

THE
INTERNATIONAL
RED RIVER
BOARD



Status Report

Spring Semi-Annual Meeting
April 28, 2015

Washington D.C., United States



**STATUS REPORT ON THE ACTIVITIES OF THE
INTERNATIONAL RED RIVER BOARD**

**Prepared for the International Joint Commission
Spring Semi-Annual Meeting,**

**April 28, 2015
Washington, D.C.**

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1.0 Introduction

This status report provides highlights of current International Red River Board (IRRB) activities and basin issues. The report reflects the deliberations and decisions of the IRRB in implementing its work plan, and builds upon previous reports including the Board's fifteenth annual progress report dated October 2014 which covers the period October 1, 2013 to September 30, 2014. The water quantity information presented below highlights flow and level conditions for the spring 2015. For information on spring 2014 water quantity refer to the April 2014 status report. The water quality data, for the five IJC objectives, covers the period 2011-2014 to show any variations over that time span.

2.0 Water Quality and Quantity Conditions

Water Quantity

The risk in 2015 for substantial spring flooding in the United States portion of the Red River Basin is quite low, generally, much less than historical risks. According to the U.S. National Weather Service (NWS) probabilistic outlook on February 19, 2015 the 50% chance of exceedance will remain well below action stage for all points along the United States portion of the Red River with the exception of Wahpeton and Fargo which could see river levels approach action stage. The spring runoff potential for most MN and ND tributaries of the Red River is expected to be at a level below minor flood stage. Key contributing factors to the spring runoff are all trending towards drier conditions. Base streamflow at most USGS stream gages is in the normal range (25-75 percentile class). Soil moisture levels were below normal at freeze-up ranging from 20-50 percent of normal over most of the basin. Frost depth is deeper than normal at 2.5-3.5 ft. and ice thickness on lakes and rivers is 2-3 ft. Snow water equivalent (SWE) for the winter season is much below normal throughout the United States portion of the basin. The current climate pattern suggests near normal temperatures and precipitation will persist from Mid-March into May.

The spring of 2014 saw moderate flood peaks in the Red River Basin. The Red River peaked at Grand Forks on April 13th at a flow of 29,000 cfs and at Emerson on April 19th at a flow of 37,100 cfs (approximately 5-year events). Ice was persistent later than usual and was in the channel in the Grand Forks area until early April. The Red River peaked in Winnipeg on April 22nd at a level of 19.07 ft (James Avenue datum). The Red River Floodway was not operated for the spring event.

Flows in Manitoba were above normal but receding going into summer. Summer rains caused peak flows in June and July that were similar in magnitude to the spring freshet peaks. These flows were much higher than average summer conditions. The Red River Floodway was operated to reduce City of Winnipeg water levels from July 1st to 21st. Extremely high Assiniboine River flows contributed to the high City levels. Winnipeg crested at 17.29 ft (James Avenue datum) on July 2nd.

Flows remained above normal into the 2014 winter freeze-up, however, soil moisture conditions improved and soil moisture measurements indicated moisture conditions were below normal heading into the winter freeze-up. Flows over the 2014/2015 winter period continued to be above normal. Snow depth over winter was also below normal to near normal.

Despite the high baseflow, due to generally dry conditions in the latter half of 2014 the flood outlooks had little concern for major/extreme spring flooding on the Red River. The spring melt occurred early with peaks well below average values. By the end of March, the U.S. Drought monitor reported abnormally dry to moderate drought conditions U.S. portion of the basin.

Water Quality

2.0 Water Quality and Quantity Conditions

Water Quality

The IJC recommended the establishment of water quality objectives for a limited number of variables at the International Boundary on April 11, 1968, and the recommendation was approved by governments on May 4, 1969. These variables include: dissolved oxygen, total dissolved solids, chloride, sulphate, and Fecal coliform bacteria. E. coli replaced Fecal coliform as a water quality objective October 1, 2010. The IRRB is responsible for monitoring and reporting on compliance with these objectives. Several exceedances were observed during the 2013-2014 water year, as summarized in Table 1, below. Additional detail on each parameter is provided in the following sections.

Table 1 International Red River Board Water Quality Objectives Summary of Exceedances Red River at the International Border 2013-2014 Water Year				
Parameter	Objective	Exceedances		Exceedance Value
		Number (total # samples)	% samples exceeding	Maximum
Dissolved Oxygen	>5 mg/L	0 (44)	0%	-
Total Dissolved Solids	500 mg/L	32 (43)	81%	1045.2
Chloride	100 mg/L	0 (44)	0%	-
Sulphate	250 mg/L	11 (44)	23%	441
E. coli	<200 colonies /100 ml	0 (14)	0%	-

Dissolved Oxygen

Figure 1 shows the variability in *dissolved oxygen* levels in the Red River at Emerson over a four-year period. Observed levels did not fall below the objective of 5 mg/L in 2013-2014. The lowest concentrations tend to occur in the summer when flows are reduced and temperatures are highest.

Total Dissolved Solids

Total Dissolved Solids (TDS) remained at or above the objective of 500 mg/L for most of the reporting period, with the exception of during the flood stage (Figure 2). Exceedances were observed in 81% of the samples collected in the 2013-2014 water year. The highest observed value of 1045.2 mg/L occurred in November 2013 when there were higher and sustained releases from Devils Lake coupled with low flow / drought conditions for the majority of the basin.

Chloride

The *chloride* objective (100 mg/L) was not exceeded in any of the samples collected during this reporting period (Figure 3).

Sulphate

The *sulphate* objective (250 mg/L) was exceeded in 23% of the samples collected 2013-2014 water year. Like the TDS objective, the main reason for such a high increase in sulphate concentrations was likely due to the additional releases from Devils Lake through most of 2012 and 2013. Over the past two Water Years, sulphate concentrations started to exceed the objective in the fall (mid-September 2012 and 2013). The same observation was not noted in September 2014, where concentrations remained below the objective. This was likely due to increased flows in the river (Figure 4).

E. coli

Observed *E. coli* bacteria counts, as shown in Figure 5, generally remained below the objective of 200 / 100 mL during the reporting period. Only two exceedances have been observed over the last four years.

