

St. Mary Canal Operations - Implementation of an Annual Balancing Period

**Montana State Department of Natural
Resources and Conservation (DNRC)**

Steve Setzer and John Carron



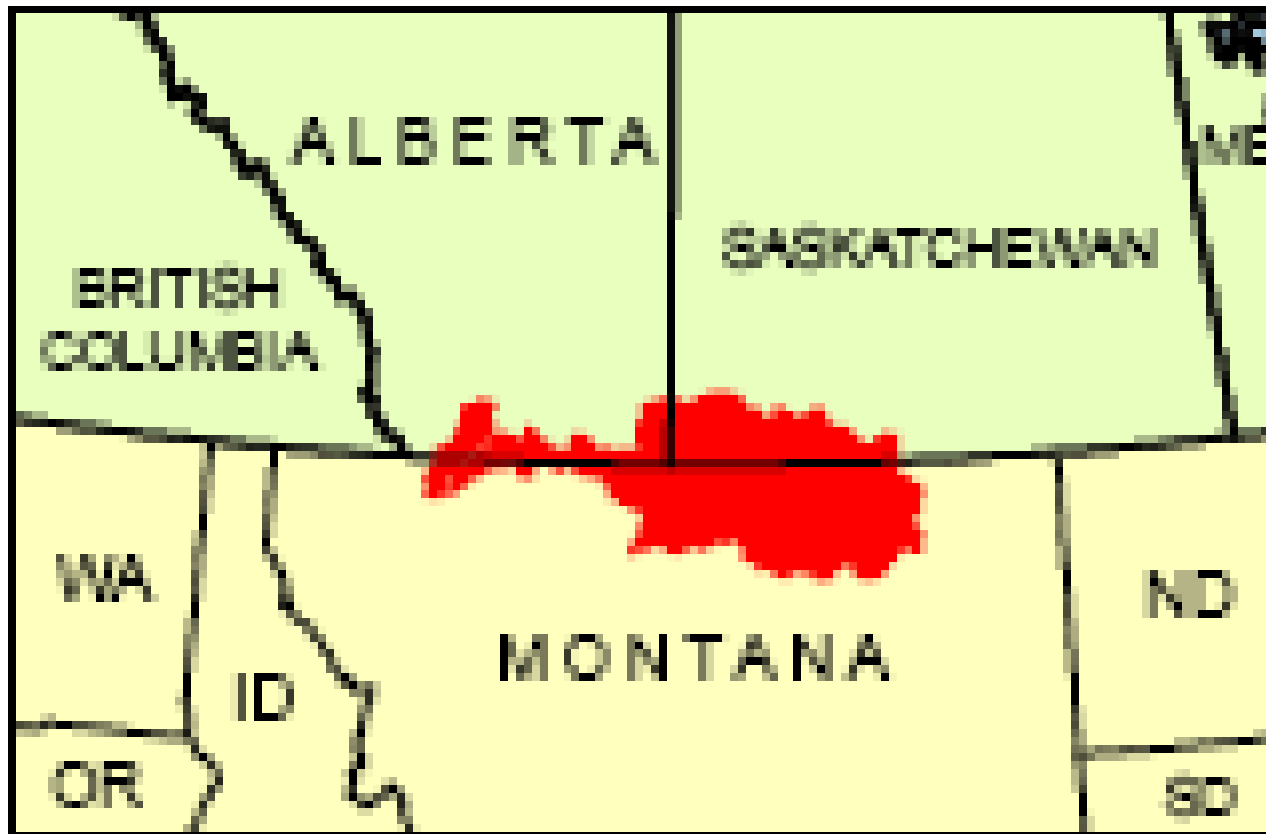
Overview



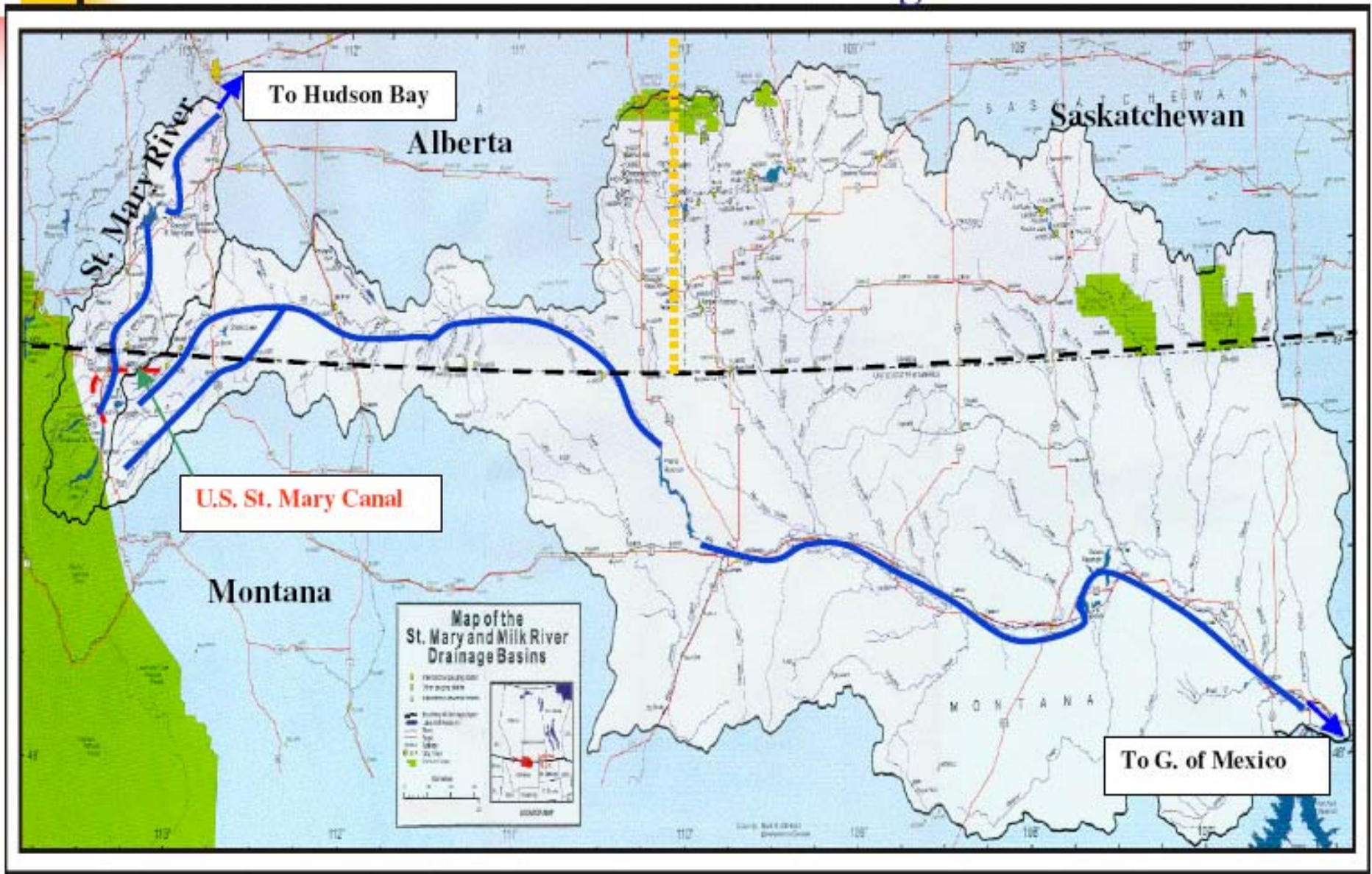
- Work AMEC performed for State of Montana - Department of Natural Resources and Conservation (DNRC)
- RiverWare model of St. Mary River and Milk River system (by DNRC)
- 2008 - AMEC performed review & recommendations
- 2009 – AMEC retained to enhance St. Mary Canal Operations
- Developed annual balancing period
 - Allow U.S. to use credit water delivered to Canada to operate canal



