

International  
Souris River  
Study Board  
Progress  
Report

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## Executive Summary

The International Joint Commission (IJC) created the International Souris River Study Board (Study Board) in 2017 in response to the US and Canadian governments' reference to evaluate and make recommendations regarding the operating plan contained in Annex A and B of the 1989 International Agreement for Water Supply and Flood Control in the Souris River Basin. The Study Board submitted a Work Plan to the IJC in 2017 that addresses each element of the Governments reference.

The Study Board has established the **Resource and Agency Advisory Group (RAAG)** and is connecting with **Indigenous Communities** to build relationships and obtain input from those living and working in the Souris River Basin. The IJC, working with the Study Board, has also established a **Public Advisory Group (PAG)** as a means of engaging the public during the course of the study.

A successful Public Advisory workshop was held on March 18-19, 2019 in Minot, ND to discuss how the seven Performance Indicators (flood control, water supply, environmental, erosion, agriculture, cultural, and recreation) capture the interests within the Souris River Basin. Of the Performance Indicator themes the overwhelming responses to the question "what do you care most in the Souris Basin?" were flood control, environmental, and recreation. Public participation from Saskatchewan and Manitoba was limited at the Public Advisory Group workshop in Minot, but another workshop will be held in Estevan, SK on April 29, 2019.

A Resource and Agency Advisory Group workshop held on March 19-20, 2019 in Minot, ND resulted in the advancement of several aspects of the study, including:

- 1) Discussion of how the seven Performance Indicators capture the interests within the Souris River Basin,
- 2) Holding a Plenary Session to review example graphics and data to display for Performance Indicators analyzed for each alternative,
- 3) Holding a brainstorming session to develop and evaluate alternatives; and,
- 4) Ranking the alternatives.

Excellent technical discussions took place during the workshop.

An interactive PAG workshop was held on July 30-31, 2019 in Estevan, SK to help the PAG members understand how to interpret the results from the model runs. The interactive PAG-Study Team workshop helped all participants to better understand flow alternatives, their benefits, impacts and trade-offs in the analysis of different flow scenarios.

The First Nations and Tribal engagement has been slow to develop, but significant progress is being made. On the Canadian side, six meetings have taken place, one with each of the following First Nations/Metis Communities; Cowessess, Swan Lake, Carry the Kettle, Ochapowace, Canupawakpa, and Saskatchewan Métis Nation Eastern Region III. Plans are in place to attempt to engage with other Canadian First Nations and Métis with interests in the basin.

The Study Board has learned through tribal engagement meetings in Bismarck that the U.S. Tribes are interested in the role of the IJC and the ISRB's mandate. Discussion focused on the role water plays in the Tribal culture and how that should be considered in any recommended alternative. The Study Board engagement is the first time a dialogue has been attempted between the Tribes and the IJC's ISRB. Canadian and U.S. Study Board members and staff continue to coordinate and plan a joint workshop for First Nations, Metis, and Tribes to be held on November 6-7 at the International Peace Garden. The workshop is a major step toward developing a long-lasting Tribal and First Nations engagement with the IJC. The Study Board realizes that continued dialogue with the ISRB will be necessary after the Study Board delivers a final report to the IJC.

A Climate Advisory Group (CAG) has been established to help identify future climate states the Study Board will consider. The CAG recommended that an assessment of both trends in historic, observed hydrometeorological records and projected, climate changed hydrology be assessed. Study Board technical team member concurred with the CAG recommendation and the assessment is in progress.

