EDEN NORTH CAROLINA COAL ASH SPILL
SEDIMENT RESULTS

NOTE: The data below represents sediment samples that were collected on Feb 8, 2014 by EPA Sample Team 2. Sediment sample measurement is in micrograms per kilogram (µg/Kg) and 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, strontium, and yttrium. 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 Standard for Sediment Samples[2]		Van Buren Rd Bridge (upstream control sample)		Directly outside 48" RCP outfall	
Sample Information						
Sample ID	-		DRVB-0214SD		DRP-0214SD	
Date	-		02/08/2014		02/08/2014	
Time	-		1910		0940	
Status	-		Validation Complete		Validation Complete	
Media	-		Sediment		Sediment	
Volatile Organics						
(m- and/or p-)Xylene	-	-	2U	µg/kg	120U	µg/kg
1,1,1,2-Tetrachloroethane	-	-	0.98U	µg/kg	60U	µg/kg
1,1,1-Trichloroethane	-	-	0.98U	µg/kg	60U	µg/kg
1,1,2,2-Tetrachloroethane	-	-	0.98U	µg/kg	60U	µg/kg
1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	-	-	0.98U	µg/kg	60U	µg/kg
1,1,2-Trichloroethane	-	-	0.98U	µg/kg	60U	µg/kg
1,1-Dichloroethane	-	-	0.98U	µg/kg	60U	µg/kg
1,1-Dichloroethene (1,1-Dichloroethylene)	-	-	0.98U	µg/kg	60U	µg/kg
1,1-Dichloropropene	-	-	0.98U	µg/kg	60U	µg/kg
1,2,3-Trichlorobenzene	-	-	0.98U	µg/kg	60U	µg/kg
1,2,3-Trichloropropane	-	-	0.98U	µg/kg	60U	µg/kg
1,2,4-Trichlorobenzene	-	-	0.98U	µg/kg	60U	µg/kg
1,2,4-Trimethylbenzene	-	-	0.98U	µg/kg	60U	µg/kg
1,2-Dibromo-3-Chloropropane (DBCP)	-	-	3.9U	µg/kg	240U	µg/kg
1,2-Dibromoethane (EDB)	-	-	0.98U	µg/kg	60U	µg/kg
1,2-Dichlorobenzene	-	-	0.98U	µg/kg	60U	µg/kg
1,2-Dichloroethane	-	-	0.98U	µg/kg	60U	µg/kg
1,2-Dichloropropane	-	-	0.98U	µg/kg	60U	µg/kg
1,3,5-Trimethylbenzene	-	-	0.98U	µg/kg	60U	µg/kg
1,3-Dichlorobenzene	-	-	0.98U	µg/kg	60U	µg/kg
1,3-Dichloropropane	-	-	0.98U	µg/kg	60U	µg/kg
1,4-Dichlorobenzene	-	-	0.98U	µg/kg	60U	µg/kg
2,2-Dichloropropane	-	-	0.98U	µg/kg	60U	µg/kg
Acetone	-	-	20U	µg/kg	1,200U	µg/kg
Benzene	-	-	0.98U	µg/kg	60U	µg/kg
Bromobenzene	-	-	0.98U	µg/kg	60U	µg/kg
Bromochloromethane	-	-	0.98U	µg/kg	60U	µg/kg
Bromodichloromethane	-	-	0.98U	µg/kg	60U	µg/kg
Bromoform	-	-	9.8U	µg/kg	600U	µg/kg
Bromomethane	-	-	2U	µg/kg	120U,J,QL-3	µg/kg
Carbon disulfide	-	-	2U	µg/kg	120U	µg/kg
Carbon Tetrachloride	-	-	0.98U	µg/kg	60U	µg/kg
Chlorobenzene	-	-	0.98U	µg/kg	60U	µg/kg
Chloroethane	-	-	2U	µg/kg	120U	µg/kg
Chloroform	-	-	0.98U	µg/kg	60U	µg/kg
Chloromethane	-	-	0.98U	µg/kg	60U	µg/kg
cis-1,2-Dichloroethene	-	-	0.98U	µg/kg	60U	µg/kg
cis-1,3-Dichloropropene	-	-	0.98U	µg/kg	60U	µg/kg
Cyclohexane	-	-	0.98U	µg/kg	60U	µg/kg
Dibromochloromethane	-	-	0.98U	µg/kg	60U	µg/kg
Dibromomethane	-	-	0.98U	µg/kg	60U	µg/kg
Dichlorodifluoromethane (Freon 12)	-	-	0.98U	µg/kg	60U	µg/kg
Ethyl Benzene	-	-	0.98U	µg/kg	60U	µg/kg
Hexachlorobutadiene	-	-	0.98U	µg/kg	60U	µg/kg
Isopropylbenzene	-	-	0.98U	µg/kg	60U	µg/kg
Methyl Acetate	-	-	2U	µg/kg	120	µg/kg
Methyl Butyl Ketone	-	-	4.9U	µg/kg	300U	µg/kg
Methyl Ethyl Ketone	-	-	4.9U	µg/kg	300U	µg/kg
Methyl Isobutyl Ketone	-	-	4.9U	µg/kg	300U	µg/kg
Methyl T-Butyl Ether (MTBE)	-	-	0.98U	µg/kg	60U	µg/kg
Methylcyclohexane	-	-	0.98U	µg/kg	60U	µg/kg
Methylene Chloride	-	-	9.8U	µg/kg	600U	µg/kg
n-Butylbenzene	-	-	0.98U	µg/kg	60U	µg/kg
n-Propylbenzene	-	-	0.98U	µg/kg	60U	µg/kg
o-Chlorotoluene	-	-	0.98U	µg/kg	60U	µg/kg
o-Xylene	-	-	0.98U	µg/kg	60U	µg/kg
p-Chlorotoluene	-	-	0.98U	µg/kg	60U	µg/kg
p-Isopropyltoluene	-	-	0.98U	µg/kg	60U	µg/kg
sec-Butylbenzene	-	-	0.98U	µg/kg	60U	µg/kg
Styrene	-	-	0.98U	µg/kg	60U	µg/kg

