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International Souris River Board  
Victoria Inn & Suites  
3550 Victoria Avenue, Brandon, MB  
1-204-725-1532  
February 21, 2019

### **Final Minutes**

#### **Board Members:**

Garland Erbele, Nicole Armstrong, Frank Durbian, Russell Boals, Mark Lee, Dave Pattyson, Gregg Wiche, Debbie McMechan, Lorinda Haman, Jeff Woodward.

**Via Conference Call:** John Fahlman, Scott Gangl, Ken Bottle and Brian Caruso.

**Regrets** –Joe Goodwill, Shelly Wepler, Col. Samuel Calkins, David Glatt, John-Mark Davies and David O’Connell.

#### **Attendees:**

Wayne Jenkinson, Lana Pollack, Mark Gabriel, Catherine Lee-Johnson, Steve Robinson, Darin Schepp, Heather Husband, Dorothy Lindeman, Dan Jonasson, Laura Ackerman, Bruce Davison, Kevin Wilson, Tim Ma, Corey Hein, Rebecca Seal-Soileau, Scott Jutila, Leland Goodman, Darrell Haman, Eric Cameron, Henry Murkin, Chris Korkowski, Jim Olson, Girma Sahl.

#### 1. Introduction and Opening Remarks.

Nicole Armstrong opened the meeting at 8:35 a.m. and extended her welcome wishes to all attendees. Garland Erbele echoed similar remarks and asked Board members and other participants to introduce themselves including those on the conference call.

#### 2. Approval of Agenda.

The agenda was approved with minor modifications. Item #22 (Souris River Post Flood Report) was removed from the agenda, Items #8, #17, #5a and #11a were modified as to who was presenting.

**Motion:** Frank Durbian moved to accept the agenda as modified. Russell Boals seconded the motion. **Carried.**

3. Approval of Minutes:

a. June 26, 2018 Face-to-face Meeting Minutes

**Motion:** David Pattyson moved to accept the revised minutes. Debbie McMechan seconded the motion. Carried.

4. Review of Action Items

Nicole Armstrong reviewed the Action Items listed on pages 40-41 of the June 26, 2018 meeting minutes and noted that they have been addressed accordingly.

5. Review of 2018 Hydrologic Conditions, Spring 2019 Hydrologic Forecast and Planned Operations

a. Saskatchewan

Jeff Woodward, Water Security Agency (WSA), gave a presentation that included a review of the 2018-19 hydrological conditions, the forecast for spring 2019, and the 2019 reservoir operating plans for Saskatchewan.

Winter Drawdown – WSA initiated the drawdown at Grant Devine Dam on November 2, 2018 at the rate of 0.84 m<sup>3</sup>/s (30 cfs) to bring the reservoirs down to its February 1<sup>st</sup> Normal Drawdown Level (NDL) over the winter months. Grant Devine Lake was 0.52 m above its NDL on November 2, 2018. The NDL was achieved on January 18, 2019 and the outflow was terminated. No outflow was required at Rafferty as levels were below the February 1<sup>st</sup> NDL at freeze-up. Jeff W. showed precipitation maps that indicated the April 1 to October 31, 2018 precipitation was near to slightly above normal during the growing season across the basin. The September 3<sup>rd</sup> to November 1, 2018 precipitation was near normal. According to the National Oceanic Atmospheric Administration (NOAA) Modelled Snow Water Equivalent (SWE) surveys, snow ranges from trace amounts in the east to 10 cm (4 in) in the west corner.

February 15, 2019 Forecast and Operating Plan – Jeff W. presented the forecast and operating plans for Rafferty, Grant Devine and Boundary Reservoirs. According to the February 15, 2019 spring runoff forecast, below normal runoff is expected across the basin, therefore non-flood operations will apply. There is no need for additional drawdown. Apportionment will be based on a 50/50 split as the natural flow at Sherwood is expected to be less than 50,000 dam<sup>3</sup>.

2019 Reservoir Operation Plans – Jeff W. stated based on current conditions, the reservoirs in Canada are not expected to fill in spring 2019. If Boundary fills, the excess will be diverted to Rafferty. If Rafferty is filled, the excess will be released at a controlled rate. No drawdown is required from Grant Devine, as well. A release from Grant Devine will be at a controlled rate if there is excess. If surcharged, plan to return to Full Supply Level (FSL) by June 1<sup>st</sup>. Releases from Grant Devine will be used for apportionment requirements.

b. North Dakota

Steve Robinson, United States Geological Survey (USGS), presented a summary of 2018 flow conditions for the US portion of the basin. According to Steve R.'s report, the total volume of

flow past the Long Creek at the Noonan gage through December 31, 2018 calendar year was 5,670 acre-ft (6,994 dam<sup>3</sup>). This volume is about 36% of the median flow for the past 59 years. The peak discharge for the reporting period January 1 to December 31, 2018 is 307 ft<sup>3</sup>/s (8.69 m<sup>3</sup>/s) on April 22, which ranks 41<sup>st</sup> in 59 years of record.

The total volume of flow past the Souris River near Sherwood gage through December 31, 2018 calendar year was 26,500 acre-ft (32,688 dam<sup>3</sup>). The total flow is 50% of the median flow for the past 88 years. The peak discharge for the period January 1 to December 31 was about 542 ft<sup>3</sup>/s (15.3 m<sup>3</sup>/s).

Flow recorded at the Souris River near the Westhope gage, through December 31, 2018 calendar year was 36,920 acre-feet (45,541 dam<sup>3</sup>). The calendar year's total flow is about 31% of the median flow for the past 88 years. The peak discharge for the period January 1 to December 31, 2018 was 416 ft<sup>3</sup>/s (11.8 m<sup>3</sup>/s) on July 9, which ranks 65<sup>th</sup> in 88 years of record.

Steve R. noted that the US Government shutdown for five weeks did not affect the USGS's ability to maintain their stream gaging network or their obligations to make flow measurements during that time.

c. US Fish and Wildlife Service (USFWS)

Frank Durbian presented a summary of refuge operations and flows for 2018. The total provisional inflow measured at Sherwood for the first five months of the year was 10,498 acre-ft (12,949 dam<sup>3</sup>). This was only 13% of the historic January-May inflow, which was 82,559 acre-ft (101,837 dam<sup>3</sup>) for the period 1938 through 2018. Total Upper Souris Refuge pool volume increased an estimated 7,532 acre-ft (9,291 dam<sup>3</sup>) during the first five months. The total provisional outflow measured at Foxholm on the south end of the Upper Souris Refuge for the first five months of 2018 was 2,515 acre-ft (3,102 dam<sup>3</sup>). This was only 4% of the historic record for the January-May outflow, which was 70,636 acre-ft (87,130 dam<sup>3</sup>) for the period 1938-2018. Lake Darling elevation increased 0.86 ft (0.26 m) from 1595.76 ft (486.39 m) on January 1<sup>st</sup> to 1596.12 ft (486.50 m) on May 31, 2018. The lake elevation on June 1<sup>st</sup> 2018 was 1596.22 ft (486.53 m).

Total yearly provisional flow at Sherwood was 26,705 acre-ft (32,941 dam<sup>3</sup>). This was 23% of the historic average annual inflow (based on calendar year), which is 117,014 acre-ft (144,337 dam<sup>3</sup>) for the period of record from 1938-2018. Total yearly provisional outflow measured at the Souris River near Foxholm on the south end of the Refuge was 12,638 acre-ft (15,589 dam<sup>3</sup>). This was 11% of the historic average annual outflow which is 119,659 acre-ft (147,488 dam<sup>3</sup>) for the period of 1938-2018. Total outflow was 7,983 acre-ft (9,847 dam<sup>3</sup>) less than total measured inflow. On December 31, 2018, Lake Darling was at an elevation of 1596.01 ft (486.46 m).

