

# CEDAR LAKE WATER LEVELS AND WATERSHED PLANNING ASSISTANCE GREENBUSH, MI

Kieser & Associates (K&A) has been providing ongoing lake and watershed consulting services to the Alcona-Iosco Cedar Lake Association (AICLA) since 2005 to address local hydrologic and anthropogenic factors influencing lake level conditions during summer recreation, traditionally lower lake level periods. In the summer of 2005, K&A completed the first phase of a three-phased approach that compiled available information, confirmed lake volume and watershed boundaries through field reconnaissance surveys, implemented low-technology field equipment and completed a preliminary mass balance calculation of estimated gains and losses of lake water as influenced by local and regional conditions.

A Phase II investigation further characterized manageable factors influencing lake levels and more formally identified in-lake and watershed factors influencing lake levels with potential mitigation options.



A detailed network of shallow and deep groundwater level monitoring wells, continuous lake level gauging on daily precipitation monitoring now provides a defensible and robust data set to assess conditions and implementation options. Findings have revealed that 75% of the lake shoreline was losing water. Storm sewers directing runoff away from the lake were the most significant cause of the greater than 2-foot annual water level drop in this 5-foot deep, 1,000-acre lake in dry summers.

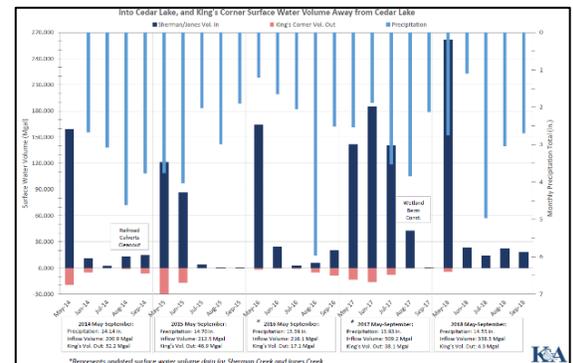
Given the complexity of hydrologic issues on the lake, its very limited watershed area (about 3,000 acres) and other pressures on the lake and watershed, the AICLA petitioned their Cedar Lake Improvement Board (CLIB) to retain K&A for developing a watershed management plan (WMP).

The USEPA-approved WMP, completed by K&A in 2011, outlines a number of approaches to protect and restore critical areas for maintaining lake levels and managing a

variety of other water quality, aquatic plant and fisheries concerns. The WMP, supplemented by a K&A 2010-2011 Lake Level Augmentation Feasibility Study, prioritized implementation options for improving natural water sources and aquifer testing to explore groundwater pumping options.

Fundamentally, these detailed studies were necessary for visioning sound management options for Cedar Lake...well beyond simple solutions that might be suggested

at first glance or with just the traditional seasonal lake monitoring and data reporting.



To date, one of two major watershed hydraulics projects from the WMP has been completed with the next scheduled for 2019 implementation. Projected benefits from K&A modeling forecasts are now being realized based on the extensive monitoring being conducted by K&A. The 2019 implementation of stream restoration and wetland hydraulics is expected to potentially mitigate the need for an expensive potential future pumping scheme that would have been the only option if not for natural restoration of watershed hydrology proposed by K&A. In 2019, K&A also began conducting LakeScan™ vegetation monitoring as well as examination of historic sediment accumulations as part of our ongoing lake management support.

**Contact:**

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**Project Costs:**  
 \$225,000 (K&A)

**Project Duration:**  
 August 2004 - present