

Blue, Karen

From: Bennett, Richard
Sent: Monday, November 9, 2020 3:19 PM
To: Blue, Karen
Subject: FW: PPES 2019 AEIR NOD Response (0303-S3N-R1, 47-00461)
Attachments: 2020-11-09 FTN LTR to DEQ Plum Point 2019 AEIR NOD Response Letter.pdf

From: Jason Ghidotti [<mailto:jig@ftn-assoc.com>]
Sent: Monday, November 9, 2020 3:08 PM
To: Bennett, Richard; Cusher, Annette
Cc: Ian Rogers; Gray, Richard
Subject: PPES 2019 AEIR NOD Response (0303-S3N-R1, 47-00461)

Richard,

Attached is a response to your letter dated September 28, 2020 (DIN 78971). Please let us know if you have any additional questions.

Thanks,
Jason

Jason J Ghidotti, PE*
FTN Associates, Ltd.
3 Innwood Circle, Suite 220
Little Rock, Arkansas 72211
(501)225-7779
*Arkansas

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AFIN: 47-00461	
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water resources / environmental consultants

3 Innwood Circle, Suite 220 • Little Rock, AR 72211 • (501) 225-7779 • Fax (501) 225-6738

November 9, 2020
Bennett@adeq.state.ar.us

Mr. Richard Bennett, PE
Arkansas Department of Energy and Environment, Division of Environmental Quality
5301 Northshore Drive
North Little Rock, AR 72118-5317

RE: Response to DEQ Notice of Deficiency of 2019 Annual Engineering Inspection Report
Plum Point Energy Station Class 3N Landfill
Permit No: 0303-S3N-R1 AFIN:47-00461
FTN No. R14590-2291-001

Dear Mr. Bennett:

On behalf of the Plum Point Energy Station Class 3N Landfill (the Landfill), FTN Associates, Ltd. (FTN), is submitting this response to the letter sent to Mr. Greg Cook from the Arkansas Department of Energy and Environment, Division of Environmental Quality (DEQ) on September 28, 2020 (DEQ document identification number [DIN] 78971).

DEQ Comment No. 1:

The cost estimates provided have no justification for the numbers provided. Please revise the estimate to include this information

Response to Comment No. 1:

The unit cost estimates associated with construction were based on median bid prices from other landfill projects in the region. However, due to the trust fund financial assurance mechanism that the Landfill operates under, the closure costs are considered for the entire landfill (171.5 acres). The theoretical 171.5-acre closure project is much larger than typical landfill closure projects FTN used to develop the unit cost estimates. Therefore, some of the estimated unit costs (e.g. Clay Cover) were lowered to account for this difference in project scale.

The unit cost estimates associated with professional services (QA/QC, Engineering, Surveying, and Certification), are based on typical fees charged by FTN for similar projects. Detailed justifications for all closure cost line items are located in the revised 2019 closure and post-closure cost estimate (attached).

DEQ Comment No. 2(a):

The soil balance has a transpositional typo. 423,000 cubic yards should be 432,400 cubic yards. Please revise the soil balance accordingly.

Mr. Richard Bennett, PE
November 9, 2020
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Response to Comment No. 2(a):

FTN has corrected the transpositional typo in the soil balance. The revised soil balance document is attached to this letter.

DEQ Comment No. 2(b):

In addition, please provide documentation to demonstrate the soil onsite is appropriate for final cover.

Response to Comment No. 2(b):

The facility's permitted final cover design is comprised of a 24-inch compacted clay cover, 12-inch protective cover layer, and a 6-inch vegetative/top soil layer. In order to satisfy the permeability requirements of Section 22.1301.a.1, the 24-inch compacted clay cover will have a maximum permeability of 1×10^{-7} cm/s. It is unlikely onsite soils of any sufficient quantity are available for use in the 24-inch compacted clay cover. For the purposes of estimating closure costs, it was assumed that all compacted clay materials would be sourced from offsite.

