

**INTERNATIONAL RAINY LAKE BOARD OF CONTROL**  
**INTERNATIONAL RAINY RIVER WATER POLLUTION BOARD**

**JOINT ANNUAL REPORT  
FOR  
JANUARY 2001 TO SEPTEMBER 2002**

**Submitted to**

**The International Joint Commission**

**October 31, 2002**

**INTERNATIONAL RAINY LAKE BOARD OF CONTROL**  
**INTERNATIONAL RAINY RIVER WATER POLLUTION BOARD**

October 2002

The International Joint Commission  
Ottawa ON and Washington DC

Commissioners:

The members of the International Rainy Lake Board of Control (IRLBC) and the International Rainy River Water Pollution Board (IRRWPB) are hereby pleased to transmit their first joint "annual" report to the Commission, covering the period January 2001 to September 2002.

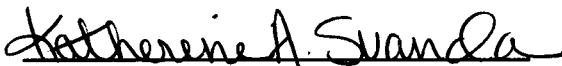
Respectfully submitted,



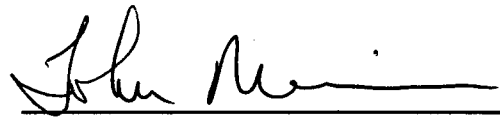
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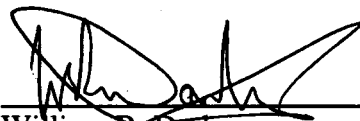
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## **1. INTRODUCTION**

This report presents a summary of Board activities for the International Rainy Lake Board of Control (IRLBC) and the International Rainy River Water Pollution Board (IRRWPB) for 2001 through September 2002. In response to the Commission's expressed commitment to a more integrated approach to its responsibilities in the Rainy basin, the two boards have been working more closely together since December 2001. The Boards held two joint board meetings and a joint public meeting in 2002 in addition to numerous joint conference calls and have developed a good working relationship, which proved quite helpful during the 2002 high water event. This report is the first joint report of the two boards.

In 2001, heavy and persistent rainfall from the beginning of April through to the end of July led to the highest water levels experienced on Rainy and Namakan lakes since 1968. In 2002, extraordinary June rainfall, primarily from two events, led to the highest water levels experienced on Rainy Lake and in the tailwater below the Rainy Lake dam since 1950 and unprecedented rise in river levels in the lower reaches of the Rainy River at the Town of Rain River, ON and the City of Baudette, MN, creating a flood threat to those communities. The 2002 high water event led to the issuance of two Supplementary Orders by the Commission on June 12<sup>th</sup> and again on June 28<sup>th</sup>. In both years, the high water conditions extended downstream to Lake of the Woods and the Winnipeg River. Appendix A contains a map and schematic of the Winnipeg River drainage, which includes the Rainy-Namakan basin. The 2001 event was fully documented in the IRLBC's October 26, 2001 report to the Commission entitled, "Report on Year 2001 High Water Levels in the Rainy/Namakan Basin," and is discussed briefly in Section 2 along with the 2002 event. Figures referenced in Section 2 can be found in Appendix B along with a supporting legend after the final figure.

Section 3 of this report documents environmental monitoring activities in the basin, while Section 4 provides municipal and industrial point source discharge information. Section 5 provides information on basin activities and issues, including a status report on the Boards' examination of peaking and other issues on the Rainy River, as requested by the Commission. The remaining sections of this report cover Board coordination and public relations efforts, other business and informational items.

## **2. REGULATION SUMMARY**

### **2.1 2001 High Water Event**

#### *Overview*

In January 2001 the IJC adopted its Consolidated Order for Rainy and Namakan lakes as the authoritative text of the Commission's Order of June 8, 1949, as amended. The Consolidated Order replaced the 1949 Order and all subsequent amendments to it. At the end of March 2001 in the Rainy-Namakan basin, hydrologic conditions consisted of near normal water content in the snowpack, normal to somewhat higher than normal (localized) soil moisture and well below normal base-flow in the basin's rivers and streams. Subsequently, the basin experienced very high water levels and flows during the spring and summer of 2001. This event was driven by extreme amounts of rainfall occurring within two periods, generally from early April through mid-June and again during the second half of July. The quarter-monthly precipitation for 2001 and 2002 for the Lac la Croix and Rainy-Namakan basins is shown in Figure 1. These conditions existed not only in Rainy-Namakan basin, but extended along the main stem of the Winnipeg River basin, from the headwaters above Rainy and Namakan (including

Basswood Lake and Lac la Croix) through to Lake of the Woods (below Rainy Lake) and down the Winnipeg River into the Province of Manitoba. These wet conditions were in marked contrast to most river basins to the west and the east of this area, which experienced drier than normal conditions in 2001. On Rainy and Namakan lakes the 2001 levels were the highest since 1968 and exceeded the IJC upper emergency level (the highest point on the upper rule curve) and “all gates open” levels for both lakes as defined by the IJC. On Lake of the Woods and downstream along the Winnipeg River, the 2001 levels were the highest since 1950, which is at or near the flood of record for the area. Figure 2 shows graphically, Namakan Lake levels, net inflow and outflow for 2001 and 2002, while Figure 3 shows the same information for Rainy Lake.

### ***Report on Year 2001 High Water Levels in the Rainy/Namakan Basin***

In a June 12, 2001 letter to the Board, the IJC requested the Board to prepare a detailed report on the 2001 high water event in the Rainy-Namakan basin. An advance copy of the Board’s report, dated October 26, 2001, was submitted to the IJC at its semi-annual meeting in Montreal, QC. The report is also posted on the Board’s web site at [www.mvp-wc.usace.army.mil/ijc/rainylake/reports/](http://www.mvp-wc.usace.army.mil/ijc/rainylake/reports/). A detailed account of the 2001 high water event can be obtained from that report, and for the sake of brevity, will not be repeated in this annual report.

However, it is important to note here that the Commission asked the Board to address six specific areas in its report, as follows:

- A description of the hydrologic conditions as the situation developed in the spring of 2001.
- An assessment of the actions and decisions taken by the Companies (Boise Cascade Corporation and Abitibi-Consolidated Incorporated) and the Board in response to these conditions and their impacts.
- The impact of the new rule curves generally including actions taken to target for other than the middle of the band.
- Any physical changes that may have been made since the original IJC Order, which would have reduced the outflow capacity at the Fort Frances/International Falls dam.
- Any other information the Board considers relevant.
- Any Board recommendations for further action or follow-up by the Board or the Commission.

The Commission’s June 12 letter also requested an interim report addressing the May 24-31 shutdown of the International Falls powerhouse, which is owned and operated by Boise Cascade Corporation. This shutdown reduced the outflow from Rainy Lake at the time when inflows to the lake were at their highest. To address this issue, the Board asked Boise to provide specific information, including a computational assessment of the impacts of the shutdown. The company’s final response was submitted to the Board under cover dated August 9, 2001, and consisted of their consultant’s (KGS Group, Winnipeg, Manitoba) report as well as a separate report prepared by company officials.

## **2.2 2002 High Water Event**

### ***Overview***

Rainy Lake and the Rainy River experienced very high water levels and flows during the late spring and summer of 2002. This event was driven by extraordinarily heavy rainfall on June 9-10 and additional heavy rainfall on June 22-23 (see Figure 1). This followed a very dry spring with little snowmelt or

rainfall runoff and with Rainy and Namakan Lake outflows at or near their minimums through much of the period. Late June reductions in Namakan Lake outflow, aimed at providing some relief to high Rainy Lake levels, along with localized heavy rainfall on July 4-5 over the Namakan Chain of Lakes gave rise to concerns on those lakes. Extraordinary runoff from the Canadian tributaries to the Rainy River in response to the June 9-10 rainfall threatened the Town of Rainy River, ON and led to a June 12, 2002 IJC Supplementary Order for Rainy Lake. Actions taken by the Board under the June 12th Order allowed time for the Town to complete its emergency flood protection, averting serious flooding of that community. The added runoff from the June 22-23 rainfall event further exacerbated already high Rainy Lake levels, increasing high water concerns on Rainy Lake. Near the end of June, rising tailwater levels in the Rainy River below the Rainy Lake dam caused flooding of the International Falls powerhouse and led to safety concerns over its continued operation. In response to the high water concerns on Rainy Lake and at the Boise powerhouse, the IJC issued a June 28, 2002 Supplementary Order for Namakan Lake. This Order was aimed at providing some relief to the high water levels on Rainy Lake by reducing Namakan Lake outflows, while Rainy Lake remained significantly in excess of its IJC upper emergency level, taking into account conditions on Namakan Lake and upstream, on Rainy Lake and downstream, and at the Boise powerhouse.

On Rainy Lake the 2002 peak level was the highest since 1950, but the Namakan Lake peak level was only the 24<sup>th</sup> highest since 1913. Both lakes exceeded their IJC upper emergency levels (the highest point on the upper rule curves) and “all gates open” levels as defined by the IJC. Figures 2 and 3 show the 2002 levels, inflows and outflows for Namakan Lake and Rainy Lake, respectively. Anecdotal evidence suggests that 2002 event produced the highest levels and flows ever experienced by anyone now living in the region for the smaller tributaries (the LaVallee R., Sturgeon R., Pinewood R., Rapid R. and the Winter Road R.) to the Rainy River. All of these rivers overflowed their banks and flooded vast areas of their floodplains, causing flooding of property and homes. This sudden and heavy tributary runoff resulted in an unprecedented rise in river levels in the lower reaches of the Rainy River at the Town of Rainy River, ON and the City of Baudette, MN, creating a flood threat to those communities. At Fort Frances, the timing of backwater effects from this runoff, as Rainy Lake outflows were nearing their peak, led to the highest tailwater level at the Rainy Lake dam since the 1950 level, exceeding that level by 3 cm (1.2 in).

