

Fish Tissue Mercury in 2012

South River, South Fork Shenandoah River and Shenandoah River

Fish were collected at 19 stations in the spring of 2012 for the South River mercury monitoring project. The Division of Consolidated Laboratory Services (DCLS) performed total mercury analysis on the single fillets taken from each fish. Target species and alternates for trophic groups were smallmouth bass for predators, redbreast sunfish for grazers, and white suckers for bottom feeders. Hogsuckers or shorthead redhorse suckers were collected as alternates to white suckers at two sites. Channel catfish were collected at 4 South Fork Shenandoah and Shenandoah River sites because they are a popular food fish. Trout were also collected at two stocking sites on South River. Target number of fish was 10 of each species per site, however we were not able to always achieve this and alternate species were not available. Redbreast sunfish were much more numerous than in 2007 probably as a result of populations rebounding after the fish kills pre-2007. We collected smallmouth at all but one site (new control site on South River) and only collected one smallmouth at the historic South River control site upstream of the Rith-Loth Dam. The absence of smallmouth is the result of the removal of the Rith-Loth Dam in the fall of 2011. The habitat upstream of the dam has changed and the smallmouth bass do not seem to prefer it. Historically, few smallmouth bass have been found upstream of the impoundment, but enough were found in the impoundment for sampling purposes. We decided to add another control upstream in case removal of the dam was allowing upstream movement of contaminated bass, but because of the change in habitat and the smallmouth bass preferences, this does not seem to be happening.

Mercury levels in fish seem to be slightly lower in South River fish in 2012 than in 2007, however smallmouth bass in the Shenandoah River were more elevated in 2012 than in 2007 and were at or above 0.5 ppm at all three stations sampled on the Shenandoah River. Generally speaking, mercury levels are similar to previous years and follow similar patterns with concentrations increasing downstream of the DuPont footbridge, decreasing at the confluence of the South and North Rivers (South Fork Shenandoah) and then decreasing again at the confluence of the North Fork and South Fork Shenandoah Rivers (Shenandoah River).

Both Rainbow and Brown trout were collected from two sites on South River where trout stocking occurs. Both species had to be collected at both sites to achieve the target number of fish. Several trout did not have measureable amounts of mercury in their tissue. Concentrations, as in past years, remain well below any advisory level.

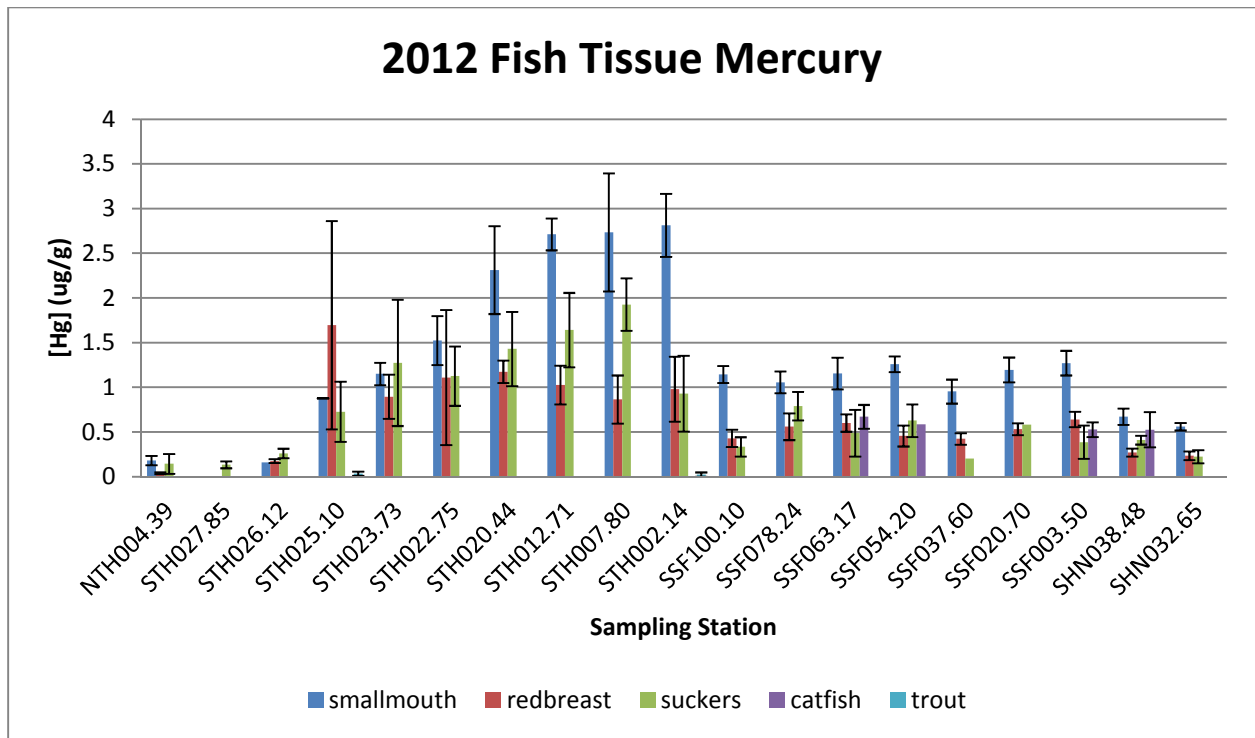


Fig. 1 – Average scores and 95% confidence limits for trophic groups and channel catfish and rainbow trout.

