

Mark Twain Lake, Site 1



2009 DATA

Monroe and Ralls County
 Latitude: 39.524 Longitude: -91.6478

Date	4/18	5/10	5/30	X	7/12	8/2	8/23	9/12	Mean
Secchi (inches)	16	9	17		22	40	52	54	25
TP (µg/L)	139	182	177		80	36	23	24	69
TN (µg/L)	2090	2090	1890		1820	1650	1450	1280	1728
CHL (µg/L)	3.4	24.6	4.2		13.9	6.2	7.4	9.7	8.0
ISS (mg/L)	10.9	16.3	7.9		5.4	1.2	1.5	1.8	4.2

Water clarity at Site 1 (Clarence Cannon Dam) was greater during the second half of the season than the first, reaching a maximum 4 ½ feet by September 12. Concentrations of inorganic suspended sediment, phosphorus and nitrogen followed the inverse of the water clarity pattern, generally decreasing as the season progressed. Chlorophyll concentrations varied across the season with no apparent pattern. The maximum chlorophyll value of 24.6 µg/L occurred on the May 10 sampling date, between the lowest chlorophyll values measured in 2009.

While the 2009 seasonal mean phosphorus concentration barely exceeded the long-term mean, the season was punctuated by high variability. The 2009 maximum and minimum phosphorus concentrations at Site 1 (182 and 23 µg/L, respectively) approached the entire range observed at this site to date. Overall, the long-term mean phosphorus concentration is below the recently

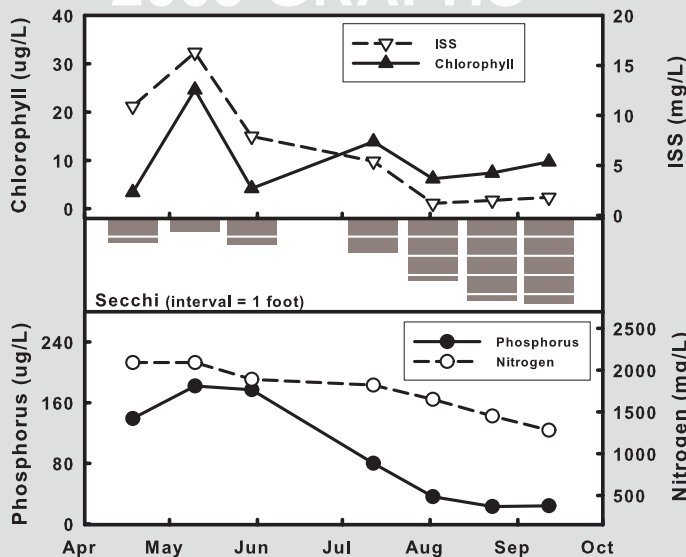
adopted nutrient criteria value. The long-term mean nitrogen concentration (graph not shown) does not exceed the nutrient criteria value when only LMVP

data are used, however University of Missouri data indicates that the lake marginally exceeds nitrogen nutrient criteria. There was just enough sediment material in the lake (graph not shown) to inhibit algal growth at the dam. As a result, chlorophyll concentrations were quite low, with the maximum value barely reaching the long-term mean. The 2009 Secchi transparency (graph not shown) averaged lower than usual at the dam despite the low algal biomass.