### ***Report on Year 2002 High Water Levels in the Rainy/Namakan Basin***

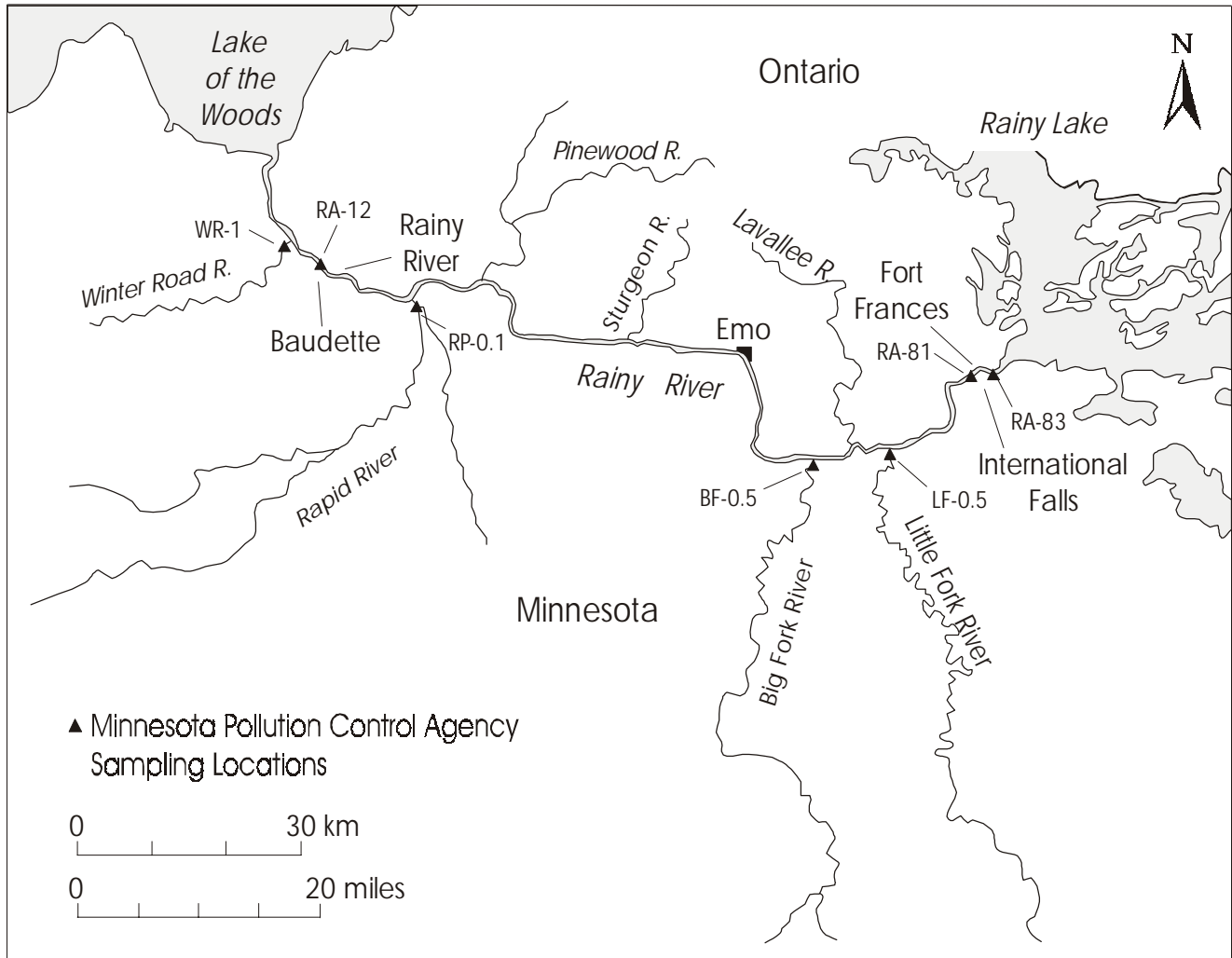
At the request of the IJC and on its own initiative, the IRLBC has undertaken a review of the 2002 high water event and will submit its report to the IJC in November 2002. In addition to a hydrologic review of this year’s event, the board will review operational and public communications employed in the management of water levels, floodplain management and hazard land utilization, high water impacts and concerns raised, and the impacts of actions taken and the new rule curves.

## **3. AMBIENT ENVIRONMENTAL MONITORING**

### **3.1 Water Quality Monitoring**

The Minnesota Pollution Control Agency (MPCA) monitors water quality on the main stem of the Rainy River at three sampling stations and on five tributaries to the Rainy River. All of these monitoring stations are part of the Minnesota Milestone sampling program, a program that includes fixed station stream monitoring sites throughout the State of Minnesota.

In keeping with the sampling schedule for the Minnesota Milestone program, these sites were last monitored in the 2000 water year and will be sampled again in the 2002-2003 water year (October 2002 to September 2003). Station RA-86, Rainy River at Ranier, has been discontinued at the request of Canadian National Railway. Permission to sample from their railway bridge was rescinded due to safety concerns. Station RA-81 located downstream of the dam at International Falls has been added.



The MPCA Milestone sites are sampled monthly for ten months of two non-consecutive years in a five-year period. The following sites are the current long-term water quality sampling stations on the main stem of the Rainy River:

#### MPCA Rainy River Sampling Locations

Sampling Agency	STORET Station #	STORET Description
MPCA	RA – 12	Rainy River @ Baudette, MN
MPCA	RA – 81	Rainy River @ Int'l Falls, below dam
MPCA	RA – 83	Rainy River @ Int'l Falls, above dam

Water samples collected from main stem Rainy River stations and tributaries are analyzed for temperature (field), dissolved oxygen (field), turbidity, pH, conductivity, total phosphorus, BOD, nitrate + nitrite, NH<sub>3</sub>+NH<sub>4</sub>, and chloride.



In addition to the Rainy River main stem stations, the following tributary stations are monitored:

### MPCA Rainy River Tributary Sampling Stations

Sampling Agency	STORET Station #	STORET Description
MPCA	BF - 0.5	Big Fork R. @ bridge on MN 11 (4 mi. E of Loman, MN)
MPCA	LF - 0.5	Little Fork R. @ bridge on MN 11 (0.5 mi. W of Pelland, MN)
MPCA	RP - 0.1	Rapid R. @ Clementson, MN
MPCA	WR - 1	Winter Road R. @ bridge on MN 11 (4 mi. W of Baudette, MN)

### 3.2 Fish consumption Advisories

Fish tissue monitoring is carried out by provincial and state agencies in Ontario and Minnesota that result in the issuing of fish consumption advisories. In Minnesota, it is a shared program between the Minnesota Department of Natural Resources (MDNR) and the Minnesota Department of Health (MDH), while in Ontario it is a shared program with the Ontario Ministry of Natural Resources (OMNR) and the Ontario Ministry of Environment (OMOE).

#### *Minnesota*

Each year, the MDNR collects fish from lakes and rivers for testing. Fish fillets are tested for mercury and in some cases polychlorinated biphenylethers (PCBs). The MDNR, the MPCA, and the MDH collaborate to select sites where fish are tested. The MPCA also screens fish for other chemical contaminants that may be a concern. The MDH issues fish consumption advice based on the concentrations of chemicals measured in fish fillets. The concentrations that trigger fish consumption advice are as follows:

#### Mercury

Meal Advice	General Population (: g/g mercury)	Women of Child-bearing Age and Children Under 15 Years (: g/g mercury)
Unlimited consumption	< 0.16	< 0.05
1 meal / week	0.16 - 0.65	0.06 - 0.2
1 meal / month	0.66 - 2.8	0.21 - 1.0
Do not eat	> 2.8	> 1.0

#### PCBs

Meal Advice	(: g/g PCB)
Unlimited consumption	< 0.05
1 meal / week	0.06 - 0.2
1 meal / month	0.21 - 1.0
1 meal / two months	1.1 - 1.9
Do not eat	> 1.9

Currently MDH issues consumption advisories based on mercury for Rainy Lake, Rainy River, Little Fork River, Big Fork River, and Lake of the Woods. Consumption advice for the Vermillion River is based on levels of PCBs and mercury.

### *Ontario*

The OMNR and OMOE are responsible for the collection of fish while, the OMOE has the responsibility of carrying out the contaminant analysis on fish tissue and issuing the “Guide to Eating Sport Fish”. Skin-off filets are analyzed for a variety of contaminants that can include mercury, PCBs, and dioxins/furans. Consumption advisories are based on health protection guidelines developed by Health Canada. Chemical concentrations that trigger consumption restrictions are as follows:

<b>Contaminant</b>	<b>Restrictions Begin</b>	<b>Total Restriction</b>
Mercury (ug/g)	0.45	1.57
PCBs (ug/g)	0.5	4.0
Dioxins/Furans (pg/g) TEQ*	10	81

\* TEQ is the toxic equivalent of 2,3,7,8-TCDD

There have been no changes to consumption guidelines that were reported in last year’s report. Consumption advisories restricting consumption have been issued for Rainy Lake, Rainy River, and Lake of the Woods. These advisories are based on mercury concentrations in fish tissue. No consumption restrictions are in effect for PCBs or Dioxins/Furans. There are more restrictive advisories for women of childbearing age and children under 15 years of age.

### **3.3 Environmental Effects Monitoring (EEM)**

The Environmental Effects Monitoring program requires pulp and paper mills in Canada through federal legislation to monitor the effects of mill discharges in receiving waters. Study components include an adult fish survey, a benthic invertebrate survey, and toxicological testing of final effluent. EEM consists of a series of monitoring and interpretation cycles that build on the findings from previous cycles.

To date, Abitibi-Consolidated in Fort Frances has completed their Cycle 2 EEM study as required under the Federal Pulp and Paper Regulations. They are scheduled to carry out their Cycle 3 EEM study in September 2002. The study design has been submitted and reviewed and includes the following components, as approved by the sub-TAP.

#### *Fish Survey*

The mill has proposed that Iowa darter be the sentinel species targeted in Cycle 3 (as in Cycle 2). The sub-TAP has suggested that another species in addition to Iowa darter also be targeted. Power analysis determined that 11 female and 15 male Iowa darters should be caught per site, as a result, the mill states that a minimum of 11 females and 15 males will be processed per area.

**Study Areas** - The mill proposes to use the same reference area as was used in Cycle 2, at Pither’s Point, upstream of the Fort Frances Dam. Furthermore, the mill proposed 3 exposure areas. The first area is located in the same location as in Cycle 2 (near field). The other two exposure areas are located downstream. The last exposure area is located in the < 1% plume.

**Sampling Period** - Fish collection is proposed for September 2002 (similar to Cycle 2).

### *Benthic Invertebrate Survey*

**Study design** - The mill has proposed to use the same gradient design as in Cycle 2. In total, 40 benthic samples will be collected: 2 sub-samples from each of 20 stations within the exposure gradient. The Exposure area will extend from 700 m to 9 km downstream on the north side (Canadian side) of the Rainy River.

