



WaDE: A State Agency Data-Sharing Platform Supporting Open Data Principles

USGS STREAMFLOW COLLABORATIVE CALL - JULY 2018



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WaDE

The Water Data Exchange or WaDE project enables states to share data with each other and the public in a more streamlined and cost-effective way. WaDE provides better access to water allocation, supply, and demand data that are maintained by state and other governmental agencies.

[LEARN MORE ABOUT HOW WADE WORKS >](#)

A Principles Based Approach...

- ▶ Making transparency, openness, discoverability, and accessibility the default for public water data, while also ensuring the highest levels of security and privacy for stakeholders where needed.
- ▶ Whenever possible, sharing data using developed standards and machine-readable formats, including thoroughly documented metadata, which will promote interoperability, regional analyses, and user flexibility. And,
- ▶ Taking a **federated approach** where data-producers maintain control over and responsibility for their information. This allows them the freedom to share what they wish (or not) at any point in time.

The Value of Open Data...

- ▶ Goal is to facilitate data transfer between states and stakeholders.
- ▶ We envision dedicated customers:
 - ▶ USGS (water census, water use compilation)
 - ▶ USEPA (WQ/WQ nexus)
 - ▶ DOE labs (water/energy nexus issues, transmission planning)
 - ▶ Academia (climate studies, drought, behavioral response to drought, etc.)
 - ▶ Policy Folks (looking into methods, regulatory differences across states, impacts of those laws and frameworks on water development)
- ▶ Access to more standardized data will facilitate data extraction by interested parties, but also support interoperability between states as programs evolve over time.

Data Targeted by WaDE...

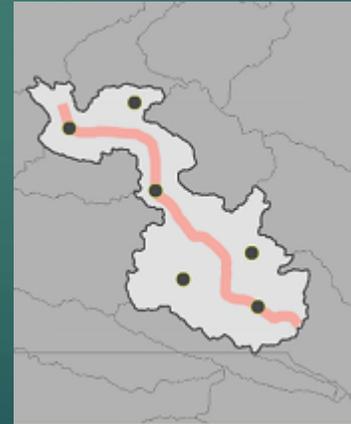
- ▶ State-agency generated planning and administration datasets that summarized by a watershed or other delineation, as well as site-specific information and metadata
- ▶ Components of a typical “water budget” – Inflow/Storage – ET/Evap/human use = outflow or yield to next basin
- ▶ Also targeting methodology information for users and metadata about the data

Aggregated



- ▶ Physical Water Supply Estimates
- ▶ Regulatory Constraints
- ▶ Legal Water Availability
- ▶ Water Use Estimates
- ▶ Return Flow Estimates

