The Shell Rock River Watershed District (the District) performs field surveys and collects water samples from Fountain 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 Fountain Lake has been monitored regularly since 2004. 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. As shown in the figure, the summer-average clarity of Fountain Lake has improved in recent years, meeting the Minnesota Pollution Control Agency’s (MPCA) standard for shallow lakes in southern Minnesota from 2009 to 2011.

**Water Quality Indicator: Chlorophyll-a**

The District has monitored chlorophyll-a, the main photosynthetic pigment found in algae, in Fountain Lake since 2004. Although recent years have seen improvements, the summer-average chlorophyll-a concentrations in the lake remain higher than the MPCA’s standard for shallow lakes in southern Minnesota. These high 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 a plant nutrient in the soil that stimulates the growth of algae in lake water. Summer-average phosphorus concentrations in the lake have historically been higher than the MPCA’s standard for shallow lakes in southern Minnesota. Sources of phosphorus to Fountain Lake include stormwater runoff from the lake’s direct watershed, water from upstream lakes and tributary streams, and the release of phosphorus from lake sediments (see reverse).
Contributions of phosphorus, a nutrient that can degrade water quality in several ways, were estimated based on water quality monitoring data collected from Fountain 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.

Internal loading was the most significant source of phosphorus to Fountain Lake during the 2011 monitoring season. All lakes accumulate phosphorus (and other nutrients) in the sediment from the settling of soil 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 can be affected by water temperature, oxygen, pH, wind mixing, and disturbance by bottom-feeding fish such as carp. Internal loading contributed about 65% of the phosphorus loading to Fountain Lake during 2011. Another significant source of phosphorus was stormwater runoff from the surrounding watersheds. When it rains, stormwater carries sediment and the phosphorus attached to sediment particles into nearby lakes and streams. The largest watershed sources of phosphorus to Fountain Lake in 2011 were Wedge Creek, Goose Creek, and Bancroft Creek. Although it is one of the smallest watersheds, Goose Creek contributed 8% of the total — more than the much larger Bancroft Creek watershed. This high phosphorus amount reflects poor water quality in Goose Lake.