

MINUTES
of the
WATER RESOURCES COMMITTEE
Lied Lodge & Conference Center
Nebraska City, NE
April 13, 2017

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MEMBERS AND ALTERNATES PRESENT

ALASKA	—
ARIZONA	Einav Henenson
CALIFORNIA	—
COLORADO	John Stulp
IDAHO	Jerry Rigby John Simpson
KANSAS	David Barfield Tracy Streeter Kenneth Titus
MONTANA	Tim Davis Jan Langel
NEBRASKA	Jeff Fassett Jim Macy
NEVADA	—
NEW MEXICO	—
NORTH DAKOTA	Jennifer Verleger
OKLAHOMA	Julie Cunningham
OREGON	—
SOUTH DAKOTA	Kent Woodmansey
TEXAS	Jon Niermann
UTAH	Walt Baker

Norman Johnson
Todd Stonely

WASHINGTON

—

WYOMING

Pat Tyrrell
Chris Brown
Kevin Frederick
Steve Wolff

GUESTS

Ward Scott, Western Governors' Association, Denver, CO
Duane Smith, D Smith & Associates, Oklahoma City, OK
Katie Miller, Burns & McDonnell, Junction City, KS
Ann Schwend, MT Dept. of Natural Resources & Conservation, Helena, MT
Dave Mitamura, U.S. Army Corps of Engineers, Austin, TX
Sam Radford, NE Department of Environmental Quality, Lincoln, NE
Lauren Dempsey, U.S. Air Force, Travis Air Force Base, CA
Doug Kluck, NOAA National Center for Environmental Information, Kansas City, MO
Julie Ward, NE Department of Natural Resources, Lincoln, NE
Susan France, NE Department of Natural Resources, Lincoln, NE
LeRoy Sievers, NE Department of Natural Resources, Lincoln, NE
Jeremy Goble, NE Department of Natural Resources, Lincoln, NE
Mike Thompson, NE Department of Natural Resources, Lincoln, NE
Robert Swanson, U.S. Geological Survey, NE Water Science Center, Lincoln, NE

WESTFAST

Roger Pierce, Federal Liaison, Murray, UT
Roger Gorke, U.S. Environmental Protection Agency, Los Angeles, CA
John D'Antonio, U.S. Army Corps of Engineers, Albuquerque, NM
Becky Fulkerson, Bureau of Reclamation, Washington, D.C.
Patrick Lambert, U.S. Geological Survey, Salt Lake City, UT
Kevin Werner, National Oceanic & Atmospheric Administration, Washington, D.C.
Danielle Wood, National Aeronautics & Space Administration, Greenbelt, MD

STAFF

Tony Willardson
Michelle Bushman
Sara Larsen
Cheryl Redding

APPROVAL OF MINUTES

David Barfield chaired the meeting. The minutes of the meeting held in St. George, Utah on September 29, 2016 were moved for approval by Jerry Rigby, and seconded by Jennifer Verleger. With no discussion, the Committee unanimously approved the minutes as distributed.

PROPOSED POSITION

A new proposed position was circulated supporting Sub-Seasonal to Seasonal Weather Research, Forecasting and Innovation. However, it was not distributed with the 30-day notice. In order to proceed, this position required unanimous consent in order to be considered. David remarked that the position was brought forward by Jeanine Jones. It addresses the need seen in California and elsewhere in the West to improve forecasting and asks NOAA to target their research in that area. Tony Willardson noted there was Congressional action on a related bill on Friday, April 7th. Tim Davis moved approval of the position. Pat Tyrrell seconded the motion. The Committee approved the position, and recommended it be taken up by the Full Council.

SUNSETTING POSITIONS

The Executive Committee held a call a couple of weeks ago and worked through the sunseting positions, which have been edited in light of that discussion. Additionally, at the back of Tab C in the briefing materials is a document that includes information on relevant actions that have been taken subsequent to the adoption of the positions in 2014.

Position #360 – regarding the Bureau of Reclamation’s (BOR) maintenance, repair and rehabilitation needs was reviewed by folks at Reclamation with Becky Fulkerson’s assistance. They made some suggestions that have been included in the edited position. The Committee had no discussion nor comments. Jeff Fassett moved to readopt the position as revised. Jen Verleger seconded the motion. During the Full Council meeting, the Committee will recommend this position be forwarded and readopted.