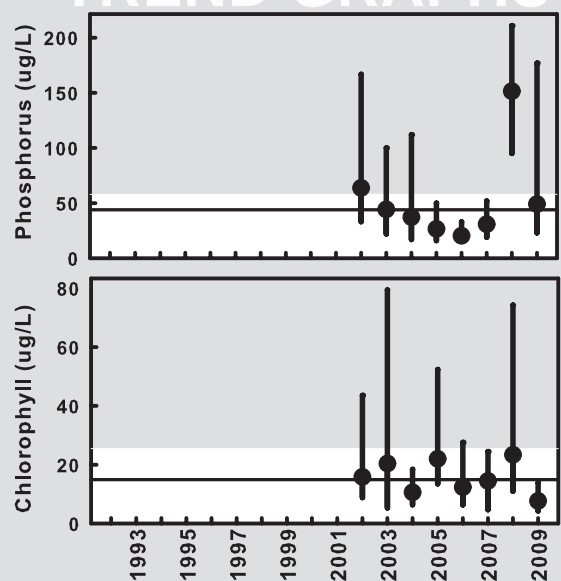
Mark Twain Lake sampling sites



2009 GRAPHS



TREND GRAPHS



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Mark Twain Lake, Site 2



2009 DATA

Monroe and Ralls County
 Latitude: 39.5395 Longitude: -91.6972

Date	4/18	5/10	5/30	X	7/12	8/2	8/23	9/12	Mean
Secchi (inches)	14	8	15		24	37	44	56	23
TP (µg/L)	136	176	158		65	39	23	25	66
TN (µg/L)	2260	1970	1920		1730	1740	1480	1250	1736
CHL (µg/L)	5.2	14.9	4.8		19.9	8.8	8.7	10.0	9.2
ISS (mg/L)	14.3	14.9	9.8		7.8	2.6	1.9	1.1	5.1

Site 2 is located in the Indian Creek arm of Mark Twain Lake and has been sampled since 2002.

Measured values and the patterns of variation were similar among the 3 Mark Twain Lake sites. Water clarity began improving mid-season, reaching a maximum of 4 ½ feet by September 12. Both nutrients decreased as the season progressed, with minimum values at or near the end of the season. ISS concentrations behaved similarly, decreasing from the beginning of the season through season's end. As at the dam, chlorophyll concentrations varied across a small range.

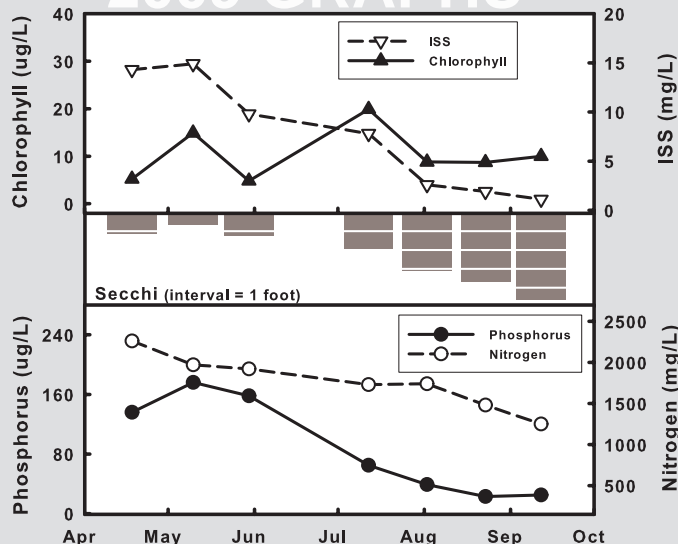
Phosphorus concentrations at Site 2 varied considerably, though the 2009 seasonal mean

was only slightly higher than the long-term mean (which is nearly identical to the dam). 2009 inorganic suspended sediment values averaged only slightly higher than the long-term mean but (like phosphorus) varied across nearly the range of values measured at this site to date.

