

EDEN NORTH CAROLINA COAL ASH SPILL SURFACE WATER RESULTS

NOTE: The data below represents surface water samples that were collected on Feb 15, 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, aluminum, copper, iron, lead, manganese, and zinc for total metals. EPA typically screens the surface water concentrations using total metals samples because this is a conservative practice for screening. Because aluminum, copper, iron, lead and zinc were not detected in any of the samples of the dissolved fraction of surface water (i.e., samples that were filtered to remove particulates), they present no threat of toxicity to aquatic organisms. Arsenic and manganese continue to be 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 ¹		Duke Outfall A (near DRSS Boat Ramp)	
Sample Information				
Sample ID	-		EDEN-OUTFL-A-SW-20140215	
Date	-		2/15/2014	
Time	-		1000	
Status	-		Validation Complete	
Type	-		Surface Water	
Water Quality Monitoring				
Temperature	-		4.88	°C
Dissolved Oxygen	<6	mg/L	12	mg/L
Specific Conductance	-		0.33	mS/cm
pH	6.5 - 9.0	std	7.01	std
Turbidity	50	NTU	220	NTU
Dissolved metals SW6010C/6020A/7470A				
Aluminum	87	µg/L	18.0J+	µg/L
Antimony	5.6	µg/L	5.00U	µg/L
Arsenic	10	µg/L	15.2	µg/L
Barium	220	µg/L	61.9	µg/L
Beryllium	0.66	µg/L	1.00U	µg/L
Boron	0.36	mg/L	0.281J+	mg/L
Cadmium	0.1	µg/L	0.700U	µg/L
Calcium	-	-	45,600	µg/L
Chromium	25	µg/L	2.50U	µg/L
Cobalt	3	µg/L	1.50J	µg/L
Copper	3	µg/L	2.00U	µg/L
Iron	1,000	µg/L	100U	µg/L
Lead	0.59	µg/L	1.00U	µg/L
Magnesium	-	-	6,310	µg/L
Manganese	200	µg/L	307	µg/L
Mercury	0.000012	mg/L	0.00020U	mg/L
Molybdenum	800	µg/L	9.61	µg/L
Nickel	17	µg/L	5.00U	µg/L
Potassium	53,000	µg/L	5,510	µg/L
Selenium	5	µg/L	5.00U	µg/L
Silica	-	-	3.14	mg/L
Silver	0.06	µg/L	1.00U	µg/L
Sodium	680,000	µg/L	8,450	µg/L
Thallium	0.24	µg/L	0.200U	µg/L
Vanadium	27	µg/L	5.00U	µg/L
Zinc	39	µg/L	42.8U	µg/L

