Table of Contents

Opening ............................2
John Freemuth

How is water supply affected by the continued reduction in acres of irrigated agricultural land?
 .........................................................................4
Michael Creamer, Mat Weaver, Andrew Waldera

How are other states dealing with changes in water use and growth?
 ..................................................................................23
David Robbins, Doug Kenney

Lunch Speaker .........................37
Roland Springer

What are the water quality implications of the urbanization of agricultural land?
 ..........................................................................................52
Dick Manning, Ralph Myers, Stephen Burgos, Hawk Stone

Closing speaker .........................71
Patricia Limerick
Opening

JF=John Freemuth

JF: That worked. First thing- I’m John Freemuth, the Executive of the Andrus Center for Public Policy and a professor here at Boise State University. I’d like to thank you all for coming. This is a topic we have done once before called Troubled Waters. We talked about another water conference for a couple of years and we’re planning on doing it and it came to fruition, and it obviously is and was something that Governor and Secretary Andrus spent a lot of time on, thinking about, and working on. And on behalf of the Center and the Andrus family, we’d like to thank the Water Users Association for the memorial they passed honoring Governor Andrus for his work on water. So, thank you. If you- if you paid two dollars for parking, you weren’t supposed to. So if you’ve got the receipt, if you hand it off in the back, we’ll- we’ll take care of your parking here. We’ll fix your ticket, whatever it takes, okay?

Now, the goal of this conference, as all Andrus conferences, is to get the people in the room that either have an interest in the topic or are major actors in the topic to get people talking, to see where there is agreement, where there is disagreement, and what maybe needs to be done to further the conversation. We’ve been successful of that in the past. The National Fire Plan really got jump-started at one of our conferences on wildland fire. It was the people in the room, the people that went out into the hall, that got the conversation going. And that’s- that’s our goal here. We never come to these conferences with any sort of agenda except deliberation, civility, and trying to move forward on a public policy problem.

What I’d like to do now is we have a nice short five or six minute video that starts the conference off that Public Television has done that sets the stage for, really, the issues, where we’re at, and will start our conversation for the rest of the day. So, video? Yeah, it worked.

Vid: Idaho’s very fortunate to have an abundant water supply. Treasure Valley is particularly fortunate to have the Boise River running through it.

Water is the economic engine of our region. Treasure Valley residents divert about 1.5 million acre feet of water from the Boise River and the Treasure Valley Aquifer each year. That flow feeds more than 1,100 miles of major irrigation canals, supports more
than 450,000 acres of agricultural land, and provides a home for wildlife and all the water needs for one of the fastest-growing regions in the country.

With some years we have too much—flooding—some years we have not enough due to drought. So the challenge is to work within those extremes, recognizing that on average we have a very nice supply.

It’s a water supply that’s the envy of our neighbors in the west, because right now we don’t have to use everything we get.

We only actually are using about 600,000 acre feet, or about a third of that water we’re actually using. The rest of it is effectively being wasted—that is, it’s infiltrating the ground, it’s going to the aquifers, it’s flowing back into the Boise River. And so that is a potential pile of water, almost a million acre feet of water, that we could use differently and it could potentially be the source and supply that we need going forward.

For nearly a hundred years, we’ve been building and maintaining a water infrastructure to support our agricultural systems. But over the next 50 to a hundred years, the population in the Treasure Valley is set to explode. By the turn of the next century, the Treasure Valley could grow by as much as 160 percent, and much of that growth will be at the expense of agricultural land.

We’re talking all the area between Boise and Nampa being completely filled in. Urbanization all the way out to Parma. So it’s pretty incredible. And the amount of ag loss was like 52 percent, if not more there, so that’s very- over half of our land would be gone.

Nampa farmer Glen Edwards sees the effects of growth in the Treasure Valley today.

It’s so hard to get a piece of equipment up and down the road, and even just to get out on the Amity sometimes during rush hour is really ridiculous.

He spends time teaching his new urban neighbors about Idaho’s water.

These people don’t understand how the water system works, how water is measured, and they don’t know a lot about sending the water down the roads and when they’re supposed to be changed.
Edwards wonders what it will mean to support an urban population on top of what is a rural irrigation system. Growth isn’t the only challenge facing the future of water use in the Treasure Valley. Another is climate change.

In February, if we have a big warm spell or rain event, giant rain event, that’s the future, is that we’ll have these events in the middle of winter. We’ll have large runoff events and we won’t know how to deal with them. Do we let ‘em all through? Because winter’s not over. We don’t know how much water we’re going to get. And so do we let that water come through the system and flush it down the river, or do we hold onto it?

Scientists expect change in both the upper and lower basins. For example, warming temperatures mean more water loss due to evaporation.

And so it means everywhere that we use water, we’re gonna need more water. So whether it’s on our crops or our soccer fields, we’re gonna need more water because when we water our lawns, more of it’s gonna come off and leave the system. And in fact, if we look at kind of the climate change projections for the future where we haven’t done anything to fix the problem and we have kind of worst-case scenario, we’re going to need 30 percent more water in the Treasure Valley just in terms of how we use water.

And with change coming, land use policy makers and other public officials will have questions to answer, like what kinds of changes to our infrastructure, our laws, and our institutions will have to take place over the next few years to meet the needs of the future? Social scientists at Boise State asked Treasure Valley residents what they want.

Despite the fact that a fairly large percentage of people that live in the Treasure Valley, and particularly Ada County, weren’t born here, over- I think it was over 79 percent of people reported that they were concerned with the loss of farmland and over 90 percent see agriculture and farming as an important part of the culture of the region.

For Canyon County planner Patricia Nelson, having good scientific research helps her and her commissioners ask the right questions.

Do you like this, or would you prefer a different future for this area? And how much are you willing to actually pay to have a different future?

But sometimes, getting answers to tough questions is difficult when there isn’t a crisis.

But there’s a lot of people spending a lot of time managing the water in the Treasure Valley all the time. And it wouldn’t take much effort to develop a more holistic view of the
problem and develop plans and think about what should we start doing now to prepare for the future?

And that’s the challenge: recognizing the needs of a growing urban population and decreasing agricultural acreage while still respecting Idaho’s water heritage.

My observation is that Idaho has always been interested in water. It forms a major part of our constitution, yet the statutes have been very well-conceived and have been adjusted over the years. And I see an ongoing discussion that is needed to account for the changes that are happening.

If you were to compare our city to anywhere else in the West, you would see a city that is sitting on a really rich water supply, and we are not fighting with each other yet. Every other major city in the West is fighting about water. We have the potential to start thinking about it now and avoid that. We house this really unique opportunity to essentially do it right in a way that almost no Western city has ever done before.

JF: I think that sets the stage for the day pretty well. Now, what we’re gonna do with our first panel—which I’ll introduce our moderator in a second—is to treat it as much as we can as a conversation, not just stand-alone presentations. Our speakers have been given some questions ahead of time to think about that are important. But also a little later during the panel, there are question cards on your tables. If you’ve got a question, we’ll collect them and bring them up to our moderator to ask. So you’ll have your chance to ask your questions. This we found over the years doing these conferences that that works better than giving somebody a mic to ask a question because we can get more done this way I think. So it’s my pleasure now to introduce a colleague of mine at Boise State. She’s a Boise girl. She went to Boise High and College of Idaho. She does a lot of environmental policy work like I do, has written a couple of books, just got full professor last month here. She came to us actually from Colorado School of Mines, and she is one of the I guess you could say co-leaders of the Idaho EPSCoR project, does a lot of work on water, is a colleague of Shawn Benner, who’s here, who’s the superstar in the video there. Hi, Shawn. And then she’s got an announcement about a new data source that’s coming. So it’s my pleasure to introduce Dr. Jen Schneider.

[applause]

Panel: How is water supply affected by the continued reduction in acres of irrigated agricultural land?

JS=Dr. Jen Schneider, MC=Michael Creamer, MW=Mat Weaver, AW=Andrew Waldera
Good morning, everyone. Thanks so much to John and to Katie and for rest of the Andrus Center Board for organizing the meeting today. EPSCoR has been proud to be a cosponsor of this event, and I want to welcome all of you here today. So I’m hopeful that at some point today or when you leave the conference, you’re going to go home and you’re going to Google these words: The Treasure Valley Water Atlas. Jill, can you raise your hand real quick? Jill has these cards with her—Jill is a postdoctoral researcher with us in the School of Public Service—that have more information about the Treasure Valley Water Atlas. So after I’m done speaking if you want to hear more, learn more from her, please seek her out and get one of these cards. If you do Google the Treasure Valley Water Atlas, it’s gonna take you to a website and you’re going to find a collection of six narratives there, or story maps, that have to do with Treasure Valley water. They answer what might seem like basic questions: Where does our water come from? How do we use water? What does water look like into the future? And indeed, we’ve tried to make it pretty accessible to laypersons who may be new to the Valley or who don’t have a deep understanding of our water system, but we also hope to make it data-rich and visualization-rich. We think it’s a pretty website. So for those of you who are experts, we think there’s something there for you as well. So if you have time, please go check that out. And we’re still at a stage where we would love to hear your feedback, so if you see things that you don’t like or you disagree with, folks have already been letting us know and we would love to hear from you. There’s a “Contact Us” link on that website. If you like what you see, the greatest compliment you could pay would be to share that with your friends or on your social media and get the word out. And just real quickly before we introduce our first panel, could I have the Treasure Valley Water Atlas team stand? There’s Shawn Benner, who’s my colleague in Geosciences who you saw in the video—they’re so nervous to stand. You can stand. Jillian Moroney is the postdoctoral researcher, Curtis Crandall a master’s student in Geosciences, and Chris Torres a PhD student in Public Policy and Administration. We’ve been working for two years on this project, so thank you so much.