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Sample Information						
Sample ID	-		DRVB-0214SD		DRP-0214SD	
tert-Butylbenzene	-	-	0.98U	µg/kg	60U	µg/kg
Tetrachloroethene (Tetrachloroethylene)	-	-	0.98U	µg/kg	60U	µg/kg
Toluene	-	-	0.98U	µg/kg	60U	µg/kg
trans-1,2-Dichloroethene	-	-	0.98U	µg/kg	60U	µg/kg
trans-1,3-Dichloropropene	-	-	2U	µg/kg	120U	µg/kg
Trichloroethene (Trichloroethylene)	-	-	0.98U	µg/kg	60U	µg/kg
Trichlorofluoromethane (Freon 11)	-	-	0.98U	µg/kg	60U,J,QL-3	µg/kg
Vinyl chloride	-	-	0.98U	µg/kg	60U	µg/kg
Semi Volatile Organics						
(3-and/or 4-)Methylphenol	-	-	440U	µg/kg	460U	µg/kg
1,1-Biphenyl	-	-	44U	µg/kg	46U	µg/kg
1-Methylnaphthalene	-	-	44U	µg/kg	46U	µg/kg
2,3,4,6-Tetrachlorophenol	-	-	440U	µg/kg	460U	µg/kg
2,4,5-Trichlorophenol	-	-	440U	µg/kg	460U	µg/kg
2,4,6-Trichlorophenol	-	-	440U	µg/kg	460U	µg/kg
2,4-Dichlorophenol	-	-	440U	µg/kg	460U	µg/kg
2,4-Dimethylphenol	-	-	440U	µg/kg	460U	µg/kg
2,4-Dinitrophenol	-	-	440U	µg/kg	460U	µg/kg
2,4-Dinitrotoluene	-	-	440U	µg/kg	460U	µg/kg
2,6-Dinitrotoluene	-	-	440U	µg/kg	460U	µg/kg
2-Chloronaphthalene	-	-	440U	µg/kg	460U	µg/kg
2-Chlorophenol	-	-	440U	µg/kg	460U	µg/kg
2-Methyl-4,6-dinitrophenol	-	-	440U	µg/kg	460U	µg/kg
2-Methylnaphthalene	-	-	44U	µg/kg	46U	µg/kg
2-Methylphenol	-	-	440U	µg/kg	460U	µg/kg
2-Nitroaniline	-	-	440U	µg/kg	460U	µg/kg
2-Nitrophenol	-	-	440U	µg/kg	460U	µg/kg
3,3'-Dichlorobenzidine	-	-	440U	µg/kg	460U	µg/kg
3-Nitroaniline	-	-	440U	µg/kg	460U	µg/kg
4-Bromophenyl phenyl ether	-	-	440U	µg/kg	460U	µg/kg
4-Chloro-3-methylphenol	-	-	440U	µg/kg	460U	µg/kg
4-Chloroaniline	-	-	440U	µg/kg	460U	µg/kg
4-Chlorophenyl phenyl ether	-	-	440U	µg/kg	460U	µg/kg
4-Nitroaniline	-	-	440U	µg/kg	460U	µg/kg
4-Nitrophenol	-	-	440U	µg/kg	460U	µg/kg
Acenaphthene	-	-	44U	µg/kg	46U	µg/kg
Acenaphthylene	-	-	44U	µg/kg	46U	µg/kg
Acetophenone	-	-	440U	µg/kg	460U	µg/kg
Anthracene	-	-	44U	µg/kg	46U	µg/kg
Atrazine	-	-	440U	µg/kg	460U	µg/kg
Benzaldehyde	-	-	440U	µg/kg	460U	µg/kg
Benzo(a)anthracene	-	-	44U	µg/kg	46U	µg/kg
Benzo(a)pyrene	-	-	44U	µg/kg	46U	µg/kg
Benzo(b)fluoranthene	-	-	44U	µg/kg	46U	µg/kg
Benzo(g,h,i)perylene	-	-	44U	µg/kg	46U	µg/kg
Benzo(k)fluoranthene	-	-	44U	µg/kg	46U	µg/kg
Benzyl butyl phthalate	-	-	440U	µg/kg	460U	µg/kg
Bis(2-chloroethoxy)methane	-	-	440U	µg/kg	460U	µg/kg
bis(2-Chloroethyl) Ether	-	-	440U	µg/kg	460U	µg/kg
Bis(2-chloroisopropyl) ether	-	-	440U	µg/kg	460U	µg/kg
Bis(2-ethylhexyl) phthalate	-	-	440U	µg/kg	460U	µg/kg
Caprolactam	-	-	440U	µg/kg	460U	µg/kg
Carbazole	-	-	44U	µg/kg	46U	µg/kg
Chrysene	-	-	44U	µg/kg	46U	µg/kg
Dibenz(a,h)anthracene	-	-	44U	µg/kg	46U	µg/kg
Dibenzofuran	-	-	44U	µg/kg	46U	µg/kg
Diethyl phthalate	-	-	440U	µg/kg	460U	µg/kg
Dimethyl phthalate	-	-	960U,B-2	µg/kg	460U	µg/kg
Di-n-butylphthalate	-	-	440U	µg/kg	460U	µg/kg
Di-n-octylphthalate	-	-	440U	µg/kg	460U	µg/kg
Fluoranthene	-	-	44U	µg/kg	46U	µg/kg
Fluorene	-	-	44U	µg/kg	46U	µg/kg
Hexachlorobenzene (HCB)	-	-	44U	µg/kg	46U	µg/kg
Hexachlorobutadiene	-	-	440U	µg/kg	460U	µg/kg
Hexachlorocyclopentadiene (HCCP)	-	-	440U	µg/kg	460U	µg/kg
Hexachloroethane	-	-	440U	µg/kg	460U	µg/kg
Indeno (1,2,3-cd) pyrene	-	-	44U	µg/kg	46U	µg/kg
Isophorone	-	-	440U	µg/kg	460U	µg/kg
Naphthalene	-	-	44U	µg/kg	46U	µg/kg
Nitrobenzene	-	-	440U	µg/kg	460U	µg/kg
n-Nitroso di-n-Propylamine	-	-	440U	µg/kg	460U	µg/kg
n-Nitrosodiphenylamine/Diphenylamine	-	-	440U	µg/kg	460U	µg/kg
Pentachlorophenol	-	-	440U	µg/kg	460U	µg/kg