J. Clark Salyer National Wildlife Refugee - The total provisional flow measured from the Souris River to the Refuge from January 1 through May 31 was 17,722 acre-ft (21,860 dam<sup>3</sup>). This was only 17% of the historic January-May inflow, which was 106,999 acre-ft (131,983 dam<sup>3</sup>) for the period of 1938-2018. Total Pool volume on May 31 was 37,603 acre-ft (46,383 dam<sup>3</sup>). This was 12,806 acre-ft (15,796 dam<sup>3</sup>) above the January 1<sup>st</sup> volume. Approximately 4,459 acre-ft (5,500 dam<sup>3</sup>) was passed to Manitoba during the five-month period.

Total outflow measured at Westhope for the 2018 calendar year was 36,651 acre-ft (45,209 dam<sup>3</sup>). Total inflow at Bantry was estimated to be 17,315 ac-ft (21,358 dam<sup>3</sup>) more than the

total measured outflow on the Souris at Westhope. Outflow during the June 1 to October 31 period was 30,614 ac-ft (37,762 dam<sup>3</sup>), or 24,545 ac-ft (30,276 dam<sup>3</sup>) above the 6,069 ac-ft (7,486 dam<sup>3</sup>) required minimum.

The average daily flow at the Westhope gage fell below the minimum 20 ft<sup>3</sup>/s (0.57 m<sup>3</sup>/s) threshold several times from August 25<sup>th</sup> through September 6<sup>th</sup>. The lowest was 18.5 cfs (0.52 m<sup>3</sup>/s) and often represented only a few periods during the total 24-hour period with the majority of the time the flow was equal to or greater than 20 cfs. These low flow conditions were likely due to a combination of relatively low calculated flow and wind fetch. Frank D. mentioned that the USFWS will aim to maintain a 25 cfs flow at Westhope to prevent dropping below 20 cfs at the gage.

Frank D. also provide summaries of Refuge operations for 2018 and the proposed plans for 2019 along with monthly lake elevations for Lake Darling including pool elevations for the various impoundments in the Wildlife Refuge. No major operational changes are expected in the wildlife refuge 2019.

Ken Bottle thanked the USGS for being able to maintain their stream gaging schedule during the US Government shutdown.

Debbie McMechan appreciated the USFWS's ability to maintain a winter flow to reduce the stress on aquatic organisms.

#### d. Manitoba

Mark Lee presented a summary of the hydrologic conditions for the Souris River in Manitoba. Mark L. stated with drier conditions in the fall 2017 (?) and below normal snowfall, below normal runoff was expected in Manitoba. The spring melt started in early to mid-April. Flood peaks were well below normal and corresponded to 1-in-5-year low flow event, indicating that these peaks have been exceeded in 80% of the years on record. The Souris River at Wawanesa peaked at 23.7 m<sup>3</sup>/s (840 ft<sup>3</sup>/s) on April 21<sup>st</sup>, which is considered to be a 1-in-4-year low flow event; or exceeded in 75% of the years on record.

Summer/Fall 2018 – Mark L. pointed out that drought conditions in Manitoba persisted through the summer and fall of 2018. April and the first few weeks in May were extremely dry leading to growing concerns over drought, especially for the agricultural sector. Rain in late May and June improved conditions and generated runoff in most tributaries, more so for the west tributaries than the east tributaries. May and June rains caused the main stem of the Souris River to rise to normal flow range. At Wawanesa, the Souris River peaked at 31.1 m<sup>3</sup>/s (1,100 ft<sup>3</sup>/s) on June 15 and receded steadily afterwards. Dry conditions returned in July and August and the drought intensity peaked in September. The Manitoba portion of the basin saw normal to above normal precipitation in late-September and October, making harvest difficult in some areas. The fall rain generated little to no runoff. Farm water supplies decreased throughout summer and in October. Manitoba Agriculture reported most dugouts were 50-60% of capacity and needed snowfall and spring runoff to replenish supplies.

Winter 2018/2019 – Mark L. stated that the antecedent moisture conditions at freeze-up were normal to below normal for much of the basin including Manitoba's portion of the Souris River Basin. Snow accumulation in the Manitoba portion of the basin has been below normal to date. Flows entering Manitoba from releases from the J. Clark Salyer Wildlife Refuge have been approximately 0.3 m<sup>3</sup>/s (10 ft<sup>3</sup>/s) over the winter. The current flow at Wawanesa gage

is approximately 0.42 m<sup>3</sup>/s (15 ft<sup>3</sup>/s). The flow is within the “normal range” for this time of year. The Manitoba portion of the Souris River Basin is currently categorized as either abnormally dry or experiencing a moderate drought by the Canadian Drought Monitor.

Spring 2019 Outlook – Mark L. mentioned currently the risk of severe flooding in Manitoba along the Souris River and its tributaries is lower than normal. The Manitoba Hydrologic Forecasting and Coordination Branch will release their first 2019 conditions report at the end of February. The National Weather Service’s probabilistic forecast at the North Dakota-Manitoba border (Westhope, ND) shows the probability of spring flooding in 2019 is lower than the historical average. With drier conditions, drought water supply conditions in the Manitoba portion of the Souris River Basin will be monitored closely during the spring melt. For more information go to the Manitoba Drought Monitor website [www.manitoba.ca/drought](http://www.manitoba.ca/drought)

## 6. Compilation of Souris River Flows to December 31, 2018

Corey Hein presented the results of the natural flow computations by Environment and Climate Change Canada (ECCC). Corey H. outlined the results of natural flows determined by ECCC for the period ending December 31, 2018. The total diversion in the Souris Rivers basin was 26,150 dam<sup>3</sup> (21,200 acre-ft). Recorded flow at Sherwood was 32,731 dam<sup>3</sup> (26,535 acre-ft). The natural flow computed at Sherwood was 55,422 dam<sup>3</sup> (44,931 acre-ft). According to these computations, the US share at 40% was 22,170 dam<sup>3</sup> (17,973 acre-ft). The flow received by the US was 35,364 dam<sup>3</sup> (28,670 acre-ft), which constitutes a surplus delivery of 13,194 dam<sup>3</sup> (10,696 acre-ft).

The annual flow requirement/apportionment at Long Creek station has also been met with a surplus of 1,946 dam<sup>3</sup> (1,578 acre-ft).

Russell Boals asked why there was a release from Roughbark (related to box 19 of the spreadsheet).

Jeff Woodward mentioned he will look into the reason for the release and report back to the Board.

Russell B. asked if the 4 cfs criteria at the Sherwood site was invoked.

Steve Robinson mentioned the minimum flow at Sherwood was 5.8 cfs last year making it unnecessary to check if the flow would have occurred under natural conditions.

Nicole Armstrong thanked Russel B. for the reminder that the basin isn’t necessarily in a wet cycle as it has been in the past few years and that awareness needs to be maintained for criteria that apply during dry cycles.

**Motion:** Russell Boals motioned to accept the natural flow computations made by ECCC. Mark Lee seconded. Carried.

## 7. Update from the Hydrology Committee

Jeff Woodward and Ken Bottle reported on progress regarding the *Apportionment Procedures Manual* (APM) for the Souris River. Jeff W. noted some work still remains to be completed; and

is currently on hold until the Plan of Study (POS) is complete. This is because determinations made by the POS may have an effect on the APM.

Wayne Jenkinson, International Joint Commission (IJC), expressed his concern that POS might take a while, therefore, timing might be an issue if the COH decides to wait until the POS is done.