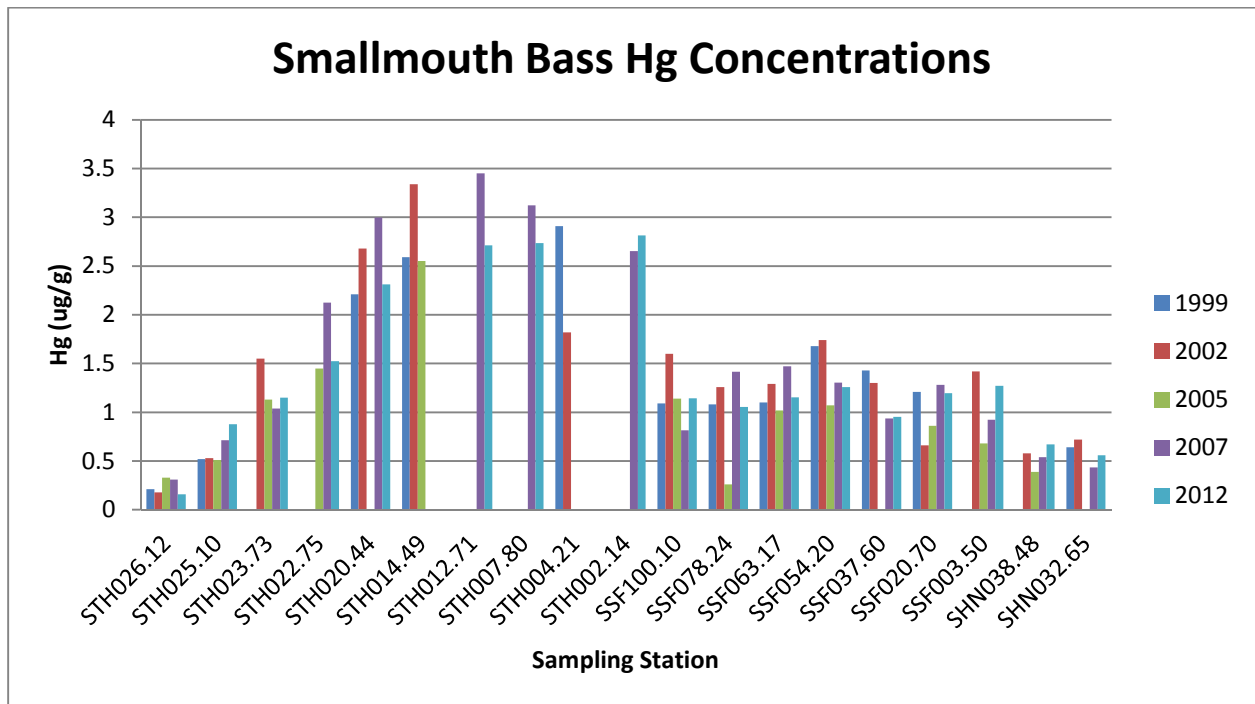


Fig 2. Average smallmouth bass mercury concentrations from 1999 to 2012.

The tables that follow show results for all of the fish collected for total mercury analysis in the 2007 South River mercury project. Based on results from past studies, methyl mercury was estimated at 90% of the total mercury. Estimated methyl mercury values that were above the action level of 0.5 ppm are highlighted in red.

1BNTH004.39 – North River near Rt. 668 (control)

Species	Collection Date	Length (cm)	Mass (g)	Total Mercury (ppm)	Estimated Methylmercury (ppm)
Smallmouth Bass	4/25/2012	35.0	661	0.35	
Smallmouth Bass	4/25/2012	34.0	519	0.32	
Smallmouth Bass	4/25/2012	32.0	409	0.16	
Smallmouth Bass	4/25/2012	33.0	498	0.14	
Smallmouth Bass	4/25/2012	29.0	323	0.16	
Smallmouth Bass	4/25/2012	29.0	308	0.12	
Smallmouth Bass	4/25/2012	24.0	161	0.12	
Smallmouth Bass	4/25/2012	25.0	211	0.19	
Smallmouth Bass	4/25/2012	25.0	173	0.15	
Smallmouth Bass	4/25/2012	22.0	127	0.10	
Average Total Mercury (ppm)				0.18	0.16
Redbreast Sunfish	4/25/2012	17.0	120	0.06	
Redbreast Sunfish	4/25/2012	17.5	133	0.04	
Redbreast Sunfish	4/25/2012	16.5	120	0.03	
Redbreast Sunfish	4/25/2012	16.5	55	0.06	
Redbreast Sunfish	4/25/2012	15.0	86	0.03	
Redbreast Sunfish	4/25/2012	15.0	82	0.08	
Redbreast Sunfish	4/25/2012	13.5	62	0.03	
Redbreast Sunfish	4/25/2012	13.0	52	0.03	
Redbreast Sunfish	4/25/2012	14.0	53	0.03	
Redbreast Sunfish	4/25/2012	12.0	39	0.03	
Average Total Mercury (ppm)				0.04	0.04
White Sucker	4/25/2012	41.0	827	0.11	
White Sucker	4/25/2012	42.0	894	0.64	
White Sucker	4/25/2012	40.0	712	0.07	
White Sucker	4/25/2012	41.0	838	0.07	
White Sucker	4/25/2012	41.0	846	0.05	
White Sucker	4/25/2012	41.0	755	0.07	
White Sucker	4/25/2012	41.0	876	0.16	
White Sucker	4/25/2012	43.0	1060	0.11	
White Sucker	4/25/2012	32.0	460	0.03	
White Sucker	4/25/2012	39.0	700	0.12	
Average Total Mercury (ppm)				0.14	0.13

1BSTH027.85 – South River near Lynhurst Rd Bridge in Waynesboro (control)

Species	Collection Date	Length (cm)	Mass (g)	Total Mercury (ppm)	Estimated Methylmercury (ppm)
White Sucker	6/7/2012	40.5	794	0.26	
White Sucker	6/7/2012	36.1	448	0.15	
White Sucker	6/7/2012	38.0	595	0.13	
White Sucker	6/7/2012	34.5	423	0.09	
White Sucker	6/7/2012	35.3	458	0.09	
White Sucker	6/7/2012	37.8	664	0.15	
White Sucker	6/7/2012	29.4	235	0.09	
White Sucker	6/7/2012	35.0	530	0.06	
White Sucker	6/7/2012	33.0	412	0.21	
White Sucker	6/7/2012	38.0	564	0.11	
Average Total Mercury (ppm)				0.13	0.12

1BSTH026.12 – South River above removed Rife-Loth Dam (Ridgeview Park) in Waynesboro (control)

Species	Collection Date	Length (cm)	Mass (g)	Total Mercury (ppm)	Estimated Methylmercury (ppm)
Smallmouth Bass	4/3/2012	27.4	315	0.16	
Average Total Mercury (ppm)				0.16	0.14
Redbreast Sunfish	4/3/2012	13.4	51	0.18	
Redbreast Sunfish	4/3/2012	11.6	31	0.17	
Redbreast Sunfish	4/3/2012	12.7	41	0.14	
Redbreast Sunfish	4/3/2012	11.1	28	0.15	
Redbreast Sunfish	4/3/2012	12.5	33	0.19	
Redbreast Sunfish	4/3/2012	11.1	29	0.23	
Redbreast Sunfish	4/3/2012	14.0	53	0.17	
Average Total Mercury (ppm)				0.18	0.16
White Sucker	4/3/2012	45.5	745	0.40	
White Sucker	4/3/2012	40.6	415	0.25	
White Sucker	4/3/2012	40.5	334	0.24	
White Sucker	4/3/2012	41.7	511	0.21	
White Sucker	4/3/2012	37.9	683	0.23	
White Sucker	4/3/2012	39.9	712	0.32	
White Sucker	4/3/2012	35.4	480	0.14	
White Sucker	4/3/2012	37.6	510	0.32	
White Sucker	4/3/2012	41.5	730	0.14	
White Sucker	4/3/2012	39.4	602	0.35	
Average Total Mercury (ppm)				0.26	0.23

