



ARKANSAS
Department of Environmental Quality

July 15, 2011

Mr. Terry Wehling, P.E.
American Electric Power
502 North Allen Avenue
Shreveport, LA 71101

RE: Final Permit Decision
John W. Turk, Jr. Power Plant - Class 3N Solid Waste Landfill
Pending Permit Number: 0311-S3N AFIN: 29-00506
Document Number: 60433 Cross Reference Number: 59305

Dear Mr. Wehling:

Arkansas Department of Environmental Quality - Solid Waste Management Division (ADEQ-SWMD) has made a final permit decision associated with the above referenced facility. Enclosed herein is the permit authorizing the construction, operation, and maintenance of the John W. Turk, Jr., Power Plant Class 3N Landfill as described in the permit application submitted February 28, 2011. The permit number for the facility is 0311-S3N. The decision to issue the permit is based upon 1) the information contained in the permit application; 2) other materials submitted by the applicant, and 3) written and verbal comments received during the initial and the second 30-day public comment periods. Also enclosed herein is the Department's Permit Summary and Rationale, and the Response to Comments addressing the written and verbal public comments received during the two public comment periods.

The permit is granted subject to the terms and conditions specified in the permit. The initial amount of financial assurance required is \$4,972,823 for the facility. Acceptable mechanisms for financial assurance include a surety bond, collateral bond (supported by a letter of credit, securities or cash), or other mechanisms as set forth in Chapter Fourteen of Regulation Number 22. The instruments used must be in the exact form set forth in Regulation Number 22 and must be filed with the Department before the permit can become effective. The purpose of the financial assurance is to ensure an environmentally sound closure of the site upon conclusion of disposal operations and acceptable post closure care. Please review all terms and conditions of the permit to ensure compliance with all applicable requirements.

Waste operations authorized under this permit may begin only after written notification from this Department is sent to the permittee that the following items have been submitted

and approved by the Department: a) financial assurance, b) construction quality assurance test results, c) engineering certification of initial construction, and d) as-built drawings of initial construction.

Should you have any questions regarding the above information please contact me.

Sincerely,



Roger Lawrence, Chief
Solid Waste Management Division

Enclosures: Permit #0311-S3N
Permit Summary and Rationale
Response to Comments - Public Comment Periods Beginning November 26, 2010
and April 22, 2011

cc: Bryan Leamons, P.E., Engineering Supervisor, SWMD
Clark McWilliams, P.E. Engineer P.E., SWMD
Sheldon Hadley, Inspector, SWMD
Heidi Love, Inspector Supervisor, SWMD
Scott McWilliams, Enforcement Branch, SWMD
Susan Speake, Program Branch Manager, SWMD
Thomas Rheaume, Permit Branch Manager, Air Division
Mo Shafii, Assistant Chief, Water Division
John Bailey, Permits Branch Manager, Water Division
Brian Bond, AEP, Vice President, SWEPCO, 502 North Allen Avenue, Shreveport, LA 71101
David Miller, P.E., AEP, 502 North Allen Avenue, Shreveport, LA 71101
Dave McCormick, P.E., Terracon
Quinn Baber, P.G., Terracon



**PERMIT
FOR THE CONSTRUCTION AND OPERATION OF A
CLASS 3N SOLID WASTE DISPOSAL FACILITY**



**ISSUED BY
STATE OF ARKANSAS
DEPARTMENT OF ENVIRONMENTAL QUALITY
SOLID WASTE MANAGEMENT DIVISION**

Permit Number	0311-S3N
AFIN	29-00506
Effective Date	July 15, 2011
Permit Owner & Address	Southwestern Electric Power Company (SWEPCO) 502 North Allen Avenue Shreveport, LA 71101
Facility Site Name & Address	SWEPCO - John W. Turk, Jr. Power Plant 3711 Highway 355S Fulton, AR 71838
Location	General: about 4 miles north of Fulton, Arkansas in Hempstead County, Arkansas Power Plant: 2,800 acre site: Both sides of Hwy 355, T12S, R26W, portions of S32 and S33; T13S, R26W portions of S4 thru S9 and S16 thru S20; T13S, R27W, portions of S13 and S24. Landfill site: T12S, R26W portions of S8 and S9. Lat: N 33 deg, 38', 59" ; Long: W 93 deg, 48', 44"
Permitted Landfill Disposal Area	73 disposal acres
Permitted Disposal Volume (Waste and Daily/Intermediate Cover)	6,102,402 Cubic Yards
Design Engineer/Consultant	Design: Shaw Constructors, Inc. Landfill Consultant: Terracon Consultants, Inc., Bryant, AR

This permit authorizes the construction and operation of the Class 3N landfill as set forth in the permit application prepared by Southwestern Electric Power Company (SWEPCO), hereinafter called "owner" or "permittee," and received by the Department of Environmental Quality on February 28, 2011.

This permit was completed through a series of technical correspondence between the applicant and the Department beginning January 20, 2009 (Doc #54476). The February 25, 2011 dated submittal (Doc #59305) is the final revised landfill permit application.

This permit is issued pursuant to the provisions of the Arkansas Solid Waste Management Act (Arkansas Code Ann. § 8-6-201 *et seq.*) as amended, hereinafter called the "Act;" Regulation Number 22, Arkansas Solid Waste Management Code, as adopted by the Pollution Control and Ecology Commission, hereinafter called "Regulation 22;" and all other applicable rules and regulations of the Department of Environmental Quality, hereinafter called "Department," and the following terms and conditions:

SITE SPECIFIC PERMIT CONDITIONS

- 1) The permit will expire when the disposal area described in the final engineering plans for Cell 1 through Cell 5 have been filled to design capacity and is closed out in accordance with the approved closure and post-closure plans and provisions of Regulation 22. The final grades and elevations shown on the approved plans, which include components of the final cover system, shall not be exceeded in anticipation of settlement and consolidation of the waste mass.
- 2) The approved permit plans for the facility are as follows: (from Doc #59305)

Drawing Number	Title	Date	Revision
DRAWING 0-30STE071	Preparation /Abbreviations	3/25/2010	1
DRAWING 0-30STE250	Sumps, Plans, and Sections	3/30/2010	3
DRAWING 0-30STE400	Key Plan, Drawing Index, and General Notes	12/29/2010	2
DRAWING 0-30STE401	Bench Marks & Piezometers	3/25/2010	1
DRAWING 0-30STE402	Leachate Collection Excavation and Grading Plan	3/25/2010	2
DRAWING 0-30STE403	Typical Sections and Details	12/29/2010	2
DRAWING 0-30STE404	Disposal Cell 1 Excavation & Grading	3/25/2010	1
DRAWING 0-30STE405	Disposal Cell 1 Final Grading & Cover	3/25/2010	1
DRAWING 0-30STE406	Disposal Cell 2 Excavation & Grading	3/25/2010	1
DRAWING 0-30STE407	Disposal Cell 2 Final Grading & Cover	3/25/2010	1
DRAWING 0-30STE408	Disposal Cell 1 Cross Sections	12/29/2010	2
DRAWING 0-30STE409	Disposal Cells 1 & 2 Cross Sections	12/29/2010	2
DRAWING 0-30STE410	Typical Sections and Details	12/29/2010	2
DRAWING 0-30STE411	Typical Sections and Details	12/29/2010	3
DRAWING 0-30STE412	Typical Sections and Details	3/25/2010	1
DRAWING 0-30STE413	Disposal Cell 3 Excavation & Grading	3/25/2010	0
DRAWING 0-30STE414	Disposal Cell 3 Final Grading & Cover	3/25/2010	1
DRAWING 0-30STE415	Cross-Section All Cells	12/29/2010	2
DRAWING 0-30STE416	Disposal Cell 4 Excavation & Grading	3/25/2010	1
DRAWING 0-30STE417	Disposal Cell 4 Final Grading & Cover	3/25/2010	1
DRAWING 0-30STE418	Disposal Cell 5 Excavation & Grading	3/25/2010	1
DRAWING 0-30STE419	Disposal Cell 5 Final Grading & Cover	3/25/2010	1
DRAWING 0-30STE420	Cross Sections Cells 1 & 2	12/29/2010	2
DRAWING 0-30STE421	Cross Sections 3 - 5	12/29/2010	2
DRAWING 0-30STE422	Disposal Cells 1 & 2 Profiles	3/25/2010	A

DRAWING 0-30STE423	Disposal Cells 1, 2 & 3 Profiles	3/25/2010	A
DRAWING 0-30STE424	Disposal Cell 1 UG Systems Plan	3/25/2010	A
DRAWING 0-30STE425	Disposal Cell 2 UG Systems Plan	3/25/2010	A
DRAWING 0-30STE426	Disposal Cell 3 UG Systems Plan	3/25/2010	A
DRAWING 0-30STE427	Disposal Cell 4 UG Systems Plan	3/25/2010	A
DRAWING 0-30STE428	Disposal Cell 5 UG Systems Plan	3/25/2010	A
DRAWING 0-30STE500	Makeup & Wastewater Pond DWG Index & General Notes	12/29/2010	4
DRAWING 0-30STE501	Makeup & Wastewater Pond Excavation & Grading Plan	11/8/2010	5
DRAWING 0-30STE502	Makeup & Wastewater Pond Sections and Notes	12/29/2010	7
DRAWING 0-30STE503	Makeup WW & Leachate Pond Access RD Plan & Sec's	12/29/2010	6
DRAWING 0-30STE504	Leachate Collection Pond Excavation & Grading Plan	3/25/2010	4
DRAWING 0-30STE505	Leachate Collection Pond Sections & Notes	12/29/2010	5
DRAWING 0-30STE506	Makeup & Wastewater Pond U/G Systems Plan	3/25/2010	0
DRAWING 0-123896CSK216	Leachate Sump Plan and Sections	7/27/2010	C

