

## EDEN NORTH CAROLINA COAL ASH SPILL SURFACE WATER RESULTS

NOTE: The data below represents surface water samples that were collected on Feb 18, 2014 by EPA START (Team 1) sampling teams. Water sample measurements are in milligrams per liter (mg/L) and/or micrograms per liter (µg/L) for these samples. The data is being compared to EPA ecological risk screening levels (ERSLs) to protect aquatic life in the surface water 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 surface water are above the EPA ERSLs for arsenic, boron, and manganese for total metals. EPA typically screens the surface water concentrations using total metals samples because this is a conservative practice for screening. Because boron was not detected above the EPA ERSL for samples of the dissolved fraction of surface water (i.e., samples that were filtered to remove particulates), there is no threat of toxicity of boron to aquatic organisms. Aluminum, arsenic, and manganese were detected above the EPA ERSLs in the dissolved metals analysis. 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 Standard for Surface Water Samples <sup>1</sup>		Duke Inlet C (36" RCP)		Duke Outfall C (36" RCP)		S Boston WTP Intake	
<b>Sample Information</b>								
Sample ID	-		EDEN-36INLT-C-SW-20140218		EDEN-36OUTFL-C-SW-20140218		EDEN-SBWTP-RAW-20140218	
Date	-		2/18/2014		2/18/2014		2/18/2014	
Time	-		1440		1540		1100	
Status	-		Validation Complete		Validation Complete		Validation Complete	
Type	-		Surface Water		Surface Water		Surface Water	
<b>Water Quality Monitoring</b>								
Dissolved Oxygen	<6	mg/L	8	mg/L	7	mg/L	-	-
Turbidity	50	NTU	18	NTU	5.2	NTU	-	-
<b>Dissolved metals SW6010C/6020A/7470A</b>								
Aluminum	87	µg/L	41.3	µg/L	27.3	µg/L	394	µg/L
Antimony	5.6	µg/L	5.00U	µg/L	5.00U	µg/L	5.00U	µg/L
Arsenic	10	µg/L	4.5U	µg/L	172	µg/L	4.5U	µg/L
Barium	220	µg/L	44.7	µg/L	130	µg/L	20.7	µg/L
Beryllium	0.66	µg/L	0.65U	µg/L	0.65U	µg/L	0.65U	µg/L
Boron	0.36	mg/L	0.256	mg/L	0.321	mg/L	0.0823J+	mg/L
Cadmium	0.1	µg/L	0.7U	µg/L	0.7U	µg/L	0.7U	µg/L
Calcium	-	-	32,800	µg/L	35,700	µg/L	5,910	µg/L
Chromium	25	µg/L	2.5U	µg/L	2.5U	µg/L	0.658J	µg/L
Cobalt	3	µg/L	0.753J	µg/L	5.00U	µg/L	5.00U	µg/L
Copper	3	µg/L	2.00U	µg/L	2.00U	µg/L	0.323J	µg/L
Iron	1,000	µg/L	120U	µg/L	120U	µg/L	524J+	µg/L
Lead	0.59	µg/L	0.5U	µg/L	0.5U	µg/L	0.247J	µg/L
Magnesium	-	-	15,000	µg/L	9,200	µg/L	2,290	µg/L
Manganese	200	µg/L	789	µg/L	384	µg/L	10.5J+	µg/L
Mercury	0.000012	mg/L	0.0002U	mg/L	0.0002U	mg/L	0.0002U	mg/L
Molybdenum	800	µg/L	5U	µg/L	12.1	µg/L	5U	µg/L
Nickel	17	µg/L	5U	µg/L	5U	µg/L	5U	µg/L
Potassium	53,000	µg/L	1,870	µg/L	5,170	µg/L	1,610	µg/L
Selenium	5	µg/L	4.5U	µg/L	0.451J	µg/L	4.5U	µg/L
Silica	-	-	9.78	mg/L	7.37	mg/L	6.6	mg/L
Silver	0.06	µg/L	0.05U	µg/L	0.05U	µg/L	0.05U	µg/L
Sodium	680,000	µg/L	16,500	µg/L	23,200	µg/L	6,720	µg/L
Thallium	0.24	µg/L	0.200U	µg/L	0.200U	µg/L	0.200U	µg/L
Vanadium	27	µg/L	5U	µg/L	1.43J	µg/L	1.54J	µg/L
Zinc	39	µg/L	10U	µg/L	10U	µg/L	10U	µg/L
<b>Total Dissolved Solids EPA 160.1</b>								
Total Dissolved Solids	-	-	241	mg/L	213	mg/L	71	mg/L
<b>Total Suspended Solids EPA 160.2</b>								
Total Suspended Solids	-	-	6.5	mg/L	5	mg/L	46	mg/L

