MINUTES
of the
WATER RESOURCES COMMITTEE
Albuquerque Marriott Pyramid North
October 19, 2017

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Marriott Pyramid North Hotel
Albuquerque, New Mexico
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MEMBERS AND ALTERNATES PRESENT

ALASKA	Dave Schade Joe Klein Christopher Estes (on phone)
ARIZONA	Einav Henenson
CALIFORNIA	Jeanine Jones
COLORADO	Rebecca Mitchell Patrick Pfaltzgraff Carlee Brown
IDAHO	Jerry Rigby
KANSAS	Tracy Streeter Kenneth Titus
MONTANA	Tim Davis
NEBRASKA	--
NEVADA	Jason King
NEW MEXICO	Tom Blaine Greg Ridgley
NORTH DAKOTA	Garland Erbele Jen Verleger
OKLAHOMA	Julie Cunningham
OREGON	Tom Byler
SOUTH DAKOTA	Kent Woodmansey
TEXAS	Jon Niermann

UTAH	Eric Millis Norman Johnson
WASHINGTON	--
WYOMING	Pat Tyrrell Steve Wolff

GUESTS

Ward Scott, Western Governors' Association, Denver, CO
Mat Weaver, Idaho Department of Water Resources, Boise, ID
Lucia Sanchez, New Mexico Interstate Stream Commission, Santa Fe, NM
Duane Smith, Southwest Oklahoma, Oklahoma City, OK
David Jordan, Intera, Albuquerque, NM
Herman Settemeyer, Intera, Austin, TX
Jordan Bunker, Southern Nevada Water Authority, LVVWD, Las Vegas, NV
Travis Hyer, Hyer Legal Services, Salt Lake City, UT
Josh Maxwell, House Committee on Agriculture, Washington, D.C.
Andrew Vlasaty, Senate Committee on Agriculture, Nutrition, & Forestry, DC

WESTFAST

Roger Pierce, Federal Liaison, Murray, UT
Patrick Lambert, US Geological Survey, Salt Lake City, UT
Becky Fulkerson, Bureau of Reclamation, Washington, DC
Chris Carlson, US Forest Service, Washington, DC
Andrew Hautzinger, US Fish and Wildlife Service, Albuquerque, NM
Brian Caruso, US Fish and Wildlife Service, Denver, CO
Doug Curtis, Bureau of Land Management, Washington, DC
Jeremy Kruger, Bureau of Land Management, Washington, DC
Stephanie Granger, NASA, Western Water Applications Office, Pasadena, CA
Elizabeth Weight, NOAA, NIDIS, Boulder, CO

STAFF

Tony Willardson
Michelle Bushman
Sara Larsen
Cheryl Redding
Adel Abdallah (intern)

WELCOME AND INTRODUCTIONS

Tom Byler, Chair of the Water Resources Committee, called the meeting to order, and requested introductions be made around the room.

APPROVAL OF MINUTES

The minutes of the meeting held in Bismarck, North Dakota on July 14, 2016 were moved for approval and the motion was seconded. The minutes were approved without change.

FARM BILL / PROPOSED POSITION

Tony gave a brief introduction to Josh Maxwell and Andrew Vlasaty, both professional staff with the U.S. Congress.

A. Overview of the 2014 Farm Bill

Josh Maxwell, Senior Professional Staff, House Committee on Agriculture for Chairman Conaway of Texas. He has served with the Committee since 2002.

As many of you are aware, the Farm Bill expires at the end of September 2018. Farm Bills are complicated tools to reauthorize. Each different Farm Bill has its own story. Chairman Mike Conaway (R-TX) is dedicated to getting a Farm Bill completed on time. The main reason is to help save the rural economy. He also believes, along with Ranking Member Collin Peterson (D-MN), that legislative fixes need to take place now to address issues facing both cotton and dairy, as well as any disaster issues being faced right now in rural America.

Committee staff have been tasked with drafting a Farm Bill now. The work actually began last year when the Committee held several hearings on the state of the rural economy. The Committee continued hearings on the rural economy this year. In addition, each subcommittee held hearings on issues that will be faced in the next Farm Bill. That consisted of twelve subcommittee hearings and a number of field listening sessions across the country. Committee members heard from a number of producers who talked about their priorities.

We are working to put together draft proposals for each title. With respect to the the conservation title specifically, the Committee heard they should not do a lot. There was a significant change in the 2014 Farm Bill when Congress decided to consolidate 23 conservation programs into about 13 programs. The comments heard suggested we let some of the changes play out, and continue to make EQIP a strong foundation for the conservation title while providing producers with a "bricks and mortar" type program. They also want to look at the Conservatiton Reserve Program (CRP) and the future of the program. Does there need to be a modest increase in acreage going forward? Additionally, they want to look at the Conservation

Reserve Enhancement Program (CREP) and funding for that program. Further, we will look at the newly created Regional Conservation Partnership Program (RCCP) program to determine if the program is functioning the way Congress intended, or should the program be either expanded or reined in? Within conservation, what is the future of the Conservation Stewardship Program (CSP)? That provides an outline of where we are headed on the Farm Bill and the issues the Committee members are looking at.

Andrew Vlasaty is a Senior Professional Staff on the U.S. Senate Committee on Agriculture for Chairman Pat Roberts (R-KS). He has served on the Committee since 2011. He thanked Josh for his overview of Title II for the 2014 Farm Bill.

