



# Montana State Water Plan & Drought Plan Water Storage Information Sheet

Prepared for: Water Policy Interim Committee

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The Montana State Water Plan (2015) acknowledged that large, traditional (built) water storage projects are “expensive to plan, construct, operate, and maintain” and are further “limited by the availability of suitable locations, cost, public support, the need to mitigate environmental impacts, and the limited legal and physical availability of water.” The State Water Plan endorsed ways to maximize built storage capacity through rehabilitation and modifying reservoir operation policies, as well as integrating natural storage to benefit water supplies and ecosystems.

The Montana Drought Plan (2023) recognized that water storage – one of the earliest drought adaptation strategies – continues to play a critical role in meeting current and future water demands. Montana’s federally owned reservoirs were constructed between 1900 and 1950, and state-owned water projects were mostly built in the 1930s. Consequently, Montana’s aging dams and reservoirs require significant and ongoing investment (private, state, and federal) for maintenance, repair, and rehabilitation.

## State Water Plan Recommendations Related to Storage

### **Increase Flexibility to Manage Available Water Supplies Through Storage & Rehabilitation of Existing Infrastructure**

- Evaluate the policies governing the operation of state & federal reservoirs.
- Explore opportunities to increase the storage capacity of existing state & federal reservoirs.
- Explore the opportunities & challenges of securing contract water from federal storage projects.
- Provide cost-share funding for upgrading & rehabilitating existing water conveyance infrastructure.
- Develop public-private partnerships & innovative funding strategies for storage projects.
- Identify basins where high spring flows are physically & legally available for storage.
- Provide cost-share funding for developing additional water storage infrastructure.

### **Integrate Natural Storage to Benefit Water Supplies & Ecosystems**

- Explore the water right implications of integrating natural storage & artificial aquifer recharge into Montana’s water use administration.
- Develop a pilot project to quantify the benefits of natural storage.
- Investigate the feasibility of using the natural storage capacity of wetlands, riparian areas, or floodplains to enhance water management.
- Investigate the feasibility & potential for using aquifer storage & recovery tools to meet local water needs.

### **Improve Conjunctive Management of Surface Water & Groundwater**

- Support funding for the MBMG’s Groundwater Investigation Program.
- Identify options for mitigation or aquifer recharge plans to offset impacts of groundwater use on surface water.
- Investigate the availability & the potential for the diversion of high spring surface water flows for aquifer recharge.
- Investigate the design of aquifer storage & recovery projects to optimize water use while protecting existing water users.

## Drought Plan Recommendations on Storage

**Water supply, storage, and delivery:** maximize water supply, storage, and delivery by enhancing existing built storage, expanding natural storage, and assessing infrastructure.

- Identify future stable funding for rehabilitation and maintenance of state and private water projects.
- Assess opportunities to expand surface water storage projects.
- Evaluate managed aquifer recharge as an adaptation strategy.
- Complete a feasibility analysis and prepare a preliminary project design for a cloud seeding pilot project in Montana.
- Use and incentivize nature-based solutions to maximize water capture and retention.
- Explore a new paradigm of integrated floodplain management.
- Update studies of public and private irrigation infrastructure condition and needs.

## Considerations for New and Expanded Storage

1. For Montana to consider new and expanded storage, investment in feasibility studies is necessary. These studies would broadly need to evaluate:
  - a. Technical and physical constraints of the location.
  - b. Fiscal analysis of costs, potential funding sources, and ability to market water.
  - c. Environmental impacts analysis
  - d. Displacement of existing infrastructure (e.g., roads, railroads, housing)
  - e. Legal and physical availability of water
  - f. Size of the project and ability to carry-over storage through a sequence of dry years
  - g. Policy and rule changes necessary for implementation.
2. The state could consider moving forward with developing new funding opportunities even as feasibility analyses are ongoing because long-term funding of construction and maintenance of storage can be a barrier to implementation.
3. Identification and definition of high priority areas could be a consideration for investment for future storage opportunities to maximize benefits to the state (e.g., areas experiencing growth pressures, limited water availability, persistent drought conditions).

