

Stockton Lake



Site #		1	2	3	5
(# of samples)		(6)	(6)	(4)	(8)
Secchi	Mean	90	102	49	27
(inches)	Range	74 - 125	92 - 120	39 - 55	12 - 67
TP	Mean	10	13	23	79
(µg/L)	Range	9 - 14	9 - 17	16 - 62	22 - 163
TN	Mean	362	380	416	1101
(µg/L)	Range	180 - 680	220 - 710	220 - 1050	730 - 1570
CHL	Mean	9.4	10.0	13.1	27.3
(µg/L)	Range	4.8 - 15.2	6.8 - 18.6	10.4 - 17.0	2.5 - 90.2
ISS	Mean	2	1.5	2.4	10.6
(mg/L)	Range	1.2 - 4.2	0.9 - 2.6	1.6 - 3.8	3.7 - 39.6



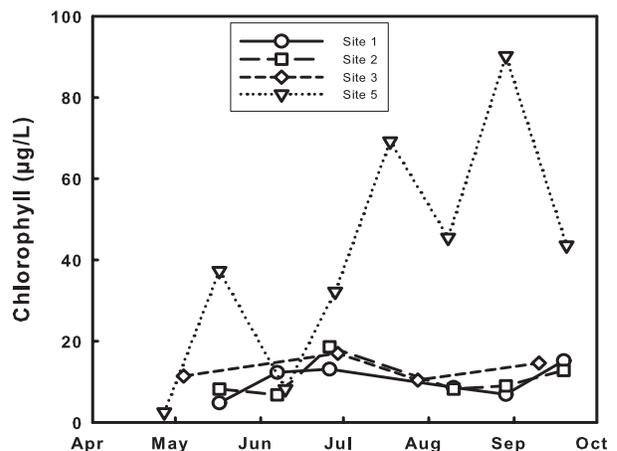
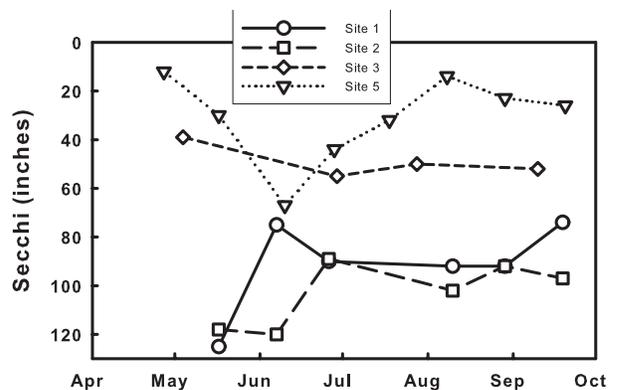
2011 Stockton Lake Sample Sites

Stockton Lake was monitored at 4 locations in 2011. **Site 1** is near the dam. **Site 2** is near the State Park Marina on the Little Sac River Arm. **Site 3** is near the Mutton Creek Public Use Area on the Sac River arm of Stockton Lake, just below the Highway Y bridge. **Site 5** is at the Greenfield Public Access on the Sac River Arm.

The data table above summarizes water quality at all 4 sites.

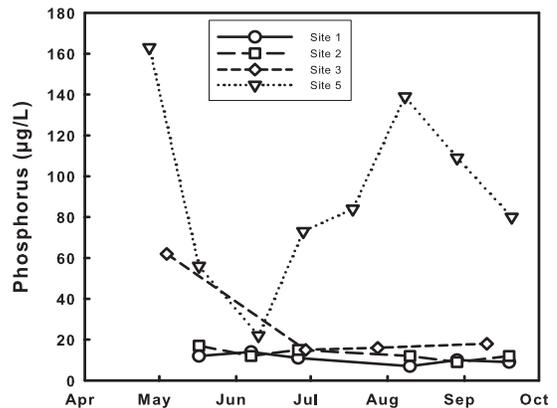
At the dam (Site 1) Stockton Lake had the second highest clarity of any public lake monitored by the LMVP in 2011. Both sites had mean Secchi values of about 8 feet, with the highest clarity of the season occurring early in the season. Reservoir data typically show that the greatest clarity is found near the dam and that clarity decreases with distance up-lake from the dam. Consistent with this, Sites 3 and 5, located considerably farther from the dam than Site 2, had half to one third the clarity found at either Site 1 or Site 2.