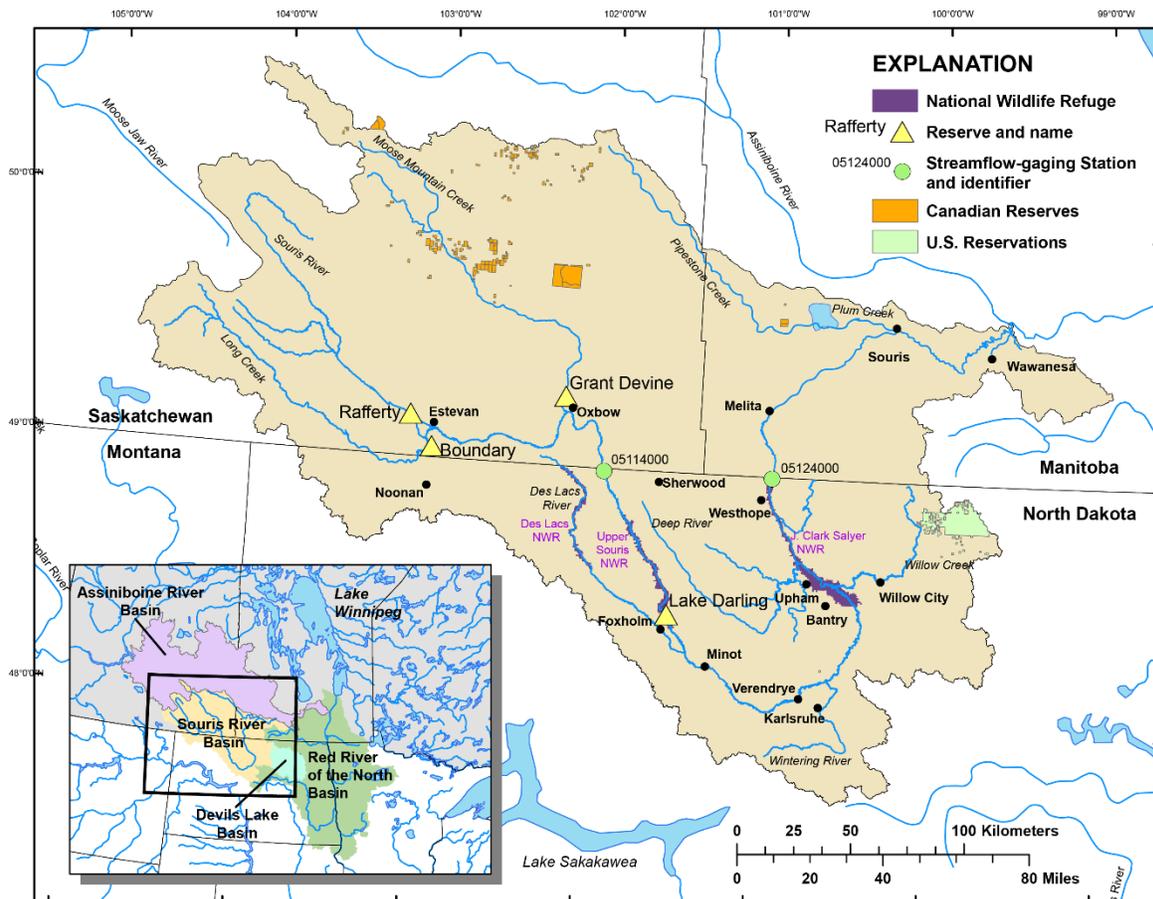
The Study Board along with IJC staff have assembled a strong group of managerial, technical, and logistical specialists to conduct the 19 tasks outlined in table 1 and to convey the results to the public, resource agencies, First Nations, Metis, and Tribes. Study Board members have made significant progress completing task reports in 2019. Task report DW2 "Lidar and Bathymetry Data" was delivered to the IJC in June, and task report DW3 "Review and Update of 2013 Hydrometeorological Data Improvement Report" was delivered to the IJC in August.

Also, task report HH1 "2019 Reconstructed Hydrology" and task report DW1 "A Review of Meteorologic, Hydrologic, and Engineering Studies Completed in the Souris River Basin from 2011 through 2017" will be delivered to the IJC in November. Finally, significant progress has been made on most of the other task reports.

The Study Board has the technical staff in place to apply hydrologic and hydraulic models to investigate a wide range of alternatives. The technical staff has developed an excellent suite of models that will lead to the recommendation of the best alternative(s).