Basin Map: St Mary River – Milk River

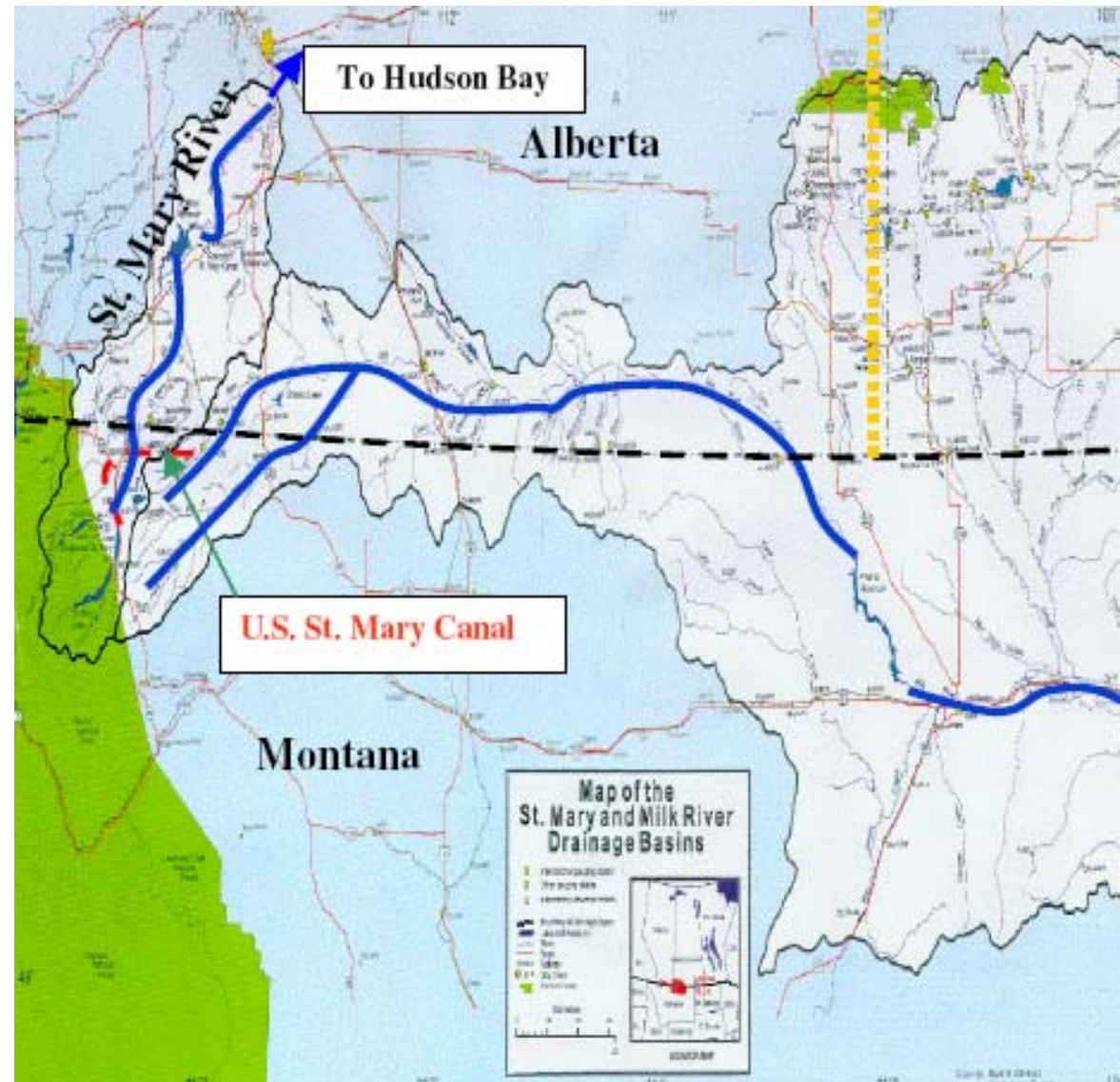


Basin Map: St Mary River – Milk River



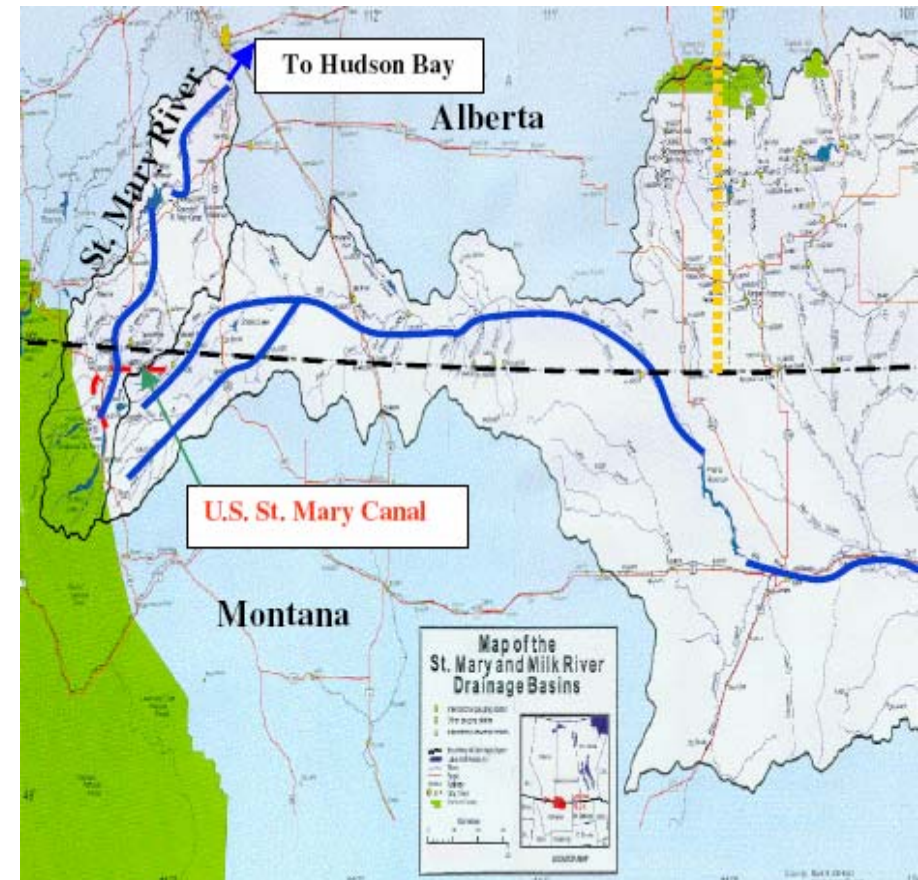
Basin Information

- St. Mary River
 - Originates in Glacier NP
 - Glacier and snowpack driven
 - Less variable, more dependable
- Milk River
 - Prairie stream
 - High variability
 - Many years no natural flow at eastern crossing
- St. Mary Canal
 - Diverts from St. Mary to Milk River
 - Storage and Irrigation on Milk River (for U.S.)