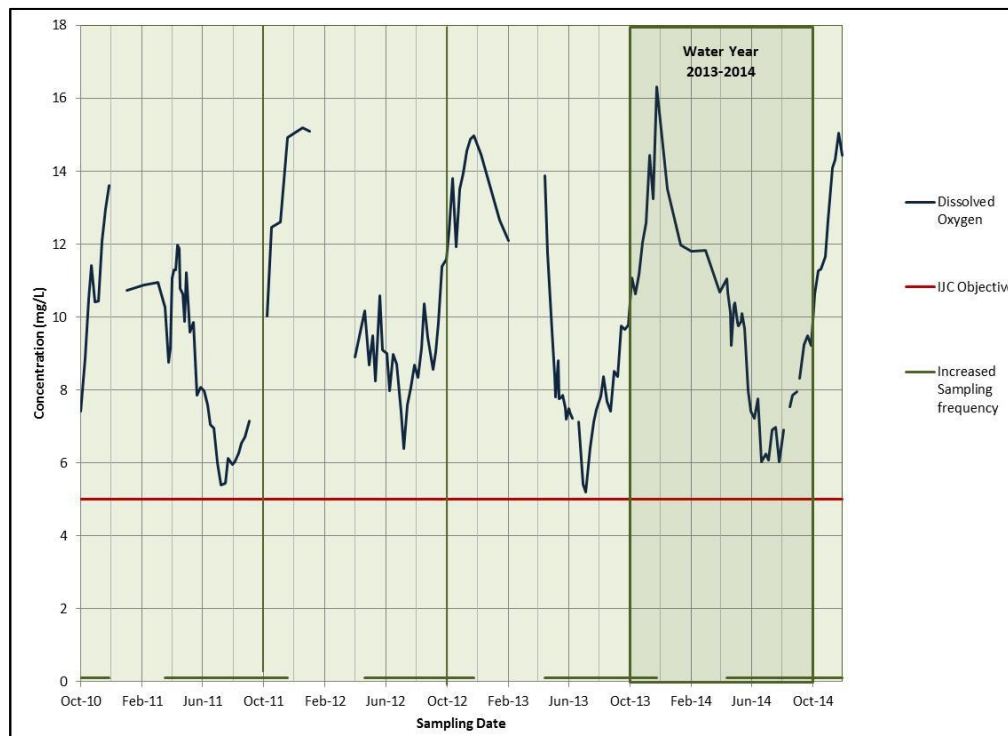


Figure 1 Dissolved Oxygen Levels – Red River at the International Boundary

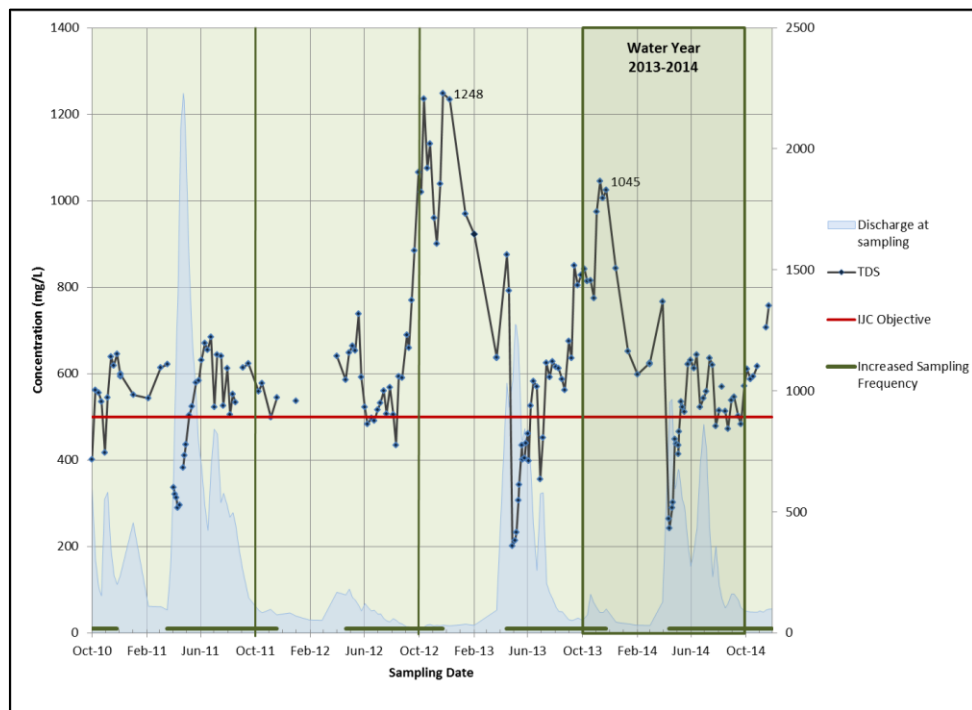


Figure 2 Total Dissolved Solids (TDS) - Red River at the International Boundary

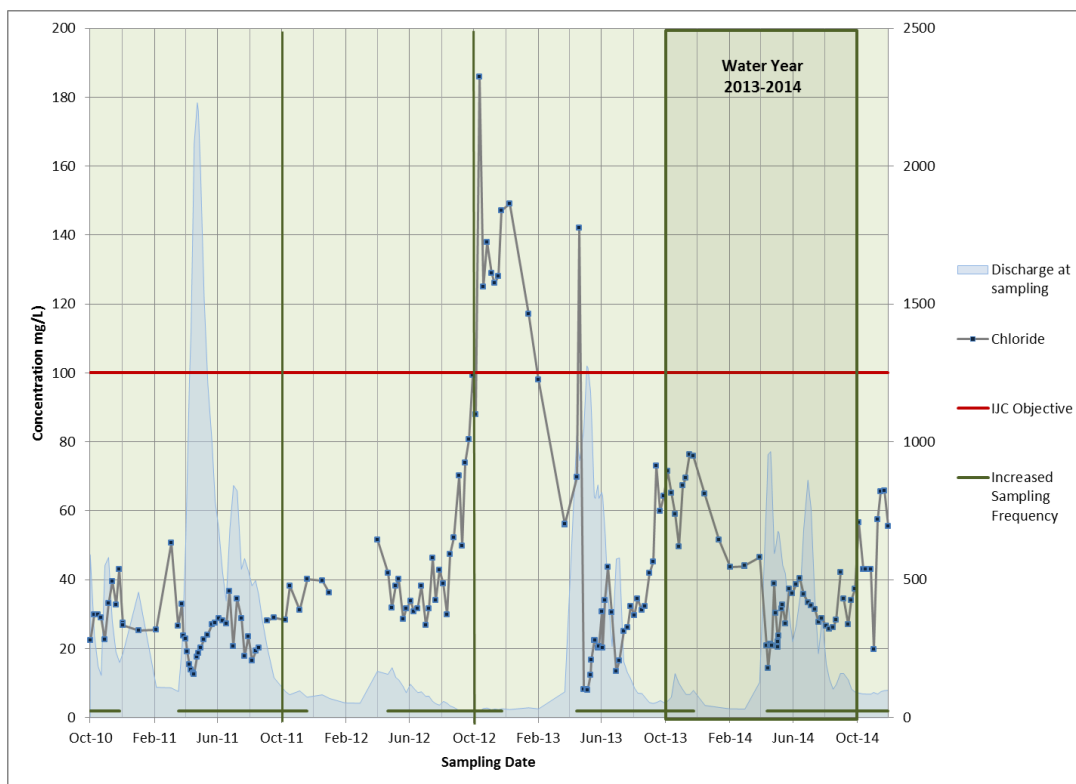


Figure 3 Chloride Levels – Red River at the International Boundary

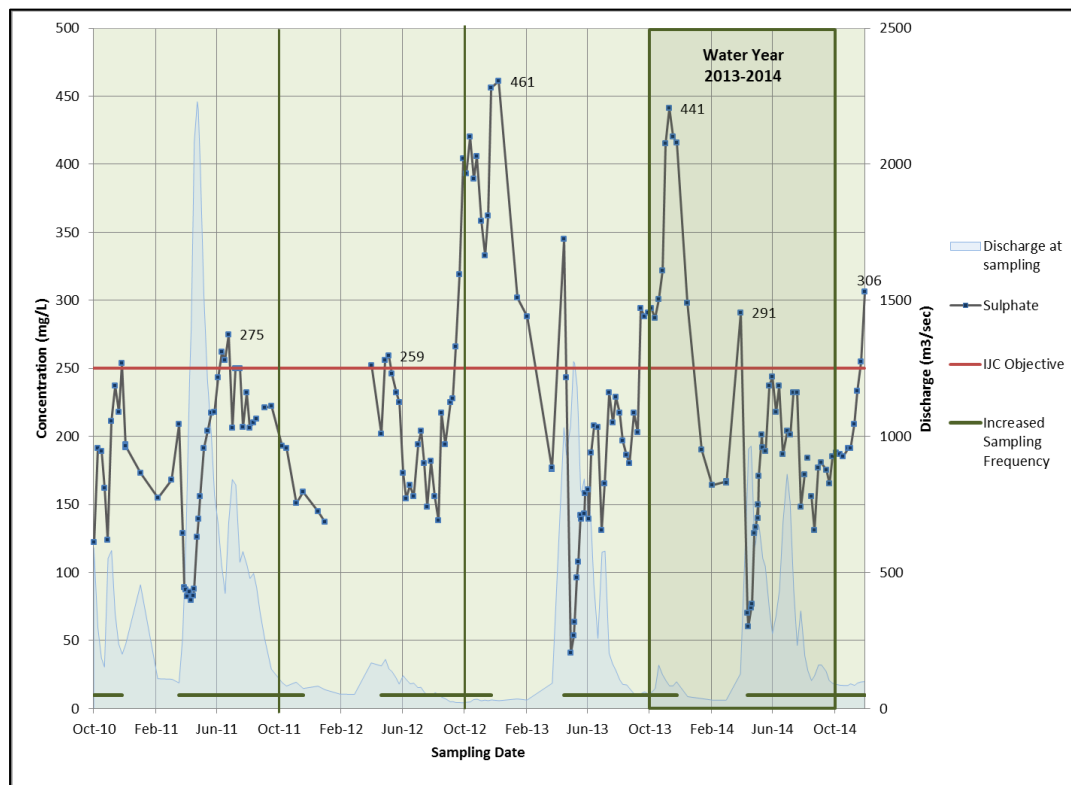


Figure 4 Sulphate Levels – Red River at the International Boundary

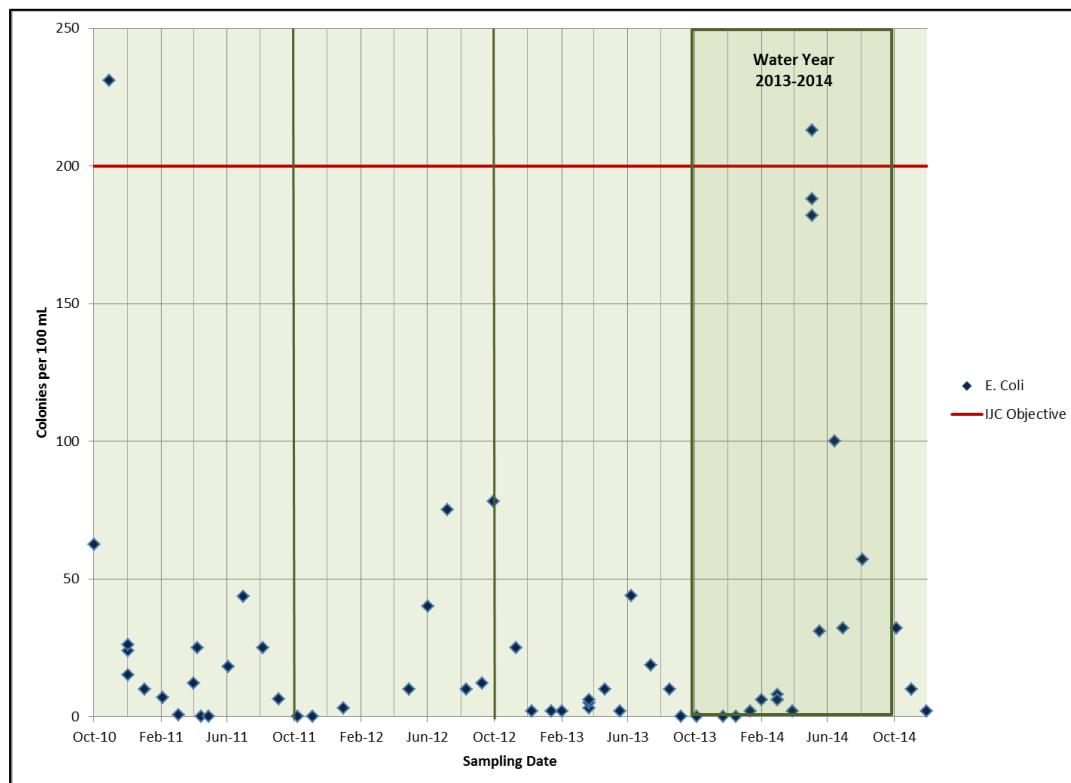


Figure 5 E. coli Count - Red River at the International Boundary

Alert Levels

Twelve of the suites of pesticides and herbicides and three of the metals and toxic substances for which alert levels were established by the former International Red River Pollution Board were detected by Environment Canada (Water Quality Monitoring and Surveillance Division) during the reporting period (Table 2).

Pesticides and Herbicides

Based on a total of up to 11 water samples, 11 pesticides and/or herbicides and one metabolite (Desethyl Atrazine) with a total aggregate of 88 alerts (greater than detection concentration) were recorded during the October 1, 2013 - September 30, 2014 reporting period. Seven compounds (2, 4-D, Clopyralid, Dicamba, MCPA, Picloram, Atrazine and Metolachlor) were detected in all samples analyzed; however the detection levels were all below the Canadian Guidelines for the Protection of Aquatic Life. Given that the Red River basin is an agriculturally dominated region, the presence of pesticides and herbicides is expected. The detection of banned pesticides (legacy contaminants) is not unusual given the slow bio-degradation rate of these chemicals.

The IRRB recognizes that there is very little scientific information available to assess the implications of long-term exposure to low concentrations of pesticides and herbicides by aquatic organisms and humans. The IRRB continues to closely monitor trends in these concentrations and their frequency of detection with the intention to update its assessment as new scientific information becomes available.

Metals

A total of 44 water samples were collected and analyzed for metals and toxic substances during the reporting period. The highest number of exceedances were detected for iron, manganese and cadmium, with exceedance rates of 93%, 95% and 100%, respectively. Iron is an abundant component in natural soils; however, the detection of higher levels of cadmium indicates anthropogenic sources.

Water Quality Monitoring at Emerson in 2014

Following North Dakota's decision to increase releases from Devils Lake, Environment Canada increased the frequency of water quality monitoring on the Red River at Emerson. During the spring freshet, a minimum of 2 samples per week were collected. Weekly samples were collected for the remainder of the open water season. Monthly sampling resumed during the winter.