The Senate Agriculture Committee, much like the House, has been active in doing the Committee's business. Senator Roberts is committed to conducting work in a transparent and regular order. Over the last year, they have been conducting oversight hearings title-by-title of the 2014 Farm Bill. Just last month, they completed the last hearing on Farm Bill oversight. With one year out to expiration of the current law, they have held oversight on each of the titles. The input they have received at the hearings has been really helpful. It is interesting to hear what is working well from the 2014 Farm Bill, what challenges remain, and what adjustments and tweaks can be made to improve program performance and deliver.

They heard an emphasis placed on continuing working lands programs and protecting the conservation dollars and the federal investments already in place. Senator Roberts has pointed out that as they gear up for reauthorization, they need to be particularly aware of the budgetary environment. We all acknowledge that the budgetary environment will be extremely tight and limited. If Congress were to pass the current law with no changes, there are 39 programs that would not have new funding beyond 2018. These programs that received mandatory dollars could not continue past expiration. Given the Congress is already facing a $3 billion deficit, there are funding challenges. Where significant increases in funding are requested, the funding will have to come from somewhere else – whether it is within the confines of Title II or from somewhere else – given the overall federal budget deficit.

Senator Roberts says now is not the time for a revolutionary bill. He wants to work within the existing confines and structures of the programs and see what changes can be made to provide predictability and stability. The rural economy is in a drastically different position, compared to what it was for the 2014 Farm Bill. Senator Roberts is trying to get this bill across the finish line and enacted before it expires in 2018.

We look forward to working with groups like the Western States Water Council, and I'm interested to hear from the state representatives around the table today.

Questions:

Tracy Streeter: What are you hearing on a modest acreage cap for Conservation Reserve Program (CRP)? I know that at least Colorado, Nebraska, and Kansas are advocating for an increase to continue to provide CRP with some room for enrollment. What is your prediction?

Josh Maxwell: Mr. Peterson has made public statements that he is in favor of a significant increase in CRP acreage. However, as Andrew alluded to, the budget situation is pretty tight. If the CRP is increased in the range of 40 million acres, you would have to find an extra $6B. The Chairman is committed to working with Mr. Peterson to allow a modest increase. However, those increases most likely need to pay for themselves. In order to do that, you need to find reforms within CRP, such as increases in the rental rates. You have to look at what type of commitment, especially when you're looking at continuous acres, that both landowners and the government need to make to each other, if the government is going to pay for continuous acres or any acres. The program is 30 years old now. How long will the government pay for those acres? How long is the farmer willing to put those acres out of production for the conservation gain?

The members will be looking at a number of reforms. It is likely there will be some type of increase. That increase could come from within the current program. USDA estimates there are around 6B acres of prime farm land currently in CRP right now. Is there a way to prevent those acres from being re-enrolled, and allowing for enrollment elsewhere?

Andrew Vlasaty: We're finding ourselves in a unique circumstance. A policy decision was made in 2014 to gradually step down CRP from 32 million acres down to 24 million acres. As I mentioned before, the rural economy was in a very different state when that decision was made. Folks around the country are really starting to feel the impact of that policy position. We recently have seen USDA make an announcement that they are basically halting CRP enrollment because they are practically hitting the statutory cap. To reiterate what Josh said, any sort of increase in CRP, regardless of whether it is one million acres or ten million acres, comes with a price tag attached. Throughout the listening sessions, we've not heard an outcry to significantly increase CRP. We're hearing more about working lands and continually investing in those types of programs, and also incorporating more working land opportunities within CRP. I would remind folks that costs for any CRP increase will be coming from somewhere. The question is where and how much?

Josh Maxwell: The reason the members made the decision to stepdown CRP last time, yes, savings had something to do with it, but additionally it was due to crop prices at the time. Landowners were not enrolling their acreage into CRP. There was a gap between the enrollment limit and the acres enrolled, and the Committees were still charged under budget rules for those acres. There is a balancing act. You have to figure out the maximum amount of demand for the program, as well as what you can pay for, because what is not being used still costs, and that means there are dollars not going into working lands programs.

Tracy Streeter: We did not touch on rural development and the water and wastewater loan and grant program. This may be of interest to our members. What can you tell us about where things stand on that with your committees?

Josh Maxwell: I don't believe there is too much interest. There was not a Secretary of Agriculture in place when that came out. The Secretary is committed to rural development. There has been a theme of emphasizing infrastructure and jobs from this Administration. I don't believe you'll see anything different from the Agriculture Committee on the House side going forward. This is about the rural economy which is on the whole suffering. This Farm Bill is about recovery in rural America.

Andrew Vlasaty: Tracy, I cannot speak directly on the program you referenced. But to provide some comments on the budget, it is often said that the Aministration proposes budgets, but ultimately Congress disposes of them. There is strong support for rural development programs on the Hill.

B. Farm Bill Conservation Programs

Chairman Byler referred the Committee to a draft position found under Tab C of the briefing materials.

Jeanine Jones provided some background with respect to the position. She noted that the Council has followed the Farm Bill somewhat in the past, particularly in the 2008, when there was an agricultural water conservation program that provided funding to districts as opposed to producers, supporting both district level conservation and on-farm level conservation. That program went away in the 2014 Farm Bill.

One of the things we are now looking at that is highlighted in this position relates to expansion of the CRP program as a way to basically fund some land idling or land retirement. This is of interest to Tracy in Kansas, as well as Colorado and the other Ogallala Aquifer states. This may help reduce, for example, unsustainable groundwater pumping conditions, and in the case of the Republican River, to help manage interstate compacts. This is an area where there has been a lot of interest. In addition to the expansion of CRP acreage, we also want to support the rural development program, which includes water and wastewater assistance for rural communities, many of which simply do not have the financial capability to qualify for SRF funding under the EPA programs. Rural development also provides very important technical support services to communities. That is the focus behind some of the points included in the position.