Position #361 – Reclamation Safety of Dams Act of 1978 -- Congress has acted to raise the funding cap for Reclamation’s activities for the next few years. There was no discussion. Jerry Rigby moved the Committee recommend adoption of the position, and Tim Davis seconded the motion. The motion carried with a recommendation to the Full Council for readoption.

Position #362 – Transfer of Federal Water and Power Projects and Related Facilities – Since 1995, BOR has transferred a number of their facilities. A minor change was made to the position as proposed for readoption this year. A motion to forward this position to the Full Council was offered by Steve Wolff. The motion was seconded and approved.

Position #363 – National Levee Safety Act of 2007 -- generally notes that water supply canals are not the same as levees. This is laid out in the resolution. It also notes the general lack

of progress on this issue. An inventory of levees has been created, but besides that, not much has happened. The resolution not only urges proper recognition of the water supply canals, but also that this activity needs to be appropriately funded. There was no discussion on the resolution. Tim Davis offered a motion to approve the revised position and Jerry Rigby seconded the motion. All approved the position be forwarded to the Full Council.

WGA WATER-RELATED ACTIVITIES

Ward Scott, Policy Advisor with the Western Governors' Association (WGA), handles water and agricultural issues. He recognized Tony and the staff, and thanked all for their patience and help as he has come on board with WGA.

The western governors view the election, the new Administration and the new Congress as a real opportunity for the western states to redefine our relationships with the federal agencies and with the federal government in general. An overarching theme for WGA this year will be realigning the state/federal relationship. This has always been in the background of their work, but this year WGA will make a concerted effort to bring positive change to those relationships and increase state consultation and collaboration in a wide variety of areas, certainly including water issues. WGA has received a lot of positive feedback on that mission, and they will try to focus on the positive aspects of relationships they have had in the past, rather than make it a contentious situation. They really want to focus on areas where that collaboration has worked in the past and use it as a model for future relationships.

Later this afternoon, Peter Nichols will discuss the water transfers rule in more detail. The WGA is very interested in the water transfers rule with the Environmental Protection Agency. This rule exempts water transfers, where there is no intervening addition of a pollutant to the water, from NPDES permitting. WGA feels this is a crucial issue to water infrastructure, and especially in these times of budgetary concerns. The potential to spend billions of dollars to permit these transfers would be very detrimental to the states and to water management in general. We are moving forward in support of EPA's current water transfers rule, trying to get it in a more protected place as it has been challenged in federal court.

WGA is also concerned with the Waters of the United States (WOTUS) rule. They want to be involved in the process and any promulgation of a new rule. While the governors don't all agree on where the jurisdictional line of the Clean Water Act sits, they are all in agreement that the states need to be involved in this. It has major federalism ramifications and major budgetary considerations for the states. We will continue to push for early, substantive, ongoing consultation with the governors.

Mr. Scott also highlighted the surplus water rule from the U.S. Army Corps of Engineers. WGA issued comments on the proposed rule, basically expressing concern that the definition of surplus waters should exclude the natural flows of the rivers which have traditionally been under state jurisdiction and have never been relinquished by the states or addressed directly by federal statute. It is the governors' opinion that the rule needs to be reviewed, and once again, states

need to be more seriously consulted in the promulgation of such rules that affect traditional state authority over water management and allocation.

WATER DATA EXCHANGE (WADE) PROGRAM UPDATE / KICK-OFF

Sara Larsen, Program Manager for the WSWC's Water Data Exchange (WaDE) Program noted it is not often that one receives an opportunity to kick-off a program that you've been working on for five years to develop. There is a lot of interest in WaDE. There is a lot of excitement about this project as it is a novel idea. Many are looking at this as a role model for collaboration to help diverse partners to share information together. Since the WSWC meetings held last fall, a new grant application was put together with the California Department of Water Resources, the Utah Division of Environmental Quality and Utah State University to look at new data sets. This includes things like near real-time continuous monitoring data. This is a new direction for WaDE to include sensor information along with more static datasets.

Sara has also been working with USGS on how they can take the WaDE infrastructure component and use it to share their aggregated water use dataset. This will be a good partnership.