[applause]

And thank you to many of you in this room who helped us build that website by allowing us to interview you or participate in focus groups or review the website. All right, I’m going to go ahead and ask the panelists for the first panel to come up and join me, and I’ll give a quick introduction and then we’ll get started. So that’s Michael Creamer, Mat Weaver, and Dan Steenson. And where’d John go? Hey, John Freemuth. Are we just having them project, or do we have mics?
I thought these were my juggling batons. [laughter] Okay. And then whoever is in charge of the visuals, if you could bring up Michael’s PowerPoint. He just wants us to see them.

MC: Right there. Perfect.

JS: Are we good there? Okay. All right, I’m going to ask the panelists to say a little bit more about what they do, but just by way of quick introduction: We have Michael Creamer, who is an attorney at Givens Pursley, specializes in environmental and natural resources law; Mat Weaver, who’s the Deputy Director of the Idaho Department of Water Resources; and Dan Steenson, who’s an attorney representing the Treasure Valley Water Users Association. Oh, last minute change, it’s actually Andy Waldera.

AW: I’m a shorter, younger, balder version of Dan.

[laughter]

JS: Okay. Excellent. All right. Great. So um if you wouldn’t mind just saying a few words about yourself and why you’re here today by way of introduction, and then we’ll get started with some of our questions.

MC: Thank you. I’m Mike Creamer, and I’m an attorney with the Givens Pursley Law Firm here in Boise. I’ve worked as a water attorney with my partner Jeff Fereday for 29 years, and we’ve been very much involved in water development, water rights, acquisitions and transfers throughout the state, but especially here in the Boise Valley, and we’ve had a real strong interest and involvement in what’s happening both with the surface water supplies in the- and ground water development in the basin.

MW: Good morning. My name is Mat Weaver. I’m with the Department of Water Resources. I have a background in engineering and hydrologic sciences by education and private sector practice. I’ve now been with the Department for about 10 years and currently I coordinate the efforts of the department’s water compliance bureau, its information technology services bureau, and its hydrology section.

AW: And my name’s Andy Waldera. I’m a partner at Sawtooth Law Offices in our Boise office. And we are involved in water predominantly from the agricultural water delivery entity sphere, represent a number of canal companies, ditch companies, irrigation districts, predominantly here in Southwest Idaho. Our niche practice is pretty much geared towards if it’s something that has to do with a farm, we can do it. But a large focus of that obviously is water resources issues.
Okay, thank you. So the first question we’re going to get started with has to do with one of the pressures we saw articulated in that opening video, the increasing urbanization of land in the Treasure Valley and the implications for water supply as a result. So I wonder if you had some general comments about what that sort of rapid land use change might mean for water supply in the Treasure Valley. Any of you can start.

MC: I thought you were going to ask a question.

JS: Do you have any thoughts about the implications for rapid urbanization?

MC: Well, now that you mention it, yes.

[laughter]

MC: You know, I think one of the questions that had been posed was what effects does increased urbanization have on our water supply, and when I looked at that question I thought, well I don’t think urbanization has its own effect on the supply. We have a finite amount of storage space in the basin, about 1.6 to 1.7 million acre feet of storage. We have an aquifer that sits below our valley, and those supplies don’t necessarily change as a result of urbanization. What we do see is that the allocations of the developed water supply have- are likely going to have to change to accommodate urbanization and to account for the changes in land use from agriculture to rural- or more urban development. The supply won’t change, it’s how we make use of the available supply in the future that is gonna have to change.

JS: Okay, thanks. Mat or Andy? Thoughts on that? Question?

MW: Well, I’m glad Michael said that, because I thought I was missing the boat when I read that question because my first thought was, well how is urbanization affecting supply if our supply is predominantly precipitation in the form of rain and snow? There’s not a very direct and immediate effect between urbanization and that water supply. However, as I thought about it a little bit more thoroughly perhaps, I thought about, well water supply could also mean where the water is available in the system at a given time and in a given location. And I think if you take that maybe broader view of water supply, then urbanization could possibly have an effect on water supply when you consider things such as carryover in the reservoir from one year to the next, available reach gains in the river, in say the regulated section of the Boise River as opposed to the unregulated section of the Boise River. So in the unregulated section water supply there is primarily being made up from return flows to the river from the surface water and ground water systems. So potentially urbanization could affect water supply of those return
flows. And then of course another piece of the water supply equation is the aquifer itself, and in the Treasure Valley—I guess that was another question I have. Are we focused just on the Treasure Valley, or statewide?

JS: Well, let’s stay with the Treasure Valley for a little bit and then we can go statewide if we need.

MW: Well, certainly aquifer is recharged based on the land use that’s occurring on the surface, and depending on the land use you can have various degrees of recharge. So I think urbanization could potentially affect the aquifer system, and specifically the shallow aquifer system.

JS: So Mat, can we just stay with you for one second. When you talk about what’s happening on the surface, um, sort of irrigation behaviors for example, can you explain what you mean by the recharge, the connection between surface and ground water supplies, for those who are new to the system?

MW: Well certainly I’ll speak about the Eastern Snake Plain Aquifer, ‘cause that’s a system I’m very familiar with. And we saw with the advent of surface water irrigation development on the Eastern Snake Plain in the early twentieth century that as we diverted surface water out of the Snake River system, put it out on the plain, ran it through canals and ditches and laterals, and then flood irrigated with it, we saw the incidental recharge associated with that land use practice increase the storage content of that aquifer significantly over the course of decades. Similarly, at the turn of the twentieth century, there were additional changes in land use practice, and maybe more importantly, irrigation practice, that led to declines in the incidental recharge to that aquifer. And so I think again, depending on irrigation practices and land use, you can control how much water you’re putting on the land and how much of that water is infiltrating or percolating down to the aquifer system.

JS: Andy?

AW: Thank you. And thank you for the entrée, Mat, to that idea. I- couple of things. I’m going to go a little off script just because of the video primer that we just watched. If I heard correctly, and I scribbled down in my notes the PB- excuse me, PBS production spoke in terms of “public policy problem.” I scribbled conflict. And then used the term “wasted” upwards of one million acre feet. Getting to the public policy problem comment, I disagree. And I don’t- I also disagree a little bit with what Mr. Cremer had to say, that we might be looking at the need to reallocate water supply or sources. Where is it that development occurs in this valley? The development occurs on the lands that are
supported by stable senior water rights. They are the most secure, they’re perfected, and
they’re protected under the prior appropriation doctrine. This water is not just irrigating
farm fields, as you saw in the video, soccer fields, parks, schools, golf courses, homes,
subdivisions, everywhere you folks live and recreate. Anybody who tubes down the
Boise River in the summer is dependent on the stored water supplies and is riding on top
of water, storage water, that is being sent downstream largely to satisfy downstream
irrigation diversions. So, it’s all interconnected and I don’t think it’s necessarily—it’s not-
I mean, it maybe a supply issue as population continues to grow, but currently I’m not so
sure it’s an allocation issue, and I don’t think there is a conflict or a public policy
problem. Because when it comes to irrigation, you want to maximize the use of available
surface water supplies. Groundwater is largely used in this valley for public potable water
supplies. So you want to use your surface irrigation water to not deplete groundwater.
And the idea that one million acre feet is potentially being wasted—and Mat just
mentioned incidental recharge—groundwater levels in this valley, with the advent of
flood irrigation in the early 1900s, rose in some place as high or as far as almost 200 feet.
So all of the groundwater development in this valley, or the lion share of it, is dependent
on historical flood irrigation practices. And the unintended consequences of losing
seepage and switching to sprinkler from flood irrigation, you need to be mindful of that.
So seepage is very beneficial. It is in no way waste. It makes the groundwater system go.
Return flows back to the river, promote fisheries and recreation, and one thing—and Mat,
you’ll be able to speak to this—flood irrigation practices and return flows drive a very
important water right administrative balance in this valley. There’s a break at Star Bridge.
There are some very senior surface water rights downstream of Star Bridge for some
other irrigation and small ditch companies and irrigation districts. And those senior water
rights are by and large served by upstream return flows back through the drain system,
particularly on the north side of the river to the tune of about 100 cfs. If those drain flows
decline and those credits no longer accrue in the river to sustain upstream irrigation, you
could have more senior water rights downstream calling on more junior rights upstream,
and that affects everybody. That affects your parks, your schools, your golf courses, your
farmers, what have you. So you know, be careful what you wish for and please don’t
leave the conference thinking that incidental recharge and flood irrigation practices is
waste.

JS: Michael?