1BSTH025.10 – South River north of DuPont footbridge (Constitution Park) in Waynesboro

Species	Collection Date	Length (cm)	Mass (g)	Total Mercury (ppm)	Estimated Methylmercury (ppm)
Smallmouth Bass	4/2/2012	30.5	485	0.83	
Smallmouth Bass	4/2/2012	26.2	295	1.07	
Smallmouth Bass	4/2/2012	23.4	173	0.97	
Smallmouth Bass	4/2/2012	28.5	390	0.97	
Smallmouth Bass	4/2/2012	21.5	142	0.75	
Smallmouth Bass	4/2/2012	21.5	148	0.80	
Smallmouth Bass	4/2/2012	21.5	149	0.60	
Smallmouth Bass	4/2/2012	19.2	104	0.68	
Smallmouth Bass	4/2/2012	18.3	100	1.24	
Average Total Mercury (ppm)				0.88	0.79
Redbreast Sunfish	4/2/2012	17.0	88.7	2.29	
Redbreast Sunfish	4/2/2012	11.4	33	1.10	
Average Total Mercury (ppm)				1.70	1.53
White Sucker	4/2/2012	36.0	472	0.70	
White Sucker	4/2/2012	33.0	380	0.62	
White Sucker	4/2/2012	34.0	395	0.34	
White Sucker	4/2/2012	37.0	521	0.78	
White Sucker	4/2/2012	42.5	781	0.16	
White Sucker	4/2/2012	43.5	805	0.76	
White Sucker	4/2/2012	32.5	342	0.54	
White Sucker	4/2/2012	43.0	764	0.69	
White Sucker	4/2/2012	38.0	504	2.17	
White Sucker	4/2/2012	34.5	433	0.51	
Average Total Mercury (ppm)				0.73	0.65
Brown Trout	4/2/2012	381.0	625	0.03	
Rainbow Trout	4/2/2012	31.0	307	0.12	
Rainbow Trout	4/2/2012	39.0	575	0.03	
Rainbow Trout	4/2/2012	28.0	221	0.02	
Rainbow Trout	4/2/2012	22.0	102	0.01	
Rainbow Trout	4/2/2012	36.5	500	0.00	
Rainbow Trout	4/2/2012	32.0	332	0.01	
Rainbow Trout	4/2/2012	23.5	120	0.08	
Rainbow Trout	4/2/2012	32.0	306	0.02	
Rainbow Trout	4/2/2012	36.5	466	0.02	
Average Total Mercury (ppm)				0.03	0.03

1BSTH023.73 – South River at 2nd Street (North Park) in Waynesboro

Species	Collection Date	Length (cm)	Mass (g)	Total Mercury (ppm)	Estimated Methylmercury (ppm)
Smallmouth Bass	4/3/2012	31.2	459	0.35	
Smallmouth Bass	4/3/2012	29.0	335	0.32	
Smallmouth Bass	4/3/2012	25.0	224	0.16	
Smallmouth Bass	4/3/2012	23.5	211	0.14	
Smallmouth Bass	4/3/2012	25.0	210	0.16	
Smallmouth Bass	4/3/2012	23.0	204	0.12	
Smallmouth Bass	4/3/2012	20.5	148	0.10	
Average Total Mercury (ppm)				1.15	1.04
Redbreast Sunfish	4/3/2012	16.7	88	0.06	
Redbreast Sunfish	4/3/2012	15.5	80	0.04	
Redbreast Sunfish	4/3/2012	11.5	31	0.03	
Average Total Mercury (ppm)				0.89	0.81
White Sucker	4/3/2012	39.5	627	0.11	
White Sucker	4/3/2012	40.0	654	0.64	
White Sucker	4/3/2012	40.0	639	0.07	
White Sucker	4/3/2012	39.0	606	0.07	
White Sucker	4/3/2012	39.0	654	0.05	
White Sucker	4/3/2012	40.5	776	0.07	
White Sucker	4/3/2012	41.5	848	0.16	
White Sucker	4/3/2012	35.5	487	0.11	
White Sucker	4/3/2012	40.0	715	0.03	
White Sucker	4/3/2012	41.5	736	0.12	
Average Total Mercury (ppm)				1.27	1.15

1BSTH022.75 – South River at Hopeman Parkway in Waynesboro

Species	Collection Date	Length (cm)	Mass (g)	Total Mercury (ppm)	Estimated Methylmercury (ppm)
Smallmouth Bass	4/4/2012	18.3	74.4	1.17	
Smallmouth Bass	4/4/2012	35.5	648	1.02	
Smallmouth Bass	4/4/2012	29.5	374	2.23	
Smallmouth Bass	4/4/2012	28.0	332	1.42	
Smallmouth Bass	4/4/2012	23.0	161	1.88	
Smallmouth Bass	4/4/2012	20.0	109	1.37	
Smallmouth Bass	4/4/2012	21.2	122	1.72	
Smallmouth Bass	4/4/2012	17.5	73	1.38	
Average Total Mercury (ppm)				1.52	1.37
Redbreast Sunfish	4/4/2012	15.0	56	0.35	
Redbreast Sunfish	4/4/2012	14.5	53.7	1.37	
Redbreast Sunfish	4/4/2012	12.5	24	1.61	
Average Total Mercury (ppm)				1.11	1.00
White Sucker	4/4/2012	38.0	517.7	1.27	
White Sucker	4/4/2012	39.0	542	1.59	
White Sucker	4/4/2012	41.0	666	1.07	
White Sucker	4/4/2012	43.0	802	1.16	
White Sucker	4/4/2012	38.0	652	2.37	
White Sucker	4/4/2012	30.5	329	0.62	
White Sucker	4/4/2012	27.0	229	0.55	
White Sucker	4/4/2012	23.0	136	0.97	
White Sucker	4/4/2012	20.5	101	0.87	
White Sucker	4/4/2012	20.8	48	0.79	
Average Total Mercury (ppm)				1.13	1.01