Several eastern states are interested in WaDE. There is a lot of interest coming in from a variety of people who have heard about the program, even though it has not actually been launched until today.

As the WaDE Program Manager, I participated in an Aspen Institute Dialogue series for integrating water data. It was a convening of high level executives from public and private institutions who talked about how to address some of the technical areas for sharing water data. They spent a fair amount of time talking about principles for publication of water data. Their thoughts included some of the suggestions that have also been discussed through the WSWC, such as making transparency, discoverability, and accessibility defaults for public water data. Where it is not appropriate, we should make sure the security and privacy is paramount to take care of the data that cannot be shared. Wherever possible we should share data using developed standards. The data should be documented with metadata as thoroughly as possible so other people can evaluate it for their purposes. They like the WaDE structure, where the data producers control and maintain their own information and share it in a discoverable and common way. A document on the dialogue series will be published in a month or so through the Aspen Institute. They may also have some funding opportunities for the WSWC.

Six months ago, we had eight states flowing data in WaDE and a basic website. The number of states flowing data has increased, and a new website has been established: wade.westernstateswater.org. This is a new central portal and is also accessible through the WSWC website. It is very user friendly and we worked on packaging the project so that it is easily understandable. Sara reviewed the new website and showed the components. There are now 14 states sharing data, from 16 state agencies and 25 distinct datasets. Most of the states have opted to share some of the low-hanging fruit. We are hoping to expand that in the coming

years to more varied investigations, such as water use and water rights. Other people can access the WaDE endpoints and build applications on top of that. There is a lot of documentation online on how to access the data and build applications that sit on top of that.

The USGS Utah Water Science Center is using the WaDE software package and pulling it into other software platforms. Through this, WaDE data can support other applications. Our effort is to make WaDE a community-based forum.

Sara invited members to look at their state's information. She also requested assistance from the states in "joining" the Water Information and Data Subcommittee (WIDS) to help determine where we go from here with WaDE. There are a lot of options that need to be sorted out.

Questions

Jim Macy: Are you aware of the Environmental Council of States (ECOS) and the activities they have going on?

Sara Larsen: Yes, WaDE has worked with them.

Jim Macy: There is an ongoing effort to develop a spreadsheet so that all of the states know of these data exchanges to ensure there is not overlap of effort.

Sara Larsen: I have not heard of that. Thank you.

Jerry Rigby: As far as coordinating between the states, obviously you are working with individuals within each state. Is there something the WSWC as a group can do to assist? What else should each state be doing to be more cohesive and make this work better?

Sara Larsen: The first hurdle we tackled was getting people used to the idea of sharing the data. Now we have gone back and done an evaluation on what can be shared. There is a little bit of nervousness and reticence in that regard. Sometimes it takes going back and reviewing the information. Anything you can do to allow people to spend time to do quality control, to get the data ready for "prime time", and to support more diverse datasets than just water rights information would really help to build the potential. We look at water use and availability on a regional basis, instead of just state by state.

Jerry Rigby: You're doing a great job!

Tony Willardson: Sara, would you like to mention our coordination with the WUDR program and your participation with the National Water Assessment ?

Sara Larsen: We work with the USGS and their Water Use Data and Research (WUDR) program. We have helped them with some program announcement development and reviewing their water use strategy information. We have helped them take WaDE components and use

them for their own purposes. WUDR is intended to make data better either by data gathering or better QAQC. We want to ensure that states can include WaDE in their WUDR grant applications, which are capped at about \$200,000 per state.

USGS NEBRASKA WATER SCIENCE CENTER ACTIVITIES

Bob Swanson, Director of the U.S. Geological Survey's Nebraska Water Science Center, first noted that Nebraska is a groundwater state. Groundwater is the primary source of supply for most uses.

Nebraska is participating in the Water Use Data and Research (WUDR) Program. This needs to be done on an annual basis. All of the water science centers are very much behind this program. Also, the National Ground Water Monitoring Network (NGWMN) is active and effective. They are installing wells with the goal of installing a well in every National Weather Service division in the state. The National Brackish Ground Water Assessment is led by Nebraska. As potable water in the U.S. declines, that makes brackish and salt water resources become much more attractive for industrial, municipal, and even agricultural use as an alternative. A professional paper will be coming out in a couple of weeks.