There are no geotechnical requirements for the erosion or protective cover layer portion of the final cover system. The only criterion for the erosion layer (Section 22.1301.a.2) states that "the erosion layer must consist of a minimum 6 inches of earthen material that is capable of sustaining native plant growth." Evidence of the plant-sustaining properties of the soils found onsite is provided by the establishment of cover plants in areas of the Landfill under intermediate cover e.g. the north, west and south slopes of Cell 1. This intermediate cover is composed of soils borrowed from onsite. A quarterly inspection conducted by DEQ on August 5, 2020 did not note any violations and the attached image from inspection shows well-established plant growth on an area under intermediate cover. Additionally, please refer to Appendix H of the original Permit Application for more information on the soils encountered on the site.

Please do not hesitate to call me at (501) 225-7779 or Ian Rogers, EI, at (479) 571-3334 if you have any questions relating to this or additional services offered by FTN.

Sincerely,
FTN ASSOCIATES, LTD.



Jason J. Ghidotti, PE
Project Manager

JJG/dlc

CC: Mr. Richard Gray, PPES

Attachments

R:\WP_FILES\14590-2291-001\CORRESPONDENCE\2020-11-09 FTN LTR TO DEQ NOD RESPONSE LETTER\2020-11-09 FTN LTR TO DEQ PLUM POINT 2019 AEIR NOD RESPONSE LETTER.DOCX *IR*



ATTACHMENT 1

Revised 2019 PPES Closure and Post Closure Cost Estimates

**ANNUAL ADJUSTED CLOSURE AND POST-CLOSURE CARE COSTS
Plum Point Energy Station Class 3N Landfill**

Reporting Year	ADEQ Annual Inflation Rate, %	Estimated Closure Costs	Adjusted Estimated Closure Costs	Estimated Post Closure Costs	Adjusted Estimated Post Closure Costs	Estimated Total Financial Assurance
2011	2.63	\$5,151,275	\$5,286,800	\$80,000	\$82,110	\$5,368,910
2012	1.77	\$5,151,275	\$5,380,400	\$80,000	\$83,570	\$5,463,970
2013	1.02	\$5,151,275	\$5,435,300	\$80,000	\$84,430	\$5,519,730
2014	1.46	\$5,151,275	\$5,514,700	\$80,000	\$85,670	\$5,600,370
2015	1.002	\$5,151,275	\$5,525,800	\$80,000	\$85,850	\$5,611,650
2016	1.013	\$5,151,275	\$5,597,700	\$87,600	\$95,230	\$5,692,930
2017	1.018	\$5,151,275	\$5,698,500	\$87,600	\$96,950	\$5,795,450
2018	1.022	\$5,151,275	\$5,823,900	\$87,600	\$99,090	\$5,922,990
2019	N/A	\$11,608,650		\$130,800		\$11,739,450

Notes:

Closure Costs and Post-Closure Costs recalculated in 2020 for reporting year 2019.

CLOSURE COST ESTIMATE
Plum Point Energy Station Class 3N Landfill

Closure Costs Based On: Entire Landfill (171.5 acres) ¹

ITEM	QUANTITY	UNIT	UNIT PRICE	AMOUNT	UNIT PRICE JUSTIFICATION
Surface Preparation	171.5	AC	\$2,500	\$428,750	Legacy LF Cells 3-4 Closure Project (2020)
Clay Cover	553,400	CY	\$10.00	\$5,534,000	City of Little Rock Cell 5 West Construction Project (2019-2020)
Protective Cover Layer	276,700	CY	\$6.00	\$1,660,200	Legacy LF Cells 3-4 Closure Project (2020)
Vegetation/Soil Top Layer	138,350	CY	\$6.00	\$830,100	Legacy LF Cells 3-4 Closure Project (2020)
Erosion Layer ²	N/A	N/A	N/A	\$0	
Seeding/Fertilizing/Mulching	171.5	AC	\$3,000	\$514,500	Legacy LF Cells 3-4 Closure Project (2020)
Erosion Control	171.5	AC	\$1,400	\$240,100	Legacy LF Cells 3-4 Closure Project (2020)
Quality Assurance/Quality Control	1	LS	\$500,000	\$500,000	FTN typical fees (\$3,000 per acre * 171.5 acres)
Engineering	1	LS	\$170,000	\$170,000	FTN typical fees (\$1,000 per acre * 171.5 acres)
Surveying	1	LS	\$50,000	\$50,000	FTN typical fees (\$300 per acre * 171.5 acres)
Certification	1	LS	\$25,000	\$25,000	FTN typical fees (\$150 per acre * 171.5 acres)
Let-Down Structures	1	LS	\$390,000	\$390,000	Legacy LF Cells 3-4 Closure Project (3520 LF * \$110/LF) ³
Side Slope Berms	1	LS	\$210,000	\$210,000	Legacy LF Cells 3-4 Closure Project (20,900 LF * \$10/LF) ³
Administrative and Contingency (10%)	1	LS	\$1,056,000	\$1,056,000	
TOTAL				\$11,608,650	

