

EDEN NORTH CAROLINA COAL ASH SPILL SEDIMENT RESULTS

NOTE: The data below represents sediment samples that were collected on July 1, 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, arsenic, barium, iron, manganese, selenium, and vanadium. 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 ¹		Transect FWS SFI1 Left Descending		Transect FWS SFI1 Left Descending		Transect FWS SFI1 Left Descending	
Sample Information								
Sample ID	-		EDEN-FWSSFI1-L-84-SD-20140701		EDEN-FWSSFI1-L-43-SD-20140701		EDEN-FWSSFI1-L-83-SD-20140701	
Date	-		07/01/2014		07/01/2014		07/01/2014	
Time	-		1350		1320		1340	
Status	-		Validation Complete		Validation Complete		Validation Complete	
Type	-		Sediment		Sediment		Sediment	
Total Metals								
Aluminum	3,200 (bkg)	mg/kg	7800	mg/Kg	9900	mg/Kg	9400	mg/Kg
Antimony	2 ^a	mg/kg	1.4UJ	mg/Kg	1.5UJ	mg/Kg	1.5UJ	mg/Kg
Arsenic	9.8	mg/kg	2.8	mg/Kg	2.4J	mg/Kg	15	mg/Kg
Barium	60 ^b	mg/kg	90	mg/Kg	97	mg/Kg	170	mg/Kg
Beryllium	-	-	0.51J	mg/Kg	0.61	mg/Kg	1.4	mg/Kg
Boron	-	-	14U	mg/Kg	15U	mg/Kg	15U	mg/Kg
Cadmium	0.99	mg/kg	0.051J	mg/Kg	0.049J	mg/Kg	0.091	mg/Kg
Calcium	-	-	580	mg/Kg	590	mg/Kg	1100	mg/Kg
Chromium	43.4	mg/kg	18	mg/Kg	22	mg/Kg	21	mg/Kg
Cobalt	50	mg/kg	6.3	mg/Kg	7.6	mg/Kg	8.9	mg/Kg
Copper	31.6	mg/kg	9.6	mg/Kg	12	mg/Kg	25	mg/Kg
Iron	6,800 (bkg)	mg/kg	14000	mg/Kg	17000	mg/Kg	15000	mg/Kg
Lead	35.8	mg/kg	5.9	mg/Kg	7.8	mg/Kg	9.3	mg/Kg
Magnesium	-	-	2300J+	mg/Kg	2700J+	mg/Kg	2100J+	mg/Kg
Manganese	460 ^c	mg/kg	210J+	mg/Kg	250J+	mg/Kg	290J+	mg/Kg
Mercury	0.18	mg/kg	0.021J	mg/Kg	0.021J	mg/Kg	0.079	mg/Kg
Molybdenum	-	-	1.4U	mg/Kg	1.5U	mg/Kg	0.76J	mg/Kg
Nickel	22.7	mg/kg	7.8	mg/Kg	9.1	mg/Kg	13	mg/Kg
Potassium	-	-	1900J+	mg/Kg	2000J+	mg/Kg	1800J+	mg/Kg
Selenium	2 ^d	mg/kg	0.54J	mg/Kg	0.49J	mg/Kg	4	mg/Kg
Silver	0.733	mg/kg	0.14U	mg/Kg	0.15U	mg/Kg	0.15U	mg/Kg
Sodium	-	-	280U	mg/Kg	290U	mg/Kg	300U	mg/Kg
Thallium	-	mg/kg	0.17	mg/Kg	0.19	mg/Kg	0.5	mg/Kg
Vanadium	57 ^c	mg/kg	26J+	mg/Kg	32J+	mg/Kg	39J+	mg/Kg
Zinc	121	mg/kg	32J+	mg/Kg	39J+	mg/Kg	35J+	mg/Kg
Physical Properties								
Percent Ash	-	-	2	%	1	%	24	%

Notes

¹ 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.

^a 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.