Tracy commented that the Agriculture Committee staffers touched on a number of the programs that are important to Kansas. Oklahoma and Kansas share a Regional Conservation Partnership Program project, which is the consolidation of the programs discussed by the staffers. Tracy believes this is a really good tool for states. Kansas is using it in several areas, such as encouraging adoption of irrigation technology, stabilize streambanks or handle sediment,

and we are working jointly on a Grand Lake Project with the Oklahoma Conservation Commission. These are great tools. Encouraging dryland farming could be useful, if we encourage dryland farming under CRP acres, after retiring water rights. We don't want to put the land in permanent vegetation and make an expensive rental payment on the land. We would rather put the money in the water right retirement and they can go to a dryland rental grant. There might be an opportunity to talk with them about this. Kansas, Colorado, and Nebraska have used the CRPs to dry up acres along some of the rivers. In Kansas, we have retired about 35,000 acre-feet of water with the CRP program. We got the rental rates up to about $200/acre. The ag groups and ag input folks don't like to see a lot of land go out of production. That is why the dryland farming provision has some appeal to some of the ag organizations. We are trying to retire water rights with these programs. Continuous CRP practices such as buffers, wetlands, and things that have good wildlife features on the surface make a lot of sense and could be very useful. We may not be able to swing the wildlife community to agree with us.

Jeanine Jones then noted that from the perspective of a state water manager, this is a way to leverage your state funding using federal dollars. If you have a program with an objective to do water conservation or to manage water rights in an area to reduce diversions or depletions, this is a way to get some federal investments to do that.

Jeanine moved approval of the proposed position as drafted. The motion was second and unanimously approved.

SUNSETTING POSITION

Position #372, which is in the form of a letter with comments on the U.S. Forest Service's proposed directive on groundwater resources management, published in Forest Service Manual 2560, is due to sunset. The Forest Service has withdrawn the proposed directive. The Executive Committee recommends taking no action on this position, so therefore it would sunset. Our comments would not be rescinded, but it appears that the USFS will address this issue again in the near future. The WSWC wants to continue discussions with the USFS, and the comments we made are still pertinent, however, they are no longer timely.

WGA UPDATE

Ward Scott, Policy Advisor with the Western Governors' Association (WGA), expressed appreciation for the opportunity to work with Tony and with the WSWC. He provided a summary of the recent work of the WGA. Some of the areas of focus at WGA include: (1) preservation of state authority; (2) adequate funding of federal programs that are vital to western water management; and (3) working to strengthen the effectiveness and dynamics of the relationships between the states and federal agencies.

With respect to state-federal relationship work, this has been an overarching theme for WGA and they have adopted a policy resolution on that point. A coalition on this issue has been pulled together. WGA is trying to refine and circulate their message that when a federal agency's actions potentially affect state interests, the federal agencies must consult the states as sovereignties with their own inherent powers. They are also working to develop a clear and effective model that would encourage federal agencies to conduct full, meaningful, substantive and ongoing consultation with the states on any agency action, including directives, that affect matters of State interest. A couple of examples of this over the last year are the Waters of the United States (WOTUS) federalism review consultation with the Environmental Protection Agency (EPA) and the Corps of Engineers in June. This week we submitted comments to the Corps of Engineers on regulatory reform and appreciate the outreach on the part of the Corps to seek our input.

Hydropower is an ongoing issue. There are two bills going through Congress right now. The states have expressed concern regarding the subordination of states' authority to issue certification under Section 401 of the Clean Water Act in the hydropower permitting process. This is not a new issue. It has been going on for 25 years at least. The governors are supportive of hydropower as a vital part of the national energy portfolio. However, that support ceases when part of the process is impinging on state authority. Those bills would require that states comply with Federal Energy Regulatory Commission (FERC) imposed deadlines for certification, the lead agency for nonfederal hydropower licensing. They would also limit the time within which States must exercise their delegated authority under the Clean Water Act to certify projects comply with their water quality standards under Section 401.

House Bill 2043 has been subsequently amended since discussion. A savings clause exempts the CWA from the scope of the legislation. The states believe this clause could be strengthened. The Senate bill does not include this same language. There is no concerted effort on the part of the opposition.

Another area of concern is sustaining EPA's current water transfers rule, which excludes transfers from National Pollutant Discharge Elimination System (NPDES) Section 402 permitting requirements. WGA is working with Peter Nichols to pursue a legislative fix and to strengthen its stability and long-term effectiveness. WGA is looking at getting a legislative fix in an infrastructure package or as a stand-alone bill working with several stakeholders. This issue transcends political lines and geographical regions. WGA is strategizing how to move forward.

WGA continues to watch EPA's Waters of the United States (WOTUS) 2.0 rulemaking. As mentioned earlier, we continue to express our concerns on federalism. The governors are encouraged by the agency's outreach with this latest rulemaking effort.

Currently, WGA has an initiative on National Forest and Rangeland Management. They would like to extend the initiative into the area of watershed management protection and want to increase the protection of water quality as a result of wildfires.

WGA has adopted two policy positions that cover water in general, one on water quality and the other on water management. The water management resolution will expire in June 2018. WGA staff will be working on making revisions in this resolution over the next six months. Ward encouraged WSWC representatives to review the resolution and asked that they please communicate with the Governor's Staff Advisory Council representative. Also feel free to contact Ward as well.

