

# Montana Mitigation Banking

Changing the Timing of Water

Unlocking the Future of Water Use in Montana

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# Overview

- Context
- Background
- Terminology
- Opportunities and Solutions
- What's Next

\*Disclaimer: This represents current efforts at MT DNRC; and is not reflective of current or proposed policy changes.

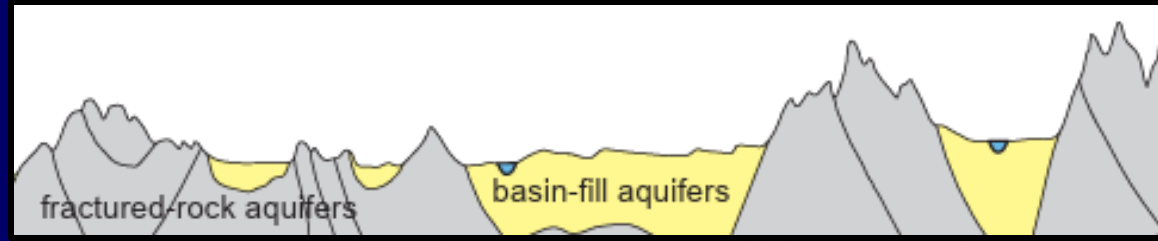


Holland Lake, MT

## Western Montana

Basin-fill unconfined aquifers

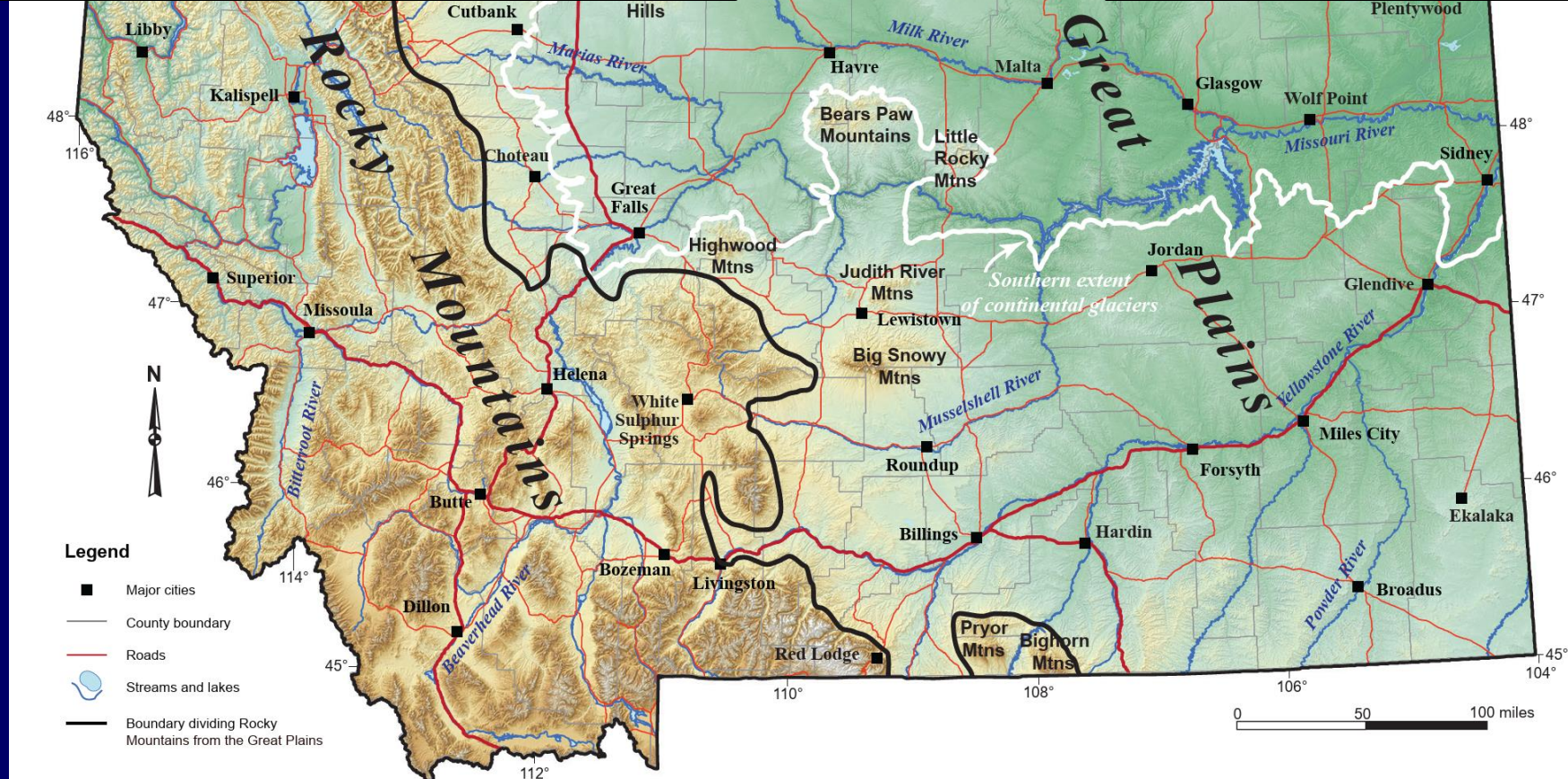
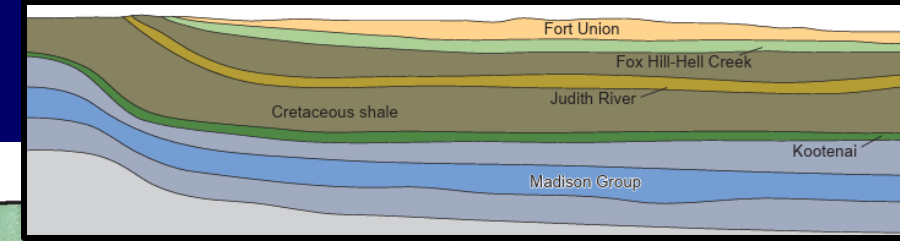
short residence time - closely connected streams



## Eastern Montana

Sedimentary bedrock aquifers

long residence time



# Background

- Montana conjunctively manages surface water and groundwater as a **connected resource**
- Most surface water has been over-appropriated for decades, in some cases 10x over appropriated
- Any depletion to over appropriated surface water must be mitigated
- Exception is for **Exempt Groundwater Rights**



