

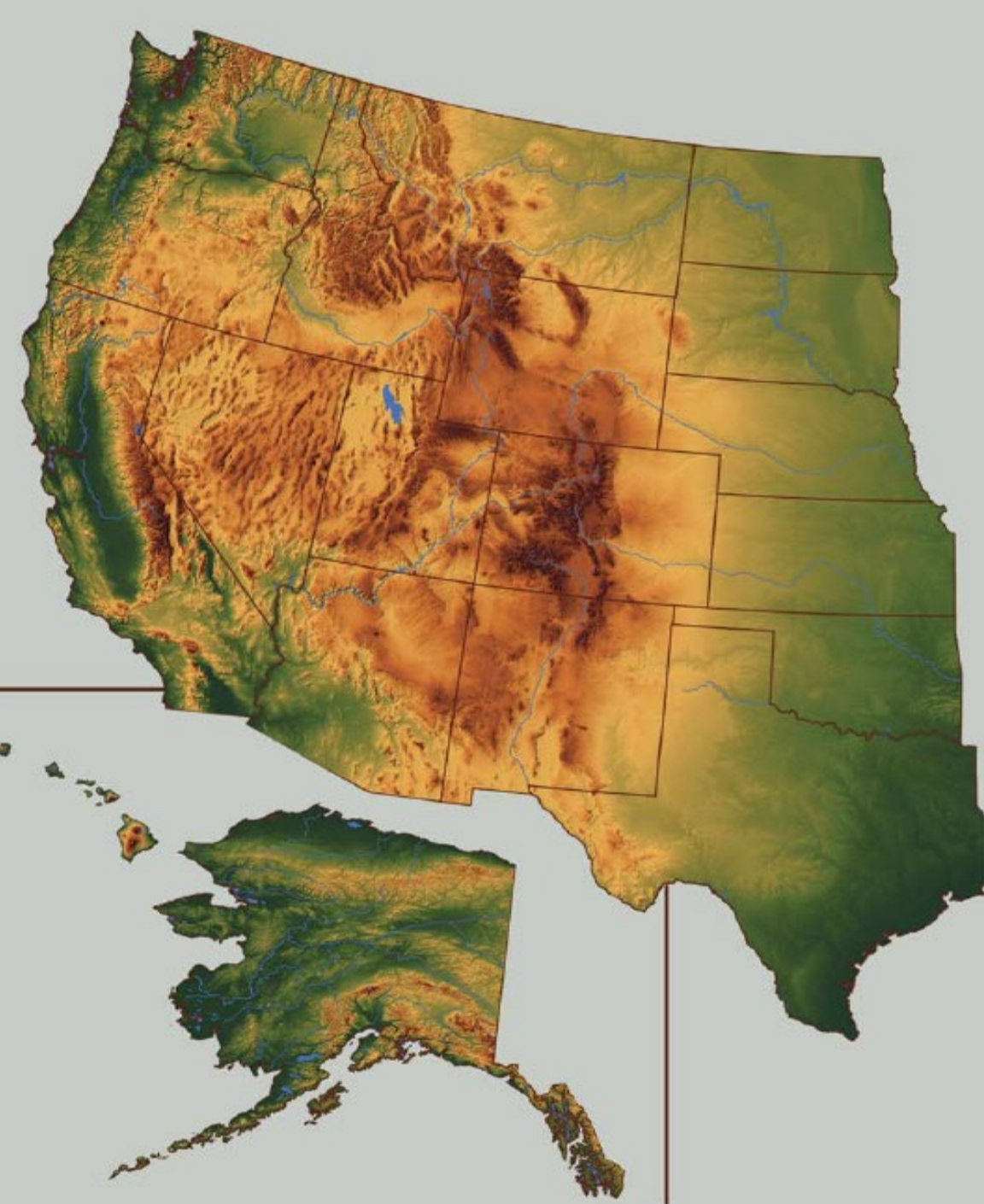
# The Western States Water Data Access and Analysis Tool (WestDAAT)

