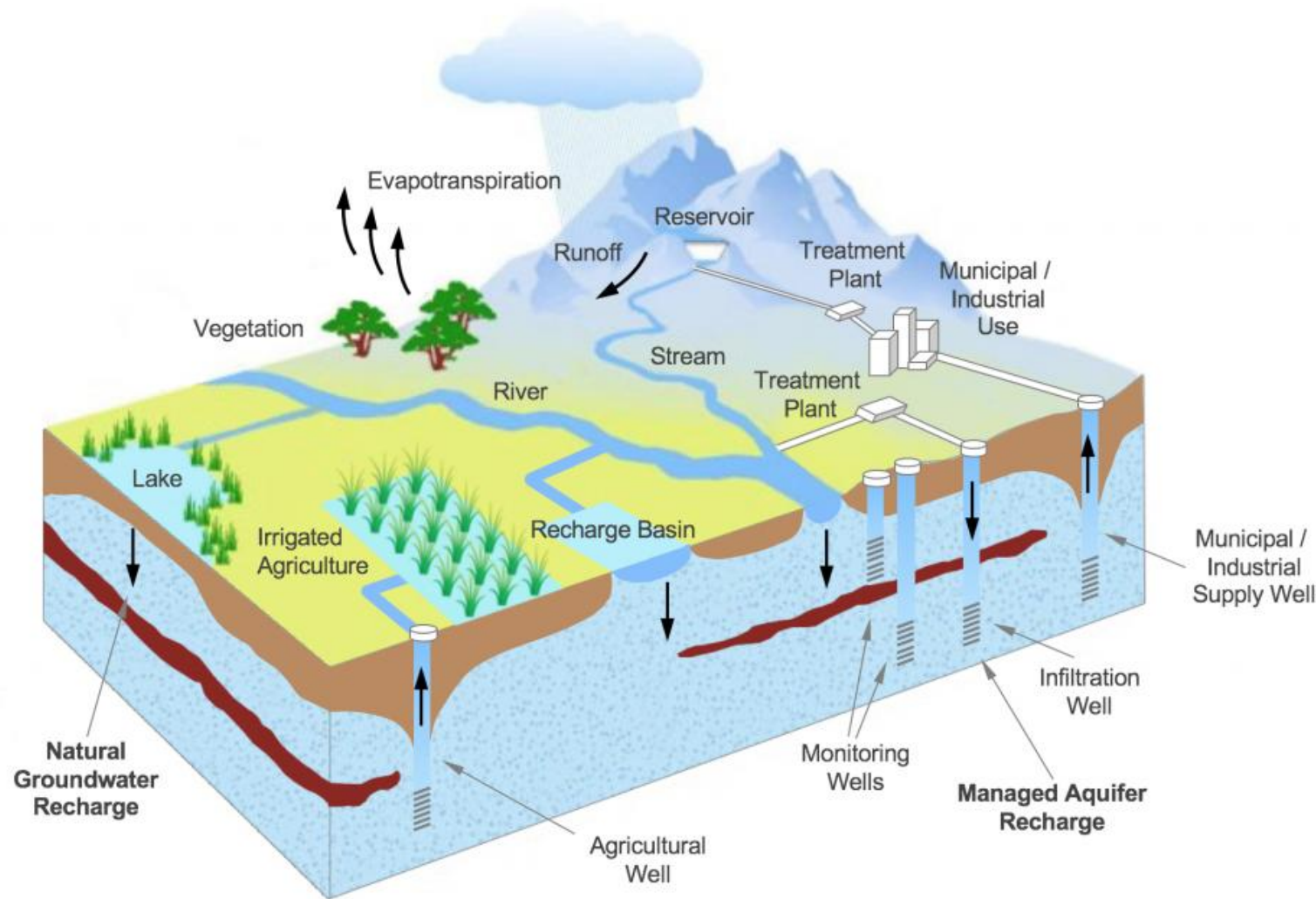
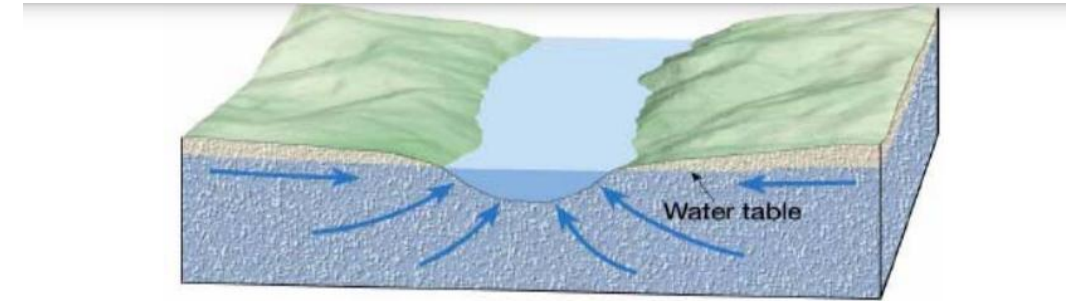
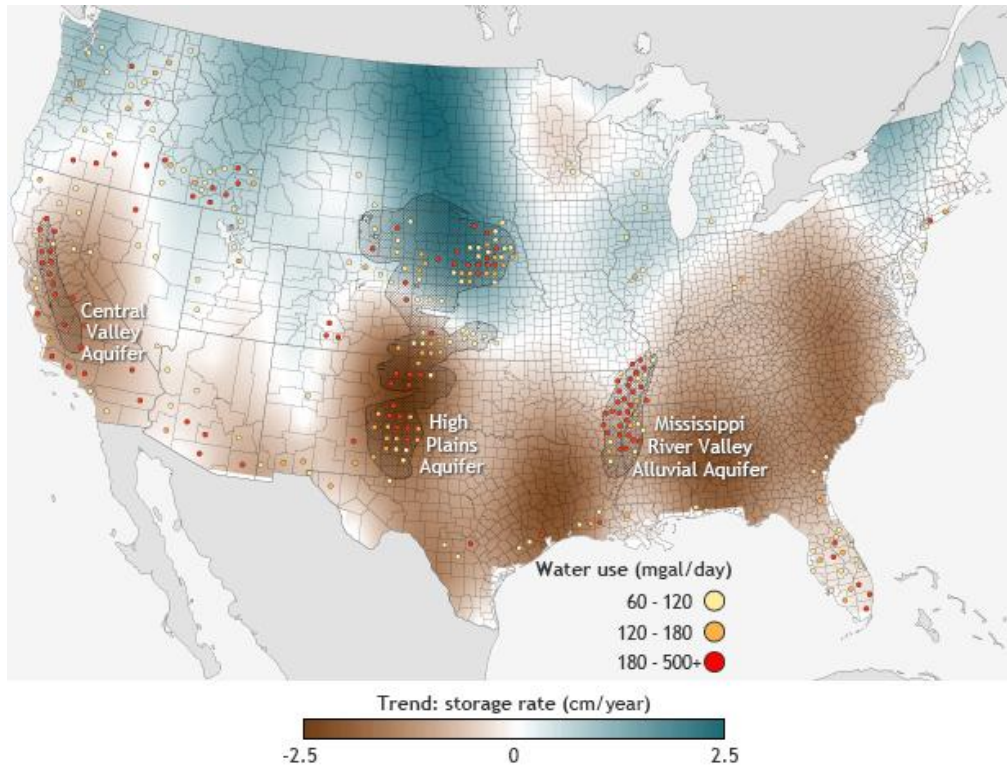