## Background

The Souris River originates in Saskatchewan, crosses the International Boundary into the United States and passes through the state of North Dakota, and then again crosses the International Boundary into Manitoba before joining the Assiniboine River. Major reservoirs have been constructed in both Canada and the United States. These include Boundary, Rafferty and Grant Devine Reservoirs in Saskatchewan, and Lake Darling in North Dakota (figure 1). The basin also includes a number of wildlife refuges and small impoundments along the North Dakota portion of the river.



**Figure 1.** Souris River Basin showing locations of major reservoirs, and National Wildlife Refuges (Modified from Kolars and others, 2016).

The International Souris River Board (ISRB) operates under the 2002 Directive and was formed through the integration of 2 existing boards – the Souris River Board of Control and the Souris

River aspects of the International Souris-Red Rivers Engineering Board. The ISRB is responsible for ensuring compliance with flow apportionment and low-flow measures. In addition, the ISRB ensures the terms of the 1989 International Agreement for Water Supply and Flood Control in the Souris River Basin are met.

Unprecedented flooding in the Souris River Basin in 2011 focused attention on review of the Operating Plan contained in Annex A to the 1989 International Agreement. Public as well as government agencies involved in flood protection, particularly in North Dakota, requested that additional flood protection measures be evaluated, above and beyond what is currently provided under the International Agreement, and that the Operating Plan contained in Annex A of the Agreement also be reviewed. In light of these factors, the ISRB established the Souris River Basin Task Force in February 2012 to conduct a review of the Annex A Operating Plan for presentation to the Governments of Canada and the United States. The Task Force completed a Plan of Study in 2013 that describes the detailed studies that would be needed to review the existing Annex A Operating Plan for the reservoirs described in the 1989 Agreement in Saskatchewan and North Dakota and to evaluate alternatives to maximize flood control and water supply benefits. In June 2013, the IJC submitted the Plan of Study to governments.

On July 5, 2017, the governments of Canada and the United States issued a reference for the IJC to undertake the Plan of Study. In this reference, the governments of Canada and the United States requested that the IJC examine and report on flooding and water supply in the Souris River Basin and coordinate the completion of the full scope of the 2013 Plan of Study.

On September 5, 2017, the IJC issued a Directive to establish and direct the Study Board to examine and report to the IJC on matters raised by the Governments of Canada and the United States in the 2017 reference.

As outlined in the Directive, the IJC directed the Study Board to develop a Work Plan; this was submitted to the IJC in February 2017. The purpose of the Work Plan is to describe all studies needed to assist the IJC in fulfilling the terms of the July 5, 2017 reference. Each element of the Governments' joint reference is addressed in the Work Plan through a number of tasks that are grouped under four broad activities:

- a. Operating Rules Review
- b. Data Collection and Management
- c. Hydrology and Hydraulics
- d. Plan Formulation

On April 18, 2019 the Study Board submitted an extension request. The Study Board requested an extension based several factors including, 1) the partial U.S. Government shutdown, 2) transaction costs of collaboration and engagement, and 3) the unforeseen process of thoroughly vetting the final report. This request was granted in June 2019, and has extended the Study by one year.

In 2019 and 2020, several data and task reports will be completed and submitted to the IJC. A final report describing the best set of alternatives developed using information gathered on past flood events and dry period operation, input gained from the public, Indigenous representatives, and agencies is currently scheduled to be submitted to the IJC in February 2021.

## Study Progress

Study progress can be broken into engagement and technical parts. The Study Board as outlined in the Study Governance section below has established the Resource and Agency Advisory Group, the Public Advisory Group, and is consulting with Indigenous communities to obtain input from those with a direct interest in the Souris River Basin. Also, a Climate Advisory Group has been established to help identify future climate states the Study Board will consider. Technical progress can be evaluated by reviewing the accomplishments of nineteen tasks. Each task has been assigned a technical lead and a technical team to provide task guidance and oversight.

### 1. Study Governance

The planning of the study and the governance structure is complete. A Study Board comprised of four members from Canada and four members from the United States has been established and is responsible for providing oversight to the study. The Study Board members come from Federal, Provincial, and State Agencies in addition to two members representing the public. Two study managers, one from Canada and one from the United States, were selected, and are responsible for assisting the Study Board on delivering on its mandate.