In light of the possibility of the timing issue, Nicole Armstrong noted that good progress has been made on the APM and that the majority of work is near final. Nicole A. then asked if it may be better to revisit the APM in a year or so when the POS has more solid footing regarding the decisions that are made, instead of waiting the entire time it takes for the POS to be officially complete.

Russell Boals pointed out that the current APM, that has been circulated and reviewed by the Board, and documents the procedures that are in use at present. The manual also identifies a number of questions and issues that need to be addressed by the POS. The decision to place the APM on hold is to provide the POS time to investigate and evaluate those concerns to address them for the APM, and not to await the POS's final decisions.

## 8. Water Quantity Monitoring

### a. Report on Canadian Water Quantity Monitoring Plans for 2019 with Highlights from 2018

Corey Hein reported that the water monitoring network for 2019 will remain the same as it was last year. Dwayne Ofukany, Water Survey Canada (WSC), is moving to Edmonton and Corey H. will be acting for him. The Evaporation Station at Handsworth, that was to be relocated, will stay where it is for now.

Garland Erbele asked where the evaporation station was located.

Corey Hein answered that the Handsworth Evaporation Station is near Moose Mountain Lake.

### b. Report on United States Water Quantity Monitoring Plans for 2019 with Highlights from 2018

Steve Robinson, USGS, reported the gauges on the US side are currently funded and operational except some freeze-up issues in winter. No major changes are expected in 2019. Repairs to gauging stations that were damaged during the 2011 Flood will be completed this summer. Construction on the new gage on the Broadway Bridge in Minot, ND, should be completed this summer as well.

## 9. Water Appropriations in the Souris River Basin during 2018

Jeff Woodward reported on the Saskatchewan appropriations as follows:

- One approval to operate was cancelled within the effective drainage area in 2018 with a total allocation of 23 dam<sup>3</sup> (18.6 acre-ft).
- There were nine approvals to operate that were issued within the effective drainage area in 2018 with a total allocation of 28 dam<sup>3</sup> (22.7 acre-ft) as follows:
  - One industrial (oil recovery) out of Rafferty for 395 dam<sup>3</sup> (320 acre-ft),
  - Two Industrial totaling 12 dam<sup>3</sup> (9.7 acre-ft),
  - Five domestic totaling 13 dam<sup>3</sup> (10.5 acre-ft), and

- One other for 3 dam<sup>3</sup> (2.4 acre-ft).
- 2 approvals decreased the allocated amount in 2018
  - One Upper Souris Irrigation Project decreased for 16 dam<sup>3</sup> (13 acre-ft),
  - One Industrial Project out of Rafferty decreased for 750 dam<sup>3</sup> (608 acre-ft).
- Net decrease of 340 dam<sup>3</sup> (275.6 acre-ft).
- Of these ten projects cancelled or approval in 2018, only the cancelled projects meet the criteria for the minor project diversions. All of the new projects were either too small or taking water directly out of Rafferty Reservoir.
- Of the projects with allocations reduced, only one, the irrigation project in the Upper Souris Basin with a reduction of 16 dam<sup>3</sup> (13 acre-ft), meets the criteria as a minor project.
- The minor project status reduction of 16 dam<sup>3</sup> (13 acre-ft) results in a net deletion of 39 dam<sup>3</sup> (32 acre-feet) in the Upper Souris Basin.
- There was no change in the Saskatchewan portion of Long Creek, the Lower Souris and Moose Mountain Creek

The following is a summary of allocations and deletions in 2018 for the Saskatchewan portion of the Basin:

Long Creek-Previous total was 803 dam<sup>3</sup> (651 ac-ft), no deletions. New total is 803 dam<sup>3</sup>.  
 Upper Souris- previous total was 1,430 dam<sup>3</sup>, 39 dam<sup>3</sup> deletions. New total is 1,391 dam<sup>3</sup>.  
 Lower Souris- previous total was 1,575 dam<sup>3</sup>, no deletions. New total is 1,575 dam<sup>3</sup>.  
 Moose Mountain Creek – previous total was 1,411 dam<sup>3</sup>, no deletions. New total is 1,411 dam<sup>3</sup>.

Garland Erbele requested a clarification on the industrial water permits out of Rafferty Reservoir.

Jeff W. answered that there was an approval to operate an industrial water permit for oil recovery for 395 dam<sup>3</sup> and that there was an approval for a decrease of 750 dam<sup>3</sup> for an unknown industrial use. These uses are not considered as Minor Diversion because they are appropriating water directly from Rafferty Reservoir.

Darin Schepp reported the following temporary water permits were issued in North Dakota in 2018:

- 29 permits for 2,495 ac-ft (3,077.6 dam<sup>3</sup>) from isolated sources,
- 5 permits for 11.3 ac-ft (13.9 dam<sup>3</sup>) from streams,
- 2 permits for 70 ac-ft (86.3 dam<sup>3</sup>) from streams with 90% non-consumptive use.

The total temporary water permits issued was for 2,576.3 ac-ft (3,177.9 dam<sup>3</sup>). There were no other types of permits issued in North Dakota in 2018.

#### 10. Update from the Flow Forecasting Liaison Committee (FFLC)

- a. It was requested to add Jeff Woodward and replace Colin Angus with Rod Bowden on the FFLC

**Motion:** Frank Durbian motioned to approve the membership list for the FFLC. Gregg Wiche seconded the motion. **Carried.**

b. Jeff Woodward provided an update on the FFLC. The following is a summary of the FFLC report.

Since the spring runoff in 2018 was a non-flood event, the FFLC has had minimal formal activity. The WSA was diligent in communicating routine operational changes at the Canadian Reservoirs, including the Grant Devine winter drawdown operation, to the committee. Keeping with the terms of the Canada-US Agreement on Water Supply and Flood Control in the Souris River Basin, two forecasts have been issued by the WSA thus far in 2019 (Feb 1 and Feb 15). These forecasts were developed in collaboration with the US National Weather Service (NWS) and circulated to the group via email. They are also available on [www.wsask.ca](http://www.wsask.ca).

With the expectation of below normal snowmelt runoff (well below the flood triggers) and no operational decisions to discuss, the FFLC did not host conference calls to discuss these forecasts. If there is any need to become more active in 2019 in response to high or low flow events, the FFLC co-chairs have circulated the contact list to ensure that it is up to date.

The committee has no ongoing work items but many members, including the co-chairs, are actively involved in Souris River POS tasks, including the forecasting tasks under Work Plan Item HH10. The forecasting and regulating agencies are also involved in the developed and/or have an interest in many of the modelling tools being developed under the study as some have the potential to be used operationally. Should some of the tasks identified under HH10 not get completed as part of the POS, the committee will look into seeing their completion outside of the study, possibly using International Watershed Initiative (IWI) funding.

The FFLC co-chairs and other committee members participated in the POS's forecasting workshop held in St Paul MN in July 2018. Presentations covered current forecasting systems and challenges in each jurisdiction, an overview of the role of the FFLC, and the role forecasting plays in the management of the system. Discussions on hydro-meteorology data availability, dissemination, and needs also took place. It was during this workshop that the subtasks under HH10 were refined. A tour of the NWS's North Central River Forecast Centre was also provided.

Declaration of 2019 Flood Event – Jeff W. mentioned based on current forecast (less than 1:10-year event) flows at the Sherwood crossing will be less than 50,000 dam<sup>3</sup> (40,535 acre-feet). Therefore, the apportionment will be 50/50 split between Canada and the United States.