Interagency Workgroup on Managed Aquifer Recharge (MAR)

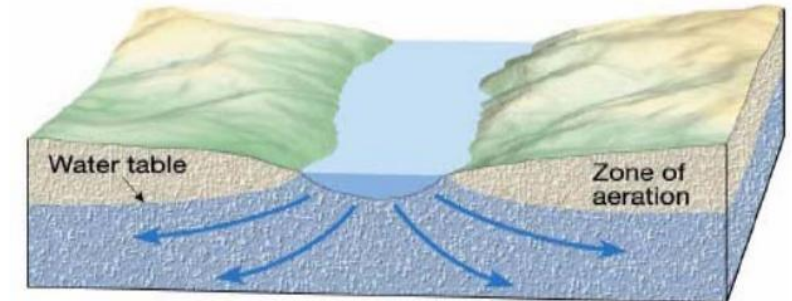


Effects of Groundwater Pumping

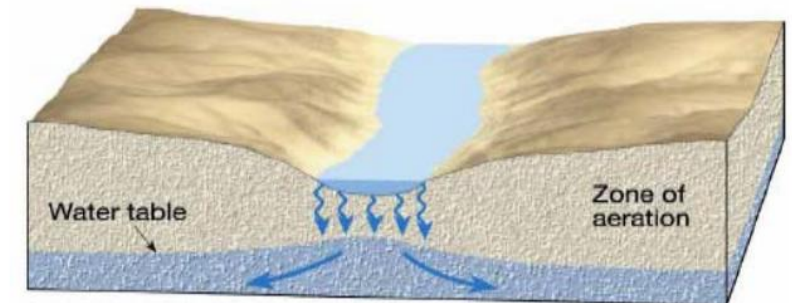
- Groundwater depletion
- Well failure
- Alteration of GW-SW interactions
- Saltwater intrusion
- Land Subsidence



A. Gaining stream



B. Losing stream (connected)



C. Losing stream (disconnected)

Kennedy (2014)