In 1986, Congress directed USGS to monitor the water levels of the High Plains Aquifer. The aquifer covers 175,000 square miles. It is one of the most intensively used aquifers in the country. About 97% of the withdrawals from the aquifer are for irrigation. Nebraska's water storage in the aquifer far exceeds the level of all other states combined. Over time, there have been long-term water level changes. The condition of the aquifer varies with saturated thickness, depth to water, withdrawal magnitude, and so forth.

Groundwater modeling capabilities are always improving and changing. The Nebraska Water Science Center models use cutting-edge technologies. The Northern High Plains model was developed to quantify available water and to create a tool to forecast aquifer responses in the future to human and environmental stresses.

Additional models are being used to determine where to best put their resources, etc. These are groundwater flow models. The important part of getting it right is the hydrogeologic framework. Most consultants and agencies are using ModFlow. The supporting framework and layers within the product represent the nuances of the art.

The Nebraska Science Center has invested heavily in geophysical studies and capabilities including 2-D resistivity, marine resistivity, microgravity, LiDar, aerial thermal infrared, etc. They are developing a recharge network with the Natural Resource Districts (NRDs) to get more defined numbers on the rate of recharge as opposed to estimation.

As shown through aerial thermal infrared mapping, the sandhills are a groundwater driving mechanism. They do not have a really good handle on how that groundwater comes into the stream systems. Being able to map it quickly and cost effectively is important. They are

developing the science to determine just what parts of the spectrums are gaining streamflow and the discharge from groundwater springs.

Airborne electromagnetic (AEM) surveys have been used for mineral studies and also for water resource studies for decades. Within the last 15 years, USGS brought this tool to Nebraska and developed it as a science specifically for groundwater investigations. This is an example showing that the USGS does not try to compete with consultants. This has now basically been turned over to the consulting industry. Nebraska is collecting information which provides a lot of detail on the extent and volume the AEM surveys provide. They are integrating and aggregating all of the information in one place, the GeoScene 3D viewer. The viewer will be available within the next couple of years.

MISSOURI RIVER RUNOFF PROJECTIONS/NATIONAL INTEGRATED DROUGHT INFORMATION SYSTEM (NIDIS) UPDATE

Doug Kluck, NOAA Regional Climate Services Director for the Central Region, noted that the National Integrated Drought Information System (NIDIS) is very focused on bringing the right people together and addressing sectors of the economy, etc. NIDIS looks at services to monitor, forecast, plan for, and cope with the impacts of drought. That is the Congressional mandate. It will be up for authorization in 2020. Additionally, NIDIS supports drought research including indicators, risk assessment and resilience, and is in place to develop educational resources, interactive systems, and tools to promote sound decision making, drought awareness, and response. Some regions have more emphasis than others. It depends on funding interests and other things.

The objectives of the Missouri River Basin Drought Early Warning System (DEWS) are to: (a) provide and develop a forum for a diverse group of federal, tribal, state, and local stakeholders that represent the water and land resource management communities to strategize and develop appropriate, relevant, useful, and readily available drought, climate, weather, and water-related information; (2) develop an understanding of the existing observation and monitoring networks, data, tools, research and other planning and mitigation resources available for a DEWS; and (3) identify the economic sector-specific and geographic needs for future monitoring, prediction, planning and information resources.

In 2014, a Missouri DEWS kickoff meeting was held right here at the Lied Lodge. It was summarized in the Missouri River Basin DEWS Plan. Basically, it consists of working with the tribes, working with states, and across basin activities. There are 28 tribes that have land or some sort of presence in the Missouri River Basin (MRB). They are working very closely with the Wind River Tribe (under a USGS grant). The Great Plains Tribal Water Alliance includes four South Dakota tribes. A drought vulnerability assessment is being done through the Bureau of Indian Affairs' tribal climate resilience program. There are four Kansas-based tribes that have been engaged in workshops and grants.

In terms of states working with the DEWS, there were drought simulations with vulnerable communities in eastern Kansas held in December 2016. They are trying to identify states in the MRB that have incorporated drought into their multi-hazard mitigation plan and talked with FEMA as well as state emergency management and others. If that has not been done in your state, NIDIS and the National Drought Mitigation Center (NDMC) can help, if needed and wanted?