1BSTH020.44 – South River at Rt. 611 in Doods

Species	Collection Date	Length (cm)	Mass (g)	Total Mercury (ppm)	Estimated Methylmercury (ppm)
Smallmouth Bass	5/2/2012	31.0	406	2.49	
Smallmouth Bass	5/2/2012	29.0	356	1.96	
Smallmouth Bass	5/2/2012	30.0	355	4.27	
Smallmouth Bass	5/2/2012	27.0	307	2.26	
Smallmouth Bass	5/2/2012	29.0	342	1.85	
Smallmouth Bass	5/2/2012	28.0	287	1.75	
Smallmouth Bass	5/2/2012	27.5	274	2.92	
Smallmouth Bass	5/2/2012	26.0	262	1.60	
Smallmouth Bass	5/2/2012	25.5	248	2.24	
Smallmouth Bass	5/2/2012	24.0	201	1.79	
Average Total Mercury (ppm)				2.31	2.08
Redbreast Sunfish	5/2/2012	17.5	122	1.67	
Redbreast Sunfish	5/2/2012	15.0	80	1.10	
Redbreast Sunfish	5/2/2012	17.0	100	1.15	
Redbreast Sunfish	5/2/2012	14.0	62	1.22	
Redbreast Sunfish	5/2/2012	14.5	72	1.16	
Redbreast Sunfish	5/2/2012	14.0	64	1.24	
Redbreast Sunfish	5/2/2012	14.0	67	1.17	
Redbreast Sunfish	5/2/2012	13.5	54	0.90	
Redbreast Sunfish	5/2/2012	12.5	46	1.13	
Redbreast Sunfish	5/2/2012	13.0	45	1.00	
Average Total Mercury (ppm)				1.17	1.06
White Sucker	5/2/2012	43.0	792	1.89	
White Sucker	5/2/2012	44.0	880	2.37	
White Sucker	5/2/2012	42.0	832	2.00	
White Sucker	5/2/2012	41.0	687	1.25	
White Sucker	5/2/2012	41.0	717	1.45	
White Sucker	5/2/2012	38.0	591	1.19	
White Sucker	5/2/2012	43.0	760	2.05	
White Sucker	5/2/2012	40.0	625	0.11	
White Sucker	5/2/2012	33.0	440	1.12	
White Sucker	5/2/2012	31.0	375	0.87	
Average Total Mercury (ppm)				1.43	1.29

1BSTH012.71 – South River at Augusta Forestry Center (VDOF) near Crimora

Species	Collection Date	Length (cm)	Mass (g)	Total Mercury (ppm)	Estimated Methylmercury (ppm)
Smallmouth Bass	4/3/2012	32.3	433	2.93	
Smallmouth Bass	4/3/2012	26.7	201	2.57	
Smallmouth Bass	4/3/2012	29.7	319	2.90	
Smallmouth Bass	4/3/2012	27.0	232	2.68	
Smallmouth Bass	4/3/2012	27.5	316	2.78	
Smallmouth Bass	4/3/2012	17.2	58	2.16	
Smallmouth Bass	4/3/2012	26.0	230	3.09	
Smallmouth Bass	4/3/2012	22.0	132	2.52	
Smallmouth Bass	4/3/2012	22.0	122	2.78	
Average Total Mercury (ppm)				2.71	2.44
Redbreast Sunfish	4/3/2012	13.5	60	0.42	
Redbreast Sunfish	4/3/2012	16.5	92	1.50	
Redbreast Sunfish	4/3/2012	12.5	44	1.03	
Redbreast Sunfish	4/3/2012	13.3	49	1.24	
Redbreast Sunfish	4/3/2012	13.5	55	1.44	
Redbreast Sunfish	4/3/2012	13.0	48	1.03	
Redbreast Sunfish	4/3/2012	11.5	33	1.13	
Redbreast Sunfish	4/3/2012	13.4	54	0.50	
Redbreast Sunfish	4/3/2012	11.9	36	0.96	
Redbreast Sunfish	4/3/2012	12.0	42	1.00	
Average Total Mercury (ppm)				1.03	0.92
White Sucker	4/3/2012	39.5	646	1.58	
White Sucker	4/3/2012	47.5	1156	3.20	
White Sucker	4/3/2012	43.0	851	1.17	
White Sucker	4/3/2012	41.0	941	1.27	
White Sucker	4/3/2012	43.5	886	1.10	
White Sucker	4/3/2012	29.0	314	1.37	
White Sucker	4/3/2012	43.0	831	2.30	
White Sucker	4/3/2012	38.0	679	1.71	
White Sucker	4/3/2012	25.5	229	0.97	
White Sucker	4/3/2012	41.0	806	1.74	
Average Total Mercury (ppm)				1.64	1.48

1BSTH007.80 – South River at Rt. 778 (Patterson Mill Rd.) at Harriston

Species	Collection Date	Length (cm)	Mass (g)	Total Mercury (ppm)	Estimated Methylmercury (ppm)
Smallmouth Bass	4/2/2012	30.3	333	3.08	
Smallmouth Bass	4/2/2012	25.0	171	3.23	
Smallmouth Bass	4/2/2012	26.0	230	3.42	
Smallmouth Bass	4/2/2012	24.0	145	0.37	
Smallmouth Bass	4/2/2012	29.0	277	2.48	
Smallmouth Bass	4/2/2012	26.0	209	2.68	
Smallmouth Bass	4/2/2012	25.4	212	2.48	
Smallmouth Bass	4/2/2012	26.3	219	2.86	
Smallmouth Bass	4/2/2012	25.8	203	4.01	
Average Total Mercury (ppm)				2.73	2.46
Redbreast Sunfish	4/2/2012	17.5	112	1.04	
Redbreast Sunfish	4/2/2012	16.5	104	1.25	
Redbreast Sunfish	4/2/2012	16.0	90	1.41	
Redbreast Sunfish	4/2/2012	15.5	80	0.48	
Redbreast Sunfish	4/2/2012	16.0	84	0.86	
Redbreast Sunfish	4/2/2012	16.0	99	0.35	
Redbreast Sunfish	4/2/2012	15.4	72	0.37	
Redbreast Sunfish	4/2/2012	13.8	62	1.16	
Redbreast Sunfish	4/2/2012	13.7	56	0.37	
Redbreast Sunfish	4/2/2012	15.5	77	1.35	
Average Total Mercury (ppm)				0.86	0.78
White Sucker	4/2/2012	37.5	656	1.00	
White Sucker	4/2/2012	46.5	1040	2.22	
White Sucker	4/2/2012	47.0	742	2.30	
White Sucker	4/2/2012	45.5	971	2.34	
White Sucker	4/2/2012	43.0	815	2.42	
White Sucker	4/2/2012	44.5	930	1.58	
White Sucker	4/2/2012	44.5	956	2.18	
White Sucker	4/2/2012	41.5	816	2.14	
White Sucker	4/2/2012	47.0	1088	1.50	
White Sucker	4/2/2012	41.0	886	1.59	
Average Total Mercury (ppm)				1.93	1.73