- 3) The facility is permitted for 6,102,402 cubic yards of solid waste disposal including daily and intermediate cover material. This volume does not include the components of the final cover system.
- 4) This permit is for the disposal of solid waste generated by Southwestern Electric Power Company (SWEPCO) at the John W. Turk, Jr. Power Plant. The authorized waste streams include bottom ash, economizer ash, fly ash (including flue gas desulfurization (FGD) waste ash), scrubber waste, waste coal, cool mill rejects, cooling tower sediments, cooling water screenings, construction and demolition debris, sump pit sediments, make-up water treatment sediment, fire brick and refractory materials, non-hazardous sand blast media, and sediments from dredging operations, as indicated in the permit application documentation.
 - a. Additional waste items not mentioned above may be authorized by the Department for disposal at the facility on a case-by-case basis when requested by the permittee.
 - b. Regulated PCBs and PCB items as defined in 40 CFR § 761 or "Hazardous waste" as defined by Regulation Number 23 are not authorized for disposal in the facility.

All disposed materials or waste streams and their volumes shall be reported in the annual report that is to be submitted to the Solid Waste Management Division.

- 5) The permittee is exempted from implementing a routine methane monitoring program unless the Department determines that:
 - a. The nature and quantity of waste poses a significant potential for the generation of

explosive gases; or

- b. Explosive gases have been detected in concentrations exceeding the standards identified in Regulation 22.514 (a).

- 6) Salvage of disposed bottom and fly ash material for recycling purposes is authorized by the Department under the following conditions:
 - a. An area has been designated by the permittee for recovery of salvageable material.
 - b. The operations do not interfere with or otherwise delay the activities of the disposal working face.
 - c. The recovery of salvageable material must be conducted in an orderly manner and do not harm human health and the environment.
 - d. All salvaged material is removed from the landfill site daily, or properly stored so that they do not create a nuisance or unsightly appearance.

Salvage is otherwise prohibited in accordance with General Condition No. 12.

- 7) The permittee is granted an exemption from the minimum daily cover requirements contained in Regulation 22.512(a) and (b) provided that the exemption will control disease vectors, fires, odors, blowing litter, scavenging, and causes no harm to human health or the environment. However, the Department reserves the right to rescind this exemption if deemed necessary to provide for the control of disease vectors, fires, odors, blowing litter, scavenging, or to prevent harm to human health or the environment.
- 8) The permittee is permitted to spray fly ash and bottom ash with water in order to encourage the pozzolanic reaction and develop the cementitious property of the ash material, and to control dust. Collected landfill leachate may be used as described herein only over permitted lined landfill areas.
 - a. The permittee shall take all the necessary steps to prevent the generation of standing water.
 - b. No waste shall be deposited in standing water.
- 9) The permittee is granted an exemption from providing aeration of leachate in the Leachate Pond. From the Leachate Pond the leachate shall be conveyed to the power block area, subsequently used in the power generation operations. The leachate shall not be discharged from the landfill facility. Visual high leachate level alarms shall be installed and maintained at the Leachate Pond. High leachate levels shall be immediately corrected. Leachate Pond levels shall be recorded daily and made part of Operating Record as required by the General Permit Conditions.
- 10) The following bottom liner system configurations are approved for Cells 1 through 5 as shown on Drawings 0-30STE404, 0-30STE406, 0-30STE413, 0-30STE416, and 0-30STE418 of the Permit Application, Document Number 59305. The bottom liner system (including the bottom sideslopes) consists of, listed from bottom to top,
 - compacted prepared subgrade
 - 2 feet compacted clay liner soil with maximum hydraulic conductivity of 1×10^{-7} cm/s
 - 60 mil high density polyethylene (HDPE) geomembrane
 - woven monofilament geotextile fabric (8-oz/yd²)
 - 12 inches leachate collection drainage layer on disposal cell bottom with minimum hydraulic conductivity of 3.0×10^{-1} [side slopes consists of composite geonet in-lieu of drainage layer material]
 - woven monofilament geotextile fabric (8-oz/yd²) over the drainage layer

-- 12 inches of soil protective layer

- 11) The following landfill final cover system configurations are approved for Cells 1 through 5 as shown on Drawings 0-30STE405, 0-30STE407, 0-30STE414, 0-30STE417, and 0-30STE419 of the Permit Application, Document Number 59305. The final cover liner system consists of, listed from bottom to top.
 - 18 inches of low permeability clay soil with maximum permeability 1×10^{-7} cm/sec
 - 60 mil high density polyethylene (HDPE) geomembrane
 - woven monofilament geotextile fabric (8-oz/yd²)
 - 12 inches of a sand drainage layer with minimum permeability of 1×10^{-3} cm/sec
 - woven monofilament geotextile fabric over the drainage layer (8-oz/yd²)
 - 18 inches of common fill (soil protective layer)
 - 6 inches of topsoil
- 12) The permittee shall implement the Hazardous Waste and Unauthorized Waste Exclusion Plan presented in Volume 2 of 4, Appendix E of the Permit Application having Solid Waste Management Division Document Number 59305. In addition to the implementation of the approved Hazardous Waste and Unauthorized Waste Exclusion Plan, the facility shall fully meet all requirements of Reg. 22.412 regarding the exclusion of all unauthorized waste streams.
- 13) The permittee shall implement the requirements detailed in the Operating Plan and Narrative presented in Volume 2 of 4, Appendix D of the Permit Application having Solid Waste Management Division Document Identifier 59305. In addition to the implementation of the approved Operating Plan and Narrative, the facility shall fully meet all operating requirements of Regulation 22 unless specifically addressed by a permit condition.
- 14) Landfill cells shall be constructed in accordance with the approved CQA Plan located in Volume 3 of 4, Appendix A of Document Number 59305 and furthermore in accordance with Regulation 22 and permitted designs. Before construction of new landfill cell, notification shall be submitted in accordance with Regulation 22.428.
- 15) The permittee shall maintain closure and post-closure care plans that describes the steps necessary to close all landfill units at any point during its active life and to maintain the integrity and effectiveness of the closure system to minimize infiltration and erosion, as required by Regulation 22.1301, *et seq.* As such, the permittee shall implement the requirements detailed in the Closure and Post-Closure Plan presented in Volume 2 of 4, Appendix H of the Permit Application having Solid Waste Management Division Document Identifier 59305.
- 16) The initial total amount of financial assurance is \$4,972,823. Of this amount, \$1,602,500 dollars will be required for closure costs and \$3,370,323 will be required for the post-closure costs. This amount shall be subject to annual adjustments and may be increased at the discretion of the Department based upon the estimated cost for a third party to close the largest area requiring final cover during the active life of the facility and the cost for a third party to perform post closure care.
 - a. The instruments used must be in one of the forms set forth in Regulation 22 or as otherwise approved by the Department.
 - b. Operations allowed under this permit shall not commence until all financial assurance is satisfactorily filed with the Department.
 - c. A portion or all of the financial assurance may be held by the Department beyond the time of cessation of disposal operations at the site to ensure satisfactory closure and post closure care in accordance with Regulation 22.

GROUNDWATER MONITORING PERMIT CONDITIONS

1. The groundwater monitoring program at the site shall follow the provisions of Regulation 22.
2. A groundwater monitoring system shall be established and maintained at the landfill and leachate pond that consists of a sufficient number of wells or sampling points, installed at appropriate locations and depths that will yield representative samples of groundwater quality. The monitoring system shall be designed, installed, operated, and maintained in accordance with the approved design specifications throughout the active life of the facility and the post-closure care period.
3. The initial groundwater monitoring system shall utilize, at a minimum, nine (9) monitoring wells (MW-1 through MW-9D). Monitoring wells MW-1 through MW-8 will be screened in the upper Arkadelphia Marl while well MW-9D will be screened in the upper Nacatoch Formation. The monitoring well locations are shown on Figure 2, Volume 2 of 4, Appendix J, in the document titled Groundwater Sampling and Analysis Plan (Doc #59305). These initial nine wells are to monitor waste in Cell 1 and 2 of the landfill and the leachate pond. Additional wells will be required to monitor Cells 3, 4, and 5 of the landfill at a future date. Additional wells must be installed and sampled at least one year prior to placing waste into each of the cells after Cell 2 (Cells 3, 4, or 5).
4. The facility will follow the approved Sampling and Analysis Plan (SAP). The SAP shall comply with the requirements of Regulation 22. The currently approved SAP is contained within Appendix J, Volume 2 of 4 of Document Number 59305. Changes to this approved SAP will be accomplished following the provisions of Regulation 22.
5. Monitoring Frequency & Reporting: Per Regulation 22, the groundwater monitoring frequency shall be at least semiannual during the active life of the facility and the post-closure period. During the first year of monitoring, four quarterly samples from each well shall be collected. A groundwater monitoring report will be submitted to the ADEQ within 90 days from the date of the monitoring event.

