

Longview Lake Water Quality Summary

2006-2015

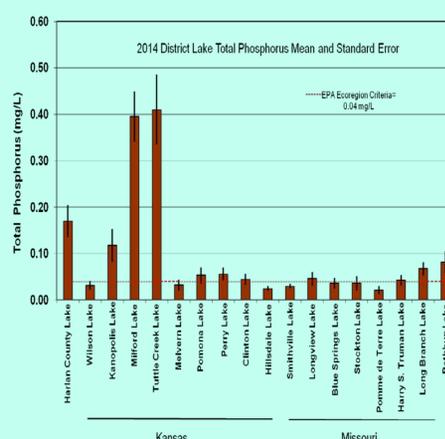
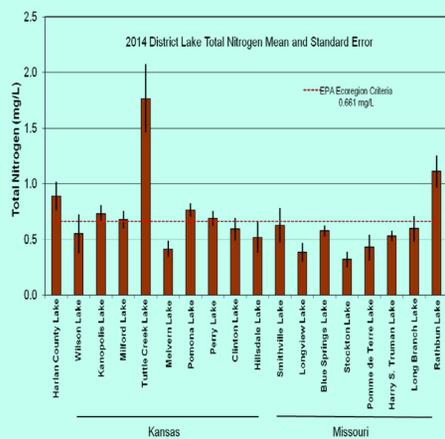


Longview Lake

- Built on Little Blue River reaching full pool in 1986.
- Watershed** = 50.3 square miles/ 32,192 Surface Acres (SA)
- Capacity:**
 - Flood Control: 24,810 Acre-feet (AF); 1,964 SA
 - Multipurpose: 13,579 AF; 927 SA; 24 miles of shoreline
 - Avg. annual inflow (2006-2015) = 32,733 AF; 2015 inflow= 40,861 AF
- Operating project purposes:** flood control, water quality, recreation, fish and wildlife
- Water Quality** at Longview Lake in 2015 was beneficial for operating purposes listed above and did not exceed MO State WQ Standards for designated uses. Water quality improves as nutrients, herbicides and sediments are removed by settling, dilution, and biological processes as water moves from inflow streams to the dam.

Nutrient Enrichment

Nutrients (i.e. phosphorus and nitrogen) are essential for aquatic life and are the primary factor driving fish and aquatic plant growth rates and productivity. Excess nutrients from urban, agricultural or natural sources increases the natural aging or eutrophication process in lakes. This can alter plant and aquatic life in lakes and water bodies, cause algal blooms, create low dissolved oxygen that affect fish survival, and lead to taste and odor issues in drinking water. Despite urban influences, nutrient concentrations at Longview Lake are typically stable and measured at moderate levels. Longview Lake total nitrogen sample results were similar to long-term trends and less than average for District Lakes (0.88 mg/L). Total phosphorus measured at the dam was below average for District Lakes (0.12 mg/L), but above EPA Ecoregion criteria of 0.04 mg/L. Summer chlorophyll a values and secchi disk measurements indicate that Longview Lake has high biological productivity and is in the eutrophic range (e.g. TSI=58-60) of Carlson's Trophic Index. Standard error bars at top of bar graph in the figures below illustrate the variation in sample results from each site in 2015.

