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## NEW MEXICO'S BRACKISH WATER PROGRAM AS IT RELATES TO THE STATE WATER PLAN

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Good morning everybody. It's nice seeing all of you here today. I addressed this conference last year about this time and talked about the State Water Plan and its implementation. At that time, we were trying to complete the State Water Plan for that calendar year. I recognize many of you from different forums - some of you work for me and some of you have worked for me. Many are professional peers in water related areas. A lot of expertise exists in this room. I really like this conference as I've said before. It is one of my favorite conferences where people with an expertise in

water get together to talk about important water issues.

Brackish water and the reuse of water are highly important issues. It is nice to follow a talk like the one Senator Pete Domenici just gave. Everything he talked about is something we are intimately involved with in the State of New Mexico. We need that federal partnership in order for things to work. We are a relatively poor state in terms of financial assistance and it very much helps to be on the same page with our federal counterparts, especially with someone as strong as Senator Domenici. Hopefully he will be

around for quite a few more years to help us by helping leverage our New Mexico dollars.

One of the things I want to address is funding issues. Governor Bill Richardson is very active in the water area and very supportive of water infrastructure projects. We are trying to develop programs in the State of New Mexico that will dovetail into a federal matching component that in turn will help every one of us in developing our water infrastructure needs. We have a Governor's Finance Council and an investment infrastructure team that the Governor has put together. We are trying to get projects together, so we can look at regionalization, spending dollars wisely, and leveraging those dollars. We will talk about this later.

As you know, New Mexico has been in a drought for four or five years. I think we are going into the fifth year of drought no matter how you look at it. We must administer our resources and anticipate that the drought will continue for some time. As far as I can tell, the drought is here to stay for potentially a long time. I am not a doom and gloom person, but the reality of it is that there are climatic factors in both the Pacific and Atlantic oceans that dictate whether we are in for a drier than normal period. With our reservoir levels so low, we can expect hard times in front of us. We must pull together to solve our water shortage issues.

New Mexico had a pretty decent snowpack last year but we need several years of above average snowpack to even come close to replenishing our limited supplies of surface waters in our reservoirs. What translates into actual runoff is far less than normal. This year seemed like a pretty good year. We had some timely monsoons, some good rainfall events here and there, but it was good only relative to how bad the last few years have been. Looking at statistics for Albuquerque, where I live, August was the eighth driest month in Albuquerque on record. I thought we were doing better than that this year and the perception was that we are doing better.

The reality is that reservoir levels are extremely low. For example, Elephant Butte Reservoir was projected to be at 14 percent of capacity by Memorial Day, about 12 percent of capacity on the 4th of July, and I hear various numbers that by Labor Day it would be down to 4 or 5 percent. It will approach those numbers depending on how much water is used at the end of the irrigation season. We could be anywhere from 2 to 4 percent of capacity, which for a 2-million acre-foot reservoir is only between 40,000 to 80,000 acre-feet of water, if that much. Elephant Butte has become the "poster child" for the western U.S.

We are not the only ones suffering through this drought. I attended a Western State Engineers meeting last week with 15 western state engineers and it was evident that the drought is everywhere. The Colorado River has far reaching affects on shortages, power supply, and water supply issues including an impact on our state because of the San Juan/Chama Project and the shortage area issues we have and the water brought down from the San Juan area to the Middle Rio Grande.

I also want to talk about Active Water Resource Management (AWRM). Because of the drought, it touches on the need for additional supplies of water through technology advancement, water reuse, desalination, and other technologies that we are trying to introduce and perfect in New Mexico. This has all come about as a result of the drought and there is no time better than now to continue exploring these areas. Active Water Resource Management, initiated by my office, is the Office of the State Engineer and the Interstate Stream Commission's attempt to address the drought proactively. This management scheme refers "...to a broad range of activities including permitting transfers, monitoring and metering diversions, and limiting diversion of water to the amount authorized by existing water rights." This initiative will guide what my office staff will look at during the next four or five years in order to get a handle on our water resources and to create the stepping stone to priority administration.