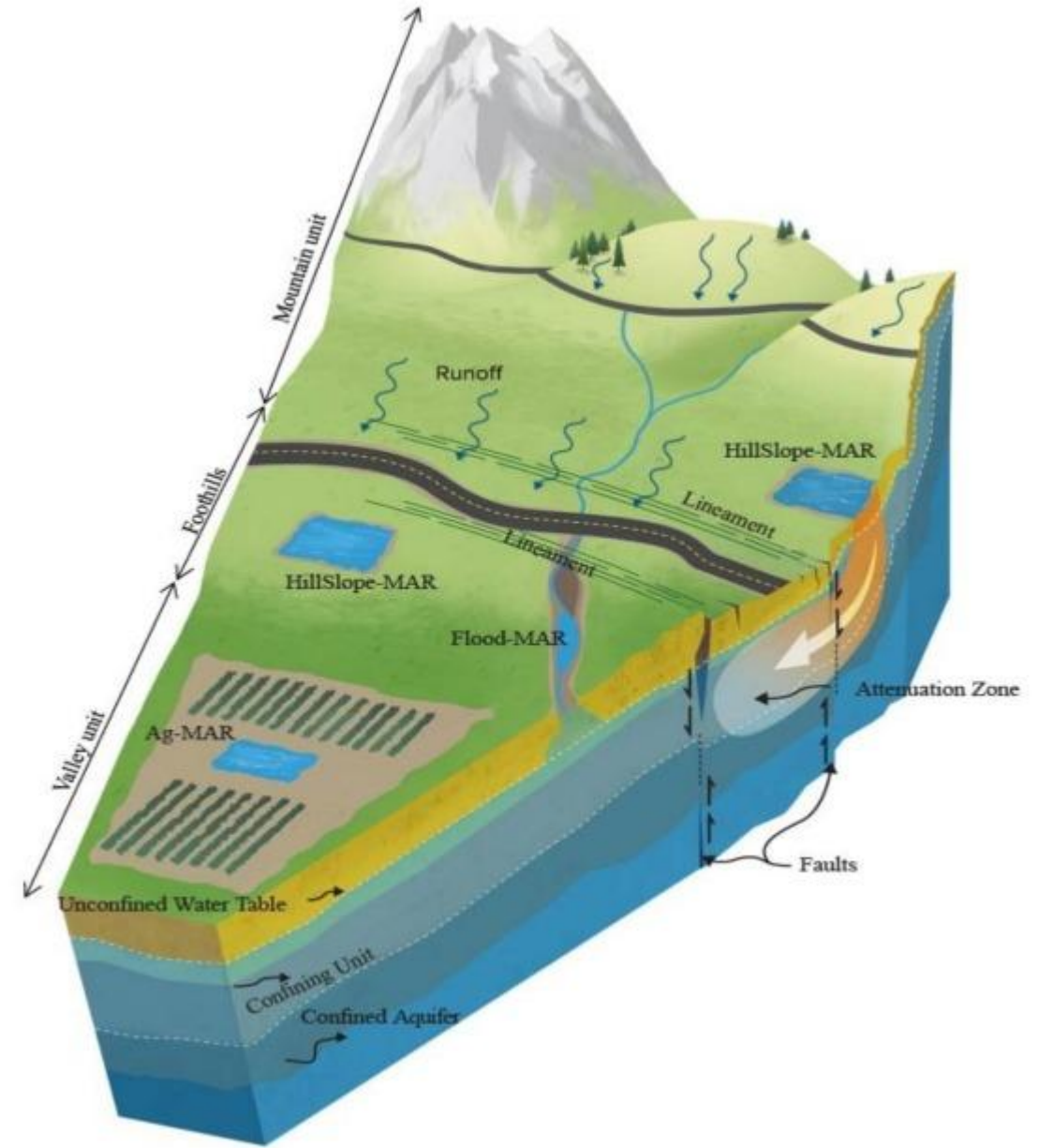
Interagency Workgroup

- Who?
 - Federal agencies
 - States
 - Practitioners
- Why?
 - MAR can mitigate GW depletion
 - Common MAR problems
 - Technical
 - Regulatory
 - Economic
 - Leverage limited resources
 - Learn from each other's experience
 - Potential federal funding avenues and support



Mission Statement

- To mitigate adverse impacts of groundwater depletion by increasing wide-spread acceptance and implementation of managed aquifer recharge (MAR). This is achieved by:
 - (i) facilitating collaborations and coordination among federal and state agencies, and local practitioners;
 - (ii) development and dissemination of decision support and management tools; and
 - (iii) overcoming common challenges faced by MAR operators.



WS 1 – Participant Roles and Responsibilities

➤ Federal Agencies

- U.S. Army Corp of Engineers
- U.S. Geological Survey
- U.S. Department of Agriculture
- U.S. Bureau of Reclamation
- U.S. National Oceanic and Atmospheric Administration
- U.S. Environmental Protection Agency