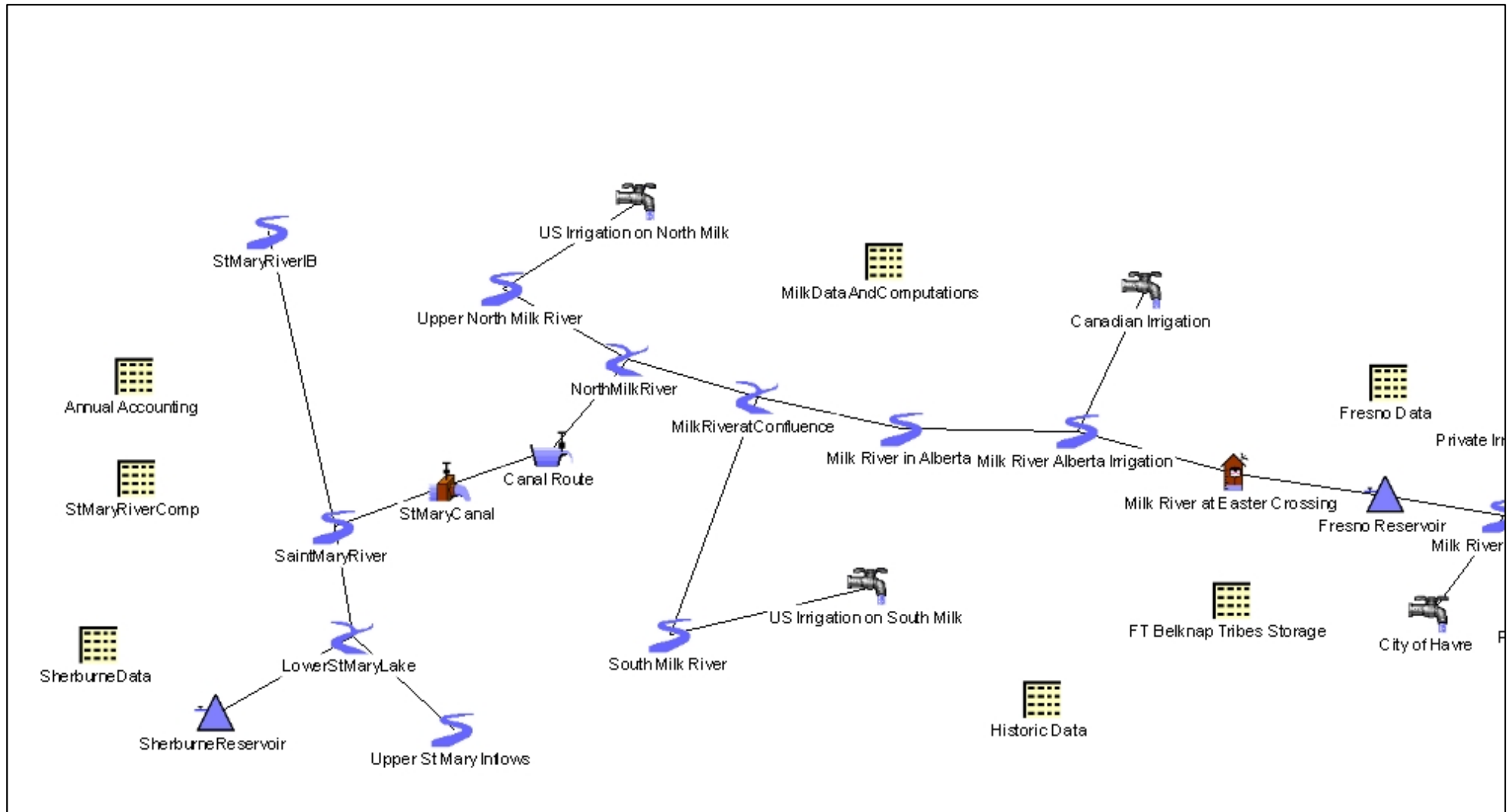


Treaties and Compacts

- International Boundary Water Treaties
- On both Milk and St. Mary, portion of natural flow goes to U.S. and a portion to goes to Canada
- Water Compacts with Native American tribes