Chlorophyll concentrations were low at Sites 1 and 2, slightly higher at Site 3, and quite high at Site 5.

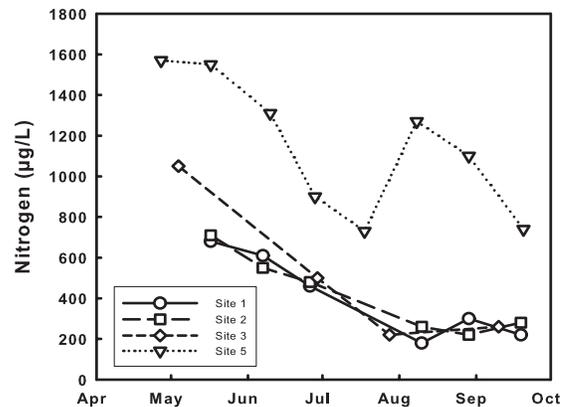


Stockton Lake 2011 Data

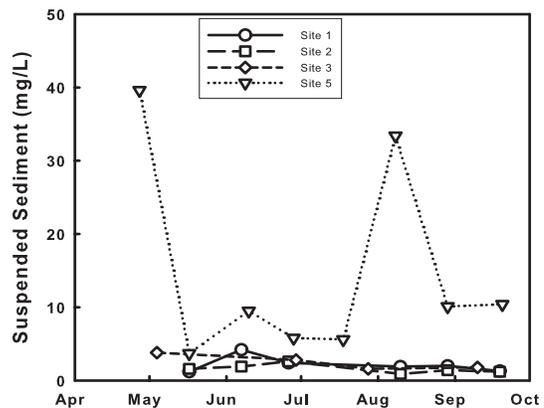
Phosphorus concentrations were considerably higher at Site 5 than at the other sites. While Site 3 had a particularly high phosphorus concentration on May 4, values for the remainder of the season were only double those measured at Sites 1 and 2. Phosphorus at Sites 1 and 2 varied little through the season, and never exceeded 20 µg/L.



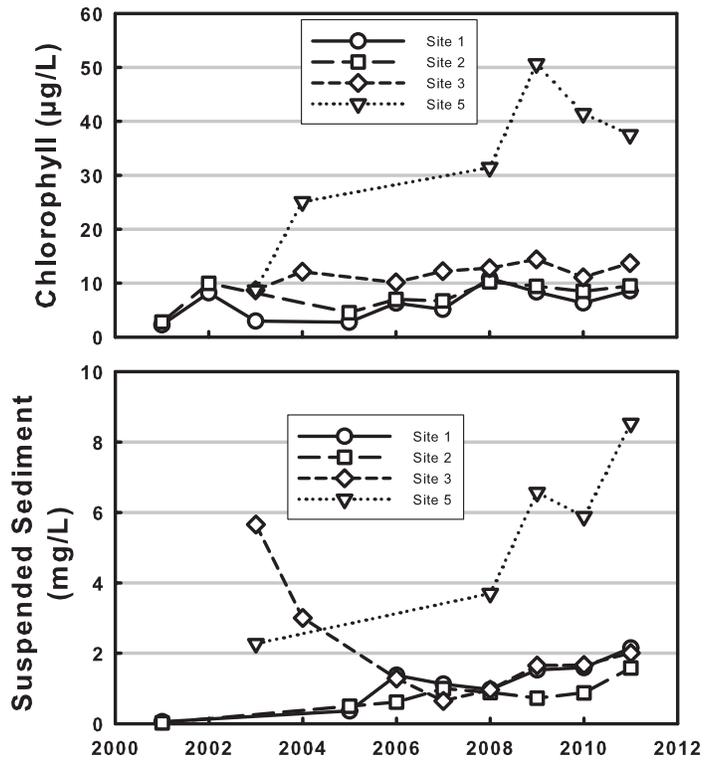
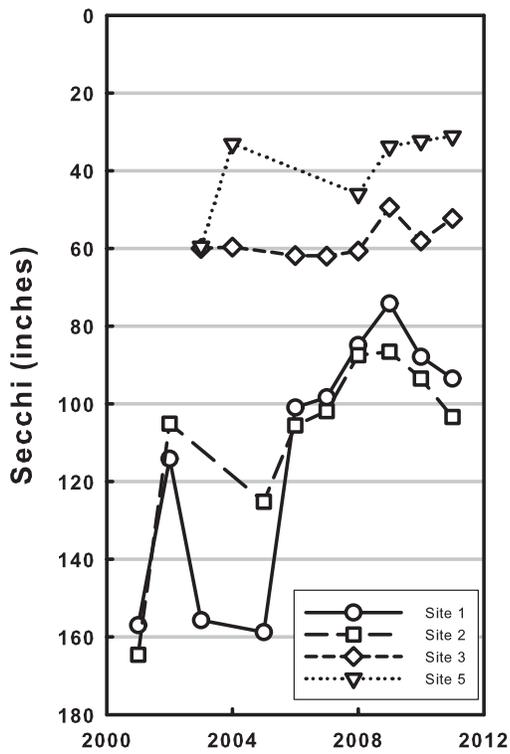
Nitrogen concentrations were similar at Sites 1, 2 and 3 during 2011. Site 5 had roughly double the nitrogen found at the other sites. While nitrogen concentrations generally decreased with time through the 2011 sample season at all sites, 2 values in August at Site 5 did not conform to this trend.