SOUTHWEST OKLAHOMA WATER PLAN

Julie Cunningham noted that the Southwest Oklahoma Water Action Plan was initiated by the locals in the area. She also stated that Duane Smith has reviewed the work at past meetings. Julie addressed statewide water planning, adding the Plan is a perfect example of how statewide water planning moves to the next level. It is an extension of the technical data that was collected during the planning process and the stakeholder meetings. One of the priority recommendations was the creation of regional planning groups, but that didn't really take off in the legislature. Since then the Oklahoma Water Resources Board (OWRB) has seen organic groups pop up all over the state. Julie credits that to Duane Smith as he is actively working with these groups.

A couple of years ago, the Board called on the WestFAST group for recommendations under the National Drought Resiliency Partnership which was an initiative of President Obama. They request the federal agencies focus on state and local needs in the Altus, Oklahoma area. The State of Oklahoma submitted their Southwest Plan and this group for recognition nationally. We suggested WestFAST could facilitate and demonstrate that federal agencies can work together under their individual authorities and get all of the different agencies focusing on a specific area or a specific project. She remarked that implementation is the costly part.

Duane Smith followed on Julie's remarks and noted he spoke to the WSWC in April in Nebraska with regard to the Southwest Oklahoma Water Action Plan. Regional planning is coming up under the State's water plan, and WestFAST is helping implement local and regional plans appropriate for drought mitigation strategies.

Referring to a hydrograph that covers 100 years of precipitation in Oklahoma, Duane indicated that 1957 was the worst drought of record in Oklahoma. That is when the Oklahoma Water Resources Board was formed. At the time, the leaders knew they had to do a better job of planning for water resources if the state was going to grow. They began building federal reservoirs. There are 29 Corps of Engineers and Bureau of Reclamation reservoirs in Oklahoma. In 1980, Oklahoma experienced the longest, wettest period in its history, which also coincided with Duane's professional state career. All of the agriculture folks and industries and professional water managers knew and were familiar with the state's wet period. The stories of drought were just that – stories. People hadn't lived it.

From the period 2010-2014, there was severe drought which prompted folks to create the Southwest Oklahoma Water Action Plan. During this period, it is estimated there was over $1B of economic downturn just in the agricultural sector alone. The City of Altus, which is home to a military base, had also been named as the worst in the Nation in terms of risk to its water resources. The City of Altus and Southwest Oklahoma were within one year of running out of water. They came to Duane, and he was hired to help Southwest Oklahoma figure out how to plan for and manage water and drought. With the Southwest Water Action Plan, this area has become a model used by federal and state agencies to demonstrate how to plan for and implement water supply resilient strategies. The area now has developed a reliable water supply that can withstand the worst drought of record.

The Southwest Oklahoma team has been interacting with the WestFAST team on a monthly basis. There are seven major sources of supply being pursued for the future in Southwest Oklahoma. These include: (1) Altus City Lake; (2) reuse and recycling; (3) new groundwater wells; (4) administrative action with respect to upstream water rights; (5) irrigation efficiencies (as cotton production has been increasing, and they want to find ways to take advantage of Farm Bill programs; (6) reservoir development with the U.S. Bureau of Reclamation looking at the feasibility of a new reservoir; and (7) municipal conservation. Surprisingly, the latter has been a controversial issue and it is very difficult to implement. People would rather add more water supply and more wells, and increase their monthly water bills than conserve water. The "idea" of conservation is great, but in practice it can be very difficult.

The programs administered by the WestFAST agencies, such as EPA's State Revolving Fund (SRF) program, are very important in the studies ongoing and the various strategies. They are moving forward and it is an interesting case study. They hope to move forward with implementation.

Roger Gorke suggested that in keeping with the Southwest Oklahoma Water Action Plan, this is how the federal family should be working – to support the work that is happening at the state level and into the local level. It is much more efficient and effective for the federal agencies to plug in to the work happening in Southwest Oklahoma. They did a lot of work prior to their engagement with the federal government. The diverse stakeholder groups and the leadership from the Chamber of Commerce (which is economic and not just a water issue), helped develop the plan and the longevity is very critical.

Water loss in the Southwest Oklahoma Water Action Plan area is being addressed. WestFAST is trying to add value to the work being done. They also want to be able to replicate this work in other areas as time moves forward.

How we work together and function together in support of the work happening on the ground will be critical – rather than hunting and pecking for which federal agency to try to find support. Another critical aspect is building on the existing relationships with the federal agencies and the local communities. We hope to foster new relationships without having to start

from scratch. There is a lot of great work already in progress. How do we build on that and allow other western states to look over our shoulder as we do this work?

DOE STUDIES OF ENERGY AND WATER IN THE WESTERN UNITED STATES

Vince Tidwell, Technical Staff with Sandia National Laboratory provided an update relative to the work on energy and water in the western United States, as well as to update on the data collected from western states about 3-4 years ago.

Vince suspects most are familiar with the energy-water nexus. There is a lot of water that goes into the production of energy. The use of water for energy production is the area in particular that Sandia worked on previously with the Western States Water Council. The picture across the United States shows thermal electric power generation is the largest user, the largest withdrawer of water. However, in the Western U.S., it is only about 2% of all of the fresh water withdrawals. Thermal power consumption U.S.-wide is about 5-7% of the total consumption. In the West, it is less than 1%, but that is important as this area continues to grow. Our efforts helped to bring water into the long term energy generation and transmission planning processes.

The Western Electricity Coordinating Council (WECC), an industry group headquartered in Salt Lake City, Utah was beginning a project to do long term transmission planning over the next 20 years. They worked to bring together the energy managers, the Western Governors' Association, and in particular, the Western States Water Council. WECC came up with five methods to study the development of energy. To help with the analysis, Sandia built an optimization model to help determine the right place and the right kind of energy generation to put in a specific location. To help constrain the model, they looked at variations in the demand for electricity, variations in the cost to produce electricity from different types -- whether renewables, coal, or oil (whichever is cheapest), various environmental constraints, and the demand for electricity.