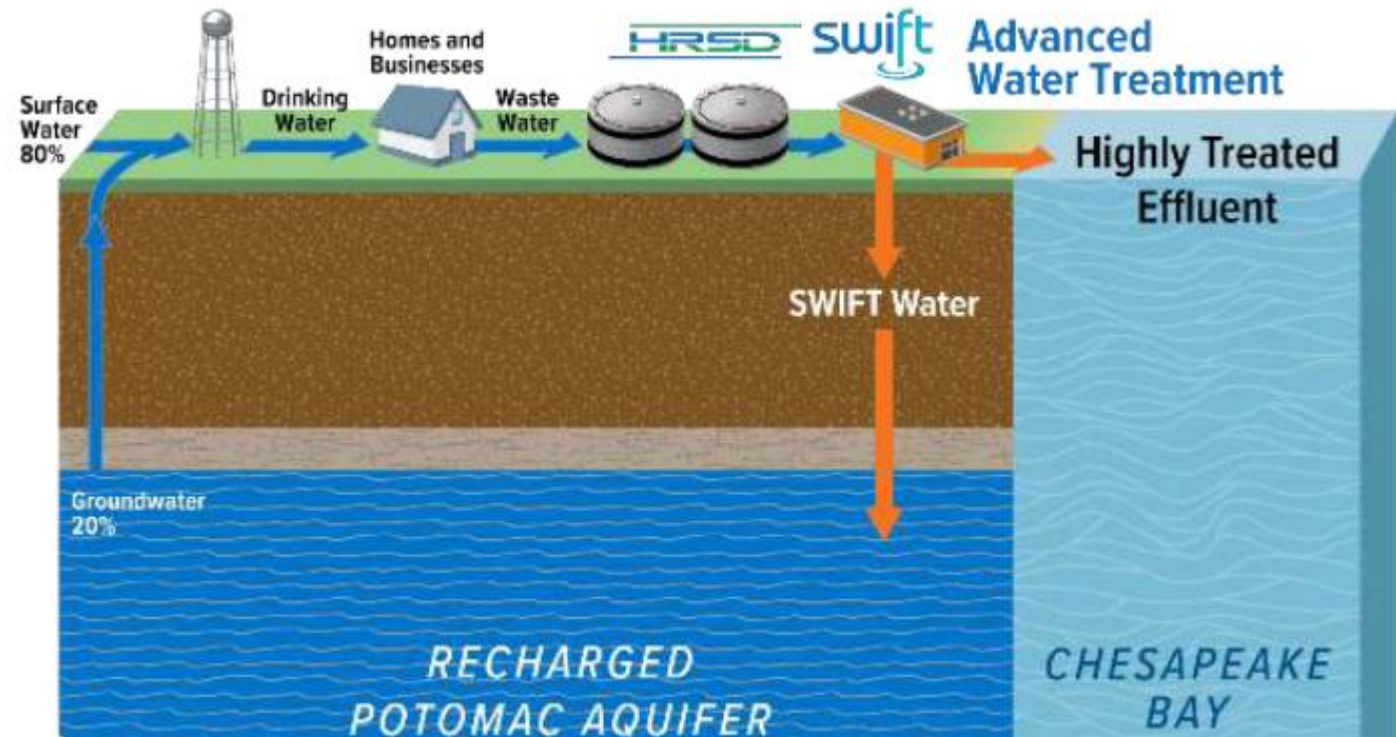
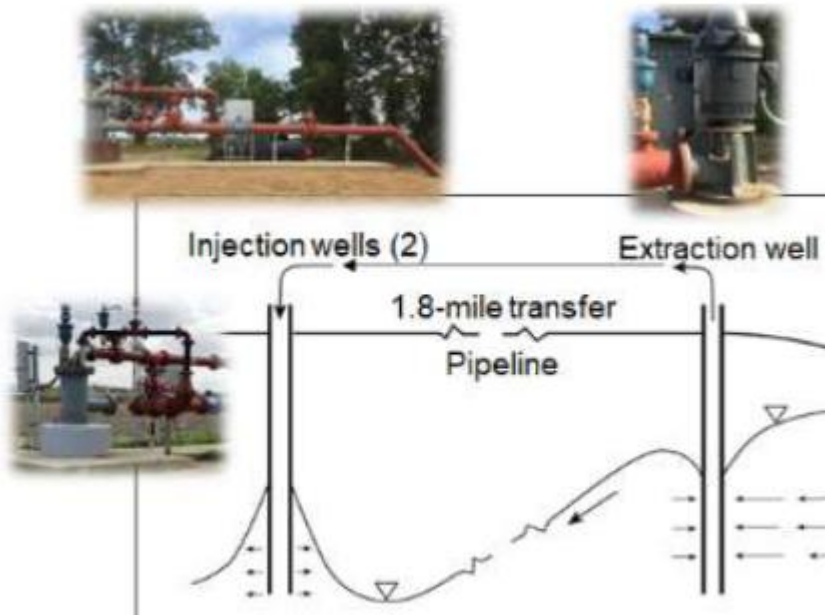
• State and Stakeholders

- California Department of Water Resources
- Texas Water Development Board
- Ground Water Protection Council
- Orange County Water District, CA
- Hampton Roads Sanitation District, VA
- National Ground Water Association
- Water Research Foundation



