

Lake Status

Overall Strategy: Routine Watershed Management

Water Quality Rating: A: Secchi – 20.8 ft;
TP (2007) – 18 µg/L

Impairment: *Aquatic consumption* due to mercury in fish tissue.

Water Quality Trend:
Secchi – Improving; TP – No Trend

Shoreland Classification: Natural Environment

Subwatershed Land Cover: 23% developed, 23% forests and woodlanes, 9% grassland/shrubland/sparse vegetation, 16% lakes and open water wetlands, 15% planted or cultivated, 14% wetlands.

Resource Goals

Short Term Goals – Year 2015

- Maintain a water quality rating of A.
- Achieve a five-year mean summer phosphorus concentration at or below 13 µg/L ± 4%.
- Maintain a mean summer secchi depth no less than 17 ft.
- Establish an active Lake Association for teaming on lake management and education.
- Gravity pipe is well-maintained and fully-operational or plans for rehabilitation have been prepared.

Long Range Goals - Year 2020

- Maintain a water quality rating of A.
- Achieve a five-year mean summer phosphorus concentration at or below 13 µg/L ± 4%.
- Maintain a mean summer secchi depth no less than 17 ft.
- Conduct watershed management in consideration of the area’s statewide importance to the Blanding’s turtle.

DNR Fisheries Lake Management Plan (1995)

- Long Range Goal: Provide gamefish population to support 40 angler hours per acre.
- Operational Plan:
 - Review all DOW and APM permit applications.
 - Cooperate with the local watershed district to limit amount of nutrients that enter the lake.
- Potential Plan:
 - Acquire and develop public access.
 - Creel and recreational use survey.



BASIC FACTS

DNR ID	82001400
Section	3
Township	30
Range	20
Lake Area	162 acres
Subwatershed Area	1037 acres
Inlet Elevation	855.3 ft.
Outlet Elevation	854.4 ft.
Low Water Level	821.00 (’77)
High Water Level	856.67 (’01)
Ordinary High Water	856.20
100-Yr. Flood Elev	861.4 (District)
Greatest Depth	70 ft.

Control Structures:

48-in RCP at inlet and 6-ft control weir at outlet

Fish Species:

Black Bullhead, Black Crappie, Bluegill, Golden Shiner, Green Sunfish, Hybrid Sunfish, Largemouth Bass, Northern Pike, Pumpkinseed Sunfish, Yellow Bullhead, Yellow Perch (1997)

Aquatic Nuisance Species:

Narrowleaf Cattail
Curlyleaf Pond Weed

CMSCWD References:

WCD Water Monitoring Report (’07 & ’08)
DNR Lake Water Level Report
DNR Lake Information Report
MN Statewide Mercury TMDL (’07)

Implementation

Operational Priorities

Routine Watershed Management

Education

Routine Watershed
Education Program

Regulatory

Activities impacting Little Carnelian Lake will be regulated by the watershed district through its *Rules of the District*. Regulatory efforts will be coordinated with Stillwater Township, Washington County, and the Minnesota DNR, where applicable.

Projects

Current:

- Routine Watershed Water Quality Monitoring
- Routine Watershed Best Management Practices (BMP) Program
- Ongoing Monitoring of BMPs
- Permitting Program

Future/Potential:

- Little Carnelian Gravity Flow Outlet Pipe Inspection & Repair
- Water Quality Diagnostic Feasibility Study

* See 2010 Watershed Management Plan Section V, *Lake Management Plans* for additional information on District lake management activities.

Overall Assessment: Little Carnelian Lake

Little Carnelian Lake is a beautifully clean lake that outlets to the St. Croix River. Lake levels have been generally stable since the 1985 completion of the District outlet pipe to the St. Croix River, but does rise and fall moderately with fluctuations in annual precipitation. Best Management Practices (BMPs) are used around much of the lake; however, no more than 50% of the lake has them in use (i.e. forested buffer). Citizen interests in this lake are primarily focused on maintaining its excellent water quality. Little Carnelian is listed on the EPA's 303(d) list of impaired waters due to the mercury content in fish. In 2007 the MPCA completed a statewide Total Maximum Daily Load (TMDL) study and implementation plan to address the state's mercury impairments.

Based on an Aerial Lakeshore Analysis study (1998), the biggest influence on the lake, other than discharge from Carnelian Creek, is runoff non-point source pollution. The major concerns are the vegetation removal within the 200-foot setback zone and structure setback (200 feet from the OHW). The recommendations from that study are to implement BMP's such as develop or expand vegetative buffers between the residences and the lake, install berms or other retention devices where vegetative buffers are not feasible, make sure septic systems are in compliance, and investigate potential runoff point sources, and mitigate if necessary.. The water quality of Little Carnelian is much better than many of the others in the watershed and the entire metropolitan area. However, current development pressures have the potential to eventually degrade the water quality.

Based on measured lake characteristics and land use in the lake's minor subwatershed, water quality modeling indicated that a no-net increase in phosphorus loading would be required to achieve the year-2010 phosphorus water quality goal of 13 µg/L. Though total phosphorous (TP) has not achieved the 2010 goal (2007 average of 18 µg/L, five-year average of 16 µg/L), water quality based on secchi readings is currently trending upwards according to the 2008 WCD Water Monitoring Report. In addition, the lake continues to maintain a water quality rating of 'A.' Routine watershed management will continue to be implemented.