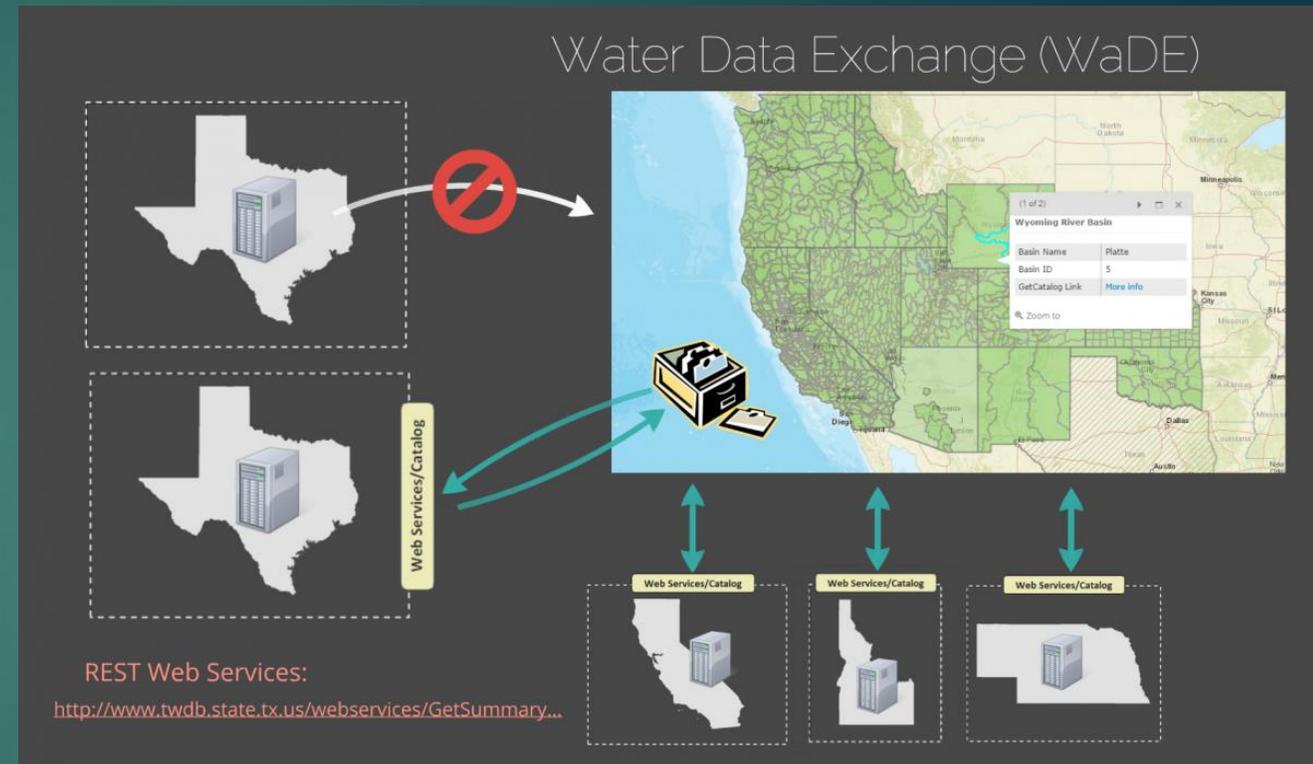
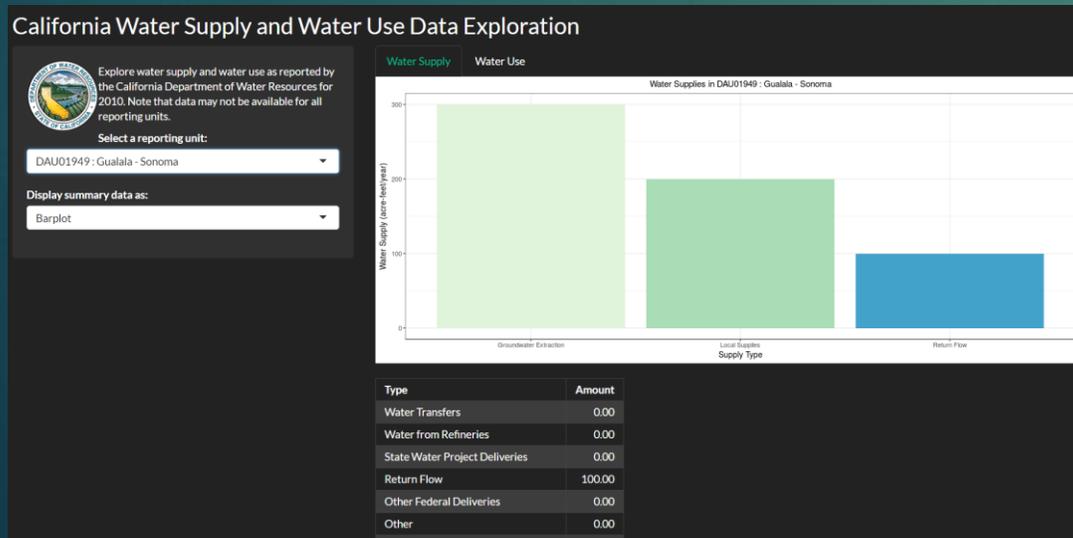
Site-Specific



- ▶ High-level Water Rights Data
- ▶ Points of Diversion/Wells
- ▶ Consumptive Use
- ▶ Return Flow
- ▶ METADATA!

How WaDE Works...

- ▶ Each state has a staging database
- ▶ The database enables RESTful web services and transfer of data in XML
- ▶ Applications can be built on the data using an open API
- ▶ Example using R/Shiny Apps



WaDE Data Returns...



Western States Water Council Water Data Exchange (WaDE) Catalog

[About WaDE](#) [Back to WaDE By Map](#) [Back to WaDE by DataType](#)

Data shared within WaDE are organized by "reports," which are yearly encapsulations of the data, either a water year (Oct. 1st - Sep. 30th), an irrigation year (Nov. 1st - Oct. 31st), or a calendar year. There may be multiple reports for any given year based on the methods used to generate that report.

****NOTICE**** For all data provided, please review the associated methodology information thoroughly to discover data provenance and quality before using, especially when comparing data between states or organizations.