Sandia Lab and the Western States Water Council came together in the development of projections regarding the use of water, and whether or not there would be enough water available in a specific location to build a power plant. The first step in helping to develop the data was a model to help figure out how much water was being used. Coal and nuclear plants tend to use more water than things like natural gas combined cycle, solar, and wind. Once it was determined about how much water would be needed, then they looked at any constraints. Together with Sara Larsen, Sandia identified the amount of available water to be developed. The data helped us put together constraints related to water resources.

As the optimization model was used for siting, interestingly, there were very few cases in which they were not able to add all of the electric generation capacity wanted due to the water constraints. They found that the thermal electric industry could potentially become a provider of water in the future, with plant decommissioning, depending on what the future looks like. In about 8% of the cases, they would have to go to non-potable sources of water.

Over the last several years, Sandia has been expanding this effort into the Eastern U.S., by mapping out water availability. In the Eastern U.S., in large part, they have set administrative limits on water availability and the use of sources of drinking water. They have looked at the existing power plants to determine which might be at risk and which have had problems in the past, due to thermal discharges being too warm or where biological vulnerabilities impact how the plants are operated.

Mr. Tidwell shared information about a study in the San Juan Basin. There are two big power plants in this vicinity, the Four Corners and the San Juan power plants. They took some models of the physical systems and looked at how the deliveries of water might impact electric power production in the West. There were six climate models and they created scenarios using several metrics.

Shortage sharing causes disruption in the basin. Instream flow releases were considered. Climate alone does not have a huge impact. In some cases, the models looked better with climate change as some of the models are wetter. When they implemented the full exercise of potential Indian water rights, things usually looked worse. Different metrics respond differently. There is little uncertainty regarding the effects of full utilization of Indian water rights.

On the other side of the coin, the study considered how much emergy was being used for water. Energy is used in a variety of different ways. Energy is used in irrigation, to treat drinking water, to treat wastewater, and to move water through large scale transbasin projects. About 6% of electricity generation is going for these different uses.

Sandia mapped out how much electricity was used across the U.S. for water provisioning. The demands on water are likely to increase in the future, and there will likely be more use of reused wastewater, more use of desalination, and new pipelines in the Western U.S. They projected changes to 2030 for water provisioning. The demands on water are likely to increase due to full utilization of the water. There are likely to be disruptions due to shortages in a basin.

Vince acknowledged these studies have included a lot of work with a variety of different labs and universities.

EASTERN SNAKE PLAIN AQUIFER RECHARGE/RECOVERY EFFORTS

Mathew Weaver, Deputy Director for the Idaho Department of Water Resources, addressed implementation of practices in Idaho to save one of the most critical water resources in the state, the Eastern Snake Plain Aquifer.

In Idaho, all water is owned by the state. Individuals and organizations can hold rights to use that water in perpetuity as long as it is beneficially used. Idaho uses the Doctrine of Prior Appropriation. Since the 1990s, they have been actively conjunctively managing both the groundwater and surface water resources. That has come with some significant growing pains.

He showed a map depicting the southern third of the State of Idaho. The "bronze amoeba" on the right side of the map is the area of the Eastern Snake Plain Aquifer. It is about 10,000 square miles in surface area and about 220 miles long. It is in hydrologic connectivity with the Snake River along its entire eastern and southern extents. Along that boundary, the river both gains and loses to the aquifer.

A couple of key areas along the system are depicted in a gray box off to the right, American Falls Reservoir. This is an area where the aquifer is discharging and increasing gains in the Snake River. Moving to the left, Milner Dam is a significant point on the system because by state water plan practice and policy, they can take the Snake River to zero flow there, and they do in most years, at that point. The significance of that is that all flows in the Snake River downstream from Milner Dam must be made up from aquifer discharge to the river system. The area where that primarily occurs is the Thousand Springs Area near a town called Hagerman. Continuing another 80 river miles or so downstream, one reaches the Swan Falls Dam, where the state has an obligation to maintain 3900 cfs in the river during the irrigation season, and 5600 cfrs in the river at that point during the non-irrigation season. In the event they drop below those flows, the Department has to administer to a large body of water rights known as the Trust Water Rights. Currently, the only real way they can administer to those people is to curtail them. Finally, the water flows downstream to the Idaho Power Company's Hells Canyon complex, which provides power to the majority of the population of southern Idaho – about 50-60% of the state's population.

The resource that supplies water to all of these systems is a world class resource. That aquifer irrigates about 1.6 million acres, either through direct pumping or withdrawals out of the Snake River. It supplies water to all of the municipalities and industries that overlay the Eastern Snake Plain Aquifer (ESPA). It also holds up an aquacultural industry in the Thousand Springs area, which is the largest concentration of those types of facilities in the world.

Unfortunately the ESPA system has not been doing well for the past five to six decades. As the aquifer changes, the volume in head associated with the water available to those springs also changes. From 1912 to 1952, there were increases of about 17 million acre-feet of gain in combined aquifer storage due primarily to the distribution of irrigation water through unlined canals and flood irrigation practices. From 1952 to the present, there has been a decline of almost 13 million acre-feet, averaging about 210-215,000 acre-feet per year of decline, due primarily to groundwater diversions by growers on that million acres of irrigated ground, and improvements and efficiencies in the delivery systems and surface water irrigation practices across the plain. A hydrograph shows the decline in the system in the region near Blackfoot to the Minidoka reach. This is an important reach because of the large amount of irrigation water that is diverted. This reach is also an area where the aquifer discharges to the river. Since about 1980, there have been declines of about 500,000 acre-feet in that reach.