**Sampling Period** - Mid-September 2002 (similar to Cycle 2).

### *Fisheries Resources*

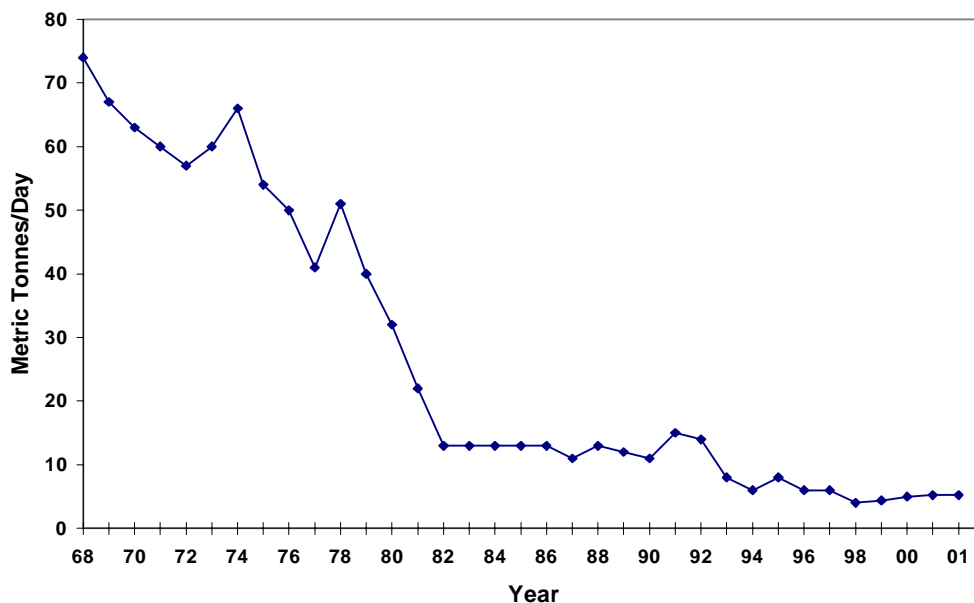
**Tissue Analysis** - Not required. The mill has met CEPA regulation limits since 1991.

**Tainting Evaluation** - No new tainting complaints lodged with the Thunder Bay/Kenora District office of the OMOE. As a result, no tainting evaluation is required in Cycle 3.

**Chemical Tracers in Fish** - Not required since the exposure and reference area are separated by a dam.

## **4. POINT SOURCE DISCHARGES**

As indicated in the most recent Board reports, point source discharges to the Rainy River from municipal and industrial sources have remained relatively constant from a loadings perspective and will probably remain fairly steady at current levels in the foreseeable future. The dramatic decreases in loading, for the conventional parameters such as BOD and TSS from the 1960's to the early 1980's is a direct result of remedial measures undertaken by industry and municipalities. The graph that follows documents this historical downtrend of BOD. With no other significant remedial measures planned, BOD loads to the Rainy River will continue at or around the current levels.



**Total BOD Load From Continuous Discharges**

## Minnesota Municipal Sources

### *North Koochiching Sanitary Sewer District*

The District, which includes International Falls, discharges to the Rainy River downstream of International Falls. The District reported no violations for the year 2001. Discharge data from this facility are shown below for the years 1996 through 2001. There were significant reductions in BOD and TSS loads to the Rainy River for the year 2000 - 2001, compared to previous years.

### North Koochiching Sanitary Sewer Discharge Summary

Year	Flow (m <sup>3</sup> /d)	BOD (kg/d)	TSS (kg/d)
1996	6813	89.7	50.4
1997	4921	77.4	38.6
1998	5349	77.1	32.4
1999	5149	89.5	51.7
2000	NA	54.6	26.6
2001	4920	64.3	35.4

### *Baudette*

The National Pollutant Discharge Elimination System (NPDES) permit for this facility was re-issued on August 17, 1999. In 1999, Baudette replaced collection lines and connected the Industrial Park to the facility with a new lift station and sewer line. A major permit modification allowing for construction of a new 16-acre pond and new discharge point was completed in 2000. There were no reported bypasses for this facility for the year 2001 and no exceedances of its permit limits of 128 kg/d for BOD and 230.3 kg/d for TSS. In total, the facility discharged 7,040 m<sup>3</sup> during the year.

## 4.2 Ontario Municipal Sources

### *Fort Frances*

The Fort Frances wastewater treatment plant was rebuilt and upgraded in January 1998 to include secondary treatment and phosphorus removal. The result of improved treatment is indicated in the discharge data below which includes two years of pre-secondary treatment and four years of post secondary treatment. The plant operated throughout 2001 within the MOE guidelines of 25 mg/L for both BOD and TSS. Average concentrations in 2001 were 5.6 mg/L BOD and 11.1 mg/L TSS, both well within the 25 mg/L limit.

### Fort Frances Wastewater Treatment Plant

Year	Flow (m <sup>3</sup> /d)	BOD (kg/d)	TSS (kg/d)
1996	8940	211	449
1997	7240	323	447
1998	6500	52	76
1999	8280	48	56
2000	6973	48	55
2001	8144	46	90

### *Emo*

The Town of Emo has a seasonal discharge from its sewage lagoon to the Rainy River. During 2001, a total of 26,050 m<sup>3</sup> was discharged to the river over 50 discharge days during the year. BOD averaged 7.0 mg/L and TSS averaged 11.0 mg/L for the discharge period, which was within the MOE limits of 30 mg/L for BOD and 40 mg/L for TSS.

### *Manitou Rapids*

The sewage lagoon operated by Rainy River First Nations at Manitou Rapids was discharged in September and October of 2001. During this period, 19,062 m<sup>3</sup> of effluent was discharged to the Rainy River. BOD and TSS concentrations were less than 2 mg/L and 2 mg/L respectively, well below the federal guidelines of 20 mg/L BOD and 25 mg/L TSS.

### *Barwick*

There were no discharges during 2001, from the sewage lagoon located in Barwick.

### *Rainy River*

The Town of Rainy River discharged a total of 229,642 m<sup>3</sup> from its lagoon to the Rainy River during 2001. During the discharge period, the average BOD was 10.8 mg/L and TSS was 15.0 mg/L, well within the MOE limits of 30 mg/L and 40 mg/L respectively.

## **4.3 Minnesota Industrial Sources**

### *Boise Cascade Corporation - International Falls*

Discharge data from 1996 to 2001 including effluent flow, BOD, TSS and AOX for the Boise Cascade Mill in International Falls is provided below. There were no permit violations in calendar year 2001. Dioxins and furans in mill effluent samples were below the detection limit of 10 parts per quadrillion (ppq) in 2001. Significantly lower BOD and TSS loads were achieved in 2000 and 2001 through modifications in their biologically pure oxygen activated reactor basin (UNOX).

The permit for this facility expired on October 31, 1996. An application for re-issuance has been submitted to the MPCA as reported in previous reports.

#### **Boise Cascade Corp. Discharge Data**

	<b>Flow (m<sup>3</sup>/d)</b>	<b>BOD (kg/d)</b>	<b>TSS (kg/d)</b>	<b>AOX (kg/d)</b>
<b>Compliance Limit</b>	N/A	4,720	7,940	N/A
1996	120,363	1,500	3,750	762
1997	114,686	1,150	2,230	615
1998	158,242	1,129	2,156	611
1999	149,368	1,537	2,105	506
2000	158,837	789	1183	805
2001	135,768	645	1079	NA

## Ontario Industrial Sources

### *Abitibi-Consolidated Inc. - Fort Frances*

Data on flow, BOD, TSS, and AOX are presented in the table that follows for the years 1996 through 2001. The decreased levels indicated for 1998 and 1999 were the result of a labor dispute that shut down mill operations for approximately 5 months. The average annual daily loads for BOD, TSS and AOX continue to be well below compliance levels, however, the mill did fail an acute lethality test for rainbow trout in January 2001. This was the first violation for toxicity testing in a number of years.

There were two spills that occurred at the mill during 2001. The first event happened in May when an underground untreated effluent pipeline burst resulting in a significant release of untreated Kraft mill effluent to the ground and to the Rainy River. Approximately 350,000 litres/hour reached the river until a complete plant shutdown was completed, approximately 6 hours later.

On August 9, 2001, a Town of Fort Frances work crew punctured an effluent line resulting in approximately 45,000 litres of untreated effluent flooding the local area. Of this amount, approximately 25,000 litres was discharged to a local storm sewer and the remaining available effluent was vacuumed and taken to the lagoon.

#### **Abitibi-Consolidated Inc. Discharge Data**

	<b>Flow (m<sup>3</sup>/d)</b>	<b>BOD (kg/d)</b>	<b>TSS (kg/d)</b>	<b>AOX (kg/d)</b>
<b>Compliance Limit</b>	N/A	5990	9420	956
1996	84800	3330	4790	271
1997	84900	3350	5320	284
1998	59700	2290	3150	140
1999	86469	2700	5300	272
2000	91129	4139	6563	274
2001	88184	4484	6216	234

## **5. BASIN ACTIVITIES UPDATE**

This section of the report is intended to provide background information on other activities occurring in the basin. Some of the activities involve members of the IRRWPB and IRLBC in their agency roles, while others are summarized to provide an overview of the types of initiatives that are currently taking place by other agencies and or interest groups.

### **5.1 Basin Planning and Management (MPCA)**

#### *Rainy River Basin Information Document*

The Rainy River BID was printed in January 2002. The BID is one tool in a three-part tool kit for resource managers in the Rainy River Basin. The BID contains summary water management information for the Minnesota portion of the Rainy River Basin. The BID concentrates on information that describes water quality, quantity and the aquatic and riparian environment. Whenever possible, the information is presented by major watershed. In some cases, summary data was not available for this

generation of the BID. If summary data is available for the BID update, in 2006, it will be included at that time, or with future updates. For those individuals needing additional information, specific websites are cited throughout the BID.

The second tool in the tool kit is the Rainy River Basin GIS Road Show. MPCA staff has compiled GIS data layers for the Minnesota portion of the Rainy River Basin onto a computer disc for use by GIS technicians either in the office or, in the field, at meetings (hence the term, Road Show). The Road Show contains much more detail than was possible in the BID. The Road Show is available to resource management agencies and organizations. Note, the Road Show is not being offered to individuals because it requires special software and expertise to operate. The MPCA will update the Road Show with each five-year BID update.

The third tool, the Data Source List, is a comprehensive, searchable bibliography of books, articles, summaries, analysis and studies relating to the Rainy River Basin. This will be distributed with the BID on a computer disc and posted to the Basin Website. The MPCA will update the Data Source List annually.

### ***Basin Plan***

The five local committees formed to develop the Rainy River Basin Plan have reached a milestone. They are at the halfway point in development of their local sections of the basin plan. The committees are close to completion of their local Goals, Objectives, Strategies and Indicators. They have begun identifying Priority Waters, development of a Project List and are discussing development of local Narratives. The local committees are expected to complete their tasks by February 2003.

## **5.2 Peaking Work Group**

Hydropower plants typically vary their flow to make the most efficient use of the available water in response to varying electrical demands. This often results in more water use during the daytime (and thus greater outflow) to generate electricity when demand and rates are greatest. Furthermore, since electrical demands are higher during weekdays and lower during weekends, the flows at hydropower plants may be more during weekdays and less during weekends. The daily cycle is called peaking, and the weekly cycle is called ponding.

Concerns about water levels and flow rates on the Rainy River were raised at the annual public meeting of the International Rainy Lake Board of Control on March 6, 2001. Several private citizens, local elected officials, Rainy River First Nations representatives, and resource agency staff expressed their concerns about navigation, ice conditions, rapid fluctuations in flow rates and water levels, and aquatic ecosystem health.