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Sample Information						
Sample ID	-		DRVB-0214SD		DRP-0214SD	
Phenanthrene	-	-	44U	µg/kg	46U	µg/kg
Phenol	-	-	440U	µg/kg	460U	µg/kg
Pyrene	-	-	44U	µg/kg	46U	µg/kg
Total Metals						
Aluminum	3,200 (bkg)	mg/kg	3,200J,QM-2	mg/kg	4,600	mg/kg
Antimony	2[a]	mg/kg	0.2U,J,QM-1	mg/kg	0.21	mg/kg
Arsenic	9.8	mg/kg	0.2U	mg/kg	22	mg/kg
Barium	60[b]	mg/kg	38	mg/kg	220	mg/kg
Beryllium	-	-	0.3U	mg/kg	0.85	mg/kg
Boron	-	-	5U	mg/kg	5U	mg/kg
Cadmium	0.99	mg/kg	0.1U	mg/kg	0.1U	mg/kg
Calcium	-	-	500	mg/kg	3,900	mg/kg
Chromium	43.4	mg/kg	8.9	mg/kg	8.9	mg/kg
Cobalt	50	mg/kg	3.3	mg/kg	4.5	mg/kg
Copper	31.6	mg/kg	3.6J,QR-2	mg/kg	16	mg/kg
Iron	6,800 (bkg)	mg/kg	6,800	mg/kg	8,900	mg/kg
Lead	35.8	mg/kg	3.1	mg/kg	5.1	mg/kg
Magnesium	-	-	1,300J,QM-2	mg/kg	1,200	mg/kg
Manganese	460[c]	mg/kg	120	mg/kg	170	mg/kg
Mercury	0.18	mg/kg	0.05U	mg/kg	0.05U	mg/kg
Molybdenum	-	-	1U	mg/kg	1	mg/kg
Nickel	22.7	mg/kg	3.3	mg/kg	7.6	mg/kg
Potassium	-	-	870	mg/kg	840	mg/kg
Selenium	2[d]	mg/kg	0.4U	mg/kg	1.9	mg/kg
Silver	0.733	mg/kg	0.5U	mg/kg	0.5U	mg/kg
Sodium	-	-	100U	mg/kg	100U	mg/kg
Strontium	3.1 (bkg)	mg/kg	3.1	mg/kg	58	mg/kg
Thallium	-	-	0.07	mg/kg	0.26	mg/kg
Tin	-	-	1.5U	mg/kg	1.5U	mg/kg
Titanium	-	-	270J,QM-2	mg/kg	210	mg/kg
Vanadium	57[c]	mg/kg	11	mg/kg	21	mg/kg
Yttrium	3.8 (bkg)	mg/kg	3.8	mg/kg	6.7	mg/kg
Zinc	121	mg/kg	16	mg/kg	19	mg/kg
Physical Properties						
% Solids	-	-	67	%	66	%