Organization: Wyoming Water Development Commission

Location Information: Snake/Salt River Basin - REPORTUNIT - 7

For a listing of methods used by Wyoming Water Development Commission and shared within WaDE, click [here](#).

ALL SUMMARIZED DATA BY REPORT: To retrieve a report that contains all summary-level datatypes within a watershed/HUC/County by Wyoming Development Commission:

Report	Data Category	View This Report
2014	SUMMARY	View Data

DATA BY DATATYPE: To retrieve both summaries and site-specific/detailed data by report and by data type:

*Note: Requests for DETAILED DATA may have more extensive data-retrieval times. Please be patient while the query is retrieved to your browser. The query retrieval could take several minutes depending on website traffic and your network speeds. Use the table below to access detailed datasets by report, data category, and data type.

Report	Data Category*	Datatype	View Report by Data Type
2014	SUMMARY	AVAILABILITY	View Data
2014	SUMMARY	SUPPLY	View Data
2014	SUMMARY	USE	View Data

Organization: Wyoming State Engineer's Office

Location Information: - REPORTUNIT - 7

For a listing of methods used by Wyoming State Engineer's Office and shared within WaDE, click [here](#).

DATA BY DATATYPE: To retrieve both summaries and site-specific/detailed data by report and by data type:

*Note: Requests for DETAILED DATA may have more extensive data-retrieval times. Please be patient while the query is retrieved to your browser. The query retrieval could take several minutes depending on website traffic and your network speeds. Use the table below to access detailed datasets by report, data category, and data type.



Western States Water Council Water Data Exchange (WaDE) Summary Data

[About WaDE](#) [Back to WaDE By Map](#) [Back to WaDE by DataType](#)

****NOTICE**** For all data provided, please review the associated methodology information thoroughly to discover data provenance and quality before using, especially when comparing data between states, organizations or applications.

Organization: Wyoming Water Development Commission

Location Information: Snake/Salt River Basin - Custom Planning Basin - 7

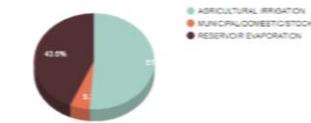
This summary is relevant for the reporting year: 2014 - WY