Internet of Water Coalition Webinar  
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Tony Willardson, WSWC Executive Director  
Adel Abdallah, WaDE Program Manager  
Ryan James, WaDE Data Analyst



WESTERN STATES  
WATER COUNCIL



## Western States Water Council

- State government entity
- Advisory body to 18 Western Governors on water issues
- Works with the Western Governors' Association (WGA)
- Provides states collective voice
- Fosters state/state and federal/state collaboration
- Western Federal Agency Support Team (WestFAST)

Our mission is to ensure that the West has an adequate, secure, and sustainable supply of water of suitable quality to meet its diverse economic and environmental needs now and in the future.



Water in the West is an increasingly scarce and precious resource.

**Hoover Dam/Lake Mead**



# What is a State Water Right?

The term is broadly applied to include state granted rights to the use of public waters, via public and private appropriations, permits, allocations, allotments and reservations.

Attributes of a state water right usually include the owner, point of diversion or withdrawal, place of use, purpose of use, a limit on the flow rate or total quantity consumptively used (sometimes including a customary water duty) and a priority date.

State water rights in western states are predominantly administered under the Doctrine of Prior Appropriation, generally governed by priority date, “first in time, first in right,” and limited to reasonable beneficial use. Waste is prohibited, as is injury to prior senior water rights, and water not “used” is subject to forfeiture, “use it or lose it.” The latter was by design intended to limit speculation, ensure applicants had the means to develop a water right, and maximize the economic benefit to the state. Modern adjustments have been made to recognized instreamflows and other environmental or recreational non-consumptive uses, as well as allow for water banking, leasing and other water marketing mechanisms to be applied on a temporary basis.

Consumptive water use as a component of reasonable beneficial use and general refers to irrecoverable losses due to conveyance losses, evaporation, crop evapotranspiration and other depletions.

Of note, domestic wells may or may not require a state water right though withdrawals may be limited; and groundwater use managed under a correlative rights or proportionate use doctrine, as in some western states, limits landowners to a reasonable share of the total water supply.

“Reliable water data is almost as critical to farmers and water managers as the water supply itself.”

—E. Joaquin Esquivel, Chair of the California State Water Resources Control Board



# Water Data Exchange (WaDE) Program

Transforming Western Water Planning, Management, and Policy by  
Sharing States Water Data Since 2011

*The WaDE Program is committed to assisting WSWC member states in publicly sharing water rights, allocation, supply, and use data through a common streamlined and standardized service that enables regional analyses to inform water resources planning and policies*

# WaDE Data is FAIR

## Findable

Metadata and data should be findable for both humans and computers

## Interoperable

Data needs to work with applications or workflows for analysis, storage and processing