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

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

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

^e Cadmium from diet

^f Chromium (VI)

^g Methyl Mercury

^h Thallium Chloride

% Percent

EPA U.S. Environmental Protection Agency

J Value is estimated

J+ Value is estimated with a possible high bias

mg/kg milligrams per kilogram

ND No fly ash detected at a PLM reporting limit of 1 percent

PLM Polarized light microscopy

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.

EDEN NORTH CAROLINA COAL ASH SPILL SEDIMENT RESULTS

Analyte	Ecological Screening Standards for Sediment ¹		Transect FWS SFI1 Left Descending		Transect FWS SFI1 Left Descending		Transect FWS SFI1 Left Descending	
Sample Information								
Sample ID	-		EDEN-FWSSFI1-L-83-SD-20140701-DUP		EDEN-FWSSFI1-L-42-SD-20140701		EDEN-FWSSFI1-L-41-SD-20140701	
Date	-		07/01/2014		07/01/2014		07/01/2014	
Time	-		1345		1300		1250	
Status	-		Validation Complete		Validation Complete		Validation Complete	
Type	-		Sediment		Sediment		Sediment	
Total Metals								
Aluminum	3,200 (bkg)	mg/kg	9800	mg/Kg	8900	mg/Kg	9300	mg/Kg
Antimony	2 ^a	mg/kg	1.6UJ	mg/Kg	1.4UJ	mg/Kg	1.4UJ	mg/Kg
Arsenic	9.8	mg/kg	16	mg/Kg	1.4J	mg/Kg	2.8	mg/Kg
Barium	60 ^b	mg/kg	180	mg/Kg	84	mg/Kg	98	mg/Kg
Beryllium	-	-	1.5	mg/Kg	0.54J	mg/Kg	0.67	mg/Kg
Boron	-	-	16U	mg/Kg	14U	mg/Kg	14U	mg/Kg
Cadmium	0.99	mg/kg	0.11	mg/Kg	0.06J	mg/Kg	0.066J	mg/Kg
Calcium	-	-	1200	mg/Kg	600	mg/Kg	630	mg/Kg
Chromium	43.4	mg/kg	22	mg/Kg	20	mg/Kg	20	mg/Kg
Cobalt	50	mg/kg	9	mg/Kg	6.9	mg/Kg	7.1	mg/Kg
Copper	31.6	mg/kg	27	mg/Kg	12	mg/Kg	13	mg/Kg
Iron	6,800 (bkg)	mg/kg	16000	mg/Kg	14000	mg/Kg	15000	mg/Kg
Lead	35.8	mg/kg	10	mg/Kg	7.6	mg/Kg	7.2	mg/Kg
Magnesium	-	-	2100J+	mg/Kg	2300J+	mg/Kg	2500J+	mg/Kg
Manganese	460 ^c	mg/kg	330J+	mg/Kg	150J+	mg/Kg	190J+	mg/Kg
Mercury	0.18	mg/kg	0.092	mg/Kg	0.02J	mg/Kg	0.024J	mg/Kg
Molybdenum	-	-	0.8J	mg/Kg	1.4U	mg/Kg	1.4U	mg/Kg
Nickel	22.7	mg/kg	13	mg/Kg	8.1	mg/Kg	9	mg/Kg
Potassium	-	-	1900J+	mg/Kg	1800J+	mg/Kg	2000J+	mg/Kg
Selenium	2 ^d	mg/kg	4.2	mg/Kg	0.48J	mg/Kg	0.9	mg/Kg
Silver	0.733	mg/kg	0.16U	mg/Kg	0.14U	mg/Kg	0.14U	mg/Kg
Sodium	-	-	310U	mg/Kg	280U	mg/Kg	280U	mg/Kg
Thallium	-	mg/kg	0.52	mg/Kg	0.19	mg/Kg	0.25	mg/Kg
Vanadium	57 ^c	mg/kg	41J+	mg/Kg	29J+	mg/Kg	30J+	mg/Kg
Zinc	121	mg/kg	37J+	mg/Kg	35J+	mg/Kg	37J+	mg/Kg
Physical Properties								
Percent Ash	-	-	34	%	ND	%	7	%