### 2. Workplan

One of the main tasks of the Study Board during 2018 was to modify and produce the final Work Plan which was delivered to the IJC in October 2018. The Study Board modified the Work Plan based on comments received online, from the Independent Review Group, and from presentations made at the Study Board public meetings in Minot, ND in February 2018 and in Estevan in June 2018. The high-level feedback coming from these meetings was that the public has a variety of concerns specific to their homes, ranch operations, and that they have been affected differently depending on their situation. There was also feedback on the impacts to local transportation infrastructure.

The modified Work Plan has 19 projects grouped into the four broad categories listed in table 1 to enable the IJC to address the issues identified in the terms of the Reference. One of the major

improvements in the modified Work Plan has been to clearly identify the technical lead for each task, outline the sub-tasks to be completed, provide a timeline, and estimated cost for each task.

Significant modifications to the tasks include separating the original HH4 task between forecasting development and forecasting assessment and adding task PF4 to look at water quality and ecosystem health. The addition of task PF4 will help the IJC address comments made in the Reference related to water quality and ecosystem health. In addition, several tasks have been reorganized. These have mainly been moved to task PF1 – “workshops and engagement”; engagement with various groups remains an important tenet of the Work Plan.

### 3. Technical Tasks

Nineteen tasks placed in four broad groups are shown Table 1 below. Each task has been assigned a technical lead, in addition to a technical team. The technical teams are comprised of scientists and engineers from several Provincial, State, and Federal Agencies as well as Consultants. Currently, the technical teams are working on sub-task assignments as outlined in the Work Plan.

Old No.	New No.	Name	Group	Canada Costs (CND)	USA Costs (USD)
1a, 1b, 2	OR1	1989 Agreement Language Review	Operating Rules Review	6	0
				6	0
3	DW1	Summarize POS Projects and Report Progress since 2013	Data Collection and Management	3	0
4	DW2	Lidar and Bathymetry for Reservoirs		75	0
5	DW3	Review of Hydrometeorological Network Report		15	0
6	DW4	Data Collection for PRM		0	85
				93	85
7	HH1	Regional Hydrology	Hydrology & Hydraulics	44	25
8	HH2	Stochastic Water Supplies		6	185
9	HH3	Artificial Drainage Impacts Review		43	0
10	HH4	Flow Simulation Tools Development (MESH)		76	0
11, A4	HH5	ECCC Climate Change Supplies		47	5
12	HH6	Reservoir Flow Release Planning (RES-SIM)		64	65
13	HH7	Reservoir Flow Release Planning (HEC-RAS)		3	16
new	HH8	Develop PRM Model		4	72
new	HH9	Model System Integration		28	0
new	HH10	Forecasting Assessment		175	0
				490	368
14, A1, A3, A5, A1PF1		Workshops and Engagment	Plan Foruulation	209	175
15, 16, 17	PF2	Run and Evaluate Alternatives		173	238
new	PF3	Dam Safety		3	75
new	PF4	Roadmap for apport., water quality, and aquatic eco. health		0	0
				385	488
	A1	Administration - Independent Review Group		47	33
	A2	Administration - Study Manager (Canada)		165	0
	A3	Administration - Study Manager (U.S.)		0	106
				212	139
			Total	1186	1080

**Table 1. Canadian and U.S. costs, and activities required to meet the IJC September 5, 2017 Directive to the International Souris River Study Board**

The Plan Formulation Task for running and evaluating alternatives (PF2) has been broken down into 5 Phases to ensure that proper feedback is collected along the way. Phase 1 focused on mock RES-SIM runs to show what the model was capable of doing, and how the PIs will be utilized. Phase 2 focused on developing alternative building blocks from the ideas generated from the RAAG, PAG, and technical team at the workshops that were held in March and April. Phase 3 focused on further refinement of the alternative building blocks and the addition of runs based on feedback provided at the Plan Formulation team face to face meeting on May 21-24, 2019. Phase 3.5 was created, as it was determined that several of the building blocks from Phase 3 required further analysis before being combined into full alternatives in Phase 4. The technical team is currently working on Phase 4 which is focusing on the combination of the alternative building blocks into full alternative operating plan based on feedback from the PAG and RAAG. Phase 5 will focus on a more in depth look into the alternative operating plans, and the recommendation of an operating plan based on PAG and RAAG feedback.