NIDIS also has some involvement with the Montana Demonstration Project, which is part of the overall National Drought Regional Partnership (NDRP). There is a sub-state mapping and planning effort, derived from ideas that came out of the Montana Demonstration Project.

Copies of the Wyoming Monthly Water Brief publication were made available to attendees.

In this region, and across the Northcentral part of the United States, they hold a monthly webinar to look at the real time climate conditions over the last 2-3 months, and they discuss impacts and potential impacts. On a quarterly basis, there are publications for various basins created to publicize the statistics of the basin and prepare a water briefing.

There is a potential for improving regional monitoring from a soil moisture and snow water equivalent point of view, if certain dedicated funds become available. In 2014, Congress put this into the Water Resources Development Act (WRDA), but they did not fund it. However, they did approve it. This is focused on lower elevation places where there is not a lot of monitoring.

One of the things they do is look for different funding mechanisms beyond NIDIS. They rely on the Bureau of Reclamation, the USGS, and others to leverage money for drought issues.

A meeting will be held in the Upper Missouri River Basin on May 23-25, 2017 in Rapid City, South Dakota. The purpose of the meeting is to update the strategic plan for the Missouri Basin DEWS. The first half day of the meeting will be a “tools” workshop for anyone who wants to know about existing drought tools.

Doug reviewed some of the scientific climate studies and findings in the Missouri River Basin. In 2011, the MRB had an extreme event and there was flooding. June 2017 was the highest single runoff month since the Corps began keeping detailed records in 1898 -- 13.8 million acre-feet, which is equal to the annual flow in the Colorado River Basin. The May and June 2011 combined runoff totaled 24.3 maf, just short of the normal total annual runoff of 24.8 Maf.

A lot of drought-related research has been done and publications are available on <https://www.drought.gov/drought/dews/missouri-river-basin/reports-assessments-and-outlooks>.

The 2011 event prompted the National Oceanic and Atmospheric Administration (NOAA) to perform an observational analysis of the change in the variability of precipitation in

the Missouri River Basin. The conclusions in the report observed that during the 117 years of record-keeping (1898-2014), the four highest flow years have occurred in the last 40 years (1975-2014). There has been a 9% increase in the average annual flow in last 40 years, compared to the prior 77 year average. Thus, the variability in runoff has increased in the upper basin and it is increasing toward the high side.

Another study explaining the hydrologic extremes in the Upper MRB looked at why the basin reacts as it does. A synopsis of the station-based analysis for both the cold season and warm season are included in a report. The mean precipitation has increased in the Upper MRB since 1975. The frequency of very heavy rain days has increased, and a greater proportion of seasonal precipitation is now contributed by very heavy rain days. There are more rain events during the cold season than was formerly the case, and they tend to be heavier when they occur.

Doug reviewed the forecast potential for flooding events this spring based on information provided by NOAA's National Weather Service office, as well as the Corps of Engineers weekly update. He also showed slides of the Missouri Basin conditions and outlook prepared by the USDA Natural Resources Conservation Service. He also included slides with temperature and precipitation projections, and they basically project above normal precipitation through the summer across the upper portions of the Missouri Basin. The slides are posted on the WSWC website.

OKLAHOMA NATIONAL DROUGHT RESILIENCY PARTNERSHIP PILOT

Duane Smith, a consultant (and former WSWC Chairman) remarked that it is good to be meeting again with the Council. Duane had been talking with Jeff Fassett and they were discussing old "war stories" of water issues that happened in the 1970s. Jeff was telling his staff in Nebraska of some of these issues when he realized that some of his staff had not even been born at that point!

Duane noted he completed his "sentence" with the state agency (Oklahoma Water Resources Board) after 32 years in 2010. He now does consulting work in regional planning around Oklahoma and that area. He discussed the Southwest Water Action Plan, which covers the southwest corner of Oklahoma. He did not intend to cover the details of the Plan, but rather to spend the time talking about the relationship with WestFAST and the process. Yesterday, the details were discussed during the National Drought Resilience Partnership workshop.