## Further Information:

- **Montana State Water Plan:** <https://dnrc.mt.gov/Water-Resources/Water-Planning-Implementation-and-Communications/State-Water-Plan-Regional-Basin-Plans/>
- **Montana Drought Plan:** <https://www.mtdroughtinfo.org/>

# Montana's 2015 State Water Plan

A watershed approach for meeting current demands & the needs of future generations



## 1 Water Supply and Demand

1.1 Support Water Use Efficiency & Water Conservation

1.2 Improve & Expand Efforts to Quantify Surface Water Supplies & Availability

1.3 Increase Flexibility to Manage Available Water Supplies Through Storage & Rehabilitation of Existing Infrastructure

1.4 Integrate Natural Storage to Benefit Water Supplies & Ecosystems

1.5 Support & Expand Existing Drought Preparedness & Planning Efforts

### 1.1 Support Water Use Efficiency & Water Conservation

- Quantify the effects associated with changes in irrigation methodologies.
- Assist landowners with controlling discharge from uncontrolled flowing wells.
- Support research on innovative water management & conservation strategies.
- Analyze the water right implications & lessons learned from the land application of treated municipal wastewater.
- Support implementation of water conservation incentives & measures that are adaptable to local conditions.
- Encourage the development of community wells as an alternative to individual wells.

### 1.2 Improve & Expand Efforts to Quantify Surface Water Supplies & Availability

- Conduct a basin-wide physical water availability assessment in the Upper Missouri Basin.
- Build on lessons learned to conduct physical water availability assessments in other basins.
- Identify & evaluate the opportunities & challenges that will influence water supply & demand over the next 20 years.

### 1.3 Increase Flexibility to Manage Available Water Supplies Through Storage & Rehabilitation of Existing Infrastructure

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### 1.4 Integrate Natural Storage to Benefit Water Supplies & Ecosystems

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- Investigate the feasibility & potential for using aquifer storage & recovery tools to meet local water needs.

### 1.5 Support & Expand Existing Drought Preparedness & Planning Efforts

- Support the development of drought management plans in small to medium size watersheds.
- Assess potential threats to the state's water supply & economy resulting from extended periods of drought & increased climate variability.
- Support research in drought monitoring & forecasting.
- Conduct climate risk assessments for each of Montana's water planning basins.

TOPICS

CRITICAL ISSUES

RECOMMENDED ACTIONS

## 2 Water Use Administration

2.1 Complete an Accurate & Enforceable Water Rights Adjudication

2.2 Enforce Against Illegal Water Use

2.3 Provide Sufficient Information, Legal & Administrative Capacity to Minimize Adverse Effects During Times of Water Scarcity

2.4 Analyze Additional Opportunities & Challenges for Using Water Marketing, Mitigation, & Banking as Tools for Meeting New Demands

2.5 Complete all Outstanding Tribal & Federal Compacts & Work Closely with Federal Partners to Better Manage Federal Water Projects

### 2.1 Complete an Accurate & Enforceable Water Rights Adjudication

- Continue funding of both the Water Court & the DNRC efforts to complete the current adjudication process.
- Evaluate & develop processes to ensure water rights are accurately & consistently defined across Montana.
- Create a plan for post adjudication of water distribution, management, & enforcement roles.

### 2.2 Enforce Against Illegal Water Use

- Improve current administrative process for bringing enforcement action against illegal water use.
- Support a water rights dispute mediation unit to provide an administrative alternative to traditional water rights litigation.
- Improve the efficiency of establishing water distribution projects based upon Water Court decrees.
- Promote consistent legal & professional measurement & distribution of water under decree.
- Clarify how decrees within subbasins will be administered when a water rights dispute arises between water users in adjacent basins.

### 2.3 Provide Sufficient Information, & Legal & Administrative Capacity to Minimize Adverse Effects During Times of Water Scarcity

- Provide legal & administrative mechanisms that enable water users to reduce water use without the risk of abandonment.
- Assess the water right implications & potential adverse effects of allowing a water right holder to change their period of use.

### 2.4 Analyze Additional Opportunities & Challenges for Using Water Marketing, Mitigation, & Banking as Tools for Meeting New Demands

- Assess the opportunities, & challenges of using water marketing, mitigation, & banking as tools for meeting new demands.
- Create well-managed systems that offer economic development opportunities to market, transfer & lease water.

### 2.5 Complete all Outstanding Tribal & Federal Compacts & Work Closely with Federal Partners to Better Manage Federal Water Projects

- Continue to support & implement all adopted reserved water right compacts.
- Remain actively engaged with adjacent states & Canada to protect Montana's interest through the implementation of treaties & compacts.