A second public meeting was hosted by the IJC on November 28, 2001 in International Falls, MN. Many of the same issues related to peaking were raised again by some of the same people. In a news release dated December 6, 2001 the IJC directed its Boards to “jointly examine the other issues raised during the public hearing related to use of water in Rainy River and Rainy Lake, including peaking operations, and report to the Commission by September 2002.”

Following a March 6, 2002 meeting of interested parties on the matter, the Ontario/Minnesota Fisheries Committee (OMNR and MDNR) directed the MDNR Area Fisheries Supervisor to form a working group to examine the effects of peaking on aquatic communities and their habitat. Representatives from

Boise Cascade Corporation, Abitibi-Consolidated Inc., Canada Department of Fisheries and Oceans (DFO), OMNR, MPCA, Rainy River First Nations, Koochiching County Environmental Services and MDNR have agreed to participate. The purpose of the working group is to examine the environmental effects of peaking and ponding on the aquatic ecosystem of the Rainy River. If harmful effects are found, the working group will explore strategies and develop recommendations to minimize impacts. To date, the Work Group has held two meetings and has prepared draft terms of reference. It is expected that the terms of reference will be finalized in the near future. The Boards have requested the working group to also look at the non-environmental impacts of peaking on the Rainy River. The Boards will continue to follow the progress of the working group, keeping the Commission informed.

### **5.3 Rainy River First Nations/Environment Canada/Environmental Arrangement**

Rainy River First Nations (RRFN) and Environment Canada have participated in a Co-operative Environmental Program Arrangement over the past three years. The focus of this year's program is threefold: (1) Conduct a summer science camp for First Nation youth that incorporates history, culture and western and traditional sciences (2) Develop a site conservation plan for the prairie-oak savannah along the Rainy River. The plan will be developed using a combination of Western science and traditional ecological knowledge. RRFN will also integrate into the conservation plan, other First Nations experience in tall grass prairie/oak savannah management (3) Develop an Environmental Management Plan for the RRFN. The Plan will identify priority areas requiring attention, and a proposed action plan for addressing them. Environment Canada staff would provide training in the development and implementation of an Environmental Management Plan, based on models used in other First Nations communities in Ontario.

### **5.4 Rainy River First Nations Resource Stewardship Framework**

In May 2002, Ontario's Living Legacy Trust Fund approved funding to the RRFN for their project to develop a Resource Stewardship Framework for the Canadian portion of Rainy River and its tributaries. Additional funding was provided by a coalition of partners.

The Resource Stewardship program is led by the RRFN, assisted by partners including the Canadian Departments of: Fisheries and Oceans (DFO), Indian and Northern Affairs, Environment, and Health. Other partners include the OMNR, Agriculture and Food, and Environment.

The project has three key objectives:

- To identify knowledge gaps and set strategic priorities for management of the fisheries resources of the Rainy River and its tributaries, on an ecologically sound basis.
- To develop a stewardship framework model for managing natural resources of the Rainy River watershed.
- To gather additional fisheries resource information based on traditional knowledge and innovative scientific approaches that will advance the understanding of aquatic ecology, as well as additional science and management needs in the watershed.

A Steering Committee of representatives from RRFN, DFO and OMNR was formed in May 2002. It provides guidance to a working group of partner representatives that was established in the same month. The working group shares information with the MDNR.



The project is divided into three phases:

- Assembling of background information.
- Gap analysis to identify information and program needs, and some field sub-projects.
- Development of the Resources Stewardship Framework.

The field sub-projects included in phase 2 are fish habitat inventory, habitat use by immature lake sturgeon, and low flow water quality monitoring. The Resource Stewardship Framework program is currently scheduled for completion by March 2003. The IRRWPB has linkages to the Resource Stewardship Framework project through Environment Canada and the OMNR.

## **5.5 Rainy Lake and Namakan Reservoir Environmental Monitoring Work Group**

Following extensive study by the IRLBC, the IJC issued a Supplementary Order on January 6, 2000, which implemented new "rule curves" for regulating water levels on Rainy Lake and Namakan Reservoirs along the Ontario-Minnesota border. The IJC adopted specific recommendations in two IRLBC reports that have implications for federal, state and provincial resource agencies on both sides of the border.

In its Final Report of October 26, 1999, the IRLBC recommended that the resource management agencies implement monitoring programs to identify impacts of the new rule curves on the biological and aquatic communities, and to provide an adequate source of information for future reviews. The Board recommended that the new rule curves be implemented and monitored for a trial period, no shorter than 10 years, so that a range of events and adaptations of the biological community can be identified.

In its Report on Year 2001 High Water Levels, the IRLBC further said (Rec. 2, p.15):

"The Commission should continue to encourage the resource management agencies to gather the environmental data that will be needed in any future assessment of the benefits or adverse impacts to the environment under the 2001 IJC Order for Rainy Lake and the Namakan Chain of lakes. The gathering of the required environmental data should be given a high priority by the resource agencies."

The Commission and the Board have provided encouragement to the resource management agencies. The agencies have already taken several actions in response:

Regular scheduled surveys continue as part of normal state and provincial work programs (e.g. creel surveys, fish index netting). These data contribute to long-term data sets that will provide helpful background information. Two workshops of scientists, biologists and resource managers were held to develop study objectives and the "best bets" for a monitoring study design. The first was held on January 11-12, 2000, in International Falls, MN. The second was held in Fort Frances, ON, on Feb. 13-14, 2002. Some fieldwork has already been started (e.g. wetland monitoring contracted out by Voyageurs National Park). A monitoring working group is in the process of being established, consisting of representatives from state, provincial and federal resource management agencies, plus a First Nations representative selected by the Fort Frances Area Chiefs Tribal Council. Their first meeting was Sept. 13, 2002.

Provincial, state and federal agencies continue their attempts to apply fiscal and personnel resources to the need for monitoring. However, it is clear from discussions with representatives of the agencies that competing priorities may interfere in part with fulfillment of the Commission's request.

## **5.6 Lake of the Woods Erosion Work Group**

A Work Group has been established to examine the issue of erosion on the southern portion of Lake of the Woods. This Work Group is being led by MDNR and MPCA with membership from a variety of interest groups and resource agencies in the basin. The goal is to determine the causes of shoreline erosion and degradation of Pine and Curry Islands from erosion. A more detailed description of the Work Group's activities will be included in the International Lake of the Woods Control Board report to the Commission.

## **6. COORDINATION AND PUBLIC RELATIONS**

### **6.1 Overall Perspective**

Over the past year and a half, the IRLBC and IRRWPB have endeavored to maintain a high level of coordination and communication with each other, the Commission, the Companies and stakeholders in the Rainy-Namakan basin regarding critical lake regulation activities. The Boards have made effective use of the telephone, including conference calls, electronic mail, the Internet and written correspondence including letters, bulk mailings of notices, faxes, news releases, newspaper ads and reports. The Boards communicated with the public during the 2001 and 2002 high water events by a number of means. The Boards received literally dozens of phone calls and email messages from individual property owners in the Rainy-Namakan basin requesting information on hydrologic conditions in the basin and dam operations or to express their concerns that action be taken to bring relief from rising lake levels. Board staff spent many long hours responding to each and every request. The Boards feel they have done a credible job of ensuring a high level of effective communication. The Companies have demonstrated a willingness to work on improving public and Board communication. Communications between the Companies and the Board concerning 2001 and 2002 high water events were very good in the view of the Boards. Communications between the IRLBC and IRRWPB went well, in spite of the inherent difficulties in working with a larger group.

### **6.2 Boise Cascade and Abitibi-Consolidated Initiatives**

The Companies continue to be active on a number of fronts to be responsive to public information needs. Flow changes and gate openings at Rainy and Namakan lakes are announced on radio stations CFOB in Fort Frances and KGHS in International Falls. Large flow changes on the Seine River are announced on radio station CKDR in Dryden, ON. A toll-free telephone information line is maintained from early spring to late fall to provide the public with information on water levels for Rainy and Namakan Lakes. This lake level information line includes daily-recorded messages with information on lake elevations and outflows for Rainy and Namakan Lakes, precipitation levels and spillway gate operations for the dams at International Falls/Fort Frances and Kettle Falls. This information can be accessed by calling 1-800-509-LAKE or 1-800-509-5253. In addition to the toll-free number, lake level graphs for Rainy and Namakan Lakes are published weekly in the Fort Frances Times, Atikokan Progress and International Falls Daily Journal from early spring to late fall.

On February 27, 2001 Boise completed its “Borderland Lakes” web site at (<http://lakes.bc.com>) to assist their public relations effort by presenting basin and water level regulation information for the Rainy-Namakan basin via the Internet. The site contains a brief history of the watershed, general watershed information, watershed statistics, a basin schematic, Rainy and Namakan lake level and flow information and links to other related web sites including links to the IRLBC, IJC and U.S. Army Corps of Engineers web sites. The site also contains contact numbers for year-round information on lake levels or outflows. The Boise web site is updated Monday through Friday, ongoing.

The Companies continue their proactive program of calling affected downstream Rainy River users and advising them of significant gate changes at the dam at International Falls/Fort Frances. Participation at the Atikokan Trade Show and at the annual Seine River Water Level Committee meetings continues to help promote greater understanding of regulation objectives in the northern portions of the Rainy basin.

### **6.3 Board News Releases and Paid Ads**

The IRLBC made extensive use of news releases, during the 2001 and 2002 high water events in the Rainy-Namakan basin, to inform the public of hydrologic conditions and actions being taken with regard to lake regulation. In 2001, the Board issued only one news release as conditions warranted. In 2002, the Board issued 3 news releases concerning gate openings at the Rainy Lake dam under the Commission’s June 12<sup>th</sup> Supplementary Order for Rainy Lake and 7 news releases concerning outflow from Namakan lake under the Commission’s June 28<sup>th</sup> Supplementary Order for Namakan Lake. These releases were provided by FAX and electronic mail to the key media outlets in the region, both in the United States and Canada and were also posted to the IRLBC web site. Board staff also gave a number of interviews concerning the high water situation to local and regional newspapers and radio stations.

In addition to news releases, the Boards utilized paid ads to advertise meeting notices and have considered their use as an informational tool for other purposes such as helping to improve public understanding of the Boards, the IJC and the process for lake regulation under the 2001 IJC Consolidated Order for Rainy and Namakan lakes.

### **6.4 Communications Between IRLBC and IRRWPB**

In December 2001 the IJC advised the public and the Boards of its intentions to defer its plans to combine the IRLBC and IRRWPB because of a lack of public support, but reaffirmed its commitment to a more integrated approach to its responsibilities in the Rainy basin. Toward this end the IJC requested the Boards to, among other things, hold joint annual public meetings, at least one joint board meeting and one joint conference call annually to exchange ideas. The two boards met jointly on two occasions in 2002 and held a number of joint conference calls. Communications between the two boards went well in spite of the inherent difficulties in working with a larger group with respect to coordinating individual schedules and arranging conference calls and meetings. During the 2002 high water event, the IRRWPB proved to be an asset, drawing upon its resources and providing the IRLBC with on-the-ground flood reconnaissance information that proved very useful, especially with respect to the developing flood situation on the Rainy River in the early days of the event.