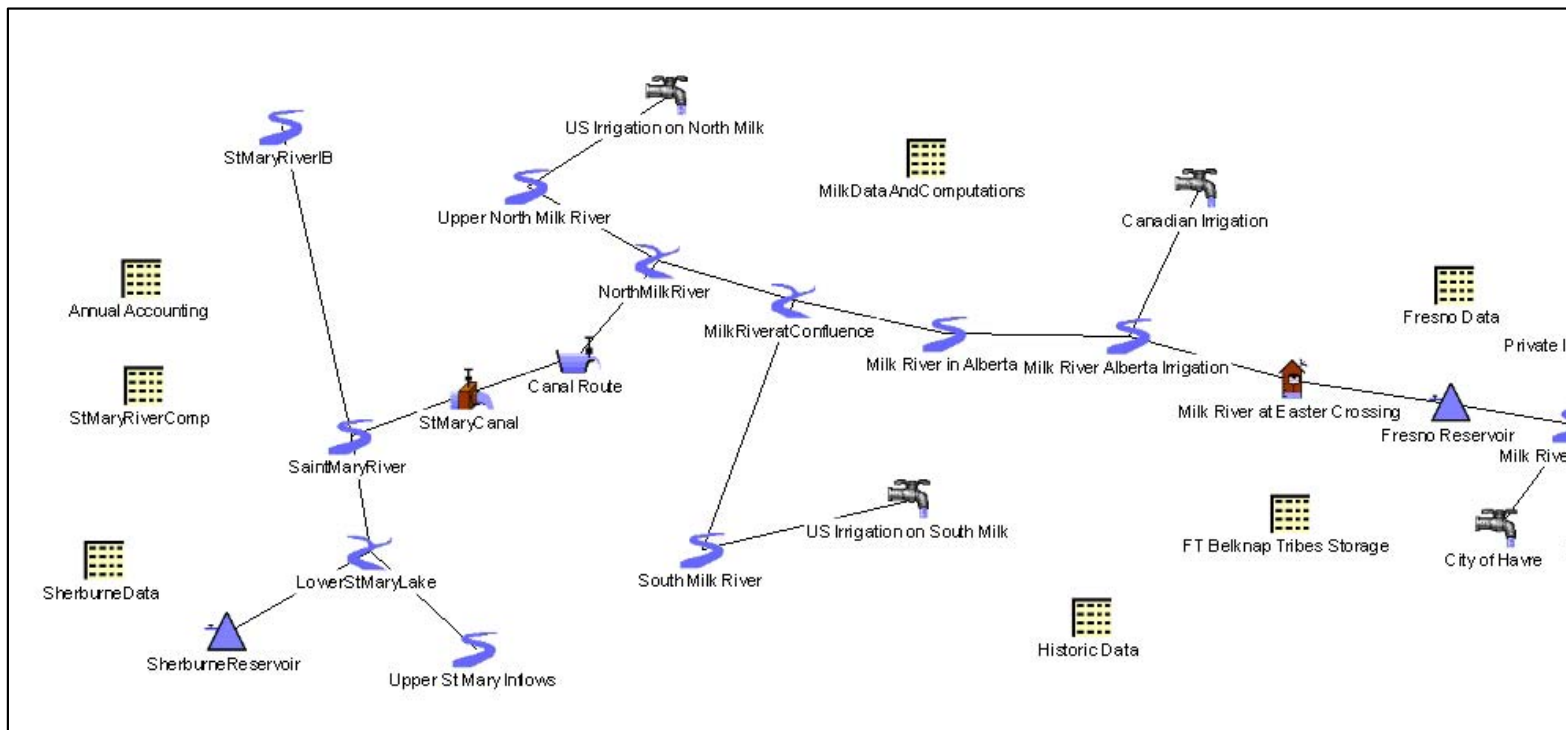


Basin Map: St Mary River – Milk River



St. Mary Canal Operations

- Sherburne Storage = 66,000 AF - St. Mary Canal Capacity = 650 cfs
- Most runoff occurs spring, little storage
- Canal opens in spring – want to run full



St. Mary Canal Operations



- In spring, U.S. is unable to divert its full apportionment through canal
 - If Sherburne is full, over-delivery to Canada

- In summer, flows are not always high enough to meet IB commitment and keep canal full at 650 cfs

- Storage/structural limitations

- Overall: U.S. cannot use its full apportionment
 - Same with Canada on the Milk River

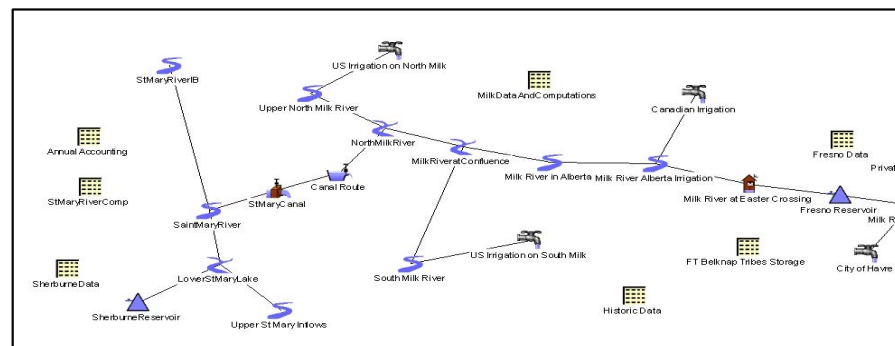
Solution

- Currently (I think): Letter of Intent
- Allows each country to run a deficit at different times of year at different delivery points
- Much debate/discussion on best approach and what changes are required
- Alternate solution: Annual balancing period