MC: I agree with Andy that words like “waste” can have connotations negative connotations.
They are kind of loaded words. At the same time, a word “reallocation” for Andy’s
clients is an inflammatory word. They don’t like the word “reallocation.” When I use that
word, I mean a- not a grand theft, not a taking, not a forceful removal of water, of senior
vested water rights from the people who hold those and are beneficially using those.
What I’m talking about is what I hope develops out of this conversation today, which is a process for looking at the way water is used for irrigation and urban uses, including parks, football fields, school-school campuses, fountains in the downtown area, and look at all of those uses and find out, is there some additional wa- is there a place- is there water looking for a home? Do we have to go build another 400,000-foot- 400,000-acre foot reservoir to meet our growing demands, or there are adjustments that can be made in a free market by changes of instutions and the way we think of water use in the valley? And so I agree some words are loaded and probably not the best for starting off a conversation. I think “waste” is one of those words. I don’t think “reallocation” should be if we think about it in the concept of taking a hard look at the way water is allocated and used today and asking ourselves whether there are ways institutionally, practically, physically, we can make sure that that water goes to the highest and best uses in a- in a willing buyer willing seller basis.

JS: Okay, thank you. I want to circle back to that issue of market-based responses to allocation in a moment. But just sticking with the question of urbanization for one more minute. So, we talked a little bit about supply. What differences do you anticipate, if any, in terms of demand moving forward?

MC: Well, gee. I just happen to have a few thoughts on that, too.

JS: I thought you might.

MC: Yeah, there have been several- numerous, I would say- numerous studies done looking at- trying to project what the urban growth is going to- you know, how many people we’re going to have in this valley over varying periods of time. And I think we have some reasonable projections about what that’s gonna be in 2060, 2065, in 2100. And it’s gonna be a lot more people than we have today if those assumptions, which I think are reasonable and seem to generate the same types of projections, actually play out. And those studies have basically said we could have 1.75 million people in this valley living in homes, driving on highways that we’re going to have to widen, shopping in shopping centers that we haven’t built yet, and working in both in their homes and in the downtown areas in high-rises or sprawled business parks. We’re gonna have to find the water for those folks. And I think those studies are fairly consistent in those projections. But I would submit that none of those studies that I’ve seen have taken the hard look at options other than building a reservoir, conservation, going down to the Snake River or the lower end of the Boise River and pumping surface water back up to the metropolitan area that’s developing. None of those have looked at the concept of reallocation, have looked at the water that could be freed up as a result of the conversion of land from irrigated agriculture to urban uses. Those studies have, I think, consistently estimated that
the amount of water that currently goes to irrigated agriculture in the Treasure Valley by 2065 or the end of the century there will be upwards of 655,000 acre feet of irrigation water looking for a home. If you add on- and those studies have all made those estimates based on projections of growth, the percentage of that growth that might occur in irrigated- currently-irrigated areas, the percentage of that growth that might occur in non-irrigated areas down near Kuna and out near the penitentiary, those high desert areas. And the numbers come in about the same. And those studies are looking at typically start in the late mid-90s or early 2000s and move forward. They don’t look at the 70s’ 6,000 acres of irrigated farmland in Canyon County and Ada County that were dried up between 1978 and 2007. If we use the same metrics in terms of the amount of water that could be freed up from those now non-irrigated acres compared to the amount of water that that same acre in an urban setting is going to require- that generates another 86, 87,000 feet of water looking for a home. And that is essentially just a little bit less than half of the total storage capacity at the three reservoirs we have above the city. So, I’m not saying that all that water needs to be diverted or assigned to urban development, I’m saying there’s an opportunity there. It may not be 750,000, it may not be 650,000 acre feet, but I bet you there’s a few thousand acre feet, and if there is and we can avoid building reservoirs or doing other, you know, taking other steps that don’t have as long-term beneficial effects but may have long term environmental effects, if we don’t look at that now, then we’re not going to have the opportunity later as development continues. And I agree with the premise in the video this morning that now’s the time to be thinking about it because as the infrastructure and institutions crystalize on the- in a scenario of what we have today, we won’t have the opportunity to make those decisions in the future.

JS: Yup. Mat?

MW: I think there’s some good thoughts there, Michael. When I first heard you question, the first thing I thought was demand means different things to different people. Diversion at a head gate, diversions into a pressurized irrigation system, to a lot of people that’s demand. Consumptive use or the evapotranspiration of water, that water that’s actually physically lost from the water budget—to a lot of people, that’s demand. And leading up to this conference I met with Mark Zersky at Pioneer, people in charge of irrigation delivery systems with the Boise Project, folks in the Eagle Middleton area who run irrigation delivery systems, and to them demand is always diversions. And when they look back and reflect on the decades of urbanization that they’ve already lived through, they don’t see a real change in demand because to them demand is the diversions. And the water used after urbanization has occurred is demand in the delivery of the same volume of water from their perspective that was required before it was urbanized. However, we think about demand from the aspect of consumptive use, which is maybe a little bit more rigorous way to think about it, it seems obvious that if you take an acre of...
ground that’s flood-irrigated and you harden it with rooftops and asphalt up to 50 percent, that you’re going to see a reduction in consumptive use off of that land. However, I think it’s much more complicated than that when you look at a city or a service area of an irrigation delivery system for a number of reasons. One thing that confounds it is not all of that ground is irrigated and not all of that ground is irrigated with surface water. You have a patchwork of nonirrigated, partial irrigation, or semi-irrigation and irrigation in that system. In addition, you’ve had a historical sweep of crop that had been grown there that might use a variant amount of consumptive use and might change from year to year depending on the water supply. When you come in and urbanize that, there is more uniformity in the water consumption that’s coming off lawns and landscapes, the demand for that water and the consumptive use of that water can start earlier in the irrigation season than historical practices, and it can end later. And so it is not obvious what the area under a season-long consumptive use curb looks like between a large subdivision when it was irrigated and after it was urbanized. In addition, historically farmers rely on rotations of water, which is something that’s not typically palatable to subdivisions in cities, and they simply use less water during times of scarcity, which too is something that isn’t always acceptable in subdivisions. So I think it is very complicated to understand how consumptive use is changing, especially in the Treasure Valley on a wide scale. I’ll close with those thoughts for now.

JS: Thanks, Mat. Andy?

AW: Thank you. In a matter of disclosure, Pioneer Irrigation is one of my clients, so I’m– Mat and I aren’t teaming up here, but I know Mat did speak with Mark. You know, the question is is there a demand shift or have we seen a demand shift with urbanization? In theory it makes sense, you know, hardscapes, rooftops, driveways, roadways, whatnot, you know, removing something from an irrigable condition should lead to- or leads to the presumption that less water’s being used. In some cases that’s true, in other cases, where we’ve monitored pump stations, it’s not. In a lot of situations, pump stations use more or less their full entitlement. Some use a little less and some use far more. People—Mat’s point is well-taken—people in subdivisions, and many of you live in subdivisions and your HOAs probably have a horrendous time trying to enforce a watering schedule to the extent you have one. Most subdivisions don’t have them. People have, unfortunately in my experience, including my own subdivision, very much a me-first attitude and you know flip the switch is like, you know, on your irrigation system’s like flushing a toilet or turning on the sink, it needs to be there ready for your use when you want it to the full extent you want to use it. And frankly, you know, at application rates that are usually far more than you need for your lawn, people growing mushrooms and have you know soft spots all over their lawns. At least in our experience, we’re not seeing a decreased demand from the diversion standpoint. One example is, at least within Pioneer, whenever
we’re approached by developers, the question is never you know what do we expect when we develop this ground to be our irrigation need or consumptive use? It’s the reverse, which is what’s our entitlement in your district? And we design our pump stations to that full entitlement. So in Pioneer Irrigation district, for example, it’s an inch to the acre. If it’s a 40-acre subdivision, folks are asking that question and they’re not saying, “Well we think we’re going to have two thirds in rooftops and hardscapes and another third in lawns and common area, so you know, we’ll give up the one third and we’ll just design our pump station—excuse me, we’ll give up the two thirds and design our pump station for the one third.” That’s not how it happens. They design their pump station for the full head. And there are a couple of reasons for this, at least with respect to irrigation districts more so than private canal companies. But we- irrigation districts are organized on a legal premise of a portion then a benefit. You know, this is long ago, hundred years ago plus, that has nothing to do with urbanization and it was judicially confirmed in an in rem proceeding binding those lands. And you live within an irrigation district, you have your entitlement—it’s not always an inch to the acre, it depends on the district—but that is an impertinence and binding on those lands and you know short of some legal statutory changes and a heck of a lot of retrofitting from a practical standpoint that would have to go in—I mean, these are gravity-based systems—you need to be able to push water in a surface gravity flow system all the way to the end user, not just to the people up at the beginning. And so they’re continuous flow through systems. So you can’t just put in pipes, you can’t just line, you can’t just design for the one-third theoretical use. There needs to be a continuous spill through the system to make the rest of the system go. And you know one of the practical consequences of these irrigation systems from a gravity flow standpoint is for the most part urbanization is occurring kind of higher up or in the middle of these districts, it’s not really on the outskirts. The outskirts tend to be predominantly agricultural and rural. Again, you need to push the water. It’s also not a cliché that you know one person’s tail water is another person’s live water for irrigation purposes. Much of the system as you work your way down the valley is dependent on these return flows as being the live flows for others. For example, Riverside Irrigation District: their primary canal the Riverside Canal accepts the entirety of Indian Creek as well as the West End Drain, which is a massive drain about three or four other federal drains tie into. Quite literally, Riverside Irrigation District is dependent—largely dependent—on return flows, drain flows. And that’s not uncommon. So from a demand perspective, in the instant on mentality—and perhaps it’s an educational issue, it’s an enforcement issue, and HOAs only have so many powers in their CCNRs and there are known enforcement policies but—it really is an instant on mentality, like brushing your teeth and flushing the toilet. And that’s not the way the system is best geared. And you know Mat raises a good point with respect to farmers rotating water. There’s a- there tends to be a more efficient use in an agricultural setting than a subdivision setting. I’m not saying that’s a bad thing, it’s just a reality. So from a
demand standpoint, I don’t think you’re going to see decreasing demand. It just— it isn’t bearing out to this point, and you know maybe with some education, some legislative changes, we can see that. But again the first question we get asked on a daily basis is, “What’s our entitlement?” Not what we think we’re going to be irrigating, but what’s our entitlement, ’cause that’s what we’re going to design. And frankly, it’s helpful because it’s gotta flow through the system. Can’t just stop at a subdivision pump station, you gotta get all the way to the tail end of the system.