Study Board members have made significant progress completing task reports in 2019. Task report DW2 “Lidar and Bathymetry Data” was delivered to the IJC in June, and task report DW3 “Review and Update of 2013 Hydrometeorological Data Improvement Report” was delivered to the IJC in August.

Also, task report HH1 “2019 Reconstructed Hydrology” has been submitted to the Study Board for approval and the task authors are making final modifications. Task report HH1 should be submitted to the IJC in early November. Task report DW1 “A Review of Meteorologic, Hydrologic, and Engineering Studies Completed in the Souris River Basin from 2011 through 2017” has been reviewed by Study Board technical team members, and editorial modifications are being made. Task report DW1 will be delivered to the IJC in November. Finally, significant progress has been made on most of the other task reports.

#### 4. Advisory Groups

Throughout the Study, public opinions, Government agencies and stakeholder perspectives will be sought to foster communication and participation at all levels on both sides of the border. The Study Board has emphasized the importance of public outreach, consultation and participation by establishing various Advisory Groups as described below.

A **Resource and Agency Advisory Group** (RAAG) has been established to act as a conduit for Federal, Provincial, State and municipal agency input and industry input on interests to study processes and for dissemination of study outputs. The first meeting was held on June 25, 2018 in Estevan, Saskatchewan. At this meeting, the Study Board outlined the Work Plan, the role and expectations of the RAAG were discussed, and a draft Terms of Reference was discussed and modified. During October and November 2018, the RAAG solicited feedback from agencies through a request for information (RFI); this information is being used in models to evaluate alternatives for the study. A Webinar was held on January 29, 2019 to introduce hypothetical alternatives and the plotting routines used to analyze alternatives based on seven study themes:

- 1) Flood control
- 2) Water Supply
- 3) Environmental
- 4) Agriculture
- 5) Erosion
- 6) Recreation
- 7) Cultural

Performance Indicators that relate a river condition (flow or water level) to a benefit or impact have been developed for the seven study themes.

The RAAG workshop held on March 19-20, 2019 in in Minot, ND resulted in the advancement of several aspects of the study, including:

- 1) Discussion of how the seven Performance Indicators capture the interest within the Souris River Basin,
- 2) Holding a Plenary Session to review example graphics and data to display for Performance Indicators analyzed for each alternative,
- 3) Holding a brainstorming session to develop and evaluate alternatives; and,
- 4) Ranking the alternatives.

The RAAG is working hard to ensure that information is obtained from all necessary agencies to develop accurate Performance Indicators to provide for the best possible modelling results.

A RAAG webinar on July 22, 2019 displayed the Phase 2 results and outlined Phase 3 scenarios. Another RAAG webinar was held on August 15, 2019 to present the Phase 3 results. Both of these webinars were held to solicit feedback from the RAAG on the scenarios as the Study was moving into the next phase.

The IJC, working with the Study Board, established a **Public Advisory Group (PAG)** in December 2017. The PAG includes an equal number of members from each country (seven) representing key interests and geographic regions within the Souris River Basin. The PAG co-chairs requested that alternate PAG co-chairs be established, and the IJC will be discussing the PAG request soon. The PAG is an advisory group that provides an important means of engaging the public in the study on an ongoing basis. PAG activities are described below in Section 5.0 Public Engagement.

The **Climate Advisory Group (CAG)** was established in early March 2019 and a Kick off webinar was held on March 25, 2019. The CAG will help the Study Board identify future climate states that will be used to estimate future hydrologic conditions in the Souris River Basin. The CAG has six members (three each from Canada and the United States) from Government and Academia; members represent the disciplines of water resources, hydrology, climatology and atmospheric science.