An additional hydrograph shows the Snake River flows near the Murphy gaging station at Swan Falls Dam. The State has an obligation to maintain minimum flows in this area. For about one week in March 2015, the minimum flows in the river dropped below the requirements.

Mat described some points of contention in the ESPA and Snake River area. The aforementioned Blackfoot to Minidoka reach is the area where they've experienced declines and a surface water coalition delivery call. In the area of the spring complex, they've had a number of large regional delivery calls originating with spring users who are senior to the groundwater pumpers on the plain. Again, at Swan Falls, the minimum flows must also be maintained.

The change in aquifer storage content dates back to 1981. Sharp declines in that aquifer storage content often result in the large regional delivery calls that can result in the curtailment of water deliveries to hundreds of thousands of irrigated acres. A surface water coalition delivery call filed in 2005 resulted in litigation. It has been to the Idaho State Supreme Court 4-6 times and there have been four instances where the methodology the Idaho Department of Water Resources (IDWR) deploys to determine injury has been remanded back to the Department with changes. Most recently, that occurred in the Fall of 2014. In 2015, when IDWR's new methology was rolled out, they made an injury determination in April of about 86,000 acre-feet (af). The significance of that is the water year was good up to that point, so it caught people by surprise. The injury determination was not the final word. During the irrigation season, they continued to update the injury determination and it was not until the time of need (when the injured senior water right holder actually needs the water), that there was some certainty of what the obligation would be from the junior groundwater users. In April 2015, they were estimating 86,000 af of injury, and were projecting that it could be as high as 260-600,000 af of injury should the dry, hot conditions persist. That would have resulted in curtailment of water rights dating back to 1957. This had never been seen in Idaho. This brought the two parties together in earnest settlement discussions.

In fact, they did reach an agreement in 2015, which was appropriately reported in the May 12, 2015 *Times-News* as a "momentous occasion." This settlement was a private agreement. Its objectives were: (1) to mitigate for material injury to senior water users in the Surface Water Coalition (SWC) delivery call; (2) to provide safe harbor to participating ground water users in participating Ground Water Districts (GWD); and (3) through both, it was hoped to minimize economic impacts to water users and the State economy.

Of the long term practices identified in the agreement, the crown jewel was the voluntary reduction of consumptive use of groundwater by 240,000 af. In addition, they would deliver 50,000 af of water to the senior water right users, and in years when it was not needed, it would be recharged. They agreed to reduce their irrigation season to match the seniors and install measurement devices on over 5,000 points of diversion on the plain by 2018.

The term sheet realized an ultimate goal to stabilize and recover aquifer levels to the average ground water levels of 1991 – 2001. They also identified benchmarks to make sure they were getting there along the way. The goal is to be achieved by 2026. In addition, they identified a handful of "sentinel" wells that are monitored, instrumented, and published by IDWR.

The adaptive water management piece states: "If any of the benchmarks or the groundwater level goal is not met, additional recharge, consumptive use reduction, or other measures as recommended by the Steering Committee shall be implemented by the participating ground water parties to meet the benchmarks or groundwater level goal." Conversely, if the goals are exceeded, they can reduce their practices. There have been serveral addendums.

Flow meters have been installed on over 5,000 wells. All must be installed by Spring 2018. About half are now installed at a cost of about $15-$16 million to the water users.

The State of Idaho adopted legislation in 2014 and 2016 both funding a State managed recharge program. In 2016, the legislation would not have passed, but for the settlement agreement under which the parties came together and went to the legislature and supported the funding.

How does the State manage recharge? They target natural flow water under water rights held by the Idaho Water Resource Board (IWRB). They divert that water in priority into private irrigation delivery systems and constructed off-channel basins and let it infiltrate into the ground. In addition, there are a handful of injection wells where they can recharge. They are now targeting recharge activities in the winter to avoid interfering with the irrigation mission of the partner entities. They have an incentive program in place that pays wheeling fees. The incentives escalate the more an entity is able to recharge.

In the winter of 2014-2015, Idaho took recharge from a pilot project to a full scale project. They recharged about 75,000 af that winter. But 300,000 af spilled past Milner Dam and was not captured. The following year a little less was recharged. This year, they've had a significant water year and the capital improvements in place. They have recharged about 318,000 af of water during the three year program. The median diversion rate was almost 900 cubic feet per second, and the cost to the Board just in wheeling fees to accomplish this recharge was about $2.4 million.

A graphic showed the dollar amounts that have been dedicated to or are projected to be dedicated towards construction of capital projects and operation and maintenance and wheeling fees, together with a line representing the amount of recharged water that has been achieved or that is projected to be achieved. Over this time period, they will be spending over $40 million for capital projects. They are budgeting over $3 million per year in wheeling fees and for operation and maintenance. They hope to be recharging an annual average of 200,000 af by 2019, and to their state water plan goal of 250,000 af by 2024.

The recharge challenges Idaho is facing include ongoing funding beyond the next 3-5 years. In the last year, there has been significant competition between private recharge and public recharge projects. In some instances, the private recharge sector is competing for the same recharge facilities as IWRB, and they are willing to pay more in wheeling fees. The State is also struggling with formal water quality related monitoring and enforcement.

Mat closed with some slides depicting the effectiveness of the implementation of the settlement agreement and recharge.

CONJUNCTIVE MANAGEMENT RULES IN THE HUMBOLDT RIVER BASIN

Jason King reported on conjuctive management of surface water and groundwater in a river dominated system in Nevada. Nevada is just taking on conjunctive management for the first time and this has been due to drought from 2011 to 2015.

