

Montana – Alberta St. Mary and Milk Rivers Water Management Initiative

**Joint Initiative Team Meeting #7, Interpretive Centre
July 23, 2009, Writing On Stone Provincial Park, Alberta**

Montana	Alberta
Dustin de Yong - Office of the Lt Governor (co-chair)	Robert Harrison – Alberta Environment (co-chair)
Randy Reed – Milk River irrigator	Brent Paterson – Alberta Agriculture RD
Dave Peterson – City of Havre	Ken Miller – Milk River
Harold "Jiggs" Main – Ft. Belknap Tribe	Tom Gilchrist – Milk River
Larry Dolan – DNRC	Gerry Perry – Oldman River
	Duncan Lloyd – Oldman River
	Sal Figliuzzi – Alberta Environment

Regrets – Don Wilson – Blackfeet Tribe, Paul Azevedo – MT Secretariat, and Tim Toth – AB Secretariat.

Guests – John Sanders, and Mike Dailey with MT DNRC.

Purpose of Phase 2 Joint Initiative Team

To explore and evaluate options for improving both Montana's and Alberta's access to the shared water of the St. Mary and Milk Rivers, and to make joint recommendation(s) on preferred options to both governments for their consideration and approval.

Meeting Objective(s)

1. Tour the Milk River in Alberta, including potential dam and reservoir location, Milk River channel regime and erosion, example direct pumping crop irrigation operation and direct pumping crop and ranch operation.
2. Review model calibration, approve the model for evaluating options and confirm first priority options to be modeled.
3. Review proposed evaluation output tables and approve these tables.

June 23 – 8:00 a.m. – 2:30 p.m. Milk River Watershed Tour

- Joint Initiative Team members rendezvous at the Roydale International dealer in Milk River, AB. Ken Miller and Tom Gilchrist welcomed the Joint Initiative Team to Milk River, Alberta.
- Toured the potential Milk River Dam site in Alberta. John Sanders provided draft handout for discussion of a Forks Dam concept option using Roller Compacted Concrete (RCC).
- Toured the irrigation operations on the Miller Seeds farm. Viewed direct pumping from Milk River to irrigation pivots. Viewed the real-time metering and telemetry of the water used. Almost all irrigation licenses in the Milk River watershed that draw water directly from the river are metered. Viewed channel erosion that exposed a natural gas line. The gas line had to be abandoned and replaced. The power poles may need to be moved.
- Toured the Milk River from the Weir Bridge to Writing On Stone Provincial Park by rafts to view the river, and erosion and sediment concerns. The river was flowing at about 600 cfs. The natural flow contribution from the Milk River South Fork was about 25 cfs and

from the North Fork about 10 cfs. Flow contribution from the St Mary Diversion was about 565 cfs. Saw many examples of slumping banks.

June 23 – 2:30 p.m. – 5:30 p.m. JIT Meeting

1. Meeting Administration

- The JIT reviewed the meeting purpose and draft agenda for Meeting #JIT-07.
- JIT **agreed** that the review and adoption of Meeting #JIT-06 minutes be deferred to Meeting #JIT-08.
- It was decided that the draft agenda would be revised by moving the discussion of the “Better Use of Share Received” options to the end of the agenda.
- The agenda was approved as revised.

2. Communications and Action Items

- Dustin de Yong reported that there had been no media communications regarding the Joint Initiative in Montana since the June meeting.
- Dustin de Yong reported that Montana State Officials had been talking with Federal Officials regarding the continuation of John Tubbs as Montana’s Co-chair on the Joint Initiative. No decision has been made.

Action – Dustin de Yong will check on the status of the decision regarding John Tubbs in the next two weeks and talk with Robert Harrison.

- Robert Harrison reported that there had been no media communications regarding the Joint Initiative in Alberta since the June meeting.
- Robert Harrison reported that Minister Renner had sent a letter to Premier Stelmach requesting the Premier send a letter of support for John Tubbs as Co-chair to Governor Schweitzer.

Action – Robert Harrison will check on the status of the letter from the Premier to the Governor and talk with Dustin de Yong.

- There were no communications reports from the other JIT members.
- The JIT received the document “Draft Summary of Action Items and Agreements” from Meeting #JIT-06 in their meeting package.
- Updates on the Technical Team Action items were provided as part of the modelling agenda items. The status of the remaining administrative action items was reported.

Follow up Action Items from June 8 - 10, 2009 meeting

Action 6. – AENV will set up a SharePoint site for all Joint Team members to be able to access the Draft Background Information Report and other large documents if needed. Complete.

Action 8. – JIT members will comment on Draft Background Information Report to the consultant either via the SharePoint site, or through the Secretariat. Members have had no comments to date.

Action 13. – Secretariat will distribute summary list of Action Items to JIT members. Complete.

3. Report on model accuracy learnings

Larry Dolan and Sal Figliuzzi provided a full report and presentation of the model calibration results and learnings.

Action – Larry and Sal to provide the Secretariats a copy of their Meeting #7 modelling presentations.

