

# EDEN NORTH CAROLINA COAL ASH SPILL SEDIMENT RESULTS

NOTE: The data below represents sediment samples that were collected on April 14, 2014 by EPA START Team 1. Sediment sample measurements are in milligrams per kilogram (mg/Kg). The data is being compared to ecological risk screening levels (ERSLs) to protect aquatic life in the sediments of the Dan River. Specific qualifiers and footnotes are listed below the summary table. These samples were collected at various locations along the river (refer to map for generalized locations). The detected concentrations in sediment are all below the ERSLs with the exception of aluminum, barium, and iron. There were no exceedances of human health screening criteria for sediment. When chemical concentrations exceed the screening values it doesn't mean there will be adverse health or ecological effects, but recommends further investigation may be needed.

Analyte	Ecological Screening Standards for Sediment <sup>2</sup>		Transect FWS-4A-RD		Transect EPA-2-RD	
<b>Sample Information</b>						
Sample ID	-		EDEN-FWS4A-R-SD-20140414		EDEN-EPA02-R-SD-20140414	
Date	-		04/14/2014		04/14/2014	
Time	-		1007		1330	
Status	-		Validation Complete		Validation Complete	
Type	-		Sediment		Sediment	
<b>Total Metals</b>						
Aluminum	3,200 (bkg)	mg/kg	2,900	mg/kg	9,200	mg/kg
Antimony	2 <sup>a</sup>	mg/kg	1.2U	mg/kg	1.6U	mg/kg
Arsenic	9.8	mg/kg	1.1J	mg/kg	2.8J	mg/kg
Barium	60 <sup>b</sup>	mg/kg	32	mg/kg	99	mg/kg
Beryllium	-	-	0.19J	mg/kg	0.57J	mg/kg
Boron	-	-	12U	mg/kg	16U	mg/kg
Cadmium	0.99	mg/kg	0.02J	mg/kg	0.049J	mg/kg
Calcium	-	-	350	mg/kg	1,100	mg/kg
Chromium	43.4	mg/kg	10	mg/kg	21	mg/kg
Cobalt	50	mg/kg	3.2	mg/kg	7.8	mg/kg
Copper	31.6	mg/kg	3.2	mg/kg	11	mg/kg
Iron	6,800 (bkg)	mg/kg	6,200	mg/kg	16,000	mg/kg
Lead	35.8	mg/kg	3	mg/kg	6.9	mg/kg
Magnesium	-	-	930	mg/kg	2,900	mg/kg
Manganese	460 <sup>c</sup>	mg/kg	200	mg/kg	330	mg/kg
Mercury	0.18	mg/kg	0.026U	mg/kg	0.03	mg/kg
Molybdenum	-	-	1.2U	mg/kg	1.6U	mg/kg
Nickel	22.7	mg/kg	3.3J	mg/kg	9.5	mg/kg
Potassium	-	-	750	mg/kg	2,300	mg/kg
Selenium	2 <sup>d</sup>	mg/kg	0.58U	mg/kg	0.46J	mg/kg
Silver	0.733	mg/kg	0.12U	mg/kg	0.16U	mg/kg
Sodium	-	-	240U	mg/kg	320U	mg/kg
Thallium	-	mg/kg	0.06J	mg/kg	0.16	mg/kg
Vanadium	57 <sup>e</sup>	mg/kg	12	mg/kg	29	mg/kg
Zinc	121	mg/kg	14	mg/kg	37	mg/kg
<b>Physical Properties</b>						
Percent Ash	-	-	2	%	4	%

**Notes**

<sup>1</sup> Values are based on ELCR=10<sup>-4</sup> or HI = 1. Assumptions: EF=100 days/year. ET=2 hr/event

<sup>2</sup> MacDonald, D.D.; Ingersoll, C.G.; Smorong, D.E.; Lindskoog, R.A.; Sloane, G; and T. Biernacki. 2003. Development and Evaluation of Numerical Sediment Quality Assessment Guidelines for Florida Inland Waters. Florida Department of Environmental Protection, Tallahassee, FL. Development and Evaluation of Numerical Sediment Quality Assessment Guidelines for Florida Inland Waters.

<sup>a</sup>The screening value for antimony is from Long, Edward R., and Lee G. Morgan. 1991. The Potential for Biological Effects of Sediment-Sorbed Contaminants Tested in the National Status and Trends Program. NOAA Technical Memorandum NOS OMA 52.

<sup>b</sup> The screening value for barium was the probable effect level (PEL) instead of the threshold effect level (TEL) because the TEL was below background

<sup>c</sup> Sediment screening values for manganese and vanadium come from the NOAA SQUIRT. <http://response.restoration.noaa.gov/sites/default/files/SQUIRTs.pdf>

<sup>d</sup>The screening value for selenium is from Region 3 after Lemley, A.D. 2002. Selenium assessment in aquatic ecosystems. US Forest Service, Blacksburg, VA.