F

A

I

R

## Accessible

Once found, users need to know how the data can be accessed

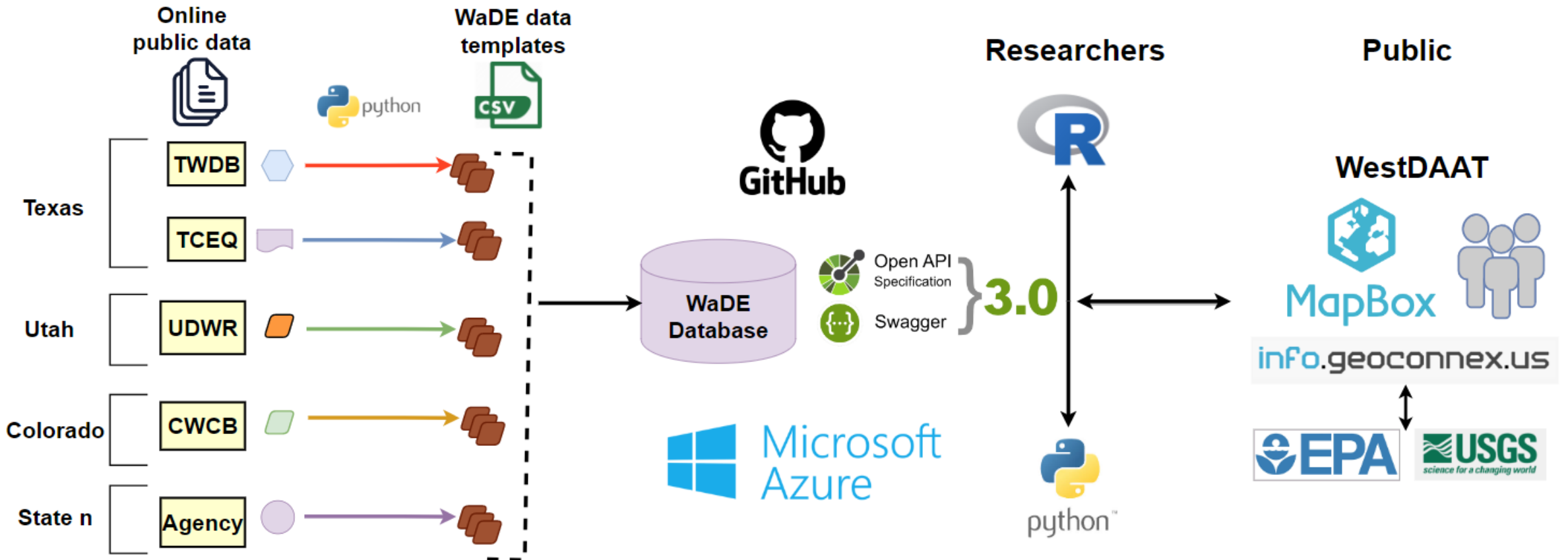
## Reusable

The goal of FAIR is to optimise data reuse via comprehensive well-described metadata

<https://www.scibite.com/solutions/enterprise-fair-data-mdm/>



# WaDE 2.0 Architecture



# WaDE Database and Water Data Shared through WestDAAT

Stage 1

#	Data Type	Data	# States sharing	WaDE database	WestDAAT
1	Water Rights	Owner, point of diversion, purpose of use, permitted flow or volume, place of use, water source name and type, priority date	17	Yes	Yes
2	State Regulatory Overlays	Basins closed to new surface water diversions, groundwater management areas, natural resources districts, interstate stream and river compacts, etc.	5	Yes	No
3	State Site-Specific time series	State reservoir and state streamgages or groundwater observation wells	10	Yes	No
		State public-supply water use	4	Yes	
		Historic withdrawals related to water rights (e.g. CA, ND).	2	No	
4	Area Aggregated time series	Available water supply, withdrawal, demand and delivered water as well as consumption or consumptive use	9	Yes	No

Stage 2

# WaDE 2.0 “Translates” Water Terminology

## □ 32 + metadata terms

Irrigation Method, Customer Type, Crop Type, Site Type, Water Source Type, Water Allocation Type, Applicable Resource Type, Data Quality Value, Report Year Type, Water Quality Indicator, Water Allocation Basis, Method Type, Legal Status, Regulatory Status, Regulatory type

#	Key Term	# of States Unique Terms	# of WaDE Unique Terms
1	Beneficial Use Category	386	21
2	Water Source Type	56	7
3	Site Type	171	9
4	Legal Status	149	TBD

# WestDAAT Use Cases and Personas

1. Gary the Governor
2. Stan the State Engineer
3. Maggie the River Basin Manager
4. Laila the Land Use Manager
5. Frank the Farmer
6. Ratibah the Researcher

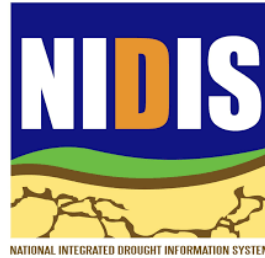
<https://westernstateswater.org/wade-updates/2021/westdaat-use-cases-and-personas/>