At this time, the tools necessary to enforce priority administration are not available to the Office of the State Engineer. We cannot actually go in and make a priority call and shut off the junior users because we do not have tools and measuring devices in place necessary to make the call. But we are developing the necessary tools and developing them rapidly. We have an initiative underway that will allow us to hire water masters. We have developed a general set of rules and regulations and have received a lot of feedback on them. The regulations are meant to be a general set of framework regulations with more basin-specific regulations to fall under the general set. The regulations have yet to be promulgated but will be soon. The general regulations are nearly complete and will be so within the next couple of weeks. We have already addressed the comments and we are trying to get the group of commenters together soon so we can present the framework rules and regulations. From them, we will begin developing the basic rules and regulations, which means we will have a defensible plan in place to

administer our water resources. That will require hiring water masters, complying with the rules and regulations of specific basins, and installing measuring and metering devices. We can then actually go in and enforce priorities. This is an extremely important initiative. You heard Senator Domenici talk about the need for measuring and metering around the State of New Mexico. The Senator spoke at the Continuing Legal Education conference about a month ago in Santa Fe. I was kind of hiding in the back. He asked if the State Engineer was present. I raised my hand and he said, "You know, what you are doing is the right thing, the measuring and metering has to be done. There will be a lot of struggles along the way, but we are behind you 100 percent." We are expecting to receive some funding from the Senator's office to help set up the measuring and metering devices. If we can continue to move forward with assistance from the federal government and we get these tools in place, we can start actively managing our water resources.

We obviously have a problem in the state with our water supply and this is where a desalination program plays a role. We have a long-range water supply concern within the State of New Mexico, and we will always have that concern. Drought cycles will continue to leave us with little precipitation. This is not unique to New Mexico, but common throughout the southwestern United States. If you look at the one-hundredth meridian, which kind of splits the nation, and look at the eastern verses the western parts of the United States and how the states are affected by drought, you'll note how dry the West has become. Yet western populations continue to grow steadily. We very much need new technology to enhance our water supplies throughout the West.

We currently are meeting demand with a limited fresh water supply. My feeling is that there is not really a shortage of water, but a shortage of inexpensive water. We are continuing to go through our water supply at a fairly alarming rate. We need to slow down that rate and look toward using fresh water diluted with some poorer quality water. If we can do that, we can reduce costs in the short-term and hopefully the technologies will continue to develop allowing us to produce less expensive water as time goes on.

Obviously we have to protect existing water rights. One of my main concerns when I look at desalination is where are we going to get the water. Economics plays a role in setting up a desalination facility; if you are looking at a large, regional system to supply water – for it to be cost effective – you are going to have to take

out a large amount of water to justify the expense of the plants, the pipelines, and all the other associated expenses. Obviously, you must charge the end-users to help pay for the facility. It becomes very critical where you locate these facilities because the amount of water you extract from the ground will have an impact and will cause impairment to those senior water rights located around the facility.

One of my chief responsibilities as the State Engineer is to protect senior water rights and to make sure that points of diversion do not cause impairment. If they do cause impairment, some type of compensation must be made to the person who holds the water right so that the project can go forward.

New Mexico's compact obligations are huge, and the state must make our compact deliveries. Whenever we can enhance our water supplies, it gives us flexibility concerning our delivery obligations and improves the state's position overall. It is imperative that we make our compact deliveries. We do not want to lose control of our water in the State of New Mexico for not meeting our obligations.

We must find ways to prolong the life of fresh water resources in New Mexico. How do we do this? Conservation is a huge component. We need to continue our conservation efforts and stress the conservation message to our citizens. But we also need to look at the systems that exist today and a lot of leaky, inefficient systems are around. The least expensive way to enhance our water supply is through conservation. Municipalities must look at leakages in their systems and inefficient metering devices that cause overuse of water. Desalination efforts are great, reuse is great, but we must not overlook the conservation component.

Having talked about the importance of conservation, brackish water may be the only significant new source of water available for future use. Senator Domenici mentioned watershed improvement and enhancement. We know we have some unhealthy watersheds and know healthier watersheds will generate additional water supply, but a large amount of funding is required to improve our watersheds. It is not an easy fix. However, if we are truly serious about new water supplies, brackish water development is one of the keys.

How do we develop brackish water in New Mexico? How do we find those resources? We estimate that there are billions of acre-feet of brackish water in our state. But where does it make the most sense to locate treatment plants and use water near

those plants? Are there wellhead solutions so we can have smaller applications to treat brackish water?

We first need to quantify our supplies. A Brackish Water Development Task Force was created in May 2004 comprised of about nine different public and private entities including the U.S. Geological Survey, the Bureau of Reclamation, Sandia National Laboratories, our state universities, and the WRRI. The task force will create awareness and promote the use of brackish water.

The Brackish Water Task Force is intended to provide a vehicle to secure funding. In the short-term, the effort will:

- Ensure communication among the state's experts;
- Provide a forum for review and evaluation of proposed projects and aquifer prioritization;
- Develop a saline aquifer web page to be accessible to the public;
- Prepare a summary report of saline aquifer resources; and
- Develop a hydrogeologic characterization and feasibility study of priority locations.