**Table 2 Exceedances of Alert Levels, Red River at International Boundary
October 1, 2013 to September 30, 2014**

Parameter	Units	Alert Level	Number of Samples	Exceedance Number (# and %)	Maximum Exceedance Value	Canadian Environmental Quality Guideline
<i>Metals:</i>						
Cadmium	ug/L	Detect	44	44 (100%)	0.359	0.074 ug/l ^{1,3}
Chromium	ug/L	50	44	0	--	NG
Iron Total	ug/L	300	44	41 (93%)	8120	300 ug/l ¹
Manganese Total	ug/L	50	44	42 (95%)	827	200 ug/L ²
Selenium	ug/L	10	44	0	--	1 ug/l ¹
Zinc	ug/L	47	44	0	--	30 ug/l ¹
<i>Toxic Substances:</i>						
Arsenic (total)	ug/L	10	44	0	--	5 ug/l ¹
Boron (total)	ug/L	500	44	0	--	29 mg/l ¹
Total PCB	ng/L	Detect	4	0	--	NG
<i>Pesticides:</i>						
2,4-D	ng/L	Detect	11	11 (100%)	137	4000 ng/l ¹
Bromoxynil	ng/L	Detect	11	4 (36%)	172	5000 ng/l ¹
Clopyralid	ng/L	Detect	11	11 (100%)	161	NG ⁵
Dicamba	ng/L	Detect	11	11 (100%)	39.2	10000 ng/l ¹
Imazamethabenz-methyl a	ng/L	Detect	11	0	--	NG
Imazamethabenz-methyl b	ng/L	Detect	11	2 (18%)	14.6	NG
MCPA	ng/L	Detect	11	11 (100%)	404	2600 ng/l ¹
Mecoprop	ng/L	Detect	11	9 (82%)	21.9	NG
Picloram	ng/L	Detect	11	11 (100%)	59.7	29000 ng/l ¹
Aldrin	ng/L	Detect	11	0	--	NG
g-Benzenehexachloride	ng/L	Detect	11	0	--	NG
Pentachloroanisole	ng/L	Detect	11	0	--	NG
Atrazine	ng/L	Detect	6	6 (100%)	70.3	1800 ng/l ¹
Desethyl Atrazine	ng/L	Detect	6	5 (83%)	28.1	NG
Metolachlor	ng/L	Detect	6	6 (100%)	66.9	7800 ng/l ¹
P,P-DDE	ng/L	Detect	11	0	--	NG
Alpha-Endosulfan	ng/L	Detect	11	0	--	3 ng/l ^{1,4}
Beta-Endosulfan	ng/L	Detect	11	0	--	3 ng/l ^{1,4}
Heptachlor Epoxide	ng/L	Detect	11	0	--	NG
Metribuzin	ng/L	Detect	6	1 (17%)	16.4	1000 ng/l ¹

Notes:

1. Canadian Water Quality Guidelines for the Protection of Aquatic Life (<http://st-ts.ccme.ca/>)
2. Canadian Water Quality Guidelines for the Protection of Agriculture (<http://st-ts.ccme.ca/>)
3. Guideline value corrected for minimum value for hardness (mg/L CaCO₃) in the reporting period (<http://st-ts.ccme.ca/?lang=en&factsheet=93>)
4. Guideline value is for technical grade Endosulfan, which is a mixture of the two biologically active isomers (α and β)
5. NG = No guideline established

3.0 Initiatives and Activities

3.01 International Red River Board Work Plan

The Board currently operates under a three-year work plan it has developed for the period 2012-2015. The Board is also updating its work plan until 2018 based on input provided by its various committees. The three-year work plan reflects the current status of the Board's activities that affirm consistency with the International Watersheds Initiative and the IJC Directive to the IRRB. The work plan priorities include a continued effort to expand the existing scientific knowledge of aquatic ecosystem dynamics and current conditions. The Board is currently exploring the possibility of extending the Pathogens and Parasites Study for the entire basin (Phase II). The Aquatic Ecosystems Committee is expected to come up with a proposed study plan. In addition, the IRRB work plan priorities include strategic goals that highlight flood preparedness and mitigation; participation in the new Lower Pembina Task Team established by governments, water quality, water quantity/apportionment, outreach and public engagement.

In 2013, IRRB requested the IJC to be designated as in IWI board. The Board discussed the merits and requirements of becoming an IWI board and approved the formal change at its summer 2013 meeting held in Steinbach, Manitoba. The IRRB became a pilot IWI board in 2005. The IRRB has two public members on the board. The board has also completed projects with IWI funding working with the Commission on strategic projects including:

- the Pathogens and Parasites Study,
- the Lower Pembina River Basin Hydrodynamic Modelling,
- the SPARROW Regional Water Quality Model, and
- the Harmonized Watershed Maps between Canada and the United States.

Once approved by the IJC, the International Red River Board (IRRB) would be renamed the International Red River Watershed Board (IRRWB).

3.02 Water Quality Committee

The formation of the Water Quality Committee was approved at the September 2011 International Red River Board meeting. The Committee is developing a Nutrient Management Strategy as endorsed by the Board.

The Water Quality Committee currently consists of the following members:

Jim Ziegler, Minnesota Pollution Control Agency (co-chair)
Nicole Armstrong, Manitoba Conservation and Water Stewardship (co-chair)
Mike Ell, North Dakota State Department of Health
Leah Thvedt, Red River Basin Commission
Rochelle Nustad, U.S. Geological Survey
Eric Steinhaus, U.S. Environmental Protection Agency
Sharon Reedyk, Agriculture and Agri-Food Canada
Mike Vavricka, Minnesota Pollution Control Agency
Iris Griffin, Environment Canada
Rob Sip, Minnesota Department of Agriculture
Keith Weston, United States Department of Agriculture
Justin Shead, Manitoba Conservation and Water Stewardship
Jeff Lewis, Red River Basin Commission

The Committees last report to the IRRB was January 22, 2015. The committee has not met since then, but is scheduled to meet again on May 6th.

Component One

Complete

Component Two - Develop a Shared Understanding of Jurisdictions' Nutrient Regulatory Frameworks and Identify Current Nutrient Reduction Actions, Activities and Plans for the Red River Watershed

Complete. The matrix and regulatory framework distributed previously will be updated as required.

Component Three - Recommend and Implement Nutrient Load Allocation and/or Water Quality Targets for Nutrients

International Watersheds Initiative Project – Review of Methods for Developing Water Quality Targets

The final report for this work was submitted by RESPEC in March, 2013 and approved by the Water Quality Committee in May, 2013. The report was distributed to and approved by the IRRB in July, 2013. It has been posted on the IRRB website at:

<http://ijc.org/boards/irrb/files/2012/06/Approaches-to-Setting-Nutrient-Targets-in-the-Red-River-of-the-North-FINAL.pdf>
Water Quality Modeling

No committee work has been done on this since the last report. Individual jurisdictions have the information they need to begin to utilize the SPARROW model.

International Watersheds Initiative Proposal – Development of a Stressor-Response model for the Red River

The IJC has funded the project to develop a Stressor-Response model for the Red River. RESPEC was selected from the firms that submitted proposals and they have been working on the project.

The Water Quality Committee held an experts workshop on December 16th to provide input to RESPEC. RESPEC has developed a draft conceptual model and has reviewed data needs for completing the work. It was determined that additional periphyton and phytoplankton data would be advantageous for modeling and RESPEC has submitted a proposal to the provincial and state jurisdictions for completing that work. The three jurisdictions are currently reviewing the proposal and working to obtain funding for the additional equipment, sampling and sample analysis.

Component Four – Monitor and Report on Progress towards Meeting Water Quality Targets and Nutrient Load Allocations

Work to assess the comparability of existing water quality monitoring programs and data

throughout the watershed is underway and the committee is exploring options for web-based delivery of information on water quality monitoring programs.

This work is ongoing.

Component Five - Facilitate ongoing technical, scientific and methodological dialogue and information sharing

This work is ongoing.

Component Six - Adapt the nutrient management strategy based on progress and ongoing evaluation.

This work is ongoing.

3.03 Water Quantity Apportionment

As indicated by the historic streamflow records, water supply in the Red River basin is highly variable seasonally, annually, and over longer time periods. Recent forecasts of water demand based on population and economic growth projections further test the adequacy and reliability of these supplies. Scientific opinion with respect to climate change provides added caution regarding future hydrologic trends and the prospect of greater instability in water supply in the region. Projected increases in water use will likely cause larger departures from the natural regime to occur. The IRRB considers it prudent to consider establishment of flow targets at the international boundary before they are needed. The Board's Committee on Hydrology (COH) has been working on apportionment issues since 2006.

A literature review on apportionment for the Red River was completed by Dr. Rob de Loe, University of Guelph, with funding from the International Watersheds Initiative (IWI). Dr. de Loe's report titled, "Sharing the Waters of the Red River Basin: A Review of options for Transboundary Water Governance" was completed in 2009. The study recommends an apportionment model and approach to transboundary water governance in the Red River basin that includes the following major elements:

1. A prior appropriation to meet critical human and environmental needs,
2. Rules to apportion remaining natural flows between Canada and the United States based on the principle of equitable sharing, and
3. Rules regarding waters that originate in the respective countries' portion of the basin but do not cross the boundary. This model represents a balanced approach that takes account of local circumstances (e.g., the role of the *Boundary Waters Treaty of 1909*, existing management relationships, climatic conditions and the nature of water uses).

The second IJC funded report, by R. Halliday & Associates; entitled "Determination of Natural Flow for Apportionment of the Red River" was completed on May 30, 2010. This report established a process for the development and implementation of water quantity apportionment procedures. Various apportionment methodologies in the context of the Red River basin to assess natural flows were investigated and the Project Depletion Method is recommended. The report reviews the actual natural flow calculation and provides information on how the calculation can be accomplished. Gaps and concerns were discussed, particularly: hydrometric and

meteorological networks, water allocation, water use, and instream flows. More detailed discussion on natural flow determination dealt with evaporation, minor projects, channel losses and travel times. Apportionment was addressed about location(s), period, make-up water and dispute resolution.

There is also a need for in-stream flow needs (IFN) studies to make recommendations for apportionment. IFN is a multi-disciplinary issue involving biology, geomorphology, connectivity, water quality, and hydrology. The Board's Aquatic Ecosystem Committee and its Committee on Hydrology are working together to address IFN questions as part of the Board's ongoing water quantity apportionment efforts. A joint proposal for IWI funding to hire a contractor to collect available bathymetric and hydrographic information for the Red River along with the following has been developed:

- Identification of representative fish species and life stages for the Red River,
- Data on distribution, habitat use and habitat availability of these representative fish species and life stages in the reference sites where bathymetric and flow data were recorded,
- Determination of biologically significant periods,
- Temperature preferences for the different fish species, and
- Any available reports on validating Habitat Suitability.

In January 2011, IRRB approved the joint IFN proposal and submitted it the IJC for IWI funding in the new fiscal year starting April 1, 2011. The project was conducted by Bill Franzin and completed in 2012.