Larry explained the irrigation practices in Montana and the assumptions therefore used in the model. Due to shortages and other factors, historically irrigators in Montana have applied only 50% of the water required for maximum crop production on average. The diversion, distribution and application efficiency for Montana irrigation districts in general is approximately 33% from point of diversion to the crop. This means for example that 42 inches of water must be diverted from the river to enable 14 inches of water to reach and be used by the crop. Private and contract irrigation efficiencies are generally about 54%.

Sal explained the irrigation practices in Alberta and the assumptions therefore used in the model. Irrigators in Alberta generally apply only 85% of the water required for the crop for maximum production in any year. The diversion, distribution and application efficiency for Alberta irrigation districts in general is approximately 80% from river diversion to crop. This means for example that 17 inches of water must be diverted from the river to enable 14 inches of water to reach and be used by the crop.

Larry and Sal explained the four components of the model and the calibration quality. Information that was gathered was put into the model and compared against recorded past data. Model calibration runs should replicate, as close as possible, past conditions.

Model components

- a. Upper St. Mary in Montana – calibration is excellent
- b. St Mary system in Alberta – calibration is excellent
- c. Milk River system in Alberta – calibration is excellent
- d. Milk River system in Montana – calibration is good

Fresno Reservoir calibrated fairly well. Replicating Fresno Reservoir storage loss from siltation has been problematic. Past recorded data was based on outdated storage curves. Fresno Reservoir is continuously losing storage due to siltation. As a result, the model shows more storage than actually existed. For the model calibration, a Fresno storage capacity of 92KAF is being used (based on 1999 reservoir survey).

Nelson Reservoir didn't calibrate as well, but trended reasonably well. More variables and fewer hard & fast rules on the operation of Nelson Reservoir make it more difficult to replicate actual operations. River flows were also used to determine the adequacy of the calibration. Havre and Nashua river gauges were used to determine effectiveness of model. Modelled flows replicated actual river gauge flows very well. The Nashua gauge was in slightly less agreement, but there is much more going on at the end of the system.

The Technical Team has worked hard to understand the water management, irrigation and structure operation practices in the Milk River in Montana and then represent these practices in the model. In doing so the Technical Team has learned a number of important things about the system.

Larry described four things he had learned about the system.

- The overall volume of water consumed in the Milk River watershed in Montana was higher than initially thought, and this seemed to be due to a large irrecoverable loss component. This might be explained by how the irrigated area is long and drawn out and because the length of the Milk River channel in Montana is 400 plus miles.
- Surprised that the Technical Team was able to model the reservoirs so that operations matched historic operations as well as they did. The operations of the reservoirs appear to have been more predictable than originally thought.
- Surprised that irrigation canal capacity limitations contributed to shortages as much as they do. Larry knew that this was a factor but didn't understand the importance.
- Surprised that the Technical Team was able to build the model and get a good calibration so quickly. Larry wasn't so certain at the start that the Technical Team would be able to get this done in the required time.

Sal described two additional things he had learned about the system.

- Sherburne Lake is not operated in conjunction with Fresno Reservoir. Sherburne is operated with the single objective to move the maximum amount possible of Montana's entitlement of the St. Mary River to the Milk River.
- Nelson Reservoir has a number of unique operating challenges, including high levels of seepage loss and water level restrictions due to Piping Plover nesting.

Each of these learnings is a potential opportunity for improved water management.

Larry and Sal, as the leaders of the Technical Team, recommended to the JIT that the model is working well and is ready for use in simulating future potential water management options.

The JIT **accepted** the Technical Team's recommendation and **approved** the model for use in simulating future potential options.

The JIT instructed the Technical Team to proceed with model runs of the future potential water management options.

The JIT thanked the Technical Team for their hard work to successfully calibrate the model.

Larry and Sal reviewed the options that the JIT identified over the last two meetings. In total there are 35 separate "Improved Access Management" options.

The JIT discussed the options and the need for modelling all the options.

The JIT **agreed** that the Technical Team should run the first set of options without the Letter of Intent. Based on the results of those runs the JIT gave the Technical Team the discretion to decide if all the other options need to be run.

If the Technical Team is able to reduce the number of runs and has time for additional runs before the next meeting the JIT requested these additional runs.

The JIT **agreed** that it was important to test an alternative Letter of Intent that traded larger deficits and instructed the Technical Team to test the benefits and impacts of an alternative Letter of Intent.

The JIT discussed the minimum flow that should be used in the model for the St. Mary River between the diversion and the border in Montana and the border to the St. Mary Reservoir in Alberta.

Robert Harrison reported that Alberta has not yet established a formal Water Conservation Objective for the Alberta reach of St. Mary River because no new water allocations are allowed in this reach and Alberta has assumed that this reach of river would reach Alberta's full entitlement within each balance period.

Larry Dolan reported that Montana does not have an instream flow requirement established on Montana's reach of the river. It also has not been seen as a priority as this reach of the river also carries Alberta's entitlement.

The JIT discussed potential minimum flows for the purpose of modelling. The JIT instructed the Technical Team to review recent past low flows under the Letter of Intent and use this low flow as a minimum flow for the purpose of running the model.

