

**Date:** February 12, 2019  
**To:** Tennessee Valley Authority  
**From:** A. Elizabeth Perry, PG, AECOM  
**Subject:** Evaluation of Statistically Significant Levels (SSLs)  
CCR Rule Groundwater Monitoring  
Gallatin Fossil Plant, Ash Pond Complex

In accordance with federal regulations for management of coal combustion residuals (the CCR Rule; 40 CFR 257), the Tennessee Valley Authority (TVA) is monitoring groundwater at the Ash Pond Complex at its Gallatin Fossil Plant (GAF) in Gallatin, Tennessee. The Ash Pond Complex consists of four surface impoundments subject to the CCR Rule: Ash Pond A, Ash Pond E, Middle Pond A, and the Bottom Ash Pond. All four impoundments are monitored together under a multi-unit monitoring system. Monitoring at the Ash Pond Complex is in the Assessment phase, as noted by TVA in their notice dated April 12, 2018.

Pursuant to 40 CFR 257.95(g), this memorandum serves as notification to identify the constituents in Appendix IV that have statistically significant levels (SSLs) above groundwater protection standards. As required by the CCR Rule, the owner of operator of a CCR unit shall establish groundwater protection standards (GWPSs) for Appendix IV parameters detected during Assessment monitoring, and determine if one or more Appendix IV parameters are detected at SSLs above their GWPSs. GWPSs for all Appendix IV parameters were established on October 15, 2018, and placed into the operating record. Those values are also provided on Table 1 attached here.

Following completion of two Assessment monitoring events (257.95(b) and 257.95(d)) in June and September 2018, the Assessment monitoring results were compared to the GWPSs to identify SSLs over GWPSs. The identification of SSLs was performed as a two-step process:

1. Each Assessment monitoring concentration result was compared directly to the GWPS. Where the Assessment concentration was below the GWPS, no SSL was identified.
2. Where the direct comparison indicated an Assessment concentration above the GWPS, further statistical analysis was performed to identify levels statistically greater than the GWPS, using procedures recommended in the USEPA's Unified Guidance for Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities (EPA 530/R-09-007; March 2009). For each situation where an Assessment monitoring concentration was greater than the GWPS, the 95% upper and lower confidence levels (UCL, LCL, respectively) on the mean concentration in that monitoring well were calculated using data from the baseline and Assessment sampling events conducted between November 2016 and September 2018. As recommended in the Unified Guidance, where both the UCL and LCL exceed the GWPS, SSLs were identified.

The identified SSLs above GWPSs are presented on Table 1 below. See the 2018 Annual Groundwater Report for supporting data: <https://www.tva.gov/Environment/Environmental-Stewardship/Coal-Combustion-Residuals/Gallatin>

**Table 1: Statistically Significant Levels (SSLs) Above GWPSs  
GAF Ash Pond Complex**

Appendix IV Parameter	GWPS (a)	Downgradient wells with Assessment monitoring results above GWPSs (b)	Calculated LCL on the mean (c)	SSL (d) LCL>GWPS
Antimony (mg/l)	0.006	None	NA	NA
Arsenic (mg/l)	0.010	GAF-410U	0.0219	<b>Yes</b>
Barium (mg/l)	2	None	NA	NA
Beryllium (mg/l)	0.004	None	NA	NA
Cadmium (mg/l)	0.005	None	NA	NA
Chromium (mg/l)	0.100	None	NA	NA
Cobalt (mg/l)	0.006	GAF-450C	0.0056	No
		GAF-450L	0.0083	<b>Yes</b>
Fluoride (mg/l)	4	None	NA	NA
Lead (mg/l)	0.015	None	NA	NA
Lithium (mg/l)	Carters: 0.045	GAF-452C	0.0729	<b>Yes</b>
	Lebanon: 0.189	None	NA	NA
Mercury (mg/l)	0.002	None	NA	NA
Molybdenum (mg/l)	0.100	None	NA	NA
Radium-226+228 (pCi/l)	5	None	NA	NA
Selenium (mg/l)	0.050	None	NA	NA
Thallium (mg/l)	0.002	None	NA	NA

NA – Not applicable

(a) GWPSs documented in notice dated 10/15/2018.

(b) Assessment monitoring events in June and September 2018 (per 257.95(b) and (d)).

(c) Lower confidence limit (LCL) on the mean of 12 sampling events between November 2016 and September 2018; only 9 samples available for GAF-450C and GAF-450L. Upper confidence limit (UCL) not shown as it is greater than LCL.

(d) SSL is statistically significant level over GWPS.