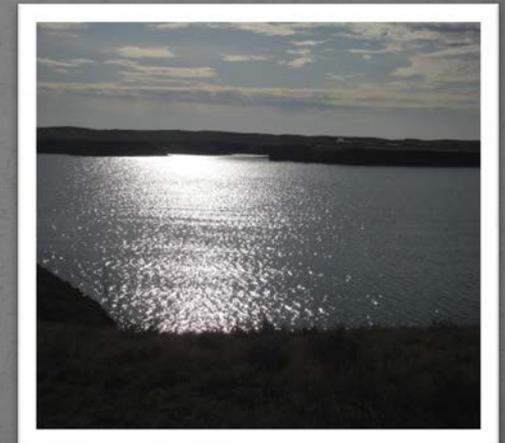


Municipal Use in the Upper Missouri Basin

Kerri Strasheim

MT DNRC

406-556-4504



Water Use Trends and Projections: Municipal

- Introduction/Background
- What's Working Well
- Current Areas/Times of "Oversupply"
- Current Areas/Times of Shortage
- Projections for the Future
- Conclusions/Questions



Municipality vs. Municipal Use

Municipality

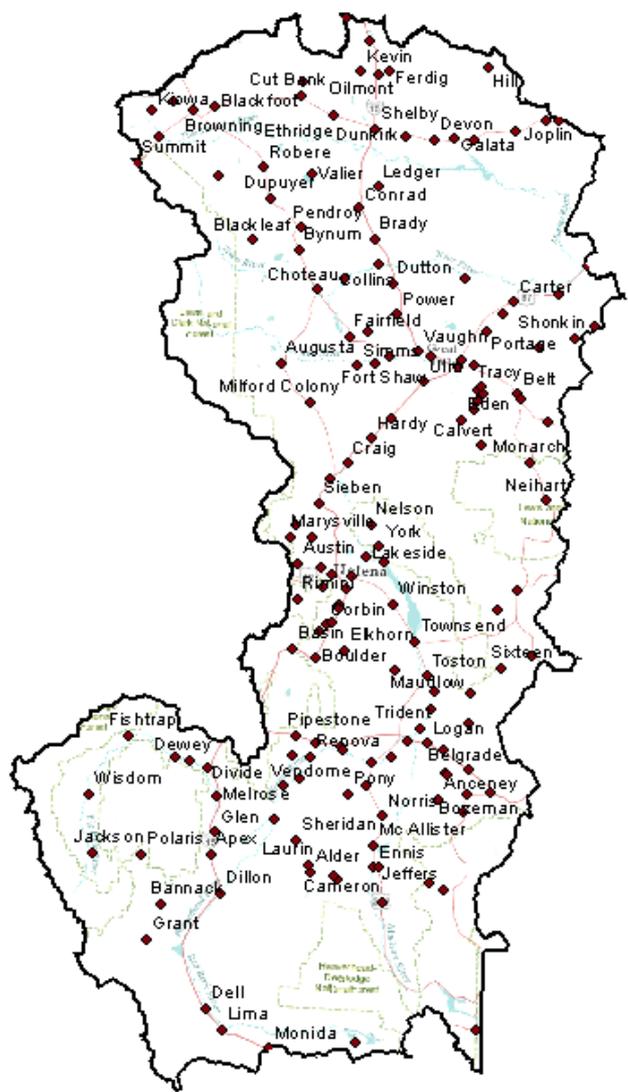
- This refers to a status, defined in Title 85 as an incorporated city or town organized and incorporated under Title 7, chapter 2.



Municipal Use

- This refers to a purpose of use of water, and along with municipalities, this could include subdivisions and water and sewer districts. Our definition is water appropriated by and provided for those in and around a municipality or an unincorporated town.