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<b>Sample Information</b>								
Sample ID	-		EDEN-36INLT-C-SW-20140218		EDEN-36OUTFL-C-SW-20140218		EDEN-SBWTP-RAW-20140218	
<b>Total Metals SW6010C/6020A/7470A</b>								
Aluminum	2,000	µg/L	294	µg/L	97	µg/L	1,630	µg/L
Antimony	5.6	µg/L	5U	µg/L	5U	µg/L	5U	µg/L
Arsenic	10	µg/L	4.5U	µg/L	183	µg/L	0.95J	µg/L
Barium	220	µg/L	47.5	µg/L	138	µg/L	37.4	µg/L
Beryllium	0.66	µg/L	0.65U	µg/L	0.65U	µg/L	0.257J	µg/L
Boron	0.36	mg/L	0.272	mg/L	0.361	mg/L	0.0878J+	mg/L
Cadmium	2	µg/L	0.7U	µg/L	0.7U	µg/L	0.7U	µg/L
Calcium	-	-	32,300	µg/L	36,500	µg/L	6,090	µg/L
Chromium	29	µg/L	2.5U	µg/L	2.5U	µg/L	2.74	µg/L
Cobalt	24	µg/L	0.948J	µg/L	0.555J	µg/L	1.18J	µg/L
Copper	3	µg/L	0.266J	µg/L	2U	µg/L	2.95	µg/L
Iron	2,300	µg/L	904	µg/L	329	µg/L	2,230	µg/L
Lead	0.6	µg/L	0.396J	µg/L	0.171J	µg/L	1.91	µg/L
Magnesium	-	-	14,800	µg/L	9,390	µg/L	2,500	µg/L
Manganese	200	µg/L	702	µg/L	412	µg/L	67.3	µg/L
Mercury	0.000012	mg/L	0.0002U	mg/L	0.0002U	mg/L	0.0002U	mg/L
Molybdenum	-	-	5.00U	µg/L	12.4	µg/L	5.00U	µg/L
Nickel	17	µg/L	5.00U	µg/L	5.00U	µg/L	5.00U	µg/L
Potassium	53,000	µg/L	1,900	µg/L	5,290	µg/L	1,750	µg/L
Selenium	5	µg/L	4.5U	µg/L	0.371J	µg/L	4.5U	µg/L
Silica	-	-	10.1	mg/L	7.57	mg/L	8.65	mg/L
Silver	0.06	µg/L	0.05U	µg/L	0.05U	µg/L	0.05U	µg/L
Sodium	680,000	µg/L	16,500	µg/L	23,700	µg/L	6,670	µg/L
Thallium	0.24	µg/L	0.2U	µg/L	0.2U	µg/L	0.2U	µg/L
Vanadium	27	µg/L	5U	µg/L	1.72J	µg/L	6.15	µg/L
Zinc	39	µg/L	13.6	µg/L	8.15J	µg/L	12.3	µg/L
<b>Anions SW9056A</b>								
Bromide	-	-	1U	mg/L	1U	mg/L	1U	mg/L
Chloride	230	mg/L	10	mg/L	19	mg/L	12	mg/L
Sulfate	-	-	150	mg/L	73	mg/L	6.7J+	mg/L

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<b>Sample Information</b>				
Sample ID	-	EDEN-36INLT-C-SW-20140218	EDEN-36OUTFL-C-SW-20140218	EDEN-SBWTP-RAW-20140218
<b>Wet Chemistry</b>				
	EPA 310.2/SM2340B/SW9040 C/SW9060A			
Alkalinity, Total (As CaCO <sub>3</sub> )	-	43.5	102	15.8
Hardness, Calcium/Magnesium (As CaCO <sub>3</sub> )	-	142	130	25.5
Organic Carbon, Dissolved	-	3.46	3.93	2.87
pH	6.5 - 9.0	6.37J	7.56J	6.98J

Notes

<sup>1</sup> Value obtained from the GL Tier 2 Values; National Recommended Water Quality Criteria; Suter and Tsao (1996); Reference condition for EcoRegion XI (25 percentile); NCDENR State Standards for surface water