Monitoring Parameters: During detection monitoring, groundwater samples shall be analyzed for the following:

Arsenic, Barium, Boron, Cadmium, Chromium, Fluoride, Iron, Lead, Manganese, Mercury, Molybdenum, Selenium, Silver, Strontium, Chloride, Sulfate, Total Dissolved Solids (TDS), pH, Specific Conductance, and Turbidity.

All parameter concentrations above the Method Detection Limit (MDL) must be reported. The Department may modify the monitoring frequency or parameters required under this permit per Regulation 22.

Leachate from the landfill will be sampled at the same frequency and for the same parameters as groundwater monitoring except that turbidity is not a required parameter.

GENERAL PERMIT CONDITIONS FOR A CLASS 3N LANDFILL

1. This permit is issued in reliance upon the statements and representations made in the application, operating narrative, plans, specifications, correspondence, and other related documents. The Department bears no responsibility for the adequacy or proper functioning of the disposal facility. Nothing contained herein shall be construed as releasing the permittee from any liability from damage to persons or property due to the installation, maintenance, or operation of the disposal facility or any act of the permittee, or the permittee's employees or agents.
2. The disposal facility shall be constructed, operated and maintained in accordance with the final plans, specifications and operation narrative as approved by the Department and in compliance with applicable provisions of the Act, Regulation 22, and all other applicable rules and regulations.
3. At all times the disposal facility shall be maintained in good condition and operations shall be conducted by licensed, qualified, on-site operators holding the appropriate license in accordance with Regulation Number 27, Licensing of Solid Waste Management Facilities and Illegal Dump Control Officers.
4. This permit may be revoked or modified whenever, in the opinion of the Department, the facility is no longer in compliance with the Act, Regulation 22, or other applicable rules and regulations. Except where expressly authorized by the Department, this permit shall not relieve the permittee, or the permittee's employees or agents, from compliance with the provisions of the Act and Regulation 22.
5. The Department may issue modifications or amendments to this permit governing the design, operation, maintenance, closure or post-closure of the facility during the term of this permit. Such modifications or amendments shall be attached to this permit and shall be fully maintained and enforceable as a condition or conditions of this permit.
6. The Department has received an initial permit fee from the permittee. Annual permit fees due thereafter shall be assessed in accordance with Regulation Number 9, Fee Regulation. The facility shall also be responsible for quarterly payments of other landfill disposal fees as required under Regulation 11, Solid Waste Disposal Fees, Landfill Post-Closure Trust and Recycling Grants Program. Failure to pay annual fees or quarterly payments when due may result in revocation of this permit.
7. The permittee shall maintain an Operating Record at the location indicated in the permit application, or at an alternate location approved in writing by the Department.
 - a. At a minimum, the following documents and materials shall be retained in the facility operating record for review by authorized representatives of the Department:
 - i.) The approved facility operating plan, approved permit plans and specifications, CQA reports, site inspection reports, operator licenses, this disposal permit and written authorizations issued by the Department that provide modifications to the facility or its operations, all environmental monitoring (including leachate pond levels) or test results, and other pertinent records, certifications and correspondence as required by Regulation 22 or other permit conditions herein; and
 - ii.) All construction test results, certifications, acceptances, construction reports, photographs, layout drawings, record (as-constructed) drawings, shop drawings, construction drawings, and other documentation required by the specifications, and

CQA/QC plans, reports and documents; and

- iii.) Other documents that pertain to the operation, maintenance, closure and/or post-closure of the facility, or as directed by the ADEQ.
 - b. The permittee shall forward a copy of information from the Operating Record when requested by the Department.
8. Transactions that affect the ownership of the facility must be fully disclosed to the Department.
 - a. For purposes of evaluating whether a change in ownership occurs, ownership or control may result from a change in the equity of the permittee of five percent (5%) or more.
 - b. If applicable, the permittee shall submit to the Department annual and quarterly reports required by the Securities and Exchange Commission (SEC) that provide information regarding legal proceedings in which the permittee has been involved in order to determine whether any change in ownership or control of the operation of this landfill has occurred.
 - c. A permit transfer will not be required when a change in ownership or control of the facility is among the persons and/or entities previously disclosed to the Department in Section E of the Disclosure Statement or similar disclosure.
9. The permittee shall furnish the Department annual engineering inspection reports in accordance with Regulation 22.522.
10. A survey control system shall be established and maintained at the landfill site that complies with Regulations 22.426.
11. The landfill working face shall be confined to the smallest practicable area.
12. The permittee shall not engage in or allow salvage operations at the facility except with written authorization from the Department or as may be provided in the section titled Site Specific Permit Conditions. The Department may review and approve requests for future salvage of disposed materials for recycling purposes on a case-by-case basis.
13. Disposal of bulk liquid waste in the landfill is prohibited. Liquid waste is waste that contains "free liquids" as defined by Method 9095 (Paint Filter Liquids Test) in EPA Publication No. SW-846.
14. Measures to control and prevent storm water run-on from running through or into the active disposal area shall be constructed and maintained. Grading, dikes, diversion ditches, silt fencing, silt traps, and other best management practices (BMP) for storm water control shall be provided as necessary to control/prevent off-site sediment accumulation from landfill related operations.
15. Appropriate NPDES construction/storm water permit(s) shall be obtained for storm water discharges from the landfill site and borrow sites. A Storm Water Pollution Prevention Plan (SWPPP), which outlines erosion and sediment control measures, shall be prepared and implemented in accordance with applicable NPDES requirements. A copy of the SWPPP shall be maintained on-site for reference by operating staff.
16. The permittee shall comply with the air criteria requirements of Regulation 22.515. Those requirements include meeting the State Implementation Plan (SIP) pursuant to Section 110 of the Clean Air Act; prohibiting open burning of solid waste, unless authorized by the Department; and establishing fire safety procedures.

17. Litter control measures shall be implemented, if necessary, to confine litter to the smallest practicable extent and prevent litter from leaving the site.
18. The permittee shall implement a Class 3N unauthorized waste exclusion screening and detection program at the facility in accordance with the approved Hazardous Waste and Unauthorized Waste Exclusion Plan and Regulation 22.511(b). The program shall include procedures for evaluation of any questionable wastes prior to disposal to determine whether the waste complies with the Regulation 22 requirements for disposal in the facility.
19. The permittee must cover disposed waste with at least six inches of soil at the end of each operating day, or at more frequent intervals if necessary, to control disease vectors, fires, odors, blowing litter, and scavenging as required by Regulation 22.512. No portion of the waste is to be left exposed at the end of the operating day. Alternative materials for daily cover, such as synthetic materials, shall only be used when specifically authorized in writing by the Department. Any alternative daily cover that is proposed by the permittee must comply with Department guidelines and include specific written operating procedures that will be implemented to control disease vectors, fires, odors, blowing litter, and scavenging. The use of synthetic material will not be authorized unless it is incorporated within operating procedures that also rely on use of at least six inches of soil cover for daily cover on some days; any proposal for daily cover based solely upon full-time use of synthetic material will not be approved.

The permittee has been granted a variance from the daily cover requirements. Details of the variance are outlined in the Site Specific Permit Conditions. The Department reserves the right to rescind this exemption if deemed necessary to provide for the control of disease vectors, fires, odors, blowing litter, scavenging, or to prevent harm to human health or the environment.

20. The final grades and elevations shown on the plans shall not be exceeded at any time or in anticipation of settlement and consolidation of the waste mass.
 - a. Timely initiation and completion of closure of landfill cells or units shall be made in accordance with Regulation 22.1301(f) and (g).
 - b. Proper construction of the final cover system shall be observed and certified in writing to the Department by a Registered Professional Engineer in a Construction Certification Report in accordance with the approved CQA Plan whenever a cell, area or phase of the landfill is closed-out.
 - c. The Certification Report shall include CQA/QC test results as indicated in the approved CQA Plan; drawings indicating the location, designation and extent of closed area(s); and test locations.
21. Any statements in the operational narrative, specifications, and/or engineering plans that conflict with Regulation 22, permit conditions herein, or other applicable laws and regulations shall not be considered authorized by the Department.
22. This permit authorizes one (1) active disposal area at the facility per Regulation 22. Multiple working faces shall not be utilized at the facility unless the permittee can provide adequate justification for more than one working face and specific authorization for such is granted in writing by the Department. It is not anticipated that such authorization will be granted except on a temporary basis for highly unusual or emergency situations.
23. The Department, its employees, agents, or any authorized person shall have the right to enter the property at any time for any reason as set out in Regulation 22 for the purposes of, including but not limited to,

taking samples, reviewing the operating record, inspecting the facility, and perform other enforcement or engineering action without interference or delay from the permittee.