Upper Missouri River Basin Communities

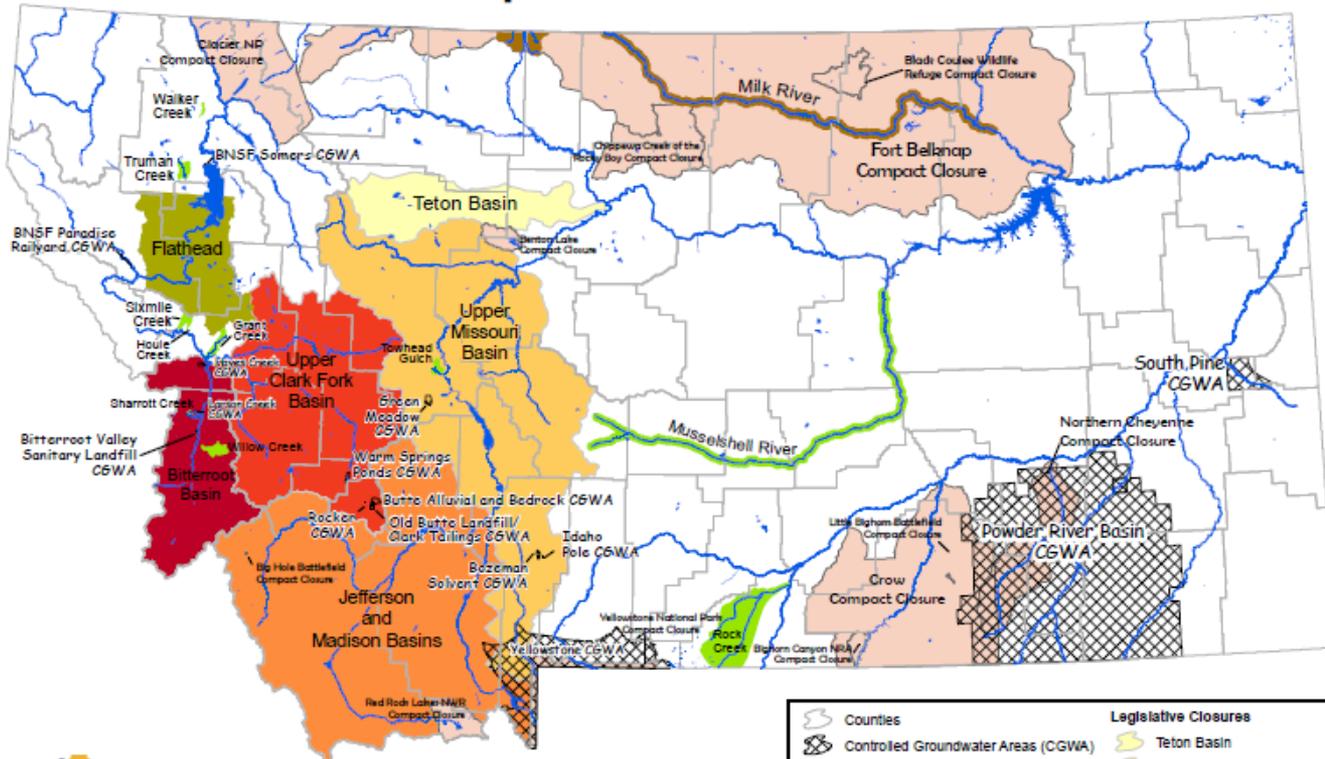


Water Use Averages and Examples

- Examples
 - Cooke City – used data from Water Resources Engineering showing a water usage comparison based on actual water use of metered and non-metered towns
 - Virginia City – Annual use of 452 GPCD with peak of 668 GPCD in summer months
 - Utility Solutions
 - Residential Water Demand is 160 GPD/Living Unit (Actual)
 - Commercial Water Demand is 16 GPD/Employee (DEQ)
 - Irrigation Water Demand is 1.56 AF/Acre (15% efficiency factor)
 - City of Bozeman
 - Average Demand of 173 GPCD

Closures and Mitigation

Montana Basin Closures and Controlled Groundwater Areas September 2010



Map created by MT DNRC WRD on 09/13/10.

Legend	
	Counties
	Controlled Groundwater Areas (CGWA)
	Department Ordered Milk River Closures
	Compact Closures
	Montana Supreme Court Order Closure
	Administrative Rule Closures
	Teton Basin
	Upper Missouri Basin
	Jefferson and Madison Basins
	Upper Clark Fork Basin
	Bitterroot Basin

Closures and Mitigation (cont)

- Two types of mitigation:
 - **Mitigation Plan**
 - This often involves flows left instream to mitigate net depletions on that stream.
 - **Aquifer Recharge Plan**
 - This often involves some type of aquifer recharge basin, where an older surface water right is discharged to the aquifer using buried perforated pipes.



Closure

- Closed Basin exceptions do include municipalities and high spring flows – something to consider when water right planning and considering storage in a closure.