**Motion:** Jeff Woodward motioned to declare 2019 a non-flood year and that the apportionment to be 50/50 split between Canada and United States. Gregg Wiche seconded the motion. **Carried.**

The Board agreed to hold a conference call to revise the declaration if flow conditions change.

11. Aquatic Invasive Species in Manitoba (Nicole Armstrong, Candace Parks by phone)

Nicole Armstrong introduced Candace Parks, Aquatic Invasive Species Specialist for Manitoba Sustainable Development, and the topic at hand.



Candace Parks started by providing a brief overview of Aquatic Invasive Species (AIS) and Zebra Mussel in Manitoba. Candace P. also talked about the legislative review, prevention programs, monitoring, early detection and response; control and management and AIS concerns for Manitoba. Some facts about AIS:

- Not native to Manitoba,
- Require an aquatic habitat,
- Could be introduced either intentionally or accidentally,
- Have competitive advantage over native species,
- Cause ecological, social, economic, and human health impacts, and
- Can be introduced and transported by various pathways.
- The number one transport of ANS is by watercraft.

A sample of zebra mussels was passed around for attendees to see what they actually look like. At early stage, zebra mussels are too small to be detected/seen with naked eyes.

Zebra mussels are prohibited in Manitoba - dead or alive. Zebra mussels are successful because there are no native predators or diseases to control their population. Furthermore, female zebra mussels produce up to one million eggs per year which significantly increases their survival rate. Candace P. also showed a timeline map that displayed the invasion of Zebra and Quagga mussels and their distribution / density across the US to May 2015. To date, the highest concentration of Zebra mussels is found in the eastern portion of the Unites States. Candace P. further explained the impacts of AIS which included:

- Increased maintenance costs for power generating stations, water treatment plants, water delivery infrastructure and communities,
- Damage to native fisheries,
- Change in aquatic ecosystem,
- Decreased tourism and recreational income,
- Decrease in waterfront property values and increased taxes,
- Long-lasting /generational impacts; and
- Reduced recreational potential of beaches.

Candace P. also provided an overview of the AIS Unit's Program with the following components:

**Legislation** – This includes both federal and provincial regulations.

Federally, Manitoba was delegated with fisheries management responsibilities similar to other inland provinces. Manitoba was also delegated under the federal AIS Regulation (2015) - the Fisheries Act. The Fisheries Act prohibits importation, possession, transportation and release of zebra mussels, quagga mussels and invasive carp in Canada.

Provincially, AIS regulation is under The Water Protection Act of Manitoba. AIS are listed in Schedule A which includes over 80 fish species, 24 invertebrates, 21 plants and 2 algae. The Law requires to clean, drain, dry, dispose and decontaminate if necessary. Furthermore, it is a legal requirement to stop watercraft at inspection stations. In addition, The Water Protection Act includes water-related equipment, aircraft, ORVs, water garden and aquarium trade and bait harvesters and dealers.

**Prevention** – the objective is to prevent and slow the spread of AIS from invaded water bodies within Manitoba to non-invaded water bodies.

Prevention includes educating the public, demonstrating to how to clean, drain, and dry watercraft and equipment properly, conduct watercraft inspections and performing decontaminations. There are strategic highway “pinch-points” to intercept traffic coming from invaded water bodies and high-volume boat launches. Candace P. also provided a summary of the 2018 watercraft inspection program at six different locations in the province. On a regional and national basis, there is an Interprovincial –Territorial Agreement coordinated in defence against AIS. Internationally, the engagement includes the IJC and IRRB.

**Monitoring** – The goal is to understand the profile of AIS in Manitoba water bodies.

The focus is on Zebra mussels that will target veliger and settled life stages. Candace P. noted 78 water bodies were sampled (un-invaded and higher risk) with the help of a range of agencies. Zebra mussels were found in the north basin of Lake Winnipeg.

**Early Detection/Containment** – Suspect adult Zebra mussels were found in Singush Lake. As a result, initiated a containment plan in 2017 that will now be entering its third consecutive year. The lake has been closed to day-use boaters; locals are allowed but their watercraft are restricted to only Singush Lake. No additional Zebra mussels have been discovered and the lake will open again if none are found this year.

**Management and Control** – Candace P. mentioned there is an Inter-departmental Committee that examines pesticide registration options for Manitoba. There is also an Inter-governmental Committee working towards engaging Health Canada’s Pest Management Regulatory Agency (PMRA) on possible management options for Zebra mussels. PMRA approves the control options.

AIS Concern for Manitoba – Candace P. pointed out invasive carp is a major threat. Silver, Bighead and Grass carp have been detected in the Mississippi River Basin in Minnesota. Reproducing Silver carp have been found in the James River in North Dakota in 2013. The pathways of introduction of AIS include illegal live bait releases (bait buckets) and flooding.

David Pattyson asked about the implications of AIS on water quality.

Nicole Armstrong responded that Sustainable Development monitors water quality as well in Manitoba. In Lake Winnipeg, the department has observed a possible correlation between the clarity of the lake water and Zebra mussel population. Candace P. noted that in 2014, about a year after Zebra mussels were first discovered in Lake Winnipeg, the secchi depth of Gimli Harbor was at 0.3 m (1.0 ft), in the fall of 2016 the secchi depth increased to 1.8 m (5.9 ft). Changes cannot be directly attributed to Zebra mussels as there are other factors such as inflow from the Red River that influence turbidity in Lake Winnipeg.

Lana Pollack noted from experience on the Great Lakes that you cannot overestimate the cost of this invasive species and asked if anyone has looked at the link between Quaga and Zebra mussels and algal blooms, noting that a dramatic link has been established between the two, first seen as a benefit in the early stages that quickly became undesirable.

Nicole Armstrong mentioned that Lake Winnipeg anglers have noted an increase in algal blooms attached to fisher's nets and that anecdotally this may be related to increased water clarity from Zebra mussels.

Mark Gabriel asked if there are other limiting factors besides Calcium. So far, Calcium is the only limiting factor identified for the establishment of Zebra mussels, though soft surfaces seem to delay the expansion of their establishment.

Frank Durbian asked if there were any estimates of how quickly Zebra mussels could colonize in favorable conditions.

Candace P. mentioned that the time of establishment hasn't been determined.

## 12. Update from the Aquatic Ecosystem Health Committee (AEHC)

Heather Husband and Dorothy Lindeman reported on the activities of AEHC in 2018. The Committee had its conference call on January 17 to discuss data, and discussed the path forward for the next report. However, the work was suspended for development of an IWI project proposal for dissolved oxygen (DO) monitoring. The project will install continuous DO/temperature monitoring sensors at three sites along the Souris/Mouse River. These sites (Sherwood, Minot, and Westhope) will be co-located with USGS gaging stations to provide discharge information for later analysis. The sites were selected to represent water leaving Saskatchewan, water modified by Lake Darling, and water entering Manitoba. The purpose of the project is to analyze DO data for diurnal and seasonal variations and to determine possible correlations to flow.

AEHC completed its first draft of IWI proposal on April 6; and had subsequent meetings to discuss the water quality index results, water quality objectives, reporting changes, and Dorothy L.'s work on the Westhope data, historic to present. Furthermore, the Committee also discussed the AEHC portion of the draft ISRB work plan, current terms of reference, and DO monitoring IWI proposal. It was also determined that the Water Quality portion of the Annual Report would be distributed to the entire AEHC for comments and edits before sending to the ISRB secretary. Discussion continued on how to proceed with the Water Quality Objectives review. After receiving final comments, AEHC submitted the IWI proposal to IJC on October 31<sup>st</sup>.

