THE

INTERNATIONAL RED RIVER BOARD

Sixth Annual Progress Report

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International Joint Commission
Commission mixte Internationale

PREFACE

This report documents water quality trends and exceedances of objectives, effluent releases, and control measures for the Red River basin for the 2004 Water Year (October 01, 2003 through September 30, 2004). In addition, this report describes the activities of the International Red River Board during the reporting period October 01, 2004 to September 30, 2005 and identifies several current and future water quality and water quantity issues in the basin.

The units of measure presented in this report are those of the respective agencies contributing to this report.

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Commissioners:

The International Red River Board is pleased to submit its Sixth Annual Progress Report to the International Joint Commission.

Respectfully submitted,

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1.0 SUMMARY

1.01 Water Quantity and Water Quality

Water Quantity

Dry conditions prevailed throughout the Red River basin in the latter months of 2003. Total winter snow accumulation over the ensuing months was also generally below average. These conditions were followed by mild weather in early spring 2004 resulting in considerable depletion of the snowpack. By end of March spring runoff was underway in the United States portion of the basin and the flood outlook indicated an average to below average spring runoff for the basin.

However, heavier than normal rains during the last days of March, exacerbated by frozen soil conditions, contributed to extensive flooding of agricultural lands. This was followed by major spring storms in May, which caused elevated soil moisture conditions throughout most of the basin. By June there was widespread ponding of agricultural lands resulting in delay of normal planting activity.

Significant rainfall in the order of 50-75 mm over many parts of the basin occurred in August and again in September, causing overland flooding in some areas. Flows on the Red River and many of its tributaries were generally above the upper decile level at this time. Persistent showers throughout the fall 2004 maintained high river levels and outflows.

The above average precipitation throughout the summer of 2004 caused Devils Lake to reach a new record high of about 1449.1 feet msl by mid-June. The previous high of about 1448.1 feet msl was experienced in August 2002.

During the 2004 water year, daily flows at the international boundary ranged from a minimum of 11.4 m^3/s (402.6 ft^3/s) in February 2004, to a maximum of about 1,280 m^3/s (45, 203 ft^3/s) in April 2004. The mean discharge of the Red River at the international boundary during the 2004 water year was approximately 177 m^3/s. The long term mean discharge is about 108 m^3/s (3, 814 ft^3/s).

Above average water levels and flows and elevated soil moisture conditions predominated going into fall and winter of 2004/2005. Snowcover was slow to develop allowing soils to freeze to significant depth. Although above normal snow accumulations occurred in parts of the basin over the course of the winter, favourable weather patterns throughout the freshet period averted potential severe flooding. The Red River and tributary flows were contained for the most part within their banks. The Red River peak flow at the international boundary was estimated at about a 1-in-5 year event. As in 2004, above average spring and summer precipitation resulted in flooding of low-lying areas delaying and/or curtailing agricultural planting and causing significant damage to emerging crops.

The added runoff in the Devils Lake sub-basin during the summer of 2005 caused Devils Lake to reach or slightly exceed the June 2004 historic high of about 1449.1 feet msl. Lake Winnipeg levels also were the highest since the mid-70's at this time.

Water Quality

No unusual deviations or significant exceedances of the International Joint Commission (IJC) water quality objectives were observed at the international boundary during the 2004 water year. *Chloride*

concentrations marginally exceeded the objective in November and December of 2003 and in February and March of 2004, but stayed below the objective over the remaining months. *Sulphate* concentrations, while not exceeding the objective, were elevated throughout the fall of 2003 and again in late summer of 2004. The TDS objective was exceeded during the fall of 2003 and again in winter and late summer of 2004. *Dissolved oxygen* measurements remained well above the IJC objective throughout the 2004 water year. Fecal coliform counts were well below the IJC objective over this period. The observed concentration patterns are in part attributable to the prevailing hydrological conditions in the basin.

Seventeen of the pesticides and herbicides for which alert levels have been established were detected during the reporting period at low levels and well below the Canadian Aquatic Guidelines. Given that the Red River basin is an agriculturally dominated region, the presence of pesticides and herbicides at low concentrations is expected.

No intervention or action by the IRRB or participating agencies was required with respect to the observed quality or the alert levels.

1.02 International Red River Board Activities

As noted in the Preface, this report also describes the activities of the International Red River Board for the period October 01, 2004-September 30, 2005 which succeeds the 2004 water year. Following is a summary of the key activities and issues in the basin.

In 2004, the IJC adopted guiding principles aimed at broadening the partnership efforts of its international boards with other entities for a more inclusive approach. The IJC refers to this effort as the International Watersheds Initiative. The aim of the Initiative is to enhance the capabilities of existing IJC international boards while, at the same time, strengthening cooperation among the various local entities.