1BSTH002.14 – South River at Mountain View Park in town of Grottoes

Species	Collection Date	Length (cm)	Mass (g)	Total Mercury (ppm)	Estimated Methylmercury (ppm)
Smallmouth Bass	4/2/2012	26.5	226	2.67	
Smallmouth Bass	4/2/2012	26.0	198	2.23	
Smallmouth Bass	4/2/2012	24.0	170	2.85	
Smallmouth Bass	4/2/2012	19.5	90	3.01	
Smallmouth Bass	4/2/2012	35.2	573	3.31	
Average Total Mercury (ppm)				2.81	2.53
Redbreast Sunfish	4/2/2012	14.8	73	0.63	
Redbreast Sunfish	4/2/2012	15.2	69	1.50	
Redbreast Sunfish	4/2/2012	16.0	82	1.29	
Redbreast Sunfish	4/2/2012	13.4	47	0.92	
Redbreast Sunfish	4/2/2012	12.7	40	1.24	
Redbreast Sunfish	4/2/2012	11.5	27	0.29	
Average Total Mercury (ppm)				0.98	0.88
White Sucker	4/2/2012	42.3	838	1.98	
White Sucker	4/2/2012	36.0	556	0.31	
White Sucker	4/2/2012	44.0	1078	1.60	
White Sucker	4/2/2012	44.0	1039	0.60	
White Sucker	4/2/2012	28.5	308	0.53	
White Sucker	4/2/2012	24.0	209	0.38	
White Sucker	4/2/2012	23.0	158	0.13	
White Sucker	4/2/2012	43.5	1058	0.72	
White Sucker	4/2/2012	43.0	904	1.14	
White Sucker	4/2/2012	44.0	965	1.91	
Average Total Mercury (ppm)				0.93	0.84
Brown Trout	4/2/2012	28.0	274	0.00	
Brown Trout	4/2/2012	29.3	316	0.00	
Brown Trout	4/2/2012	31.0	354	0.00	
Brown Trout	4/2/2012	32.0	419	0.00	
Brown Trout	4/2/2012	28.6	289	0.00	
Brown Trout	4/2/2012	27.0	248	0.00	
Rainbow Trout	4/2/2012	35.3	442	0.10	
Rainbow Trout	4/2/2012	28.6	280	0.01	
Rainbow Trout	4/2/2012	31.8	347	0.09	
Rainbow Trout	4/2/2012	29.0	259	0.05	
Average Total Mercury (ppm)				0.02	0.02

1BSSF100.10 – South Fork Shenandoah at Rt. 708 near Lynnwood

Species	Collection Date	Length (cm)	Mass (g)	Total Mercury (ppm)	Estimated Methylmercury (ppm)
Smallmouth Bass	4/24/2012	32.0	483	1.21	
Smallmouth Bass	4/24/2012	33.5	522	1.20	
Smallmouth Bass	4/24/2012	31.5	459	1.08	
Smallmouth Bass	4/24/2012	32.5	441	1.36	
Smallmouth Bass	4/24/2012	35.0	672	1.27	
Smallmouth Bass	4/24/2012	28.0	310	0.84	
Smallmouth Bass	4/24/2012	30.0	441	1.26	
Smallmouth Bass	4/24/2012	24.5	202	0.98	
Smallmouth Bass	4/24/2012	30.0	378	1.14	
Smallmouth Bass	4/24/2012	24.5	199	1.10	
Average Total Mercury (ppm)				1.14	1.03
Redbreast Sunfish	4/24/2012	17.0	110	0.38	
Redbreast Sunfish	4/24/2012	18.0	129	0.36	
Redbreast Sunfish	4/24/2012	18.5	123	0.77	
Redbreast Sunfish	4/24/2012	17.0	122	0.23	
Redbreast Sunfish	4/24/2012	17.5	108	0.39	
Redbreast Sunfish	4/24/2012	15.0	78	0.33	
Redbreast Sunfish	4/24/2012	15.5	70	0.53	
Redbreast Sunfish	4/24/2012	14.5	70	0.58	
Redbreast Sunfish	4/24/2012	14.5	68	0.32	
Redbreast Sunfish	4/24/2012	13.0	43	0.41	
Average Total Mercury (ppm)				0.43	0.39
White Sucker	4/24/2012	42.0	790	0.45	
White Sucker	4/24/2012	41.0	798	0.62	
White Sucker	4/24/2012	33.5	458	0.32	
White Sucker	4/24/2012	32.0	481	0.16	
White Sucker	4/24/2012	33.0	429	0.36	
White Sucker	4/24/2012	48.0	1535	0.60	
White Sucker	4/24/2012	33.0	465	0.23	
White Sucker	4/24/2012	34.0	492	0.29	
White Sucker	4/24/2012	32.0	460	0.17	
White Sucker	4/24/2012	28.5	322	0.14	
Average Total Mercury (ppm)				0.33	0.30