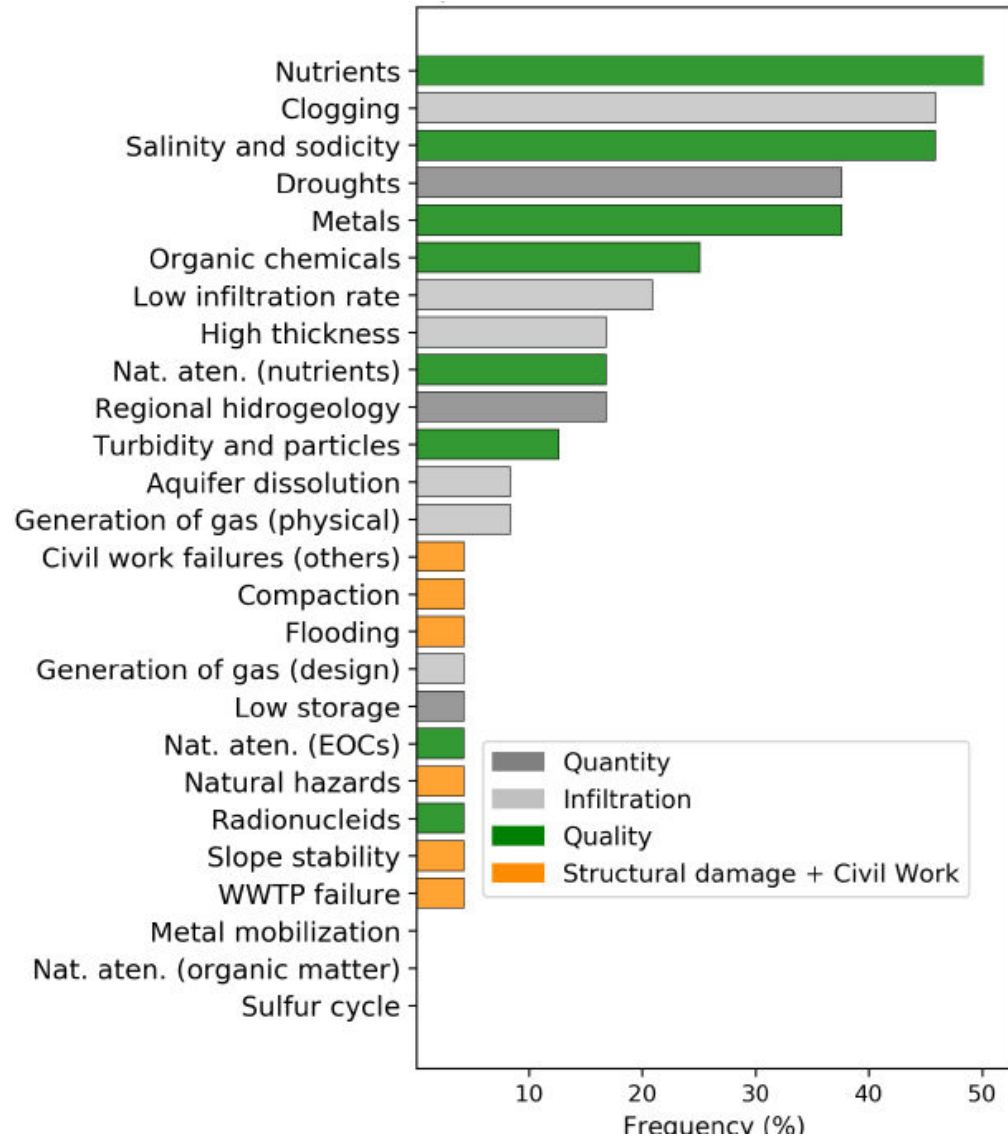
WS 2 - MAR Case Studies

- Hampton Roads Sanitation District, VA
- Orange County Water District, CA
- U.S. Department of Agriculture
- Barton Springs Edwards Aquifer Conservation District, TX