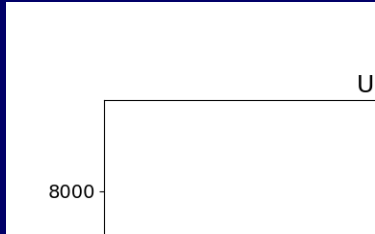
# Background

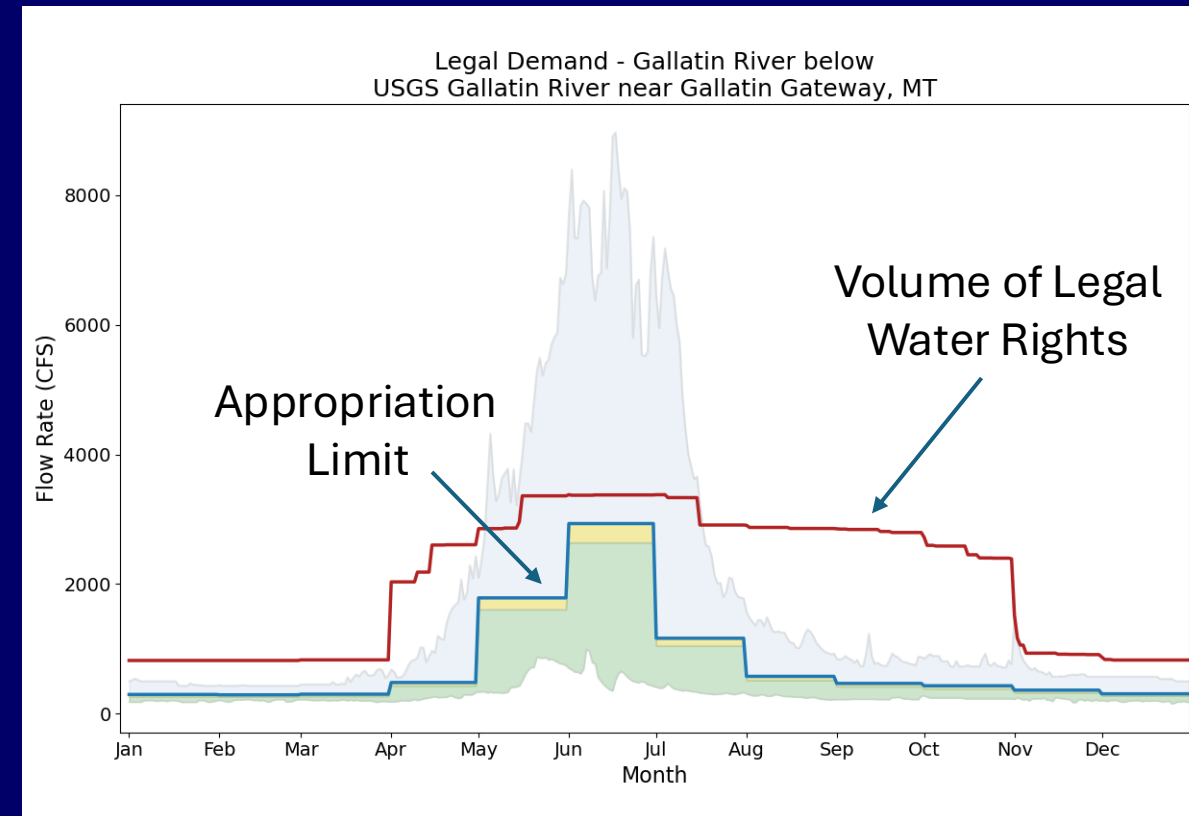
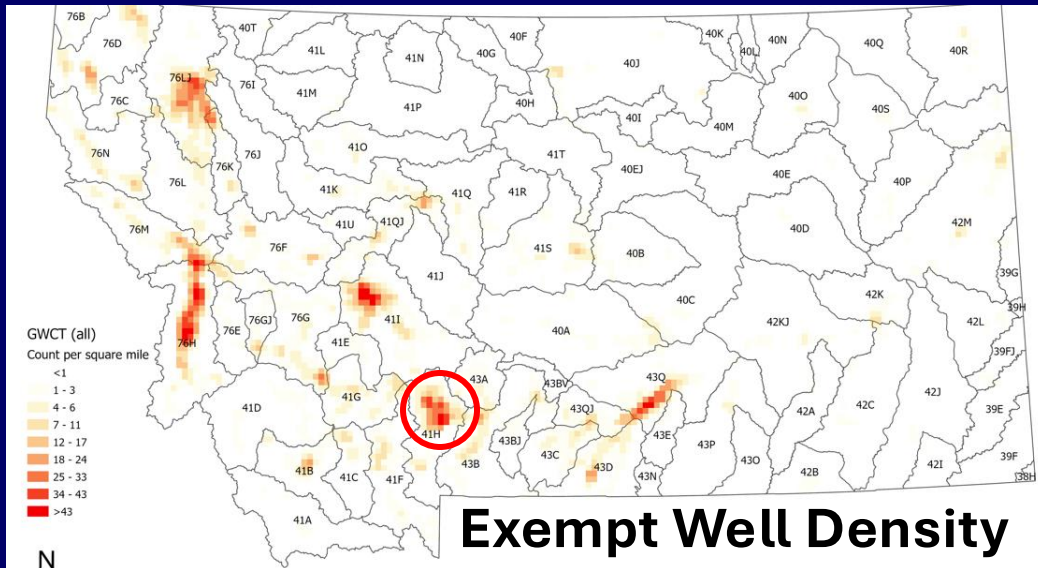


- Because surface water has been over-appropriated for so long and because surface water and groundwater are recognized as connected, new groundwater rights have been limited for several decades, and **most aquifers have plenty of water physically available – no remaining legal availability of connected surface water.**
- Cumulative use of **Exempt Groundwater Rights** are beginning to have a noticeable impact on over-appropriated surface water

# Exempt Well Impacts

## Gallatin Basin Example (Bozeman Area)

- 9,337 exempt wells within valley-fill aquifer
  - Max concentration: 220 exempt wells per square mile
  - Total permitted use: 23,564 AF/year
  - Total consumptive use: 10,748 AF/year
  - Net depletion to surface water: ~15cfs
- 



# Mitigation Challenges

Any new water use must be mitigated by retiring or changing an “effective” older water right

**Rate, Location, Timing**

Most water rights in priority are seasonal irrigation

Most new use demands are year-round for domestic and municipal



# Terminology

**Water Markets** – Marketplace for existing water rights. Good tool to help identify and facilitate transfer of water rights. More useful for large water users like municipal, irrigation, large developments.

**Water Trusts** – “parking place” for water rights to avoid abandonment. Good tool to help enhance seasonal instream flows.