### **6.5 Meetings**

This section contains brief summaries of key meetings and functions attended by the Boards and their staff.

### ***Meeting With Boise Cascade/Abitibi-Consolidated – March 6, 2001***

In connection with its annual basin trip, the Board met with Boise Cascade and Abitibi-Consolidated Inc. representatives at Abitibi's training facility in Fort Frances on the afternoon of March 6<sup>th</sup>. Items discussed included Boise's participation in the annual public meeting, their regulation of the lakes over the past year and plans for the coming spring, review of the first year's regulation under the new IJC Order for Rainy and Namakan lakes, periodic dam maintenance activities, water level related public relations activities of the Companies, peaking operations by the Companies and an update by the Board on the Commission's Watershed Board initiative.

### ***Annual Public Meeting – March 6, 2001***

The IRLBC's thirty-fourth annual public meeting was held in Fort Frances on the evening of March 6<sup>th</sup>. 29 local residents including representatives of the Companies attended the meeting. IJC staff was also in attendance. The small turnout was perhaps attributable to the fact that, aside from peaking-related issues in the fall of 2000, Rainy and Namakan lakes had remained within their rule curves for the entire year, aside from a few minor violations on Rainy Lake.

Abitibi-Consolidated presented a review of the past year's regulation under the new Order and the Board reviewed current basin conditions and the outlook for spring runoff. IJC staff presented the Commission's views concerning its Watershed Board initiative and progress to date towards establishment of these boards. The meeting was then opened to questions from the public. The primary concern raised by the public focused on fluctuations in the Rainy River related to the peaking operations of the Companies and calls for a formal process for investigating the matter. Others noted poor ice conditions, lots of fluctuations, poor angling and boating on the river, since the implementation of the new IJC Order for Rainy and Namakan lakes.

### ***IJC Spring Semi-Annual Meeting – April 5, 2001***

The Boards met jointly with the Commission at the Spring Semi-Annual meeting held at the Washington, D.C. office of the IJC on April 5<sup>th</sup>. The primary purpose of the joint appearance of the Boards was to provide Commissioners with a brief overview of each board and for further discussions concerning the merger of the two Boards. Prior to the discussion of the board merger issue, the IRLBC presented an update on regulation to date under the new IJC Order for Rainy and Namakan lakes and noted that its annual report for the year 2000 had been submitted to the Commission on March 21<sup>st</sup>. The IRRWPB presented its 49<sup>th</sup> Progress Report on the water quality of the Rainy River.

### ***Man-O-Min Conference – April 6-7, 2001***

Representatives of both Boards attended the Man-O-Min Watershed Conference in International Falls on April 6-7, 2001. The purpose of the conference, hosted by the RRFN, MPCA, Koochiching County (USA) and Environment Canada, was "to promote international cooperation and understanding in the Man-O-Min Watershed". The watershed encompasses the Manitoba-Ontario-Minnesota boundary waters including the upper Winnipeg River, Lake of the Woods and Rainy-Namakan basins. The Friday session was geared to resource management professionals to share information about planned and ongoing water related monitoring efforts in the Man-O-Min Watershed. The Saturday session was geared more to the general public and included sessions on eagles, water quality, septic systems, wildfires (control and use in resource management), erosion control and Rainy River water levels (related to hydroelectric energy production and fish habitat). Attendance during the Friday session

exceeded the expectations of the organizers but attendance at the public session on Saturday was less than organizers had hoped.

### ***Koochiching County Commissioners Meeting – August 14, 2001***

In response to a request from the Koochiching County Board of Commissioners, IRLBC and IJC staff attended the August 14<sup>th</sup> meeting of the County Commissioners in International Falls, MN and gave a presentation on the 2001 high water event in the Rainy-Namakan basin. The meeting provided a forum for discussing concerns with water level and flow regulation and the 2001 high water conditions in the Rainy basin. Meeting attendees included representatives from Abitibi-Consolidated and Boise Cascade, a representative from U.S. Senator Paul Wellstone's office, and approximately 40 members of the public. The presentation gave a brief overview of the IJC and its organization and authorities and was followed by a discussion of 2001 basin hydrologic conditions, water levels and flows, factors affecting regulation, issues and concerns raised and preliminary findings of a report by the KGS Group consultants. These findings were presented to the Commission in the IRLBC's October 26, 2001 report on year 2001 high water levels in the Rainy-Namakan basin.

The major points and concerns raised focused on an a perceived cause and effect relationship between the 2001 flooding and the new rule curves, on targeting lake levels lower in the rule curve in the spring to reduce flood risk, on a transfer of discretion away from the hydropower companies to the Board with regard to managing lake levels under the new IJC Orders and fluctuations in Rainy River levels. At the end of the meeting, County Commissioners expressed a desire to meet with the Board and IJC in 6 months or at the Board's next annual public meeting.

### ***IJC Fall Semi-Annual Meeting – October 24, 2001***

As in April, the Boards met jointly with the Commission at the Fall Semi-Annual meeting held in Montreal, QC on October 24<sup>th</sup>. The primary purpose of the appearance was the presentation of the IRLBC's report on 2001 high water levels in the Rainy-Namakan basin. The final report, dated October 26, 2001, was transmitted to the Commission on November 5, 2001.

### ***IJC Roundtable Discussion and Public Meeting – November 28, 2001***

The IJC held a public meeting on November 28<sup>th</sup> in International Falls, MN to hear from residents of the Rainy-Namakan basin on the 2001 high water event and the proposed amalgamation of the IRLBC and IRRWPB. The evening public meeting was preceded in the afternoon by a round-table discussion between the Commission and a balanced group of selected participants, representing a wide variety of interests. The round-table discussions focused on the proposed amalgamation. The Boards were present at both meetings, providing technical support at the roundtable and giving a presentation on the 2001 high water event at the public meeting. The views of most roundtable participants were not in favor of the proposed amalgamation. The major concerns expressed at the public meeting centered on the proposed amalgamation of the two boards, with public sentiment decidedly against amalgamating the boards.

### ***IJC Workshop - March 5-6, 2002***

The IJC held a two-day workshop on March 5-6, 2002 to discuss issues of importance to amalgamated IJC boards, or to those IJC boards with the potential for amalgamation, as they implement their 21<sup>st</sup> century directives presented in the IJC's October 1997 report entitled, "The IJC and the 21<sup>st</sup> Century."

An invitation was extended to all board members and secretaries of these selected boards to participate in this workshop. The IRLBC and IRRWPB were both invited and participated in the workshop. The goal of the workshop was for participants to emerge from the workshop with a better understanding of the issues and concerns of the boards, related to amalgamation, and to develop guidance to assist them in fulfilling their mandates.

### ***Meeting With Boise Cascade/Abitibi-Consolidated – August 20, 2002***

In connection with the annual basin trip of the IRLBC, the Boards met with Boise Cascade and Abitibi-Consolidated Inc. representatives at Abitibi's training facility in Fort Frances on the morning of August 20<sup>th</sup>. Items discussed included regulation of the lakes during the 2002 high water event, Board/Companies and Board/IJC communications, hydrologic data collection and transfer issues, periodic dam maintenance activities, water level related public relations activities of the Companies, findings of a hydrology report by KGS Group under contract to Boise looking at the cause of the unusually high Boise powerhouse tailwater levels in 2002, amalgamation of the IRLBC and IRRWPB, clarification of the existing IRRWPB mandate and peaking operations by the Companies.

### ***First Joint Annual Open House & Public Meeting of the IRLBC/IRRWPB – August 20, 2002***

The Boards held their first joint annual open house and public meeting in Fort Frances on the evening of August 20<sup>th</sup>. In light of a second straight year of high water in the basin, public interest in the 2002 high water event was keen and the meeting was extremely well attended. About 100 persons attended the meeting including local basin residents, a few individuals representing downstream Lake of the Woods interests, Company representatives and local media representatives. The U.S. Chair of the IJC and IJC staff were also present at the meeting.

The open house preceded the public meeting and provided the public opportunity to view and discuss various displays of ongoing environmental and water management activities in the basin. A number of federal, state, provincial and local groups were invited to participate. During the open house, Board and IJC representatives were available on a one-to-one basis to discuss matters of interest to attendees. Following the open house, the IRLBC gave a presentation on the 2002 high water event. Prior to the completion of the presentation, a number of individuals voiced their views that the hour was late and that the Board was infringing on their time to ask questions. The presentation was quickly finished and the meeting then opened to public questions and answers.

The primary concerns raised by the public were that the 2002 high water was the result of the recent rule curve change, that more water should have been stored in Namakan Lake sooner in an effort to help alleviate high Rainy Lake levels and later Boise powerhouse flooding, that the IRLBC and IJC should have acted more quickly to open Rainy Lake dam, that the Board and IJC need to streamline the overall regulation process and communicate better with each other and the public and that more discretion should be given back to the Companies to manage water levels within the rule curve band.

Overall, public comment was reasonably balanced with support for the new rule curves expressed by interests on the Namakan Chain of Lakes, some Rainy Lake interests and even some interests from Lake of the Woods. Most seemed to understand that the 2002 high water event was driven primarily by the extraordinary June rainfall, but also expressed views that some areas could be improved.

## ***Basin Tour – August 20-22, 2002***

In connection with the annual basin trip of the IRLBC, the Board Members and staff, Commissioners and IJC staff toured the control dams at “International Falls/Fort Frances and at Kettle and Squirrel Falls, in addition to the Abitibi-Consolidated powerhouse and paper mill in Fort Frances. The group also visited the Town of Rainy River and areas on Rainy Lake impacted by this year’s high water and talked with some local property and business owners and city officials.

## ***Board Meetings and Conference Calls***

The Boards met jointly on two occasions in 2002 and held a number of joint conference calls. The joint conference calls in 2001 were primarily in connection with the merger of the IRLBC and IRRWPB and Board appearances before the Commission. The joint conference calls in 2002 were primarily in connection with the high water conditions in the Rainy-Namakan basin. Individually, the IRLBC and IRRWPB met separately on several occasions and held a number of conference calls regarding the individual board matters.

