamped copy of the notice is to be sent to the ODEQ and maintained in the facility permanent operating record. The notice must also state that the site will be monitored for a specified period, that a survey plat has been filed with the tax assessor's office, and shall contain a prominent note stating that the land has been used for solid waste disposal and that future uses may be restricted.

Final closure and post closure of the site must be approved by the ODEQ in writing. After final closure certification has been approved by the ODEQ, PSO's final closure financial assurance will be released by the ODEQ provided that adequate post-closure financial assurance is still secured, if required.

Beginning one (1) year after the Department's approval of the certification of final closure, PSO will submit annual reports no later than April 1st of each year, summarizing post-closure care activities and monitoring until the end of the post-closure care period. The report will document the maintenance performed and will summarize all monitoring data for the previous year. After the receipt of the annual post-closure report, the ODEQ will conduct a post-closure inspection of the site.

At the conclusion of the post-closure care period, PSO is required to submit, in lieu of the annual post-closure report, a certification, signed by an authorized PSO representative and an Oklahoma licensed professional engineer. The certification shall state that the landfill site was maintained and monitored in accordance with this document, the Permit, and applicable regulations. If monitoring during the post-closure care period indicates the presence of elevated levels of any constituent or if any evidence of contamination associated with the landfill operations is identified, this information will be included in the certification report along with corrective measures taken if any. This certificate will be maintained in the facility operating record.

Upon the ODEQ's approval of final certification of post-closure performance, the ODEQ will authorize the release of the post-closure financial assurance.

ATTACHMENT B –PERMIT DRAWINGS

DWG. NO. 34-30200-06-B

30209

30204

LANDFILL PERIMETER BERM

DUAL 36" RCP CULVERTS

DUAL 36" RCP CULVERTS

BASIN C

STORMWATER MANAGEMENT IMPOUNDMENT TO BE LINED

GROUND OBSCURED BY TREES

GROUND OBSCURED BY TREES

MISSOURI PACIFIC RAILROAD

DUAL 36" RCP CULVERTS

LEACHATE IMPOUNDMENT

DUAL 36" RCP CULVERTS

GROUND OBSCURED BY TREES

STORMWATER DITCH

MW-10S

MW-10D

4% SLOPE

4% SLOPE

GROUND OBSCURED BY TREES

VERDIGRIS RIVER

MW-11D

MW-11S

MW-9S

MW-9D

LANDFILL PERIMETER BERM (TIE-IN BENCH)

MW-12D

MW-12S

MW-13D

N

SCALE IN FEET

F. OWEN CARPENTER 23514 OKLAHOMA REGISTERED PROFESSIONAL ENGINEER

Expires 31-OCT-13

NOTE:
EXISTING CONTOURS AND BASE INFORMATION SHOWN ON THIS DRAWING WAS PROVIDED BY HENDERSON AERIAL SURVEYS INC. AERIAL SURVEY WAS PHOTO EXPOSED APRIL 4, 2011. DRAWING IS ON PLANT GRID COORDINATE SYSTEM AND USES THE NATIONAL GEODETIC VERTICAL DATUM OF 1929.

LEGEND:

- MW-1S — EXISTING GROUNDWATER WELL LOCATION
- MODIFICATION WASTE DISPOSAL BOUNDARY
- EXISTING APPROXIMATE PROPERTY BOUNDARY
- ORIGINAL (EFFECTIVE) PERMITTED WASTE BOUNDARY
- 630 — PROPOSED FINAL COVER CONTOUR
- PROPOSED CULVERT
- PROPOSED STORMWATER DITCH
- EXISTING PLANT GRID COORDINATE SYSTEM