The task force came up with priority locations for brackish water assessments based on areas where quantity has been defined and also where there is a need for that water due to a lack of fresh water supplies. You may not be familiar with all the locations on this list. I don't even think the Tularosa Basin is on this list, where the new desalination research facility will be built. The task force, in their limited time together, came up with a priority list including: Galisteo Basin, Mesilla Basin, San Juan Basin, Hueco Basin, Estancia Basin, Southern High Plains, and Lea County. This is a primary list where we can begin looking at developing brackish water in New Mexico.

One thing that comes into play when we look at these different basins is, "Where can we put regional projects together so that we can look toward sharing the cost and passing that cost on to a private investor?"

We need public/private enterprise money in New Mexico to fund our \$5-billion-dollar need for infrastructure. The only way to secure funding is to start charging adequately for our water resources so that private enterprises can get a return on their investment. We currently are not charging enough for our water. Systems are old, infrastructure is decaying, and as I have said before, we have spent more on cable TV in a lot of areas than we have on water. The era of cheap water is gone. We must face that fact, water is going to be more expensive. Technology is there and we need to foster pilot projects that will lead to

regionalization of projects that make sense.

One short-term goal in the brackish water project plan is to assure communication among the field experts. We often feel like we are herding cats in all these different areas. Anne Watkins is here today, she usually has the responsibility of herding the cats as she coordinates these different task force groups. Since we are spread so thin, it is difficult to get groups together, but this is an important issue and it is now a matter of making it a priority.

A conference like this provides a great forum for raising awareness of the problems and opportunities related to brackish water resources. We are able to learn about the great work Sandia National Labs and the Bureau of Reclamation are involved with, like the pilot projects in Alamogordo. This forum helps to focus the need for the projects in which we must invest our money. The Governor and the Governor's Finance Council have supported the project financially. I think he will continue to support these types of projects. As you heard from Senator Domenici, we need the grassroots level to continue to put the pressure on both state and federal governments to continue the prospect of developing the finances for these projects.

We need to develop a saline aquifer web page accessible to the public, prepare summary reports of the resources, and develop a hydrogeologic characterization and feasibility study of priority locations. Again, these are short-term goals. We need to reconvene that task force and attempt to find some additional monies.

Long-range water management would best consider brackish water resources that are not well connected to stream systems thus minimizing the issue of making our compact delivery requirements. We are fully aware that in some cases, our brackish water is hydraulically connected to a stream system and that for every gallon of water taken out of the stream system, it will eventually affect that stream system. We must look at how we are going to pay back the river and keep the river whole.

There are some opportunities in areas such as the Estancia Basin and the Tularosa Basin where the water is not connected to streams that have compact delivery requirements. There are fewer management issues in those areas because groundwater withdrawals are not impairing a river because there is no hydraulic connection.

A final thought: when we began putting this presentation together, I wondered how I was going to talk for forty-five minutes on brackish water. I don't

know that we have actually done that much in the State of New Mexico on the resource, but I think it gets down to, "Where do we go from where we are now?"

I think we are making progress in the things that we are doing. Brackish water must be part of our plan for the future. We must maintain long-term supplies as our population grows. We must be flexible in our administration. When I look at projects and applications, I try to give the benefit of the doubt to most applications. But how do we deal with the situation where we have the desire and need to develop potential areas but know that we will be causing impairment to the existing water supply? I have to pay attention to that. I think the State of New Mexico is large enough and our brackish water supply extensive enough that we can find those locations that are best suited for taking diversions out of the ground and we can start developing that water supply.

In developing and following through with our State Water Plan, we need to work together and continue to support Sandia Lab's efforts as it has been so successful in developing the Tularosa Basin alternative as a potential brackish water source.

Now I would like to take questions.

*Question:* John, I am with Sandia Labs and my question relates to water rights and the use of brackish water. Given that water rights are essentially given out to senior-holders, when we start talking about brackish water, will we have the same process in your vision or do you see a different way of allocating brackish water rights if we start using methods to purify it?