1BSSF078.24 – South Fork Shenandoah above dam in Town of Shenandoah

Species	Collection Date	Length (cm)	Mass (g)	Total Mercury (ppm)	Estimated Methylmercury (ppm)
Smallmouth Bass	4/9/2012	34.0	600	1.29	
Smallmouth Bass	4/9/2012	33.0	91	1.28	
Smallmouth Bass	4/9/2012	32.0	441	0.98	
Smallmouth Bass	4/9/2012	30.0	359	1.04	
Smallmouth Bass	4/9/2012	30.0	356	1.33	
Smallmouth Bass	4/9/2012	27.5	273	1.10	
Smallmouth Bass	4/9/2012	30.0	291	1.06	
Smallmouth Bass	4/9/2012	24.0	171	0.91	
Smallmouth Bass	4/9/2012	24.0	176	0.78	
Smallmouth Bass	4/9/2012	23.0	148	0.80	
Average Total Mercury (ppm)				1.06	0.95
Redbreast Sunfish	4/9/2012	18.0	170	0.40	
Redbreast Sunfish	4/9/2012	18.5	124	1.02	
Redbreast Sunfish	4/9/2012	17.8	127	0.60	
Redbreast Sunfish	4/9/2012	16.2	100	0.60	
Redbreast Sunfish	4/9/2012	15.0	82	0.30	
Redbreast Sunfish	4/9/2012	16.0	91	0.45	
Redbreast Sunfish	4/9/2012	15.5	86	0.60	
Redbreast Sunfish	4/9/2012	16.0	79	0.50	
Average Total Mercury (ppm)				0.56	0.50
White Sucker	4/9/2012	47.0	1207	0.57	
White Sucker	4/9/2012	49.0	1355	1.00	
White Sucker	4/9/2012	42.0	774	1.04	
White Sucker	4/9/2012	50.0	1505	1.27	
White Sucker	4/9/2012	50.5	1801	0.82	
White Sucker	4/9/2012	47.0	1254	0.89	
White Sucker	4/9/2012	44.5	989	0.62	
White Sucker	4/9/2012	47.0	1243	0.48	
White Sucker	4/9/2012	46.0	1184	0.57	
White Sucker	4/9/2012	45.0	1084	0.64	
Average Total Mercury (ppm)				0.79	0.71

1BSSF063.17 – South Fork Shenandoah at Newport Landing

Species	Collection Date	Length (cm)	Mass (g)	Total Mercury (ppm)	Estimated Methylmercury (ppm)
Smallmouth Bass	4/4/2012	22.0	115.5	0.35	
Smallmouth Bass	4/4/2012	34.5	539.8	0.32	
Smallmouth Bass	4/4/2012	34.0	507.7	0.16	
Smallmouth Bass	4/4/2012	30.5	361.1	0.14	
Smallmouth Bass	4/4/2012	28.0	240.7	0.16	
Smallmouth Bass	4/4/2012	28.0	281.9	0.12	
Smallmouth Bass	4/4/2012	22.5	130.5	0.12	
Smallmouth Bass	4/4/2012	25.0	165.6	0.19	
Smallmouth Bass	4/4/2012	23.0	140	0.15	
Smallmouth Bass	4/4/2012	21.0	104.3	0.10	
Average Total Mercury (ppm)				1.15	1.04
Redbreast Sunfish	4/4/2012	19.5	154.3	0.06	
Redbreast Sunfish	4/4/2012	17.0	100	0.04	
Redbreast Sunfish	4/4/2012	92.7	17	0.03	
Redbreast Sunfish	4/4/2012	123.5	18.5	0.06	
Redbreast Sunfish	4/4/2012	16.5	107.6	0.03	
Redbreast Sunfish	4/4/2012	17.5	107.1	0.08	
Redbreast Sunfish	4/4/2012	20.0	172.3	0.03	
Redbreast Sunfish	4/4/2012	17.0	110	0.03	
Redbreast Sunfish	4/4/2012	16.0	87	0.03	
Redbreast Sunfish	4/4/2012	17.5	95.3	0.03	
Average Total Mercury (ppm)				0.60	0.54
White Sucker	4/4/2012	34.0	551	0.11	
White Sucker	4/4/2012	37.0	601	0.64	
White Sucker	4/4/2012	47.0	1338	0.07	
White Sucker	4/4/2012	42.5	920	0.07	
White Sucker	4/4/2012	34.0	549	0.05	
Average Total Mercury (ppm)				0.49	0.44
Channel Catfish	4/4/2012	41.8	703	0.11	
Channel Catfish	4/4/2012	37.0	458	0.64	
Channel Catfish	4/4/2012	44.0	697	0.07	
Channel Catfish	4/4/2012	46.0	804	0.07	
Channel Catfish	4/4/2012	55.5	1678	0.05	
Channel Catfish	4/4/2012	55.5	1933	0.07	
Channel Catfish	4/4/2012	51.0	1227	0.16	
Channel Catfish	4/4/2012	46.0	798	0.11	
Channel Catfish	4/4/2012	42.5	660	0.03	
Channel Catfish	4/4/2012	50.0	1115	0.12	
Average Total Mercury (ppm)				0.67	0.60

1BSSF054.20 – South Fork Shenandoah at Rt. 211 near Hamburg (Whitehouse Landing)

Species	Collection Date	Length (cm)	Mass (g)	Total Mercury (ppm)	Estimated Methylmercury (ppm)
Smallmouth Bass	4/9/2012	30.0	400	1.13	
Smallmouth Bass	4/9/2012	34.0	595	1.44	
Smallmouth Bass	4/9/2012	28.0	302	1.21	
Smallmouth Bass	4/9/2012	28.0	275	1.51	
Smallmouth Bass	4/9/2012	25.0	185	1.12	
Smallmouth Bass	4/9/2012	25.0	211	1.14	
Smallmouth Bass	4/9/2012	23.5	158	1.30	
Smallmouth Bass	4/9/2012	23.0	167	1.16	
Smallmouth Bass	4/9/2012	24.0	184	1.39	
Smallmouth Bass	4/9/2012	23.0	150	1.19	
Average Total Mercury (ppm)				1.26	1.13
Redbreast Sunfish	4/9/2012	19.0	163	0.41	
Redbreast Sunfish	4/9/2012	18.0	146	0.34	
Redbreast Sunfish	4/9/2012	18.0	137	0.36	
Redbreast Sunfish	4/9/2012	20.0	187	0.42	
Redbreast Sunfish	4/9/2012	18.0	150	0.31	
Redbreast Sunfish	4/9/2012	18.5	162	0.44	
Redbreast Sunfish	4/9/2012	18.5	144	0.87	
Redbreast Sunfish	4/9/2012	15.5	84	0.35	
Redbreast Sunfish	4/9/2012	16.0	98	0.33	
Redbreast Sunfish	4/9/2012	17.0	119	0.74	
Average Total Mercury (ppm)				0.46	0.41
Northern Hogsucker	4/9/2012	41.0	937	1.02	
Northern Hogsucker	4/9/2012	32.0	495	0.35	
Northern Hogsucker	4/9/2012	34.0	545	0.38	
Northern Hogsucker	4/9/2012	44.0	1179	0.79	
Northern Hogsucker	4/9/2012	41.0	976	0.69	
Northern Hogsucker	4/9/2012	43.0	1021	0.70	
Northern Hogsucker	4/9/2012	30.0	378	0.19	
Northern Hogsucker	4/9/2012	42.0	1051	1.05	
Northern Hogsucker	4/9/2012	30.0	401	0.36	
Northern Hogsucker	4/9/2012	32.0	461	0.74	
Average Total Mercury (ppm)				0.63	0.56
Channel Catfish	4/9/2012	42.0	826	0.59	
Average Total Mercury (ppm)				0.59	0.53

