Missouri Department of Natural Resources
West Fork Black River - WBID 2755
Sediment Chemistry, 1995-2007

Data is in mg/kg, except HG (ug/kg)

Project	Site Code	Site Name	Mo	Dy	Yr	TAs	TBa	TCd	TCo	TCr	TCu	TFe	THg	T Ni	TPb	TTl	TZn
USGS	2755/9.9	W. Fk. Black R. bl. Bee Fk.	8	1	2004			0.15	8.7			5870.0		10.6	29.8		34.1
USGS	2755/30.4	W. Fk. Black R. nr. Greeley*	9	12	1995	2.8	340.0	0.50	16.0	32.0	17.0	16000.0	0.05	21.0	33.0		150.0
USGS	2755/27.7	W. Fk. Black R. bl. Greeley	7	1	2002			0.11			2.5	3700.0		4.8	14.8	0.0	12.0
USGS	2755/27.7	W. Fk. Black R. bl. Greeley	8	1	2004			0.05	5.4			3360.0		16.6	4.4		10.9
MDNR	2755/23.8	W. Fk. Black R. ab. West Fork mine*	4	11	2007	1.2		5.40	9.5		3.5			7.5	48.9		77.0
	Mean Concentration Above West Fork Mine					**2.0**	**340.0**	**1.24**	**9.9**	**32.0**	**7.7**	**7232.5**	**0.05**	**12.1**	**26.2**	**0.0**	**56.8**
USGS	2755/22.8	W. Fk. Black R. at West Fork Mine	8	1	2004			0.28	10.7			7890.0		12.5	50.2		63.1
MDNR	2755/22.8	W. Fk. Black R. at West Fork Mine*	4	11	2007	46.4		13.30	81.8		34.4			104.4	1725.2		894.6
MDNR	2755/22.7	W. Fk. Black R. 0.2 mi.bl. West Fk mine*	4	11	2007			9.30							48.3		13.7
MDNR	2755/22.7	W. Fk. Black R. 0.2 mi.bl. West Fk mine	5	23	2007	24.6	154.5	7.83	266.0	18.2	46.3	26450.0	0.08	376.5	753.0	7.7	1790.0
MDNR	2755/22.7	W. Fk. Black R. 0.2 mi.bl. West Fk mine	6	23	2009	4.1	94.0	0.98	35.5	14.8	22.1	12850.0	0.05	32.3	511.0	1.3	249.0
MDNR	2755/22.3	W. Fk. Black R. 0.6 mi. bl. West Fork mine *	4	11	2007	7.0		4.30			10.8			17.6	230.8		199.7
USGS	2755/21.5	W. Fk. Black R. 1.3 mi.bl. West Fk mine	7	1	2002			2.40			11.0	10030.0		62.7	204.0	0.1	633.0
USGS	2755/21.5	W. Fk. Black R. 1.3 mi.bl. West Fk mine	8	1	2004			0.30	13.1			4310.0		20.7	55.3		89.3
	Mean Concentration First 1.3 miles below West Fork Mine					**20.5**	**124.3**	**4.84**	**81.4**	**16.5**	**24.9**	**12306.0**	**0.06**	**89.5**	**447.2**	**3.0**	**491.6**
USGS	2755/16.2	W. Fk. Black R. bl. Radford Hollow	8	1	2004			0.09	4.7			4490.0		6.7	18.2		20.6
MDNR	2755/15.9	W. Fk. Black R. ab. CR 848*	4	11	2007									33.6	67.9		153.0
MDNR	2755/13.8	W. Fk. Black R. ab. Cook's Cave	4	11	2007										13.8		
USGS	2755/12.2	W. Fk. Black R. @Sutton Bluff cmpgd	7	1	2002			0.21			6.7	8000.0		14.4	25.6	0.1	51.0
USGS	2755/12.2	W. Fk. Black R. @Sutton Bluff cmpgd	8	1	2004			0.18	6.7			4990.0		9.7	23.5		33.4
MDNR	2755/12.2	W. Fk. Black R. @Sutton Bluff cmpgd*	4	11	2007										20.0		41.6
	Mean Concentration First 5.6-10.6 miles below West Fork Mine							**0.16**	**5.7**		**6.7**	**5826.7**		**16.1**	**28.2**	**0.1**	**59.9**
	Probable Effect Level (PEL)					**33.0**		**4.98**		**111.0**	**149.0**		**1.06**	**48.6**	**128.0**		**459.0**

* results are the mean for two or more duplicate samples collected on that date and location

The U.S. Environmental Protection Agency has not yet established federal guidelines for toxic chemicals in stream or lake sediments. The relationship between the amount of a toxicant in sediment and the strength of the toxicity it exerts is not simple or straightforward. Two publications, *Calculation and Evaluation of Sediment Effect Concentrations for the* Amphipod Hyalella azteca *and the* Midge Chironomus riparus, C. Ingersoll et al., 1996, and *Development and Evaluation of Consensus-Based Sediment Quality Guidelines for Freshwater Ecosystems* , D. MacDonald, et al., 2000, reviewed a large number of research papers on sediment toxicity and suggested numeric guidelines that could be used to judge the potential for toxicity to aquatic life.

Levels of Nickel and Lead in sediments of West Fork for the first 1.3 miles below the mine are more than 150 percent of the PEL values for these metals. Thus, this stream is judged to be **impaired** by Nickel and Lead.

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1/14/2013 jf