

EXECUTIVE SUMMARY

An overview of the results for the 2006 monitoring season as collected by the Minneapolis Park and Recreation Board (MPRB) Environmental Operations Section are presented. Details and analyses are presented within the report.

The MPRB monitors the water quality of Brownie, Calhoun, Cedar, Diamond, Grass, Harriet, Hiawatha, Isles, Loring, Nokomis, Powderhorn, Spring, Webber and Wirth lakes. Historical data from 1991 – 2006 are used to calculate trophic state index (TSI) trends and estimate fertility for each lake. Based on the trophic state report for 2006, the following can be concluded:

Lakes with Decreasing TSI trends and Decreasing Fertility	Lakes with Stable TSI Trends	Lakes with Increasing TSI Trends and Increasing Fertility
<ul style="list-style-type: none"> ➤ Lake Calhoun ➤ Lake Harriet ➤ Loring Pond ➤ Powderhorn Lake ➤ Wirth Lake 	<ul style="list-style-type: none"> ➤ Brownie Lake ➤ Lake Hiawatha ➤ Lake of the Isles ➤ Lake Nokomis ➤ Webber Pond 	<ul style="list-style-type: none"> ➤ Spring Lake ➤ Cedar Lake

The water quality of Lake Calhoun and Lake Harriet has improved to pre-European settlement conditions. Rehabilitation efforts have helped these urban lakes tremendously. Powderhorn Lake received its third year of barley straw in an effort to improve water clarity. Due to this and other restoration activities at Powderhorn Lake, aquatic plants were noticeable for the first time. Aquatic plants are an integral part of a healthy lake ecosystem and require a certain level of water clarity to survive.

Arrowhead and pickerelweed plants were added to the northeast corner of Wirth Lake by water quality staff to improve shoreline habitat. Environmental Operations received a shoreline restoration grant from the Minnesota Department of Natural Resources for Lake Hiawatha. The University of Minnesota and the Department of Natural Resources planted softstem bulrush along a section of shoreline at Lake Calhoun and at Lake Harriet. These test plots are to determine optimal planting conditions.

The MPRB monitored 10 public beaches for *Escherichia coli* (*E. coli*, as recommended by the Environmental Protection Agency). These bacteria are used as indicators of pathogens in the water. All public beaches were open for the entire season since bacteria levels were below state guidelines.

Exotic aquatic plants out-compete native species and reduce the available habitat for fish and other organisms. They also reduce the overall aesthetic appeal of area lakes. Eurasian watermilfoil harvesting was completed on Calhoun, Harriet, Isles, Nokomis and Wirth in 2006.

MPRB monitored storm sewers within Minneapolis to comply with the federal National Pollutant Discharge Elimination System (NPDES) permit. One site location was changed for 2006. The purpose of monitoring is to characterize the impacts of stormwater discharges. The results of

the 2006 data were typical for stormwater as compared to reports from other cities.

The MPRB and the City of Minneapolis have many Best Management Practices (BMPs) throughout the city. BMPs include procedures and structures designed to help reduce water pollution. The MPRB monitored one stormwater pond in north Minneapolis to evaluate its effectiveness, known as Logan Pond. Logan Pond provided over 40 percent removal of many stormwater pollutants. A baseline bathymetric map was made of Logan pond in 2006. Further monitoring will help better determine how effective Logan Pond is at improving water quality.

The MPRB also monitored a permeable paver lot at the City of Minneapolis' Animal Shelter. Permeable pavers are a BMP designed to increase infiltration. The MPRB monitored the system to assess its effectiveness. The data for 2006 reflect an overall infiltration of 62%. The pavers appear to be functioning well with little or no ponding visible during rain events.

The MPRB presents the precipitation and temperature data collected by the National Weather Service each year from the rain gage located at the Twin Cities airport. In general, most 2006 average monthly temperatures were warmer than normal. The average annual temperature for 2006 was 49.3° F, 4.0° F above normal. Spring had above normal precipitation; summer through fall was overall below normal. An unusually large rainfall event occurred on 8/1-2/06 resulting in 3.58 inches at the Twin Cities airport. The annual recorded rainfall total for 2006 was 27.57 inches, 1.84 inches below normal.

The latest freeze up of Lake Calhoun and Lake Harriet ever recorded by 16 days occurred in 2006.