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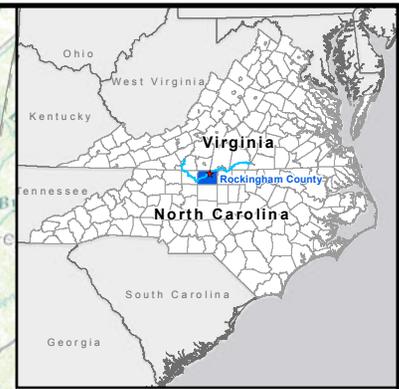
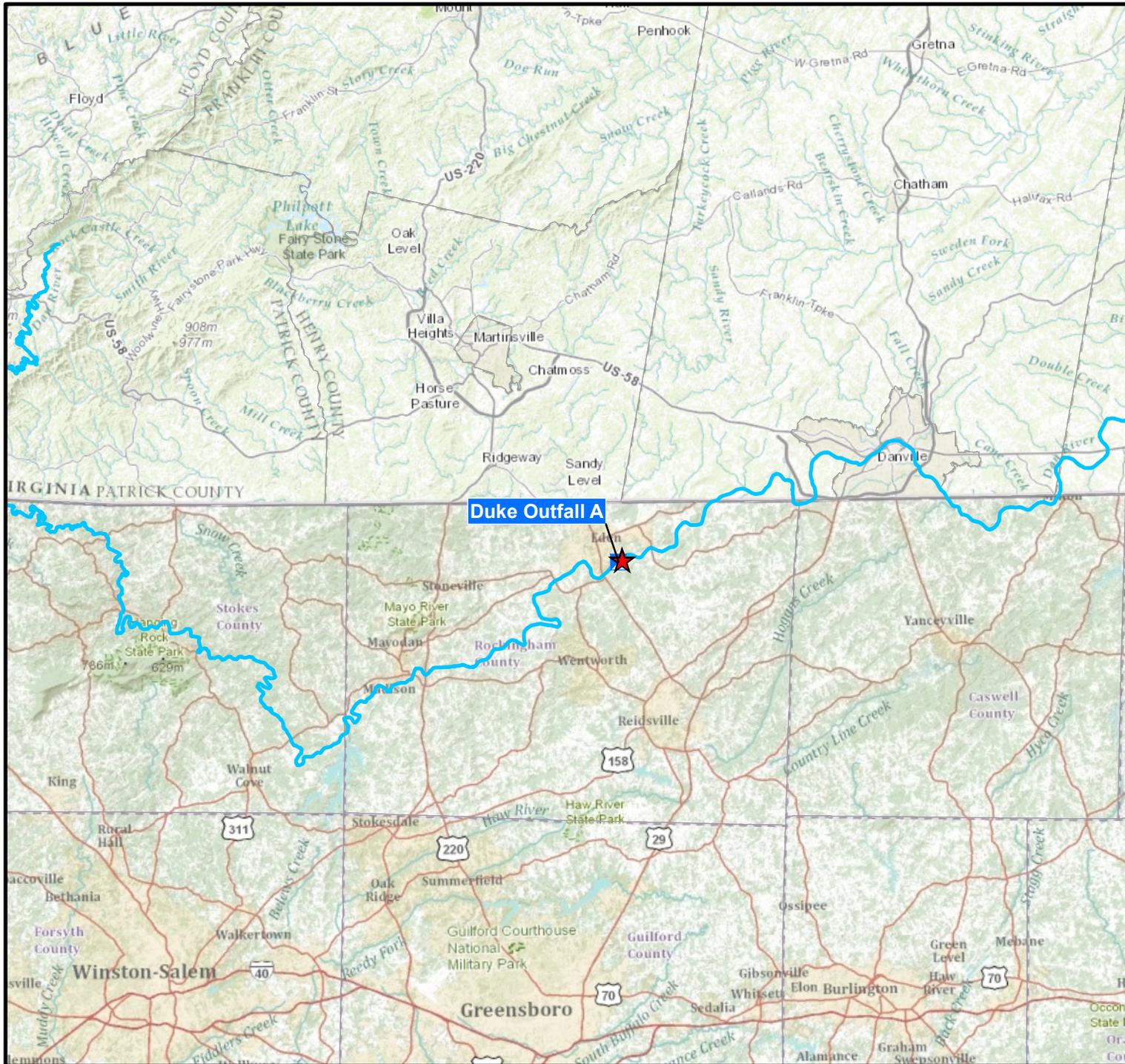
Analyte	Ecological Screening Standard for Surface Water Samples ¹		Duke Outfall A (near DRSS Boat Ramp)	
Sample Information				
Sample ID	-		EDEN-OUTFL-A-SW-20140215	
Total Dissolved Solids EPA 160.1				
Total Dissolved Solids	-	-	327J+	mg/L
Total Suspended Solids EPA 160.2				
Total Suspended Solids	-	-	97.5	mg/L
Total Metals SW6010C/6020A/7470A				
Aluminum	2,000	μg/L	4,850	μg/L
Antimony	5.6	μg/L	5.00U	μg/L
Arsenic	10	μg/L	33.2	μg/L
Barium	220	μg/L	97.9	μg/L
Beryllium	0.66	μg/L	0.454J	μg/L
Boron	0.36	mg/L	0.297J+	mg/L
Cadmium	2	μg/L	0.315J	μg/L
Calcium	-	-	46,800	μg/L
Chromium	29	μg/L	13.2	μg/L
Cobalt	24	μg/L	4.29J	μg/L
Copper	3	μg/L	10.6	μg/L
Iron	2,300	μg/L	8,420	μg/L
Lead	0.6	μg/L	9.32	μg/L
Magnesium	-	-	7,730	μg/L
Manganese	200	μg/L	398	μg/L
Mercury	0.000012	mg/L	0.00020U	mg/L
Molybdenum	-	-	8.65	μg/L
Nickel	17	μg/L	10.3	μg/L
Potassium	53,000	μg/L	6550	μg/L
Selenium	5	μg/L	5.00U	μg/L
Silica	-	-	10.6	mg/L
Silver	0.06	μg/L	0.0212J	μg/L
Sodium	680,000	μg/L	8,790	μg/L
Thallium	0.24	μg/L	0.100J	μg/L
Vanadium	27	μg/L	11.5	μg/L
Zinc	39	μg/L	167J+	μg/L

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Analyte	Ecological Screening Standard for Surface Water Samples ¹		Duke Outfall A (near DRSS Boat Ramp)	
Sample Information				
Sample ID	-		EDEN-OUTFL-A-SW-20140215	
Anions				
	SW9056A			
Bromide	-	-	0.370J	mg/L
Chloride	230	mg/L	61	mg/L
Sulfate	-	-	57	mg/L
Wet Chemistry				
	EPA 310.2/SM2340B/SW9040 C/SW9060A			
Alkalinity, Total (As CaCO ₃)	-	-	37.2	mg/L
Hardness, Calcium/Magnesium (As CaCO ₃)	-	-	149	mg/L
Organic Carbon, Dissolved	-	-	3.16J+	mg/L
pH	6.5 - 9.0	std	7.00J	std

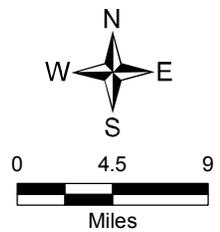
Notes

- ¹ 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 15, 2014**