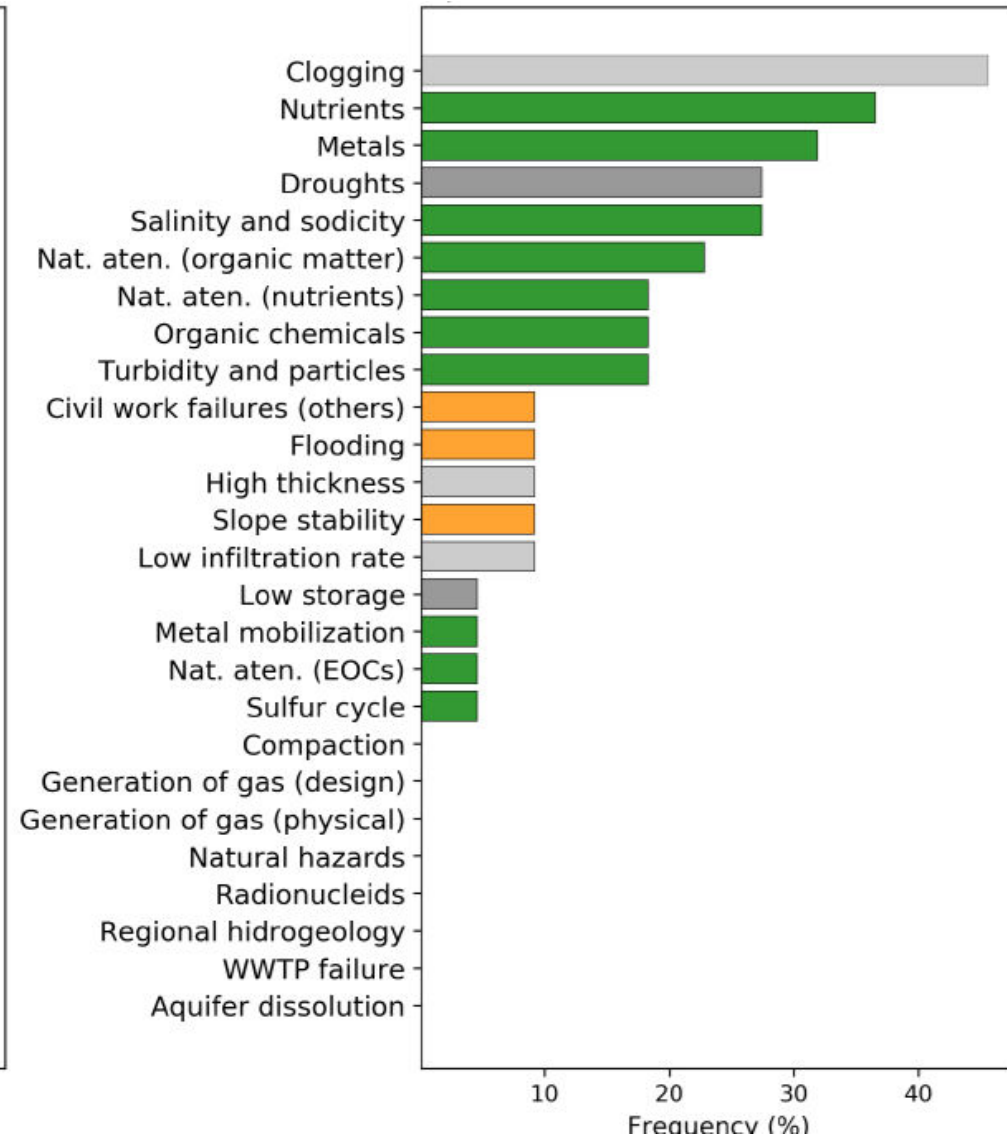


Technical Problems

Injection Well

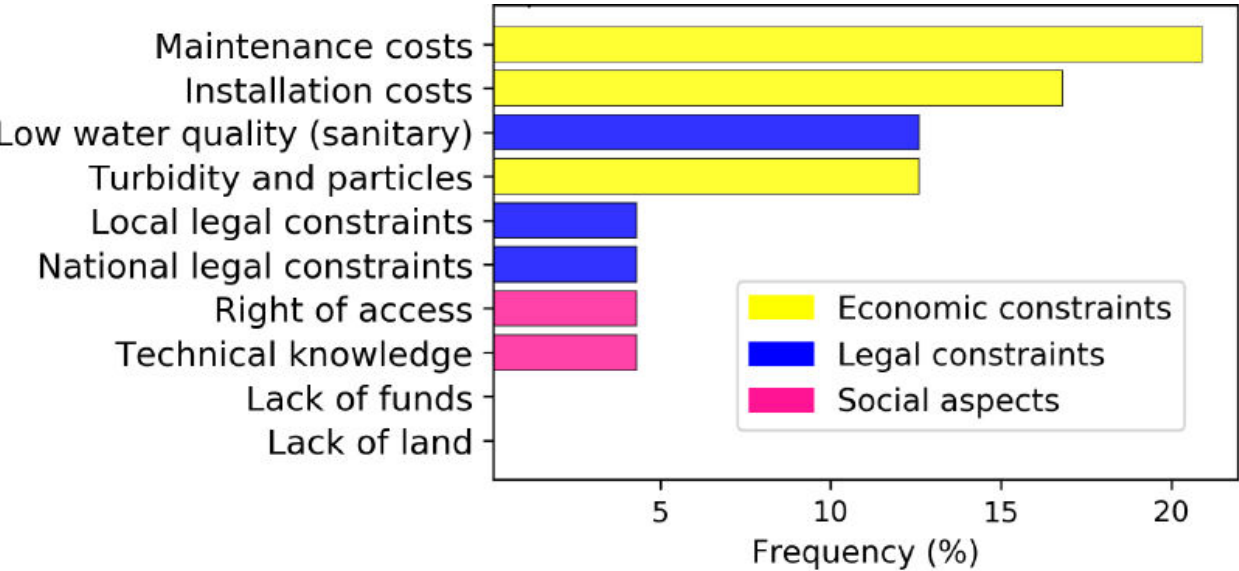


Surface Infiltration

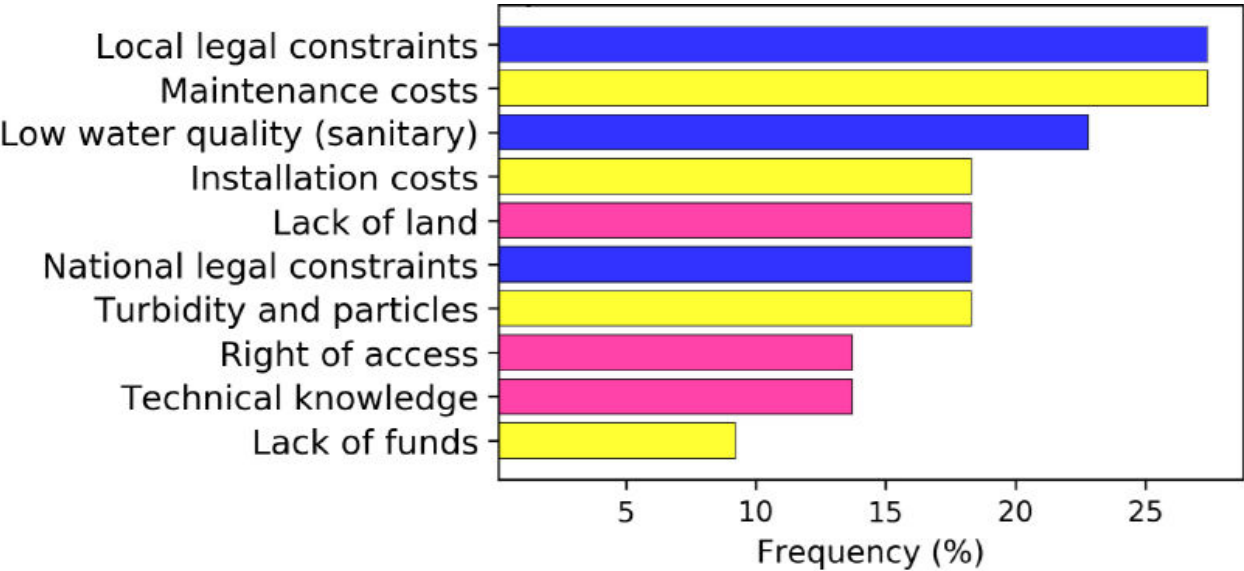