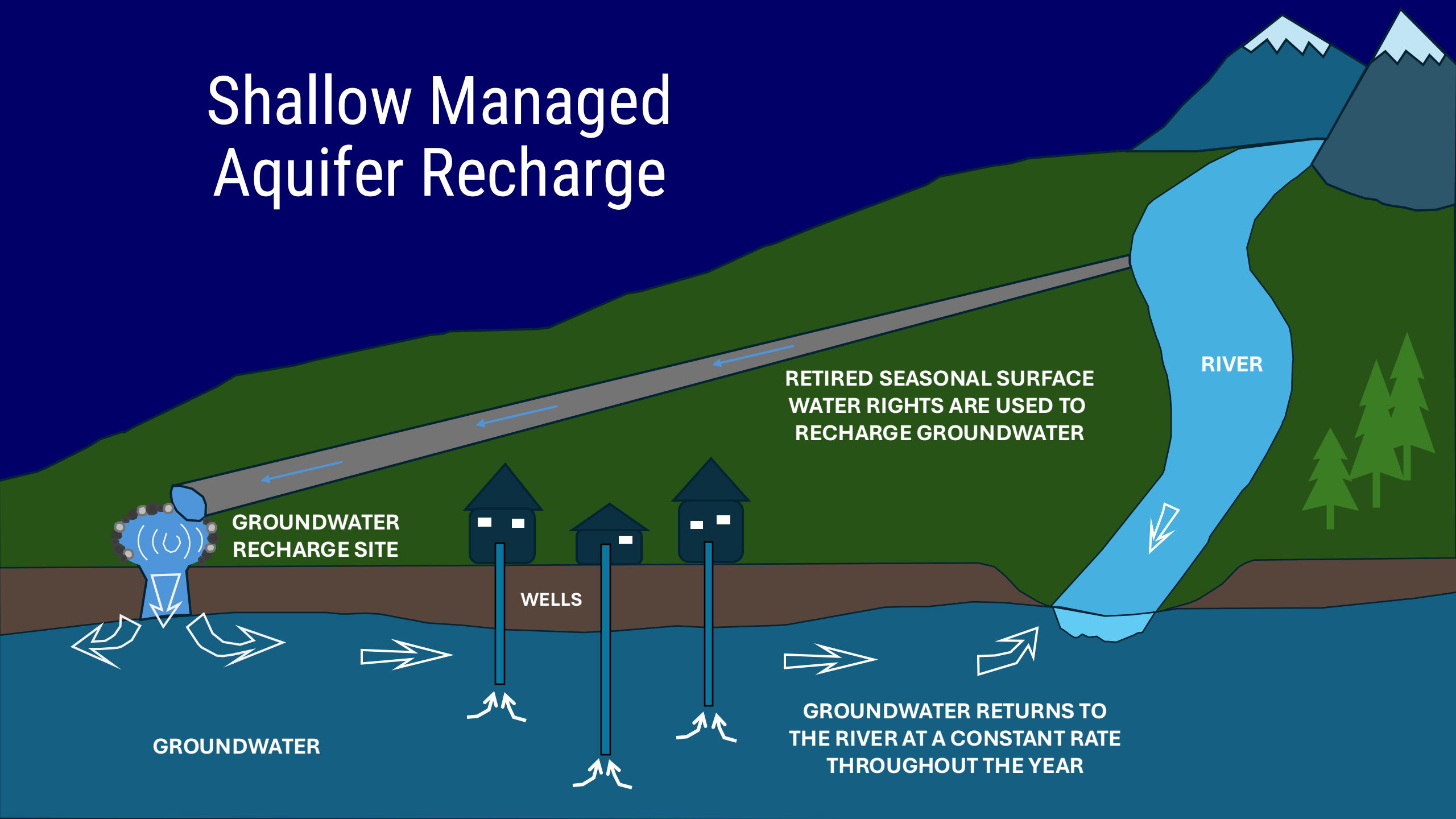
**Mitigation Banks** – Actual bank that uses wet water rights on the front end, transitions the timing of the right from seasonal to year-round, sells credits to public to use for mitigating new uses of water.



