

Water Quality

International Souris River Board

of the International Joint Commission



No. ISRB-2009E

The International Souris River Board (ISRB) has a mandate to monitor water quality from the International Joint Commission, which administers the water pollution component of the Boundary Waters Treaty between Canada and the United States.

Two Monitoring Sites

The ISRB monitors the water quality of the Souris River at the two locations where it crosses the international boundary into the USA and into Canada:

- **Souris River near Sherwood**
- **Souris River near Westhope**

Technologists visit these two sites 7 or 8 times during the year. They collect samples for measurements on-site and for analyses in laboratories. The sampling plans vary as the flow conditions fluctuate and water quality concerns change.



Typical Sampling Schedule

Peak flow – March to June	Every month
Summer flow – July to Oct.	Every two months
Winter low flow – Nov. to Feb.	Every two months

Water samples are analyzed for as many as 50 different physical, biological, inorganic and organic water quality parameters. In water quality jargon, “inorganic” refers to simple compounds and elements such as iron or other metals. “Organic” refers to complex carbon based molecules such as pesticides.

Types of water quality tests

- **Dissolved oxygen**
- **pH (acidity)**
- **Major ions**
- **Nutrients**
- **Trace elements**
- **Pesticides**
- **Suspended sediment**
- **Fecal coliform (intestinal bacteria)**
- **Temperature**

continued

Dissolved Oxygen

Low dissolved oxygen levels are a particular concern in the Souris River. The aquatic ecosystem of fish, plants and animals needs to have oxygen in the river water. A healthy ecosystem will cleanse the river and makes it suitable for human use. Decaying plant and animal matter uses up oxygen. The problem is worse in the winter when a solid ice cover cuts the river off from the air. A concentration of 5 milligrams per liter (5 ppm) is a lower limit of acceptability.

Phosphorus

Phosphorus plays a critical role as the limiting nutrient for most aquatic ecosystems. The Souris River is no exception. Some algae and river weed is desirable for the ecosystem. However, excess phosphorus produces too much growth that can choke the river. A green river is unsightly and prone to undesirable odors and tastes. When the algae and plants eventually die, their decay process uses up oxygen. Dissolved oxygen levels can fall to levels lethal to fish and other life. The ISRB monitors for phosphorus not only for the local concerns, but also for the phosphorus loading on downstream rivers and lakes. Concentrations less than 0.10 milligrams per liter (0.1ppm) are acceptable. Although the soils in the Souris River basin have high levels of natural phosphorus, runoff from fertilizer and animal waste can become the main sources of excess phosphorus in the Souris Basin.

Pesticides

Due to the high level of agricultural production within the watershed of the Souris River, pesticide monitoring deserves special attention. The ISRB monitors for many different types of pesticides used commonly in the area. It also tests for especially toxic or long-lived pesticides. The ISRB has not detected levels that could indicate a serious problem.

Water Quality Objectives

For each of the water quality parameters sampled for, the ISRB compares the results to water quality objectives that have been set. Reports are provided to the IJC on trends in the water quality and on any exceedances of the objectives. Periodically the ISRB reviews new developments in water quality science and modifications in the basin to recommend corresponding changes in the water quality objectives and the monitoring program.

The International Souris River Board is a board of the International Joint Commission of the Boundary Waters Treaty

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