Notes

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

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

^e Cadmium from diet

^f Chromium (VI)

^g Methyl Mercury

^h Thallium Chloride

% Percent

EPA U.S. Environmental Protection Agency

J Value is estimated

J+ Value is estimated with a possible high bias

mg/kg milligrams per kilogram

ND No fly ash detected at a PLM reporting limit of 1 percent

PLM Polarized light microscopy

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EDEN NORTH CAROLINA COAL ASH SPILL SEDIMENT RESULTS

Analyte	Ecological Screening Standards for Sediment ¹		Transect FWS SFI1 Left Descending		Transect FWS SFI1 Left Descending		Transect FWS SFI1 Left Descending	
Sample Information								
Sample ID	-		EDEN-FWSSFI1-L-40-SD-20140701		EDEN-FWSSFI1-L-30-SD-20140701		EDEN-FWSSFI1-L-10-SD-20140701	
Date	-		07/01/2014		07/01/2014		07/01/2014	
Time	-		1150		1140		1120	
Status	-		Validation Complete		Validation Complete		Validation Complete	
Type	-		Sediment		Sediment		Sediment	
Total Metals								
Aluminum	3,200 (bkg)	mg/kg	13000	mg/Kg	14000	mg/kg	15000	mg/Kg
Antimony	2 ^a	mg/kg	1.8UJ	mg/Kg	1.9UJ	mg/kg	1.4UJ	mg/Kg
Arsenic	9.8	mg/kg	8	mg/Kg	3J	mg/kg	3.3	mg/Kg
Barium	60 ^b	mg/kg	160	mg/Kg	130	mg/kg	120	mg/Kg
Beryllium	-	-	1.2	mg/Kg	0.88	mg/kg	0.88	mg/Kg
Boron	-	-	18U	mg/Kg	19U	mg/kg	14U	mg/Kg
Cadmium	0.99	mg/kg	0.1	mg/Kg	0.1	mg/kg	0.1	mg/Kg
Calcium	-	-	990	mg/Kg	700	mg/kg	630	mg/Kg
Chromium	43.4	mg/kg	27	mg/Kg	28	mg/kg	30	mg/Kg
Cobalt	50	mg/kg	10	mg/Kg	9.9	mg/kg	11	mg/Kg
Copper	31.6	mg/kg	22	mg/Kg	18	mg/kg	23	mg/Kg
Iron	6,800 (bkg)	mg/kg	21000	mg/Kg	23000	mg/kg	23000	mg/Kg
Lead	35.8	mg/kg	11	mg/Kg	11	mg/kg	16	mg/Kg
Magnesium	-	-	2900J+	mg/Kg	3200J+	mg/kg	3000J+	mg/Kg
Manganese	460 ^c	mg/kg	330J+	mg/Kg	320J+	mg/kg	380J+	mg/Kg
Mercury	0.18	mg/kg	0.053	mg/Kg	0.046	mg/kg	0.036	mg/Kg
Molybdenum	-	-	0.55J	mg/Kg	1.9U	mg/kg	0.64J	mg/Kg
Nickel	22.7	mg/kg	13	mg/Kg	12	mg/kg	12	mg/Kg
Potassium	-	-	2400J+	mg/Kg	2500J+	mg/kg	2300J+	mg/Kg
Selenium	2 ^d	mg/kg	2.2	mg/Kg	0.93	mg/kg	0.62J	mg/Kg
Silver	0.733	mg/kg	0.18U	mg/Kg	0.19U	mg/kg	0.17	mg/Kg
Sodium	-	-	360U	mg/Kg	370U	mg/kg	290U	mg/Kg
Thallium	-	mg/kg	0.37	mg/Kg	0.3	mg/kg	0.26	mg/Kg
Vanadium	57 ^c	mg/kg	44J+	mg/Kg	44J+	mg/kg	47J+	mg/Kg
Zinc	121	mg/kg	48J+	mg/Kg	52J+	mg/kg	54J+	mg/Kg
Physical Properties								
Percent Ash	-	-	10	%	10	%	8	%

Notes

¹ 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.