3.04 Lower Pembina Flooding

The IRRB at its January 2008 meeting established the Lower Pembina River Flooding Task Team (LPRFTT). The mandate of this Task Team was to develop a science-based solution(s) to mitigate flooding in the lower Pembina River basin.

A significant milestone for the IRRB was the completion of the Lower Pembina River Flooding Task Team (LPRFTT) Report. The LPRFTT has overseen the completion of a three- phased International Watersheds Initiatives (IWI) study report entitled, "Simulation of Flood Scenarios on the Lower Pembina River Flood Plains with the Telemac 2D Hydrodynamic Model". All three phases of the study were conducted by the National Hydraulic Centre (NRC). Based on the results of the modelling effort, the LPRFTT developed a document titled, "An exploratory analysis of mitigation measures for the lower Pembina River basin". These LPRFTT reports from the three phases were then presented and subsequently accepted by the IJC. The reports, the model and animations have also been made public.

The National Research Council's (NRC) Canadian Hydraulics Centre provided a March 1, 2013 webinar, showing how Blue Kenue can be used as an analysis and visualization tool for hydraulic models.

One of the recommendations provided by the IJC to Governments was to establish a Task Team to work towards a binational solution to help manage the flooding issues in the Pembina Basin. Based on this recommendation, the Governor of ND and the Premier of Manitoba have each assigned 5 members and have created the Pembina River Task Team. IRRB Co-chairs have also been included as members of the Task Team in addition to the 10 Task Team members. The first

meeting was held on 15 October 2013 in Fargo, ND. The meeting was organized by the Red River Basin Commission. Lance Yohe, Executive Director of the RRBC, was the meeting facilitator. (Jeff Lewis has since become Executive Director of the RRBC and will be the main facilitator for the Task Team.)

- Topics of discussion included:
 - Summary of past reports/plans/studies, data, modeling, and transboundary committees;
 - Purpose and charge of the committee;
 - Role of participants;
 - Starting points that Manitoba and North Dakota agree on for what the committee will move forward on;
 - Presentation on the Telemac 2D model prepared under the leadership of the Lower Pembina River Basin Task Team from 2008-2012; and
 - Primary discussion of possible solutions.

The second meeting of the Task Team was held on March 24, 2014 in Fargo, ND. Discussion included:

- Purpose, charge, roles, and starting points
- Additional study needs
 - Effects of possible raise of HW #18 near Niche
 - Impact of 2 large openings through border road/dike for larger floods
- Opinions on various alternatives
- Some economic information on various options was also presented

A conference call was held on June 13, 2014 to provide further information on the following:

- Preliminary economic analysis of some alternatives were provided
- Agreement on the need for the following additional modeling:
 - Impact of raising HWY #18 in Niche area
 - Additional culvert capacity required to prevent change in flood conditions
 - Analysis of 50-year and 100-year flood for the alternative where two large openings are made through the road/dike
 - Analysis of additional temporary flood water storage near the study area

Several members of the Task Team were able to tour the study area during an August 26, 2014 tour of the area that was hosted by the IRRB and IJC members.

An IWI Project Proposal Form was completed to request funding for the National Hydraulics Centre to complete the modeling of the 3 items described during the June 13, 2014 conference call (as listed above), with the Telemac 2D Hydrodynamic Model.

Work started on the model development after funding was approved during the latter part of 2014. The modelers held bi-weekly conference calls to update the status of the study, starting near the middle of January 2015 and continuing to the middle of March 2015. The final report was completed on March 31, 2015.

The Task Team will schedule their next meeting after obtaining results from the final report for the modeling. Representatives of the Task Team have already been developing a draft report to summarize the issues, itemize progress made based on points of agreement, narrowing the focus

on alternatives to be pursued, a summary of additional information that may be needed to determine the best overall solutions for the area, and a description on how to proceed towards that solution. Information obtained from the current modeling effort will also be incorporated into the Task Team report.

3.05 Invasive Species - Zebra Mussels

Zebra mussels, a non-native invasive species, were discovered in the Red River basin for the first time in September 2009. The mussels were found in Pelican Lake in Otter Tail County, Minnesota, which is on the Otter Tail River. Native to Eastern Europe and Western Russia, zebra mussels were first discovered in the Great Lakes in 1988. They entered the Upper Mississippi River system from Lake Michigan via the Illinois River (Chicago Sanitary and Shipping Canal) and spread upriver into Minnesota and Wisconsin via recreation and commercial boat traffic. Heavy infestations can kill native mussels, impact fish populations, interfere with recreation, and increase costs for industry, including power and water supply facilities.

Zebra mussels are adapted to lentic (lakes/reservoir) habitat. They can survive in riverine habitat, but they require an upstream source of healthy zebra mussel populations to continually supply free floating larvae – typically from an upstream reservoir or lake. Zebra mussels are typically spread overland from infected lakes via transient recreational boat traffic and transfers of boat docks or lifts. It is probable that there is an established and reproducing population in Pelican Lake, as evidenced by small and large individuals observed. Based on previous experience on the Upper Mississippi River, it is likely that zebra mussels will colonize the reservoir immediately downstream (Orwell Reservoir) and larvae likely will drift down the Otter Tail River to the Red River. However, the higher energy and flashy nature of the Red River does not provide ideal zebra mussel habitat. Eventual Zebra mussel infestation of the Red River is possible, but surviving population levels are likely to be minimal.

The confluence of the Red River and the Otter Tail River is approximately 550 river miles from Lake Winnipeg. U.S. Army Corps of Engineers experience on the Upper Mississippi River indicates that larval drift ranges from approximately 75 to 125 miles before juveniles settle and attach to hard surfaces. It is highly unlikely that larval juveniles will drift from the Otter Tail to Lake Winnipeg. Infestation of Lake Winnipeg via the Red River would require the establishment of a viable population within closer proximity (a lake or a reservoir which is non-existent at this time). Over land transport by humans from infested waters appears to be a more likely vector for zebra mussels to become established in Lake Winnipeg.

There is little that can be done to address an existing infestation of zebra mussels. Natural resource agencies in the U.S. and Canada are focused on public awareness and education aimed at preventing transportation of mussels on boats, trailers, and docks. Actions include increased signage at infested lakes, watercraft inspections, and monitoring.

In October 2013, Manitoba Conservation and Water Stewardship (MCWS) confirmed zebra mussels have been found in Manitoba waters. Mussels were recently found on the hull of a private boat and a dock at Winnipeg Beach and on some fishing boats dry docked at Gimli (Lake Winnipeg). MCWS is implementing a rapid-response protocol to address the issue which includes:

- Ensuring staff are on site at Winnipeg Beach, Gimli and Hecla to provide information to watercraft owners and local residents to help identify zebra mussels, collect samples to determine the extent of infestation and advise on steps everyone can follow to help prevent the further spread of this aquatic invasive species. Watercraft inspection teams will be in the Winnipeg Beach and Gimli areas from this weekend until Lake freeze-up.
- Deploying mobile decontamination units for aquatic invasive species where necessary. Teams' locations will change depending on need and as new information is received.
- Engaging stakeholders to make them aware that zebra mussels have been found in Manitoba and what can be done to deal with the situation.
- Extending the watercraft inspection program to help collect data about this situation.

The public can call 1-877-867-2470 (toll-free) for up-to-date information about the exact daily location of these teams [Source: MCWS-October 17, 2013 -News Release].

4.0 Red River Basin – Activities and Issues

4.01 Devils Lake Sub-Basin

Devils Lake

Hydrology:

The water surface elevation on January 1, 2014 was 1452.3 msl. The level of Devils Lake continued to increase during the spring of 2014, with an apparent peak of 1453.46 msl on June 29. This is an increase of 1.2 feet from the beginning of 2014. This increase added 13,881 acres to the size of the lake, and about 240,000 acre-feet of additional storage. This 2014 peak elevation is also only 0.8 feet lower than the modern period record high of 1454.30 established on June 27, 2011. The lake elevation on January 1, 2015 was 1451.6 msl; about 1.9 feet lower than the apparent peak for 2014 (Table 3).

Table 3: Devils Lake Surface Elevation, Area / Volume – January 2010 to January 2015

Date	Elevation (msl)	Area (acres)	Volume (acre-feet)
Jan. 16, 2010	1449.92	162,100	3.36 Million
June 27, 2010	1452.05	182,800	3.73 Million
Jan. 16, 2011	1451.62	178,600	3.66 Million
June 27, 2011	1454.30	208,500	4.19 Million
January 21, 2012	1453.3	197,000	4.00 Million
May 7, 2012	1453.6	200,057	4.03 Million
Jan. 1, 2013	1451.4	176,000	3.62 million
June 27, 2013	1454.0	204,852	4.11 million
Jan. 1, 2014	1452.3	185,000	3.77 million
June 29, 2014	1453.5	198,881	4.01 million
Jan. 1, 2015	1451.6	178,100	3.65 million

State Emergency Outlet Project Update:

Operation:

West Devils Lake Outlet:

Due to high flows on the Sheyenne River and other rivers further downstream (and repairs on the riser pipes) discharge from the west outlet did not start until May 20, ranging from 50 cfs to 130 cfs for the rest of May. The pumps were shut down on June 2 due to high flows occurring further downstream. Limited discharge of about 125 cfs started again on June 13. The pumps were again shut down on June 28, due to high downstream flows and potential change of precipitation. Within a couple of days, the pumps resumed at a rate of about 140 cfs. The rate of discharge increased to the full capacity of 250 cfs on July 16. Discharge was limited during the first week of August due to maintenance. Discharge resumed at 250 cfs, with only minor reductions due to routine maintenance through the rest of the year. The pumps were shut down for the year on November 9, 2014.

East Devils Lake Outlet:

High downstream flow conditions also delayed the start of pumping from the east outlet. The pumps started to discharge at a reduced rate on May 12. Due to high flow conditions downstream, the discharge rate was limited to about 150 cfs for the rest of May. Pumps had to be shut down on June 2, due to heavy rain received further downstream. The pumps were again started at a rate around 140 cfs on June 17. They were shut down again for a couple days around June 28, before continuing at a rate of about 140 cfs. Discharge was increased to about 350 cfs on July 16. The outlet was briefly shut down for electrical utility work for a limited time during the latter part of July. A power outage in early August limited discharge for a very short time. The discharge rate continued at about 350 cfs (with a few short reductions due to routine maintenance) until water quality restrictions forced a reduction to about 300 cfs near the last week in October. The pumps were shut down for the year on November 9, 2014. The following table (Table 4) summarizes the extent of discharge from the outlets for a portion of 2014.