Non-Technical Problems

Injection Well

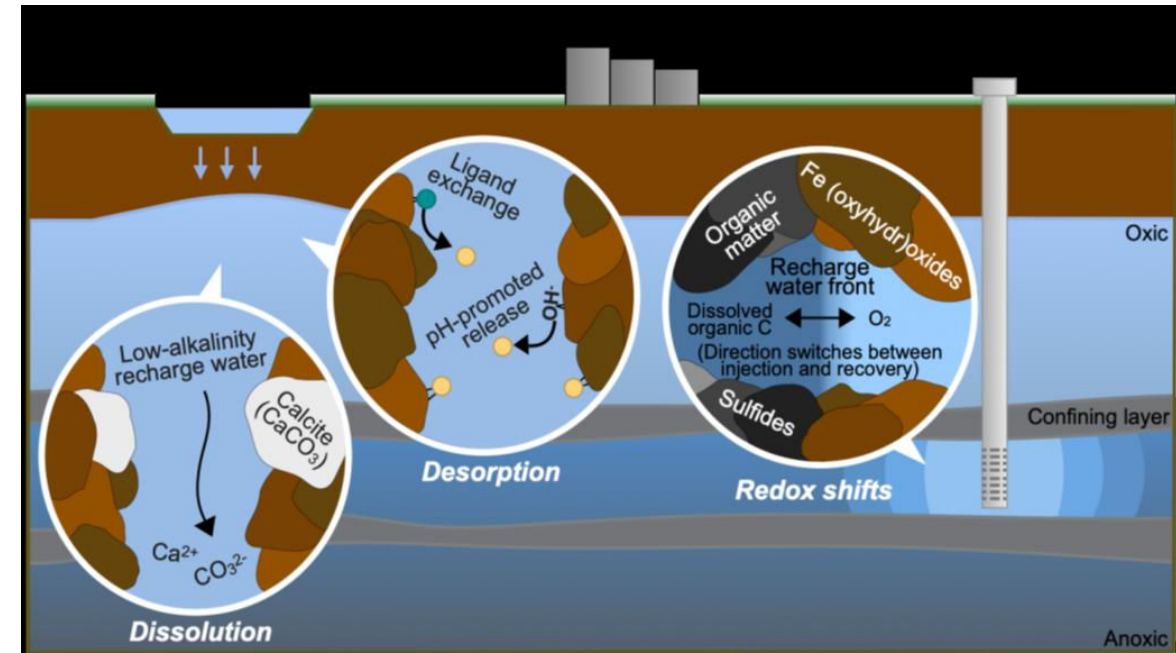
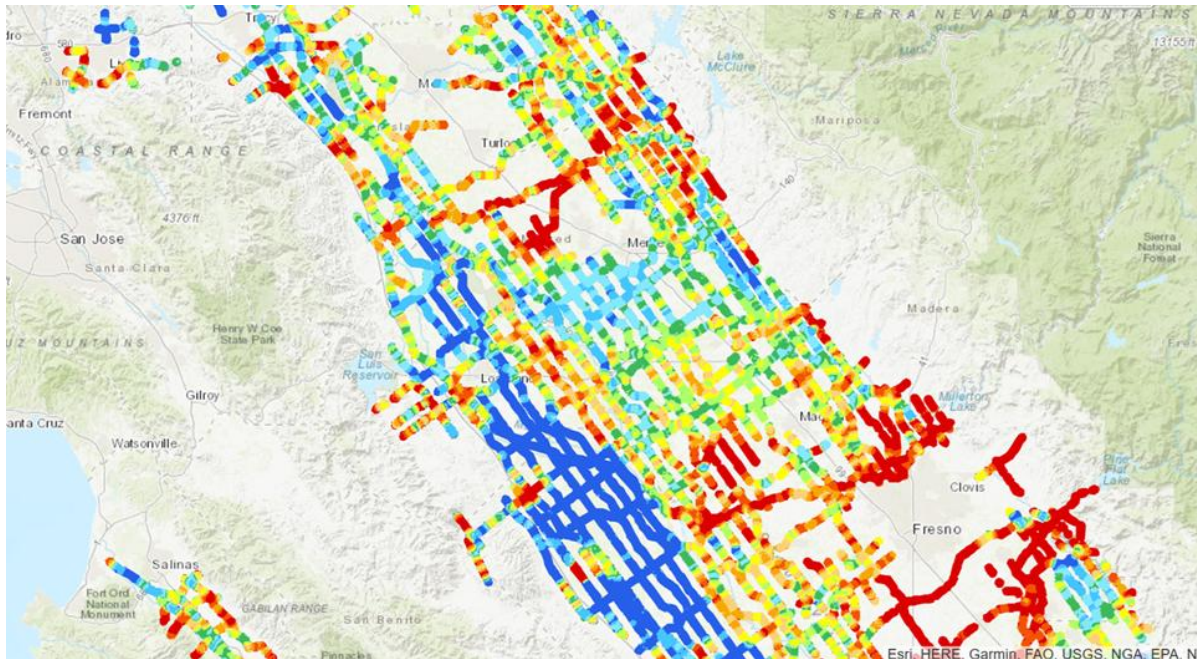
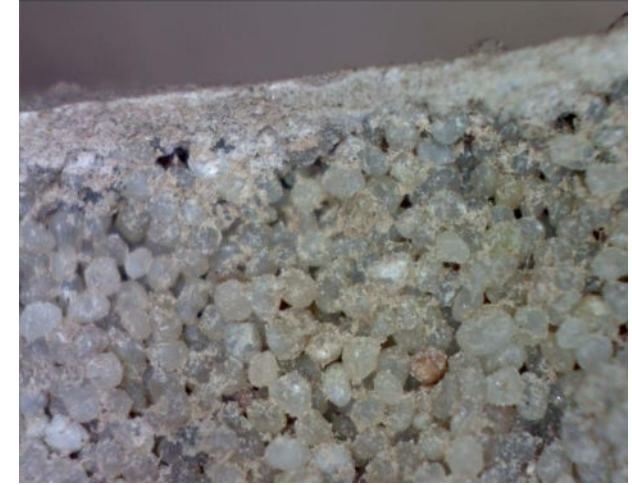