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

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

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

^e Cadmium from diet

^f Chromium (VI)

^g Methyl Mercury

^h Thallium Chloride

% Percent

EPA U.S. Environmental Protection Agency

J Value is estimated

J+ Value is estimated with a possible high bias

mg/kg milligrams per kilogram

ND No fly ash detected at a PLM reporting limit of 1 percent

PLM Polarized light microscopy

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.

EDEN NORTH CAROLINA COAL ASH SPILL SEDIMENT RESULTS

Analyte	Ecological Screening Standards for Sediment ¹		Transect FWS SFI1 Left Descending		Transect FWS SFI1 Left Descending		Transect FWS SFI1 Left Descending	
Sample Information								
Sample ID	-		EDEN-FWSSFI1-L-20-SD-20140701		EDEN-FWSSFI1-L-00-SD-20140701		EDEN-FWSSFI1-L-21-SD-20140701	
Date	-		07/01/2014		07/01/2014		07/01/2014	
Time	-		1130		1110		1200	
Status	-		Validation Complete		Validation Complete		Validation Complete	
Type	-		Sediment		Sediment		Sediment	
Total Metals								
Aluminum	3,200 (bkg)	mg/kg	20000	mg/Kg	12000	mg/Kg	13000	mg/Kg
Antimony	2 ^a	mg/kg	2.3UJ	mg/Kg	1.7UJ	mg/Kg	1.5UJ	mg/Kg
Arsenic	9.8	mg/kg	5.2	mg/Kg	6.3	mg/Kg	3.2	mg/Kg
Barium	60 ^b	mg/kg	170	mg/Kg	130	mg/Kg	120	mg/Kg
Beryllium	-	-	1.2	mg/Kg	0.96	mg/Kg	0.81	mg/Kg
Boron	-	-	23U	mg/Kg	17U	mg/Kg	15U	mg/Kg
Cadmium	0.99	mg/kg	0.14	mg/Kg	0.094	mg/Kg	0.078	mg/Kg
Calcium	-	-	1200	mg/Kg	680	mg/Kg	880	mg/Kg
Chromium	43.4	mg/kg	38	mg/Kg	25	mg/Kg	26	mg/Kg
Cobalt	50	mg/kg	14	mg/Kg	8.5	mg/Kg	9.5	mg/Kg
Copper	31.6	mg/kg	26	mg/Kg	18	mg/Kg	17	mg/Kg
Iron	6,800 (bkg)	mg/kg	32000	mg/Kg	20000	mg/Kg	21000	mg/Kg
Lead	35.8	mg/kg	18	mg/Kg	10	mg/Kg	11	mg/Kg
Magnesium	-	-	3700J+	mg/Kg	2800J+	mg/Kg	2900J+	mg/Kg
Manganese	460 ^c	mg/kg	570J+	mg/Kg	210J+	mg/Kg	310J+	mg/Kg
Mercury	0.18	mg/kg	0.054	mg/Kg	0.054	mg/Kg	0.038	mg/Kg
Molybdenum	-	-	0.71J	mg/Kg	0.54J	mg/Kg	1.5U	mg/Kg
Nickel	22.7	mg/kg	16	mg/Kg	11	mg/Kg	11	mg/Kg
Potassium	-	-	2700J+	mg/Kg	2300J+	mg/Kg	2200J+	mg/Kg
Selenium	2 ^d	mg/kg	1.1	mg/Kg	1.6	mg/Kg	0.87	mg/Kg
Silver	0.733	mg/kg	0.23U	mg/Kg	0.17U	mg/Kg	0.15U	mg/Kg
Sodium	-	-	460U	mg/Kg	330U	mg/Kg	310U	mg/Kg
Thallium	-	mg/kg	0.33	mg/Kg	0.31	mg/Kg	0.28	mg/Kg
Vanadium	57 ^e	mg/kg	62J+	mg/Kg	40J+	mg/Kg	41J+	mg/Kg
Zinc	121	mg/kg	72J+	mg/Kg	45J+	mg/Kg	49J+	mg/Kg
Physical Properties								
Percent Ash	-	-	19	%	28	%	1	%

Notes

¹ 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.