Table 4: Summary of Devils Lake Discharge in 2014

Month	Days Discharge Pumped		Average Discharge (cfs)		Monthly Volume (acre-feet)	
	West	East	West	East	West	East
May	12	20	79	141	1,874	5,581
June	19	15	82	68	4,884	4,061
July	31	30	228	293	14,013	18,042
August	31	31	244	368	15,002	22,613
Sept.	30	30	242	365	14,423	21,698
Oct.	31	31	236	327	14,541	20,121
Nov. 2014	9	9	214	290	3,812	5,172
TOTAL					68,548	97,288

The following (Table 5) is a summary of the volume and inches of water removed from the lake since pumping was started in 2005:

Table 5: Summary of Volume and Inches of Water Removed from Devils Lake Since 2005

Year	Volume Removed (acre-ft.)	Inches Removed (inches)
2005	38	0.0
2006	0	0.0
2007	298	0.02
2008	1,241	0.1
2009	27,653	2.0
2010	62,977	4.2
2011	46,911	2.7
2012	157,542	9.5
2013	141,783	10.0
2014	165,837	11.0
TOTAL	604,280	39.52

Water Quality:

Water quality testing has been ongoing at several locations along the Sheyenne River and Red River. Data from July and September 2014 is shown in the following charts (Figure 6 & 7).

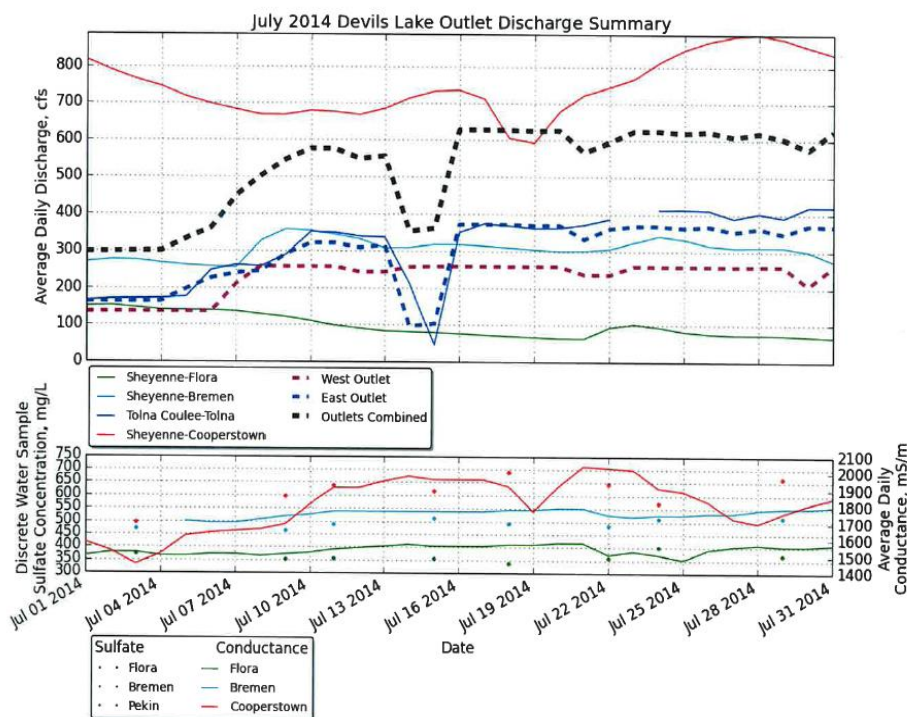


Figure 6 Devils Lake Outlet - Water Quality Data from July to September 2014

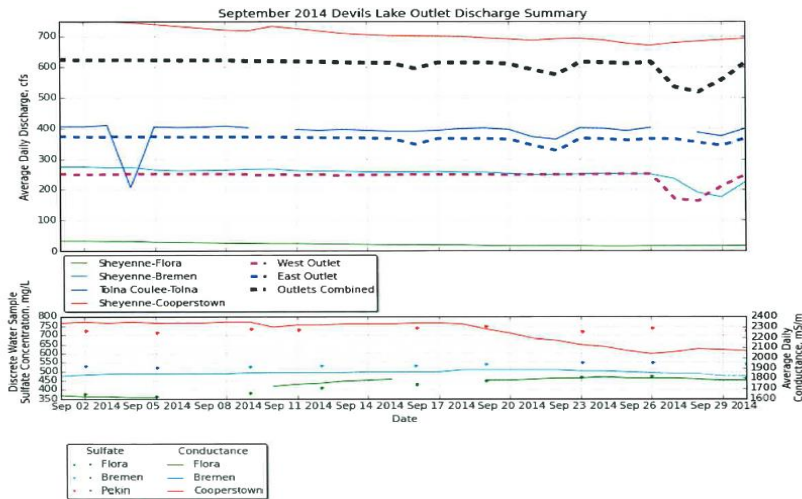


Figure 7 Devils Lake Outlet Discharge Summary – September 2014

Devils Lake Outlet Committee:

The Devils Lake Outlets Management Advisory Committee met on May 14, 2014 in Carrington, ND. The committee includes a representative from Manitoba and Minnesota.

Tolna Coulee Control Structure:

The operating plan for the structure requires that prior to a natural overflow the stop log elevation remain between 1 foot and 2 feet below the water surface of the lake.

Outlet Mitigation Plan:

Beginning in 1993, as Devils Lake began its historically unprecedented rise, the State Water Commission (SWC) has been at the forefront of efforts to combat flooding in the basin. The lake level has now risen 30 feet expanding from about 49,000 acres to over 200,000 acres. At its overflow elevation of 1458 feet msl, where it naturally spills into the Sheyenne River, Devils Lake will cover more than 261,000 acres. To combat the growing flooding problem, local, state, and federal authorities adopted a three-pronged approach in the mid 1990s: infrastructure protection for roads, levees, and relocations; upper basin water management, including water storage in the upper basin; and discharge of flood water through an emergency west-end outlet to the Sheyenne River. This approach was designed with the interests of both Devils Lake basin and downstream residents in mind. The principal concept has been to manage water and flood damage within the Devils Lake basin, while attempting to prevent a potentially catastrophic natural overflow through Tolna Coulee to the Sheyenne River.

The 2011 Devils Lake Outlet Mitigation plan developed by SWC staff with input from stakeholders, including the Devils Lake Outlet Advisory Committee, provides important direction in addressing problems that could arise downstream from emergency measures taken at Devils Lake to protect the safety and general welfare of both basin and downstream residents. The draft plan has two key components; construction of emergency outlets to remove floodwater from Devils Lake and a course of action to address downstream issues along the Sheyenne River that may result from operating the emergency outlet projects.

Period of Record Lake Elevations

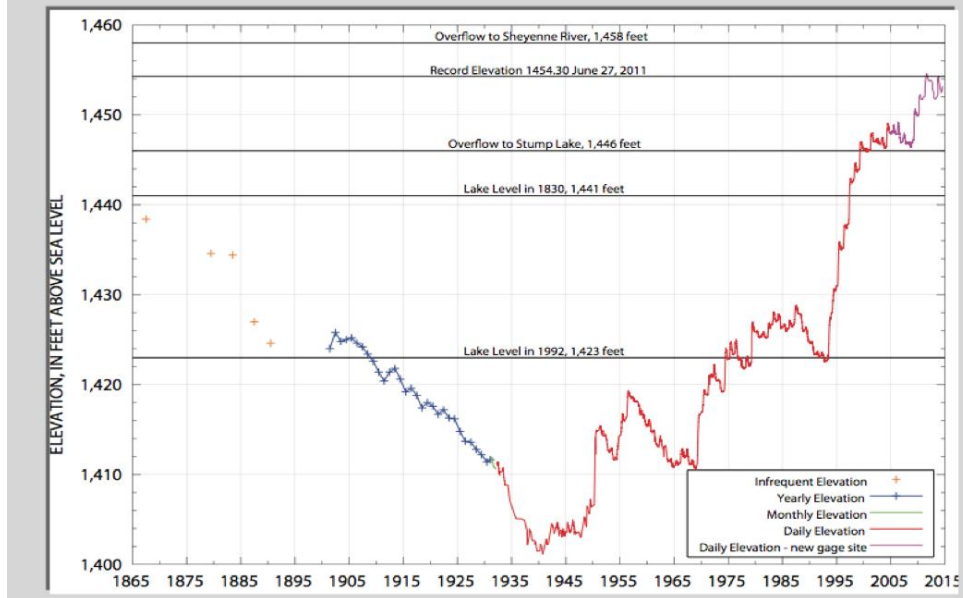


Figure 8 Devils Lake Historic Water Surface Elevations

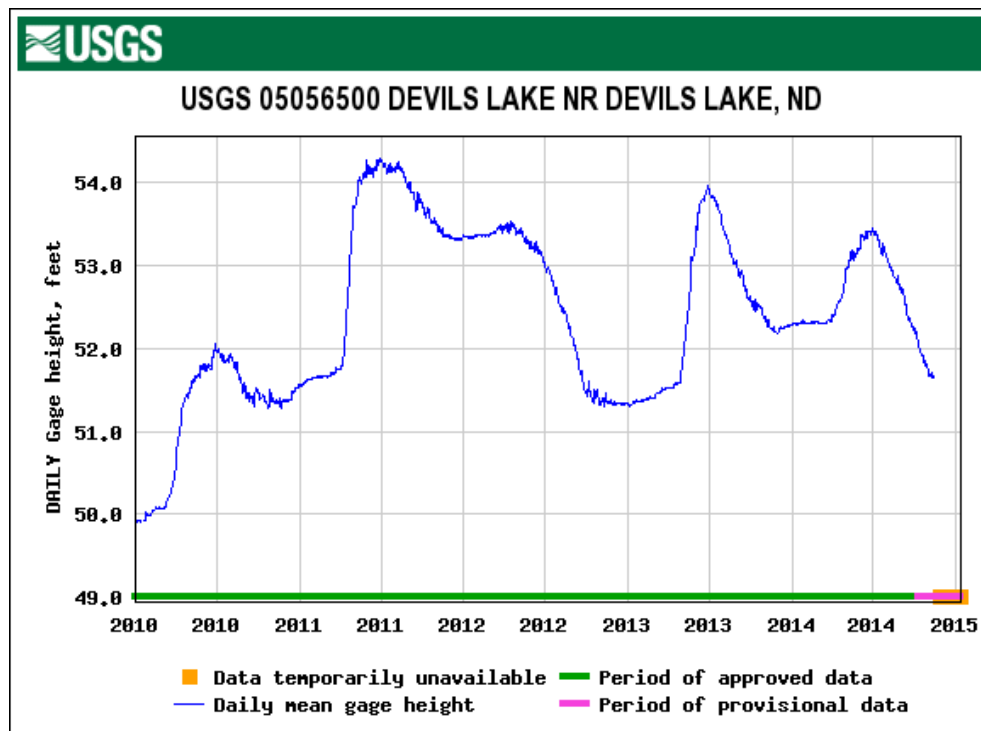


Figure 9 Devils Lake near Devils Lake Water Surface Elevations - 2010-2014

US Federal Government Initiatives to Reduce Flooding in the Devils Lake Basin

In June 2010, the United States government directed an intensive Federal interagency effort to assess the status of the efforts of each major Federal agency actively addressing the flooding in the area of Devils Lake and options for additional near-term actions within existing authorities. This U.S. Federal Interagency Task Force used data from previous analyses to re-examine what options might be feasible to address Devils Lake flooding.