Notes:

All costs are in 2020 Dollars

Costs are for a third-party firm to close the largest open area of the landfill. This includes construction and consulting fees.

1 - Estimate based upon cost of closure of entire landfill area to meet requirements of using a Trust Fund as the Financial Assurance vehicle.

2 - The Erosion Layer costs are included with the Vegetation/Soil Top Layer.

3 - Quantities estimated from current permit drawings

POST-CLOSURE CARE COSTS
Plum Point Energy Station Class 3N Landfill

TABLE A				
ANNUAL MAINTENANCE/REPAIRS (SUBSIDENCE, SETTLING, EROSION, ROADS, ETC.)				
ITEM	QUANTITY	UNIT	UNIT PRICE	AMOUNT
Labor (3 people x 8 hr/day x 5 days/yr)	120	Hours	\$25.00	\$3,000
Equipment- Dozer	20	Hours	\$120	\$2,400
Dump Truck	20	Hours	\$70	\$1,400
Loader	20	Hours	\$75	\$1,500
Mowing of Cover	1	LS	\$2,500	\$2,500
Misc. Materials and Services ¹	1	LS	\$5,000	\$5,000
TOTAL ESTIMATED ANNUAL MISC. REPAIRS				\$15,800

TABLE B				
ANNUAL MAINTENANCE/OPERATION OF LEACHATE COLLECTION SYSTEM				
ITEM	QUANTITY	UNIT	UNIT PRICE	AMOUNT
Annual Maintenance and Repair of System	1	LS	\$4,000.00	\$4,000
Leachate Disposal (Gallons) ²				
Transportation Costs	10,000	GAL	\$0.25	\$2,500
Treatment/Disposal Costs	10,000	GAL	\$0.25	\$2,500
TOTAL ESTIMATED ANNUAL LEACHATE SYSTEM O&M				\$9,000

Notes:

Costs are in 2020 dollars.

1 - Includes NPDES Sampling and Reporting.

2 - Leachate is used in power facility operations. Estimate assumes offsite disposal if facility is shut down.

POST-CLOSURE CARE COSTS, CONTINUED
Plum Point Energy Station Class 3N Landfill

TABLE C				
ANNUAL MAINTENANCE/OPERATION OF GROUNDWATER MONITORING SYSTEM				
ITEM	# of Wells	UNIT	Cost/Well	AMOUNT
Annual Sampling Costs (2/year)	12	Wells	\$1,300	\$15,600
Annual Laboratory Analysis (2/year)	12	Wells	\$960	\$11,500
Statistical Analysis and Reporting (2/year)	12	Wells	\$1,130	\$13,500
TOTAL ESTIMATED ANNUAL GW MONITORING SYSTEM COSTS				\$40,600

TABLE D				
ANNUAL MAINTENANCE/OPERATION OF GAS MONITORING SYSTEM ³				
ITEM	# of Locations	UNIT	Cost/Probe	AMOUNT
Capital Cost of System = N/A				
Annual Maintenance and Repair	N/A	N/A	N/A	\$0
Sampling/Analysis Costs	N/A	N/A	N/A	\$0
TOTAL ESTIMATED ANNUAL GAS MONITORING SYSTEM COSTS				\$0

TOTAL ESTIMATED ANNUAL POST-CLOSURE CARE COSTS:	\$65,400
TOTAL ESTIMATED POST-CLOSURE CARE COSTS (2-YEAR PERIOD ⁴):	\$130,800

Notes:

Costs are in 2020 Dollars

3 - Facility design does not include Gas Monitoring System.

