Headwaters Dam and Nokomis Weir History and Operations

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Dam Construction 19th Century

- **1853** first dam built at Minnetonka Mills (Burwell).

- **1874** Hennepin Co completed creek excavation and strengthened the 1853 dam.

- **1893** Hennepin Co built a new dam 100 feet upstream of the 1853 dam with license from Minnetonka Mills owners.

- **1896** the 1893 dam was removed by court order.

- **1897** new dam built by Hennepin Co at Gray’s Bay outlet. Timber sheet piling 700 feet long with a spillway 130 feet wide.
Dam Construction 20\textsuperscript{th} Century

1932 Hennepin Co repaired the dam. Timber sheet piling with a 200 foot spillway.

1944 Hennepin Co reconstructed the dam. Timber sheet piling 213 feet long with a 194 foot timber spillway approximately 2 feet upstream of the 1932 structure.
1974 - MDNR determines the Natural Ordinary High Water to be 929.40 MSL and the natural runout elevation to be 928.6 MSL

1979 - MCWD replaces the wooden structures with steel sheet pile at 930 MSL and builds an adjustable tainter gate structure. MDNR requires extensive public input and engineering analysis to develop an operating plan

1997 - MCWD added riprap to weir, installs continuous steel weir cap and drives butt piles to keep weir level, large downed trees removed
Dam Construction 21st Century

2005 - MCWD/Minnetonka joint project to remove boat launch, cover outlet control structure, revegetate shoreline
1980 Operations Plan

MDNR NOHW Study

Historical Context of Water Controls

Gray' Bay Dam Operating Plan

Lake Level Record Beginning 1908

Historical Discharge and Elevation Relationship

Flood Reduction

Natural and Constructed Outlet Hydraulic Behavior

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Gray' Bay Dam Operating Plan
Operating Plan

Gray's Bay Dam Operational Plan for Discharges as Required by MDNR Permit

- Unrestricted Discharge
- Maximum Creek Capacity
- 150 cfs to Maximum Creek Capacity
- 20 - 150 cfs
- Baseflow
- Zero to Maximum Creek Capacity
- No Discharge
- 100-year Flood 931.5
- Top Emergency Spillway 930.0
- NOHW 929.4
- Runout 928.6
- 1991-2000 Average Lake Level
- 30 Year Average Lake Level

Month of the Year

Elevation (ft) MSL 1929 datum

Dimensions: 932.0 to 931.5
Lake Nokomis Weir

OHW 815.4 MSL
Lake Nokomis Weir (20th Century)

1914-1918 - Lake Amelia (now Nokomis) dredged

Dredge used in Lake Nokomis

Construction of the channel between Nokomis and Minnehaha Creek (?)
Lake Nokomis – 21st Century

2001 – Obermeyer Inflatable Weir installed as part of Lake Nokomis Improvement Project to divert or reduce inflows from the Minnehaha Creek to prevent phosphorous from entering the lake.

The stainless steel weir was 30 feet in length, hinged, and would raise 2 feet. It was operated by an air bladder under the entire length of the weir.
2012 – Due to high ongoing maintenance and operations costs, the Obermeyer weir was replaced with a fixed weir. The weir helps to keep creek polluted creek water and zebra mussels from entering the lake.
Questions?