

EVALUATION OF MIRROR LAKE WATERSHED & WATER QUALITY CONDITIONS WITH MANAGEMENT RECOMMENDATIONS

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Project Costs: K&A: \$11,850

Project Completion: 2004

The Mirror Lake Association authorized KIESER & ASSOCIATES (K&A) to initiate a study of Mirror Lake and its watershed beginning in June 2003 and continuing through June 2004. The purpose of this effort was to examine current water quality conditions and identify lake and watershed management options to address Association concerns. A final report summarizes field and modeling evaluations and provides a range of lake and watershed management recommendations for current and long-term considerations.

Mirror Lake is an on-stream impoundment on the Grand River in Jackson County, Michigan and has a surface area of approximately 71 acres. Mirror Lake receives outflow from Lake LeAnn, an upstream impoundment, and drains to Grand Lake, a downstream impoundment.

The overall goal of the study was to identify cost-effective options to improve and sustain the quality and character of Mirror Lake. Generalized outcomes and products of the one-year study effort include:

- ◆ Watershed delineation and assessment of runoff contributions from various land covers in the watershed.
- ◆ Identification of specific stormwater pollutant sources (e.g., pipes and ditches) and estimation of contributing loads.
- ◆ Pollutant source estimation for shoreline areas and septic systems using field and written survey techniques and modeling.
- ◆ Hydraulic mass balance (inflows and outflows) and lake morphometry (volume).
- ◆ Pollutant mass balance from contributing sources including the watershed, septic systems, the upstream lake, and in-lake processes.
- ◆ Water quality and outflow monitoring over three seasons plus sediment sampling.
- ◆ Aquatic plant mapping.
- ◆ Suggested self-monitoring program and invasive species prevention techniques.
- ◆ Fisheries data compilation with recommendations for future fisheries management.
- ◆ Lake improvement/protection options compiled in a Final Report. Pollutant mass balance results were used to clarify expected pollutant reductions (pounds) per dollar invested.

Recommendations were presented to the Mirror Lake Association by K&A in August 2004. The Association has subsequently been implementing various management recommendations.