DATE	NO.	DESCRIPTION	APPD.
2/28/12	B	REVISIONS PER ODEQ COMMENTS	
4/10/09	A	ISSUED FOR PERMIT	

REVISIONS

PUBLIC SERVICE COMPANY OF OKLAHOMA
NORTHEASTERN POWER STATION
OOLOGAH OKLAHOMA

ASH LANDFILL MODIFICATION
FINAL COVER SYSTEM PLAN

DWG. NO. 34-30200-06-B

SCALE: | CIVIL ENGINEERING DIVISION
DR:
CH:
DES:
SUPV:
PROJ. ENGR:
DATE:
APPROVED BY

Terracon Consulting Engineers and Scientists
2216003/35107130/CP/006.dwg

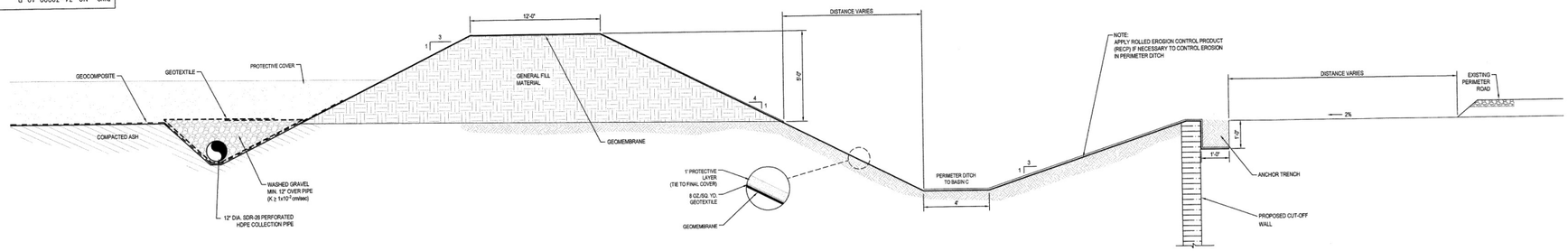
AEP SERVICE CORP.
1 RIVERSIDE PLAZA
COLUMBUS, OH 43215

IGS0694

SYSTEM DATE- DD-MMM-YYYY
SYSTEM TIME- HOUR:MINUTE

WHERES ARCH

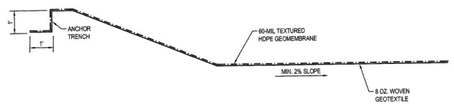
DWG. NO. 34-30200-10-B



PERIMETER BERM AT CELL 3

SECTION G 5 10

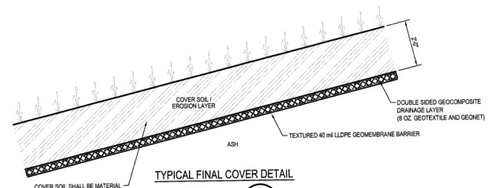
SCALE: N.T.S.



BASIN C LINER DETAIL

SECTION J 5 10

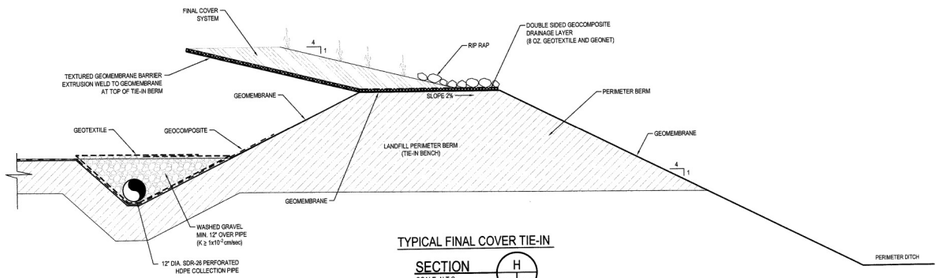
SCALE: N.T.S.



TYPICAL FINAL COVER DETAIL

DETAIL I 7 10

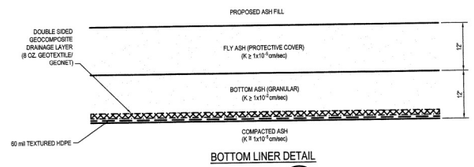
SCALE: N.T.S.



TYPICAL FINAL COVER TIE-IN

SECTION H 5 10

SCALE: N.T.S.



BOTTOM LINER DETAIL

DETAIL K 5 10

SCALE: N.T.S.

REGISTERED PROFESSIONAL ENGINEER
F. OWEN CARPENTER
21814
OKLAHOMA

Expires 31-OCT-13

DATE	NO.	DESCRIPTION	APPD.
2/28/12	B	REVISIONS PER ODEQ COMMENTS	
4/15/09	A	ISSUED FOR PERMIT	

REVISIONS

PUBLIC SERVICE COMPANY OF OKLAHOMA

NORTHEASTERN POWER STATION

OOLOGAH OKLAHOMA

ASH LANDFILL MODIFICATION

MISCELLANEOUS DETAILS

DWG. NO. 34-30200-10-B

Terracon Consulting Engineers and Scientists

SCALE: -
DR: -
CH: -
DES: -
SUPV: -
ENGR: -
DATE: -

APPROVED BY

CIVIL ENGINEERING DIVISION

AEP SERVICE CORP.
1 RIVERSIDE PLAZA
COLUMBUS, OH 43215

216/003/35012713C/CP/011.dwg

SYSTEM DATE: DD-MMM-YYYY
SYSTEM TIME: HOUR:MINUTE

WHERES ARCH

IGS0694