- 24. The Department's decision to issue this permit is final for purposes of appeal as of the date indicated in the Certificate of Service below. If any provision of these conditions or the application of these conditions thereof to any person or circumstance is held invalid, such invalidity shall not affect other provisions or applications of these conditions that can be given effect without the invalid provision or application. Therefore, to this end, the provisions of these conditions are declared to be severable.

APPROVED BY: **Arkansas Department of Environmental Quality**
5301 Northshore Drive
North Little Rock, Arkansas 72118

Teresa Marks

Teresa Marks, Director
Date

Susan C. Smith CERTIFICATE OF SERVICE
I, *Susan C. Smith*, hereby certify that a copy of this permit has been mailed by first-class mail to Mr. Terry Wehling, Southwestern Electric Power Company (SWEPCO), 502 North Allen Avenue, Shreveport, LA 71101, on or before this 7/15/11 day of _____.

Permit Summary and Rationale
Permit for John W. Turk, Jr. Power Plant Class 3N Landfill
 Draft Number 0311-S3N; AFIN: 29-00506

Permit Summary

This summary form consists of information submitted during the permitting process. It represents basic information from the administrative record utilized in forming recommendations from the Solid Waste Management Division. The entire file for the solid waste permit application specified below should be reviewed for complete details on the proposed facility.

Permit Application Summary	
1. Name of Applicant:	Southwestern Electric Power Company (SWEPCO) 502 North Allen Avenue Shreveport, LA 71101
2. Type of Facility:	Class 3N Landfill
3. Engineering Firm:	Terracon Consultants, Inc., Bryant, Arkansas
4. Application Date:	February 25, 2011
5. Site Location	General: The site is located between McNab and Fulton, Arkansas in Hempstead County.
6. Permit Area:	Permitted Landfill Area: 73 acres
7. Residences Within 2 Miles:	Approximately 500 dwellings identified from USGS 7.5 minute quadrangle
8. Water Supplies Within 2 Miles:	Thirty one (31) water wells were identified within 2 miles of the proposed landfill. The wells were identified through well construction records on file at the Arkansas Geological Commission and by sending a well survey questionnaire to locations within ½ mile of the proposed landfill. The water well inventory is documented in Section 2.6 and Appendix A of the Hydrogeologic and Geotechnical Report (Document #59305)
9. Wetlands:	Landfill footprint changed to prevent disturbance of preliminarily identified adjacent wetlands.
10. Geology:	<p>This Class 3N landfill sits on the Cretaceous Age Arkadelphia Marl. The marl consists of a limy clay with variable amounts of silt and gravel at shallow depths and grading into a firm shaley clay/clayey shale. Variable amounts of rounded chert gravel occurs within the upper clay unit especially in the northern portion of the site. Gypsum veins are present within the marl. The weathered upper marl unit ranged in thickness from approximately 30 to 45 feet. Dark gray shaley clay/clayey shale (shale) of the Arkadelphia Marl is present below the weathered upper marl. The lower shale unit of the Arkadelphia Marl ranges in thickness from approximately 65 to 95 feet. The total thickness of the Arkadelphia Marl beneath the proposed landfill ranges from 110 to 135 feet.</p> <p>The Nacatoch formation is located below the Arkadelphia Marl and is represented by a hard sandstone layer overlying a fine grained, loosely cemented sand. The sandstone is generally medium to light gray with a calcareous cement and is 3 to 15 feet thick.</p>

Permit Application Summary	
11. Groundwater:	<p>Groundwater within the upper Arkadelphia Marl appears to flow within the gravelly units, the gypsum veins, and fissile zones due to the blocky nature of the marl. Groundwater within the marl appears connected and to represent the uppermost aquifer. The depth to groundwater ranges from 10 to 30 feet below ground surface. The general direction of groundwater flow across the site within the intermediate wells in the Arkadelphia Marl was to the east with components northeast and southeast during the Hydrogeologic Investigation (Document #59305).</p> <p>Beneath the Arkadelphia Marl, at 110 to 135 feet below ground surface, the Nacatoch Sand is present and is used as a water supply aquifer in the area. The groundwater in the Nacatoch Sand is under confined conditions at the site. The general direction of groundwater movement in the Nacatoch Sand was to the southwest during the Hydrogeologic Investigation (Document #59305).</p>
12. Surface Drainage Sequence:	<p>Bridge Creek is a natural drainageway approximately bisecting the permittee's property between the power block and solid waste landfill area. The topography of the proposed landfill site is relatively flat with approximately 20 feet of relief. The existing generalized overland flow conditions within the north portion of the landfill drains to the perennial Bridge Creek, while the southeast drainage is through an intermittent drainage way to Bridge Creek. Bridge Creek flows into Bois d'Arc Creek approximately five miles southeast of the landfill site within the Bois d' Arc Creek Wildlife Management Area. Surface water from the south portion of the proposed landfill drains through an unnamed intermittent drainage way to the Red River near the town of Fulton.</p>
13. Waste Streams:	Eligible Class 3N waste generated at the site.
14. Capacity	Total Capacity = 6,102,402 Cubic Yards
15. Disposal Rate (estimation)	177,927 cubic yards per year.
16. Projected Active Life (estimation)	34 years
17. Bottom Liner System:	<p>The bottom liner system includes a leachate collection and recovery system (LCRS) consisting of lateral permeable drainage layer (12" of drainage material on bottom landfill areas and geosynthetic geonet on landfill side slopes), and a series of pipes designed to remove leachate from the waste mass. Overlaying the LCRS is a geosynthetic geotextile and a 12" protective soil cover to shield the LCRS. Underlying the LCRS, the liner design consists of a 60 mil high density polyethylene (HDPE) geomembrane above a two foot thick layer of select, low permeable clay soil material placed and compacted to achieve the required maximum 1×10^{-7} cm/sec hydraulic conductivity.</p>
18. Final Cover:	<p>Overlaying the waste mass is designed a final cover consisting of an 18" low permeable clay constructed to achieve a maximum hydraulic conductivity of 1×10^{-7} cm/sec. The clay is overlain by a 60 mil high density polyethylene (HDPE) geomembrane and a geosynthetic geotextile fabric. Over the geotextile is a 12" sand drainage layer which directs any rainfall percolation to an 8" diameter slotted drain pipe installed along the perimeter of the final cover area, and then to 12" diameter outfall pipes periodically spaced at the toe of the final cover slope. A geosynthetic geotextile and an 18" layer of common soil fill are placed atop the sand drainage layer, and finally a 6" topsoil layer is placed for vegetative growth.</p>

Permit Rationale

The following information was considered during the preparation of a draft permit for the proposed facility:

- Permit Application dated February 25, 2011 (Doc #59305).
- Correspondence from the Permittee; the Arkansas Solid Waste Management Code, as Amended; Regulation Number 22; and all other applicable rules and regulations of the Arkansas Department of Environmental Quality.

Condition No.	Site Specific Permit Conditions
1	Refers to the landfill disposal area for the Class 3N facility as shown in the approved application and operational narrative plans (22.309)
2	Lists the approved design plans. (22.303)
3	Permitted disposal volume as calculated by design engineer based on permitted bottom and waste grades (22.303)
4	Concerns the types of wastes that can be accepted at the facility. The facility is permitted as a Class 3N landfill and may accept nonhazardous industrial, commercial, non-putrescible waste generated only by the permittee. Hazardous and/or toxic waste materials, liquid or semi-liquid waste, household garbage, and putrescible wastes are not authorized for acceptance and disposal at the facility (22.102)
5,6,7,8&9	Concerns various exemptions granted to permittee
10	The minimum requirements of the approved bottom liner system (22.524). Permittee requested geomembrane component to enhance liner performance.
11	The minimum requirements of the approved final cover liner system (22.528). Permittee requested geomembrane component to enhance liner performance.
12	Concerns the approved hazardous waste exclusion plan (22.511)
13	Concerns the approved operating plan and narrative (22.510)
14	CQA Plan requirements (22.524)
15	Closure and Post-Closure Plan requirements and implementation (22.1301 and 22.1302)
16	Specifies the initial amount of financial assurance. (Regulations 22.1402 and 22.1403).

Condition No.	Groundwater Monitoring Permit Conditions
1	Statement requiring the facility to follow the provisions of Regulation 22 for groundwater monitoring. In addition, no groundwater monitoring conditions in this permit or currently approved Sampling and Analysis Plan (Volume 2 of 4, Appendix J (Doc #59305) are intended to conflict with Regulation 22.
2	A general summary of Regulations 22.1202 (a); 22.1201(d); and 22.1202(c). Monitoring of groundwater around the leachate pond is based on the clause "landfills and other facilities" in Reg.22.1201(a) – <i>Applicability</i> , and on the definition of "facility" in Reg.22.102 - <i>Definitions</i> .
3	Defines the initial groundwater monitoring system to be installed for Cells 1 and 2 of the landfill and the leachate pond. The upper portion of the Arkadelphia Marl has been defined as the uppermost aquifer in the Hydrogeological Investigation of the site (Volume 2 of 4, Document 59305). Monitoring wells MW-1 through MW-8 will be screened in the same zone as the intermediate wells in the Hydrogeological Investigation. Monitoring well MW-9D will be screened in the Nacatoch Formation because of the importance of this formation as a source of drinking water.
4	Requires the permittee to monitor in accordance with the approved Sampling and Analysis Plan (SAP). Defines the current SAP. An approved SAP is required in Reg.22.1203.
5	Defines the frequency, parameters, and some reporting aspects for groundwater monitoring during background sampling and detection monitoring. Frequency and reporting are based on Reg.22.1203(k), 1203(h)(5), and 1204(b). Parameters are based on leaching and leachate results from the SWEPCO Flint Creek plant and other coal combustion plants. Leachate sampling requirements are based on Reg.22.529 (i.e. Reg.22.429).