### 3 Water Information

3.1 Support Improvements to the Montana Water Information System

3.2 Inventory of Consumptive & Non-Consumptive Uses

3.3 Monitor Water Supply & Distribution

3.4 Improve & Expand Efforts to Quantify Groundwater Supplies & Availability

3.5 Improve Conjunctive Management of Surface Water & Groundwater

#### 3.1 Support Improvements to the Montana Water Information System

- Provide the State Library with resources to develop new water related data sets, interactive applications, & maps.
- Update the Montana Spatial Data Infrastructure (MSDI) Hydrography Framework
- Develop a process for transmitting water data generated by local, state & federal agencies, & watershed groups to the State Library.
- Work with the U.S.G.S. on the development of StreamStats.
- Improve the spatial representation of points of diversion (PODs) & places of use (POUs) associated with water rights.

#### 3.2 Inventory of Consumptive & Non-Consumptive Uses

- Acquire the best information available on current consumptive & non-consumptive water use in Montana.
- Develop the capability to calculate consumptive use (ET) using available information generated from NASA's Landsat Program.
- Explore the development of standard practices for evaluating consumptive use (ET) from analysis of Landsat imagery.
- Provide technical assistance & incentives to water users to measure water at or near the point of diversion.

#### 3.3 Monitor Water Supply & Distribution

- Expand the funding base for the USGS Co-Op Program beyond traditional state & federal agency partners.
- Develop a network of 100 state operated real-time stream gages on smaller streams & tributaries not monitored by the USGS.
- Support expanded collection snowpack & soil moisture condition data.

#### 3.4 Improve & Expand Efforts to Quantify Groundwater Supplies & Availability

- Reassess the criteria used in selecting studies conducted under MBMG's Groundwater Assessment & Groundwater Investigation Programs
- Provide funding to MBMG's Groundwater Characterization Program (GWCP).
- Provide funding to expand MBMG's Groundwater Monitoring Program.

#### 3.5 Improve Conjunctive Management of Surface Water & Groundwater

- Support funding for the MBMG's Groundwater Investigation Program.
- Identify options for mitigation or aquifer recharge plans to offset impacts of groundwater use on surface water.
- Investigate the availability & the potential for the diversion of high spring surface water flows for aquifer recharge.
- Investigate the design of aquifer storage & recovery projects to optimize water use while protecting existing water users.



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### 4 Ecological Health & Environment

4.1 Provide Sufficient Protection for Instream Flows Within the Prior Appropriation Framework to Maintain Aquatic & Riparian Systems

4.2 Support Proactive, Coordinated Efforts to Reduce Invasive Species & Protect Endangered Species in Montana

#### 4.1 Provide Sufficient Protection for Instream Flows Within the Prior Appropriation Framework to Maintain Aquatic and Riparian Systems

- Ensure the change process for instream flow/fishery water rights is consistent with the change process for all other beneficial uses.
- Recognize & document the importance of connectivity within stream and riparian systems.
- Support research to determine the hydrological conditions needed to maintain the natural ecological functions of Montana's rivers & streams.

#### 4.2 Support Proactive, Coordinated Efforts to Reduce Invasive Species & Protect Endangered Species in Montana

- Promote voluntary programs that preserve the flexibility of landowners into Endangered Species Act protection & recovery programs.
- Support local & agency coordination efforts to implement invasive species protection programs.

### 5 Collaborative Water Planning & Coordination

5.1 Expand Support for Basin & Community Based Watershed Planning

5.2 Encourage Collaboration, Coordination, & Communication across Local, State, Federal & Tribal Governments

5.3 Develop a Plan to Deliver Water Related Training, Education & Outreach

#### 5.1 Expand Support for Basin & Community Based Watershed Planning

- Provide funding to convene the Basin Advisory Councils to evaluate, update & implement the recommendations adopted in the State Water Plan.
- Provide funds to support local efforts to implement state & basin plan recommendations.
- Build on the work of the statewide organizations such as the Montana Association of Conservation Districts & the Montana Watershed Coordination Council to local natural resource planning.

#### 5.2 Encourage Collaboration, Coordination, & Communication across Local, State, Federal & Tribal Governments

- Improve interaction and communication between water users, watershed groups, technical specialists, & policy makers at all levels of government.
- Encourage land management agencies to include potential impacts to water supplies in their management decisions.

#### 5.3 Develop a Plan to Deliver Water Related Training, Education & Outreach

- Expand on current efforts to create & deliver public awareness and training programs.
- Develop an easily navigable webpage or portal that provides up to date information on Montana's water resources.