492142094421501 LAKE OF THE WOODS, TUG CHANNEL, NEAR BUNTINGS PT., ONT. CA

LOCATION.--Lat 49°21′42″, long 94°42′15″ referenced to North American Datum of 1983.

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

[$CaCO_3$, calcium carbonate; FNU, Formazin nephelometric units; LED, light-emitting diode; N, nitrogen; P, phosphorus; SiO_2, silicon dioxide; ft, feet; ft^3/s, cubic feet per second; 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)	Tempera-ture, air, °C (00020)	Color, water, filtered, platinum cobalt units (00080)	Discharge, instanta-neous, ft^3/s (00061)	Dissolved oxygen, water, unfiltered, mg/L (00300)	pH, water, unfiltered, field, standard units (00400)	pH, water, unfiltered, laboratory, standard units (00403)
10-23-2010	0930	Surface water	736	3.4	30	-1,520	9.8	7.8	7.8

WATER-QUALITY DATA
WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011

Part 2 of 5

[$CaCO_3$, calcium carbonate; FNU, Formazin nephelometric units; LED, light-emitting diode; N, nitrogen; P, phosphorus; SiO_2, silicon dioxide; ft, feet; ft^3/s, cubic feet per second; 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	Specific conduc-tance, water, unfiltered, laboratory, µS/cm at 25 °C (90095)	Specific conduc-tance, water, unfiltered, µS/cm at 25 °C (00095)	Tempera-ture, water, °C (00010)	Trans-parency, water, in situ, Secchi disc, m (00078)	Turbidity, water, unfiltered, mono-chrome near infra-red LED light, 780-900 nm, detection angle 90 +/- 2.5 degrees, FNU (63680)	Gage height, ft (00065)	Sampling depth, m (00098)	Stream width, ft (00004)
10-23-2010	0930	106	104	9.8	1.50	2.9	5.83	4.0	1,560

Suggested citation: U.S. Geological Survey, 2012, Water-resources data for the United States, Water Year 2011: U.S. Geological Survey Water-Data Report WDR-US-2011, site 492142094421501, accessed at http://wdr.water.usgs.gov/wy2011/pdfs/492142094421501.2011.pdf

492142094421501 LAKE OF THE WOODS, TUG CHANNEL, NEAR BUNTINGS PT., ONT—Continued

WATER-QUALITY DATA
WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011

Part 3 of 5

[$CaCO_3$, calcium carbonate; FNU, Formazin nephelometric units; LED, light-emitting diode; N, nitrogen; P, phosphorus; SiO_2, silicon dioxide; ft, feet; ft^3/s, cubic feet per second; 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	Number of sampling points, count (00063)	Sampler type (84164)	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 (pH 4.5) titration, laboratory, mg/L as $CaCO_3$ (29801)	Chloride, water, filtered, mg/L (00940)	Fluoride, water, filtered, mg/L (00950)
10-23-2010	**0930**	1	Kemmerer bottle	Thief sample	12	< 15	45	2.08	.04

WATER-QUALITY DATA
WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011

Part 4 of 5

[$CaCO_3$, calcium carbonate; FNU, Formazin nephelometric units; LED, light-emitting diode; N, nitrogen; P, phosphorus; SiO_2, silicon dioxide; ft, feet; ft^3/s, cubic feet per second; 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	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)	Ammonia plus organic nitrogen, water, unfiltered, mg/L as N (00625)	Ammonia, water, filtered, mg/L as N (00608)	Nitrate plus nitrite, water, filtered, mg/L as N (00631)	Nitrite, water, filtered, mg/L as N (00613)	Orthophos-phate, water, filtered, mg/L as P (00671)	Phos-phorus, water, filtered, mg/L as P (00666)
10-23-2010	**0930**	5.1	4.86	.44	.56	.012	.114	.002	.010	.014

492142094421501 LAKE OF THE WOODS, TUG CHANNEL, NEAR BUNTINGS PT., ONT—Continued

WATER-QUALITY DATA
WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011

Part 5 of 5

[$CaCO_3$, calcium carbonate; FNU, Formazin nephelometric units; LED, light-emitting diode; N, nitrogen; P, phosphorus; SiO_2, silicon dioxide; ft, feet; ft^3/s, cubic feet per second; 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	Phosphorus, water, unfiltered, mg/L as P (00665)	Chlorophyll a, phytoplankton, chromatographic-fluorometric method, µg/L (70953)	Pheophytin a, phytoplankton, µg/L (62360)
10-23-2010	**0930**	.033	7.5	E 3.2