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

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^e Cadmium from diet

^f Chromium (VI)

^g Methyl Mercury

^h Thallium Chloride

% Percent

EPA U.S. Environmental Protection Agency

J Value is estimated

J+ Value is estimated with a possible high bias

mg/kg milligrams per kilogram

ND No fly ash detected at a PLM reporting limit of 1 percent

PLM Polarized light microscopy

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EDEN NORTH CAROLINA COAL ASH SPILL SEDIMENT RESULTS

Analyte	Ecological Screening Standards for Sediment ¹		Transect FWS SFI1 Left Descending		Transect FWS SFI1 Left Descending		Schoolfield Dredge Area 1C 0-6"	
Sample Information								
Sample ID	-		EDEN-FWSSFI1-L-23-SD-20140701		EDEN-FWSSFI1-L-53-SD-20140701		EDEN-SFDA-1C-0006-SD-20140701	
Date	-		07/01/2014		07/01/2014		07/01/2014	
Time	-		1220		1235		1646	
Status	-		Validation Complete		Validation Complete		Validation Complete	
Type	-		Sediment		Sediment		Sediment	
Total Metals								
Aluminum	3,200 (bkg)	mg/kg	13000	mg/kg	6300	mg/kg	20000	mg/Kg
Antimony	2 ^a	mg/kg	1.8UJ	mg/kg	1.4UJ	mg/kg	1.9UJ	mg/Kg
Arsenic	9.8	mg/kg	2.8J	mg/kg	0.89J	mg/kg	5.5	mg/Kg
Barium	60 ^b	mg/kg	120	mg/kg	54	mg/kg	160	mg/Kg
Beryllium	-	-	0.73	mg/kg	0.38J	mg/kg	1.3	mg/Kg
Boron	-	-	18U	mg/kg	14U	mg/kg	19U	mg/Kg
Cadmium	0.99	mg/kg	0.091	mg/kg	0.04J	mg/kg	0.15	mg/Kg
Calcium	-	-	800	mg/kg	310	mg/kg	1400	mg/Kg
Chromium	43.4	mg/kg	26	mg/kg	19	mg/kg	39	mg/Kg
Cobalt	50	mg/kg	9.5	mg/kg	5.4	mg/kg	14	mg/Kg
Copper	31.6	mg/kg	16	mg/kg	7.7	mg/kg	28	mg/Kg
Iron	6,800 (bkg)	mg/kg	22000	mg/kg	10000	mg/kg	34000	mg/Kg
Lead	35.8	mg/kg	11	mg/kg	6	mg/kg	19	mg/Kg
Magnesium	-	-	3100J+	mg/kg	1600J+	mg/kg	3400J+	mg/Kg
Manganese	460 ^c	mg/kg	330J+	mg/kg	130J+	mg/kg	760J+	mg/Kg
Mercury	0.18	mg/kg	0.023J	mg/kg	0.022J	mg/kg	0.056	mg/Kg
Molybdenum	-	-	1.8U	mg/kg	1.4U	mg/kg	0.94J	mg/Kg
Nickel	22.7	mg/kg	11	mg/kg	5.8	mg/kg	15	mg/Kg
Potassium	-	-	2400J+	mg/kg	1300J+	mg/kg	2500J+	mg/Kg
Selenium	2 ^d	mg/kg	0.47J	mg/kg	0.69U	mg/kg	0.89J	mg/Kg
Silver	0.733	mg/kg	0.12J	mg/kg	0.14U	mg/kg	0.19U	mg/Kg
Sodium	-	-	350U	mg/kg	280U	mg/kg	370U	mg/Kg
Thallium	-	mg/kg	0.24	mg/kg	0.12J	mg/kg	0.34	mg/Kg
Vanadium	57 ^e	mg/kg	40J+	mg/kg	23J+	mg/kg	65J+	mg/Kg
Zinc	121	mg/kg	49J+	mg/kg	26J+	mg/kg	71J+	mg/Kg
Physical Properties								
Percent Ash	-	-	ND	%	ND	%	-	%