### **6.6 Website**

The IRLBC expanded use of its web site in 2001 and 2002 with the addition of areas for posting of news releases and IJC Orders. This provided an added means of rapidly disseminating information on basin hydrologic conditions, water levels and flows, actions taken by the Board to manage water levels and public meeting notices. A basic web site for the IRRWPB is currently being developed and is awaiting establishment of an active linkage from the IJC’s web site. The Boards are planning the addition of a section to their web sites that allow for the posting of Board minutes, following their approval by the IJC. The Boards have received many compliments from basin residents on the usefulness of the IRLBC web site and the linkages it contains to the web sites of the Lake of the Woods Control Board ([www.lwcb.ca](http://www.lwcb.ca)) and the U.S. Army corps of Engineers, St. Paul District ([www.mvp-wc.usace.army.mil](http://www.mvp-wc.usace.army.mil)).

## **7. OTHER BUSINESS**

### **7.1 Board Membership**

There were major changes in the membership of both Boards during the reporting period of this report. For the IRLBC, Colonel Robert Ball was appointed in July 2001 as the U.S. Member and Doug Brown was appointed in October 2001 as the Canadian Member. For the IRRWPB, three appointments were made in October 2001; Katherine Svanda as the U.S. Chair, John Merriman as the Canadian Chair and Bill Darby as a Canadian Member.

### **7.2 Board Merger**

In response to a request made by Commissioners at the IJC’s 2000 Fall Semi-Annual meeting in Ottawa, the IRLBC and IRRWPB Chairs submitted a revised proposal in January 2001, providing further advice to the Commission regarding a potential merger between the two boards. Subsequently, the Boards met jointly with the Commission at the Commission’s 2001 Spring Semi-Annual meeting held at the Washington, D.C. office of the IJC on April 5<sup>th</sup> and again on October 24<sup>th</sup> at the Commission’s 2002 Fall Semi-Annual meeting held in Montreal. The board merger issue was discussed further with Commissioners at both 2001 joint appearances.

As discussed in Section 7.5, the IJC held an evening public meeting on November 28<sup>th</sup> in International Falls, MN to hear from residents of the Rainy-Namakan basin on the proposed amalgamation of the IRLBC and IRRWPB. A round-table discussion between the Commission and a group of selected participants, representing a wide variety of interests, was held in the afternoon concerning the proposed amalgamation. The Boards were present at both meetings, providing technical support. The views expressed by most roundtable participants and public meeting attendees were decidedly not in favor of the proposed amalgamation.

Subsequently, the Commission advised the Boards and publicly announced in December 2001 that after considering comments from the meetings it was deferring its plans to combine the two boards. The Commission reaffirmed its commitment to a more integrated approach to its responsibilities in the Rainy basin and, toward this end, requested the IRRWPB and the IRLBC to take a number of steps aimed at furthering this integrated approach. The Boards held two joint board meetings and a joint public meeting in 2002 in addition to numerous joint conference calls and have developed a good working relationship, which proved quite helpful during the 2002 high water event.

### **7.3 Maintenance Activities and Dam Safety**

#### *Maintenance Activities*

Since the IRLBC's last annual report in March 2000, the Companies have taken a number of actions related to the ongoing maintenance of the outlet facilities at International Falls/Fort Frances and at Kettle Falls. These actions are listed below:

- The following work was completed at the Fort Frances powerhouse:
  - Tailrace inspection and repair of draft tube stay braces.
  - Trashrack repairs for the #8 bay.
  - Fortification of all dam waste gate bearings and repair of #2 waste gate.
  - Underwater inspection of trashrack supports & gate guides.
- The following work was completed at the International Falls powerhouse:
  - Replaced draft tubes for #6 water wheel.
  - Each of the 7 waterwheels was inspected over the winter of 2001-2002 as a part of routine annual inspection.
  - Structural inspection of powerhouse completed in March 2002 by Acres International Consultants and subsequent report recommendations on future operation of the powerhouse under conditions of high tailwater (see the next section of this report entitled "Update on Implementation of August 2001 KGS Report Recommendations" for more details); Boise intends to implement Option 2 as presented in the Acres report.
- Pointing of masonry on downstream side of dam in response to recent 5-year FERC inspection.
- Refurbished 4 stop logs for Raft Lake control dam.
- Replaced log-lifting machine at the Sturgeon Falls dam.
- Planned maintenance for 2003 includes:
  - Develop plan for trashrack support upgrade at Fort Frances powerhouse.
  - Phase #10 of Calm Lake Dam still in budget for 2003 includes refurbishing bays 13,14,15, and 16 with new stop logs and new decking.



### ***Implementation of August 2001 KGS Report and June 2002 Acres Report Recommendations***

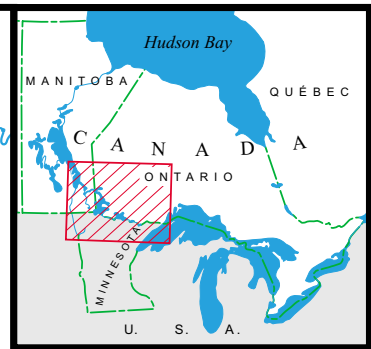
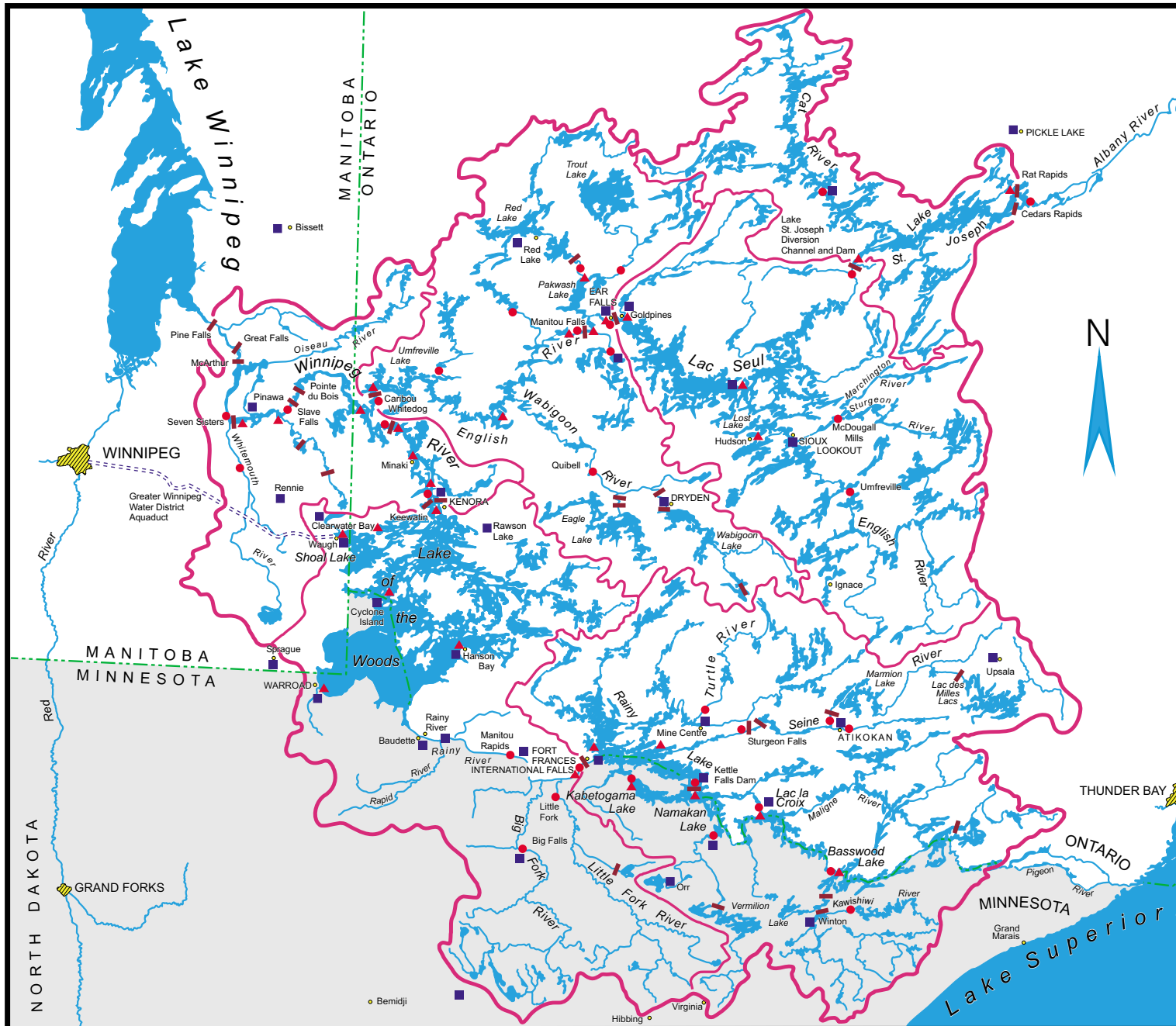
The August 2001 KGS Group engineering consultants report entitled, "Analysis of Rainy and Namakan Lake Levels During Spring Flood of 2001," was prepared under a contract from Boise, in part to answer certain questions posed by the IRLBC regarding the May 24-31, 2001 International Falls powerhouse shutdown and future operation of the powerhouse during high tailwater conditions, and in part to estimate what peak 2001 Rainy Lake and Namakan Lake levels would have been under certain hypothetical scenarios. The findings of the August 2001 KGS report were incorporated into the Board's October 26, 2001 report to the Commission entitled, "Report on Year 2001 High Water Levels in the Rainy/Namakan Basin," and were also presented to the Commission at the Board's October 24, 2001 semi-annual meeting appearance in Montreal. With regard to the future operation of the powerhouse during periods of high tailwater, the August 2001 KGS report recommended an initial study phase to address a structural analysis of the powerhouse, an investigation of measures to prevent flooding of the powerhouse and development of a computer program to improve methods of estimating tailwater levels to assist future decision-making and allow rapid analysis for a range of scenarios. Based upon the results of these assessments, which were to be provided to the IJC by July 31, 2002, appropriate measures commensurate with the potential level of risk were to be developed to deal with future high tailwater conditions at the Boise powerhouse.

In response to the recommendations in the 2001 KGS report concerning the powerhouse structural analysis and flood prevention measures, Acres International Corporation, engineering consultants, under contract from Boise, completed a structural analysis and study of the powerhouse. Their findings and recommendations are documented in their June 2002 report entitled, "International Falls Powerhouse Generator Hall Floor Flooding Study." In brief, the Acres report determined that the maximum allowable water depth above the generator hall floor was approximately 32 in (80 cm), corresponding to a tailwater elevation of 1091.29 ft (332.63 m). The report also presented two options for dealing with flooding of the powerhouse. In response to the 2001 KGS report recommendations concerning improved methods of estimating tailwater levels, KGS Group, engineering consultants, under contract from Boise, completed a tailwater estimation computer program entitled, "Tailwater," and a users manual for the program.