JS: Okay, so we have a couple of related audience questions. So, one has to do with what Mat was saying about consumptive use and ET and— that we don’t understand that problem very well as we move to urbanization. Would you agree with that, the three of you, that we don’t understand consumptive use?

MC: I agree with that, and I say why don’t we figure it out.

JS: Yeah. How—

MC: It seems like it’s an important enough issue we ought to figure that out.

JS: How can we figure it out?

AW: Through education of course, and I think the Water Atlas—I recall reviewing some of those modules early on—addresses this very issue of consumptive use through the water budget and to the delivery system.

JS: And then one more question that has to do with diversion. So this is a— it’s just a provocative yes/no question, so it’ll be fast. We’ll see. Are you aware that irrigation districts end up delivering more water to subdivisions than to ag land?

MC: Yes. And if you give me the clicker on the PowerPoint, I’d like to show that to you. I picked a location in the Treasure Valley. This happens to be in Meridian. This is what it looked like in 1992. It was all farm ground. This is what it looked like last year. If we drill in a little bit on this area, now we can see again back what it looked like in 1992. This is what it looks like today. The 90 acres on the right is entirely parking lot. The 80 plus acres in the middle is entirely a turf farm. And the 80 plus acres on the left is a mix of intense developed subdivision and some mixed commercial development. Each one of these properties, each one of these three sections of ground, is entitled to the same amount of water. The 40-acre subdivision, which has about 10 acres—I’m sorry, about 20 acres of irrigation is entitled to receive 40 inches of water. And it does receive 40 inches of water. So where the land in the middle gets one inch to the acre, the land in the 40-acre
piece gets two inches to the acre. And what happens when they’re entitled to take the full amount that was on historically allocated to that ground is this: We see if we were-
they’re getting two inches to the acre on 40 acres instead of one inch on 80, we see that the use of water goes up and down. All of these folks irrigate at night in these subdivisions ‘cause they want to play on those lawns during the daytime. What that means is that the two inches of water per acre that are going by that pump station during the day misses the pump station, isn’t diverted, and runs on down to the Boise River, hits the Snake, and it belongs to Washington and Oregon. The subdivisions that I’ve worked on as a water attorney working with engineers and consultants in this valley using surface water have been designed to this lower mid level, which is an inch to the acre. All of those subdivisions using private rights—because we can’t do that with irrigation district water because of the statutes and the institutions that they have—but when we’re using private surface water rights on these subdivisions, we design those to deliver an inch to the acre, and every one of those subdivisions is on a schedule. Internally, they might be able to irrigate for six hours per zone in the subdivision, maybe eight hours, maybe the large common areas get a little bit more, but they all operate within an inch to the acre and they’re basically irrigating using that water 24 hours a day instead of 12. So all of that water is going to beneficial use on the subdivision. So what my point is, if we can say that it’s complicated, I agree. I agree with Mat and Andy on that. Sure, it’s complicated. But is it too complicated for us to figure out? I don’t think so. I use the analogy of the Apollo 13. They had an explosion, and all of a sudden they were filling up with CO2, and this guy walks into a room with a bunch of really smart people with slide rules, he throws it down and he says, “They’ve got some tubing, they’ve got some wire mesh, they’ve got some duct tape and some pantyhose. We gotta figure out how we’re going to change CO2 into oxygen for these guys and we only have so much time.” I think we have enough smart people in this room and in this valley that we can work through these complicated issues. We can take that water off the top and put it back in the reservoir system and make it available for our future uses.

JS: Andy?

AW: Thank you. I see subdivisions irrigating during the daytime all the time. I think it’s a bit of a generalization to say they irrigate at night. And I think it’s a bit of an oversimplification to suggest that spills running past pump stations, don’t happen to be on, return to the river, and are lost to Washington, Oregon, and whoever else might be downstream. In fact, particularly as you progress down to lower ends of the valley as you head west, these systems are all interconnected. So I’ll give you an example that’s Pioneer Irrigation District specific. The flood irrigation in the district’s upgrading of it, which are largely Boise Project Border Control districts, so Nampa Meridian irrigation district, Boise Kuna irrigation district, New York irrigation district, leads to drain flows
that ultimately return largely through Pioneer, given where we sit geographically. We are about a 34,000-acre district. The middle 10,000 acres is roughly the city of Caldwell, the eastern third of the district is largely occupied by the city of Nampa, and the panhandle heading west is still largely agricultural and ends right around Pipe Gulch about Green Leaf. And we have a series of feeder canals where instead of making diversions of water from the Boise River, we dam up and divert through feeder canals water from Fivemile Drain, Tenmile drain, Wilson Drain, other districts around us from Elijah Drain and Wilson Drain, and that water’s not lost to the river. That water’s actually reused, leaving water supplies up in the reservoirs for other opportunities and leaving water in the Boise River for other opportunities. You know, we prefer to use the closest source available to us and based on the reuse plumbing that we have in our system, a lot of that is drain flow water. We have several water rights that are- with a dedicated source of the drains, numbering you know in excess of 100 cfs. That’s a significant water use. So I don’t want people left with the impression that you know somehow water flowing past a pump station in subdivision isn’t picked up and used elsewhere in the system, and even it may not be in the same irrigation district where it’s picked up and used again through a right to recapture, which Nampa and Meridian for example does a lot of with subdivision pump stations built on the drains. We use it downstream, Riverside Irrigation District uses it downstream, Farmer’s Cooperative Ditch Company uses it downstream. It’s constantly recycled and reused, and I think if I remember correctly the Bureau estimates that the level of water we used from head to tail of the Boise River is about- is reused and recycled about seven times. So it doesn’t just go out of state and it’s not just lost to the system.

JS: Okay, Mat I just wanted to give you a chance to respond. The question was about diversion and our- is developed land diverting more than irrigated land did or does.

MW: Diverting more consumptively, using more-

JS: The question’s about diversion, not about consumption.

MW: Yeah, okay. I guess the question- or my answer to that would be, I’m not sure. I’m certain that there must be examples in the Valley where that does occur, perhaps examples in the Valley where it doesn’t occur. Leading up to this, I did work with some people in the hydrology section of the Department, Dan Stanaway, who’s here today, Liz Cresto, the supervisor of our hydrology section, and Shawn Vincent. And we did look at a number of existing data sets in the system to try and see if there was any compelling trends or obvious trends in consumptive use of water or diversion of water in the system, and I applaud Dan on his efforts, but in everything that he brought me there was nothing very compelling there that said, yes, clearly we’re Valley-wide, say, consuming less
water. In fact, it looked like there wasn’t a lot of trends in the analysis that we did, and I think that that’s kind of remarkable, because in 1970, Ada and Canyon County had 174,000 people, roughly, and today we have roughly 630,000 people. And in that 30 to 40 year time period, there’s no obvious trend that consumptive use has gone up or down even though we’ve brought all of those people under the system and urbanized that system. I’ve talked a little bit with Dr. Benner at BSU and he’s done similar analysis, and in what he shared with me, although it’s not final and it’s exploratory at this point, I wasn’t seeing any compelling trends in his data as well. That doesn’t mean that it’s not happening, but it means that the data that we have doesn’t reflect it, and something that perhaps would be more useful would be to look at the actual evapotranspiration that comes off of the ground and then have some understanding of the land use that’s occurring on those same pieces of land that you’re generating ET data sets for. In 2016, the legislature funded the development of a groundwater model for the Treasure Valley through the Idaho Water Resource Board and the department staff and board staff are actively pursuing that. We’re in year one of a five-year development plan, and included in the development of that groundwater model is the development of time-series data sets dating back to approximately 1986 that will look at evapotranspiration spatially distributed across the Treasure Valley for specific years to be calculated by a process called metric, and then intervening years filled in between, looking at the irrigation practices and changes in irrigation practices of the land over that period of time, looking at drain flow or return flows to the Boise River, looking at changes in water surface elevation at the underlying shallow aquifer. And I think with all of those datasets you have the ability to evaluate and create the water budget from year to year and then look at how that water budget has changed with changes in land use practice. So that might be a more interesting data set to consider with respect to this question. We’re probably still several years our from having that data available and published.