Notes

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PLM Polarized light microscopy

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

EDEN NORTH CAROLINA COAL ASH SPILL SEDIMENT RESULTS

Analyte	Ecological Screening Standards for Sediment ¹		Schoolfield Dredge Area 1C 0-6"	
Sample Information				
Sample ID	-		EDEN-SFDA-1C-0006-SD-20140701-DUP	
Date	-		07/01/2014	
Time	-		1700	
Status	-		Validation Complete	
Type	-		Sediment	
Total Metals				
Aluminum	3,200 (bkg)	mg/kg	21000	mg/Kg
Antimony	2 ^a	mg/kg	1.8UJ	mg/Kg
Arsenic	9.8	mg/kg	3.4J	mg/Kg
Barium	60 ^b	mg/kg	160	mg/Kg
Beryllium	-	-	1.2	mg/Kg
Boron	-	-	18U	mg/Kg
Cadmium	0.99	mg/kg	0.14	mg/Kg
Calcium	-	-	1300	mg/Kg
Chromium	43.4	mg/kg	40	mg/Kg
Cobalt	50	mg/kg	15	mg/Kg
Copper	31.6	mg/kg	27	mg/Kg
Iron	6,800 (bkg)	mg/kg	32000	mg/Kg
Lead	35.8	mg/kg	17	mg/Kg
Magnesium	-	-	3600J+	mg/Kg
Manganese	460 ^c	mg/kg	650J+	mg/Kg
Mercury	0.18	mg/kg	0.061	mg/Kg
Molybdenum	-	-	0.85J	mg/Kg
Nickel	22.7	mg/kg	16	mg/Kg
Potassium	-	-	2500J+	mg/Kg
Selenium	2 ^d	mg/kg	0.9J	mg/Kg
Silver	0.733	mg/kg	0.18U	mg/Kg
Sodium	-	-	360U	mg/Kg
Thallium	-	mg/kg	0.33	mg/Kg
Vanadium	57 ^e	mg/kg	64J+	mg/Kg
Zinc	121	mg/kg	73J+	mg/Kg
Physical Properties				
Percent Ash	-	-	-	%

Notes

¹ 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.

³ 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.

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

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

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

^e Cadmium from diet

^f Chromium (VI)