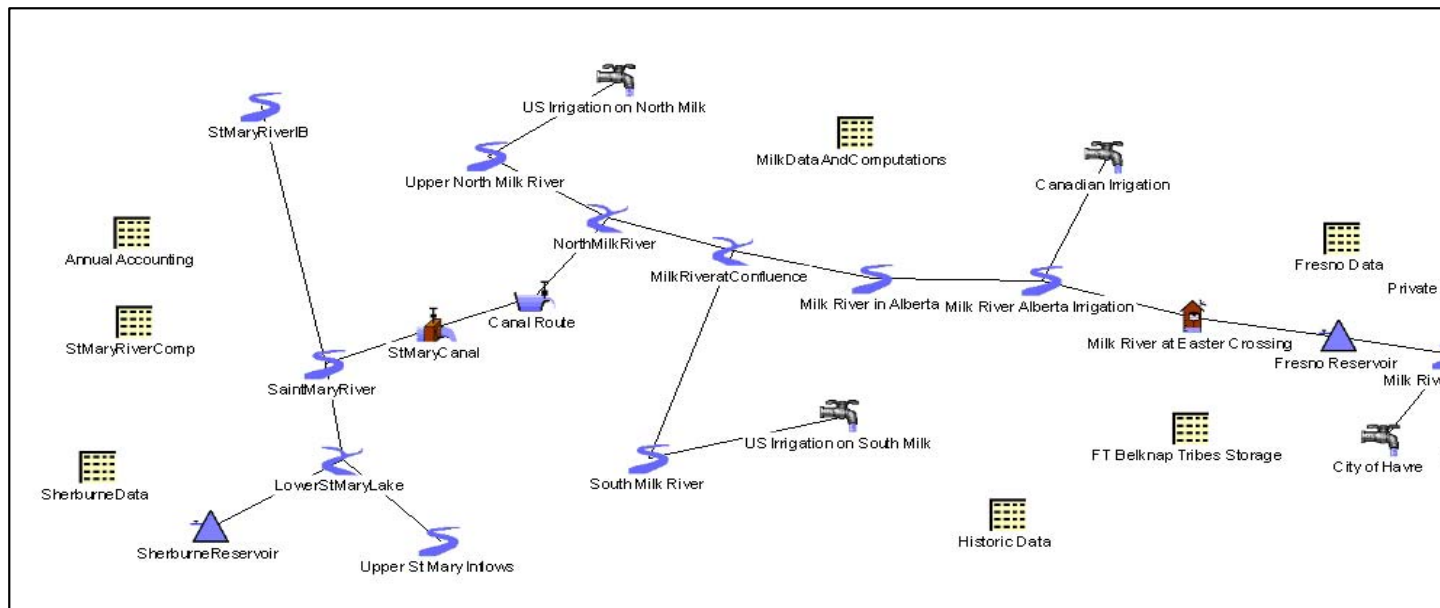
Annual Balancing

- Implemented annual “accounting” system
- RiverWare accounting is not necessary – no reservoir storage rights
- Use rules and data objects to set up a simple accounting system
 - Track U.S. and Canada shares of natural flow
 - Accumulate overdelivery to Canada
- U.S. can run up a credit in the winter and spring and draw on that credit during the summer to keep canal full