Suspended sediment concentrations at Sites 1, 2 and 3, were lower than found in most Missouri lakes, though somewhat high for Stockton Lake. Site 5 had considerably more suspended sediment than found at the other sites. The suspended sediment values of April 27 and August 8 at Site 5 were among the highest measured in any LMVP lake during 2011.



Stockton Lake Long-Term Trends

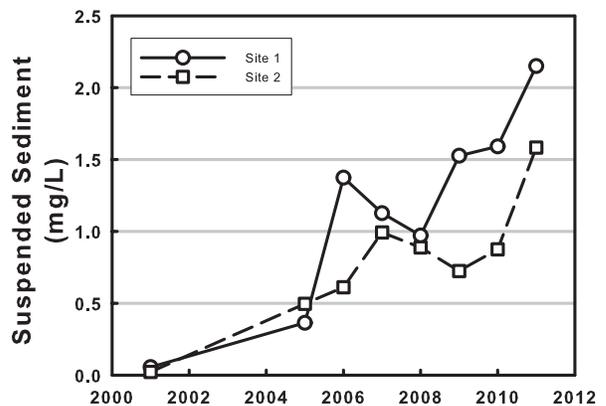


Monitoring at Sites 1 and 2 in Stockton Lake began in 2001. Sites 3 and 5 were added in 2003. In that time, water clarity at both Site 1 and Site 2 has decreased by almost half. This may not be a trend, but bears careful watching. Climate plays a large role in reservoir water clarity and the range of values observed may be related to rainfall rather than changes in the reservoir. Sites 3 and 5 show no similar decrease in water clarity.

Chlorophyll concentrations have increased at all sites since 2003. At Sites 1 and 2, measured chlorophyll has nearly tripled, though the 2002 and 2011 values are nearly identical. Site 3 had more algae in 2011 than in 2003, though the change was much less dramatic than at Sites 1 and 2. Site 5 experienced the greatest chlorophyll increase by far. The 2003 concentration was 8.7 and it increased to 37.5 in 2011, a more than four-fold increase.

At Sites 1, 2 and 5 concentrations of suspended sediment were higher in 2011 than

in any previous year and an upward trend is indicated. This is concerning and further monitoring will determine if suspended sediments are truly trending upward in Stockton Lake or if weather extremes and sample timing are responsible.



Suspended Sediment at Stockton Lake Site 1 and Site 2

Stockton Lake Long-Term Trends

Concentrations of phosphorus in Stockton Lake have increased since 2001. Sites 1 and 2 have experienced almost a doubling of total phosphorus since the first year of monitoring. Phosphorus concentrations at Site 5 have more than tripled since 2003.

Precipitation data correlate somewhat with the phosphorus data. Phosphorus molecules bind readily with soil particles, which will wash into the lake during storm events. Further monitoring will determine if the phosphorus increase at Sites 1, 2 and 5 are the result of human influence.

Interestingly, Site 3 showed no increase in phosphorus concentrations.

The far right graph shows only Site 1 and Site 2, with the scale manipulated to exaggerate the phosphorus increases at these sites.

Nitrogen concentrations have not changed at either Site 1 or Site 2. There is some variability at Sites 3 and 5, but there are no trends apparent.