We wonder what is the best way for people to start planning for drought. The best way is for them to live through a drought. If they haven't lived through a drought, typically the planning process is pretty limited. In southwest Oklahoma, where precipitation is 17-18 inches per year, during the 1920s to the 1950s, there have been cases of extreme drought. In about 1978, they started with 30 years of the wettest period in their history. During that time, the people of southwest Oklahoma thought that was the norm. They thought their water problems were solved forever when they built Tom Steed Reservoir. They discontinued some of the

practices they had begun enhancing and drilling groundwater wells and maintaining wells in order to supplement surface water.

In 2010, the area started into what is now recognized as the worst drought of record. Tom Steed Reservoir got down to 12%. Within one year, the Bureau of Reclamation projected that the City of Altus would be out of water. This supplies Altus Air Force Base, and the Department of Defense listed Altus Air Force Base as the worse installation in terms of water security in the nation and Wichita Falls as second.

If you're the economic development director in Altus and you're trying to bring business into Altus, and you're within one year of running out of water, you've got business asking if they need to leave or shutdown. An emergency plan was to fly drinking water in to Altus Air Force Base. The rural water folks were being blamed for not supplying water to citizens and not planning ahead. The Altus City Council was being blamed for discontinuing their wellfields and not conserving enough water during the drought. The irrigated agriculturists were being blamed for using all of the water. The Air Force Base has high trihalomethane (THM) problems – water quality issues and water supply issues – and they were pointing fingers at the city saying it was not their fault. Panic started to set in.

By necessity, this brought parties together to create the Southwest Water Action Plan. It includes items that needed to be done in the short-term, mid-term, and long-term. The short-term items include drilling some wells to get water to town. They went to land they owned in Texas and got water that is being piped across the Red River from Texas to Altus. As soon as that happened, it started raining. Within 37 days, both reservoirs that were nearly dry were both overflowing and spilling.

A great question was asked yesterday. What happened to the citizens once it started raining? Did they become apathetic about the resource? I've thought about how to answer that question, and I want to answer it this way. Last week, 64 citizens paid their own way to Washington, D.C. to talk to their delegation and federal agencies about (1) water; and (2) about the military base and how they had planned for their future and the future of water, to secure water for the military base. They said Congress does not need to be closing Altus Air Force Base. The message changed the narrative from this devastated economy in terms of what the drought did, to the narrative of we lived through that drought and we have made changes now to our way of life and our structure to where when drought strikes again, we will be good – we will live through.

The short-term and mid-term goals involve water reuse and others. The long-term goals include figuring out what the ground water/surface water interaction is above those two reservoirs that may be impacting the yield of those reservoirs. Also, they are looking at expanding the drainage area, a transfer canal, to put more water into Tom Steed Reservoir, and then look at additional reservoir construction.

The beauty of the Southwest Water Action Plan (SWAP) is that there is no way the southwest Oklahoma area would be able to fund the technical effort necessary to evaluate their needs. The Bureau of Reclamation (BOR) came in with an Upper Red River Basin Study. This

is a \$1 million effort cost shared with the Oklahoma Water Resources Board to do work on the three priority items listed in the SWAP. The community needs the federal government to help them leverage their technical and financial resources.

Julie Cunningham, newly appointed Executive Director of the Oklahoma Water Resources Board (and a Council member), interacted with the WSWC and WestFAST. In 2008, when Duane was a WSWC member, WestFAST was formed. The idea behind WestFAST at the time was that the states were frustrated when the federal government would come to our meetings, we had different representatives from perhaps the local area office. We didn't feel like we were getting good communication back and forth with the federal agencies. The idea of WestFAST was that we would have a dedicated group of federal agency representatives that would attend our meetings. They would collect relevant information for the states and be able to bring information and have a better relationship between the states and the feds on rulemaking, funding, and various other issues.

Julie Cunningham went to WestFAST when they were looking for "pilot projects" for WestFAST to show their effectiveness. The SWAP was brought to them to consider. The purpose of WestFAST then, is to find ways in which the federal agencies can work together and with the state to assist Southwest Oklahoma in implementing their water action plan.