Condition No.	General Conditions for Class 3N Facilities
1	States the Department has no responsibility for the proper functioning of the disposal facility and the permittee is not exempt from liability to third parties per Regulation 8.
2	Concerns the requirements for construction and operation of the disposal facility in accordance with the approved plans/specifications/operation narrative are in accordance with Regulation 22.
3	Concerns requirements to maintain the disposal facility in good operating condition under licensed, qualified, on-site landfill operators is in accordance with Regulation 22 and with Regulation 27.
4	Concerns the right of the Department to revoke or modify the permit in the event the facility is no longer in compliance with the Arkansas Solid Waste Management Act, Regulation 22, or any other applicable regulations.
5	Concerns issuance of modifications to the permit by the Department is in accordance with Regulation 22.
6	Concerns payment of permit fees in accordance with Regulation 9.
7	Concerns requirements for maintenance of landfill related documents in an Operating Record are in accordance with appropriate Sections of Regulation 22.
8	Concerns permit transfer and disclosure is in accordance with Act 454 of 1991.
9	Concerns requirements for submittal of an annual engineering inspection report are in accordance with Regulation 22.
10	Outlines the requirements for implementation and maintenance of a survey control system at the landfill site for horizontal and vertical control of landfill construction/operation is in accordance with Regulation 22.
11	Outlines requirements for disposal in a single working area of the smallest practicable extent are in accordance with Regulation 22.
12	Regards salvage operations are not allowed in accordance with Regulation 22.
13	Concerns the prohibition of the disposal of bulk liquid waste in the landfill is in accordance with Regulation 22.
14 & 15	Concerns measures to control and prevent stormwater run through or into the active face and requirements for appropriate NPDES permit(s) and a Storm Water Pollution Prevention Plan (SWPPP) is in accordance with Sections 22.418, 22.419 and 22.427 of Regulation 22, and the Clean Water Act.
16	Concerns requirements for compliance with applicable air criteria is in accordance with Section 22.416 of Regulation 22 and the Clean Air Act.
17	Concerns with litter control fences and other control measures for blowing litter.
18	Concerns requirements for implementation of a Class 3N Exclusion Screening and Detection Program at the facility is in accordance with Regulation 22.
19	Concerns the application of six inches of soil at the end of each operating day.
20	Concerns requirements to fill within the final grades and elevations indicated on the approved plans, timely initiation and completion of closure, and proper CQA monitoring and certification are in accordance with Sections 22.308, 22.411, 22.428, and 22.1301 of Regulation 22
21	Concerns the requirements for the permittee to comply with Regulation 22 or permit conditions in the event of a conflict between them and representations in the permit application documents is in accordance with Section 22.308 of Regulation 22.
22	Concerns the permit authorizes only one (1) working face. Regulation 22.411
23	Concerns the right of Department employees to enter the permittee's property to inspect the facility at any time without interference or delay is in accordance with Section 22.1501 of Regulation 22.
24	Concerns providing notice for the purpose of appeal of the final permit in accordance with Section 22.306 of Regulation 22 and in accordance with Regulation 8. Provisions regarding severability are in accordance with Section 22.1601 of Regulation 22.

Response to Comments

Solid Waste Class 3N Landfill
John W. Turk, Jr., Power Plant
Permit: 0311-S3N AFIN: 29-00506

On November 26, 2010, the Arkansas Department of Environmental Quality (“ADEQ”) gave public notice of a draft solid waste permitting decision for the John W. Turk, Jr. Class 3N Landfill (hereinafter “Turk Class 3N Landfill”). On April 22, 2011, ADEQ gave notice of a second draft solid waste permitting decision after the applicant requested a landfill liner design change. Public hearings were held at the University of Arkansas - Community College at Hope, Arkansas, on December 16, 2010, and May 16, 2011. During the thirty-day comment periods for each public notice, six-hundred eighty (680) written comments on the draft permitting decision were submitted. Twenty-six (26) verbal comments were also received during the public hearings.

ADEQ is governed by Arkansas statutes and promulgated regulations from the Arkansas Pollution Control and Ecology Commission (hereinafter “APCEC”). The following comments regarding the Turk Class 3N Landfill draft permitting decision have been summarized from all comments received during both public comment periods. Comments unrelated to the draft solid waste permit are outside the venue of this ADEQ proceeding. Comments outside the solid waste venue, such as air and water comments related to the power plant generating units and associated equipment and related areas of the site, may have been or may be addressed in a separate venue, by the appropriate ADEQ personnel. However, comments that were questionable if the author was referencing the solid waste permit have been included herein. For the original and full text of the submitted comments, please refer to [ADEQ - Database - Permit Data System \(PDS\) - Facility and Permit Information](#). The Department's responses to comments relevant to the solid waste permitting decision follow below.

Responses to Comments

1. Statements were made concerning the development of cancer and other adverse health effects by breathing air borne contaminants. Several commenters also expressed concern about pollution of the waterways.

RESPONSE:

In the context of a draft permit for the Class 3N solid waste landfill, APCEC Regulation 22.303(c)(11) requires each permit applicant to develop an Operating Plan and Narrative which outlines the control of dust on the landfill property. In Permit #0311-S3N, the applicant is permitted to spray the flyash and bottom ash with water in order to encourage the pozzolanic reaction that will develop the cementitious properties of the materials and reduce the potential for dust emissions. As an additional requirement, the current ADEQ air permit addresses

landfill dust emissions. Air permit #2123-AOP-RO requires dust emissions from the landfill be monitored and limited to no visible offsite emissions from the landfill.

The landfill permittee must also meet specific criteria for protecting surface waters in and around the landfill area. In addition to the regulatory requirement of developing an Operating Plan and Narrative to address stormwater, Regulations 22.517 and 22.518 require the solid waste landfill permittee to specifically design, construct, and maintain a surface water control system to collect and manage stormwater. Rainfall that falls on the landfill site and does not contact the waste materials is collected through a series of ditches and channels that direct runoff to a stormwater runoff pond. Some of the ditches and channels are changed periodically as the waste fill progresses and areas are capped and closed. The stormwater runoff pond receives and retains the stormwater to allow for sediments which have been transported by the water to settle out prior to discharge. Specific stormwater retention and discharge standards are governed under appropriate water permitting by ADEQ.

Rainfall that contacts the waste materials and contains soluble, suspended or miscible materials removed from the waste is leachate. Any surface leachate is directed through a series of earthen berms to the lined leachate collection pond. Leachate originating from the bottom of the disposed landfilled waste is collected with a series of pipes and gravel/sand layer installed during the initial construction of each landfill unit. This leachate is also designed to flow by gravity to the lined leachate collection pond. With the removal of the landfill leachate, the amount of leachate on the landfill liner system will be kept to a minimum, further reducing the potential impact to groundwater from the landfill unit. More information about the leachate collection system and protecting the area groundwater is presented in response to Comment #2.

2. Numerous references were made by several commenters claiming the landfill will leak and groundwater will become contaminated. Multiple commenters expressed that coal ash leachate includes contaminants such as arsenic, lead and mercury, and puts the surrounding groundwater at risk. It is requested to reject the landfill permit in order to safeguard the drinking water and public health of Arkansas residents.

RESPONSE:

It is agreed that commonly-held knowledge of coal ash leachate indicates that it contains various metals at non-hazardous concentrations. One of the purposes of APCEC Regulation 22, Solid Waste Management Rules, is to ensure that permittees will design, construct, and operate landfills to prevent contamination

of groundwater, surface waters, wetlands, or land areas outside of the landfill itself. A main component of preventing contamination is placing the ash on low permeability liners and later covering the ash with similar low permeability liners. In addition, during operation and the post-closure care period, water that does infiltrate into the landfill will be collected in the lined leachate collection pond and handled per a National Pollutant Discharge Elimination System (“NPDES”) permit through the ADEQ Water Division. These engineered containment and drainage systems are designed to work together to keep leachate from ponding within the landfill and they allow active management of the leachate. Also, during operation and afterwards in the post-closure care period, groundwater monitoring is performed around the landfill and leachate pond to verify that the groundwater is not being contaminated. The groundwater monitoring provides a check during the site-life and in the post-closure care period to make sure that the landfill is constructed and operated as it was designed and that the landfill continues to operate as permitted to prevent groundwater contamination.