JS: So Andy, I just want a quick follow-up question for you from the audience. We have two questions that have to do with drainage water and recharge. So the question has to do with as we develop more, create more of these subdivisions, isn’t it likely that we’ll have less reuse of drainage water, less recharge, and that that might affect the system? Might actually increase flow to the river, somebody asks. Decrease recharge.

AW: Well, that’s a- that’s a question with two sides of that coin. One is is, there a demand change with urbanization, which again, we - and I, I think Mat’s last comment kind of hits on that, which is we haven’t seen a demand change necessarily, though you know one might expect it. I mean, that’s pretty interesting. What do you- about 175,000 people in the 70s or so and you know upwards of 630,000 now, yet you’re not seeing a spike in the river, you know, at the western end of the Valley, which if you had decreasing demand and decreasing use you would expect to see. What we instead are seeing on the
other side of the coin from a supply standpoint, one of the impacts of urbanization is
decreasing drain flows in some, not all the drains. But that’s partly a consequence of
sprinkler irrigation—you know, subdivisions aren’t using flood irrigation practices,
everybody has their own little pop-up sprinklers and roters—and increased localized
demand where pump stations are being built on drains. And so you’re not getting the
infiltration but then you’re also reusing water from the drains to serve these subdivision
systems where it makes sense to build these pump stations to you know put your intake as
close to the source as possible, just from a, you know, engineering efficiency standpoint.
So, I don’t think, particularly based on what Mat said, you’re going to see a bunch of
water returning to the river because you’re using drains as reusable sources of water to
begin with to feed this development and you’re also not seeing it because you’re not
seeing an overall demand or consumptive use change. The same amount of water is still
being used.

JS: Okay, I want to just switch gears a little bit because I now have three questions that want
more information about what a water market could look like. So we’ve heard sort of two
responses to some of the issues that have been raised. One is increased storage, maybe
raising the dams or creating more storage, and the other would be reallocation or the
development or markets. So, the sort of most straightforward question that came in was
how would reallocation work? A simple question, probably a 30-second answer on that.
I’m kidding, I’m kidding. It’s a complicated question, right? But how might reallocation
work for those of us who are just starting to think about water markets?

MC: Well, my thoughts about that are we had some reallocation that occurs in this valley and
elsewhere in this state, either temporarily or permanently. And when I think of permanent
reallocations in this valley, it’s typically been with transfers of shares of water rights in
mutual ditch companies, where one person has no further need for the water on their land
and they can transfer those to someone else who does, and there are transfer procedures
within the canal company and through the Department of Water Resources that can allow
that to happen. That’s typically on a willing buyer willing seller basis. With irrigation
districts, which are under a comprehensive set of statutes that have been around for many
years, I think the process could be developed where water rights that are within districts
can be moved more easily to provide easier exclusions of lands, to provide differential
rates for lands that are no longer going to receive water but that are- for example, the
paved acres within a subdivision are charged higher rates than the farm grounds to
maintain the assessments for the irrigation districts but provide the incentives for them to
allow, to change the entitlements for an 80-acre piece of ground that’s converted to 40
acres of hardscape. So those types of institutional changes could come about that would
provide the- and it’s money, it’s- it’s, you know, money is what provides the biggest
incentive that needs to be money to make- pay the O&M costs of these irrigation entities.
Needs to be money to make it worthwhile of the water users who don’t need the water to turn it loose and the people who do need it to pay a fair price for it.

JS: Thank you. Mat, do you want to weigh in on the question of water markets?

MW: Well, from the perspective of the Department, our authorities are grounded in the statutes in Idaho, and the statutes do specifically allow for reallocation of water through specific processes. You’ve got the transfer process, where you can permanently change elements of the water right. You’ve got the water supply bank and rental pools, where you can temporarily change the elements of water rights and transact that water from one party to another, and then you also have the condemnation process that maybe is envisioned in our Constitution under Article 15 and 1, whereby there seems to be preference given—I’m on a panel with two attorneys, so that always gives me a little bit of reserve when I enter into discussions of the Constitution—but certainly as I read the Constitution, it seems to envision that there is a preferential use for domestic or municipal use, but that you have to condemn that as private property and pay a fair market value for that. So, do we see a lot of transfers in the state? We absolutely do, and across the four corners of the state. Do we have active water supply bank and rental pools? Yes we do. Again, the water supply bank is active across the four corners of the state. We have rental pools that are active in the upper Snake Basin in Basin 65, the Payette Basin. But perhaps less active in Basin 63 than in other places in the state. Do we see a lot of condemnation of water rights to municipal use? I would say that I’m not familiar with that happening very often, certainly while I’ve been at the department, so as I think about reallocation, I think we have specific processes in place in our statutes, in our Constitution, that allow for those kinds of transactions. I see that those processes are being used robustly across the state from my perspective and the perspective of the Department of Water Resources.

JS: Andy?

AW: Here’s that nasty word reallocation again, and I’m not attributing it to some sinister definition for purposes of the discussion, but I guess the question it raises in my mind is what is it we’re suggesting be reallocated? I mean, within an urbanizing irrigation district, we are supplying irrigation water at the apportioned benefit entitlement to farmers just as we are to urbanized landscapes—parks, playgrounds, golf courses, and so on—so the urbanized needs are being met. We do have, you know, a water bank system. My personal opinion of this valley is we’re relatively water rich. I think the PBS film at the beginning mentioned that. You know, an example of that is the going rate for an acre-foot of storage on the rental bank, lease rate is currently 20 dollars an acre foot. You know, you go to California, particularly during the drought years a couple years ago, and they were horse-trading acre feet of water for 15 hundred dollars an acre foot. The supply
is largely there. What are we trying to reallocate, and is it a suggestion that municipal providers have an interest in switching from their groundwater supplies? Probably not, because groundwater supplies provide them with close-looped systems that are comparatively cleaner higher water quality, particularly the deeper you go with a well, in a location where you can serve, you know, instantaneous demand. So I guess I’m not sure what reallocation would look like and whether it’s necessary. If reallocation is taking water off some ground and putting it somewhere else where it’s currently dry ground, sure. The transfer process allows for that. And all of- or the acquisition of senior water rights, and you move them and you transfer them. I mean, it’s all driven by the free market, but right now the free market’s telling us that 20 dollars an acre foot’s the going rate, and that alone, there’s just not much incentive because, fortunately, we’re relatively water rich.

JS: Okay, we have a couple of questions that have to do with governance of water in the Valley, and along the lines of collaboration versus competition or conflict. So in other mid-sized cities, large cities in the West, as a result of shortages and conflict, there have been the development of collaborative governance spottles, or the development of new organizations that have emerged in order to provide a more holistic view of water management. What do you see as the potential or possibility for something like that evolving in the Treasure Valley if it doesn’t already exist?

AW: I’ll pat Mat and the Department of Water Resources on the back in this regard. I think Idaho does a really good job for the most part—can’t be unequivocal—for the most part you know managing and stewarding the water resource. A good example is, you know, people have come to Idaho from all over the West looking at the Snake River Basin Adjudication as a model of how to get a major adjudication done. It took 35 plus years, but there are states or private decrees and adjudications going on in other states that have been going on for more than 50 that are, you know, less than a third of the size and they still can’t get it done. So you have a water rights inventory against which, you know, to administer and plan that a lot of other places don’t have. Idaho has long managed the groundwater resource, the Groundwater Act and the need to apply for a dedicated water right for groundwater withdrawals. California just did that I think two legislative sessions ago. I mean, it used to be a situation where the richest farmer in that drought who could go 600 feet with a well with a 10-inch casing would put all the other local smaller farmers out of business because they had the luxury and the money to mine the water with no state oversight or control. So are there additional opportunities for collaboration? Sure, there always are, and but I frankly I think the Valley does a pretty darn good job of it. There was the Treasure Valley CAMP process, which was one of comprehensive aquifer management process, which was one of several across the state. I’m not sure we necessarily needed it here because we’re blessed with a pretty robust aquifer, again,
we’re relatively water rich given our surface irrigation uses, but I don’t know what those
models would look like. I mean, the city of Boise—and maybe Steve Burgos would be a
good person to answer this—has taken a really proactive role and created almost entirely
a new position within its environmental division that is a, I guess I’ll call it a water tsar, a
blend of legal and technical expertise for purposes of managing the city’s water rights
portfolio and looking forward and future planning, not just from water supply side but
water quality side. I mean, it’s rather shocking to me that a city of its size didn’t have that
position before. So there are opportunities, and the cities are recognizing this and they are
doing that, but you know frankly we do a pretty good job as it is as far as I’m concerned.

JS: Are there comments on collaboration, governance, organization?