On December 3<sup>rd</sup>, the IJC recommended the proposal for funding, with a few minor modifications. These were mostly regarding improved communication efforts between the ISRB and the IJC for progress reports and ways to get information on the project out to the public.

During December, a large portion of the AEHC was also recruited to assist the ISRSB with the development of performance indicators for water quality that will go into the model to create alternatives for the POS. While the process slowed during the US government shutdown, the group is committed to having a product by the May deadline. While a full water quality trends analysis of the entire basin will not be possible given the time constraint, data have been compiled on a limited number of parameters for Sherwood, Minot, and Westhope sites and will be run through the USGS's QW Trend model to look for possible relationships between the parameter concentration and flow, season, and time. Calls on this effort are occurring every two weeks.

Heather H. noted while it was recognized that there was not sufficient time or resources to develop basin-wide trend analysis by the deadline of the ISRSB Study, it was determined to be a necessary step in the process of looking at water quality objectives as well as general analysis of

water quality in the basin by the AEHC. To support this effort, the AEHC will be submitting another grant proposal during the next IWI cycle.

Nicole Armstrong asked about considerations being made towards more sensors being added to the sensor array.

Heather H. explained to the Board that originally, they had planned to measure DO and temperature, and that the AEHC discussed the potential for additional water quality sensors. She explained that the IWI seemed agreeable to the possibility of capturing more data. However, the partial government shutdown had complicated the ability to gather estimates of the costs and effort that would entail.

Wayne Jenkinson, IJC, mentioned some discussion is needed if more sensors are required because while the IWI recognizes the added value that can be obtained at a low cost, the individual sensor needs to be found beneficial to the ultimate goal of the IWI project.

Communications was also discussed highlighting the need to engage/involve tribal councils and First Nations People in the work to be carried out.

There were discussions about the exceedances and particularly about Atrazine which was detected in 2018.

### 13. Compliance with Water Quality Objectives for 2018

Heather H. presented a summary of the water quality monitoring program for the Sherwood site; and Dorothy L. presented data for the Westhope site:

The USGS collected eight regular water quality samples from the Souris River near Sherwood in 2018. However, one of the samples was lost in transit to the lab, so seven samples are used in the calculations. In addition, a joint sampling event with ECCC occurred at the Sherwood site in September.

Heather H. stated it was interesting to note that a large portion of the parameters had their lowest concentrations for the April 25 samples and the highest concentrations for the September or October samples. Also, many of those below with exceedances to Water Quality Objectives had lower minimum and maximum values than last year and previous years, but higher median values. Only six parameters overall exceeded Water Quality Objectives in 2018.

#### Sherwood-USGS/ND Department of Health (NDDOH)

- **Total Phosphorus** exceeded the Water Quality Objective of 0.10 mg/L for all samples in 2018. The Total Phosphorus concentrations at Sherwood ranged from 0.130 mg/L on January 4 to 0.390 mg/L on September 5.
- **Sodium** exceeded the Water Quality Objective of 100 mg/L for 6 of 7 samples in 2018. The concentrations ranged from 59.7 mg/L on April 25 to 254 mg/L on October 2.
- **Sulfate** exceeded the Water Quality Objective of 450 mg/L on 2 occasions in 2018. The minimum concentration was 160 mg/L on April 25 and the maximum concentration was 556 mg/L on September 5.

- **Total Dissolved Solids** exceeded the Water Quality Objective of 1000 mg/L on 2 occasions in 2018. The highest concentration was 1260 mg/L on September 5, and the lowest concentration was 380 mg/L on April 25.
- **Total Iron** exceeded the Water Quality Objective of 300 µg/L in 6 of 7 samples in 2018. Concentrations ranged from a minimum of 168 µg/L on January 4 to a maximum of 2120 µg/L on June 12.
- **pH** exceeded the upper Water Quality Objective of 8.5 pH units twice in 2018, but only just over the objective. Maximum values of 8.6 occurred on September 5 and October 2. The minimum value of 7.60 occurred April 25.
- **Dissolved Oxygen** concentrations were above the minimum 5 mg/L Water Quality Objective in all samples.
- **E-coli** values for 2018 ranged from less than 97 colony forming units/100 mL on September 5 to 230 colony forming units/100 mL on May 15. There were no exceedances of the single-sample objective of 400 colonies /100 ml. The geomean for April to September (5 months) was 168.46 CFU/100 mL, which is slightly above the seasonal geomean objective of 126 CFU/100 mL.
- **Organics**
  - Pesticide samples were collected six times by the ND Department of Agriculture on the Souris River at Sherwood May through October 2018. Atrazine was detected in all samples, but with reportable values in only four of six samples. The concentrations ranged in value from 0.0079 µg/L to 0.043 µg/L. 2,4-D was also detected in all samples, with reportable values in five of the six samples. Concentrations ranged from 0.009 µg/L to 0.27 µg/L. Bromoxynil and MCPA, detected in some samples (see Table 1). All detections were well below Water Quality Objectives.
  - Other pesticide detections, for parameters without Water Quality Objectives, were also noted. A few just had detections, but not at concentrations that were above reportable limits. These included the list below, with parenthesis to indicate their uses:
    - Diuron (unwanted vegetation, non-crops, forage crops)
    - Fluroxypyr (multi use herbicide)
    - Imazethapyr (soybeans)
    - Propiconazole (fungicide)
    - Saflufenacil (soybeans and corn)
    - Pyrasulfotole (cereal crops)
  - These pesticides were detected at reportable values, though still well below any concentration of concern:
    - Bentazon – six detections, used for beans and peas with specific instructions to not apply directly to water or wetlands.
    - Tebuconazole – four detections, used as a fungicide

- Tebuthiuron – five detections, used on non-cropland, right of ways, industrial sites, and to kill woody vegetation
- In addition to the Atrazine, several of the metabolites of Atrazine were also detected. It is important to monitor these as they can persist for longer periods in water. These included Deethyl Atrazine, Deisopropyl Atrazine, and Hydroxy Atrazine.

#### Westhope –ECCC

ECCC collected eight (8) regular water quality samples from the Souris River near Westhope in 2018. A joint sampling event with the USGS occurred at the Sherwood site in September.

- **Total Phosphorus** exceeded the Water Quality Objective of 0.10 mg/L for all samples in 2018. The Total Phosphorus values at Westhope ranged from 1.070 mg/L on April 10 to 0.251 mg/L on June 8.
- **Sodium** exceeded the Water Quality Objective of 100 mg/L for all samples in 2018. The results ranged from 115 mg/L on June 8 to 693 mg/L on February 20.
- **Sulphate** exceeded the Water Quality Objective of 450 mg/L on 4 occasions in 2018. The minimum value was 326 mg/L on April 12 and the maximum concentration was 1880 mg/L on February 20.
- **Total Dissolved Solids** exceeded the Water Quality Objective of 1000 mg/L four times in 2018. The highest value, 3638 mg/L occurred on January 10, and the lowest value was 783 mg/L on July 5.
- **Total Iron** exceeded the Water Quality Objective of 300 µg/L in all 8 samples in 2018. Concentrations ranged from a minimum of 620 mg/L on May 1 to a maximum of 5490 µg/L on January 10.
- **pH** exceeded the upper Water Quality Objective of 8.5 pH units three times in 2018. The maximum value of 9.06 occurred on September 5. The minimum value of 7.60 occurred twice, on January 10 and April 10. There were no exceedances of the lower objective of pH 6.5.
- **Dissolved Oxygen** concentrations were below the minimum 5 mg/L Water Quality Objective in two samples, January 10 and February 20, 2018.
- **Fecal coliform** values for 2018 ranged from less than 2 on April 10, to 190 on September 5. The objective of 200 colonies/100 mL in one sample was not exceeded.
- **E-coli** values for 2018 ranged from less than 2 on April 10 to 140 colonies per 100 mL on September 5. There were no exceedances of the single-sample objective of 400 colonies /100 ml. The geomean for April to September (5 months) was 19.99. This was well below the geomean objective of 126.
- **Chloride** exceeded the Water Quality Objective of 100 mg/L twice in 2018, on January 10 and February 20. The maximum value of 163 mg/L occurred on February 20<sup>th</sup>, and the minimum of 30.1 on June 8.
- **Total Boron** exceeded the Water Quality Objective of 0.50 mg/L once in 2018, with a maximum value of 532 µg/L on February 20. The minimum value of 146 occurred on May 1.