1BSSF037.60 – South Fork Shenandoah at Fosters Landing, Rt. 684

Species	Collection Date	Length (cm)	Mass (g)	Total Mercury (ppm)	Estimated Methylmercury (ppm)
Smallmouth Bass	4/11/2012	28.5	290	1.31	
Smallmouth Bass	4/11/2012	30.5	391	0.87	
Smallmouth Bass	4/11/2012	28.0	264	1.27	
Smallmouth Bass	4/11/2012	27.0	253	1.00	
Smallmouth Bass	4/11/2012	29.0	377	1.00	
Smallmouth Bass	4/11/2012	27.0	282	1.02	
Smallmouth Bass	4/11/2012	25.0	218	0.82	
Smallmouth Bass	4/11/2012	22.5	156	0.76	
Smallmouth Bass	4/11/2012	20.5	115	0.61	
Smallmouth Bass	4/11/2012	21.0	122	0.88	
Average Total Mercury (ppm)				0.95	0.86
Redbreast Sunfish	4/11/2012	17.0	101	0.40	
Redbreast Sunfish	4/11/2012	15.0	61	0.36	
Redbreast Sunfish	4/11/2012	19.5	176	0.43	
Redbreast Sunfish	4/11/2012	16.0	95	0.45	
Redbreast Sunfish	4/11/2012	16.0	83	0.51	
Redbreast Sunfish	4/11/2012	14.0	59	0.24	
Redbreast Sunfish	4/11/2012	14.0	56	0.36	
Redbreast Sunfish	4/11/2012	15.0	65	0.34	
Redbreast Sunfish	4/11/2012	13.5	46	0.58	
Redbreast Sunfish	4/11/2012	15.5	71	0.56	
Average Total Mercury (ppm)				0.42	0.38
White Sucker	4/11/2012	34.0	486	0.20	
Average Total Mercury (ppm)				0.20	0.18

1BSSF020.70 – South Fork Shenandoah at Bentonville/Hazard Mill Landings

Species	Collection Date	Length (cm)	Mass (g)	Total Mercury (ppm)	Estimated Methylmercury (ppm)
Smallmouth Bass	4/11/2012	36.0	645	1.14	
Smallmouth Bass	4/11/2012	39.0	964	1.59	
Smallmouth Bass	4/11/2012	38.5	875	0.95	
Smallmouth Bass	4/11/2012	37.0	676	1.36	
Smallmouth Bass	4/11/2012	34.5	540	1.45	
Smallmouth Bass	4/11/2012	28.5	418	0.95	
Smallmouth Bass	4/11/2012	33.0	525	0.95	
Smallmouth Bass	4/11/2012	32.5	514	1.15	
Smallmouth Bass	4/11/2012	31.0	416	1.28	
Smallmouth Bass	4/11/2012	29.5	378	1.15	
Average Total Mercury (ppm)				1.20	1.08
Redbreast Sunfish	4/11/2012	20.0	198	0.50	
Redbreast Sunfish	4/11/2012	18.5	170	0.45	
Redbreast Sunfish	4/11/2012	19.0	146	0.68	
Redbreast Sunfish	4/11/2012	18.0	139	0.43	
Redbreast Sunfish	4/11/2012	19.0	139	0.44	
Redbreast Sunfish	4/11/2012	19.5	154	0.62	
Redbreast Sunfish	4/11/2012	18.5	131	0.74	
Redbreast Sunfish	4/11/2012	18.5	124	0.50	
Redbreast Sunfish	4/11/2012	14.5	59	0.47	
Redbreast Sunfish	4/11/2012	15.0	63	0.51	
Average Total Mercury (ppm)				0.53	0.48
White Sucker	4/11/2012	49.5	1660	0.58	
Average Total Mercury (ppm)				0.58	0.52

1BSSF003.50 – South Fork Shenandoah at Luray Avenue Landing in Front Royal

Species	Collection Date	Length (cm)	Mass (g)	Total Mercury (ppm)	Estimated Methylmercury (ppm)
Smallmouth Bass	4/10/2012	44.0	1211	1.23	
Smallmouth Bass	4/10/2012	42.0	1163	1.32	
Smallmouth Bass	4/10/2012	41.0	979	1.17	
Smallmouth Bass	4/10/2012	47.0	1608	1.78	
Smallmouth Bass	4/10/2012	40.0	805	1.39	
Smallmouth Bass	4/10/2012	31.0	432	0.92	
Smallmouth Bass	4/10/2012	41.0	426	1.16	
Smallmouth Bass	4/10/2012	26.5	271	1.35	
Smallmouth Bass	4/10/2012	30.0	386	1.25	
Smallmouth Bass	4/10/2012	28.0	322	1.14	
Average Total Mercury (ppm)				1.27	1.14
Redbreast Sunfish	4/10/2012	19.0	131	0.84	
Redbreast Sunfish	4/10/2012	18.0	118	0.78	
Redbreast Sunfish	4/10/2012	18.0	116	0.52	
Redbreast Sunfish	4/10/2012	19.0	146	0.63	
Redbreast Sunfish	4/10/2012	17.0	111	0.84	
Redbreast Sunfish	4/10/2012	18.0	123	0.58	
Redbreast Sunfish	4/10/2012	18.0	115	0.61	
Redbreast Sunfish	4/10/2012	19.0	138	0.59	
Redbreast Sunfish	4/10/2012	18.0	119	0.44	
Redbreast Sunfish	4/10/2012	19.0	142	0.57	
Average Total Mercury (ppm)				0.64	0.58
White Sucker	4/10/2012	43.0	1054	0.87	
White Sucker	4/10/2012	48.0	1616	0.85	
White Sucker	4/10/2012	44.0	1236	0.41	
White Sucker	4/10/2012	36.0	681	0.29	
White Sucker	4/10/2012	31.5	414	0.28	
White Sucker	4/10/2012	34.0	550	0.26	
White Sucker	4/10/2012	34.0	599	0.09	
White Sucker	4/10/2012	36.0	742	0.13	
White Sucker	4/10/2012	33.0	578	0.31	
Average Total Mercury (ppm)				0.39	0.35
Channel Catfish	4/10/2012	54.0	1743	0.57	
Channel Catfish	4/10/2012	48.0	1095	0.35	
Channel Catfish	4/10/2012	57.0	2089	0.80	
Channel Catfish	4/10/2012	51.0	1549	0.52	
Channel Catfish	4/10/2012	41.0	715	0.44	
Channel Catfish	4/10/2012	47.0	1109	0.50	
Channel Catfish	4/10/2012	41.0	842	0.46	
Channel Catfish	4/10/2012	59.0	2327	0.50	
Channel Catfish	4/10/2012	52.0	2044	0.71	
Channel Catfish	4/10/2012	49.0	1314	0.43	
Average Total Mercury (ppm)				0.53	0.47