What's Working Well

- Existing Water Rights – optimizing and maintaining
 - Statements of Claim
 - Reservations
 - Permitted Wells
 - Permitted Wells with Mitigation
- Acquiring Water Rights
 - Purchase Existing Water Rights or Shares
 - Through annexation requirements (either water rights transfer to city or pay fee)
- System Losses – Leak Detection and Repair
- Planning for the Future

Water Reservations, MCA 85-2-316

Key Points

- Water Reservations – to preserve future use of water for Montanans
- Not to be confused with federal “reserved water rights” which indicates water rights created when Congress or the President reserves land out of the public domain for federal entities or Indian Tribes



Water Reservations (cont)

- Yellowstone River Basin Water Reservations (1978)
 - 8 Municipalities, priority of December 15, 1978, 12:30 pm
- Upper Missouri Water Reservations (1985)
 - 14 Municipalities, July 1, 1985
- Lower Missouri Water Reservations (July 1, 1985) and Little Missouri Water Reservations (July 1, 1989)
 - 11 Municipalities
- Basins that remain open to water reservations
 - Clark Fork River and Tributaries
 - Kootenai River and Tributaries
 - St. Mary River and Tributaries

Acquiring and Changing Water Rights

- Examples of what some communities are doing
 - Reservoirs
 - Buying shares from state-owned reservoirs
 - Leasing Bureau of Reclamation water
 - Growth Capture
 - Requiring existing water rights be turned over to city when city annexes land, whether surface water rights or groundwater developments.
 - Purchasing Nearby Water Rights for changing

A Grey Area – Rainwater Harvesting

- Policy not well developed on this
- Generally, if within existing place of use, not a concern
- Ask that large systems speak with DNRC first



A Challenge: Wastewater Reuse

- Effluent Reuse
 - DNRC still refining policy/procedure on this
 - Deer Lodge Finding:
 - If part of required treatment of the water, then no permitting/change authorizations are needed. Deer Lodge example was switching from discharge to land application – this was deemed as part of required treatment of water, thus no water right permitting required.
 - If the reuse is a new beneficial use of water, a water right permit or change authorization may be needed.

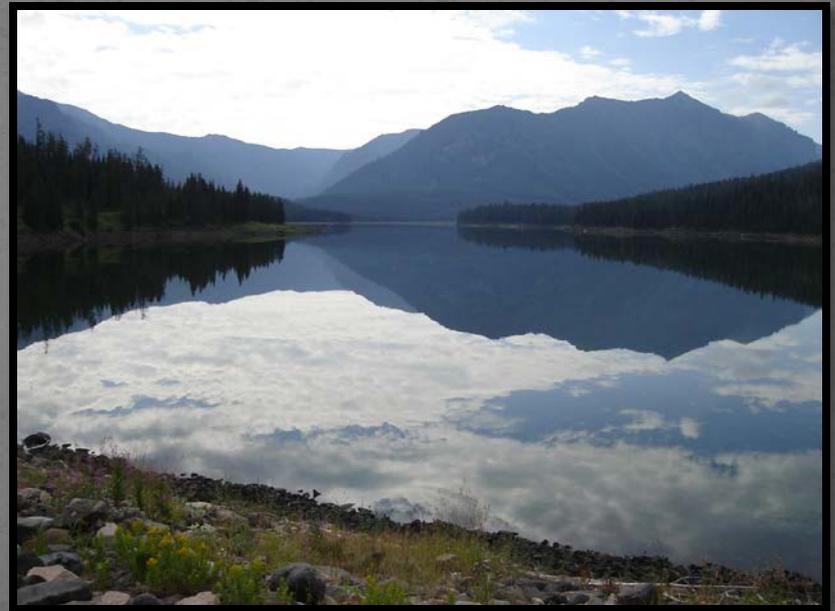
Current Areas/Times of “Oversupply”

- Spring Flooding Events
- Full Storage Times, Times of Storage Operation
- Beginning of Growth Planning Cycle



Current Areas/Times of Shortages

- Droughts (other Natural Disasters)
- Winter Freezing Conditions
- Any Times Storage Use Restricted
- Basin Closures



Projections for the Future

- Conservation
- Climate Change Adjustments?
- Real Time Water Use Data
- Funding Needs?
- Redundancy of supply / increased storage
- Reuse/Purple Pipe?