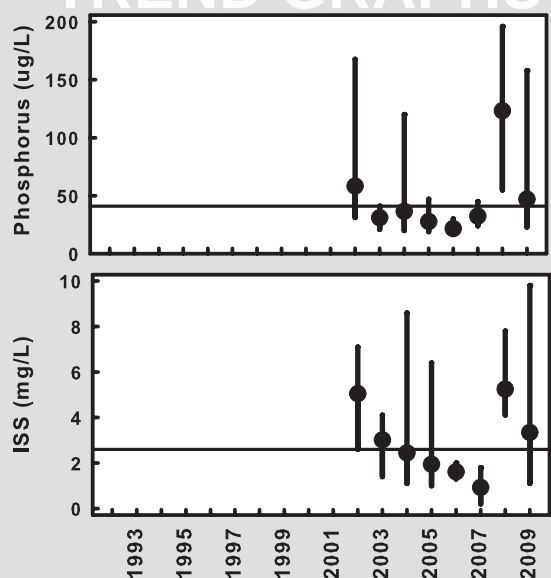
Mark Twain Lake sampling sites



2009 GRAPHS



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Mark Twain Lake, Site 5



2009 DATA

Monroe and Ralls County
 Latitude: 39.5066 Longitude: -91.7679

Date	4/18	5/10	5/30	X	7/12	8/2	8/23	9/12	Mean
Secchi (inches)	16	8	14		19	36	50	57	23
TP (µg/L)	130	185	168		91	40	28	25	72
TN (µg/L)	2440	1890	1910		2000	1830	1580	1290	1818
CHL (µg/L)	17.4	14.2	4.2		12.0	7.8	14.7	9.9	10.5
ISS (mg/L)	20.2	16.2	10.3		7.7	3.5	2.2	1.5	6.1

Site 5 is located in "Florida Pool," the confluence of the North Fork and South Fork Rivers in the main channel.

Measured values and the patterns of variation were similar among the 3 Mark Twain Lake sites. Water clarity increased and nutrients and sediments decreased as the season progressed. The early season peaks tended to be higher, resulting in higher variability at Site 5. This variability won't be apparent on the trend graphs, as the highest values occurred prior to May 15.

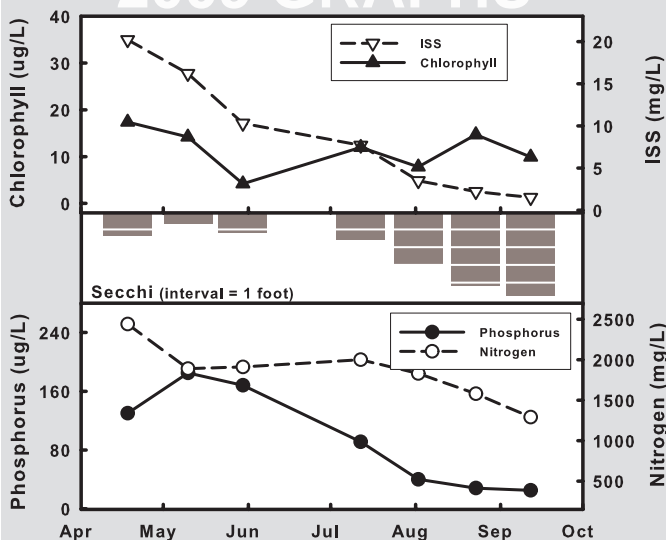
The seasonal suspended sediment (ISS) variability was high in 2009, with a higher maximum value than seen at this site to date. The mean was also high in 2009, exceeded only by

the 2008 mean. Secchi transparency values at Site 5 closely mimic suspended sediment concentrations. Both parameters nicely illustrate how the flood conditions of 2008 interrupted the apparent trend of reduced suspended sediments and improving water clarity.

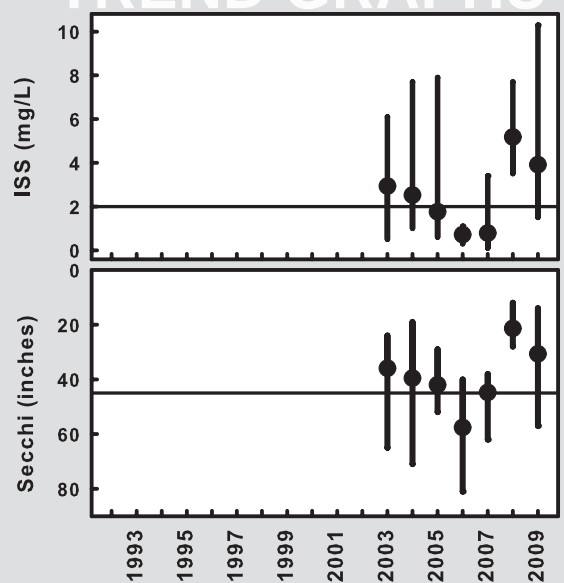
Mark Twain Lake sampling sites



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