The CAG recommended that an assessment of both trends in historic, observed hydrometeorological records and projected, climate changed hydrology be assessed. To assess historic trends, a literature review is being compiled and a first order statistical analysis is being

carried out using data specific to the study area. The first order statistical analysis consists of analyzing trends and non-stationarities in observed streamflow, precipitation and temperature datasets. A series of readily available projected, climate changed meteorological datasets have been compiled for the study area. These datasets have already been downscaled to a time scale and spatial scale relevant to water resources analysis. The next step will be to force a hydrologic model with the projected precipitation and temperature data to produce climate changed hydrology for the Souris River Basin.

## 5. Public Engagement

The first PAG Workshop was held in February 2018 in coordination with the ISRB winter meeting in Minot, ND. At the meeting the PAG was briefed on the establishment of the Study Board and the Work Plan. Several PAG members shared their own experiences related to the water resources of the Souris Basin. The PAG prepared and released a questionnaire to the public (available online until November 12<sup>th</sup>, 2018) in order to solicit feedback on how various interests were affected by the 2011 flooding and how changing flows might potentially affect their lives and communities. The results of the questionnaire are being utilized to develop inputs to various models that will contribute to selecting an operating plan or plan(s).

A Webinar was held with the PAG on January 28, 2019 to provide an update on development of Performance Indicators, introduce hypothetical alternatives, and display graphics used to analyze alternatives.

A PAG workshop was held on March 18-19, 2019 in Minot, ND to discuss how the seven Performance Indicators capture the interests within the Souris River Basin. Of the seven Performance Indicator themes (flood control, water supply, environmental, erosion, agriculture, cultural, and recreation) the overwhelming responses to the question “what do you care about most in the Souris Basin?” were flood control, environmental, and recreation. PAG attendees participated in a group exercise to brainstorm water-management alternatives and then ranked these alternatives. Public participation from Saskatchewan and Manitoba was limited at the PAG workshop in Minot. Thus, in an effort to gain a more complete understanding of stakeholder concerns in all parts of the Souris River Basin, the Study Board hosted a one-day workshop on April 29, 2019 in Estevan, Saskatchewan.

An interactive PAG workshop was held on July 30-31, 2019 in Estevan, SK to help the PAG members understand how to interpret the results from the model runs. The workshop had activity sheet that the PAG members were asked to complete, then a technical team member walked them through the activity step by step. The activities were based on the Phase 2 building block that addressed the PAG concerns from previous workshops and showed the PAG members how the system reacts when different changes are made at the reservoirs. The interactive PAG-Study Team workshop helped all participants to better understand flow alternatives, their benefits, impacts and trade-offs in the analysis of different flow scenarios.

In addition, the Study has hosted four public meetings in Minot, North Dakota on February 20, 2018;; Brandon, Manitoba on February 19, 2019; and Bottineau, North Dakota on June 25, 2019. These meetings were well attended and received positive media coverage.

The PAG and those working on the study are working hard to ensure that the public is able to provide their input for this important step in the study. The report titled “International Souris River Study PAG Mid-Term Report, September 2019” provides a comprehensive review PAG activities to date.

## **6. Indigenous Engagement**

The Study Board is working with the PAG and IJC to contact First Nations, Métis and Tribes who may be interested in various aspects of the Work Plan or who may have been affected by the 2011 event. A workshop presentation focused on Indigenous engagement with First Nations in Canada was held in June 2018 in order to provide further background to the Study Board on the process as well as recommendations for engagement. Engagement with these groups is ongoing; engagement has taken place through different channels in each country due to different existing relationships and structuring of the various Indigenous communities and Tribes. In both countries, the goal is to establish engagement meetings to have meaningful dialogue with the First Nations and Tribes regarding the impact of flooding and water supply.