- **Organics**

- Pesticide samples were collected on the Souris River at Westhope in the April through September sampling events for 2018. 2,4-D and Atrazine were detected in all samples. Bromoxynil, Dicamba, MCPA, and Picloram were detected in some samples.
- No pesticide variables exceeded their objectives.

Russell Boals asked how Atrazine is transported and nobody knew the response.

Lana Pollack mentioned that Atrazine may be out of the Board's scope and inquired if there is a cross-border issue. This may be a case where a red flag needs to be waved and international agencies be involved to determine a more concise cause and effect, especially if cross-border movement is involved.

There was discussion about the monitoring of neonicotinoids, if there was existing monitoring, and if there should be.

Nicole Armstrong mentioned Manitoba is doing some monitoring and can share some of the data with the Board.

Garland Erbele suggested the ND Department of Agriculture ND Department of Agriculture who monitors some 86 different parameters, may have information to share.

**Action:** AEHC to put an information package together for the next meeting regarding information on Atrazine

**Action:** AEHC to put an information package together for the next meeting on neonicotinoids.

Garland Erbele mentioned that the NDSWC has developed remote monitoring stations, initially for water levels, but they have the ability to use various types of sensors relative to water quality monitoring. The systems run off of solar cells and automatically downloads data to the SWC servers. Garland E. mentioned that stations could be made available if it is determined that additional monitoring stations would provide value. They have the potential to do a large amount of monitoring at a cheap cost.

#### 14. Water Quality Monitoring Plan

Heather Husband noted that there are no major anticipated changes to the Water Quality Monitoring Plan for 2019 except that three more stations will be added. Dorothy Lindeman added that the Water Quality Monitoring for the Westhope site will remain the same and also mentioned that they dispatched two Hobo Meters, monitoring DO and temperature, one at the Westhope site and one 10 km North of the Sherwood site.

#### 15. Overview and Update on Tile Drainage in Manitoba (M.D. Timmerman, MB Agriculture)

Mitchell Timmerman, Manitoba Agriculture, provided an update on tile drainage in Manitoba. The purpose of tile drainage is to remove excess water from the soil profile. This is accomplished by placing perforated pipes in the ground, typically 24 inches to 36 inches deep in the ground. A tile drainage system typically includes a number of smaller diameter lateral pipes that empty into a larger main pipe. The water in the pipes flows by gravity to the edge of an agricultural field where it is released via gravity or lift station to the surface drainage system

(ditch or municipal drain). Mitchell T. further explained what tile drainage accomplishes, what it entails; and how it is installed and operated.

David Hay, Manitoba Sustainable Development (MSD), provided a brief overview of the Water Rights Act and Tile Drainage in Manitoba. The Water Rights Act states that no person shall control water or construct, establish or maintain any water control works unless he or she has a valid and subsisting licence to do so. The Water Rights Act is administered by MSD. Water control works are defined as any dyke, dam, surface or sub-surface drain, improved natural waterway, canal, tunnel, bridge, culvert, borehole or contrivance for carrying or conducting water, that temporarily or permanently alters or may alter the volume or direction of flow, the level or location of water. David H. noted that any of these activities triggers the requirement of a Water Rights Licence to construct control works. David H. further explained the licencing process for tile drainage projects in Manitoba. Currently, there are proposed changes to the Water Rights Act dealing with tile drainage.

The Board then had a discussion on the implications and regulation of tile drainage determining that it is a topic requiring more attention.

## 16. ISRB Communication

Russell Boals provided the final draft of the Terms of Reference (ToR) of the Communications and Outreach Committee. The ToR specifies roles and responsibilities, accountability and authority; membership, frequency of meetings and duration of mandate of the Communication and Outreach Committee. The current members are:

- Russell Boals
- David Pattyson – Upper Souris Watershed Association
- Wanda McFadyen – Assiniboine River Basin Initiative
- Debbie McMechan - Reeve, Manitoba
- Shelly Weppler – Ward County Commissioner
- Darin Schepp – North Dakota State Water Commission

The Co-chairs, one from the United States and one from Canada, will be selected by the members and serve for a two-year term. The Committee will exist as an on-going basis until its ToR are modified or replaced by ISRB.

Mark Gabriel mentioned the plan for the Communication Committee to develop a Communications Infographic with possible IWI funding and asked if that was still desired and if so, where the Committee was in the timeline for that.

Russell Boals answered that it was still intended for the Committee to apply for funding and produce an infographic. However, at this time the focus has been in producing fact sheets for the Study Board.

Ken Bottle expressed his desire to seek help from the Communications and Outreach Committee in the preparation of an IWI project proposal by the COH. The Communication Committee will package the COH proposal for submission to the IJC for funding. The Communication Committee will actively participate in the development of the new IJC website, as well.

**Action:** Secretaries to distribute finalized Communications and Outreach Committee ToRs to the



Board when distributing the meeting minutes

**Action:** The Communications and Outreach Committee will package the COH IWI proposal for submission the IJC funding

## 17. International Souris River Study Board Update (ISRSB)

### a. Update from Study Managers, Co-Chairs and Board Members

Jeff Woodward and Rebecca Seal-Soileau presented the study purpose and objectives; and the status of the POS. The ISRSB is composed of 8 members with 4 members each from Canada and the United States. In addition, the ISRSB also has a Public Advisory Group (PAG), as well as the Resource and Agency Advisory Group (RAAG), Independent Review Group (IRG), and Climate Advisory Group (CAG). There are provisions for observer status and Independent Parties, as well. Jeff W. explained progress to date:

- ISRSB Work Plan updated and submitted to IJC in October, 2018 and briefed at appearances in Ottawa,
- IJC staff have worked closely with ISRSB members and PAG to provide up to date information regarding ISRSB activities,
- Held Forecasting Meeting in July 2018,
- H&H Face to Face meeting in November 2018,
- WSA Letter of Contract for Consultants for LIDAR Surveys,
- Meteorological Network (HydroMet) assessment completed, and
- H&H modeling well underway.

Public Engagement - The ISRSB held its public meetings on February 20, 2018 in Minot, ND, June 25, 2018 in Estevan, SK, and February 19, 2019 in Brandon, MB. Webinars and workshops held by the PAG and RAAG are as shown below:

#### PAG/RAAG Webinars:

- March 4, 2019 - Study update with alternatives background briefing and input on useable data formats
- January 28, 2019: Study Update, Information and planning for March Workshops

#### PAG/RAAG Workshops:

- June 25, 2018, Estevan - Kick off meeting and introduction to study, initial input on impacts of water levels and flows.
- March 18-20, 2019 Minot, ND - Evaluate performance indicators developed from questionnaire and RAAG input, provide input to alternatives.
- July 22-24, 2019 - View initial results

Rebecca S. mentioned there were 15 public participants at the Brandon meeting. Approximately 10 questions and comments were received. A number of mitigation measures were discussed during the public meeting including the effectiveness of the reservoirs, and if any changes that may arise from the new plan will be monitored for reservoir efficiency as

well. Jeff W. mentioned that it may be pertinent to do a review of the reference for the Board and the initial environmental assessments to see if, and make sure, items of interest are being addressed. The first steps would be to review the 1989 Agreement to see what was envisioned at the time. The ISRSB was planning on seeking guidance from the ISRB on this matter.