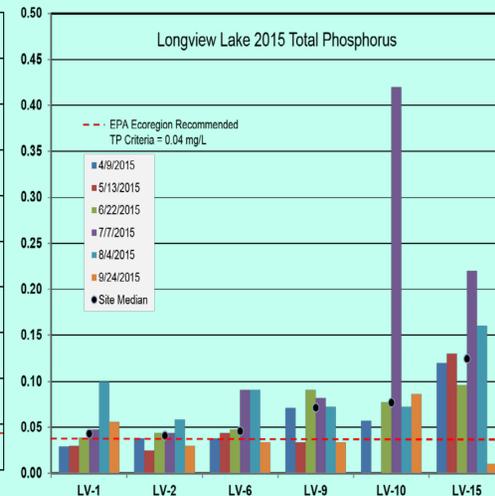
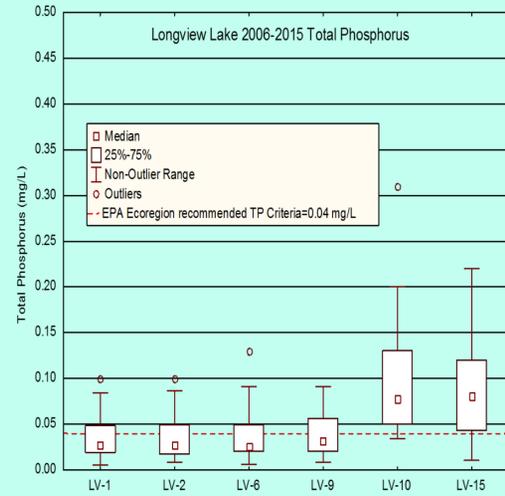


The **US Army Corps of Engineers (USACE)** Water Quality Program collects monthly water samples at Longview Lake* from April through September. These figures present data collected between 2006-2015 from lake sites (#2, 6, 9), and the outflow (#1) below the dam. Thirty-four chemical, physical and biological parameters are measured to evaluate water quality. USACE uses this data to describe conditions and changes from the inflow streams, within the main lake, and outflow focusing on eutrophication, nutrients, sediment, herbicides, metals, and contaminants.

*Note: The term "lake" is substituted for technically correct "reservoir" throughout this document for consistency.

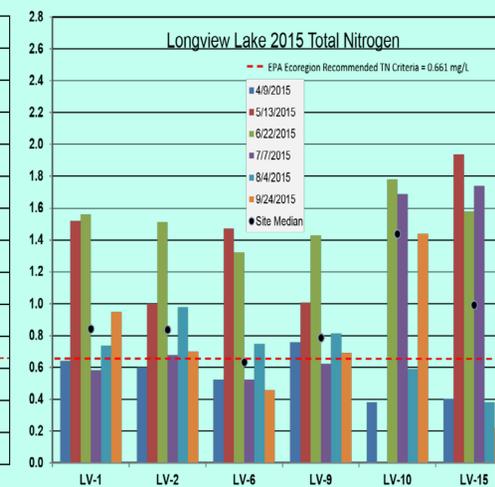
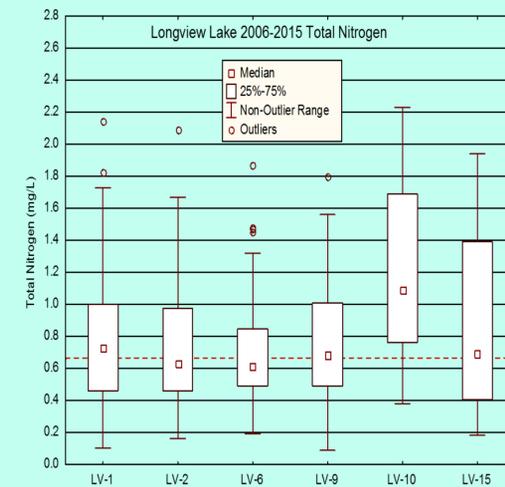
Total Phosphorus

Total phosphorus (TP) median concentrations from 2014 Longview Lake samples were below or equal to EPA Ecoregion criteria (0.04 mg/L) and in the range of moderate biological productivity. From 2005-2014, Longview Lake median and average TP was lower than EPA Ecoregion recommended criteria at all sites. Median TP concentrations were similar to 10 year median concentrations. Similar to most impoundments, higher TP concentrations and a wider range of data is usually found in the upper lake sites due to mobilized nutrients bound to silt particles transported in moving water near the inflows and biological uptake or decline of TP as the water moves through the lake.



