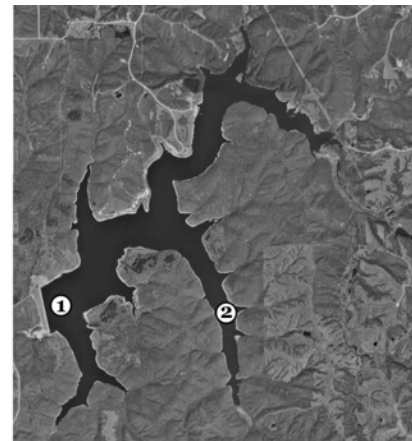
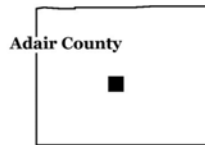


Forest Lake

Forest Lake is a 573 acre lake in the Thousand Hills State Park. The 9,400 acre watershed is 67% forest and 15% grassland. This Adair County lake has a residence time of almost 3 years and provides drinking water for the city of Kirksville.



Location of Forest Lake and its sample sites

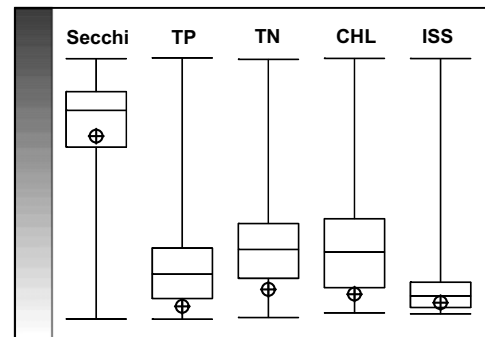
Forest Lake, Site 1

The geometric mean values for phosphorus, nitrogen, chlorophyll and ISS were low, especially for a northern Missouri lake. The 2005 mean values for these parameters were below the statewide median, with the nutrients and chlorophyll being in the lowest 25th percentile.

Mean Secchi was also below the statewide median. There was just enough algal chlorophyll and ISS to keep water clarity in Forest Lake from being outstanding (values >100 inches).

Nutrients, algal chlorophyll and ISS values were stable during the 2005 season, with very low variability from sample to sample.

Relative Rank for Forest Lake, Site 1



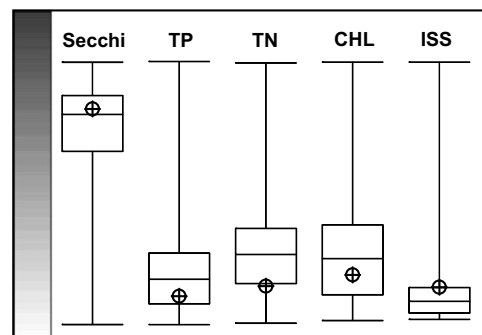
Forest Lake, Site 2

There were more nutrients, chlorophyll and ISS at Site 2 compared to Site 1. This gradient is common in Missouri's lakes, as sedimentation occurs as the water moves towards the dam.

Site 2 displayed more variation during the season, especially for chlorophyll and ISS which ranged 7 and 5 fold, respectively.

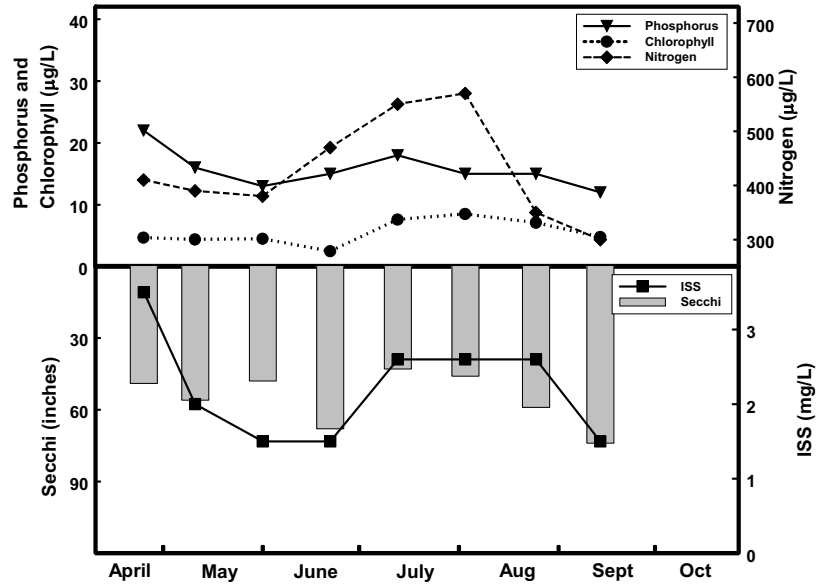
Even though Site 2 is located in a tributary arm of the lake, water quality ranked better than the statewide median for nutrients and chlorophyll, and slightly higher than the median for Secchi.