Boise stated in its June 26, 2002 transmittal letter to the Board that the June 2002 Acres report and the program "Tailwater" comprise the completion of the initial study phase as recommended by the KGS Group in their August 2001 report. Boise also indicated it intends to implement Option 2 of the Acres report, over the upcoming winter months, believing it has the greatest potential for success and greatly enhances the chances of continuing the hydro operation when the tailwater level exceeds the generator hall floor elevation during a future flood. In short, Option 2 contains the powerhouse seepage in the downstream section of the generator hall and consists of modifications to the concrete arch floor upstream of generators 1 to 5 and construction of a 30 in (76 cm) high, 6 in (15 cm) thick concrete wall approximately 3 ft (0.9 m) downstream of generators 1 to 5.

**APPENDIX A**

**MAP AND SCHEMATIC OF BASIN**



**KEY MAP**

**LEGEND**

- PROVINCIAL BOUNDARY . . . . .
- INTERNATIONAL BOUNDARY . . . . .
- DRAINAGE BASIN . . . . .
- SUB-BASIN . . . . .
- CONTROL DAMS AND/OR GENERATING STATIONS . . . . .
- DATA GAUGES (NEAR REAL TIME)
- STREAMFLOW . . . . .
- WATER LEVEL . . . . .
- PRECIPITATION . . . . .

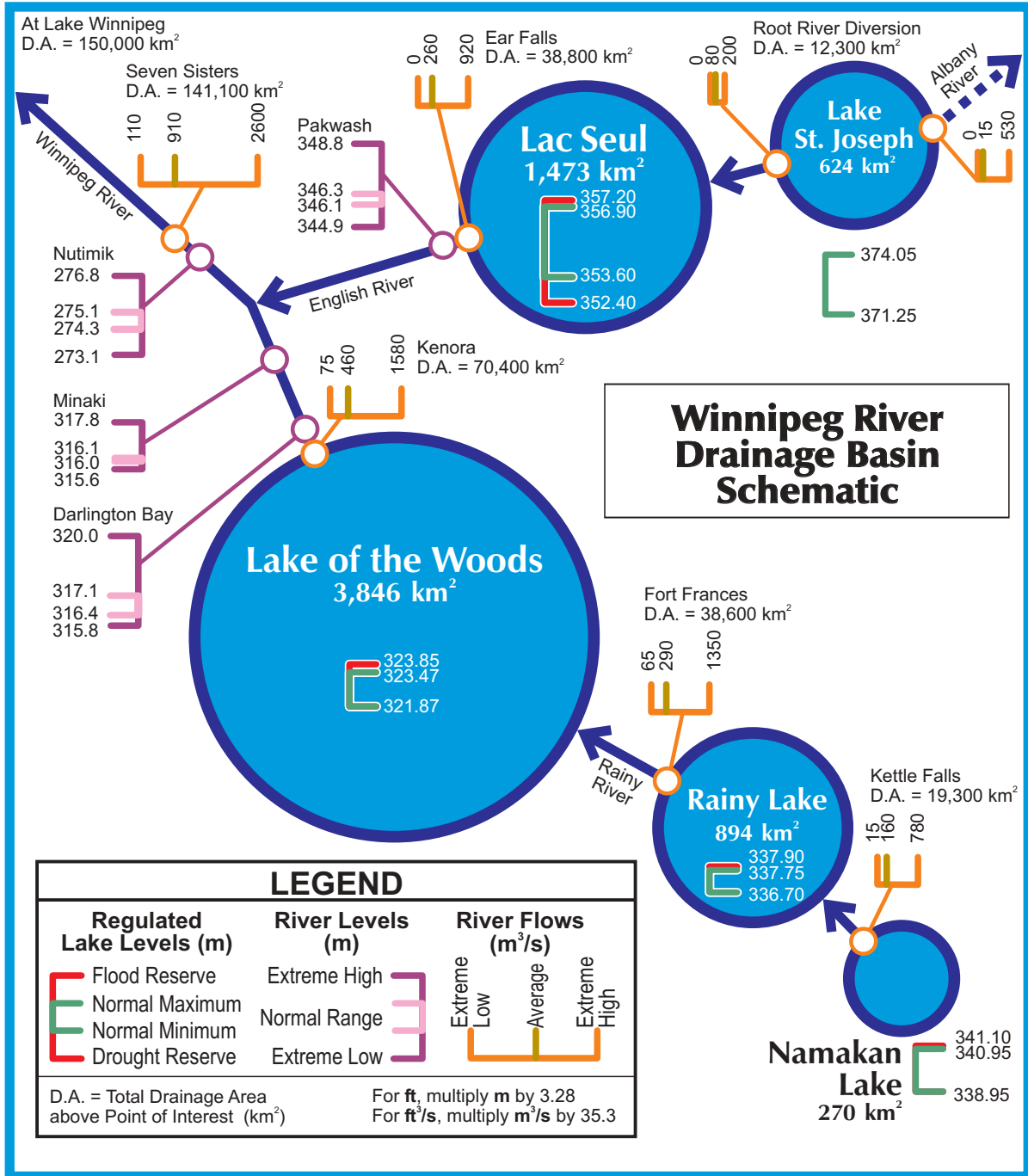
0 10 20 30 40 50 60 km  
0 10 20 30 40 mi

2000.12.01



**LWCB**  
Lake of the Woods  
Control Board

## Winnipeg River Drainage Basin



## **APPENDIX B**

### **FIGURES**

- 1 Winnipeg System Precipitation
- 2 Namakan Lake Elevation, Net Inflow and Outflow
- 3 Rainy Lake Elevation, Net Inflow and Outflow

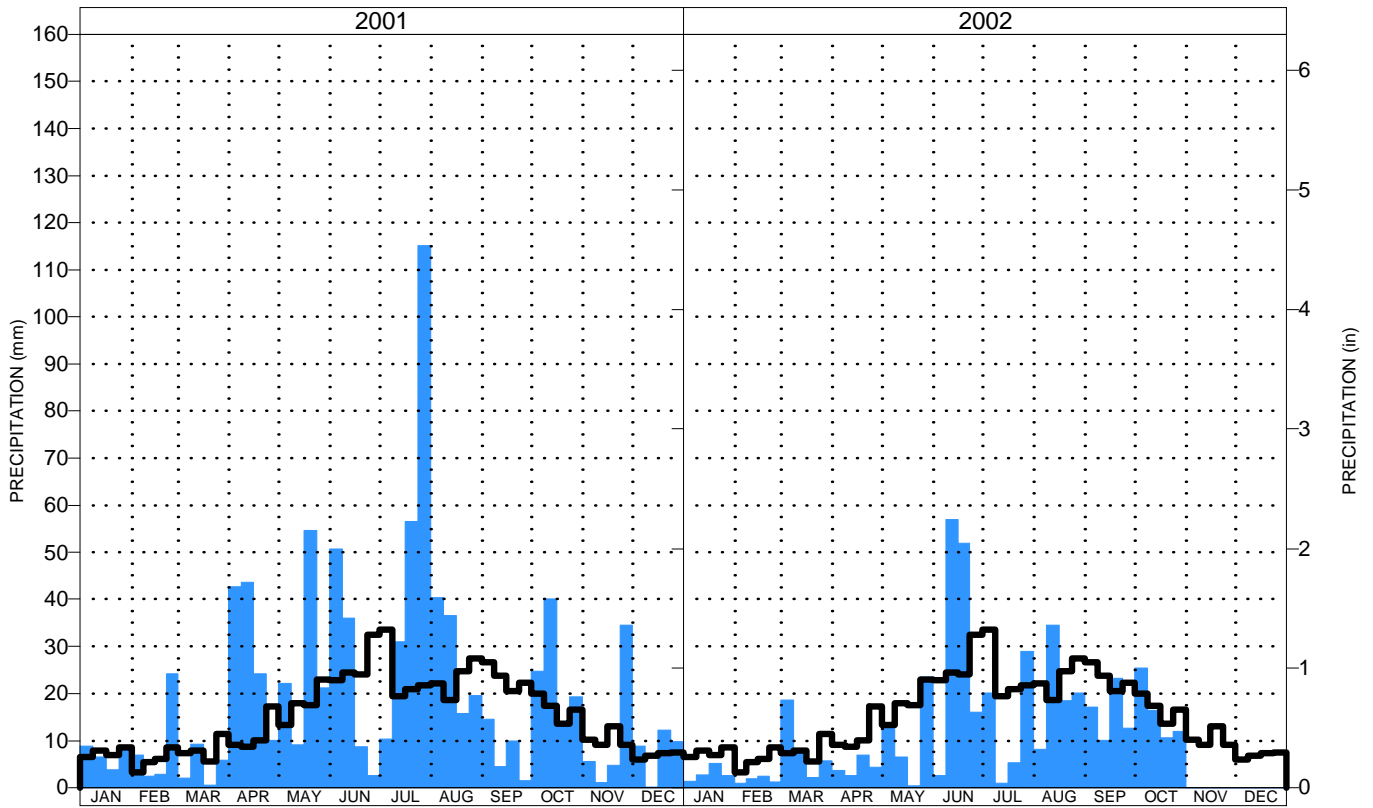
Legend

#### NOTE

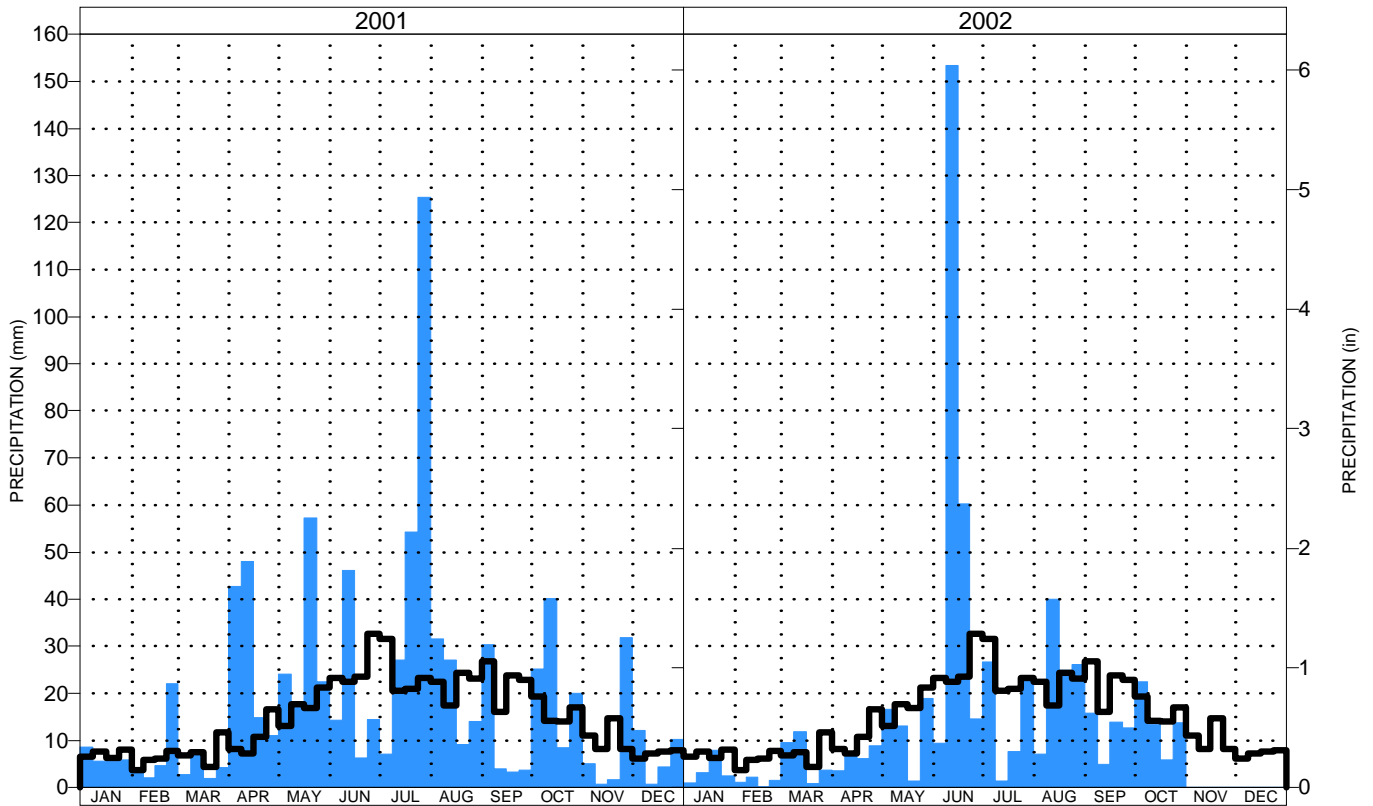
All precipitation, water level and flow data used in the text and figures of this report were taken from the database of the Secretariat of the Lake of the Woods Control Board. At the time of preparation of this report, this data was still provisional and subject to revision.

