

Breakout Sessions – Group 2 participants:

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1. What are the challenges in getting the data you need to meet your regulatory, water planning and other obligations? Do you have adequate information/data on surface/groundwater uses? If not, do you have plans for a solution to those challenges? What data are missing now?

- In Missouri:
 - No matter what use, if your well or surface water intake diverts 70 gal/min or more, you “must” report. Major water users already regulated by other state entities (ex: public water supply / municipal, power plant, major industrial) are easy to collect data from because they already meter their water use and submit other data to the state.
 - The problem is private entities (mostly irrigators) who are not used to being regulated. That is the hardest part.
 - Very few of these small irrigators actually have a meter. But they can estimate (15 inches per irrigation season x acres being pivot irrigated. Or gallons per minute being irrigated). The biggest issue is a lack of trust and no regulation to enforce statute (non-binding). Statute says that if data is not reported, then an “injunction” can be filed against the water user. However, that hasn’t been used before because various ag groups carry a lot of weight in the legislature and it would cause great tension / conflict for the Missouri Geologic Survey.
 - A hypothetical example that Scott Kaden uses to illustrate the importance of water use data to irrigators in Missouri’s Bootheel is that if Arkansas were to sue Missouri for water the state would need the data to protect the farmer’s water rights. This has at least improved friendliness of farmers, although data sharing is still low.
 - Side note about water use law in Missouri: Anyone can use water over or under their land in any way as long as it doesn’t negatively impact the neighbor. If neighbor feels concerned about water use, they can file civil suit against neighbor. This has nothing to do with the State though.
- Wyoming doesn’t ask for data unless it is specifically used in a decree/state compact agreement (this would be collected by Office of State Engineer).

- Wyoming is a prior appropriation state.
 - Must file water use with Office of State Engineer – so there are good records of what is permitted.
 - State Engineer can go for abandonment proceedings, but, similar to Missouri, this never happens because that is “suicide” for State Engineer Office.
 - Wyoming Development Office can’t ask Office of State Engineer for data used in state compact agreement. They rely solely on remote sensing for estimating consumptive use & planning efforts. But also to be prepared for a lawsuit if needed.
- Utah has a good sense of irrigated lands (good land use mapping program). Field surveys w irrigation type used to be the only method.
 - Aerial imagery that is available can be used to figure out irrigated lands. Now field spot checks are used and remote sensing supplements this.
 - Even though this irrigation method works well, the biggest challenge is that consumptive use is still estimated.
 - Division of Water Rights (office of records) can’t change self-reported records, even if they know the record is incorrect. That is another block.

SOLUTIONS

- Missouri: local farmers know county offices. County Farm Service Office (USDA) or Farm Bureau Office have relationship w farmers. If State can reach to those local folks, then that might be the best approach. Getting their buy in & relying on local trust is a good approach.
- Utah: water banking legislation has been a process that has been helped by local Farm Bureau. As a result, the local rural communities are reaching out to Candice asking for a presentation on how the system might work. Local support happens through dialogue
- Wyoming has same experience. Farmers w Part time jobs at NRCS – those are the folks who can help build local support for data collection. And clarify that the State Water Development Office is there to protect water rights.
- USGS found that Extension Agents were very helpful in Counties. Offering something (ex: free measurement of water use and finding they were under allocated) opens the doors to communication, relationship building and trust.

2. What water use reporting (2020 and beyond) for regulatory and institutional purposes are most important to your State? What data standards for QA/QC, accuracy, and completeness do you use in the State to monitor water supply or use?

- Missouri: The only QA/QC thing Missouri does is that the online reporting system requires users to tell pumping capacity. The check is that use cannot exceed this capacity. That is the only check. Only irrigating 4 months of the year on average. But the check that they do assumes 24/7 & 365 day/yr pumping.
 - One success story is the state gave out meters on wells and checks each month on use. Then the farmer could keep meter after 5 years. Farmers became friends with state data collectors.

- Utah: water banking legislation has been a process that has been helped by local Farm Bureau. As a result, the local rural communities are reaching out to Candice asking for a presentation on how the system might work. Local support happens through dialogue
- Wyoming: no reporting. Surveys are sent out to irrigation and public water systems – both voluntary. But people sometimes don't understand question, or don't want to share the truth.
 - Questions in survey include: How much water did you use? Do you sell water to other systems?
 - One way that might improve response rates and accuracy is by writing the motivation for the survey to protect against law suits.
 - Another important strategy is local relationship building via existing networks / established trust of Farm Bureau (such as Utah water banking example).

3. What are your State's water use reporting systems and gaps in technical support, and methods? What future updates/plans for data collaboration, models, data services do you have? If water use data are reported voluntarily by water users, does your agency provide guidelines for reporting?

