Memorandum

Date: February 11, 2019

To: David Miller (AEP)

Copies to: Terence Wehling (AEP)

From: Allison Kreinberg and Bruce Sass, Ph.D. (Geosyntec)

Subject: Evaluation of Detection Monitoring Data at
                    Turk Plant's Landfill (LF)

In accordance with the United States Environmental Protection Agency's (USEPA's) regulations regarding the disposal of coal combustion residuals (CCR) in landfills and surface impoundments (40 CFR 257 Subpart D, "CCR rule"), a detection monitoring event was completed on September 5, 2018, December 20, 2018, and January 22, 2019 at the Landfill (LF), an existing CCR unit at the Turk Power Plant located in Fulton, Arkansas.

Ten background monitoring events were conducted at the Turk LF prior to these detection monitoring events, and upper prediction limits (UPLs) were calculated for each Appendix III parameter to represent background values. Lower prediction limits (LPLs) were also calculated for pH. Details on the calculation of these background values are described in Geosyntec's *Statistical Analysis Summary* report, dated January 15, 2018.

To achieve an acceptably high statistical power while maintaining a site-wide false-positive rate (SWFPR) of 10% per year or less, prediction limits were calculated based on a one-of-two retesting procedure. With this procedure, a statistically significant increase (SSI) is only concluded if both samples in a series of two exceeds the UPL.

Detection monitoring results and the relevant background values are summarized in Table 1. No SSIs were observed at the Turk LF CCR unit, and as a result the Turk LF will remain in detection monitoring. The statistical analysis was conducted within 90 days of completion of sampling and analysis in accordance with 40 CFR 257.93(h)(2). A certification of these statistics by a qualified professional engineer is provided in Attachment A.

engineers | scientists | innovators

Table 1: Detection Monitoring Data Evaluation
Turk Plant - Landfill

Geosyntec Consultants, Inc.

Parameter	Unit	Description	MW-2	MW-3		MW-4		MW-5	MW-10
			9/5/2018	9/5/2018	1/22/2019	9/5/2018	12/20/2018	9/5/2018	9/5/2018
Boron	mg/L	Intrawell Background Value (UPL)	1.40	1.30		0.608		0.426	0.407
	mg/L	Detection Monitoring Result	0.098	0.073	-	0.255	-	0.086	0.074
Calcium	mg/L	Intrawell Background Value (UPL)	433	440		863		481	692
	mg/L	Detection Monitoring Result	111	160	-	516	-	380	410
Chloride	mg/L	Intrawell Background Value (UPL)	39.1	41.2		1200		674	1235
	mg/L	Detection Monitoring Result	13	**58**	7.3	**1241**	110	134	405
Fluoride	mg/L	Intrawell Background Value (UPL)	1.11	1.34		1		1	1.25
	mg/L	Detection Monitoring Result	<0.083	<0.083	-	<0.083	-	<0.083	<0.083
pH	SU	Intrawell Background Value (UPL)	8.03	7.82		7.53		7.91	7.60
	SU	Intrawell Background Vlaue (LPL)	6.24	6.33		6.33		6.02	5.67
	SU	Detection Monitoring Result	7.38	7.31	-	6.79	-	6.40	7.47
Sulfate	mg/L	Intrawell Background Value (UPL)	467	618		983		1257	1800
	mg/L	Detection Monitoring Result	66	554	-	748	-	273	484
Total Dissolved Solids	mg/L	Intrawell Background Value (UPL)	3800	1313		4750		3372	5245
	mg/L	Detection Monitoring Result	348	1234	-	**5442**	2792	1502	1872

Notes:

UPL: Upper prediction limit

LPL: Lower prediction limit

-: Not Sampled

Bold values exceed the background value.

Background values are shaded gray.

Based on a 1-of-2 resampling, a statistically significant increase (SSI) is only
identified when both samples in the detection monitoring period are above the

ATTACHMENT A

Certification by Qualified Professional Engineer

CERTIFICATION BY QUALIFIED PROFESSIONAL ENGINEER

I certify that the selected statistical method, described above and in the January 15, 2018 *Statistical Analysis Summary* report, is appropriate for evaluating the groundwater monitoring data for the Turk LF CCR management area and that the requirements of 40 CFR 257.93(f) have been met.

DAVID ANTHONY MILLER
_____
Printed Name of Licensed Professional Engineer

David Anthony Miller
_____
Signature
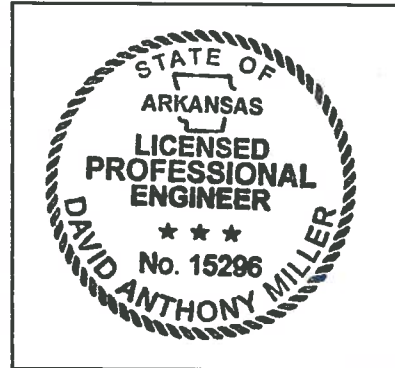
15296
_____
License Number

ARKANSAS
_____
Licensing State

02.18.19
_____
Date