Action – Technical Team to determine the minimum flow for the St. Mary River to be used as an input value in the model. Note: The JIT is NOT setting an actual instream flow number for any reach of the St. Mary River. This is a minimum flow number for the purpose of modelling.

Action – Robert Harrison to provide the JIT with a description of the aquatic ecosystem health process in Alberta as it relates to the St. Mary River from the border to the St. Mary Reservoir.

The JIT **agreed** that it is important to test the shared storage facility on the Milk River and instructed the Technical Team to test the benefits and impacts of sharing the storage of the large Milk River Dam.

Action – Technical Team to complete the model runs as directed by the JIT and provide summary information to the JIT by September 14, 2009.

Action – Technical Team to provide the JIT with initial summaries of the first few runs as soon as they are available so that the JIT has the opportunity to understand the model results.

4. Model Run Outputs

Sal and Larry presented the proposed output tables that will summarize the model runs for the attributes of interest to the JIT.

The JIT discussed the proposed output tables and provided the following instructions.

The JIT wants graphical summaries that compare the key interests of entitlement accessed, total volume accessed and irrigation reliability for each option. In addition the JIT wants summary tables of averages for the entire modeled period for the same three interests for the individual rivers and the combined totals. The graphs and the summary tables will be the primary information used by the JIT to evaluate options. Access Percentage of Entitlement Share Accessed Table: Have Table show numbers greater than 100% (Surpluses).

The JIT wants the detailed tables that present the annual information for each option, prepared and stored on disks. The JIT wants this information available in case a member needs to look at the details of any given option.

The JIT **agreed** on the revised model output tables that focus on percent of entitlement accessed, volume accessed and irrigation reliability and on the format of graphs, summary tables and detailed appendices.

ACTION – Technical Team to finalize the model output tables and provide a full set of the base case to the JIT for information and preparation of receiving output for all runs.

Action Item Summary

1. **ACTION:** - Dustin de Yong will check on the status of the decision regarding John Tubbs in the next two weeks and talk with Robert Harrison.
2. **ACTION:** Robert Harrison will check on the status of the letter from the Premier to the Governor and talk with Dustin de Yong.
3. **ACTION:** - Larry and Sal to provide the Secretariat a copy of their Meeting #7 modelling presentations.
4. **ACTION:** - Technical Team to determine the minimum flow for the St. Mary River to be used as an input value in the model. Note: The JIT is NOT setting an actual instream flow number for any reach of the St. Mary River. This is a minimum flow number for the purpose of modelling.
5. **ACTION:** - Robert Harrison to provide the JIT with a description of the aquatic ecosystem health process in Alberta as it relates to the St. Mary River from the border to the St. Mary Reservoir.
6. **ACTION:** - Technical Team to complete the model runs as directed by the JIT and provide summary information to the JIT by September 14, 2009.
7. **ACTION:** - Technical Team to provide the JIT with initial summaries of the first few runs as soon as they are available so that the JIT has the opportunity to understand the model results.
8. **ACTION:** Technical Team to finalize the model output tables and provide a full set of the base case to the JIT for information and preparation for receiving output for all runs.

Summary of Approvals, Agreements, etc.

1. JIT **agreed** that the review and adoption of Meeting #JIT-06 minutes be deferred to Meeting #JIT-08.
2. The JIT **accepted** the Technical Team's recommendation and **approved** the model for use in simulating future potential water management options.
3. The JIT **agreed** that the Technical Team should run the first set of options without the Letter of Intent. Based on the results of those runs the JIT gave the Technical Team the discretion to decide if all the other options need to be run.
4. The JIT **agreed** that it was important to test an alternative Letter of Intent that traded larger deficits and instructed the Technical Team to test the benefits and impacts of an alternative Letter of Intent.
5. The JIT **agreed** that it is important to test the shared storage facility on the Milk River and instructed the Technical Team to test the benefits and impacts of sharing the storage of the large Milk River Dam.

6. The JIT **agreed** on the revised model output tables that focus on percent of entitlement accessed, volume accessed and irrigation reliability and on the format of graphs, summary tables and detailed appendices.

Message in Joint Status Report:

- Members of the Montana and Alberta Joint Initiative Team (JIT) toured the Alberta portion of the Milk River to view the potential Milk River Dam location, erosion on the Milk River and two direct pumping irrigation operations and the continuous water metering at these operations.
- Technical Team leads presented the final calibration results of the model to the JIT and recommended that the model was ready to simulate the future options.
- The JIT instructed the Technical Team to proceed with the simulation of the future options.

Next meeting:

The next three meetings were **agreed** to:

JIT #8 – Sept. 24th -25th, Lethbridge

JIT #9 – Oct. 28-29th, Great Falls

JIT #10 – Dec. 3rd -4th, Lethbridge

Adjourn

The meeting was adjourned at 5:30 p.m. JIT members then toured the Deer Creek Ranch to see the direct pumping from the Milk River and water use from smaller tributaries. Irrigation from Deer Creek and Bear creek is difficult during lower flow years. The tour was followed by a dinner at the Gilchrist residence.