The Humboldt River headwaters are in the northeast part of the state. The river travels about 1,000 miles. It travels through 34 groundwater basins where there is a lot of groundwater pumping. The Humboldt River adjudication decree was issed in 1930. It covers about 285,000 acres of irrigated acreage. The groundwater development in the 34 basins began in the 1950s. They have appropriated about 750,000 af in those basins. Annual pumping is estimated to be around 380,000 af. All of the decreed rights are senior to the junior groundwater right holders.

The Persian County Water District is located in the Lovelock area. They hold about 140,000 af of decreed rights. The area received little to no water from 2013 to 2015, while the pumpers in the 34 groundwater basins were getting their full water deliveries every year. Of course, the drought had a lot to do with the fact they were not receiving their surface water. Nonetheless, they asserted that the groundwater pumping was impacting their deliveries.

In August 2015, the Persian County Water District filed a writ of mandamus petition in the district court to compel the State Engineer's Office to curtail groundwater pumping in the over-appropriated basins within the Humboldt drainage to eliminate cones of depression by groundwater pumping causing interference with surface water flows. An important point is that in the northeast corner of Nevada, there are huge gold mines and they pump a lot water, most of which is dewatering their mines. Most of the dewatering is put back into the basin. However, there is a fairly large consumptive use by the mines. The Nevada State Engineer's Office has treated mining rights as temporary in nature. They have actually over-appropriated groundwater basins based on the fact that the mine water use is going to be short term. The petitioners are requesting that the mine water rights be treated as permanent.

This issue has been on the horizon since Jason started with the State Engineer's Office almost 30 years ago. They have agreed to try to do something to address this issue. They are putting together regulations to conjunctively manage the groundwater and surface water in the basin. Nevada is the driest state in the Nation, and they do not have much surface water. Often conjunctive management in other states involves augmentation plans where water will be brought into the system. They don't have such water in Nevada. Their approach is when possible, to allow for replacement of injurious depletions – to the extent that surface water is available. There is very little storage that exists, and whatever augmentation may occur will likely be groundwater pumpers paying surface water right holders to fallow their lands. If replacement water is not made available, then groundwater users are required to participate in a

basin-wide mitigation plan. This mitigation plan will include all of the groundwater use that depletes the river. They will be required to come forward with financial compensation. The mitigation money will compensate surface water users based on conflict. They will need to find an independent value of water in the upper, middle and the lower basin. Additionally, they need to determine the conflict based on pre-pumping estimates of supply, and scheduled deliveries minus actual deliveries.

In order to do that, Nevada has a contract with the U.S. Geological Survey and the Desert Research Institute to put together a capture model and simulate the natural system. They will also calibrate to historic conditions, flow records, water levels and pumpage, as well as quantify how much surface water is actually captured by the groundwater pumping. This will be funded by the groundwater users in the drainage. The State Engineer's Office has the ability to assess groundwater pumpers' fees for management of those basins. That portion is about $2 million. They expect to have the capture model, which will evaluate stream depletion as result of pumping, finalized by the Fall of 2019.

Looking towards promulgating these regulations, one of the first things they did was to form the Humboldt River working group. It is a nine member group made up of representatives from different industries along the entire stretch of the Humboldt River. They have met about ten times to talk about the issues and to come up with draft regulations. Through these discussions, they have determined what kinds of augmentation can occur. Many times they land on the fact that there is no water for augmentation, and it may have to be done through mitigation funding.

We have certainly heard from those in the lower basin around Lovelock that they do not want money. They want water, and they want to continue to farm. If we have to go to curtailment, that is a scorched earth scenario. You pick a date, draw the line in the sand, and everyone post that date is cut off completely. There are population centers along the Humboldt River, major mines, agriculture, and other businesses right on the river that would be completely curtailed. You can imagine what that would do to their economy. If we get to the point where we have to use mitigation dollars to compensate senior water users, that will also likely force many of the smaller groundwater users out of business.

Domestic wells are the only type of use in Nevada that is exempt from a water right. We're not certain how they play into the whole situation. There are a number of domestic wells on the river. Are they part of the plan? Do they get priority? Do they not have to participate? These are all questions yet to be defined.

We hope to have our first workshop towards promulgating the regulations by the end of November. We hope to "sell" the proposed regulations, as opposed to the repeatedly going before the court. Some advantages are that this addresses the same groundwater rights as the repetition. The State hopes the regulations will allow for continued beneficial use of both surface and ground water. The senior surface water right holders will be compensated either through augmentation or through mitigation dollars. The State believes the regulations will

provide a better outcome for both surface water and groundwater users than curtailment. If you curtail all of the groundwater use, it will not bring back all of the surface water. The regulations will impose a burden on small businesses, since they may have to pay for mitigation, but it may be much less of a burden to the businesses than potential curtailment.

In terms of the status, the working group has been established. They've had good dialogue and come up with draft regulations. They are drafting a small business statement. Workshops will be held all along the river with the idea of getting the regulations promulgated by the time the capture model is produced in 2019. They hope to be able to hit the ground running. Litigation is likely imminent. The issue will not subside – it will only get tougher to resolve.

Questions:

Greg Ridgley: The financial compensation that the system is going to be predicated on, how is that determined for surface water irrigators?

Jason King: Greg, that is one of the many challenges. We had to get an independent third party, so we're talking with some economists from the University of Nevada at Reno. We have not even identified who that person may be. We have to identify someone who has experience and is familiar with how much it is per acre of alfalfa, depending on the crop, of course. We have to get that number. I don't have a good answer for you in terms of how we are going to determine it. It will be key to how we come up with the mitigation fund and it is fraught with problems.