In 2005, the International Red River Board (IRRB) updated its work plan to reflect the current status of its activities and to affirm consistency with the International Watersheds Initiative and the 2000 IJC Directive to the Board. The updated work plan involved review and/or re-evaluation of some 25 projects costing in excess of $400, 000 to complete. The resulting selection of priority activities reflects a practical assessment of organizational capacity, the relative merit of each activity, the significance of making continued progress with respect to the longer-term effectiveness of the Board, and the risk associated with delay of project. The priority activities encompass actions to: enhance the existing scientific knowledge of aquatic ecosystems basin-wide, including fish and macroinvertebrate communities, distribution of exotic species, as well as plant community structures and trends; establish apportionment/flow targets at the international boundary, and; address the need for nutrient objectives and continued water quality monitoring at the international boundary.

The IRRB also reports on the Poplar and Big Muddy basins, which were the responsibility of the former International Souris-Red Rivers Engineering Board. No major apportionment or water quality concerns were encountered in these basins during the reporting period.

The IRRB also investigates and reports on other activities in the Red River basin that have a potential to affect waters and aquatic ecosystems of the Red River and its transboundary tributaries and aquifers. The Devils Lake diversion and the Red River Valley Water Supply project are current examples of this reporting responsibility. These projects and activities, summarized in Table 1, are described in greater detail in subsequent chapters of this report.

Table 1. Summary of Current Activities and Issues in the Red River Basin

Project/Area	Transboundary Issue	Status	Action
Devils Lake Outlet	-Operation of the North Dakota State outlet to divert water from Devils Lake to the Sheyenne/Red Rivers could cause introduction of non-native fish species and pathogens to Lake Winnipeg and cause water quality deterioration and increased deviations from IJC water quality objectives at the international boundary. -Proposed Tolna Coulee clean out presently under study would enable overflow from Stump Lake to the Sheyenne River.	-Operation of the outlet began on August 5, 2005 under permit and continued intermittently for about 10 days. -Operation is not considered to have caused harm to downstream waterways or to violate IJC water quality objectives at international boundary. -CEQ-led negotiations resulted in installation of rock filter and 4-day bio-sampling project. Sampling did not find targeted invertebrates or pathogens. -CEQ draft agreement for enhanced filtration and monitoring not ratified.	-Project being monitored by the IRRB. -IRRB may be asked to oversee enhanced post-diversion monitoring.
Lower Pembina River Flooding	-Embankment along boundary in Manitoba prolongs agricultural flooding in North Dakota ---------- -Embankments along Pembina alleged to increase water volumes flowing toward Manitoba	-Manitoba and North Dakota have reached agreement to improve capacity of road-dike crossings #2 &3. -In May 2004, Pembina County and communities served statement of claim on Manitoba for damages resulting from the road-dike. Legal process is in progress. ---------- -Non-permitted levees in ND have been removed and set-back levees proposed. ---------- -In 2003 Pembina River Basin Advisory Board (PRBAB) asked IRRB for assistance in resolving long-standing drainage and flood problem. -IRRB Study Team identified the elements of a long-term solution and a number of short-term initiatives.	-Manitoba and ND will keep the IRRB informed on progress of bilateral discussions. ---------- -Short term initiatives are being funded by the [US] IJC, including culvert capacity inventory and choke-point modelling.

Project/Area	Transboundary Issue	Status	Action
Red River Valley Water Supply	-Optional water importation from the Missouri R. to the Red River basin could cause transfer of non-native fish species and pathogens to the Hudson Bay watershed , change water quality, and increase flows.	-Dakota Water Resources Act authorizes study of water needs and options for Red River valley in ND. -Needs & Options Study report released in November 2005; draft EIS released in December 2005.	-Project being monitored by the IRRB.
Poplar River Monitoring	-IJC apportionment formula not ratified.	-Current Bilateral Monitoring Agreement extended to March 31, 2007. Saskatchewan and Montana considering renegotiation of agreement on apportionment and water quality. ---------- -No significant upward trends in parameters sampled over 20 years. Reduced water quality monitoring started in 2004 continues.	-IRRB to maintain watch on negotiations when they resume. ---------- -Bilateral Monitoring Committee will continue to monitor and review water quality conditions at the international boundary.
Boundary Region	-Intensive livestock operations near boundary could be potential water quality concern.	-A [IRRB] notification protocol developed and implemented by Minnesota, Manitoba, and ND ensures effective exchange of information and review of concerns.	-Members will keep IRRB informed of notifications. As a courtesy, IRRB shares notification information with RRBC.