The Shell Rock River Watershed District (the District) performs field surveys and collects water samples on Albert Lea Lake twice a month from June through September. The District uses this information to guide watershed and lake management strategies.

**Water Quality Indicator: Water Clarity**

The water clarity of Albert Lea Lake has been monitored regularly since 2000. The clarity of the water is measured by lowering a black and white disk (Secchi disk) into the water and identifying the depth at which the disk is no longer visible. The summer-average clarity of Albert Lea Lake has improved in recent years, but was below the Minnesota Pollution Control Agency’s (MPCA) clarity standard for shallow lakes in southern Minnesota, after surpassing the standard in 2009 and 2010.

**Water Quality Indicator: Chlorophyll-a**

The District has monitored chlorophyll-a, the main photosynthetic pigment found in algae, in Albert Lea Lake since 2004. The summer-average chlorophyll-a concentrations in the lake have historically been higher than the MPCA’s standard for shallow lakes in southern Minnesota, with exception of 2009. These high chlorophyll-a levels typically indicate an abundance of algae in the lake, which is also evident by the pea-green color of the water at times.

**Water Quality Indicator: Phosphorus**

Phosphorus is an essential element for plant life, but when there is too much phosphorus in lake water, it stimulates the growth of algae. Summer-average phosphorus concentrations in the lake are consistently higher than the MPCA’s standard for shallow lakes in southern Minnesota. Sources of phosphorus to the lake (see reverse) include stormwater runoff from upstream areas, water from Fountain Lake, and the release of phosphorus from lake sediments, a process aggravated by carp.
Contributions of phosphorus, a nutrient that can degrade water quality in several ways, were estimated based on water quality monitoring data collected by the District from Albert Lea Lake and the upstream lakes and streams. The pie chart at right shows a breakdown of the phosphorus sources to the lake during the 2011 monitoring season (April through October). The areas that correspond to each of the sources are shown on the map below.

Stormwater runoff is a significant source of phosphorus to Albert Lea Lake. When it rains, stormwater carries sediment—and the phosphorus attached to sediment particles—from the land into nearby lakes and streams. The water from Fountain Lake and its tributary watershed was the largest source of phosphorus (about 47%) to Albert Lea Lake during the 2011 monitoring season. An additional 7% of the phosphorus came from Peter Lund Creek.

Another significant source of phosphorus to Albert Lea Lake during the 2011 monitoring season was internal loading (about 38%). All lakes accumulate phosphorus (and other nutrients) in the sediment from the settling of particles and dead organisms. Internal loading occurs in some lakes as the phosphorus in the sediment is reintroduced into the lake water and becomes available again for uptake by plants. This complex process of internal loading can be affected by water temperature, oxygen, pH, wind mixing, and disturbance by bottom-feeding fish such as carp.