4 - Post-Closure Care period is 2 years according to regulations.

ATTACHMENT 2

Revised Soil Balance



**Plum Point Energy Station (PPES)
Class 3N Landfill
Permit No 0303-S3N-R1**

Landfill Soil Balance Calculation

As of August 2020, two permitted landfill cells have been constructed at the PPES Class 3N landfill. Neither cell has received final cover. The soil balance calculation accounts for the future construction of the remaining ten permitted cells, stormwater ponds, perimeter levees, and the final cover system. The facility's currently permitted bottom liner consists of 24-inches of compacted clay and 12-inches of protective cover on top of prepared subgrade. The facility's permitted final cover design is comprised of a 24-inch compacted clay cover, 12-inch protective cover layer, and a 6-inch vegetative/topsoil cover layer.

Bottom Liner System Construction Requirements

Based on prior investigations at the site, local clays are highly variable in their engineering properties and may be unsuitable for liner construction. Therefore, the clay used in the 24-inch compacted clay liner will likely come from offsite. The area of future Cells 2 and 4-12 is approximately 140 acres. The construction of the bottom liner in these cells would require 451,700 and 17,200 cubic yards of compacted clay liner and protective cover, respectively. As with the final cover, the material used in the 24-inch compacted clay liner will likely come from offsite. For this calculation, it is assumed that the compacted clay liner will likely come from offsite and is not included in the soil balance. Table 1 below summarizes the soil requirements described above.

Final Cover System Construction Requirements

The same calculations are performed to approximate the soil requirements to construct the closure system for the cells. As described above, the material used in the 24-inch compacted clay cap will likely come from offsite. The amount of soil required for the protective cover layer and vegetative/topsoil cover layer is approximated by multiplying the thickness of each layer by the total permitted area of the landfill (171.5 acres). This yields 276,700 and 138,500 cubic yards for the protective cover and vegetative/topsoil layers, respectively (Table 1).

Table 1: Soil Requirements for Construction of PPES Class 3N Landfill

Structure	Soil Type Required	Soil Quantity (Cubic Yards)
Bottom Liner System (Cells 2,4-12)		
Compacted Clay (24-in., 1×10^{-7} cm/s)	Clay	451,700
Protective Cover	General Soil	17,200
Final Cover System (Cells 1-12)		
Compacted Clay Layer (24-in., 1×10^{-7} cm/s)	Clay	553,400
Protective Cover Layer (12-in.)	General Soil	276,700
Vegetative Cover Layer (6-in.)	General Soil	138,500
Total Soil Required (Excluding compacted clay)		432,400

Soil Balance Calculations

The cut and fill quantities of material to construct the remaining ten permitted cells, the east stormwater pond, and perimeter berms was calculated using AutoCAD Civil 3D software. A three-dimensional surface of the permitted design subgrade was developed and compared to the most recent available survey data of the existing surface. As some of the design subgrade is above grade (berms, etc.) and some is below grade (cell bottoms and ponds), the comparison results in both cut and fill. Ultimately, this results in a net cut (excess) of 379,800 cubic yards of available onsite material. Table 2, below, provides a summary of the estimated soil quantities for construction of the remaining cells and associated improvements.

Table 2: Estimated Onsite Soil Quantities for Future Landfill Cells

	Soil Quantity (Cubic Yards)
Cut	975,300
Fill	595,500
Net	379,800 (Cut)

This net material may be used for landfill operations and final cover construction. Subtracting the 379,800 cubic yards of material from the 432,400 cubic yards of total soil required for the operations and construction of the final cover systems (Table 1) results in a deficit of 52,600



cubic yards of soil. This quantity of soil material will need to be sourced from offsite. Table 3 lists the estimated amount of clay and general soil materials that will potentially need to come from offsite.

Table 3: Estimated Offsite Soil Requirements

	Soil Quantity (Cubic Yards)
24" Compacted Clay Bottom Liner	451,700
24" Compacted Clay Cover	553,400
Operations and Final Cover General Soils	52,600
Total Offsite Materials	1,057,700