UPPER COLORADO RIVER BASIN S2S PILOT

Jeanine Jones noted that California has been working with the National Oceanic and Atmospheric Administration (NOAA) to determine what is needed to improve sub-seasonal to seasonal (S2S) forecasting. California is currently investing about $20 million per year in S2S work. An S2S Precipitation Coalition was formed to talk to the Administration and the Congress and try to get them to put more priority on S2S forecasting and funding for the research needed to make advancements. The California Department of Water Resources (CDWR) is having conversations with NOAA about a rather substantial contract between CDWR and NOAA's Climate Prediction Center to get them going. California is focusing on NOAA doing a better job of understanding precipitation in mountainous areas. Much of the West is mountainous and the reolution of many of the climate models is so course that they don't see mountain ranges. Mountain ranges are very important for orographic precipitation. We will be funding work with the Climate Prediction Center to look at the orographic precipitation component in particular. And we're also trying to encourage NOAA to do more work in the West. The thought is to have a conversation with the research community and with NOAA about what it would take for them to to spin up a pilot project in the Rocky Mountain area.

In an effort to get NOAA to focus on ways to improve outlooks for the western United States, CDWR is essentially sharing the work they've done on atmospheric river storms and other storms known as cut-off lows, which are an important contributor of precipitation in the Upper Colorado River Basin. CDWR will be meeting with the Upper Colorado River Basin Commission to provide them some background on this, and also with the NOAA's River Forecast Center in Salt Lake City. This is a multi-year activity. There is ongoing work in the basin on drought contingency planning and obviously there is a need for a better understanding of the tools we have to work with. This appears to be a good opportunity to encourage NOAA to take on this work. This is not a proposal yet, but is a conversation with NOAA about potential work.

WADE UPDATE (CLOUD COMPUTING SURVEY)

Since the Summer meetings held in California, Sara Larsen has been working diligently to get the remaining states into the Water Data Exchange (WaDE) portal. Texas is now included with some great water rights datasets. The grant acquired four years ago with the help of the Texas Commission on Environmental Quality and four state partners has come to a close. She expressed thanks to Carlos Rubinstein, former TCEQ Commissioner, and Jon Niermann, current TCEQ Commissioner, and their staff that worked on administering the grant. We have completed all of our commitments under EPA's Exchange Network (EN) program in terms of making our components available and our web services discoverable in their systems. A second grant will likely be closing out next Fall.

In addition, Sara has been working on an update to the the WaDE schema that can support greater interoperability with other data sharing platforms. Carly Hansen and Adel Abdallah, both interns, have been working on improvements to the system that allow for WaDE to pull in time series data. They have also been working on some new visualization tools.

Further, we've been working on ways to increase performance of our applications and ways we could improve updates to the system. Given this is a distributed system, it means when Sara sends out an update, each state has to individually update their system and then things have to be checked. It may be strategic to come up with a federated cluster of WaDE applications on a cloud or perhaps a supercomputer center where the entire system could be updated at one time, and also to be able to monitor access and performance more easily than we currently can.

We have recently reinvigorated the Water Information Data Subcommittee (WIDS). Sara expressed thanks to those who have contributed to this effort. A meeting was held on August 24th. They discussed what is good, what is working, and also areas that need improvement, and what kinds of datasets need to be incorporated moving forward. Another EPA EN grant application is being submitted to start incorporating near real time sensor observations data.

Sara is working with the National Aerospace and Atmospheric Administration's (NASA) Western Water Applications Office (WWAO) on the use of cloud computing technology, big

data and remote sensing intense applications. NASA's WWAO office is required to build tools that can be easily used and pulled into your office. Such applications require a lot of space and computing power that the States do not always have. Thus, we have a joint interest in exploring State cloud usage.

We sent out a survey which most of our member states have completed. We found that most have servers that you operate in-house, but that you are exploring use of the cloud for those applications. The cloud offers reduced hardware procurement requirements, more agility, and it is easy to maintain for backups and updates. In some cases, it is less expensive, but it really depends on your intended purposes. In other cases, it is much more expensive. It can offer better performance depending on your internet connectivity. Conversely, there may be some outages, some lag time and some performance issues with which you have to work with the vendor to remedy. You may be locked into a specific vendor. Once your data is in the cloud, it is difficult to move it. The costs can be very high to maintain those services. It varies a great degree on how much data you are storing, how much you are processing, and user access. There can be costs associated with porting the data back and forth. Also, when your staff are working on applications, if they get disconnected, and it can be really frustrating to try to access the cloud if you're out in the field.

Of the seven member states who are using the cloud actively, five believe it has been great, while two were ambivalent. The ones not using the cloud are now in the process of reviewing and trying to determine whether or not it is appropriate or applicable for their circumstances. The folks not reviewing it have sufficient infrastructure and are not interested in the cloud as they can meet their current needs.

Lastly, Sara referred to a draft agenda included under Tab F in the briefing materials for a Water Information management Systems (WIMS) Workshop that will be jointly hosted with NASA's WWAO office. The workshop will cover online water use reporting/permitting systems, IT requirements for adjudications topics, big data and remote sensing advances, Open Water Data access, publication, visualization and open data trends. We hope your staff will be able to learn new things about water data technology advances. Please get in touch with Sara if you know of a speaker who fits in nicely with this program outline, so she can send an invitation.

SUNSETTING POSITIONS

At the Spring 2018 meetings there are tree positions due to sunset. These are included in your briefing materials under Tab XYZ.

OTHER MATTERS

There being no other matters, the meeting was adjourned.