°C degrees Celsius

EPA U.S. Environmental Protection Agency

J Value is estimated

J+ Value is estimated with a possible high bias

µg/L micrograms per liter

mg/L milligrams per liter

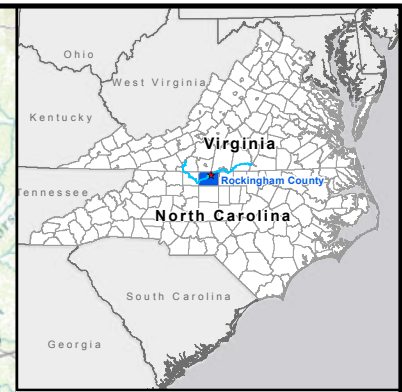
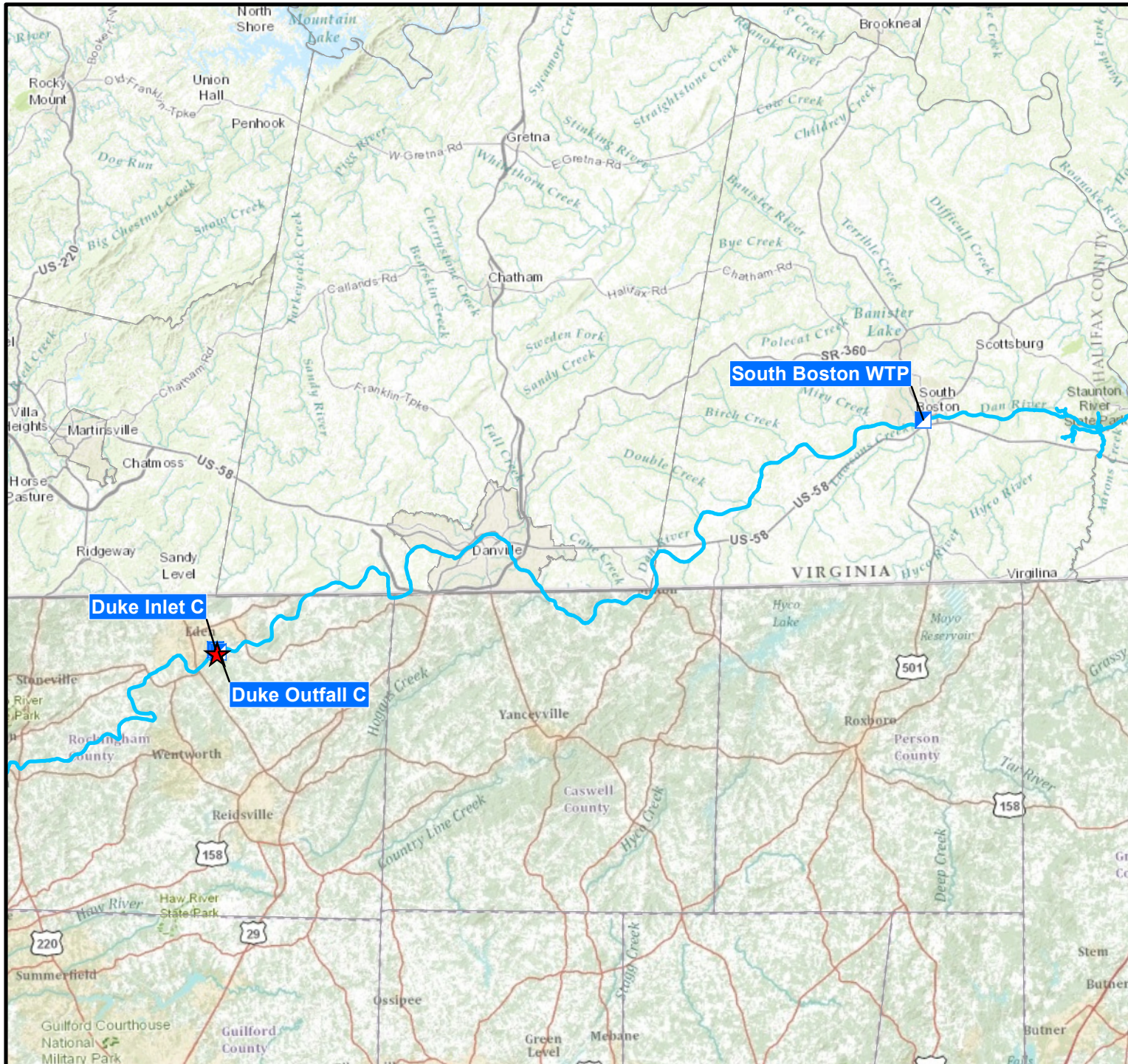
mS/cm milliSiemens per centimeter

NTU Nephelometric turbidity units




std standard

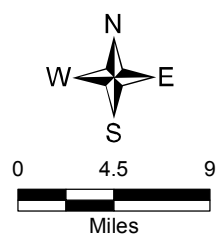
U Analyte was not detected at the listed reporting limit.





**Legend**

-  Approximate Spill Location
-  Surface Water Sample Location
-  Dan River



Map Source: ArcGIS Online World Map Topo, 2014

**Surface Water Sample Locations  
February 18, 2014**