It is so difficult for communities, particularly small communities or regional entities, to interact with the federal government. We ask what federal programs are available and we get a data dump of programs. Today's description of how the State of Nebraska is helping a local group to implement best management practices is an example for how the federal government can have an entry point into that. That is exactly what we are looking for. That is a great example of how the agencies can come together. Rather than the federal agencies deciding that they want to do some type of a program, they listened to the people who are actually going to implement activities on the ground and figured out ways to interact with the locals to carry it out. This is what Southwest Oklahoma is trying to do with WestFAST.

The next steps are finding deliverables for WestFAST. One of the things we need to be cognizant of is the opportunities presented as this new administration comes on board. We have to have the attitude that we are going to interact and we are going to have a good relationship. We need to figure out how to do that. There are several examples in Southwest Oklahoma of deliverables and how the federal agencies have assisted the community through Clean Water SRF funding, for low interest financing (this was received from EPA through the OWRB), drought grants that the state gave for putting a pipeline in place, administrative approval of permits that were sped up so projects could be completed in a timely manner, drought contingency plans, drought resiliency grants from BOR, the USGS doing cost share on groundwater basin studies, and others. These are all examples and great efforts by federal agencies to assist.

The local people have to have skin in the game. If they are not willing to put up funds, things will never survive. They are not looking for the federal government to fund everything. The locals need to put their dollars on the table as well, for a long-term plan to succeed.

The success in Southwest Oklahoma's process is: (1) technical; and (2) identification and buy-in of the stakeholders. The long-term implementation of the plan depends on those stakeholders staying together.

I am here today to express thanks to WestFAST for your interest in trying to help, and for the help you have provided, and to look for a better relationship with those agencies in the future. We hope this can be another example of how the WSWC and WestFAST, and the Western Governors' Association, can be more relevant in local and regional drought planning and drought resiliency.

Roger Gorke commented that WestFAST has been around for about 9-10 years now. What has helped us to coalesce with folks in Southwest Oklahoma and with the work in Montana under the National Drought Resiliency Partnership. That is a partnership of all of our agencies and departments. NDRP has helped us get more, not just being a western water group, but also to get headquarters' attention and cross agency and department collaboration, as well as specific actions that we are doing for long-term drought resiliency. Having the ability to plug in WestFAST into the drought partnership and work with the WSWC and the states has helped to connect dots between different actions and efforts by the federal family to not themselves become a silo. These things have helped us work with them better.

NASA APPLIED SCIENCES PROGRAM

Danielle Wood is the Applied Sciences Manager based at Goddard Space Center in Maryland. She works closely with Bradley Doorn.

She described the fleet of NASA's earth observing satellites and systems. There are many ways that NASA is observing what is going on on the earth, in the air, on the land, and in the water. They continue to improve their observations of the earth. One of the latest platforms for earth observations is the International Space Station. It is a convenient place where astronauts can try things and make observations.

NASA partners closely with USGS and NOAA. With USGS, they work together on Landsat, and with NOAA they work on the water satellites.

Within NASA's overall applied earth science portfolio, there are a number of areas of focus, including: health and air quality, water resources, ecological forecasting, disasters, and wildland fires. These are all done in collaboration with international earth observations so NASA can continue to ask how United States data and programs are coordinating with European, Asian, and other programs around the world.

NASA's capacity building programs are of relevance to state levels of government as they include hands on training programs and development programs. Applied Remote Sensing Training (ARSET) is a training program that is available to professionals all over the world,

including the U.S., and was developed as a program to build capacities. It also does concrete projects for state and local governments. There is an excellent library of ARSET webinars that have already been delivered and can be reviewed at your leisure. The team at ARSET will respond to requests if you'd like to have training on a certain topic. However, their efforts are so popular that they need several months of lead time to set up special training.

NASA's DEVELOP National Program bridges the gap between NASA and society, building capacity in both participants and end-user organizations to better address environmental challenges. Individuals and students can apply and they spend about ten weeks focused on a project, such as from a state government or another organization. They co-develop a product. They use NASA data.

The Global Precipitation Measurement (GPM) mission is actually an international system made up of several satellites working together that provide rainfall and snowfall data.

She provided an update on the Western Water Applications Office (WWAO). She is supporting this effort along with Brad Doorn. NASA has a commitment to focus on western water. Their main goal is to take the science and make sure they are transferring it from the science applications and models out to a useful product. They want to link together the data sharing portals. The WWAO becomes a forum for stakeholders to understand their needs and match them with NASA's abilities.