This Working Group effort involved extensive analysis by all key Federal agencies engaged in responding to flooding at Devils Lake. Led by the U.S. Army Corps of Engineers, the Working Group also included the U.S. Environmental Protection Agency (EPA), the Office of Management and Budget (OMB), and the Departments of Agriculture (USDA), Commerce, Defense, Homeland Security, Interior, Transportation, and State. The Working Group was committed to gaining an understanding of the local perspectives on these issues, and held four focus group meetings in North Dakota (“the State”) – three in the City of Devils Lake and one in Valley City, North Dakota. The purposes of these meetings were to gather information and testimony from local and state officials and other subject matter experts, and to obtain recommendations on actions that the Federal government could undertake to assist with the problems caused by the rising lake.

The Working Group completed several specific tasks to assess the status of each agency’s ongoing activities to address the flooding in the area and identified the near-term actions that could be taken within existing authorities. These tasks included:

- Identifying past and current Federal activities/programs and spending
- identifying all available legal authorities to respond to the flooding, including those that have been used in the past and those that have not
- compiling existing analyses of near-term and longer-term actions, including evaluating the actions raised by the North Dakota congressional delegation
- re-examining possible solutions using data generated from its previous analyses

Federal agencies have been involved in a number of initiatives to assist the population affected by the flooding, including rebuilding and elevating roads and levees; constructing dams; reimbursing local governments for damaged infrastructures; purchasing easements; relocating and buying out homes; studying the cause and modeling potential future lake levels; providing area-specific weather, water and climate forecasts; and providing assistance to farmers and local businesses. Since 1992 (when the lake started rising from an elevation of 1423 feet), using at least 49 different Federal program authorities, Federal agencies have spent or committed about \$852 million of Federal funding to assist those affected by Devils Lake flooding. Many of the authorities Federal agencies operate under require a local sponsor and matching contribution. As such, State and local governments have also expended hundreds of millions of dollars.

In addition to these ongoing activities, the Working Group identified and developed twenty one specific actions that are underway or could be undertaken by Federal, State, and/or local agencies. Those items are identified in the table below with the Federal and local agency responsible for each (Table 6).

Table 6 Actions and Lead Agencies Responsible for Flood Mitigation Works

#	Action	Lead Agency	
		Federal	State/Tribal
1	Devils Lake Executive Committee (DLEC)	USACE (MVD)	NDSWC
2	Devils Lake Collaborative Working Group (DLCWG)	USACE (MVP)	NDSWC
3	Comprehensive Watershed Management Strategy	FEMA	NDSWC / NDDDES
4	Development of the Multi-Purpose “Pelican Bay Recreation and Wildlife Area”	USFWS	NDGF
5	Consider Options for Revising Water Quality Standards	EPA	NDDH
6	<i>Control Outflows from Tolna Coulee Outlet at Elevation 1458.0</i>	USACE (MVP)	NDSWC
7	East Devils Lake Outlet	USACE (NWO)	NDSWC
8	<i>Expansion of West End Outlet</i>	USACE (NWO)	NDSWC
9	<i>Flooded Land Compensation and Increase Upper Basin Storage</i>	NRCS	NDGF
10	Increase Sheyenne River Channel Capacity	USACE (MVP)	NDSWC
11	Construct Biota Filter for Devils Lake Outlets	USACE (MVP)	NDSWC
12	Control Structure on Jerusalem Channel between East Devils Lake and Stump Lake	USACE (MVP)	NDSWC
13	Construct Diversion from Edmore Coulee to Tributaries of the Red River of the North	USACE (MVP)	NDSWC
14	Non-Structural Hazard Reduction: Acquisition/Relocation of Imperiled Structures	FEMA	NDDDES
15	Fully Fund Roads Acting as Dams Project	BIA/FHWA	SLT
16	Road Raise Contracts to 1460/1465	FHWA	NDDOT
17	<i>Raise Township Roads</i>	FHWA	NDDOT
18	Utility Relocations	RD	NDDDES
19	Railroad Embankment Raises	FRA/FHWA	NDDOT
20	Prepare a Multi County Evacuation and Mass Care Annex to Existing Emergency Operations Plans	FEMA	NDDDES
21	Additional Observations for Emergency Preparedness	USGS	NDSWC
22	<i>Mental Health Assistance</i>	<i>FEMA</i>	<i>NDDDES</i>
23	<i>Digital Flood Insurance Rate Maps (DFIRMS)</i>	<i>FEMA</i>	<i>NDDDES</i>
24	<i>Local/ Tribal Hazard Mitigation Planning</i>	<i>FEMA/BIA</i>	<i>NDDDES</i>
25	<i>Business and Employment Preservation</i>	<i>Dept. Commerce</i>	<i>NDDC</i>

Since the release of the federal report, the U.S. Federal Government directed that action item 1, the Devils Lake Executive Committee, be established to oversee efforts and to ensure Federal actions are expedite to the greatest extent possible to address the flooding issues in and around Devils Lake. The DLEC was additionally directed to prepare an action plan and present it to the Office of Management and Budget in June 2011. Those actions are currently ongoing.

4.02 Garrison Diversion Projects

Dakota Water Resources Act

The Dakota Water Resources Act (DWRA) of December 2000 amended authorizing legislation for the Garrison Diversion Project. The legislation outlines a program to meet Indian and non-Indian water supply needs in North Dakota and authorizes water uses including municipal, rural and industrial, fish and wildlife, recreation, irrigation, flood control, stream flow augmentation, and ground water recharge.

Red River Valley Water Supply Project

An extensive amount of engineering and environmental work had previously been completed using an approach to obtain a federal Record of Decision and federal implementation. Because the Secretary of Interior has not signed the Record of Decision, the Lake Agassiz Water Authority (LAWA) and Garrison Diversion Conservancy District (GDCCD) had their consultants develop a proposed alternative route concept and project configuration for State and local implementation. In 2014, the ND State Water Commission (NDSWC) obtained the services of CH2M HILL to perform an independent value engineering analysis of the proposed alternative and other alternative routes. Various questions about the potential for the RRVWSP to be implemented as a State and local project were also to be addressed.

The primary goal of the study is to help the State select the alignment that provides the best opportunity to complete the Red River Water Supply Project.

The main study objectives are to:

1. Assess various pipeline alignments previously identified, and to identify and assess additional alignments that should be considered
2. Assess the overall technical and permitting feasibility of a Missouri River intake and delivery of water to identified end users
3. Assess the estimated project costs

The following 25 alternatives were evaluated:

- 12 alignments, each with one of two intake types (total of 24 alternatives)
 - A bank filtration system (BFS), consisting of several horizontal collector wells
 - A conventional river bank diversion intake system
- Preferred Alternative described in the Final Environmental Impact Statement, Red River Valley Water Supply Project (FEIS) (Bureau of Reclamation, 2007)

Project stakeholders developed the following criteria, in order of importance, to select the best alternative:

- Criteria A – Timely Construction Start. Federal permitting requirements, existing easement options, and how to leverage work already completed was evaluated to for a State and local project to be implemented in the shortest period of time.

- **Criteria B – Sustainable Project for Users.** The project would need to meet the long term needs of user. Various delivery systems (stream channel versus pipeline) and the use of Lake Ashtabula.
- **Criteria C – Robustness.** This criterion reflects the desire to deliver water to Lake Ashtabula to take advantage of storage on the east side of the Continental Divide and measures the relative cost to add more users.
- **Criteria D – Benefits/Impacts to Lake Ashtabula and Instream Flows.** This reflects the desire to maintain previous environmental commitments made during the federal process. A distinction exists among the alternatives regarding their potential to enhance conditions for aquatic life and habitat in the Sheyenne River and, in some cases, the Red River. That benefit occurs due to providing higher instream flows when the project water is delivered within these rivers to Fargo or Grand Forks.

At the June 2014 State Water Commission meeting, the final value engineering (VE) study was presented. From those findings, three alignments were identified as being the most likely to meet the criteria for future consideration. Those options were the (Option 1) Washburn to Baldhill Creek, (Option 2) Bismarck to Lake Ashtabula, and (Option 3) Bismarck to Fargo and Grand Forks routes.

Subject to further analysis, these alternatives were chosen as being the most likely to avoid impacts to sensitive environmental resources. They also support a project configuration that will minimize negative environmental impacts, and achieve compliance with federal, state, and local requirements as a state and local project.