# RAINY RIVER SYSTEM PRECIPITATION

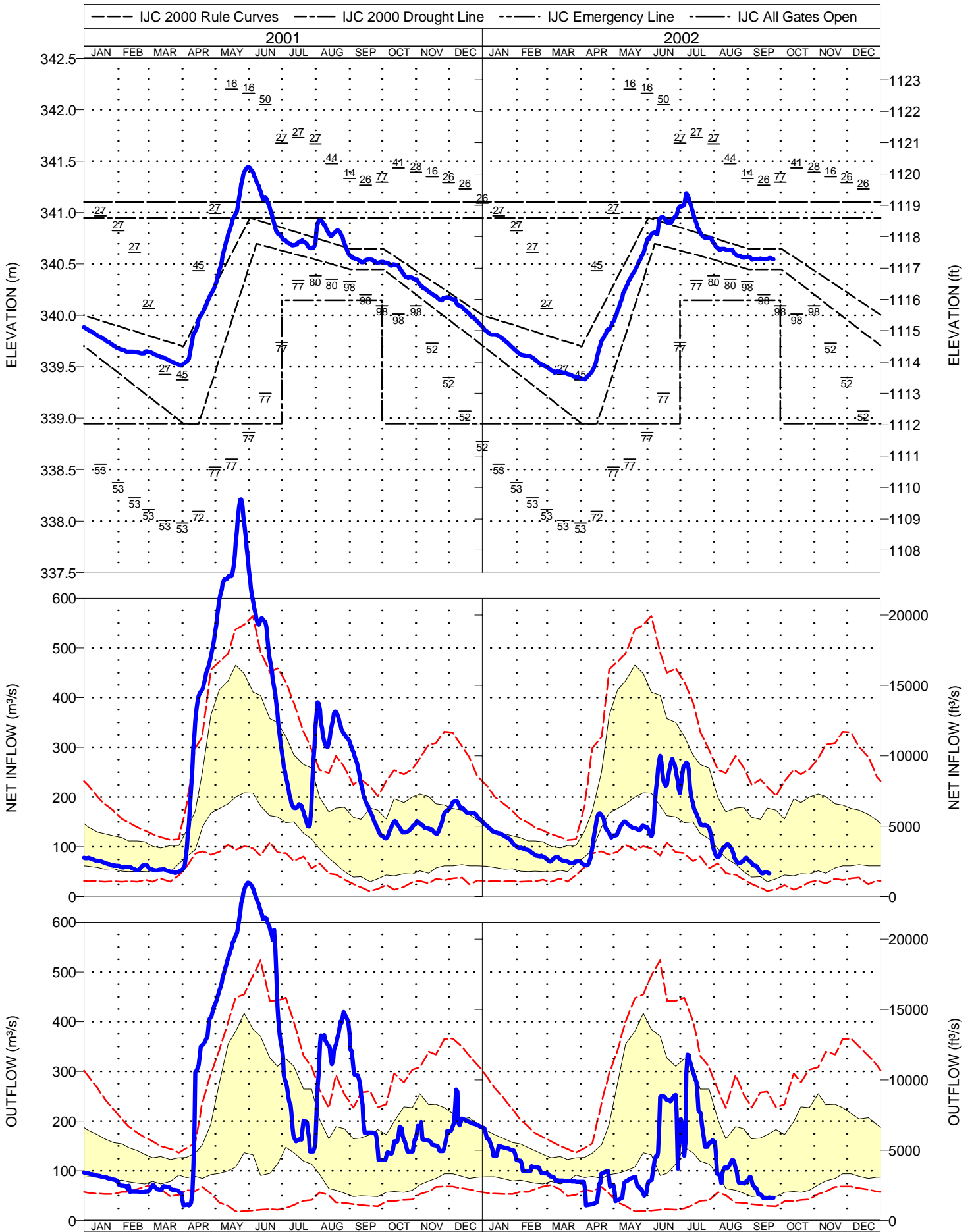
## LAC LA CROIX BASIN



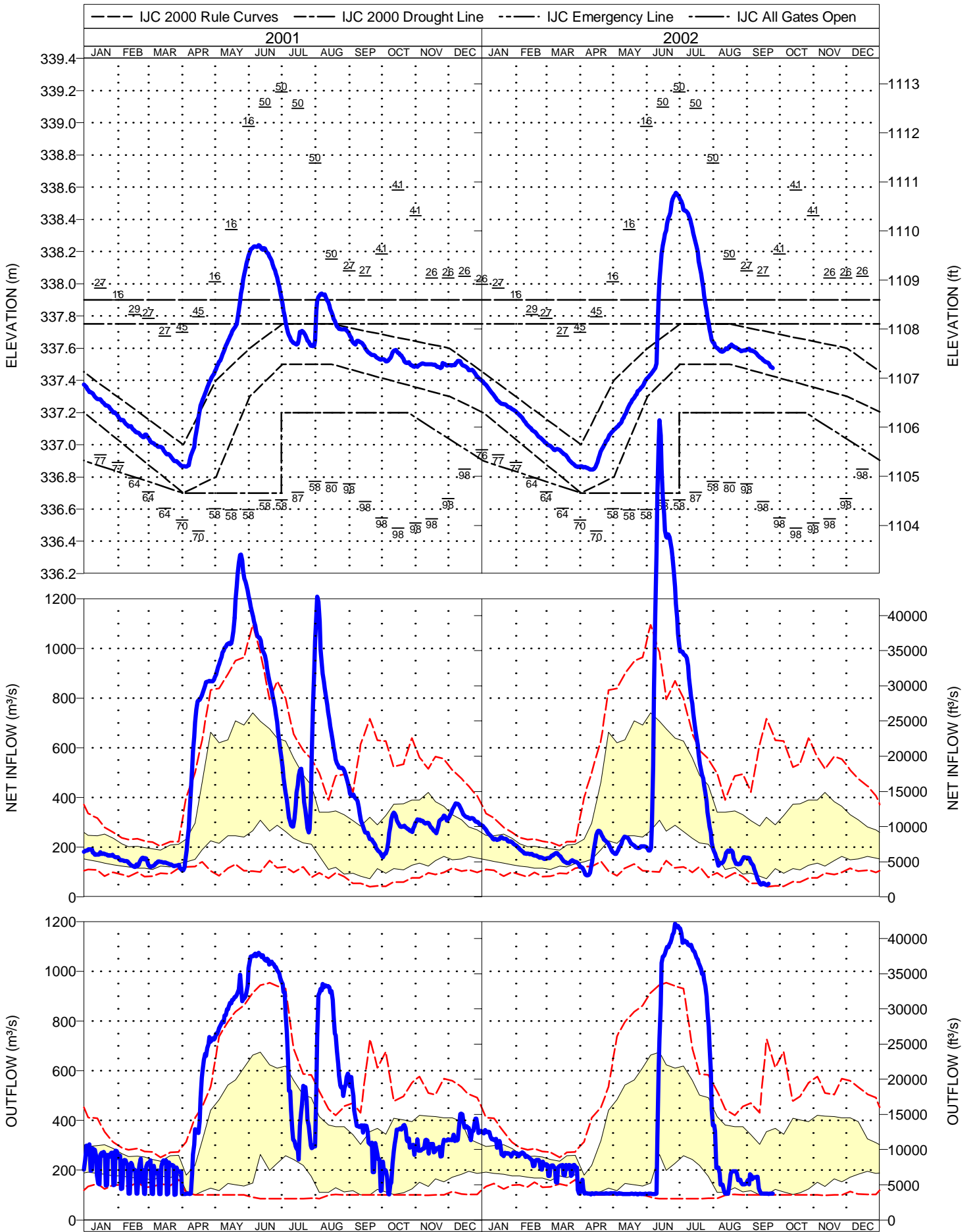
## RAINY-NAMAKAN BASIN



# NAMAKAN LAKE



# RAINY LAKE





# LEGEND - LAKE AND RIVER GRAPHS

## PRECIPITATION



Actual data for year shown, plotted as quarter-month totals  
(last quarter-month is usually incomplete)



Average - over the years 1970-1999

## WATER LEVELS & FLOWS

### Actual Data



Actual data for year shown  
- levels are 1-day main lake means plotted daily  
- inflows are 7-day means  
- outflows are daily values

### Rule Curves (Namakan & Rainy Lakes)



IJC 2000 Upper & Lower Rule Curves



IJC 2000 Drought Line



IJC Upper Emergency Level



IJC "All Gates Open" Level

### Statistical Data

50

Maximum level recorded and its year of occurrence



Level/flow has been above this line 10% of time.



Normal level/flow range  
- level/flow has been above this range 25% of time  
- level/flow has been within this range 50% of time  
- level/flow has been below this range 25% of time



Level/flow has been below this line 10% of time

77

Minimum level recorded and its year of occurrence

All statistical levels are based on 3-day means at month quarter points.

All statistical flows are based on quarter-monthly means.

Percent data is based on the period 1970-1999.

Datums for water levels are:

- Namakan Lake - USC&GS (1912) datum
- Rainy Lake - USC&GS (1912) datum