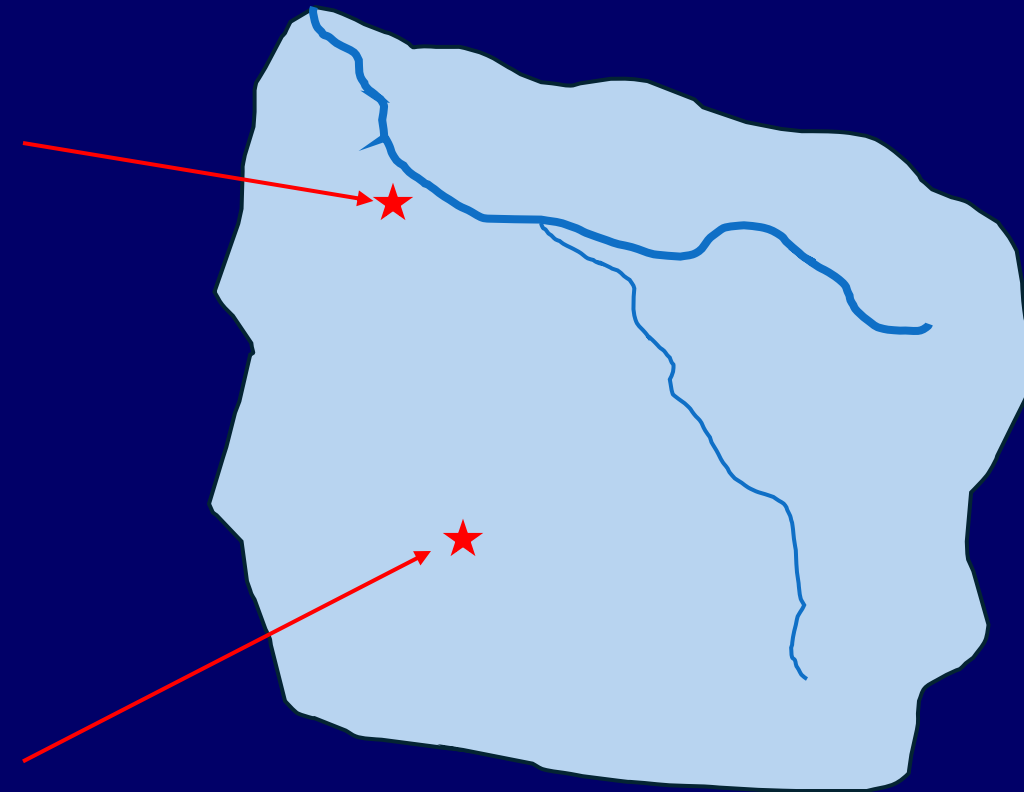
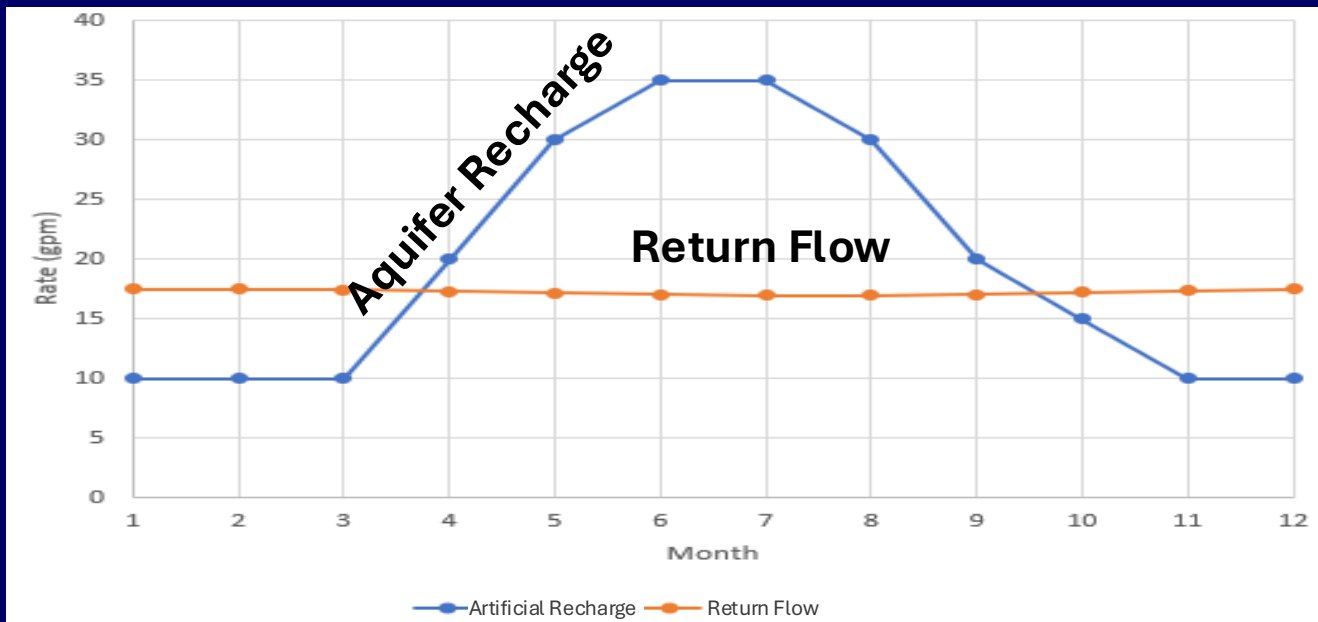
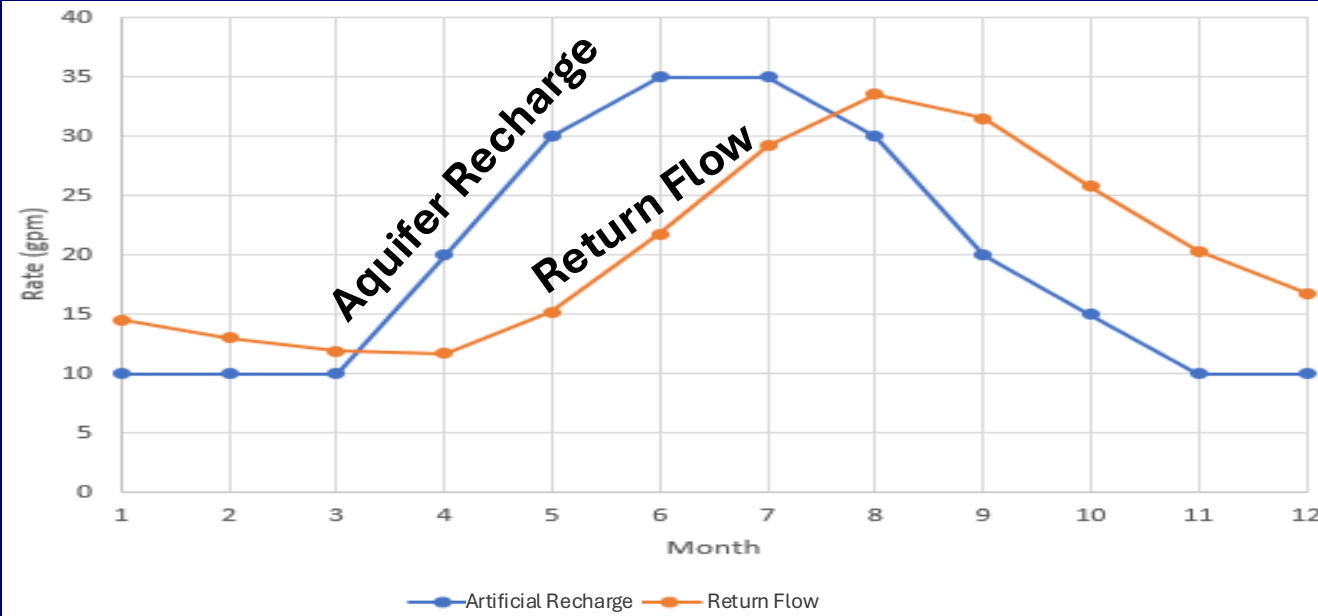
# Mitigation Banking Opportunities

- MAR – Managed Aquifer Recharge
- ASR – Aquifer Storage and Recovery
- Surface reservoir storage – water can be released throughout the year
- Updating policy to make mitigation easier