Landfill bottom liner systems are constructed of earthen materials and sometimes include a synthetic membrane. Earthen materials are heterogeneous by nature, and are not one single type of material. Therefore, some variability is inherent in an earthen liner system. However, the approach to designing the liner systems considers the heterogeneity nature of the materials, and the construction methods and quality control procedures required during the construction ensure the liner system is built to perform as designed. In the Turk Class 3N liner design, the permit applicant has chosen to add an additional component to the bottom liner system to further enhance the performance of the bottom liner. The first and second draft permit both contained the required regulatory design components specifying the 1.5 feet of clay earthen materials exhibiting a permeability of less than 1×10^{-7} cm/sec. In the second draft permit, a synthetic geomembrane has been added in addition to the earthen material. Also, above the bottom liner barriers, a leachate collection system will be constructed to remove any leachate which flows through the waste materials. Design calculations indicate the leachate collection and removal systems are adequate to remove the leachate and maintain the requirement of less than one (1) foot of leachate on the landfill liner. At this facility, the leachate will be collected in a lined leachate collection pond, and transported to the power generation area.

Groundwater monitoring at the site will initially be performed in nine (9) wells for twenty (20) parameters. Eight (8) of the wells will be screened in the upper Arkadelphia Marl, while one (1) well will be screened in the upper Nacatoch Formation, which is approximately one hundred (100) feet deep at the site. Additional wells will be required as the landfill is filled. The parameters that will be monitored include: arsenic; barium; boron; cadmium; chromium; fluoride; iron; lead; manganese; mercury; molybdenum; selenium; silver;

strontium; chloride; sulfate; total dissolved solids (TDS); pH; specific conductance; and turbidity. Statistical increases in these parameters (except for field parameters) will require the facility to sample for a longer list of analytes. If any monitored parameters statistically exceed site Groundwater Protection Standards, then a further investigation and corrective action is required. For further information on the facility groundwater monitoring requirements see Regulation 22, Chapter 12 and Section 22.523, and the applicant's permit application section entitled *Groundwater Sampling and Analysis Plan* (Solid Waste Management Division, Document #59305). Site permitting and facility documents can be accessed at [ADEQ - Solid Waste - Database - Permitted Facilities](#)

- 3. A few commenters recommended that ADEQ wait to issue the final solid waste permit until the proposed Environmental Protection Agency (“EPA”) regulation regarding coal combustion residues (“CCR”) is finalized. Several commenters recommended that ADEQ should utilize the proposed EPA coal combustion waste rule, specifically Subtitle C criteria.**

RESPONSE:

While it may be more convenient to wait for the final EPA CCR regulation, the permit applicant has put forth their application at this time, and ADEQ is obligated to review and process each application for solid waste permit according to existing rules and regulations. Under Arkansas State statutes, any changes in the federal regulations would have to be adopted into regulations through the regulatory change process. However, the fact that Arkansas will not have a CCR regulation when the EPA CCR regulation goes into effect does not relieve any facility from complying with the new federal regulation. For Arkansas to issue a permit with any new requirements for CCR materials, the Arkansas regulations must be amended to include such criteria. Therefore, ADEQ must follow the current State regulations at this time.

The initial permit application included the Arkansas required design standards for Class 3N landfill. The permit applicant chose to modify the design to include a geosynthetic liner, a typical component of Subtitle C design, in order to enhance the environmental protection. Although the Subtitle C design criteria includes more protection landfill elements, as mentioned above, ADEQ must follow the current regulations at this time.

- 4. Comments were made that across the country coal combustion landfills have leaked, caused spills, or have otherwise contaminated drinking water, sickened families, destroyed entire fish populations, and have caused superfund sites.**

Commenters note that, according to the permit, the proposed Turk landfill is located within 2 miles of 500 homes and, as such, it is imperative that the landfill adhere to the highest standards necessary to protect human health and the environment. See response to Comment #2 for more information.

RESPONSE:

Arkansas' regulatory standards for Class 3N landfills are protective of human health and the environment. The current standards for Class 3N landfills in APCEC Regulation 22 outline significant protective criteria for design, operation, closure and post-closure care of the facility with the goal of safeguarding human health and the environment. Although not required by regulation, the permit applicant chose to enhance the liner system of the proposed landfill by adding a synthetic geomembrane. This is another added safeguard to protect Arkansas' groundwater.

5. Numerous statements were made that a satisfactory groundwater monitoring procedure should include quarterly sampling in order to account for seasonal differences. Alternatively, one commenter wrote semi-annual groundwater monitoring is appropriate and there is no benefit to increasing the frequency.

RESPONSE:

Detection groundwater monitoring is monitoring that occurs when there is no statistical increase in groundwater concentrations over background. The standard frequency of detection groundwater monitoring required by APCEC Regulation 22 and 40 C.F.R. § 258 is semi-annual. ADEQ may specify an alternative frequency for sampling based on the hydrogeology of the area, including factors such as groundwater flow rates, resource value of the aquifer, etc. Most landfills in Arkansas, in detection monitoring, sample on a semi-annual basis. The few exceptions are located in north and northwestern Arkansas and are on karst terrain, where the geology is composed of carbonate rock with high groundwater flow rates.

At the proposed Turk Class 3N Landfill site, the upper Arkadelphia Marl extends from the ground surface to more than 100 feet deep. Testing during the site hydrogeologic investigation revealed that the marl has a very low vertical hydraulic conductivity and a moderate to low horizontal hydraulic conductivity. Groundwater movement was calculated to be relatively slow. In addition, the groundwater in the marl already has naturally high chloride, sulfate, and total dissolved solids concentrations at the site. The underlying Nacatoch Formation is a high quality aquifer in the area, but it is separated from the landfill by over 100 feet of Arkadelphia Marl.

Any possible impacts seen in the monitoring wells installed in the Arkadelphia Marl or Nacatoch Formation would be expected to occur slowly over time. Therefore, ADEQ considers semi-annual monitoring during detection monitoring to be reasonable at this site. There are times when quarterly sampling is required per Regulation 22 for all sites; for example, during background sampling (prior to detection monitoring) and for at least the first year of assessment monitoring (if parameter concentrations start to increase over background). Quarterly or more frequent sampling will be performed during these time periods.

- 6. Several comments were made regarding the draft permit exemption of landfill daily cover. Commenters referenced a 2010 EPA report, “Inhalation of Fugitive Dust: A Screening Assessment of the Risks Posed by Coal Combustion Wastes Landfills,” to state that daily cover was necessary to protect the residents near CCR landfills and to prevent National Ambient Air Quality Standards (hereinafter “NAAQS”) violations. Commenters requested ADEQ to rescind the exemption because daily cover is necessary to prevent harm to human health and the environment. Alternatively, one commenter agreed with ADEQ granting the variance from the daily landfill cover requirement.**

RESPONSE:

The 2010 EPA report, “Inhalation of Fugitive Dust: A Screening Assessment of the Risks Posed by Coal Combustion Waste Landfills,” includes an evaluation of the potential human health risks associated with uncontrolled dust emissions from dry handling of coal combustion waste (hereafter CCW). The study included scenarios of several dust control management operations, including types of dust suppression techniques and the frequency of application. Some examples of dust control measures studied included cover soils applied over the CCW or spraying water on the CCW. The report indicated that annual and monthly application frequency of dust control measures did result in a potential for risk to human health, and the weekly application was a concern for landfills over 200 acres in size. The daily application of dust control measures passed the screening criteria for conservative input assumptions. Though no frequency is required, the Turk Class 3N Landfill permit allows water to be used to suppress the potential for dust emissions. The facility's air permit requires that no air emissions be allowed offsite. The air permitting process included a site specific analysis for air emissions sources under operating scenarios to verify compliance with the NAAQS.

APCEC Regulation 22.512 requires daily cover be applied unless the permit applicant or permittee demonstrates that less frequent or no cover will adequately meet the requirements of controlling fires, disease vectors, odors, blowing litter,

scavenging, and limit the generation of leachate. If the applicant or permittee adequately addresses these requirements, the Director may approve the alternate frequency. The waste materials to be placed into the Turk Class 3N landfill primarily consist of flyash and bottom ash from the generation of electric power. The waste materials exhibit cement-like physical properties when exposed to water, undergoing pozzolanic reactions and hardening. This waste material does not typically cause concern for disease vectors, odors, blowing litter or scavenging.

This waste material, whether it has undergone the pozzonlanic reaction or not, is prone to dust emissions when it is disturbed, particularly in the active areas of the landfill. The draft solid waste permit and the current air permit issued by the Department addresses the control of dust emissions from the landfill. Dust control measures around the landfill include the use of water to suppress the transport of airborne particulates. The current air permit stipulates that there be no visible offsite emissions from the landfill.

In addition to controlling dust during operations, the landfill areas at or near final elevations and grades are to be covered with twelve inches (12”) of intermediate soil cover. Regulation 22.512(b) also requires the permittee to apply intermediate cover soil on all areas that will not receive additional waste or final cover within thirty (30) days. This intermediate cover is to be maintained by the permittee and inspected by the Department. This intermediate cover layer will prevent dust generation from the waste materials. Any erosion or lack of intermediate cover in these areas will be recorded by the Department during the routine quarterly inspections, and the Department will require corrective action by the permittee.