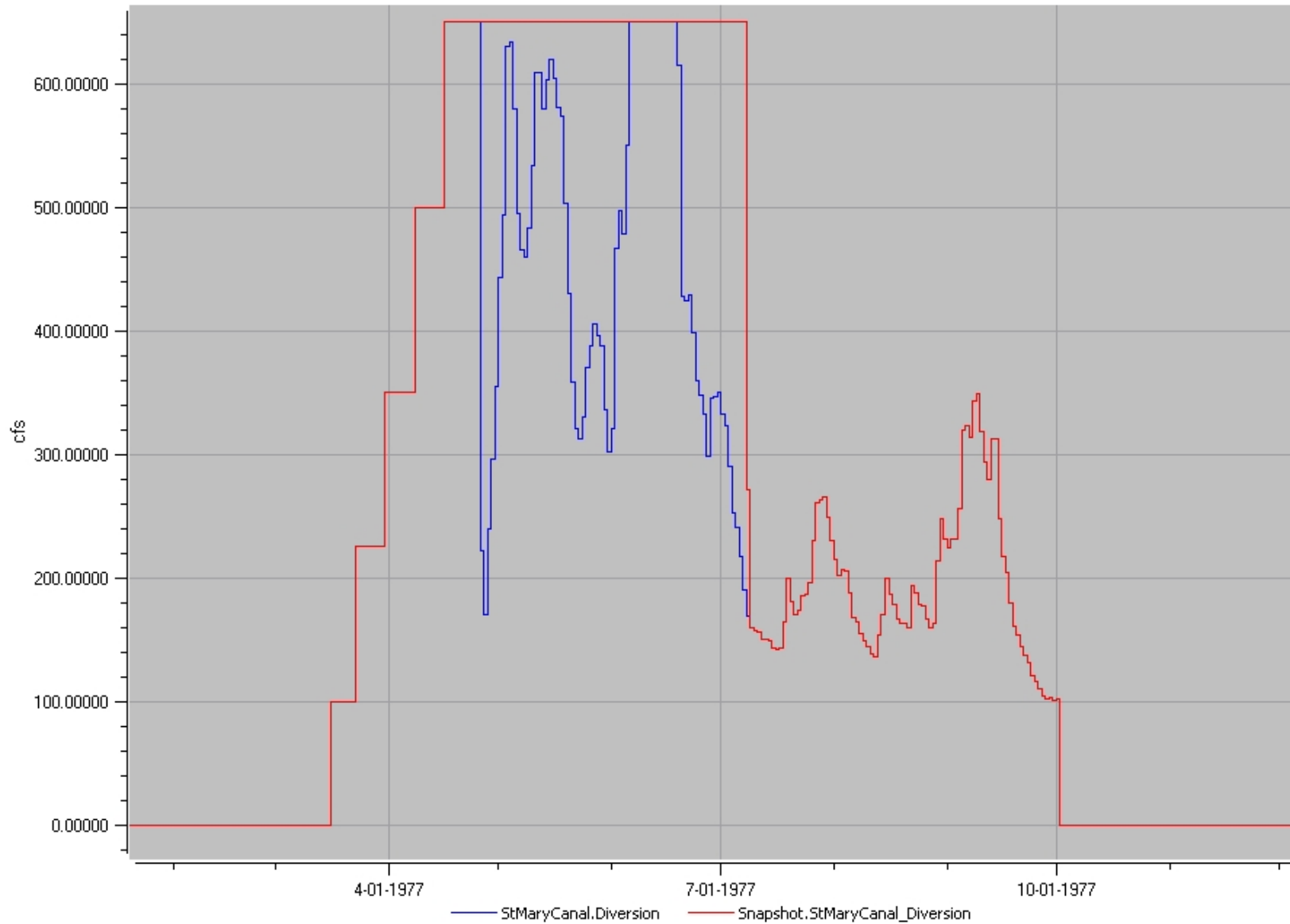


Results

- U.S can use its full apportionment (or closer to it...)
- Revamped and streamlined the operational rules for St. Mary River
- Flexible system for future enhancements and variable balancing periods



Results



Going Forward...

- 2009 – USBR announced Basin Study program
 - One of three western basins
- St. Mary Canal requires ~\$100 million in repairs and upgrades
- Plenty of opportunities for DNRC to use this RiverWare model



- Questions?