Russell Boals noted that when the Canadian Reservoirs were constructed, because they were impacting the flows of an international stream in Canada, there was a requirement for them to be licensed under the *International Rivers Improvement Act*. This license has a number of conditions in regards to the follow up on the mitigation measures. Water quality monitoring included in the Bi-lateral water quality monitoring of the Agreement is directly related to that requirement.

Girma Sahlu mentioned that he has a copy of the International Rivers Improvement License if it is required.

**Indigenous Engagement** – Study Board is working with PAG and IJC to contact First Nations, Metis and Tribes who may have interest in aspects of work plan. In the US, the Study Board is working with North Dakota Indian Affairs Commission staff to seek guidance on Tribal interest and consultation process. Another meeting to discuss Indigenous Engagement is being scheduled in March. Gregg Wiche mentioned there are five tribes in North Dakota that will be engaged. Wayne Jenkinson stated on the Canadian side, a consultant was hired to work with the IJC. Three meetings were held with the Cowessess, Swan Lake, and Carry-the-Kettle First Nations. More engagement is expected in the summer.

**Advisory Groups** - The ISRSB currently has three advisory groups and an Independent Review Group. The PAG is active and growing. The PAG co-chairs held media interviews in Canada and the US to promote questionnaire. The RAAG was established to act as conduit for input on interests to the study. The RAAG solicited feedback from agencies through request for information to be used in models to evaluate alternatives. The CAG will be established soon. Currently, the CAG is in the process of developing draft Terms of Reference (ToR) and soliciting membership recommendations. CAG will help identify future climate states such as precipitation, temperature, and evaporation that will be used to estimate future hydrologic conditions.

**Work Plan** – The final work plan was delivered to the IJC in October. Improvements to the work plan were made based on comments received online from the Internal Review Group, and from the ISRSB public meetings in Minot and Estevan. Operating Rules Review (OR1) ISRB comments were received and incorporated. The majority of group tasks on Hydrology/Hydraulics and the Plan Formulation tasks (PF1-PF4) are all underway.

**Next Steps** – Continue with planned activities to engage Canadian First Nations/Metis and US tribes. Hold a PAG and RAAG workshop in Minot, March 18-20, 2019. Bi-monthly Hydrology and Hydraulics calls will continue to discuss technical issues and resolve any modelling issues. There will be a Plan Formulation/Alternatives Development Workshop in Saskatoon, in May 2019. Adjustments to the work plan will be made based on public input, independent review and if there was any effect from the government shutdown -- Evaluating potential need for time and budget extension. The Study Board will continue its engagement with the public.

b. Update from the 1989 Agreement Core Committee

Jeff Woodward provided a status report on the work of the Core Committee (review of the Operating Principles of the Reservoirs, contained in Annex A). Comments that were received from the Board have been incorporated. The next step is to finish the plain language review and have it approved by the Board. Some discussion is needed at the Study Board and Souris Board level concerning the necessary steps for the language approval. The next steps include the finalization of the review by the Study Board and submission to the ISRB for comments. Liz Nelson is in charge of the Annex A revisions at this time, and is expected to have the report ready for discussion at the June 2019 Board meeting.

**Action:** Liz Nelson to provide a status report and provide an update on the revisions to Annex A - 1989 Agreement prior to the June 2019 meeting.

18. Update on Water Management Projects

a. Update on the Northwest Area Water Supply (NAWS)

Darin Schepp reported that there were no major changes from the last update except some progress on the planning and construction stages and intake modifications at the source (Lake Sakakawea).

b. Canadian Dam Safety

Jeff Woodward provided an update on the revised Probable Maximum Flood (PMF) and its implications on the development of reservoir operating plans for Rafferty and Grant Devine Dams. The 2011 flood in the Souris River Basin resulted from summer rainfall events that followed already wet conditions from spring freshet and generally wet conditions in 2010. The 2011 flood was different than the 1986 PMF design flood. Jeff W. pointed out that the dominant runoff is in the spring from snowmelt with a few years of relatively minor summer flow. The 2011 flood resulted from summer rains and as a result caused the WSA to re-visit the design and operating principles of both Rafferty and Grant Devine reservoirs. The original principles were based on hydrological analysis from 1988 and dealt mainly with spring runoff from winter snow accumulation. This was the basis for the “Annex A Operating Plan for Rafferty, Alameda [now Grant Devine], Boundary and Lake Darling” of the 1989 Souris River Agreement between Canada and the United States.

**Review of PMF – Hatch 2014** - Jeff W. explained the review of the PMF (Hatch 2014) for Rafferty and Grant Devine dams. For Rafferty, the PMF 1988 design was 800 m<sup>3</sup>/s, and the PMF 2014 revised design was 1,380 m<sup>3</sup>/s. Similarly, the PMF 1988 design for Grant Devine Dam was 1,189 m<sup>3</sup>/s, and the PMF 2014 revised design was 1,760 m<sup>3</sup>/s. The first issue is the new PMFs are larger than the original designs.

**Inflow Design Flows (IDF) - Hatch 2016** – Jeff W. also pointed out both Rafferty and Grant Devine were classified as high consequence dams allowing the design flow to be one third between 1:1000 year-flood and the PMF. The IDFs would be 833 m<sup>3</sup>/s for Rafferty, and 862 m<sup>3</sup>/s for Grant Devine, respectively. The second issue is the new PMF and IDFs are summer events and not spring snowmelt events. To pass the IDF, reservoirs need to be drawn down enough by June 1<sup>st</sup>, considering the allowable flows out of the reservoirs. The constraints are

that the Rafferty spillway is undersized and can only pass 495 m<sup>3</sup>/s at Maximum Allowable Flood Level (MAFL). Furthermore, flows out of the Grant Devine Reservoir are restricted to 300 m<sup>3</sup>/s by a downstream railway embankment. The proposed solution is to drawdown the reservoirs to Inflow Design Flow Service Levels to create storage to pass the summer IDF.

Jeff W. also mentioned the changes to the operating principles to account for a significant summer rain event, and the impact on the basin have become part of the Souris River POS and will be studied as part of the investigation of alternatives. The POS undertaken by the IJC is designed to improve the agreement between Canada and the United States and the cooperative operations of the reservoirs in the Souris Basin.

***Path Forward*** – Jeff W. stated the POS will look at the implications of the proposed new operating plans as one of the modelled alternatives. This should allow an assessment of the impact to the basin and an analysis of the implications to the agreement. A special note is that Annex A is specific to the spring operations and may require modification. The WSA will complete Reservoir Operating Plans that will be jointly reviewed by the US and Canada. The intended course of investigation is for the POS to analyze how the system could be operated to better manage the re-occurrence of a summer flood. This will result in modifications to the operating plan which will be documented in a reservoir operating manual that is required as part of the 1989 Agreement.

c. Other planned developments

Garland Erbele mentioned about the proposed Red River Valley Water Supply Project (RRVWS) in the Red River Basin that brings water to eastern North Dakota from Lake Sakakawea. The project is going through its early design stages. Garrison Diversion Conservation District (GDCCD) is the lead agency. Manitoba has expressed concerns about the potential transfer of non-native biota from the Missouri River Basin to the Hudson Bay Basin. Similar issues to the NAWA Project.