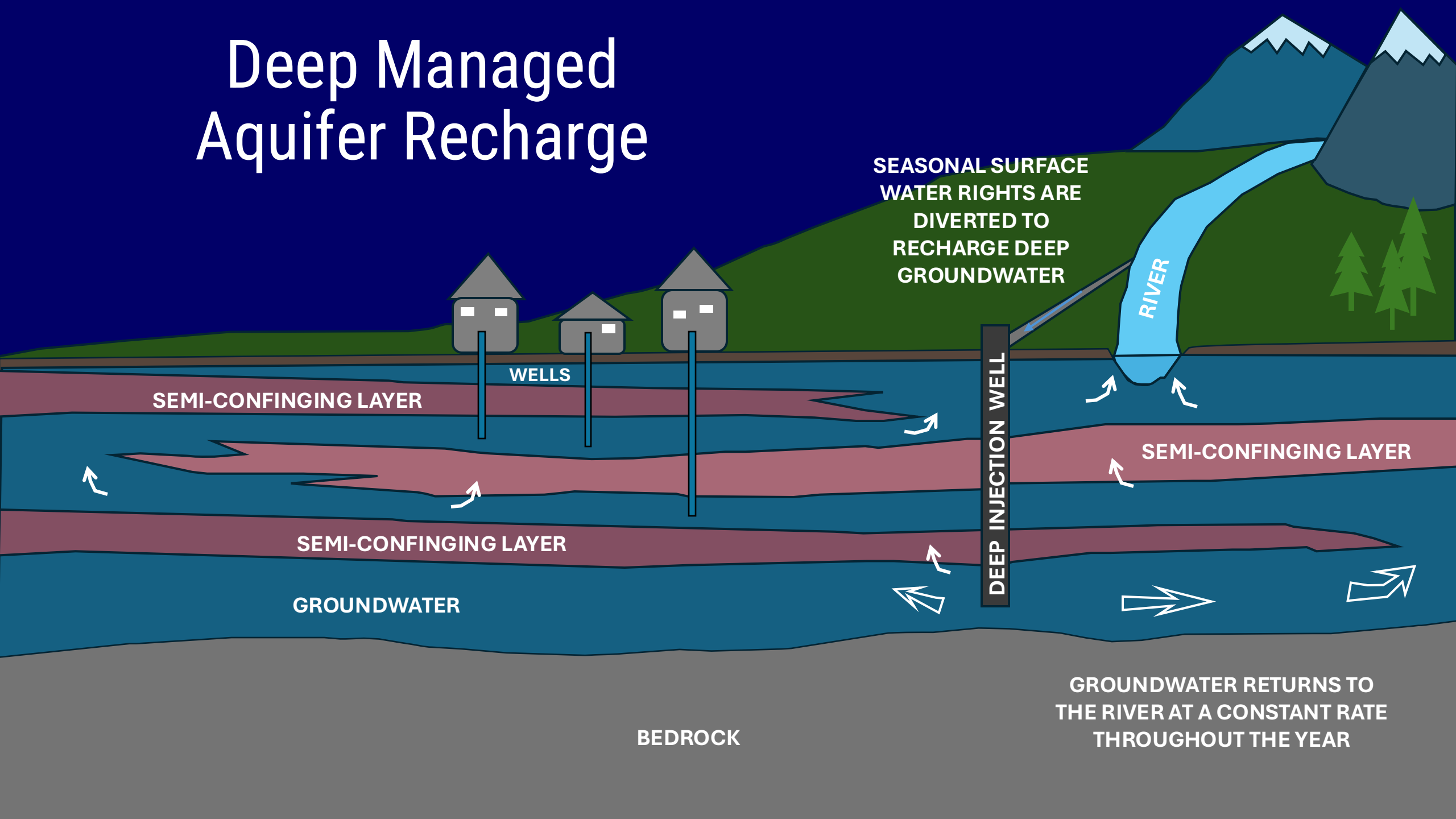
# Shallow Managed Aquifer Recharge



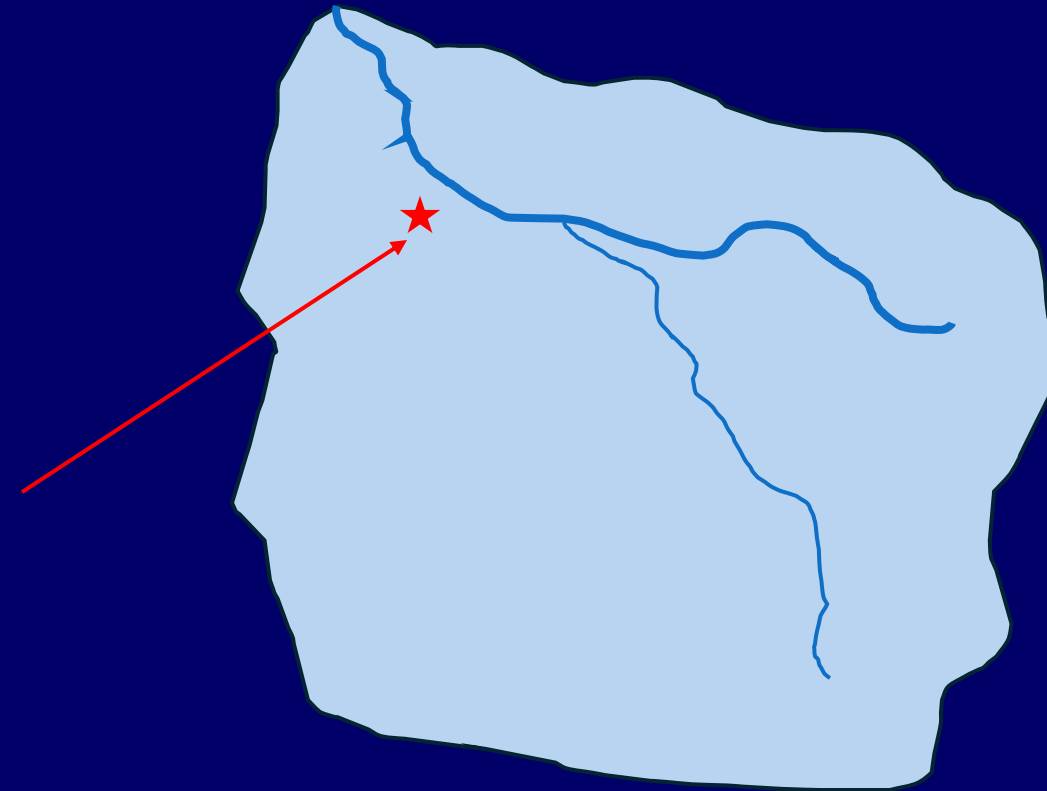
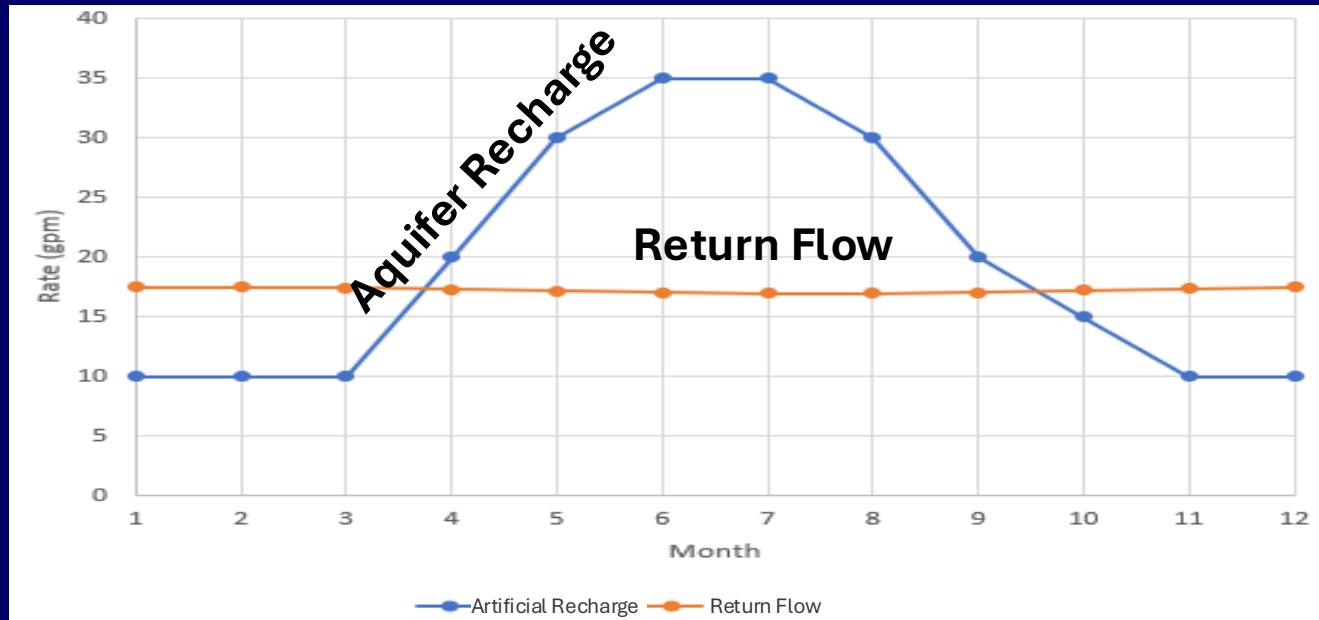
# Managed Aquifer Recharge