Notes

[2] 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

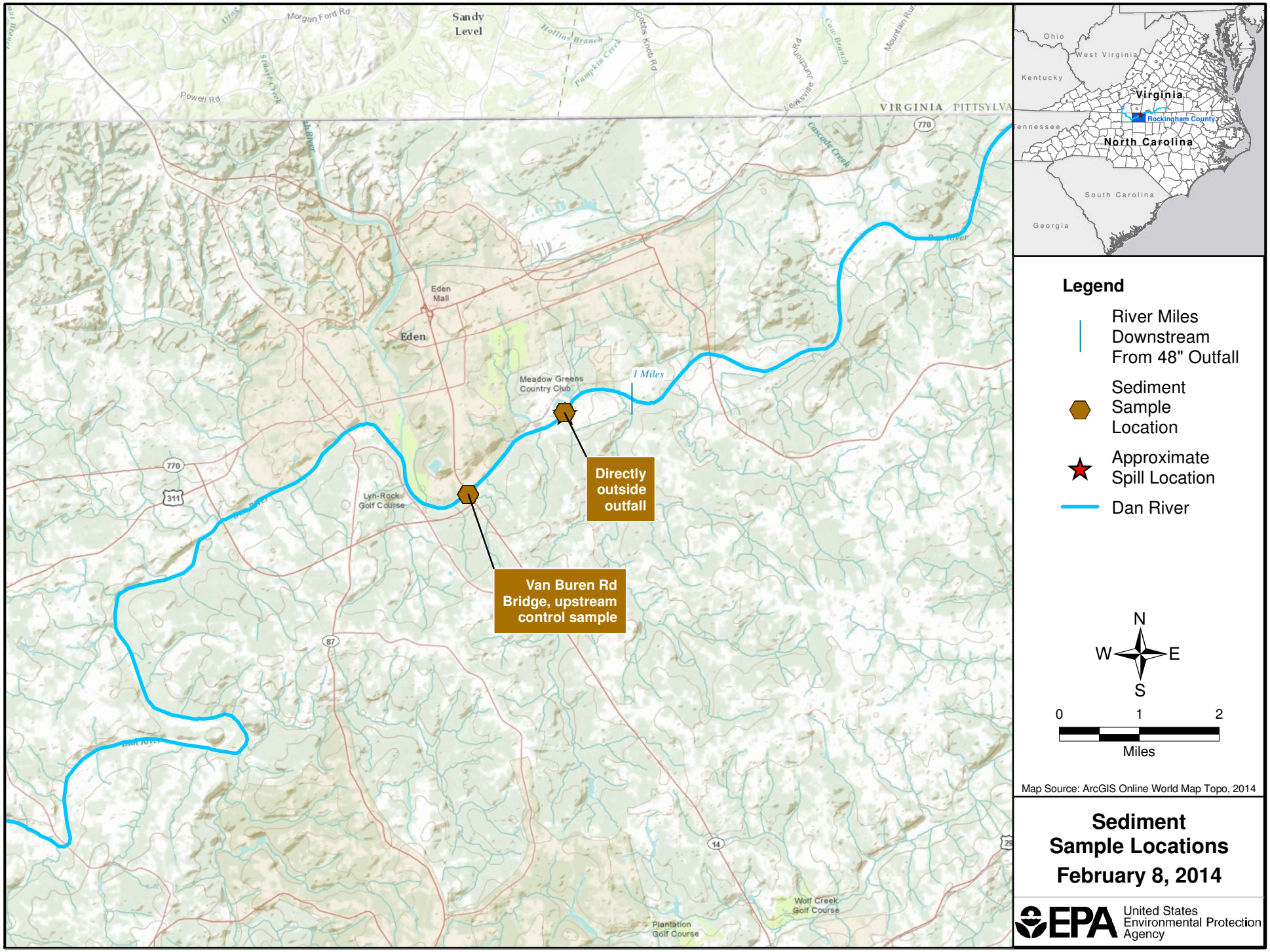
[c] Sediment screening values for manganese and vanadium come from the NOAA SQuIRT.
http://response.restoration.noaa.gov/sites/default/files/SQuiRTs.pdf