<sup>e</sup> Cadmium from diet

<sup>f</sup> Chromium (VI)

<sup>g</sup> Methyl Mercury

<sup>h</sup> Thallium Chloride

% Percent

EPA U.S. Environmental Protection Agency

J Value is estimated

J+ Value is estimated with a possible high bias

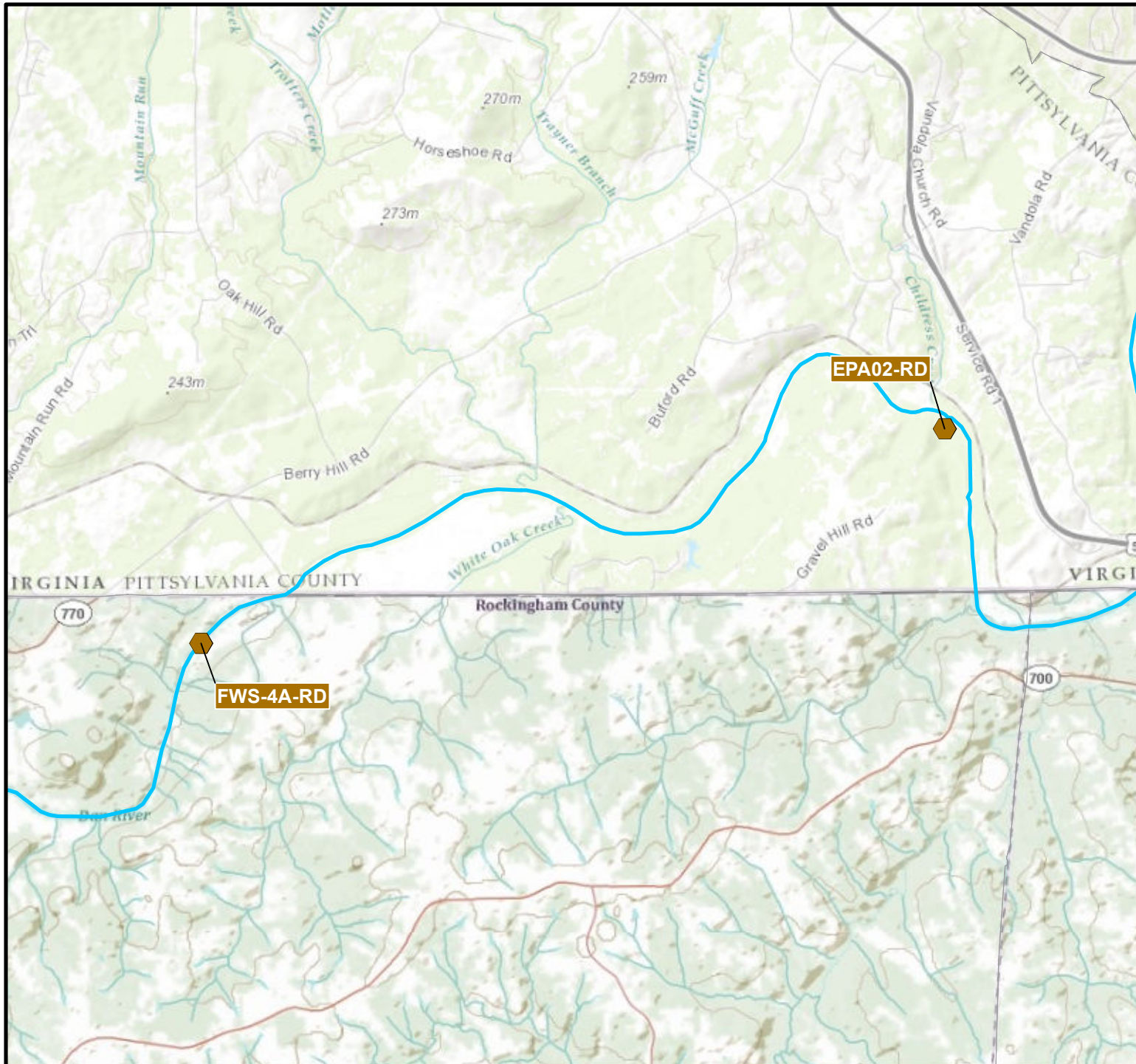
J- Value is estimated with a possible low bias




µg/L micrograms per liter

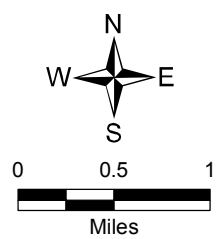
mg/L milligrams per liter

U Analyte was not detected at the listed reporting limit.

UJ Analyte was not detected at the listed reporting limit, which is an estimated quantitation.



- Legend**
-  Approximate Spill Location
  -  Sediment Sample Location
  -  Dan River



Map Source: ArcGIS Online World Map Topo, 2014

**Sediment  
Sample Locations  
April 14, 2014**