MC: I would have to say that collaboration is essential to anything we do in this valley,
including addressing water needs. I think that when we do collaborate, when we finally
do sit down and start thinking about what we’re gonna do to meet the future needs, then
all options need to be on the table and all stakeholders need to be there and we need to be
committed to go get the information that we need. We’ve talked about a lot of anecdotal
information today. Lots of my- you know, the information that I have that I make
decisions on is anecdotal. Mat has described some studies that they’re doing looking at
ET and consumptive use. There’s a lot of tools out there today that we didn’t have in the
past to analyze what’s going on with the water in this valley. I think a collaborative
process that uses all those tools takes advantage of the universities and their experts and
the Department of Water Resources and looks at all options and answers all the questions
we need to make an informed decision’s the way to go. Not one that as I think I’ve seen
in the past that have left some options off the table.

JS: Comments, Mat?

MW: Well, I generally agree with both Andy and Michael on this, and just the piece that I
might add to this is another example of collaboration that’s currently going on will be the
Treasure Valley Groundwater Model Development. There’s a technical advisory
committee that’s made up of a cross-section of cities and other stakeholder groups, water
user community, that’s guiding that development. But one thing I’ll note as an
observation as the Deputy Director, I’ve been in this chair for five years now, is how
many people come to the Department of Water Resources or pick up the phone and call
the deputy and expect the Department of Water Resources or sometimes the Idaho Water
Resource Board to do things that they don’t have the statutory authority to do. And when
we talk about this type of collaborative process, of course it’s needed, of course the
Department and the Idaho Resource Board need to participate, but we also need to think
about what statutory changes need to change or what authorities we need to put in place
so that everyone can fully participate in that type of collaboration. Because right now we have authorities outlined in the statute, and those are the duties and responsibilities that we need to carry out. And I know that people often come frustrated to the Department that we’re not working outside of those authorities.

JS: Okay, thank you. All right, we’ll go ahead and end on this question. I think it’s a good one. To truly drive the more efficient use of water, there needs to be an unmet need. Are any of the panelists aware of projects that have failed or not started because of lack of available water?

MC: I’m not aware of any particular project. I think that there may be, for some industries that might come to this state, to this valley, there may be concerns about whether or not there be sufficient water for say industrial or commercial needs.

JS: So projecting into the future, that remains an open question? Certain parts of the Valley?

MC: I think we need to keep that in mind that to attract new businesses here, we’re going to be able to- we need to be able to assure them that there will be a water supply for their needs.

MW: Specific to the Treasure Valley, I’m not aware of any projects. I think if you look towards Southeastern part of Idaho out on the Eastern Snake Plain, I think arguably there are needs there that aren’t being met currently and the conjunctive administration delivery calls that are going on there. But I think part of the problem, or part of the opportunity, is people aren’t quite used to paying the appropriate value or cost of water. And so they might come and be frustrated that the water’s not there or it’s not there as quickly as they want it. But they’re frustrated not so much that the water’s not there. The water’s not there at a price they’re willing to pay for it. And so I think there is some reluctance on the part of people in Southern Idaho in our semi-arid environments to pay the actual cost of the water.

AW: In short direct answer to your question, I’m not aware of any projects, at least in the Treasure Valley, that have failed due to lack of water. And I think even under, you know, current statutory provisions and operations, there’ve been success stories. For example, Micron, a large portion of its water use, industrial water use, is actually met by an application for transfer involving Nampa Meridian Irrigation District, where Nampa Meridian Irrigation District, [annexed and] included Micron within its footprint to supply it with water. So, you know, again, you’re using already available water supplies for arguably non-traditional uses, but the fact of the matter is even with our current arguably archaic infrastructure and perhaps legal regime, it can get done. Where there’s a will,
there’s a way. And- but again, the short answer, I’m not aware of any projects that have failed.

JS: Okay. We’re a little bit ahead of schedule, so maybe I can convince you three to stick around for a few minutes in case people have questions or comments for you. Otherwise, please join me in thanking these gentlemen for participating in the panel today.

[applause]

Panel: How are other states dealing with changes in water use and growth?

JF=John Freemuth, R=David Robbins, K=Doug Kenney

JF: Okay, everybody. Excuse me. If we can start to reassemble.