In Canada, a consultant was contracted to assist the Study Board to set up meetings with the Indigenous groups in the basin to discuss the study with them, gauge their interest in the study and its outcomes, obtain their feedback on how they may have been affected by the 2011 flood, and establish potential long-term relationships. As of September 2019, six meetings have taken place, one with each of the following; Cowessess First Nation, Swan Lake First Nation, Carry the Kettle Nakoda Nation, Ochapawace Nation, Canupawakpa Dakota Nation, and Métis Eastern Region III. There is a plan for a future meeting with the Manitoba Métis Federation, but a meeting has not yet been scheduled.

In the United States, Study Board committee members met with the Executive Director of the North Dakota Indian Affairs Commission on January 4, 2019 to seek guidance on Tribal interest and the consultation process. The Study Board sent out a letter in October 2018 to all Tribal contacts provided by the Executive Director to establish the Tribes’ interest in the Work Plan. On February 27, 2019 Study Board member Tim Fay and Study Board committee members met with representatives from 4 out of 5 North Dakota Tribes to discuss the study and how the Tribes might participate. The Study Board learned that cultural sites are important to the Tribes, and most of sites are not in the files of the North Dakota State Historic Preservation Office. The Tribes indicated that cultural site surveys would be needed to identify many of the sites. The Study Board has also reached out to tribes outside of North Dakota for an upcoming workshop in November, as they may have ancestral interest within the basin.

The study board is in the process of finalizing plans for an upcoming workshop for First Nations, Tribes and Métis in the Souris basin or with potential interest in the basin. This will bring together the US and Canadian efforts on Indigenous engagement which, up until fall 2019, have been taking place separately. The workshop is scheduled to take place on November 6<sup>th</sup> and 7<sup>th</sup> at the International Peace Garden and Indigenous communities on both side of the border who have expressed interest in the study were invited to attend. Results and recommendations from this workshop will help guide next steps on Indigenous engagement.

## Budget

The original budget for this study shown in table 1. The IJC has approved the Study Board's request for an additional one-year extension for the study and a funding increase of \$761,000 (\$375,000 CA and \$386,000 US). The funding increase will be used for:

- 1) additional review and development of modelling tools for alternative scenarios
- 2) to ensure adequate incorporation of climate change scenario development
- 3) additional alternative scenarios completed in Phase 5
- 4) additional workshops, thorough engagement with the public and resource agencies, and special effort in planning and logistics for Tribal, First Nations, and Metis workshop planned for November 6-7
- 5) additional time to review work, develop recommendations, and write final report.

## Notable Accomplishments

### 1. Assembling the Team

The Study Board along with IJC staff have assembled a strong group of managerial, technical, and logistical specialists to conduct the 19 tasks outlined in table 1 and to convey the results to the public, resource agencies, First Nations, and Tribes. Although the Study Board may have underestimated the time and budget needed to complete all the technical tasks and engage all interests in the Souris River Basin, we now have the technical staff in place to apply hydrologic and hydraulic models to investigate a wide range of alternatives. The technical staff has developed an excellent suite of models that will lead to the recommendation of the best alternative(s).

## **2. Capacity Building**

Several agencies assisted with model development, and the team approach has led to an increase in forecasting and hydrologic modeling capabilities. Thus, staff from various Federal, State, and Provincial agencies can apply the models to address various alternatives. This approach to model development used by the Study Board, with buy in from agencies, required large in-kind contributions (close to one million dollars) of staff time but should pay dividends to the ISRB in addressing future water-management questions in the Souris River Basin.

## **3. PAG and RAAG Engagement**

The PAG workshops held March 18-19, 2019 in Minot and April 29, 2019 in Estevan provided the first opportunities for the public to view and discuss how different reservoir operations will impact the magnitude and duration of streamflow in the Souris River Basin. A preliminary alternatives PAG workshop was held on July 30-31 in Estevan to show how flow scenarios impacted performance indicators. The Study Board believes the PAG engagement is paying dividends, and continued meetings and engagement with the PAG will lead to PAG understanding of recommended alternatives. The Study Board has made the similar observations on the development of engagement with the RAAG.