# Deep Managed Aquifer Recharge

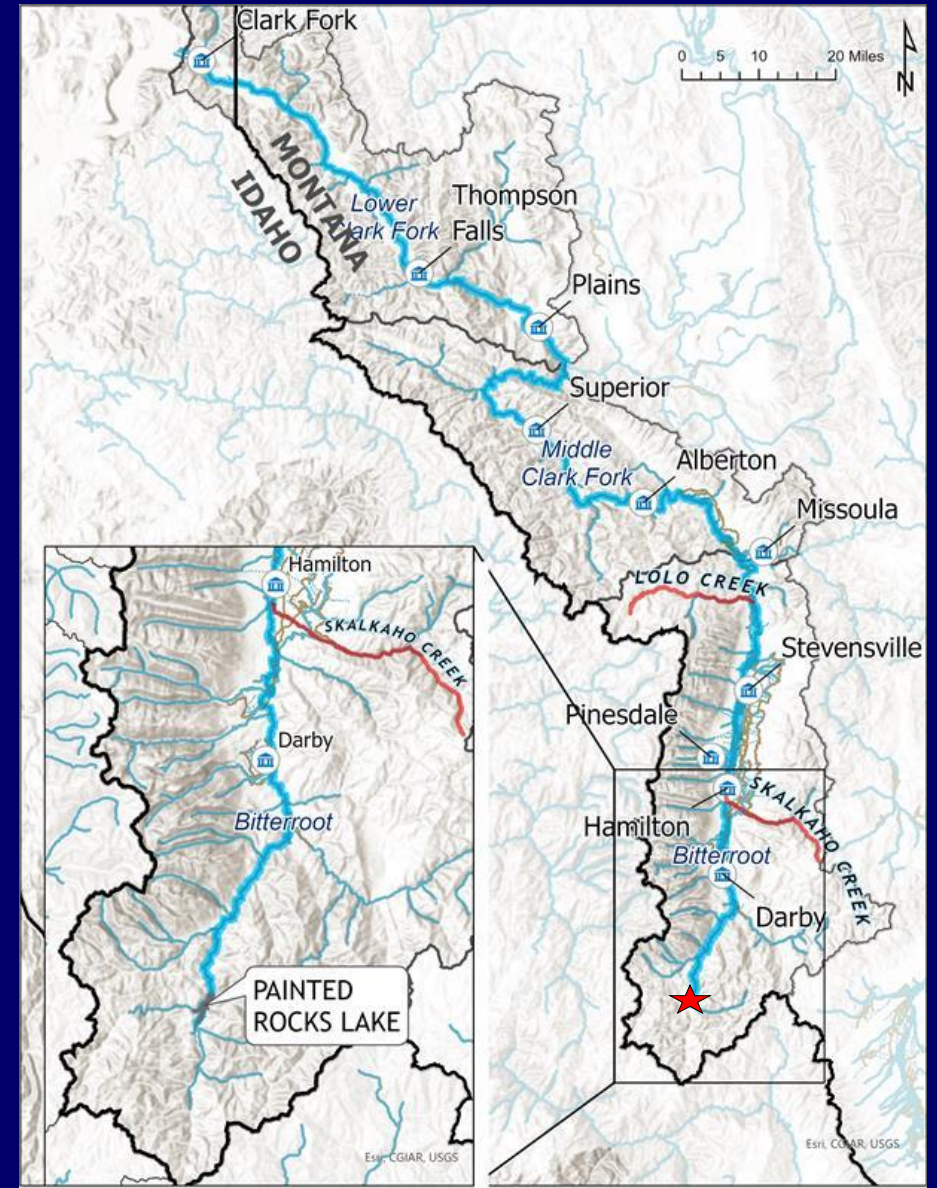
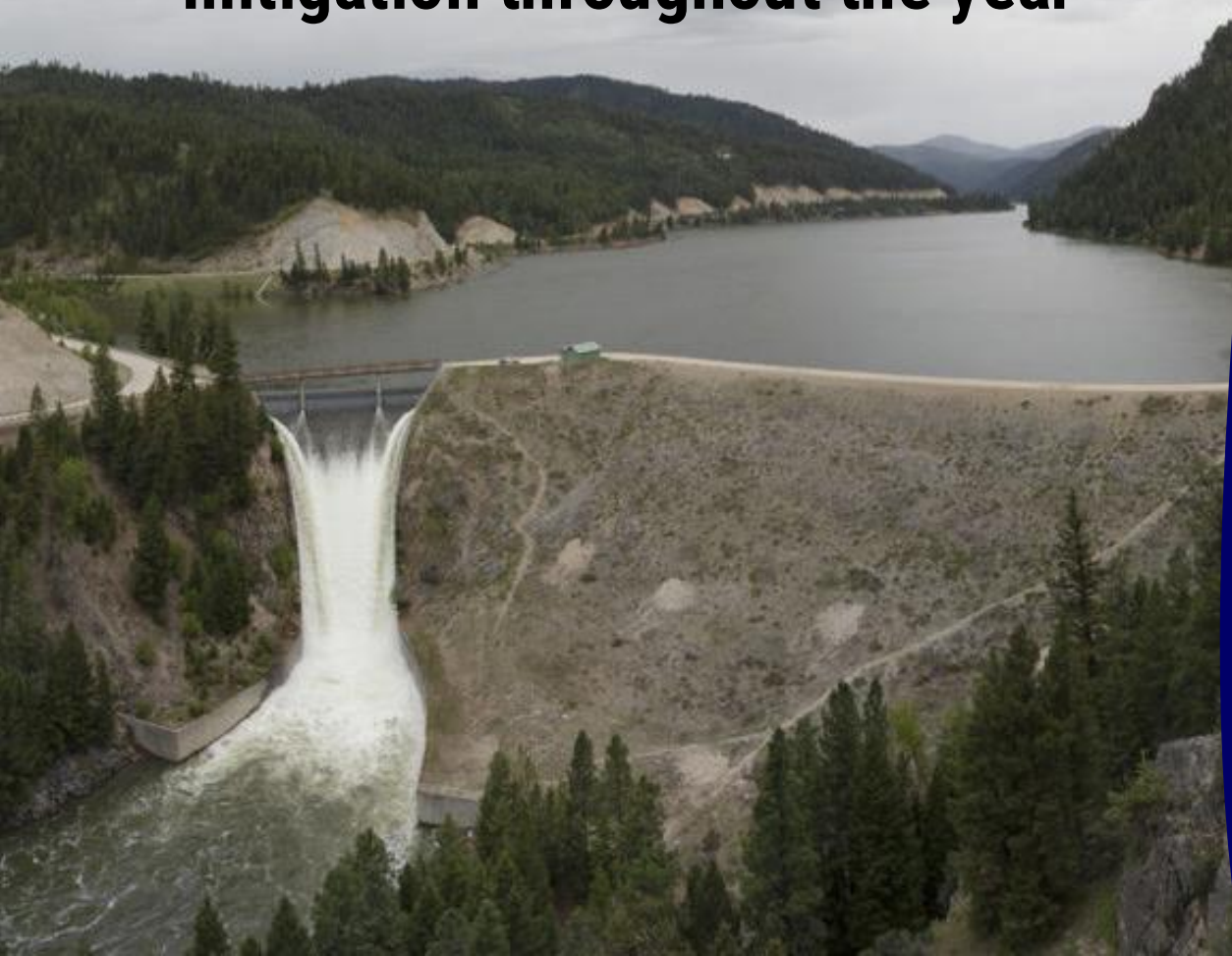