*Answer:* No. Most of the saline supplies, as you know, are in aquifers that are connected to streams. When you file an application for saline water, you will learn that in most cases water resources are fully appropriated. We really have to look at areas where there is available water. Alamogordo is a perfect example. There is an application before me that our hearing officers have looked at and have made recommendations. There is a point of diversion: and if they want to take out 10,000 acre-feet of water from a point of diversion, you must look at whether over time, a cone of depression will develop and how it will affect existing users. If you will be drying up existing uses of water, you have to go in and evaluate who will be harmed and in what way. If there will be harm to existing users, conditions will be placed on that permit. One condition could be to either reduce the amount of water allowed or allow that applicant to work with the impaired parties to make them whole in one way or

another. You must work with the senior water holder and look at the situation as one source of water. The process is really not any different from any other application. We call the request a new appropriation, but water is usually connected unless you have a very good picture of an isolated aquifer or a situation where the water is not interconnected and have verifiable information. You could conceivably find some saline water somewhere that is not connected and would not cause impairment. That is an issue we are looking at in our efforts to map the state's aquifers. We need a whole lot more information because we will continue to explore this opportunity to develop saline resources while continuing to protect our existing water rights. A whole lot of water may be underground but we cannot harm current senior users.

*Question:* I'm Sat Noriega and am a New Mexico facilitator for the Southwest Water Company out of Los Angeles. I think I have some good news. I have been talking to water rights holders over the past year, and to financial people, our own people, and to our own engineers and technicians. As you know, we have opened a desalination plant in El Paso that is going full blast right now. While traveling through New York, Chicago, and Los Angeles, the conversations I've had with many people, including those in the Southwest, indicate that private money is available for this effort. New Mexico has an abundance of collateral; billions of acre-feet of water but the problem is, as you know and the finance council of the government knows, it is just a matter of crossing the "T's" and dotting the "I's" and being backed up by collateral, which is not insurmountable. Our own company will finance any of the desalination projects with as much as is needed. As you mentioned, the rates have to become adequate. My company tries to finance a project in which we will pay ourselves back mostly from added usages. The added usage is very predictable and automatically goes up. The taxable base will increase because of new industry coming into the area. It is just a matter of good management. The second point is that I have talked with most of the water rights holders from Oro Grande all the way to Three Rivers and about 70 percent of them have said that they have water that is already adjudicated, it is in full use, and it is not harming anybody and will not do so if it continues. I have looked at their numbers and their numbers add up to much more than what Alamogordo is asking for, even with a 20 percent penalty. The potential is there ... it is nice to know that there is a fall back position in the private industry.

*Answer:* Thank you for those comments.

*Question:* My name is Sterling Spencer and I'm a private operator in Lincoln County. I want to thank you for coming to the conference and making a presentation. I have a comment I want to publicly make to you. I want to thank you for the comments you just made in protecting us, the culture, and the public economy of New Mexico through the senior water rights issues. I think we all know as a society we are moving toward where those massive needs will be [confronted] but we have to recognize, as you stated, that we either have to compensate or protect. I really appreciate your comments that you have made here today.

*Answer:* Thank you.

*Question:* I am Bruce Prior with Tucson Water. When you were discussing long-term water resource enhancement, I noticed that you did not mention the reuse of effluent. Do you feel it is something not to be addressed now because of the public's perception or do you feel that the technology being developed in desalination will transfer over to water reuse of effluent?

*Answer:* No. Reuse is obviously needed and is essential, but the topic I was given was brackish water and I have stuck to that issue. But reuse is very important and I know in Arizona it gets a lot more use than here in New Mexico. I have spent some time with Jim Holway from Arizona's Department of Water Resources and last week we talked about some of the things they are doing. They have 200+ golf courses around Phoenix and are able to inject in the shallow aquifer and bring water back out. Maybe this is not the reuse you are talking about. The aquifer storage and recovery could be very great but we do not know enough about the aquifers in our state yet. We do not have enough data to say, "Is this an appropriate way to start using that technology?" In 2003, a graywater law was passed that allowed for using graywater in homes. A lot of people in Santa Fe are using graywater systems and thereby utilizing reuse technologies. The City of Las Vegas is trying to start a reuse program for their golf course. The same is starting to happen around our state, especially with so many people whose water rights are dependent upon the return flow credits they get. Some of them, their municipalities especially, have a certain amount of water rights and they get a credit for the amount of return flow that goes through their water treatment facility. If they start to reuse that

water, their return flow decreases and they have to go back and acquire additional water rights. Some communities have to deal with other issues. Rio Rancho is using a significant amount of reuse technologies. We encourage communities to use reuse. We will need to calculate the final numbers affecting water rights but reuse is definitely in our plans and is something we promote.

*Question:* Hello, I'm Joe Ortiz and am representing the Realtors Association of New Mexico. Thank you for your presentation. ... [Given that] the Office of the State Engineer is the gatekeeper, what facilitates the financial mechanisms that the previous gentleman talked about? Can the Office of the State Engineer be a guiding light and help find those basins? What kind of timeline are we looking at based on [recent] studies for some initial testing facilities?