Okay everybody. I think we saw in our first panel is what we exactly wanted to come out of that panel. We know there's points of agreement, we know there are points of disagreement. I think we also found that we- there’s a lot of common agreement that more and better data, which Mat mentioned that some of that’s ongoing, is really necessary before we jump to conclusions that- that may not be substantiated by the data. So the Center is certainly glad to help facilitate if there's a need to get more money for more research to develop better data. We are certainly glad to be part of helping get that money where it should be to the right scientists to do that. Okay? So our second panel—and this one’ll be a little different, there's just two folks up here—so they will have some opening remarks and- and a slide or two or more, and then we'll have plenty of time for questions as we did the last panel. This panel takes a look at what goes on in other states, obviously in the West. Patty Limerick and I were talking at dinner that we like to talk about the West being arid as opposed to the rest of the country, and it is, but not all parts of the rest are indeed arid compared to other parts. Idaho apparently in some ways is at least water rich. So our two panelist, and you've got their bio's again in the program, but I do want to mention a few things about our two speakers. The first one will be Doug Kenney from the Western Water Policy Program at- it's part of the Law School in the Getches-Wilkinson Center at the University of Colorado Boulder. I’ve met Doug in the past, and I know he has worked on water for a long time. Has written In Search of Sustainable Water Management: International Lessons for the American West and Beyond, the Water-Energy Nexus in the Western United States, he served on as a consultant on a number of local state, multi-state, and federal agency groups, presentations in 21 states, eight nations and nine- five continents—and I get excited when I get to give a presentation in Winnemucca, so good for Doug. [laughter] He's got a BA in Biology from the University of Colorado, and MS in Natural Resource Policy and Administration from the University of Michigan, and a PhD in Renewable Natural Resources from the University of Arizona. Our second speaker is David Robbins, President and Co-founder of Hill & Robbins, where his practice emphasizes the fields of water and natural resources law, water quality, and environmental law. Prior to entering private practice, he served in the U.S. Army, he was a captain, with EPA, he then went to the Colorado Attorney General’s Office as First Assistant Attorney General, and was later appointed to
K: Thank you. Everybody get their taxes filed today? Don't do it. I'm going to start by saying I think you have a- a panel, if you can call two people a panel, that’s already been thrown for a loop, because I don't think either of us ever work with groups of people who preface their remarks by saying, “You know, we actually have a lot of water. You know? And what should we do with the extra? You know?” I can't recall ever having that. And I've consulted- I did consulting in Vietnam where they were getting 80 inches of rain a day and they thought they were- did not have enough water so. It’s a- I'm a bit thrown for a loop, but I'm gonna power through here. I am one of these people that when I think of the West, I tend to think of the semi-arid West, because that’s again where I end up doing a lot of my work. And in the semi-arid West, people are concerned about growth, they’re concerned about water. I even wrote a book many years ago called Water in Growth in Colorado back in around 2000, ‘cause that’s what everyone was talking about. And then the world has really changed for me in the last 15 to 20 years. Most of the people I deal with don’t worry about growth anymore. I mean, they worry a bit, but it’s not what keeps them up at night. What keeps them up at night is the warming climate and what that’s doing to the hydrology that they have to deal with. Most of my work is in the Colorado River Basin. That basin is two degrees warmer than it was when I was a kid. I mean, just in my lifetime it’s two degrees warmer. What is that- why is that important? Evaporation. More water evaporates than it used to. Growing seasons are longer than they used to. They start earlier, they run later. Not nearly as much water, as much of the snow and rain, makes it to the rivers anymore. The stream flow in the Colorado River is about 20 percent lower this century than last century. I mean, 20 percent. Think of a river system, a major river system, drains a large section of the West—this is a river that doesn’t make it to the ocean, hasn’t made it to the ocean in decades—and boom. In just a couple of decades you lop 20 percent off of that, and there’s another 20 percent coming in the next- off of that probably in the next 30 or 40 years. I mean, that’s the- that’s the context that I deal with a lot, and so it’s again it’s a- it’s a challenge that overwhelms a lot of water management. Now, you have the same atmospheric forces certainly at work as you move out to the Northwest. It is getting warmer here as well, it is causing problems for water management, especially as you get to some of your lower elevation mountain ranges like up toward- through the Cascades and so on where you get snow melt that in some places is three or four weeks earlier than it was three or four decades ago. I mean, that’s a big difference. That’s- the earlier that snow melts, the, you know, it changes how you operate your reservoirs, it changes how much- how long growing seasons are, it changes a lot of things. It changes your flood control regimes, makes life complicated. But it also makes life complicated in that you don’t have a natural reservoir of snow- water stored as snowpack. So the extent that you see calls for new storage, I think you’re going to see a lot more of that, more dams and reservoirs in the Northwest than you do in the
Southwest. In the Southwest we got plenty of dams and reservoirs, we just don’t have any water to put in them, you know? And it’s this great irony that people say, “Oh, you’re running out of water. You should build more reservoirs.” I’m like, “If you’re running out of clothes, you don’t build more closets.” [laughter] I mean, we have reservoirs. We don’t have water to put in them. The other thing that really keeps a lot of people up at night that I find is this variability between wet and dry years. And again, that’s increasing. The wet years are wetter, the dry years are dryer, it causes a lot of challenges in how you manage your infrastructure, when you store water, when you don’t store water, what sort of flood risks exist, what sort of risks from extreme drought exist. And again, this is a global phenomenon. It affects every community differently, but as people like to say you know in the West we have nineteenth century law, twentieth century infrastructure, and now twenty-first century water management challenges. And you see that in these extreme wet periods and extreme dry periods. You see that challenge. All right, so let me get back to population growth and the concern there. You know, a lot of people don’t talk about this, but you could have a lot of population growth and not worry about water. I mean, Seattle, Los Angeles, San Francisco, Las Vegas, Denver, Albuquerque, I could go on, all those places have had extreme growth in the last 25 years. They don’t use more water than they did 25 years ago. And it wasn’t difficult. As a person that lived in those places for the last 25 years, it wasn’t difficult. It was invisible, really. You go to one of those towns and you tell them, “Do you know that your city uses the same or less water than they did three or four decades ago?” And they- they’ll- most of them won’t even know that. They’re like, “Oh, I didn’t know that. I didn’t do anything.” It’s not that difficult. Growth is- that sort of growth is pretty easy to deal with. What’s hard to deal with, and I think this speaks more to your growth challenges here, is not the growth in the big cities, but small communities that grow up to mid-size cities, ‘cause these are communities that don’t have a big base of developed water to conserve from. They don’t have that base to work from. And to the extent that these are younger cities, that means they probably have junior water rights and they have water systems where they didn’t get the first choice as to where they built the reservoirs and the infrastructure. So those are the towns, those small towns becoming mid-sized towns, where growth is a challenge. It’s not the big places. And of course those are the towns whose growth is so closely tied into agriculture and taking water from agriculture. And I- clearly that’s what we want to talk about here. As far as solutions, I think our title system, what are people doing about this, what are the solutions, and of course again the solutions depend on where you’re at. There’s a lot of, you know, the- water managers as a whole are some of the craftiest people I know, and I mean that in the nicest sense of the word. There’s a lot of clever things being done by the water engineers out there, you know, and it’s all stuff that, you know, it’s not like some trick technologies. It’s using storage, operating storage a little differently, you know, pumping in different schedules and routing water differently. There’s a lot more and more efforts to connect water systems. If you have a community where there’s four or five water systems, people find if you build some interconnections in terms of pipes and ditches and so on, that gives you some flexibility. And so you see a lot of things like that going on throughout the West. Again, I’ve talked about conservation and how that’s really easy. It’s not only really easy, it’s really cheap. And most places that I looked at in the West serving new growth- serving an acre foot of- taking care of an acre foot of demand, let me phrase it that way. Taking
care of an acre foot of new urban demand costs, if you do that through conservation, essentially offsetting or eliminating demand, that costs you about a third as much as it does to build new infrastructure and develop new water. It costs about half as much usually as buying out farmland in places where that’s done. It’s easy. I won’t talk about the legal conflicts, ‘cause I’m with an expert here on my panel, but you know, we’re good at that, you know? We’re good at going to court, we’re good at suing each other. And those things are expensive and they’re not terribly efficient and they can get kind of ugly and so on and so forth, but those things get worked out, you know? Conflicts between seniors and juniors, between pumpers and surface water users, between upstream and downstream, these things get worked out. But where we have challenges, I guess—and again this is a theme I think- a major theme of this conference- is about how do we use markets to do some of this reallocation of water, some of this shifting of water—and I think that’s where our tools are the weakest. I think that’s where we struggle the most. In part- largely in part because it becomes very much a social issue. It’s not an engineering issue. Engineering issues are easy ‘cause we have good engineers, and legal issues are easy because we have good lawyers. These social issues about what happens when cities grow into rich agricultural areas and chew up that land and change how the water moves around, that’s difficult. And that’s really where a lot of people in the West struggle. It’s interesting- I think one of the questions I’m supposed to answer is how do markets function in the West, and my short answer is, poorly. They function poorly in part because they have all these rules and regulations layered upon these processes, which you hear the word water markets, you think people buying and selling, that’s pretty simple. It’s anything but simple. But if you go to the state legislature and you look at the bills that are considered about water marketing—and I’ve done this in a few states—oh I’m sorry. Okay, I’m sorry. Let me know if this is better. If you go and look at the legislation about water marketing, what you’ll find is for every bill that’s being considered to try to make markets function better—smoother, easier, you know, less lawyers and engineers involved—for every bill that tries to do that, there’s another bill that tries to restrict how markets work—to put on more protections, more hoops to jump through—because people have this love-hate relationship with markets. There’s this idea that, you know, as a country we believe in markets, we believe in capitalism, we believe this is an efficient way to the extent that some water needs to be reallocated, we believe that’s the way- markets are the way to do that. But markets are feared, especially in the very arid parts of the West. Markets are feared as a way for cities to take advantage of agriculture and to take whole communities and essentially wipe them off the map. I mean that can- it’s a little dramatic, but that’s the fear out there. You have this dichotomy when you talk to the farmers, it’s like every farmer I talk to says it’s a bad thing when water leaves agriculture. It’s a bad thing when water rights are sold to cities. But every one of them tells me also, “But I want to be able to sell my water right, you know, if I so want to. You know, don’t put restrictions on that. Put restrictions on everybody else’s ability to sell if you can figure out how to do that, but not mine.” And I had a wonderful conversation once with a guy from the Farm Bureau. I was at a meeting, we were talking about water markets, and he was silent. And I said, I asked him, “Why doesn’t the Farm Bureau have a policy on this?” And he explained to me this dichotomy, this love-hate relationship with markets. So that’s where a lot of the West is really struggling, this idea that some of the- especially the smaller communities that are growing up to mid-sized
communities, their only available water supply is out of the agricultural sector. They’re willing to pay the money to get the water but the farming communities are concerned. And the cities don’t want to be the bad guys. The cities aren’t looking to drive agriculture, create problems for agriculture. They’re not looking to dry up farms and they’re not looking to dry up some of these problems that we’ve heard talked about, these problems of, you know, if too much water shifts hands, then you know ditches don’t function the way they were originally designed. You know, those sort of problems. Cities don’t want to be the source of that, those sort of issues, either. So, a lot of the activity in the West regarding markets and growth and this relationship between cities and farms surrounds something called ATMs, which is a horrible acronym ‘cause you think of ATMs as the Automatic Trans- what is it the Automated Teller Machine. ATMs in much of the West now mean Alternative Transfer Methods, and this is ways- it’s an alternative of a city going to a farm, buying out a farm, taking the water, and the farm going dry. Alternative Transfer Methods are aren’t there ways that urban areas and agricultural areas can get along. And some of these methods are things like transfers that are temporary—maybe the water only flows to the city in two years out of 10, the two driest years. These are transfers on a small scale. These are transfers that are more about managing the risk of running out of water than about actually increasing an urban area’s water supply, because most growing areas, as I say, don’t necessarily need more water, but they need more reliability of the water supply they have. So you see a lot of deals like deals based on rotational fallowing. So you’ll have an irrigation district where they agree that in any given year 20 percent of the lands will be fallowed and 20 percent of the water that would have been used, that 20 percent that is saved, then goes to the city which then pays those farmers those 20 percent that don’t have a crop that year. Those sort of deals. There’s no net increase in the amount of water used in those deals, but it’s shifted in at least that given year between farm and city. But the farms still stay in business, again, it’s rotational, it moves from one farm to the next, one plot of land to the next, there’s various schemes. A lot of things like that are happening in the West. And in Southern California for example these happen on a scale that’s pretty stunning. You have big irrigation districts like the Imperial Irrigation District and the Palo Verde Irrigation District who have deals with big cities like Los Angeles and San Diego, and these are arrangements that are in place—some of these arrangements go 30 or 40 years—and over the course of these arrangements, we’re talking millions of acre feet moved, we’re talking hundreds of millions, if not billions, of dollars changing hands. But yet the irrigation areas still continue to irrigate, crop yields haven’t dropped any in any of these places. I mean, people get a little better you know with how they’re farming in part because they’re getting a nice check from the cities, which helps finance some repairs and infrastructure improvements and that sort of thing. So that’s the sort of relationship that I end up working on a lot, and it’s interesting that some of that cooperation or working together, certainly those principle are universal. They could transfer to the discussion here. Some of the other parts of this just don’t transfer, this idea that you can have urban growth and still have farming- you know, it’s not an either-or here. You have water for both. You know, the land itself might be more of a limiting characteristic than the water. So it’s a different challenge. So let me just wrap this up, what other states doing? It varies a lot from region to region, and we even heard it today, it varies a lot just from Treasure Valley to the Upper Snake Valley next door. Which way is east? I don’t know my
directions here. So, you know, context matters, but there’s almost always a mix of strategies that I’m seeing and improved engineering, making systems- trying to get some more flexibility into these systems because they’re being asked to do different things, strong focus on urban water conservation—much more so than agricultural, and there’s reasons for that—, still the occasional lawsuit but it’s, you know, I don’t know if it’s any more lawsuits than we had before. I mean, people talked about water conflicts, but as someone mentioned earlier, there’s really a lot of negotiation and deal-making and collaborative action more so than litigation, at least from what I see. You know, and again, markets. Everyone’s struggling to figure out how to use markets in a more skillful way, a way that makes these- that makes arrangements efficient but that doesn’t, you know, and that protects the fundamental interests of both urban and rural areas but that doesn’t cost too much money in terms of legal and regulatory hurdles. So that’s where people are working. So I’ll stop there. Thanks.