[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.

EPA	U.S. Environmental Protection Agency
µg/kg	micrograms per kilogram
mg/kg	milligrams per kilogram
%	percent

DATA QUALIFIER DEFINITIONS

B-2	Reporting level elevated due to trace amounts of analyte present in the method blank
B-3	Level in blank does not impact data quality
B-4	Level in blank impacts MRLs
B-5	Qualitative evidence of contamination in the blank at a concentration less than the MDL
C-2	Improper sample container used
H-1	Recommended holding time exceeded
J	The identification of the analyte is acceptable; the reported value is an estimate
MRL-1	MRL verification for Potable Water matrix (Drinking Water)
MRL-2	MRL verification for Non-Potable Water matrix
MRL-3	MRL verification for Soil matrix
MRL-6	MRL verification for Waste matrix
N	There is presumptive evidence that the analyte is present; the analyte is reported as a tentative identification
NA-5	Not Analyzed. Cannot exceed TCLP regulatory levels based on Total Scan analyses
NA-9	Not Analyzed. No sample container received.
NJ	Presumptive evidence that the analyte is present; reported as a tentative identification with an estimated value
P-6	Incorrect reagent or technique used to preserve sample
Q-2	Result greater than MDL but less than MRL
QC-1	Analyte concentration low in continuing calibration verification standard
QC-2	Analyte concentration high in continuing calibration verification standard
QC-5	Calibration check standard less than method control limits
QC-6	Calibration check standard greater than method control limits
QI-1	Internal standard was outside of method control limits
QL-1	Laboratory Control Spike Recovery less than method control limits
QL-2	Laboratory Control Spike Recovery greater than method control limits
QL-3	Laboratory Control Spike Precision outside of method control limits
QM-1	Matrix Spike Recovery less than method control limits
QM-2	Matrix Spike Recovery greater than method control limits
QM-3	Matrix Spike Precision outside method control limits
QR-1	MRL verification recovery less than lower control limits
QR-2	MRL verification recovery greater than upper control limits
TIC	Tentatively Identified Compound - AN analyte identified based on a match with the instrument software's mass spectral library. A calibration standard has not been analyzed to confirm the compound's identification or the estimated concentration reported.
U	The analyte was not detected at or above the reporting limit
XD-2	Duplicate results less than 5X MRL
XM-1	Sample background/spike ratio higher than method evaluation criteria



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