## **4. Indigenous Engagement-Important First Steps**

The tribal and First Nations engagement has been slower to develop, but significant progress is being made. The Study Board learned through tribal engagement meetings in Bismarck that the Tribes are interested in the role of the IJC and the IRSB's mandate. Discussion focused on the role water plays in the Tribal culture and how that should be considered in any recommended alternative. The Study Board engagement is the first time a dialogue has been attempted between the Tribes and the IJC's IRSB. Canadian and U.S. Study Board members and staff continue to coordinate and plan a joint workshop for First Nations, Metis, and Tribes to be held on November 6-7 at the International Peace Garden. Long-lasting First Nations, Metis, and Tribal engagement will require continued dialogue with the IRSB after the Study Board delivers a final report to the IJC.

## **Summary of Emerging Issues/Challenges**

The Study Board has the resources to effectively address flooding and water supply issues, as well as to examine the impacts of alternative operating plans on apportionment. However, full understanding of the impacts of alternative operation plans on water quality and aquatic ecosystem health are beyond the resources that have been made available to the Study Board.

The Study Board will provide a road map in task PF4 to provide guidance on how to address water quality and aquatic ecosystem health concerns.

The timelines in the Work Plan represent optimistic estimates for completing work within the original time frame of the study. As we acknowledged in our October 15, 2018 Study Board Progress report, the original timeline is based on the study components progressing without any surprises in the results, extensions in public and agency input periods, or difficulties in execution that might call for significant changes in the Work Plan approach. The Study Board requested an extension based several factors including, 1) the partial U.S. Government shutdown, 2) transaction costs of collaboration and engagement, and 3) the unforeseen process of thoroughly vetting the final report. A one-year extension was granted to the Study in June, 2019.

The timeline of the Study is fast-paced and has a quick turnaround for producing results and gathering feedback for each phase of the alternative runs. This has brought up some concern from the RAAG about how much access they currently have to results to conduct their own analysis of the results. The Study has contracted out the development of a visualization tool that will allow members of the RAAG and PAG access to the data from the model runs. The visualization tool will allow the user to access data from events and areas of interest within the basin. The visualization tool should be ready by mid to late October.

The team is utilizing the best available data and methods from both countries and integrating some of them for the first time through this effort. The complexities of integrating the nineteen tasks, and our commitment to effective public engagement in developing and selecting alternatives, introduce some unknowns into the Work Plan and Schedule, but the Study Board is committed to delivering a high-quality final report that represents the best alternative(s) for IJC consideration.

## Next Steps

Based on the extension request granted to the Study Board by the, the Study Board task team members have two major components to complete. First, task teams have about 4-months left to complete various modeling activities needed to identify potential reservoir operating alternatives. Secondly, the Study Board and task teams must maintain an aggressive schedule of webinars and meetings to convey the results of the various modeling activities. As of September, there are a number of upcoming meetings and events:

### 1. Technical meetings

- Plan Formulation team will meet December 3-5 to review the alternative operating plans ran in Phase 4.

- Technical committee such as the Hydrology and Hydraulics and Plan Formulation Committees will continue to hold conference calls.

## 2. Engagement

- Indigenous engagement
  - A joint workshop between the Canadian and US Indigenous communities is planned for November 6-7, 2019 at the International Peace Gardens.
    - The purpose of this workshop is to gather Indigenous knowledge of how the hydrology of the Souris River impacts First Nations, Metis, and Tribal communities, and explore the interests of the attendees to engage with the IJC.
  - Canadian Indigenous engagement-
    - Planning to have a meeting with the Manitoba Métis Federation in October.
- ISRB-ISRSB workshop November 13-14, 2019 in Regina to discuss Phase 4 results, and handoff of Study products.
- PAG workshop November 19-20, 2019 in Minot, ND to discuss Phase 4 results.
- RAAG workshop November 20-21, 2019 in Minot, ND to discuss Phase 4 results
- Study managers and other involved in study administration and planning participate in weekly calls.

## Issues Requiring IJC direction

There are currently no issues requiring IJC direction