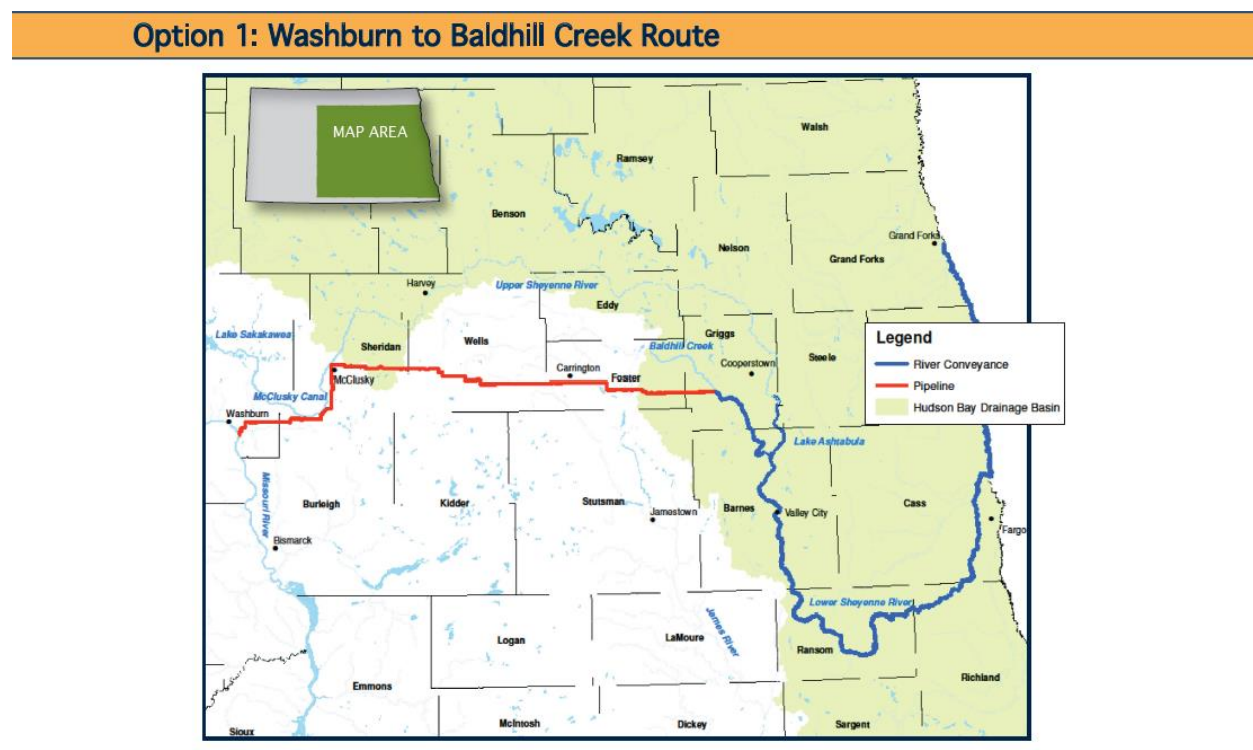


Figure 10 Washburn to Baldhill Creek Route

Option 2: Bismarck to Lake Ashtabula Route



Figure 11 Bismarck to Lake Ashtabula Route

Option 3: Bismarck to Fargo & Grand Forks

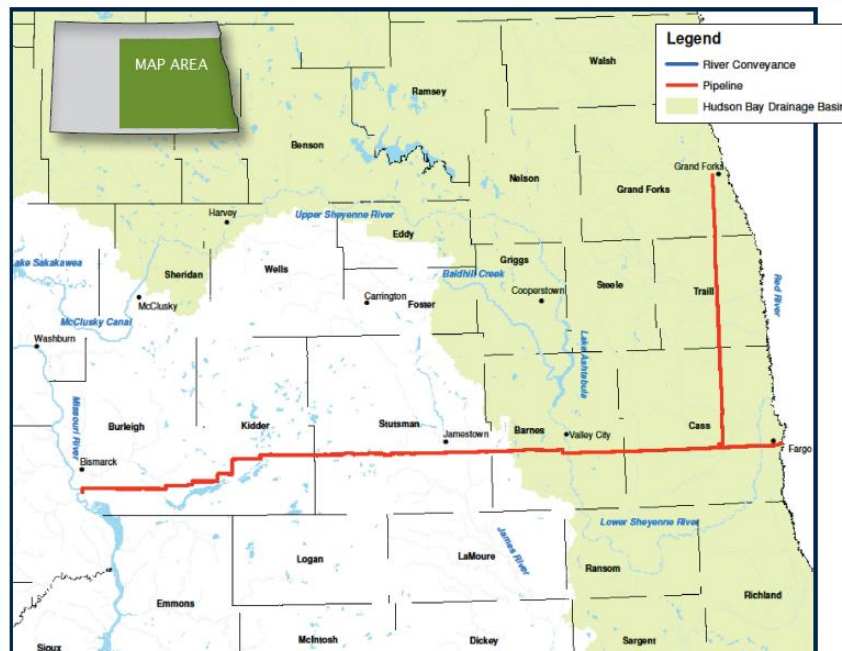


Figure 12 Bismarck to Fargo & Grand Forks

In June 2014, the North Dakota State Water Commission (NDSWC) voted to begin a feasibility study for the siting of water intakes for the three project routes, using adjacent wells lateral to the Missouri River. The wells on the banks of the Missouri River would work by intersecting the water table of the Missouri River, allowing the project to access that water, without requiring a surface water intake to be physically located in the river itself.

As part of this study to determine the feasibility of acquiring necessary amounts of Missouri River water for any future alignments, CH2M Hill will conduct a hydrogeologic analysis and investigate the feasibility of a Bank Filtration System (BFS) design on the Missouri River. The study will include a review of existing data, geophysical exploration, soil borings, aquifer pumping tests and conceptual design of an intake along with estimate of probable costs. Additional study was approved in January 2015.

Northwest Area Water Supply (NAWS)

Manitoba & Missouri Lawsuit

The Federal Court issued an order on March 5, 2010, requiring the Bureau of Reclamation to take a hard look at (1) the cumulative impacts of water withdrawal on the water levels of Lake Sakakawea and the Missouri River, and (2) the consequences of biota transfer into the Hudson Bay Basin, including Canada. The order dated October 25, 2010, allowed construction on the improvements in the Minot Water Treatment Plant and pipelines to the Minot Air Force Base and Glenburn to proceed. However, it did not allow design work to continue on the intake. The court ordered a conference call on November 15, 2012. The court expressed concerns about construction taking place under the previously approved and unopposed injunction modifications possibly affecting the outcome of the SEIS. A briefing explaining the additional construction on the northern tier, justifying the need and explaining the independence from supply or biota treatment alternatives was filed December 6, 2012. Missouri and Manitoba filed responses on January 6, 2013, and North Dakota's response was filed January 22, 2013. The Court issued an opinion on March 1, 2013, modifying the injunction to not permit 'new pipeline construction or new pipeline construction contracts'. North Dakota provided notice to the Court in September 2013 of their intention to begin design work on replacement of the softening facilities and associated equipment at the Minot water treatment facility.

The Bureau of Reclamation (Reclamation) has continued to work on the Supplemental Environmental Impact Statement (SEIS). The draft SEIS evaluates the estimated future water needs of the area through 2060, develops a full range of reasonable alternatives to meet this future need, and evaluates the potential environmental effects of the proposed alternatives.

The NAWS Draft EIS went out for public comment on June 20, 2014. A public hearing was held on the draft SEIS on July 23, in Minot, ND. The purpose of the hearing is to seek public comment on the draft SEIS. Public comments were received through September 10, 2014.

A meeting was held on December 9, 2014, with the Environmental Protection Agency, Reclamation, North Dakota Department of Health, City of Minot, and SV/C staff to discuss concerns raised by EPA in their comment letter. A cooperating agency team (CAT) meeting is being planned to go through responses to comments received. It is expected that a draft version of the Final SEIS will be shared with the CAT members for their review prior to publication. Current estimates would have this process extending into March 2015.

Watershed Detention Strategies

Updated hydrologic models have been completed on all the subbasins in the Red River watershed located in ND, except for the Park River and Pembina River subbasins. A review of the 100 percent submittal stage is currently underway for those two subbasins. Distributed detention studies have also been completed in all subbasins in the Red River basin of ND, except for the Park River and Pembina River. Detention studies will now be able to get underway for those two subbasins. The studies located potential temporary storage sites, for the purpose of flood damage reduction, within each subbasin. Criteria used included the requirement that each site had a drainage area of at least 20 square miles, that it was capable of temporarily holding at least 3 inches of runoff, that off-channel sites be analyzed throughout the drainage area, and a combination of off-channel and on-channel sites analyzed in the upper portion of the tributaries.

The newly completed hydrology models were used to develop hydrographs for various events and to compare the change in hydrograph if each potential site were in place. The volume of water removed from the flood hydrograph within each subbasin was compared to the amount described in the RRBC LTFS study, to determine if each subbasin was capable of obtaining the storage described in that report. A similar effort is ongoing on the MN side of the Red River watershed.

Possible impacts to the flood hydrograph on the Red River mainstem have been determined for the southern portion of the watershed (to Halstad). Further development of the hydraulic model is underway so that a similar analysis can be continued to the border. Discussion is underway with the Corps of Engineers to complete this task.

Red River Retention Authority

The Red River Retention Authority (RRRA), formed in 2010, is comprised of members of the Red River Joint Water Resource District, a North Dakota political subdivision, and the Red River Watershed Management Board, a Minnesota political subdivision. The primary objective of the Red River Retention Authority is to ensure joint, comprehensive, and strategic coordination of retention projects in the Red River of the North watershed and facilitating implementation and construction of temporary retention in the Red River Watershed for the purpose of flood damage reduction. Several entities are involved as partners in this process.

The main goal of the RRRA is to reduce the severe flood flows on the Red River by 20 percent, while also providing local benefit. To achieve that, retention projects in the basin need to temporarily store about 1.5 million acre-feet of water. Using the data provided in the detention studies, and detailed discussion with each individual member of the RRJWRD in ND and the RRWMB in MN, a list of potential projects has been prepared. The projects are in various stages of development; with some close to construction, some in various stages of study/design, and some just getting underway.

The RRRA and its members have been aggressively pursuing federal dollars to off-set local costs for retention projects, and will serve as an advocate for local projects in the federal regulatory process. The U.S. Department of Agriculture has included the Red River Basin in the Prairie Grasslands Region Critical Conservation Area. This provides an opportunity for the RRRA to apply for funding through the Regional Conservation Partnership Program, which is included in the 2014 farm bill.

The Red River Watershed area in the U.S. received up to \$50 million over 5 years in targeted funding to develop projects with the various farm practice programs that are available. The funds are to be used for projects to minimize flooding by creating temporary flood water storage, increase soil health, and improve water quality. Private landowners will be able to use existing programs for these purposes. It has been stated that the rules for these programs will be “flexible” in order to obtain some of the flood damage reduction goals.

In addition, the Secretary of Agricultural announced on January 14, 2015 that up to \$12 million was included in funding for the Red River Basin of the North Flood Prevention Plan through the NRCS-Regional Conservation Partnership Program (RCPP). The Red River Retention Authority will be the lead partner for the projects. These funds will be used to plan and build PL-566 like projects to be used for temporary storage of flood water. They will be leveraged with state and local funds. The first two projects likely to benefit from this program are a dam on the Upper Maple River watershed district in North Dakota and the Redpath project in Minnesota. The dam on the Upper Maple River (Figure 13) is scheduled for construction in 2015.

While the main purpose of the projects is for flood damage reduction, water retention on agricultural lands could also help to improve water quality in the basin.