These data were reported on: 2015-01-01

Water Availability Summary

Water Use Summary

Water Use Categories

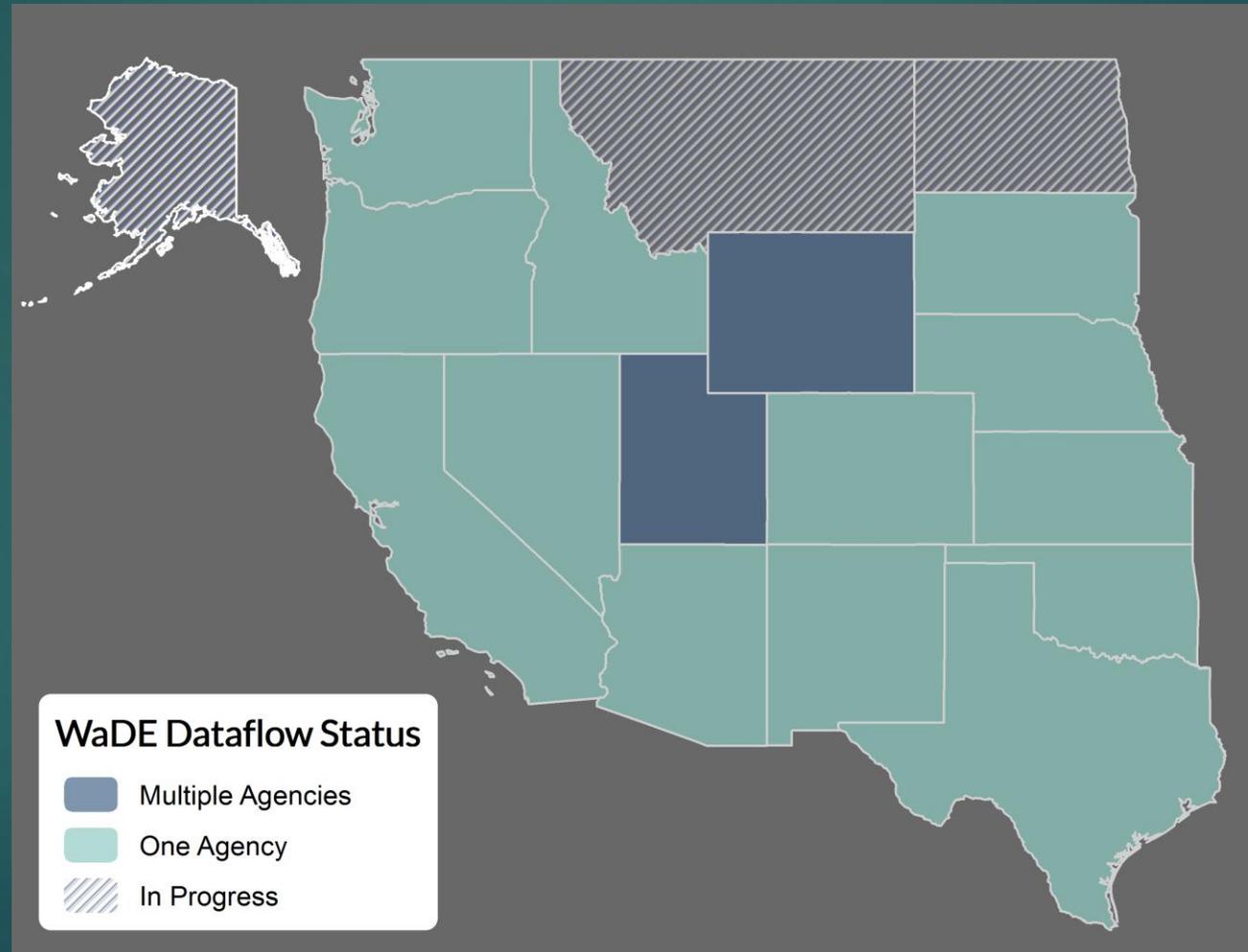


Beneficial Use	Consumptive Use?	Fresh/Saline	Source Type	Irrigation Type	Acres Irrigated	Crop Type	Population Served	Power Generated (MWH)	Acre-Feet Per Year (AFY)	Start Date	End Date	GIS Feature	Water Use Methodology
AGRICULTURAL IRRIGATION	Y	FRESH	SURFACE		NaN	NaN	NaN	NaN	84,671	10/01	9/30	7	Snake River/Salt River
INDUSTRIAL	Y	FRESH	SURFACE		NaN	NaN	NaN	NaN	0	10/01	9/30	7	Snake River/Salt River
MUNICIPAL/DOMESTIC/STOCK	Y	FRESH	SURFACE		NaN	NaN	27,480	NaN	0	10/01	9/30	7	Snake River/Salt River
MUNICIPAL/DOMESTIC/STOCK	Y	FRESH	GROUND		NaN	NaN	27,480	NaN	8,865	10/01	9/30	7	Snake River/Salt River
RESERVOIR EVAPORATION	Y	FRESH	SURFACE		NaN	NaN	NaN	NaN	72,175	10/01	9/30	7	Snake River/Salt River

Estimated Water Supply Summary

State Agency Partners

- ▶ Current Status: States participating or in preliminary steps to get WaDE deployed



Looking Forward...

- ▶ Working on getting our remaining member states into the WaDE portal
- ▶ Need more datasets... some states only have one primary dataset (e.g. only water rights data) in WaDE
- ▶ Need to work with states to achieve better coverage and water availability “metrics,” need to include more interoperable formats (greater temporal/spatial resolution, watershed-based summaries)
- ▶ Working on next schema version 0.3 – more GIS data, data quality information, greater integration with CUAHSI controlled vocabulary and some USGS terminology. Go to WaDE Community on GitHub to add comments/issue.
- ▶ Working with the Fed-led Open Water Data Initiative (OWDI) and Aspen Institute Dialogue Series participants on greater integration with other frameworks
- ▶ **More agile development is needed. Faster turnaround on WaDE tech and components.**

Questions for You...

- ▶ Besides basic state water plan data, what state-generated information would you like to have access to?
- ▶ What format do you prefer to receive the data?
- ▶ What data are specific to eastern states that we don't cater to?
- ▶ What architecture solutions have you seen that solve the issues with a distributed network in terms of monitoring and ensuring a performant application?
- ▶ Strictly open source or private vendor hybrid? Cloud providers?

Any Questions?

- ▶ WaDE Website: wade.westernstateswater.org
- ▶ WaDE Github Repo: <https://github.com/WSWCWaterDataExchange>
- ▶ Please contact or Sara Larsen (WaDE Program Manager) – saralarsen@wswc.utah.gov for more information, for any help with the WaDE API, and to contribute your expertise

THANK YOU!