BUREAU OF RECLAMATION



United States Department of Agriculture



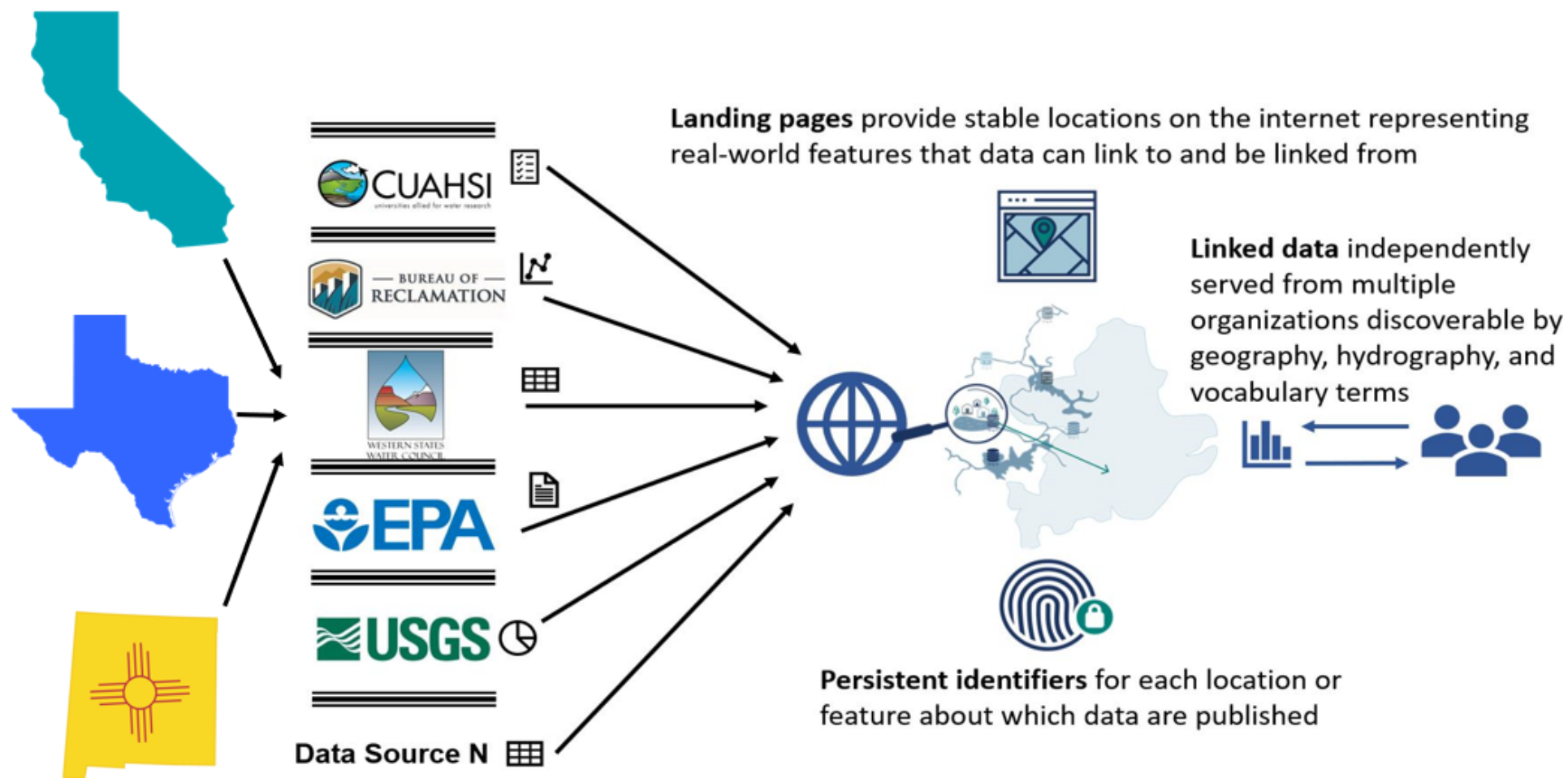
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Upper Colorado River Commission