1BSHN038.48 – Shenandoah River at Rt. 17/50

Species	Collection Date	Length (cm)	Mass (g)	Total Mercury (ppm)	Estimated Methylmercury (ppm)
Smallmouth Bass	4/10/2012	46.0	1351	0.92	
Smallmouth Bass	4/10/2012	37.5	685	0.61	
Smallmouth Bass	4/10/2012	39.0	896	0.56	
Smallmouth Bass	4/10/2012	37.0	683	0.83	
Smallmouth Bass	4/10/2012	35.0	554	0.85	
Smallmouth Bass	4/10/2012	34.5	566	0.67	
Smallmouth Bass	4/10/2012	27.5	329	0.62	
Smallmouth Bass	4/10/2012	30.0	400	0.45	
Smallmouth Bass	4/10/2012	28.5	291	0.63	
Smallmouth Bass	4/10/2012	27.0	254	0.59	
Average Total Mercury (ppm)				0.67	0.60
Redbreast Sunfish	4/10/2012	17.0	97	0.24	
Redbreast Sunfish	4/10/2012	19.0	105	0.38	
Redbreast Sunfish	4/10/2012	16.0	73	0.24	
Redbreast Sunfish	4/10/2012	18.5	126	0.23	
Redbreast Sunfish	4/10/2012	16.5	75	0.22	
Redbreast Sunfish	4/10/2012	17.0	97	0.23	
Redbreast Sunfish	4/10/2012	16.0	78	0.42	
Redbreast Sunfish	4/10/2012	16.0	71	0.21	
Redbreast Sunfish	4/10/2012	15.5	68	0.27	
Redbreast Sunfish	4/10/2012	16.0	71	0.25	
Average Total Mercury (ppm)				0.53	0.47
Shorthead Redhorse	4/10/2012	50.0	1721	0.47	
Shorthead Redhorse	4/10/2012	47.0	1250	0.41	
Shorthead Redhorse	4/10/2012	45.0	1382	0.35	
Shorthead Redhorse	4/10/2012	52.0	1830	0.41	
Average Total Mercury (ppm)				0.41	0.37
Channel Catfish	4/10/2012	40.5	609	0.36	
Channel Catfish	4/10/2012	44.5	794	0.47	
Channel Catfish	4/10/2012	42.0	642	0.43	
Channel Catfish	4/10/2012	45.0	826	0.37	
Channel Catfish	4/10/2012	60.5	3058	1.37	
Channel Catfish	4/10/2012	49.0	942	0.60	
Channel Catfish	4/10/2012	49.0	1130	0.40	
Channel Catfish	4/10/2012	44.0	742	0.63	
Channel Catfish	4/10/2012	44.5	710	0.38	
Channel Catfish	4/10/2012	40.0	500	0.27	
Average Total Mercury (ppm)				0.14	0.13

1BSHN032.65 – Shenandoah River at Locks Landing

Species	Collection Date	Length (cm)	Mass (g)	Total Mercury (ppm)	Estimated Methylmercury (ppm)
Smallmouth Bass	4/5/2012	28.2	266.8	0.68	
Smallmouth Bass	4/5/2012	25.1	203	0.59	
Smallmouth Bass	4/5/2012	24.4	160.8	0.59	
Smallmouth Bass	4/5/2012	22.9	505.3	0.58	
Smallmouth Bass	4/5/2012	26.0	240.2	0.47	
Smallmouth Bass	4/5/2012	38.5	700.6	0.49	
Smallmouth Bass	4/5/2012	41.6	965.1	0.49	
Smallmouth Bass	4/5/2012	30.0	363.1	0.57	
Smallmouth Bass	4/5/2012	26.6	255.4	0.52	
Smallmouth Bass	4/5/2012	23.1	143.5	0.62	
Average Total Mercury (ppm)				0.56	0.50
Redbreast Sunfish	4/5/2012	18.5	115.6	0.30	
Redbreast Sunfish	4/5/2012	19.0	133.6	0.21	
Redbreast Sunfish	4/5/2012	18.5	126.8	0.17	
Redbreast Sunfish	4/5/2012	20.0	135.1	0.40	
Redbreast Sunfish	4/5/2012	18.0	99.9	0.27	
Redbreast Sunfish	4/5/2012	19.0	123.1	0.18	
Redbreast Sunfish	4/5/2012	20.6	173.1	0.24	
Redbreast Sunfish	4/5/2012	17.6	108.4	0.13	
Redbreast Sunfish	4/5/2012	19.5	148.7	0.28	
Redbreast Sunfish	4/5/2012	18.1	116.9	0.18	
Average Total Mercury (ppm)				0.23	0.21
White Sucker	4/5/2012	44.0	1038	0.39	
White Sucker	4/5/2012	30.5	415	0.14	
White Sucker	4/5/2012	46.0	1117	0.40	
White Sucker	4/5/2012	33.0	534	0.17	
White Sucker	4/5/2012	31.0	408	0.14	
White Sucker	4/5/2012	30.0	310	0.18	
White Sucker	4/5/2012	39.0	750	0.18	
White Sucker	4/5/2012	47.0	1216	0.39	
White Sucker	4/5/2012	33.0	473	0.12	
White Sucker	4/5/2012	30.0	404	0.13	
Average Total Mercury (ppm)				0.22	0.20