19. International Watershed Initiative Projects

Wayne Jenkinson mentioned the DO issue is still outstanding. The AEHC is assisting the Study Board regarding water quality in the Souris River Basin. Some water quality work was done for the Red and Assiniboine River basin (SPARROW Model) five years ago. The IJC website training is coming up. The IJC semi-annual meeting has been delayed, commissioners have not been named in Canada and the United States. No dates have been set. Wayne J. also talked about the IJC Climate Change Framework that was introduced at the Board meeting in Estevan; and how climate change could affect the Board to deliver its mandate. The St. Croix and Rainy - Lake of the Woods boards have gone through the process of incorporating the Climate Change Framework. The Souris Board could wait until the POS is complete. The work by the Rainy - Lake of the Woods Board might be useful to the Souris Board. The engagement of First Nations was noted. Furthermore, the IRRB and ISRB could exchange and share information. There were questions regarding the status of ISRB becoming an 'IWI Board'; and implications of the POS work on the mandate of ISRB.

20. Work Plan – Nicole Armstrong shared the latest version of the work plan for 2019 with the Board. There were not many changes since the last version. The work plan is based on five expected results as shown below:

1. Oversee the implementation of compliance with the 2000 Interim Measures for Apportionment of the Souris River as modified,
2. Perform an oversight function for flood protection,
3. Assist the IJC with the Joint Water Quality Monitoring Program and report on aquatic ecosystem health issues in the watershed,
4. Provide opportunities for the public to be involved in the work of the Board, and
5. Maintain an awareness of existing and proposed developments, and carry out other studies or activities the IJC may request.

The Board will revisit the work plan in 2020.

#### 21. Other Business

There was some discussion about future collaborative work with the Assiniboine River Basin Initiative (ARBI).

#### 22. Next Meeting

The next public session and face-to-face meeting is scheduled to be held on June 25, 2019, (Public); and June 26, 2018 (Board) in Bottineau, ND.

**Action:** NDSWC will coordinate the hosting of the next face-to-face meeting.

#### 23. Adjournment

The meeting was adjourned at 3:50 p.m. on February 21, 2019 (Brandon, MB).

**International Souris River Board**  
**ACTION ITEMS – progress updated February 21, 2019**

<b>PERSONS OR COMMITTEE RESPONSIBLE</b>	<b>TOPIC</b>	<b>MINUTE</b>	<b>ACTION</b>	<b>STATUS As of February 21, 2019</b>
Joel Galloway	Discrepancies of results of water quality sampling	February 24, 2016	Joel Galloway will investigate the reason for the discrepancies of the results of the joint water quality sampling between Canada and the USGS	Ongoing
Pascal Badiou	DU Nutrient Project	February 24, 2016	Pascal Badiou to present the results of the DU Nutrient Project to the Board	Ongoing
Mark Gabriel	IJC - Review Water Quality Objectives	February 24, 2016	Mark Gabriel will present the results from his review of the Souris River Water Quality Objectives	Completed
ISRB Secretaries	IJC Climate Change Framework	February 23, 2017	Secretaries to add to the agenda for discussion at the June 2017 Board meeting	Completed
ISRB Secretaries	North Dakota Water Quality Project	February 23, 2017	Secretaries to add to the agenda for discussion at the June 2017 Board meeting	Completed
Souris River Study Committee	Plan of Study (POS) report	February 23, 2017	The Souris River Basin Study Committee to present its draft report at the June 2017 Board meeting	Completed
Public Working Committee	Public meetings	February 23, 2017	David Pattyson, Shelly Wepler, Debbie McMechan, and Wanda McFadyen to work on public outreach. Co-Chairs will send an email to the IJC about the creation of the Committee	Closed
Mark Lee	Whitewater Lake EA	June 27, 2017	Mark Lee to send an electronic copy of the EA for the Whitewater Lake Project in Manitoba	Ongoing
Nicole Armstrong	Picloram Exceedances	June 27, 2017	Nicole Armstrong to check and report back the Picloram Exceedances in May, June, and July	Ongoing
John Fahlman	Water Management Projects	June 27, 2017	John Fahlman to send a 1-page summary about capital projects in Saskatchewan to the secretaries	Ongoing
Russell Boals	Terms of Reference for the Communications Committee	June 27, 2017	Russell Boals will prepare the Terms of Reference (TOR) for the Communications Committee	Completed
ND SWC	Winter 2018 Board Meeting	June 27, 2017	ND SWC will coordinate and host the winter 2018 Board meeting in Bismarck in North Dakota	Completed
Board Secretaries	Apportionment Procedures Manual	June 26, 2018	Board Secretaries to distribute the Apportionment Procedures Manual to Board members with deadline for comments.	Completed
Curtis Hallborg	FFLC membership update	June 26, 2018	Curtis Hallborg to provide a new membership list of the FFLC to the Secretaries.	Completed
COH	Apply for an IWI funding for the Procedures Manual	June 26, 2018	The COH will consider applying for IWI funding for the Procedures Manual	Ongoing

**International Souris River Board**  
**ACTION ITEMS – progress updated February 21, 2019**

<b>PERSONS OR COMMITTEE RESPONSIBLE</b>	<b>TOPIC</b>	<b>MINUTE</b>	<b>ACTION</b>	<b>STATUS As of February 21, 2019</b>
COH	Apply for an IWI funding for the Communications Infographics	June 26, 2018	The COH has been requested to apply for IWI funding for Communications Infographics	Ongoing
Board Secretaries	Souris River Study Board Update Presentation	June 26, 2018	Secretaries will distribute the Souris River Study Board update to the Board	Closed - Discussed February 21, 2019 and replaced with item for June 2019 board meeting (update from Study Board on meeting agenda)
1989 Core Committee	Draft of Revised Annex “A”	June 26, 2018	Core Committee will resubmit the draft of the revised Annex “A” of the 1989 Souris River International Agreement to the Board with a deadline of July 31, 2018.	Closed - Discussed February 21, 2019 and replaced with new action item
Board Secretaries	Dam Safety	June 26, 2018	Secretaries to reserve a place for an update on Canadian Dam Safety Work on the following Board agendas.	Completed
Communication Committee	Indigenous participation	June 26, 2018	Amend Role and Responsibility “a” to include Indigenous People to increase awareness.	Completed
All Committees	Work Plan	June 26, 2018	All committees to review the draft ISRB Work Plan, update their current progress prior to the IJC Appearance in October.	Completed
Manitoba Sustainable Development (MSD)	Hosting next meeting	June 26, 2018	Manitoba Sustainable Development will coordinate hosting the next Board meeting (February 21-22, 2019) in Brandon.	Completed
AEHC	Additional Water Quality monitoring including herbicides	February 21, 2019	AEHC will put information packages together for the next meeting regarding Atrazine and neonicotinoids	Ongoing
Communication Committee	Support COH’s IWI Project Proposal	February 21, 2019	The Communication and Outreach Committee will package the COH IWI proposal for submission for IJC funding	Ongoing
Lez Nelson	Updated Annex “A”	February 21, 2019	Les Nelson to provide a status Report and an update on the revisions to Annex “A” – 1989 Agreement	Ongoing
Board Secretaries	Terms of Reference for Communications and Outreach Committee	February 21, 2019	Secretaries to distribute finalized Communication and Outreach Committee ToR’s to the Board when distributing the meeting minutes	Ongoing
ND SWC	Next Board meeting	February 21, 2019	ND SWC will coordinate and host the next Public and Board meetings in Bottineau, ND	Ongoing

Note: When two or more meetings are referenced to an item; that indicates a carry-forward of an action item from previous meetings.