- 7. Another issue raised by commenters focused on the required length of the post closure period. The proposed post closure plan is for two years following closure of the landfill. Commenters expressed that the post closure period should be at least 30 years because coal combustion waste is not a stable material and its condition changes overtime. Commenters noted that coal ash evolves slowly and releases its harmful contamination over the course of decades, especially if exposed to the water table or precipitation. Commenters stated that a 2-year monitoring period would capture none of these harmful coal combustion waste changes and potential groundwater contamination. Alternatively, one commenter wrote the two year post-closure period is appropriate and there is no benefit to extending this time period.**

RESPONSE:

APCEC Regulation 22.1302(c)(3) requires the permittee to provide post closure care for at least two (2) years. The length of the post closure care period may be increased by the Director if it is determined that the lengthened period is necessary to protect human health and the environment. Post closure care consists of maintaining the integrity and effectiveness of the final cover, including making repairs to the cover as necessary to correct the effects of settlement, subsidence, erosion, leachate seepage, or other events, and preventing runoff and runoff from eroding or otherwise damaging the final cover. Mowing and maintaining the vegetation are significant elements in post closure care. All cracked, eroded and uneven areas are filled and reseeded. Post closure care also includes operating and maintaining the leachate collection system and the groundwater monitoring system. Surface water control maintenance is required until such time as permanent erosion control measures have been established at the site.

The Post Closure Care Plan developed by the applicant indicates that post closure care period will be for two years. However, the plan does acknowledge the Director may increase or decrease the post closure care period. When the landfill site reaches a point when post closure care maintenance due to subsidence, surface erosion, leachate generation and collection, and other short-term initial maintenance issues is reduced to a minimum, the regulatory post closure care period may be complete. However, this does not relieve the landowner from custodial care of the landfill. Custodial care includes long-term routine maintenance items, such as vegetation mowing and site restrictions to prevent disturbance of the final cover. Even though custodial care may not be a regulatory requirement, it is a long term responsibility of the property owner. Under the federal Resource Conservation and Recovery Act (“RCRA”), 42 U.S.C. § 6901 *et seq.*, owners/operators are required to protect human health and the environment, and under the Arkansas Water and Air Pollution Control Act, Ark. Code Ann. § 8-4-101 *et seq.*, owners/operators are required to not cause pollution or potentially cause pollution. Pollution is defined as “contamination or other alteration of the physical, chemical or biological properties of any waters of the state...that renders the waters harmful, detrimental or injurious to public health, safety, or welfare...” Ark. Code Ann. § 8-4-102(6). Groundwater protection is included in the scope of this statute, as groundwater is considered a “water of the state.” Ark. Code Ann. § 8-4-102(10). Under both the federal and State environmental statutes, owners have a continual responsibility to protect the environment from damage. The fact that, under the Arkansas solid waste regulations, the post closure care period may be limited to two (2) years does not preclude the owner from continually caring for the waste that remains on his/her property. Any future releases or potential releases that may harm the environment may be addressed at that time by other federal and state statutes and regulations.

During landfill operation and the post-closure care period, groundwater monitoring is performed around the landfill and leachate pond to make sure that the groundwater is not being contaminated. Groundwater monitoring is a check to make sure that the landfill is constructed and operated as it was intended and in a manner that prevents groundwater contamination. The estimated life of the landfill is about 34 years; therefore, with a minimum of two (2) years of post-closure, the groundwater at the landfill would be monitored for 36 years after initial waste placement. During the active life of the landfill, the active area will be exposed to weather elements. After closure, the waste materials will be covered and capped with soils and a geomembrane, which will significantly reduce infiltration of water into the waste mass. During the years of groundwater monitoring, should there be an indication of a long-term groundwater concern, the Director has the authority to extend the post closure care period. The Department also has the authority to require corrective action should it become necessary.

As mentioned in Comment #3, EPA is currently considering a federal regulation regarding coal combustion residues (“CCR”). Under both of the scenarios that EPA is currently considering, the standard post-closure care period would be 30 years. Changes to the Turk Class 3N Landfill post closure period would be made based on a final federal regulation, and related state regulations, as applicable.

8. A few comments were made regarding the proximity of the landfill to the wetland area. Commenters expressed concern that the millions of tons of coal ash so close to the wetlands expose them to an unacceptable high risk of seepage from the landfill and overflow from storms.

RESPONSE:

APCEC Regulations 22.504 and 22.404 require that Class 3N landfills shall not be located in wetlands unless the owner or operator can make the demonstration there is no practical alternative location, the landfill will not cause or contribute to violations of applicable State water quality standards or other water standards, the landfill will not contribute to degradation of the wetlands, and the landfill construction acreage will be mitigated under Section 404 of the federal Clean Water Act. The permit applicant has chosen to not locate the landfill footprint in a wetland area. In fact, the shape of the landfill footprint was altered in the early design stages to avoid building in a wetland area.

The location proposed for the landfill is near the identified wetland area to the southeast. Arkansas regulations do not specifically require a setback distance from wetland areas for landfills. Through compliance with landfill construction and operational regulations, ADEQ believes the characteristics of the wetland

area, located to the southeast of the landfill footprint, will not be impacted. The surface water drainage from the landfill is collected in the stormwater runoff pond located adjacently east of the landfill and is regulated by the ADEQ Water Division. Any permitted discharges from the stormwater pond would go into an intermediate drainage feature which connects to Bridge Creek north and east of the landfill area. Therefore, stormwater is not permitted to flow into the identified wetland to the southeast of the landfill.

As discussed in the Response to Comment #2, one of the purposes of APCEC Regulation 22, Solid Waste Management Rules, is to design, construct, and operate landfills to prevent contamination of groundwater, surface waters, wetlands, or land areas outside of the landfill itself. A main component of preventing contamination is placing the ash on low permeability liners and later covering the ash with similar low permeability liners. In addition, during operation and the post closure care period, water that does infiltrate into the landfill will be collected in the leachate collection pond and will be managed pursuant to a NPDES permit through the ADEQ Water Division. During the landfill active operation and post closure care periods, groundwater monitoring is performed around the landfill and leachate collection pond to make sure that the groundwater is not being contaminated. Groundwater monitoring provides a verification to make sure that the landfill is constructed and operated as it was intended and in a manner that prevents groundwater contamination. After the end of post closure care, it will be to the responsibility of the landowner to take care of the property.

9. Some commenters expressed concerns about the landfill being near the 100-year floodplain and the integrity of the stormwater control berms around the “ash heaps.”

RESPONSE:

If the location of a proposed solid waste landfill is in a flood hazard area, APCEC Regulation 22.503(a) requires the permit applicant to design and operate the landfill in a manner that does not restrict the flow of a flood, reduce the temporary storage capacity of the floodplain, or results in washout of solid waste. The proposed Turk Class 3N Landfill is located about 1 mile north of the 100-year floodplain of the Little River and several hundred feet south of the floodplain associated with Bridge Creek. The solid waste landfill is not located in a defined flood hazard area according to the Federal Emergency Management Agency (hereinafter "FEMA") Flood Insurance Rate Maps.

The ash at this proposed landfill is planned to be disposed of as a solid. Transportation of the waste material to the landfill will be by truck. Slurry

transportation via a pipeline was not requested and is not permitted, and the landfill has not been designed for a wet-type disposal operation. Concerns about berm integrity for the dry disposal operation would be related to the temporary stormwater control measures put in place during the landfill operations. The landfill stormwater control measures are specified in the permit applicant's Operating Plan and Narrative and include safeguards to protect the area drainage ways. Water that contacts waste material will be treated as leachate and will be collected, stored, and sent to the power block area for use in the electric power generation process. Stormwater runoff that does not contact waste materials is collected in the Stormwater Runoff Pond and is managed pursuant a water permit issued by ADEQ Water Division.

10. Concerns about long term performance of the geocomposite liner system were expressed. Specifically, there was a concern that the geomembrane may degrade over time and allow landfill leachate into the groundwater.

RESPONSE:

The geocomposite liner construction is a voluntary addition to the liner system requested by the permit applicant. The addition of a geomembrane exceeds the prescribed liner system outlined in Arkansas' regulations for Class 3N landfills. The added geomembrane provides another level of environmental protection that is used, and has been used for several years, routinely at the Class 1 landfills around the state.

Numerous technical studies related to the integrity of aged geomembrane liners have been conducted. These studies investigated, in part, the effects of service time and long term chemical compatibility aspects of geomembranes. Studies have been conducted by industry manufacturers, as well as independent educational and research institutions. In general, the findings have been positive for the geomembrane liners, with minimal impacts to geomembrane integrity due to aging. Some actual evaluations of decades old, in-place constructed geomembrane liner systems have also been conducted, with similar conclusions. One area of adverse impacts to geomembrane liner performance, common to the case studies, center around construction quality assurance. The industry and independent quality control standard organizations have a stringent quality assurance and documentation process to help prevent poor performance of geomembranes due to poor construction installation. These stringent applications of quality control measures are required by APCEC Regulation 22, including an independent engineering firm's certification of proper liner construction.