- Missouri: Database constructed in 2009 through Microsoft Access. Difficult to query and some data were even lost. Online Web software sometimes doesn't transfer properly to database. Also online reporting system is not user friendly and is clunky. Data is locked behind IT department, which is very understaffed. Making raw data into useful information would be a great WUDR grant.
- Utah: SQL data base is not easy to see, visualize, understand or tell story with. Need to focus on water budget data on open data platform. Power BI vs Tableau vs Insight conversation is just about knowing whatever does the job (cost matters too). Visualization capabilities are important. Having people and capacity to keep efforts going is difficult. Many people retired.
- Wyoming: Sam Swartz wants to improve water rights permitting system. It needs upgrade. The water rights permitting system does not allow easy queries or finding all documents associated with a specific water right. Adjudication process is tracked through the system, from application to approval. It is based on really old software from an enormous SQL database – totally inaccessible. Many scanned documents, not all QA/QCed. This would be a great system to improve w WUDR grant. People at the top of the layer cake need answers and a story. It is difficult to get from raw data to that story. Seeing how water use changes over time would be great. It is exciting to see young people w technical skills. Retaining these young people is difficult though.

4. What is an acceptable lag time given reporting schedules? Monthly time-step? What are acceptable, optimal, spatial resolutions for State assessments of supply and use information (site-specific, HUC-8, custom spatial units)? What are the challenges in working in a common spatial unit (HUC 8, 10, 12)?

- For all states in group: data comes in annually, but monthly usage is typically requested & reported. All three states have databases that are updated as data comes in. Ideally data comes in at once, but this doesn't happen.

- Missouri: for water users, the state asks for location information as lat/long as well as township and range. Sometimes lat/long does not line up with township and range. People are confused by lat/long, not knowing what projection or geographic coordinate system. Good idea from Illinois state: 2 min video showing how to go to google maps, find farm and click “what’s here” to find lat/long.
- Wyoming: same issue. But only reporting comes in from data specific for a compact agreement. Spot checking data has been inputted in excel spreadsheet but then field notes were thrown away (loss of data). Working to avoid that situation in the future.
- Utah: river commissioners measure how much is being diverted out of stream. No requirement for irrigators to tell state which fields water goes to. Secondary use and irrigation boundaries/use is measured. After audit, division of drinking water gives points with public water supply. If you report water use, you get 50 points. If you don’t have a certain # of points, you could lose some water rights.

5. What can WaDE or WUDR do to help your state meet its challenges?

Missouri can’t get any more WUDR funding: it has already spent on improving quantity and quality of data. Having better database and way to present data is what is needed now. If they had \$\$, they could develop a more interactive/user friendly database system. Or external contractor could do this.

WUDR’s \$26k for initial plan 5-6 years ago. Each grant application has to tie into original plan. But now with hindsight & learning, original plan doesn’t include what they realize now is the most important. Wyoming has the same situation. A little more flexibility to update plan would be helpful.

***** This was discussed in report out session. It was confirmed that WUDR does have the flexibility to update original plan. *****

Wyoming: database upgrade would enable easier pulling out / presenting data. Visualization is also key. Still need to do experimentation on what system works best. Putting visualizations on public website is very powerful. People get excited about new technology and can go to legislators as constituents saying how they are supportive of data sharing initiatives.

Utah: metering secondary water use will cost \$300 million dollars. It is impressive Kansas was able to meter all water use. Candice is interested in how to improve estimations but notes that it is too expensive to meter all use. Open ET is exciting for this reason.

If OpenET is built by neutral third party, that will help people agree. Unified methodology is especially important for compact agreements. And even just agreeing on definitions of “depletion”, “Consumptive Use”. It took 4 years for USBR and USGS to agree on consumptive use definition.

6. Would you like to share lessons learned with other states?

Yes. Sharing lessons learned with both veteran and new employees. Identifying gaps together is powerful. Leaving echo chamber is also a good idea for getting new approaches to solving

problems. “What!? We can do that?!” moments were common at WIMS. Use cases are awesome.

USGS shares WUDR workplans online. But it is nice to have dialogue. WUDR webinar was useful to get gist of program, but hearing about state projects & what was achieved would be useful. Setting aside 1 hour for webinar on calendar is easier than adding more to do on the reading list.

Quarterly webinar would work – as consistent as possible. Having a mixture of avenues is useful. Non-professional settings with face-to-face is important. Presentations encourage only showing “the best side”. But casual conversations is where a lot of good, real conversations unfold.

There is a need for additional meetings to share best practices / lessons learned on how to communicate to Irrigators so they can understand why water data being requested is important.

WUDR afternoon / meetings at existing meetings also works. Doing meetings in conjunction w other meetings makes sense (EX groundwater, AWRA, WIMS, etc).