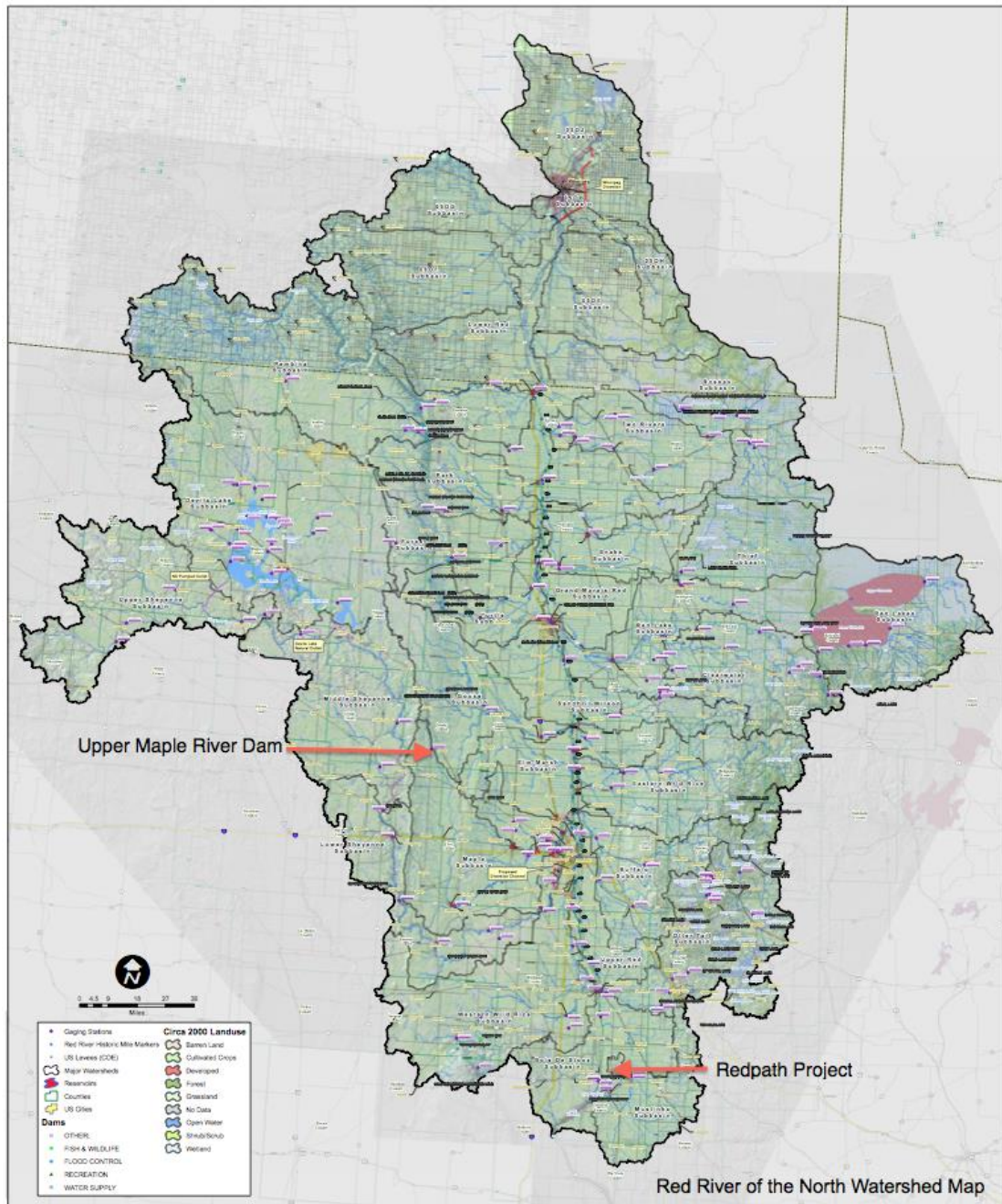


Figure 13 Location of Flood Water Retention Areas in North Dakota

4.03 Lake Winnipeg

Lake Winnipeg is the 10th largest freshwater lake in the world. The Lake's watershed spans an area of almost one million km², from the eastern slopes of the Rocky Mountains to the Winnipeg River system and Lake of the Woods. The watershed extends into four provinces and four U.S. states as illustrated in Figure 14.



Figure 14 Lake Winnipeg Watershed (Map - Manitoba Conservation & Water Stewardship)

Lake Winnipeg Basin Initiative

Environment Canada continues to deliver Phase II of the LWBI (\$18M, 2012-2017) which was introduced in Budget 2012. The LWBI focuses on three areas: transboundary partnerships to manage nutrients in the basin; scientific research, modelling and monitoring; and a stewardship fund for stakeholder-led projects that reduce nutrient loads into the lake and basin.

LWBI activities since the last IJC update (April 2014) included:

- Lake Winnipeg Basin Office (LWBO) staff continue to support the provincially led Lake Friendly Accord and Stewards Alliance. LWBO staff are members at large on the Lake Friendly Stewards Alliance Steering Committee. EC staff from the LWBO participate in two of the six working groups formed to start gathering sector specific information and actions for implementing the goals and objectives of the Accord.
- LWBO staff attended the Red River Basin Commission's 32nd Annual Red River Basin Land & Water International Summit Conference on January 20-22, 2015 in Winnipeg. An exhibit booth was staffed to distribute information on Phase II of the LWBI and on Lake Winnipeg Basin Stewardship Fund (LWBSF) projects from Rounds 6 and 7.
- LWBO, as part of its program delivery commitment, published a Progress Report on the LWBI, 2012/13 to 2013/14 in January 2015. The report summarizes the activities for the first two years of Phase II of the Initiative and is available upon request. (Contact: Arthur Friesen at arthur.friesen@ec.gc.ca.)
- The Lake Winnipeg Basin Stewardship Fund (LWBSF) Public Advisory Committee met on January 8 & 9, 2015 in Winnipeg to review a total of 53 proposals submitted under Round 8 of the Stewardship Fund. Based on the results of that meeting, recommendations for 14 projects were submitted to the Minister and approved on March 24. Environment Canada will be providing support in the amount of \$536,991 for these projects.
- LWBSF staff participated in the annual Manitoba Conservation Districts Association conference and trade show in Brandon, MB on December 1st & 2nd. The conference theme "Water Management in Action – The Urban-Rural Connection" attracted 405 participants and 52 trade show booths. A LWBI trade show booth was staffed to distribute information on the LWBI, the LWBSF, as well as other EC funding programs.
- The Canada-Manitoba Lake Winnipeg MOU Steering Committee held its 9th meeting on November 28, 2014. The Committee approved and finalized the report of the MOU Management Review Process thus confirming support from the Committee for extension of the MOU to 2020 after its expiration in fall 2015. The Committee also confirmed the proposed approvals process which would lead to an exchange of Ministerial letters to extend the MOU until 2020.

Contact: Les Rutherford, Manager, Lake Winnipeg Basin Initiative, Environment Canada, Winnipeg, MB, Phone: 204-296-8319 or e-mail Les.Rutherford@ec.gc.ca
Website: <http://www.ec.gc.ca/eau-water/default.asp?lang=En&n=4E8DF48A-1>

International Red River Board Membership

Current membership is as follows – eight members on the Canadian side and eight members on the United States side. The full complement of membership is nine members from each country.

United States

Col. Daniel Koprowski – U.S. Co-Chair District Engineer, St. Paul District U.S. Army Corps of Engineers	Megan Estep U.S. Fish and Wildlife Service
James Ziegler Detroit Lakes Office Minnesota Pollution Control Agency	Bert Garcia Director of Ecosystems Protection Remediation U. S. Environmental Protection Agency (Region 8)
David Glatt Director, Division of Water Quality North Dakota Department of Health	Daniel Wilkens Administrator, Sand Hill River Watershed District, Minnesota (Red River Basin Commission)
Randy Gjestvang Red River Water Resources Engineer North Dakota State Water Commission	Gregg Wiche Director, North Dakota U.S. Geological Survey, Water Science Center
Keith R. Mykleseth A/Regional Manager, Division of Ecological and Water Resources, Minnesota Department of Natural Resources	Scott Jutila- U.S. Co-Secretary Hydraulic Engineer St. Paul District U.S. Army Corps of Engineers

Canada

Mike Renouf – Canadian Chair Executive Director Transboundary Waters Unit Environment Canada	Herm Martens Red River Basin Commission
Nicole Armstrong Director, Water Science and Management Manitoba Conservation & Water Stewardship	Malcolm Conly Regional Program Manager-Prairie Operations Water Survey of Canada
Steven Topping Executive Director, Infrastructure and Operations, Manitoba Water Stewardship	Dr. Brian Parker Director, Fisheries Branch Manitoba Conservation & Water Stewardship
Gordon Bell Senior Hydrologist, Ag Water Directorate Agri-Environment Services Branch Agriculture and Agri-Food Canada	Dr. Patricia Ramlal Manager, Environmental Science Division Fisheries and Oceans Canada
Dr. L. Gordon Goldsborough Delta Marsh Field Station and Department of Botany, University of Manitoba	Girma Sahl - Canadian Co-Secretary Senior Engineering Advisor Transboundary Waters Unit Environment Canada

6.0 Summary of Priorities

The IRRB work plan identifies a suite of activities in response to the IJC Directive and in support of the International Watersheds Initiative. These activities are being undertaken as resources and capacity of the participating agencies allow. The work plan includes the following strategic goals and three-year outcomes:

- 1. FLOOD PREPAREDNESS AND MITIGATION: The human and economic impacts of flooding in the Red River Basin are minimized.
 - Monitor and Report progress by the governments (federal, state, provincial, municipal) in implementing the recommendations of the Commission's report on Red River basin flooding, and in maintaining and advancing the work of the Task Force's legacy projects.
 - IRRB is aware of the Basin runoff conditions.
 - Identify strategies to encourage governments to develop and implement long-term flood mitigation and emergency preparedness in the Basin.
 - Provide scientific support to address Pembina flooding issues.
 - Meet IJC's requirements for ongoing reporting.
- 2. WATER QUALITY: Water quality at the international boundary is at an acceptable level so that international disputes with respect to water quality in the Red River Basin are avoided and resolved.
 - Meet IJC's requirements for ongoing Monitoring and Reporting of Water Quality Objectives and Alert Levels at the International Boundary.
 - Develop and Recommend science-based nutrient objectives at the international boundary.
- 3. AQUATIC ECOSYSTEM HEALTH: Water resources of the Red River of the North Basin support and maintain a balanced community of organisms with species composition, diversity and functional organization comparable to the natural habitats within the Basin without regard to political boundaries so that disputes with respect to aquatic ecosystem health are avoided and resolved.
 - Complete Devils Lake Fish Pathogens and Parasites Survey.
 - Complete the risk analysis, peer review, and prepare final report.
 - The IRRB is aware of and takes appropriate action regarding the natural transfer of water between the Red River basin and other basins.
- 4. WATER QUANTITY: International disputes with respect to water quantity in the Red River Basin are avoided and resolved.
 - Long-term: Assess and recommend a process for the development and implementation of water quantity apportionment procedure for the Red River at the International Boundary.
 - Short-term: Compile information identified in the January 2008 approved multi-year "Proposed Flow Apportionment Conceptual Framework Plan".
- 5. OUTREACH AND ENGAGEMENT: The IRRB's work is enhanced by its relationships with key stakeholders and interested members of the public.