Surface Infiltration



WS 3 – Research Gaps and Problem Statements

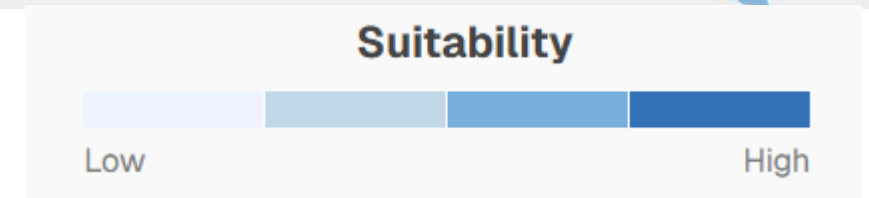
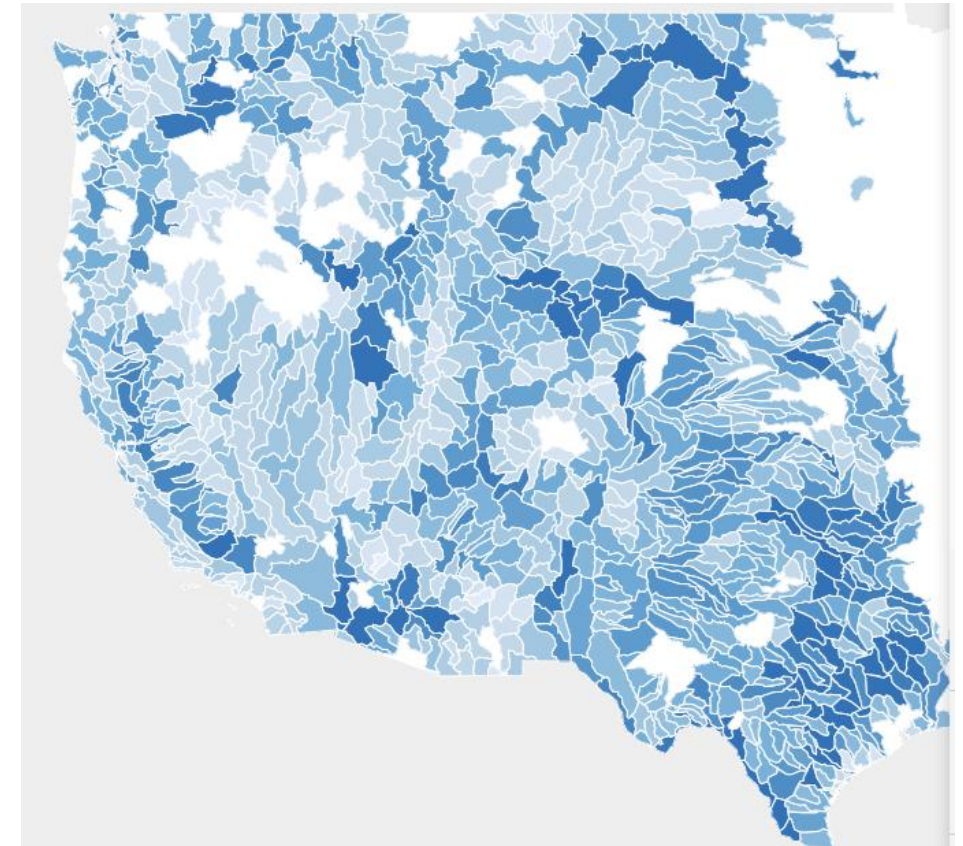
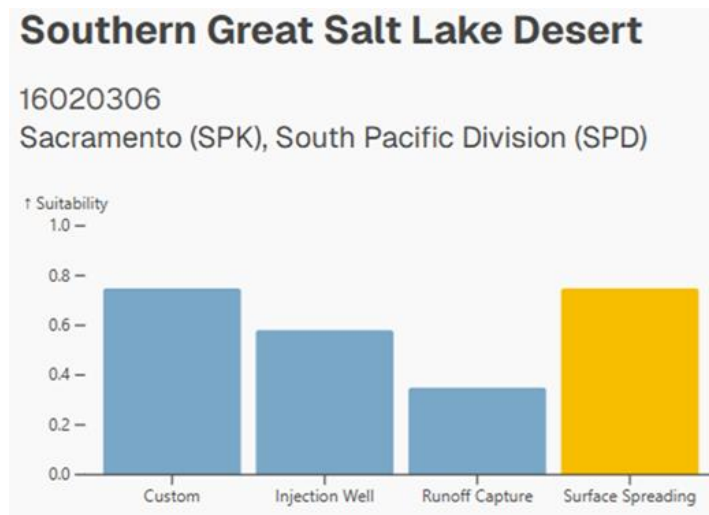
- Solutions for clogging in MAR facilities
- Developing decision support tools
- Understanding MAR water quality



Source: Fakhreddine et al., 2021

WS 4 – Research Questions and Collaborations

- Solutions for clogging in MAR facilities
 - Development of a machine learning or other model to predict clogging
- Developing decision support tools
 - Multifactor MAR suitability maps
- Understanding MAR water quality
 - Creation of a guidance document



<https://floodmar-app.vercel.app/>

FY 2026 Goals

- Continue collaborative work from FY25
 - Clogging
 - Water quality
 - Decision support tools
- Facilitate MAR activities for States
 - Selecting locations and approaches for MAR
 - Assessing MAR performance
 - Overcoming challenges to MAR
 - Economic and regulatory considerations
- How can we better support WSWC state members regarding the practice of MAR?



Thank you...



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