# Deep Managed Aquifer Recharge



# Surface Reservoir Storage

**Existing storage used to store seasonal water and delivered as constant rate mitigation throughout the year**

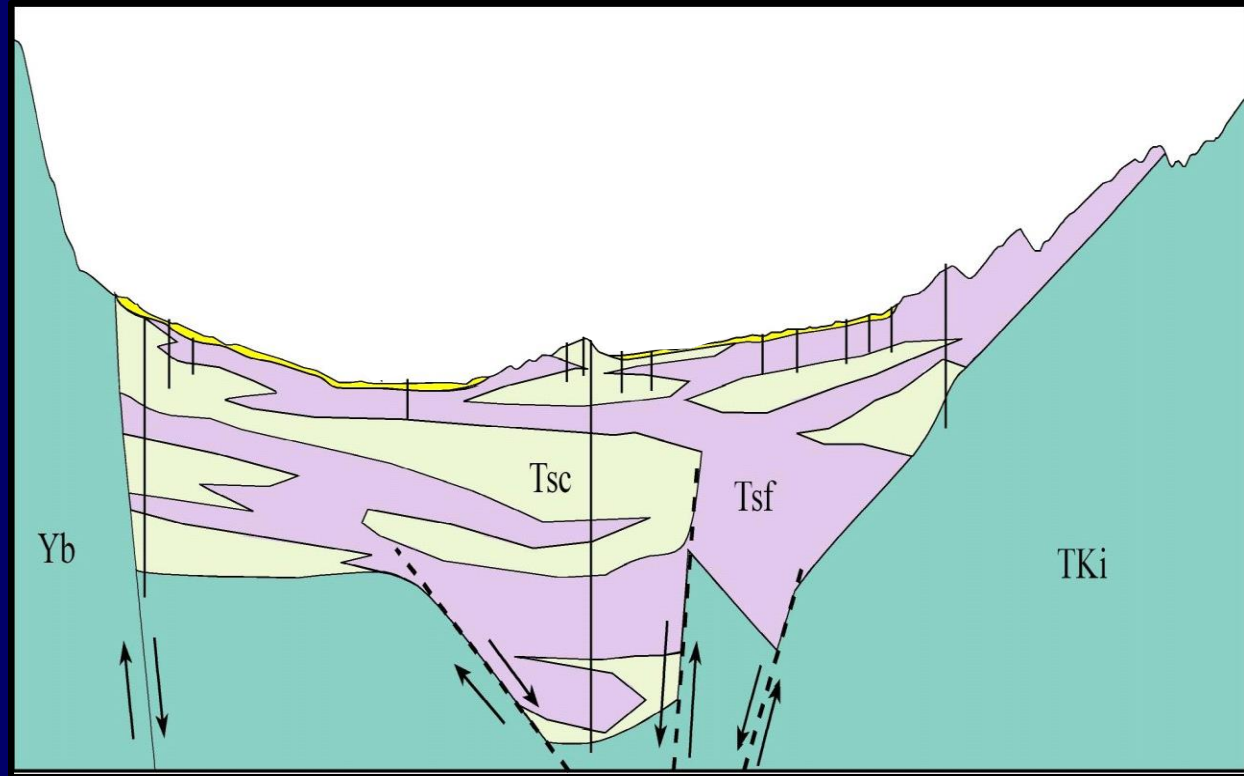


# Shallow Managed Aquifer Recharge – Pros and Cons

- Water can slowly return to surface, changing the timing to allow for constant rate year-round mitigation
- Not terribly expensive to construct, can use existing site (i.e. old gravel pit)
- Passive management
- Must be located far enough from discharge area to produce a constant rate return to surface water
- Must be located in a part of the aquifer that would allow mounding of water, i.e., not shallow groundwater table
- May require water quality analysis/treatment

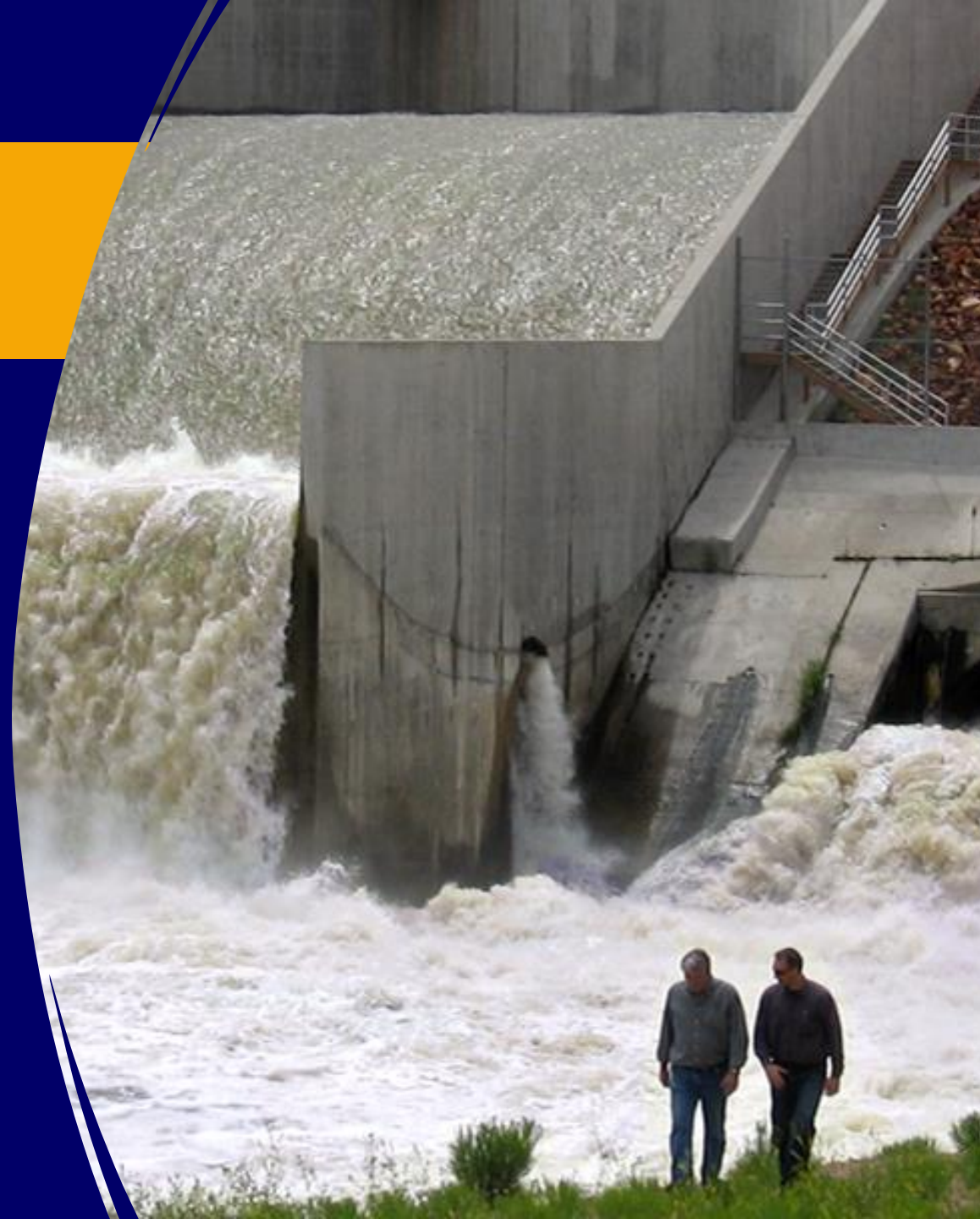
# Deep Managed Aquifer Recharge – Pros and Cons

