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TN0005355

Tennessee Valley Authority, 1101 Market Street, Chattanooga, Tennessee 37402-2801

June 29, 2012

Mr. Glen Pugh, Manager
Division of Solid Waste Management
Tennessee Department of Environment
and Conservation
711 RS Gass Boulevard
Nashville, Tennessee 37243

Dear Mr. Pugh:

TENNESSEE VALLEY AUTHORITY (TVA) – VOLUNTARY GROUNDWATER MONITORING MAXIMUM CONTAMINANT LEVELS (MCL) EXCEEDANCES

Enclosed are groundwater monitoring summaries for the voluntary monitoring TVA is performing for Coal Combustion Residual (CCR) impoundments currently regulated under NPDES permits. This voluntary monitoring is a part of the agreement TVA has with the Utilities Solid Waste Activities Group (USWAG) to conduct semi-annual monitoring and to report any MCL exceedances. Nine of the eleven coal-fired plants have USWAG monitoring, six of which are in Tennessee. Of those six plants, three plants had an exceedance of one parameter out of the typically 14 parameters sampled. Listed below are the enclosed reports, along with the MCL parameter that was exceeded:

- Allen Fossil Plant; February 2011 – Arsenic (Well P6)
- Allen Fossil Plant; August 2011 – Arsenic (Well P6)
- Allen Fossil Plant; February 2012 – Arsenic (Well P6)
- Bull Run Fossil Plant; May 2011 – Arsenic (Well 10-52)
- Bull Run Fossil Plant; November 2011 – Arsenic (Well 10-52)
- Bull Run Fossil Plant; May 2012 – Arsenic (Well 10-52)
- Johnsonville Fossil Plant; September, 2011 – Nickel (Well 10-AP3)
- Johnsonville Fossil Plant; March 2012 - No exceedances

Sampling events where a parameter had an MCL exceedance were followed up by confirmation sampling. If the confirmation sampling did not confirm the exceedance, the report for that site is not included here. This is an accepted practice within the discipline of groundwater monitoring.

Because the USWAG wells are relatively new wells, some of the exceedances may be attributable to short-term post-installation effects resulting from disturbing the geochemical equilibrium around the well or contributions from background metals concentrations in surrounding soils. This could be the case with the Johnsonville Fossil Plant (JOF), where the first sampling event showed an unconfirmed MCL exceedance for nickel. The second event had a confirmed exceedance, but the last event, in March 2012, indicated no MCL exceedances.

For reference, the JOF March 2012 report is enclosed as well. If nickel continues to be identified, a more detailed evaluation of potential causes will be conducted. The Bull Run Fossil Plant (BRF) well appears to be experiencing elevated suspended solids in the samples where MCL exceedances occur. The presence of high levels of suspended solids tends to raise the level of metals in groundwater, due to metals naturally occurring in soils.

TVA is also investigating the natural levels of arsenic in soil in the Memphis, Tennessee area where the Allen Fossil Plant is located. In addition to new well construction, naturally high arsenic levels in surrounding soils could be contributing to the levels of arsenic in the groundwater under TVA's Memphis Fossil Plant.

One other Tennessee plant, Kingston Fossil Plant has an extensive groundwater monitoring program which combines monitoring of the solid waste disposal facilities and impoundments. Those reports are already being submitted to your office. As a result, no separate voluntary program was needed at this site.

If you have any questions, please call me at (423) 751-4878 in Chattanooga.

Sincerely,

Cynthia M. Anderson

Cynthia M. Anderson
Senior Manager
Water and Waste Compliance

Enclosure
cc: Mr. Robert Alexander
Environmental Protection Specialist
Division of Water Pollution Control
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TN0005410

Bull Run Fossil Plant Ash Impoundment Groundwater Monitoring Report
May 2011

Summary:

- Voluntary semi-annual sampling of the four ash impoundment wells (1, S, 10-51, and 10-52) of the BRF Ash Pond facility was conducted May 3, 4, and 11, 2011. Micropurge well sampling was employed, purging to stability in water level and field parameters (within +/- 10%). Results are given in Table 1.
- MCL exceedance for arsenic at new well 10-52 (both the original and duplicate 26 µg/L and 27 µg/L exceeds the 10 µg/L TDEC Appendix III stated MCL). Too early to tell if this is a true representation of water quality at this well, or simply due to post-well installation affects that can observe elevated metals within the first year post-sampling.
- All other TDEC Appendix I constituents are below applicable MCLs.
- Resampling – Well 10-52 was resampled for arsenic June 1, 2011, utilizing low-flow sampling. The exceedance was confirmed, was a result of 30 µg/L.
- Potentiometric contours – Figure 1 shows water mounded around the Ash Pond and flowing southwest towards the Clinch River / Melton Hill Reservoir, based upon water levels observed May 2, 2011.
- Next sampling event will be November 2011.

Table 1. May 3, 4, 11, and June 1, 2011 Bull Run Fossil Plant Ash Impoundment Groundwater Monitoring Results

	Well	1	S	10-51	10-52[3]	10-52			Comparison to MCL[1]			
	Sample Date	05/11/2011	05/03/2011	05/04/2011	05/04/2011	06/01/2011			05/03/2011	05/04/2011	05/04/2011	06/01/2011
Appendix I Constituent	Units	(upgradient)	(downgradient)	(downgradient)	(downgradient)	(downgradient)	MCL	MCL Source[2]	S	10-51	10-52	10-52
Antimony	ug/L	<1	<1	<1	<1	--	6	TDEC	L	L	L	--
Arsenic	ug/L	1.8	<1	2	26.5	30	10	TDEC	L	L	G	G
Barium	ug/L	1600	58	81	435	--	2,000	TDEC	L	L	L	--
Beryllium	ug/L	<1	<1	<1	<1	--	4	TDEC	L	L	L	--
Cadmium	ug/L	<0.5	0.69	<0.5	<0.5	--	5	TDEC	L	L	L	--
Chromium	ug/L	<2	2.4	4.4	2.2	--	100	TDEC	L	L	L	--
Cobalt	ug/L	2.9	1.8	1.5	2.8	--	--	--	--	--	--	--
Copper	ug/L	<2	<2	2.4	<2	--	1,300	EPA PMCL	L	L	L	--
Lead	ug/L	<1	1.1	1.6	1.55	--	15	TDEC	L	L	L	--
Mercury	ug/L	<0.2	<0.2	<0.2	<0.2	--	2.0	TDEC	L	L	L	--
Nickel	ug/L	2.1	5.5	6	4.2	--	100	TDEC	L	L	L	--
Selenium	ug/L	<1	1.6	<1	4.15	--	50	TDEC	L	L	L	--
Silver	ug/L	<1	<1	<1	<1	--	100	TDEC	L	L	L	--
Thallium	ug/L	<1	<1	<1	<1	--	2	TDEC	L	L	L	--
Vanadium	ug/L	<2	3.2	4.4	2.5	--	--	--	--	--	--	--
Zinc	ug/L	<10	18	10	19	--	5,000	EPA SMCL	L	L	L	--
Total Suspended Solids	mg/L	56	16	29	39	--	--	--	--	--	--	--

Legend

1 - Comparison to MCL; "G" is greater than indicated MCL, and "L" is lower than indicated MCL.

2 - TDEC - TDEC Rule 1200-01-07 Appendix III; EPA PMCL - EPA Primary Drinking Water MCL; EPA SMCL - EPA Secondary Drinking Water MCL.

3 - Results reported are averages of duplicate samples.

Figure 1. May 2, 2011 Bull Run Fossil Plant Ash Pond Area Groundwater Potentiometric Map