



Water-Data Report 2011

485713095111901 LAKE OF THE WOODS AT MUSKEG BAY NEAR WARROD, MN

Rainy Basin
Lake of the Woods Subbasin

LOCATION.--Lat 48°57'13", long 95°11'19" referenced to North American Datum of 1983, Lake of the Woods County, MN, Hydrologic Unit 09030009.

WATER-QUALITY RECORDS

REMARKS.--The USGS, in cooperation with the Minnesota Pollution Control Agency (MPCA), collected hydrologic and water-quality data from the primary U.S. inflows, main body, and outflow channels of Lake of the Woods. The data were collected to support the development of a water-quality model being developed by the MPCA.

The objectives of this study are to:(1) Collect water-quality samples and gage streamflow near the mouths of the Rainy and Warroad Rivers during the open water season of 2010, as part of the Nutrient-Sediment Loading Study, Phase I. Streamgaging would continue during the open-water season of 2011 to better develop index-velocity/discharge relations.(2) Collect water-quality samples at 10 sites in Lake of the Woods during the open-water season of 2010, as part of the In-Lake Nutrient Study, Phase I.(3) Measure streamflow velocities and cross-sectional areas of 5 channel constrictions in Lake of the Woods, as part of the Big Traverse Outlet Hydrology Study, Phase I. If velocities are sufficient. Channel locations near the Northwest Angle are Tug Channel, Canadian Channel, Sturgeon Channel, Flag Island Channel, and NW Angle Flowage.

**WATER-QUALITY DATA
WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011**

Part 1 of 5

[CaCO₃, calcium carbonate; FNU, Formazin nephelometric units; LED, light-emitting diode; N, nitrogen; P, phosphorus; SiO₂, silicon dioxide; m, meters; mg/L, milligrams per liter; mm Hg, millimeters of mercury; nm, nanometers; °C, degrees Celsius; µS/cm, microsiemens per centimeter; µg/L, micrograms per liter; <, less than; E, estimated]

Date	Sample start time	Medium name	Barometric pressure, mm Hg (00025)	Temperature, air, °C (00020)	Color, water, filtered, platinum cobalt units (00080)	Dissolved oxygen, water, unfiltered, mg/L (00300)	pH, water, unfiltered, field, standard units (00400)	pH, water, unfiltered, laboratory, standard units (00403)	Specific conductance, water, unfiltered, laboratory, µS/cm at 25 °C (90095)
10-21-2010	1115	Surface water	740	6.7	35	10.6	7.7	8.1	115
10-21-2010	1130	Surface water	740	6.7	30	10.6	7.7	8.3	116

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Part 2 of 5

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Date	Sample start time	Specific conductance, water, unfiltered, μS/cm at 25 °C (00095)	Temperature, water, °C (00010)	Transparency, water, in situ, Secchi disc, m (00078)	Turbidity, water, unfiltered, monochrome near infrared LED light, 780-900 nm, detection angle 90 +/- 2.5 degrees, FNU (63680)	Sampling depth, m (00098)	Number of sampling points, count (00063)	Sampler type (84164)
10-21-2010	1115	116	10.0	1.20	3.6	1.5	1	Kemmerer bottle
10-21-2010	1130	117	10.0	1.20	3.6	6.0	1	Kemmerer bottle

WATER-QUALITY DATA
WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011

Part 3 of 5

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Date	Sample start time	Sampling method (82398)	Loss on ignition of suspended solids, water, unfiltered, mg/L (00535)	Suspended solids, water, unfiltered, mg/L (00530)	Alkalinity, water, filtered, fixed endpoint titration, (pH 4.5) laboratory, mg/L as CaCO ₃ (29801)	Chloride, water, filtered, mg/L (00940)	Fluoride, water, filtered, mg/L (00950)	Silica, water, filtered, mg/L as SiO ₂ (00955)	Sulfate, water, filtered, mg/L (00945)	Ammonia plus organic nitrogen, water, filtered, mg/L as N (00623)
10-21-2010	1115	Thief sample	< 10	< 15	53	2.18	.07	2.5	5.16	.46
10-21-2010	1130	Thief sample	13	< 15	53	2.18	.08	2.6	5.18	.49

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Part 4 of 5

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Date	Sample start time	Ammonia plus organic nitrogen, water,		Nitrate plus nitrite, water,		Orthophosphate, water, filtered, mg/L as P (00671)	Phosphorus, water, filtered, mg/L as P (00666)	Phosphorus, water, unfiltered, mg/L as P (00665)	Chlorophyll a, phytoplankton, chromatographic-fluorometric method, μg/L (70953)
		unfiltered, mg/L as N (00625)	filtered, mg/L as N (00608)	filtered, mg/L as N (00631)	filtered, mg/L as N (00613)				
10-21-2010	1115	.60	.017	.056	.002	.011	.018	.038	7.0
10-21-2010	1130	.55	.017	.055	.002	.010	.016	.043	6.8

WATER-QUALITY DATA
WATER YEAR OCTOBER 2010 TO
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Part 5 of 5

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Date	Sample start time	Pheophytin a, phytoplankton, μg/L (62360)
10-21-2010	1115	E 2.6
10-21-2010	1130	E 2.5