- 11. One commenter expressed concern that the coal ash is radioactive, contains lead, mercury, chromium, aluminum, and other metals in large quantities, and there is a problem with wind picking up the ash and blowing it.**

RESPONSE:

It is acknowledged that coal contains some elements which, when concentrated or used in a particular way, would be of concern to human health and the environment. Though radioactivity is not required to be monitored by the permit, it may be monitored in the groundwater if the facility enters assessment monitoring. The landfill at the Flint Creek power plant analyzes for gross alpha and gross beta radiation in groundwater. The Arkansas regulations do require monitoring and management for all the heavy metals listed in the comment, except aluminum, and for other heavy metals associated with coal ash (e.g., arsenic, barium, boron, cadmium, fluoride, iron, manganese, molybdenum, selenium, silver, and strontium).

- 12. A few commenters expressed that the plant should have long-term protections. The major spillage from a reservoir in Eastern Tennessee a couple of years ago was totally unexpected and that reservoir was two or three decades old. ADEQ should put a lot of precautions into the requirements.**

RESPONSE:

The failure which occurred in Tennessee was at a wet disposal surface impoundment. The Turk Class 3N Landfill is a dry disposal landfill. The conceptual designs are very different, making it impossible to compare design aspects or protective features which may be included at one or the other. APCEC Regulation 22 requires a landfill design which demonstrates stability and soundness in design through modern engineering design practice and analyses and which are inclusive of best available management practices. The site of the Turk Class 3N Landfill has undergone a rigorous subsurface hydrogeologic and geotechnical analysis in order to properly site and design landfill features in consideration of subgrade settlement and stability effects on components such as liners, leachate collection systems and final cover systems. Analysis is also performed for waste settlement affects and slope stability. Design considerations for maximum anticipated precipitation events have been included in water control and handling systems analysis for stormwater and leachate systems. Each of the various computations for design has been developed using generally accepted engineering methods and has resulted in verification that the design is within the confines of commonly accepted factors of safety. As a final check on the protectiveness of the design and functionality of the systems, it is discussed in Comment #2 that a system of groundwater

monitoring is required immediately surrounding the landfill unit. Surface water monitoring is also required by applicable NPDES stormwater and discharge permits.

- 13. One commenter stated bird species of federal and state concern will be adversely impacted by the Turk Plant due to air and water pollution. The Little River serves as home to the Interior Least Tern, a federally endangered species. Many birds including the Interior Least Tern forge on the Red River, and there is concern that the proposed landfill will have an adverse impact on the region's water bodies. The draft permit application indicates possible surface drainage into Bois d'Arc Creek and the Red River through Bridge Creek, and the Red River and Little River bottoms are a major nursery for birds and other wildlife**

RESPONSE:

The application requirements for the Turk Class 3N Landfill include correspondence from the Department of Arkansas Heritage and the U.S. Fish and Wildlife Service which address the possible impacts to endangered or threatened species. The U.S. Army Corp of Engineers approved wetland delineation studies that indicate the landfill will not be located in a jurisdictional wetland environment. Regulatory requirements for site location have been met.

- 14. One commenter suggested shipping the waste out of state to somewhere else like back to the coal fields or to Texas or Louisiana.**

RESPONSE:

Without consideration of feasibility, risk, or cost-effectiveness elements, it may be a theoretical option to transport waste to another legal disposal location; however, this is not the choice the applicant has made for this waste. The applicant has chosen to obtain a Class 3N landfill permit as allowed by Regulation 22 and other applicable regulations and statutes.

- 15. Local officials expressed support and confidence that the agency and the applicant are concerned about the future welfare of the community and expressed positive support for the liner modification.**

RESPONSE:

Comments are acknowledged and filed into the record.

- 16. One commenter suggested groundwater monitoring without notice so to alleviate concern that SWEPCO will arrange fake test areas and secure positive test results.**

RESPONSE:

It is common practice across various permitting media including air and water, as well as solid waste groundwater sampling, that facility representatives collect their own samples. ADEQ does not have staff or funding available for the vast array of environmental testing requirements for the many permits issued. ADEQ does review collection procedures and analysis plans, lab reports, and has a lab certification program. Occasionally ADEQ will attend sampling events to “split” samples with the permittee, especially for solid waste permit high priority cases, like nature and extent investigations. It is noted that intentional falsification or manipulation of samples is considered a criminal offense, as described in Ark. Code Ann. §8-6-204(a)(2)(A)(iii), and subjects all involved to prosecution, fines and imprisonment.

- 17. One commenter stated, "And what about all the toxic ash we live with from the White Bluff plant?"**

RESPONSE:

The Entergy - White Bluff Plant disposes ash at its own permitted on-site Class 3N landfill. Comments regarding the White Bluff landfill are outside the scope of this permitting action.

- 18. Many commenters reference "In Harm's Way", a report released by the Environmental Integrity Project, Earth Justice and the Sierra Club in 2010, to illustrate that Arkansas has a history of leachate seeping into the groundwater, citing landfills at the Flint Creek Power Plant and Independence Power Plant sites.**

RESPONSE:

Leachate from coal ash can have concentrations of concern for metals and other constituents. That is one reason that current Arkansas regulations have a more stringent approach to ash management than was required in the past.

Groundwater impacts are currently being seen in wells monitoring the uppermost aquifer at the SWEPCO Flint Creek Power Plant landfill near Gentry, Arkansas. Selenium and sulfate are the main parameters of concern at the impacted wells. Selenium initially statistically exceeded the groundwater protection standard in 2009. The landfill at Flint Creek began in 1978 and used insitu clay as a liner from 1978 to 1994; and six inch compacted clay liner beginning in 1994. The landfill also had no leachate collection until 2010 when the facility installed a partial, retrofitted collection system. In comparison, the proposed Turk Class 3N Landfill power plant landfill design includes a compacted clay layer of 18 inches, overlain by a synthetic geomembrane liner and leachate collection system. At Flint Creek, the facility has been required to install eight additional wells to help define the nature and extent of the contamination, and more will be installed. They have also installed a retrofitted leachate collection system to capture leachate and have submitted a permit modification to cover the old waste with plastic liners and collect leachate on the new waste. The facility will have to implement other corrective actions as necessary until the groundwater concentrations are below the groundwater protection standards.

At the Entergy Independence Plant, near Newark Arkansas there have been some groundwater impacts of secondary parameters. Sulfate is the main constituent of concern, but groundwater concentrations are much lower than at Flint Creek. The impact is near the landfill, however Entergy states that the impact is coming from other site sources (e.g., underground cooling water pipes, recycle ponds, surge pond, coal yard, and offsite agricultural impacts). As with Flint Creek, the landfill liner under most of the landfill is insitu clay with no leachate collection. Landfill operation began in 1983. In 2002, the facility was permitted to use 18 inches of compacted clay instead of insitu clay only. Entergy Independence is currently proposing to collect leachate in a proposed permit modification that is under review by ADEQ. Entergy has also been taking actions to reduce groundwater concentrations. They have been periodically locating and repairing leaks that occur at pipe joints and in cooling tower basins. In 2007 and 2008, 102 joints were repaired in the underground piping. Entergy reports that they also performed repairs to the recycle pond liners.

In summary, though there have been groundwater impacts seen at other coal ash landfills in the state, the Turk Class 3N Landfill is designed in compliance with modern regulations and more protective specifications that older landfills did not originally include.

- 19. An inquiry was made about stockpiling the fuel coal, uncovered on the ground in the coal storage area, while requiring the coal ash to be covered.**

RESPONSE:

The stockpile requirements for coal fuel are not related to the solid waste permit, but are considerations in the applications for air and water permits. The comment is acknowledged and filed into the record.

20. **Commenters expressed that the facility should employ people who are well educated because it is human beings that are managing these facilities and we depend on the quality of the human being and their ability to make educated and thoughtful responses in emergencies.**

RESPONSE:

Educational requirements related to the overall power plant operation are not part of the solid waste permit. APCEC Regulation 27 does require landfill staff be licensed to operate this Class 3N landfill. Comment is acknowledged and filed into the record.

21. **One commenter stated building of the Turk plant will increase the CO2. This building of the plant is wrong for Arkansas for two additional reasons; 1) coal ash is toxic, and 2) smoke and soot causes asthma and other very harmful health effects.**

RESPONSE:

Comment is acknowledged and filed into record

22. **One commenter seeked to deny the permit based on current electric energy needs and most of the energy would be sold out-of-state.**

RESPONSE:

Comment is acknowledged and filed into record.

23. **One commenter expressed concern with the discrepancy in the SWEPCO estimated annual payroll figures presented at the Public Service Commission hearings. The commenter said annual payroll was unknown because of the many estimates which were being presented at the time.**

RESPONSE:

Comment is acknowledged and filed into record.

24. **One commenter stated that groundwater is being seriously threatened by the fracking taking place by the gas industry and says that the technology is too secretive and the potential danger is too high.**

RESPONSE:

Comment is acknowledged and filed into record.

25. **One commenter states the Department "...got the phone call for this \$5 billion project, that it would happen come hell or high water".**

RESPONSE:

Comment is acknowledged and filed into record.