# WaDE Integration with Geoconnex and NLDI



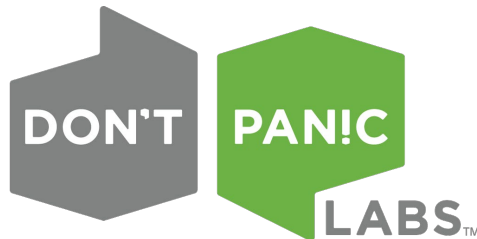
Geoconnex <https://internetofwater.org/events/geoconnex-a-community-index-for-water-data/>

The Hydro Network-Linked Data Index (NLDI): <https://waterdata.usgs.gov/blog/nldi-intro/>

# Funders, Collaborators & Partners



Water Foundation  
Mitchell Foundation  
BHP Foundation  
MOORE Foundation  
EPA Exchange Network  
**WSWC Member State Agencies**



# Support WaDE by Sharing Feedback

## Water Data Exchange (WaDE) Data and Software Terms of Service

The screenshot displays the Water Data Exchange (WaDE) Program interface. On the left, there are navigation and filtering options, including a 'Reset All Filters' button, 'COLOR AND SIZE TOOLS' for map customization, and 'WATER RIGHT SELECTION FILTERS' for data selection. The main area shows a map of the Western United States with various data points. A 'Send Feedback' modal form is overlaid on the map, containing the following fields and options:

- Send Feedback** (Close button)
- Please let us know your feedback about the Water Data Exchange Data (WaDE) Tool.
- Contact us: <https://westernstateswater.org/wade/contact-us/>
- First Name(Optional)**: John
- Last Name(Optional)**: Doe
- Email(Required)**: email@domain.com
- Comments(Optional)**: [Text area]
- Professional Organization(Optional)**: [Text area]
- Role(Optional)**: [Text area]
- How do you use the data?(Optional)**:
  - Demand Management
  - General Interest
  - Planning
  - Regulatory
  - Research
  - Reservoir Management
  - Thermoelectric / Hydropower Management
  - Water Markets
  - Water Quality

A red arrow points from the 'Feedback' link in the bottom right corner of the map to the 'Send Feedback' modal form.

<https://westernstateswater.org/wade/westdaat-terms-of-service>



# Thank You!

WestDAAT Public Release: Whiteboard Feedback

<https://app.mural.co/t/wswcwade0183/m/wswcwade0183/1682429994281/77824521660c0c9338183490a644c2aeaa8527dd?sender=ubd9657ad60f5132a09853743>

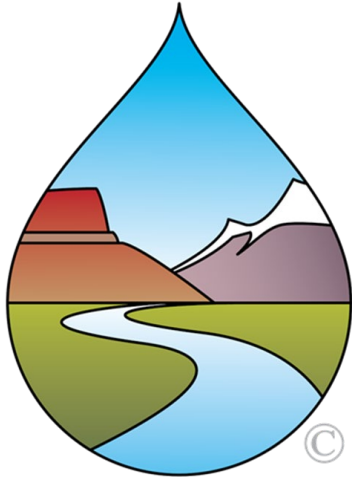


Adel Abdallah, WaDE Program Manager

Ryan James, WaDE Data Analyst

Western States Water Council

[adelabdallah@wswc.utah.gov](mailto:adelabdallah@wswc.utah.gov)



# Live Demo

WestDAAT

<https://westdaat.westernstateswater.org/>

## Prototypes

1. Reservoir and Gage Data  
<https://waterdataexchangewswc.shinyapps.io/SiteSpecificReservoirAndObservationSiteDemo/>
2. Aggregated Area Water Budget Data  
<https://waterdataexchangewswc.shinyapps.io/AggregatedBudgetWaterUseDemo/>
3. Public Supply Water Data  
<https://waterdataexchangewswc.shinyapps.io/SiteSpecificPublicSupplyWaterDemo/>