The WWAO welcomes the states' ideas for pilot projects. She showed an example of a partnership between NASA and outside NASA to estimate fallowed land that was not being used for crops.

Danielle is working on the area of food security. NASA is inviting external groups to partner with them. They are now accepting proposals for an external group to host a consortium and be NASA's partner. They will review the proposals over the next few months and they will do physical science research, and also find ways to improve the use of earth science data for food security. They will look at it both domestically and also internationally.

Several links were included on a slide in the powerpoint presentation of useful sites for NASA programs (posted on the WSWC website).

Steve Wolff remarked that Wyoming applauds the ARSET program.

GROUND WATER RECHARGE PROJECTS

Tony Willardson noted that the WSWC wrote a couple of reports in the 1980s looking at state statutes as they related to ground water. There has been an evolution in the laws since that time. In the 1990s, the WSWC worked with the Bureau of Reclamation on a ground water recharge demonstration program. In fact, two of the projects were actually here in Nebraska. Tony provided some background on the demonstration program and some of the opportunities

and obstacles encountered. The WSWC prepared a report for BOR on related economic, financial, institutional and legal issues.

Jeanine Jones noted that California has been in the recharge business for a long time, and she raised the potential of updating the WSWC reports. Please keep this in mind for discussion as we determine the items the Committee wishes to pursue for the coming fiscal year work plan, which will be adopted at our next meetings in June 2017.

CDWR/WSWC WORKSHOPS

Tony Willardson observed that under Tab F there is a notice of the next in a series of workshops with the California Department of Water Resources looking at improving long -range weather forecasting capabilities, specifically the sub-seasonal to seasonal (S2S) precipitation forecasting skills. This will look at developing a strategic plan, as to how to move forward, and gain political support for the program. Legislation has been passed authorizing more work by NOAA in the area of sub-seasonal to seasonal (S2S) precipitation predictions. The skill level is not that good right now. Tony stated he has learned from listening to some of the NOAA folks talk about the complexity of the dynamical and statistical models used to try to make long-range predictions. There is still a lot of work that needs to be done. Jeanine was recently in Washington, D.C. with the Sonoma County folks and reaching out to seek support for the S2S precipitation models and getting better models and information exchange.

The upcoming workshop will be held in San Diego on May 17-19, 2017.

2016-2017 WORK PLAN

David Barfield invited the committee to turn to Tab G in the briefing materials for the work plan. There are currently five tasks in the work plan. Are these the right priorities for the work of the committee and of the Council? Is anything missing?

As an overview of the current work plan, David briefly outlined the topics and highlighted a few things. With respect to the first item on water availability and use and the Water Data Exchange, he noted this is something we are actively working on and it seems to have a clear path forward. The second item includes workshops that are ongoing with the California Department of Water Resources on S2S and Irrigation Management Information Systems (IMIS). Please let us know if there is something else we need to be doing. Item three is the work task related to energy and water resources integrated management and the past work on water needs for energy and discusses the ongoing work in the forum of the Western Electric Coordinating Council and the State Provincial Steering Group. Please advise if there is additional work to be done on this effort. The fourth item is on drought and NIDIS, both of which we have discussed today. Is there anything more there? The last item is on western water infrastructure projects to see if we can work with Congress and the Administration to maintain funding. If there are any specifics that need to be added or subtracted, please let Tony know.

Tony noted the WSWC completed work with the California Department of Water Resources on irrigated management systems. A report is posted on our website. The WSWC may want to look at how to provide political support for those systems in your states.

We have not done a lot in the area of infrastructure lately, but that is becoming more of an issue as was mentioned earlier when we addressed the safety of dams programs and our position. Some of our member states have dams that are being stressed. He mentioned recent losses of small dams in South Carolina due to torrential rain events.

No comments were made by meeting attendees. Dave noted however that we did mention perhaps updating the ground water recharge project reports.

SUNSETTING POSITIONS FOR 2017 SUMMER MEETINGS

Under Tab XYZ are the sunseting positions for the next meeting that will be considered. There are a number that will be addressed by this committee. Tony highlighted a few notable sections of the positions for reference.

OTHER MATTERS

There being no other matters, the meeting was adjourned.