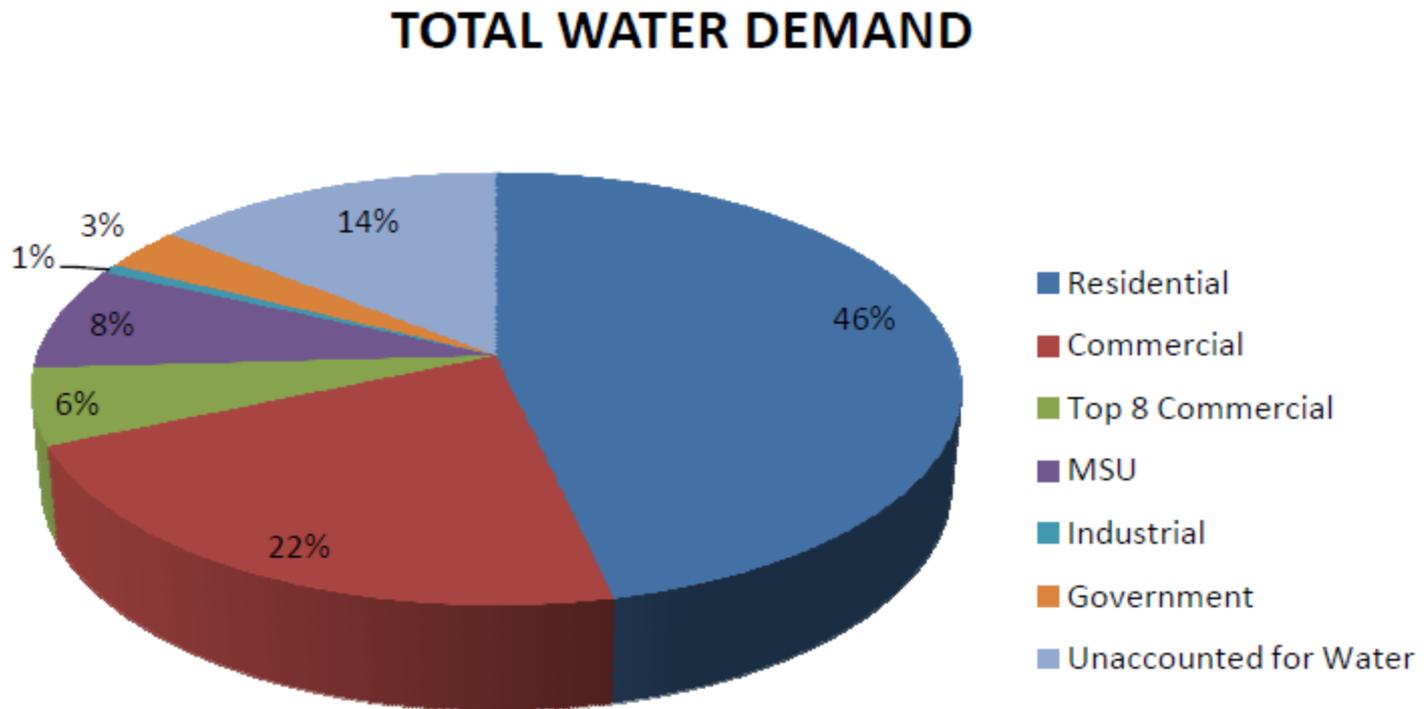


Specific Examples

- City of Bozeman
 - 30- and 50-year planning horizons
 - Projecting Growth –moderate or high rate (past shows 0-5% growth rates)
 - Firm Water Supply Yields/Water Rights/Seasonality
 - Available Water Supply vs Future Water Balance Gap
 - Models with and without climate change (climate change models show a different water availability pattern during the year, e.g. earlier spring runoff)
 - Process developed a method to score/rank supply options
 - Process resulted in identified water supply alternatives to further investigate to meet future water supply needs

City of Bozeman Example

Figure 3-1: Characterization of Total Water Demand by User Class



Self-Supply – Domestic Wells

- What's Working Well – Exemption to Permitting
 - No bills for water use, typically individually supplied
 - Allows for rural development
- Times of Oversupply
 - Abundant aquifer area
- Times of Shortage
 - Limited aquifer, either in quantity or quality (CGAs)
 - Drought, increased demand
- Future
 - Proposed New Rules
 - Increased Controlled Groundwater Areas

Data Gaps

- Good estimates of available supply and existing legal demands for basins?
- Groundwater details
- ?

Conclusions/Questions

- Importance of Proactive Water Supply Planning
- Funding Prioritization?
- Water in the Bank? (Storage, Reservations)
- Maximizing Existing Water
- Conservation



DNRC Water Resources Division Water Rights Website

http://www.dnrc.mt.gov/wrd/water_rts/

Forms

Administrative Rules

Pending Application Information

Regional/Unit Office Contact Information

Water Resource Surveys

NRIS Interactive Mapping

Kerri Strasheim kstrasheim@mt.gov 406-556-4504