- Water slowly returns to surface, changing the timing to allow for constant rate mitigation
- Expensive to construct, expensive to maintain
- Must be active maintained indefinitely
- Return flows are difficult to model
- May require water quality analysis and treatment



# Surface Reservoir Storage Pros and Cons

- New reservoirs are expensive to construct, expensive to maintain
- Must be actively maintained indefinitely
- Mitigation bank credits sold can fund infrastructure rehab costs
- May need to work within existing storage contracts/water user associations



# Mitigation Bank Example – 10,000AF

- 1,000AF reserved for In-House Domestic Credits
- 1,000AF reserved for Stock Credits
- 8,000AF reserved for Irrigation (Lawn/Garden) Credits

Assuming 1 credit = 0.5AF

- 10% consumptive use for In-House Domestic
  - **35,714 domestic credits available**
- 100% consumptive use for Stock
  - **2,000 stock credits available**
- 70% consumptive use for Irrigation
  - **11,428 irrigation credits available**

# Mitigation Bank Example – 10,000AF

1 Mitigation Bank Credit = 0.5 AF\*

## Tiered rate approach

\$1,000 per credit for first 1/3, \$2,000 per credit for next 1/3,  
\$3,000/credit for final 1/3

**+ \$75/yr/credit annual maint. fee**

- 35,714 domestic credits
- 2,000 stock credits
- 11,428 irrigation credits
- Sub total: \$97,302,857      + Annual Maint: \$3,685,714

# Mitigation Bank Example - 10,000 AF

How long will these credits last at current use rate?

How much water is allocated and income generated during first 20-yr?

- 35,714 domestic credits at 225 per year = **158 yrs**
- 2,000 stock credits at 40 per year = **51 yrs**
- 11,428 irrigation credits at 200 per year = **57 yrs**
- After 5 years with 2% interest accruing: \$3,153,256
- After 20 years, **1,926 AF allocated**, \$12,888,362 generated  
After 20 years 8,074 /AF remains unsold

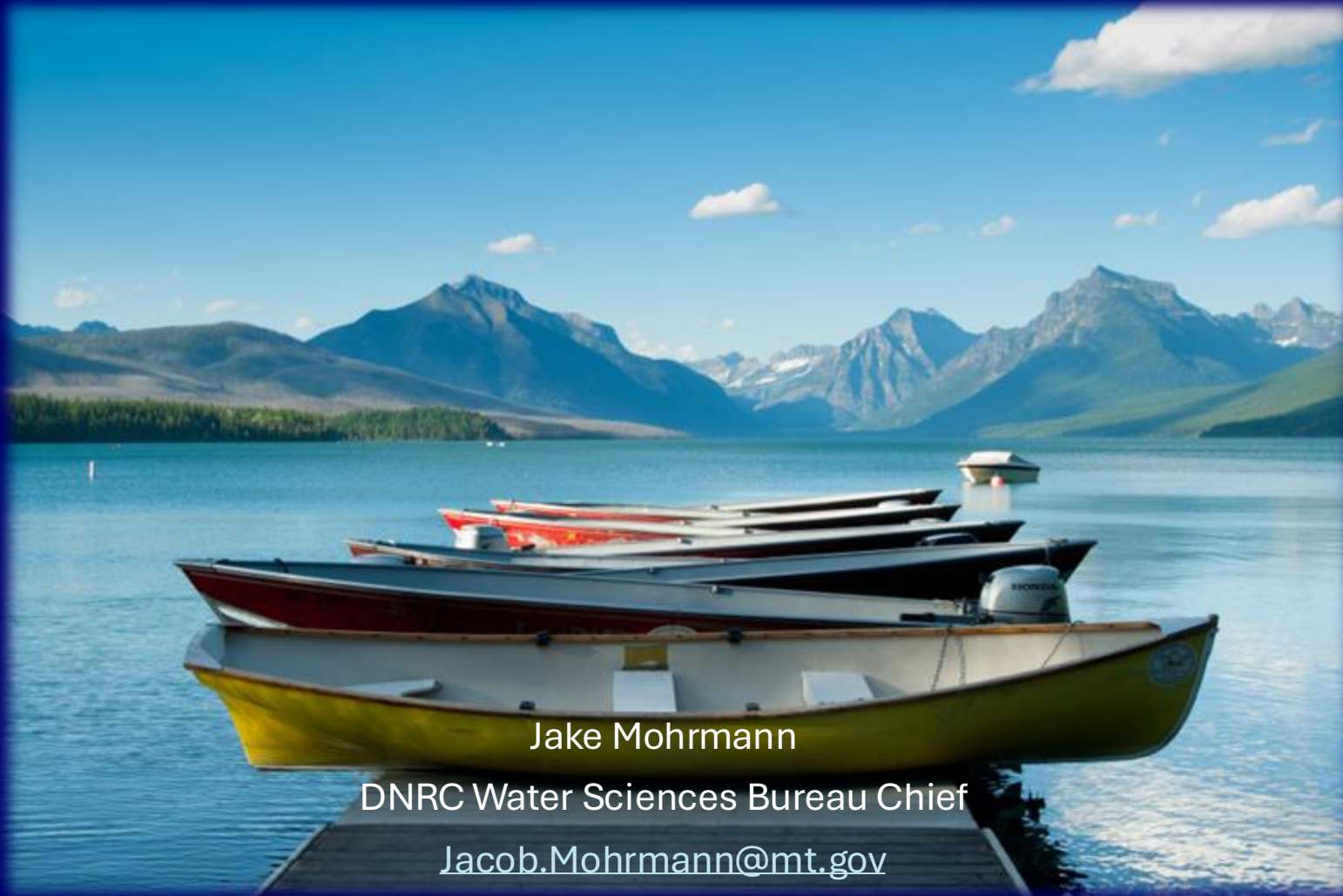


# Next Steps

Montana is actively pursuing Mitigation Banking

- Goal is to have a policy package ready for the 2027 session
- Pilot projects for both MAR and surface reservoir mitigation banks
- Internal work group comprised of scientists, policy experts and communications
- External grass-roots group working on technical and fiscal implementation and collaboration building
- Technical work group comprised of multiple agencies to address feasibility and effectiveness

# Questions?



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