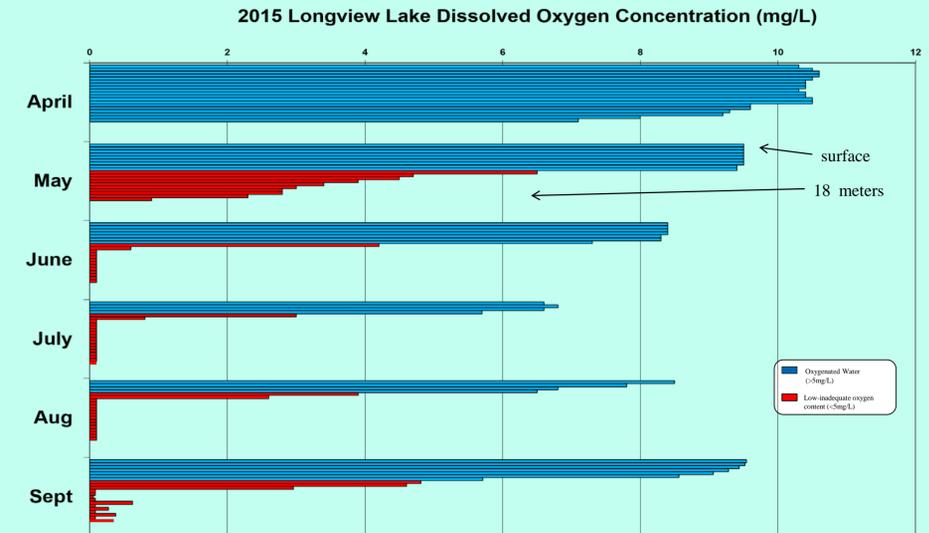
Total Nitrogen

Median total nitrogen concentrations at Longview Lake sites are slightly lower than EPA Ecoregion recommended criteria of 0.661 mg/L from 2005-2014. Total nitrogen concentrations are less variable between sites and years at Longview Lake than most lakes due to stable inflow levels and other watershed factors (i.e. stable soils and limited row crop farming).



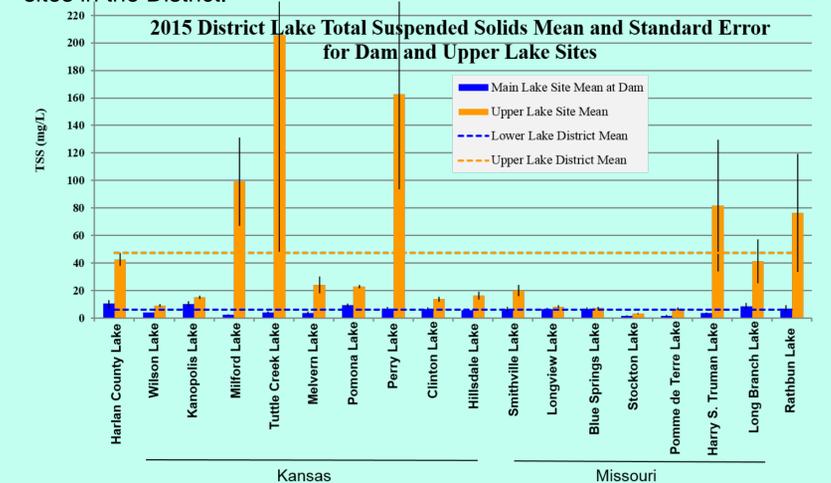
Dissolved Oxygen

Dissolved oxygen is important to aquatic species location, growth, and ultimately survival in lakes. The figure below shows dissolved oxygen (D.O.) measured in the water column in one-meter intervals (e.g. each row in each month represents one meter of depth) from April through September. Longview Lake stratifies for a short period of the summer, but adequate (5 mg/L) dissolved oxygen is typically available. In 2015, the top 4 meters of the lake was well oxygenated for fish and aquatic life throughout the summer.



Total Suspended Solids

Total Suspended Solids (TSS) is a measurement related to erosion in river basins, sedimentation or filling rates of downstream reservoirs. TSS is also closely linked to nutrient and contaminant transport through river systems. In 2015, Longview Lake TSS values from the lower lake site (LV-2) were near the average for all District lower lake site average while the upper lake site (LV-9) had much lower than average suspended solids compared to other upper lake sites in the District.



Water Quality Concerns:

- Eutrophication
- Nutrients



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