^g Methyl Mercury

^h Thallium Chloride

% Percent

EPA U.S. Environmental Protection Agency

J Value is estimated

J+ Value is estimated with a possible high bias

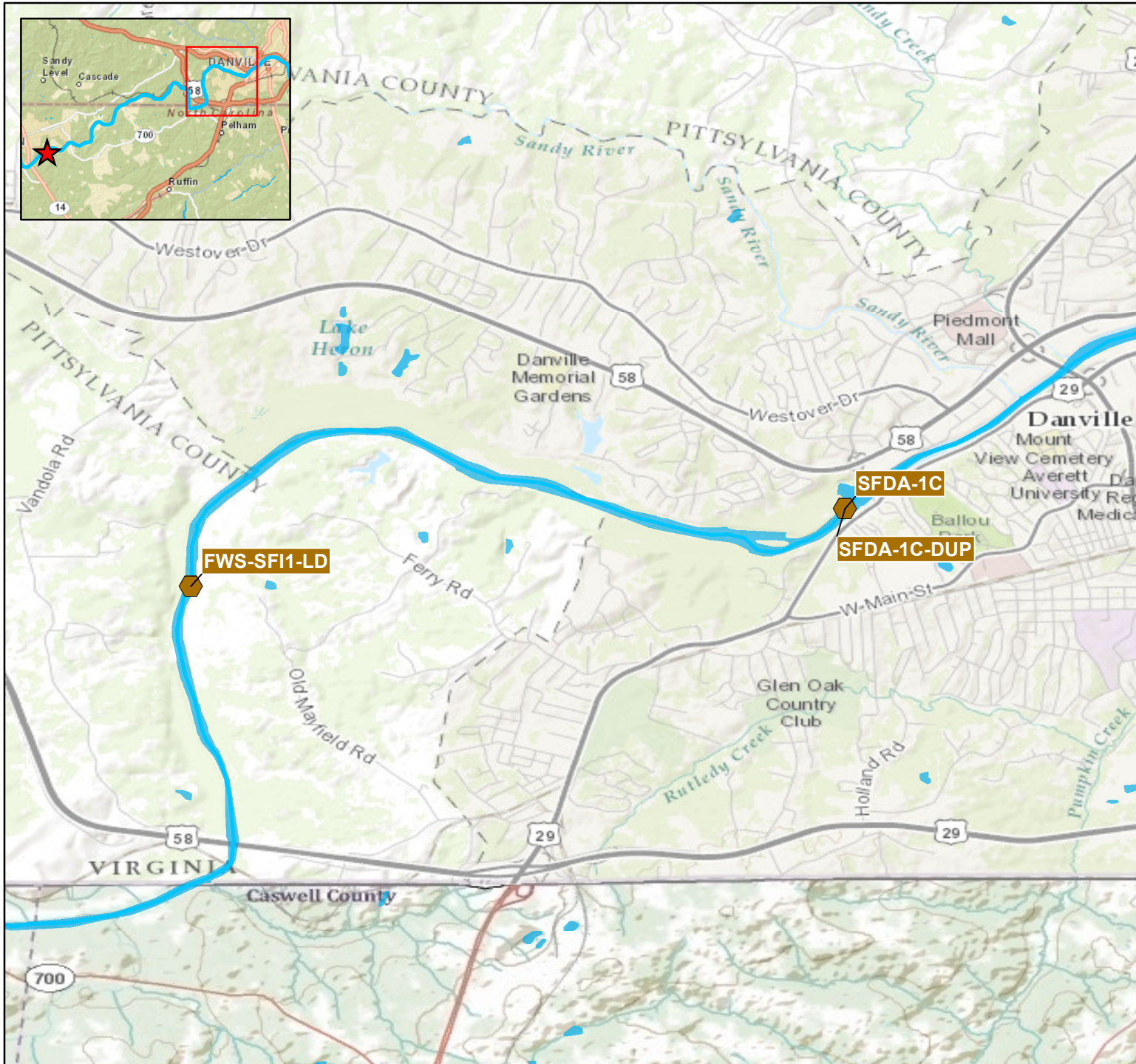
mg/kg milligrams per kilogram

ND No fly ash detected at a PLM reporting limit of 1 percent



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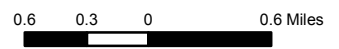
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Legend

-  Approximate Spill Location
-  Sediment Sample Location

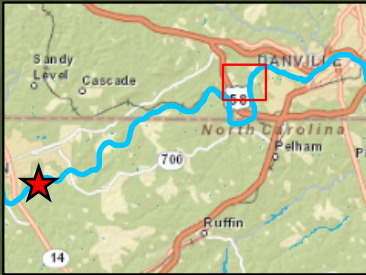
Imagery Source:
ESRI, USGS Mapping Service, 2013





Eden Coal Ash Spill
Eden, North Carolina

Sediment
Sample Locations
July 01, 2014





Legend

-  Approximate Spill Location
-  Sediment Sample Location

Imagery Source:
ESRI, USGS Mapping Service, 2013



Eden Coal Ash Spill
Eden, North Carolina

Sediment Delineation
SF11-LD
July 01, 2014