Relative Rank for Forest Lake Site 2



Forest Lake, Site 1

Seasonal fluctuations of parameters for Forest Lake, Site 1 – 2005



Descriptive statistics for Forest Lake, Site 1 – 2005

	Secchi (inches)	TP (ug/L)	TN (ug/L)	CHL (ug/L)	ISS (mg/L)
Geometric Mean	54	16	418	5.2	2.1
Minimum	43	12	300	2.5	1.5
Maximum	74	22	570	8.5	3.5
Number of Samples	8	8	8	8	8

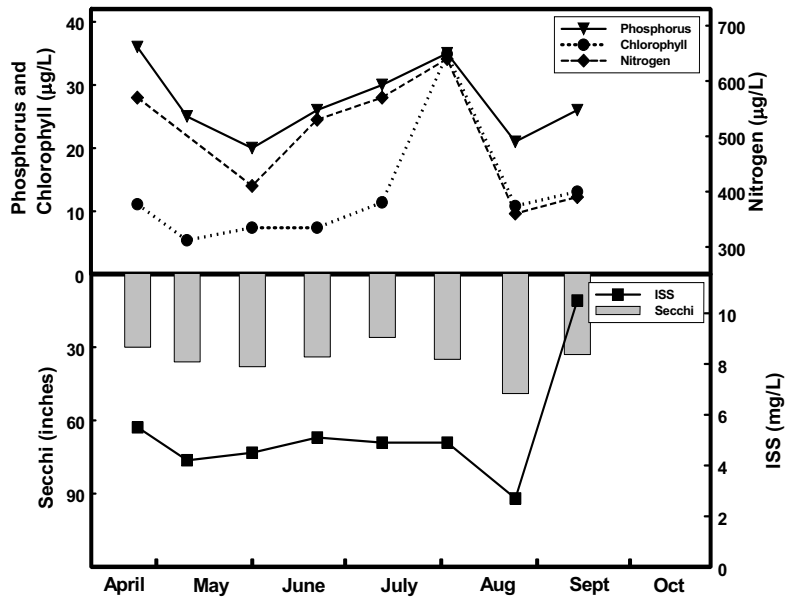
Highest ISS and phosphorus values were measured on the first sample date, a common occurrence as spring rains lead to inputs of these materials to the lake.

Nitrogen peaks in early August, possibly due to inputs from the watershed or the fixation of atmospheric nitrogen by certain species of algae. A sudden shift in the algal population could explain the decrease in nitrogen that occurs during the month of August.

ISS appears to be variable during the sample season, due to the small range of values used to scale the graph above. The range of 2 mg/L observed in Forest Lake during 2005 is small relative to most Missouri lakes.

Forest Lake, Site 2

Seasonal fluctuations of parameters for Forest Lake, Site 2—2005



Descriptive statistics for Forest Lake, Site 2 – 2005

	Secchi (inches)	TP (ug/L)	TN (ug/L)	CHL (ug/L)	ISS (mg/L)
Geometric Mean	35	27	485	10.8	5.0
Minimum	26	20	360	5.4	2.7
Maximum	49	36	640	34.9	10.5
Number of Samples	8	8	7	8	8

Nutrient and chlorophyll concentrations follow the same general pattern through the sample season. All peak in the beginning of August, again this may relate to a shift in the algal species.

The 5 fold increase in ISS at the end of the sample season is accompanied by only a small increase in nutrients. Normally we would expect to see an increase in phosphorus of more than 5 µg/L with an increase in ISS of this size.