*Answer:* I believe the State can be that entity, and we are trying to do so as demonstrated by establishing the task force I mentioned earlier. One year we tried to get, if my memory serves me correctly, \$600,000 for New Mexico Tech to start mapping aquifers, but we did not get funded. We continue to need funding at this early stage in the effort. We struggle with this all the time. We have some cooperative programs with the USGS that are headed by Tom Morrison, our Hydrology Bureau Chief. We must look at our workload and where we can spend our limited financial resources wisely. We simply do not have enough of our state adequately mapped and this is one of the areas we are looking into. We talked about the Governor's Finance Council, private investment, and the Governor's infrastructure team. One of the things we are trying to do is to get technical information upfront and employ some of the engineering entities to help us look at what makes sense regarding regionalization. This means not only water development infrastructure needs but also development of desalination projects. We have some pretty good ideas but it is a matter of obtaining that initial funding to start the teams. It does not make much sense for individual applications to go in different areas without a real knowledge of the process because that results in a lot of wasted time in the process. Regardless of what we do in my office, there will be an application filed, there will be a protest, and there will be a hearing. Many attorneys and hydrologists will be involved and before you know it, you are two years down the road and you cannot get off that dime and get things developed. It would make more sense if we go in early and get the information that we need and make

the smart choices since we have limited funding. Let's put a project here, here, and here, and focus on these projects because they are our best choices. This is what we are trying to do: make some smart investments, entice private partnerships, and look at where we can get projects off the ground. The price of gasoline isn't coming down but the price per thousand gallons of desalinated water is coming down to the point where it is becoming more feasible.

*Question:* I'm Colleen Logan from Weston Solutions, Inc. You mentioned conservation as the cheapest alternative among the arrays facing your office and the state. I wondered if you would talk about current efforts in your office regarding conservation and any future plans that you may have.

*Answer:* Thank you for that question. We do have a Water Use Conservation Bureau within our office. Again, we are hampered in that office by limited funding. In the past, we did a lot of water conservation programming and had cost-share programs with the Bureau of Reclamation but that funding has dried up. However, the conservation component is something I look at when I evaluate applications and I always look at impairment issues. Statutorily, I am required to review applications as to whether or not they are contrary to conservation or detrimental to the public welfare. So conservation is a huge component. I recently approved a permit for the City of Albuquerque to start using their San Juan/Chama surface water for drinking water. That means they must build a treatment plant, pipe water into storage facilities, and start using this water in lieu of groundwater, thus saving groundwater for times of drought. I put some fairly stringent requirements on the city as conditions of the permit, like a per capita water use maximum in Albuquerque. They have made great strides in conservation but I feel they can come down from their current usage level. I will continue to place requirements for conservation especially for municipalities. One area I think we are weak in, as is the entire U.S., is, "How do we create incentives for the agricultural community to conserve?" If you talk to individual farmers and irrigation districts, you will learn that many farmers are putting in laser-leveled fields and drip irrigation systems. These efforts are helping to conserve water but there really are not incentives for a widespread approach to conservation by the agricultural sector. Every time there is a bill introduced in the legislature, the tax credits are stripped out. The tax credits are not necessarily attractive to the farming

community because the farmers are not showing a whole lot of income anyway so a tax credit will not help pay for their conservation systems and improvements. We do not have adequate incentives for agriculture to conserve water and the state law is such that if you save water by diverting less water, your water rights stay the same. You are not increasing that water right because your water rights are defined on consumptive use of a crop and although you may be diverting less water, that water stays in the system. By conserving 50 acre-ft of water, you cannot simply use that amount of saved water elsewhere. We have to be careful about additional depletions of that extra use of water. We are trying to educate farmers about this process. We educate about water conservation within the schools, we distribute brochures, and we have water saving techniques on our website. I think we have a great educational component for our young kids in schools, but we probably do not have enough money to continue the educational programs although it is one of the things we are looking at. Earlier I mentioned efforts by municipalities to detect leaks and water losses and old metering systems. If we can replace those systems gradually, we can be much more efficient in our water use component.

*Question:* I am Pat McCourt from the City of Alamogordo. John, I want to thank you for coming here and talking about desalination. We think it is an important component in our state's future, as far as allowing us to address our future growth. We are a growing state, and we think it is a method to [allow increases to our population] without having us at each others' throats. It is a way to actually expand our water supply. Lastly, this isn't a question, but we hope you have a fast and safe journey back to your desk, so you can work on other matters.

*Answer:* And for your benefit, we will try to have a decision out by the end of October.

Thank you everybody. I definitely appreciate your time and your attention.