[applause]

R: Thank you, Doug. I’d like to start this morning by thanking Professor Freemuth as well as Doug and the speaker who will speak later today Professor Patty Limerick. These-they are both Coloradans, they are both students of this Science of Water Management. And although Doug suggests that he doesn’t want to get into the legal aspects, I assure you he understands them in a very sophisticated way. By comparison, I guess you would call me a mud-on-the-boots lawyer. I represent individuals and most predominantly public entities in the matter of water resource allocation. I worked for six years for the Environmental Protection Agency and for the Colorado Attorney General, and for the last 40 years I have been in private practice, but I principally represent states like the state of Colorado and the state of Wyoming and large basin-wide water conservation districts and large municipalities in determining how best to protect the water supplies and how best to make changes to the water supplies as are required. I spent a significant part of my career in litigation. I end up being brought in on cases where it’s actually gonna go to trial, and I have the pleasure of crossing swords with fine lawyers in an effort to ensure that any proposed change in the state’s water resources has been appropriately vetted and terms and conditions in place to ensure that the remaining water-using community is not impacted adversely by the change. I’ve spent a significant amount of time either preparing for litigation, litigating, or trying to figure out what to do with the results of litigation on Colorado’s rivers, eight of the nine compacts have been involved in that activity and I have been involved in all of those. I think Idaho and Colorado are very very similar in some ways and very different in others. They- our states are similar in a very important way in that we are two of the Western states who actually believe in science and attempt to mold our laws and interpret our constitution in ways that respect scientific principles that are accepted in the engineering scientific professions throughout the world. By that, I mean we have priority systems which we understand to give a greater benefit to water rights that are more senior or were developed earlier in times of shortage, but more importantly, we also acknowledge that the great percentage of groundwater in our states is in direct hydrologic connection to surface streams and that the pumping of wells has an impact on the surface flows and has an impact on the water budget, however you want to measure it. Most of our neighboring Western states and our friends in those
states have struggled mightily to figure out how to avoid that piece of scientific knowledge. Texas believes that the right of capture should apply. They basically pretend that groundwater is like oil and gas and that if you own land you can drill a well and get as much as you can get, and too bad if more senior water rights are impacted. Similarly, California doesn’t really regulate groundwater. Arizona has a claim that it regulates groundwater; I can’t see it from my perspective, but that brings us together. ‘Cause we understand at the end of the day how much water is available coming out of our snow packs and our sources of water is being consumed, whether it’s from groundwater or surface water, is vitally important. We’re also similar because we treat water as being a public resource subject to the right of citizens to acquire a portion of it and to use it beneficially, and we are similar in that we have preferences in the constitution that allow domestic uses, municipal domestic uses, to have a preference in times of shortage over other uses. And we are similar in that we do not insist upon those preferences. We treat them as a right of condemnation, not simply a right to stand up and say, “I’m taking your water because I want to.” There are differences though, and the biggest difference has been discussed today. Doug put his finger on it. And that is that Idaho has a significant amount of water, an embarrassment of riches. Colorado’s rivers have been effectively over-appropriated for 75 to a hundred years. There maybe an exception on the Colorado River depending on which hydrologist you talk to or which perspective you take, but there is no question that our other rivers are all fully and completely over-appropriated. And that is for the second reason that we’re very different. Colorado is a signatory to nine compacts and is the recipient of limitations in two Supreme Court equitable apportionment decrees. Compacts do one thing and only one thing. When you strip off all of the rhetoric and you strip off all of the effort to avoid saying that this is what they’re doing, what they do is they constrain and allocate the right to consume water. They don’t constrain the right to divert water, they don’t constrain what you do with the water, but they specifically limit how much a state is entitled to consume from an interstate resource. Consume. That’s an important word. As a result, Colorado doesn’t pay a whole lot of attention in water management decisions to what size a decree might be in terms of a diversion rate. The easiest example would be to look at a 10-acre tract of land on, let’s say the Yampa River, which is in Northwestern Colorado and does not have as much pressure on it as some others. And hypothetically a rancher has a hundred cfs right to divert from the Yampa River. And he can run all 100 cfs under that 10-acre tract or he could cut that back to half a cfs. And in doing so, he would not change the value of his water right one iota. That 10-acre tract in our hypothetical’s, growing native hay, and it will consume 1.8, 1.9 acre feet per acre throughout the growing season and that is all the water that that farmer or rancher has to use for other purposes or to sell to another individual. So, we don’t pay as much attention as some people think we do on what our decree books have to say. We pay very detailed attention on how people are actually applying the water to beneficial use. And in my Yampa example, what’s happening to the other 99 point whatever cubic feet per second? It is being diverted out of the river, washing across that hay field, probably killing the hay in the process, rusting the lower wire on the fence below, and roaring right back into the Yampa River where it is immediately doing one of two things: it is becoming a water supply for a downstream neighbor, or more importantly, it is serving to assist Colorado in meeting its obligations for delivery to its neighbors, the Yampa is a tributary to the Colorado, which would be
our neighbors in Wyoming, Utah, New Mexico, California, Arizona, and Nevada. So, using my example, if my friend growing the hay wants to sell the water right, he is entitled to acquire through the water court a decree for 10, 18, 20 acre feet of transferable historical consumptive use that could be used for a different purpose or at a different location. As a result, every change in land use and every change in type and place of use is scrupulously monitored, and it is important because if a person were entitled to expand the use to reflect something that had to do with the rate of diversion versus the rate of use, that—and allowed to consume water over and above what was historically consumed—that means that the water had to come from someone else, because we are at our limit on each of our compacts. Every year, we struggle to deliver sufficient water to meet the obligations to our neighbors. And so if you increase in any way the consumption of existing water rights, that means someone else—another water right holder, or the state of Colorado’s obligations to the neighbors—are shorted. In terms- also in terms of conflicts, in terms of change of use, I guess I have some map- a map up on the board. This is the- a map of the state of Colorado. You can see the river basin shown on the map, and I- these are sort of cartoon maps. As you go along you’ll see why. But you can visualize, I hope, where our water basins are. And I will see if I’ve done this right, I promise you I’m not very good at doing these things. How do I switch? Maybe I do that. There we go. Okay, that’s the irrigated areas of the state of Colorado. I want you to understand that there’s more irrigation than is shown, this is where row crop irrigation is occurring. It’s not- it doesn’t represent any of the big hay meadow operations that exist in the mountains, okay? So you can get a sense of where we are using water and in high production commercial agriculture. All right, this is the South Platte Basin, and the South Platte Basin is- we have a compact on it with the state of Nebraska. There’s the irrigation activity that occurs in the South Platte Basin, sort of in lawyer-e. I did these things and I’m terrible with this, so it gives you a sense. And that is basically the urbanized corridor in the Denver Basin. As you can see, that urbanized corridor sits right on top of irrigated farmland. So let’s then move on to the Arkansas Basin. The Arkansas Basin does not have as big an urbanized area. There’s the Arkansas Basin’s irrigated area, or principle irrigated area, and there’s the urban- the large area of urbanization, which is around Colorado Springs. The interesting thing about these two maps is that in the South Platte Basin, there is not significant conflict when land is taken out of agricultural production and shifted to urban production. And the reason for that is the farmer gets to sell the land to the developer and gets to sell the water to the developer or to the city in which the development will occur. So the farmer gets full value out of his process. In the case of the Arkansas Basin, that it’s very different because all of the irrigation is still going on and when a city comes down and proposes to use agricultural water, the farmer is left with dry land in a climate similar to here and no water. And so you go from irrigated ground with good tax return to the communities and the counties, implement dealers, seed dealers, all that sort of stuff, and all of that financial return to those communities goes away. So that takes me- I’m losing track here. Now what happens in the Arkansas Basin is that this explains why there’s now a push to use alternate transfer mechanisms as described by Doug. The effort is to figure out a way to keep water tied to land so that it can be used in a certain number of years going forward into the future while at the same time allowing cities to use the water in a limited number of years when they require additional water supplies. And that- the idea behind it is to keep the green area viable, to
keep most of those farms operating, to keep those small communities viable and not
allow their economic vitality and their success to be sucked up into the metropolitan area.

In the case of this- in the case of the South Platte, the previous slide where I showed you
how urbanization was right on top of irrigated agriculture, it’s far less of a problem
because the water is transferred through a water court process, either to the city that is
going to serve those municipal needs or the water is- a determination is made of how
much consumptive- beneficial consumptive use exists on the property and the water is
used for purposes in other communities in other areas within the basin. There are a
number of Colorado statutes that are designed to bridge the gap when water transfer
occurs. There are statutes that require the acquiring city to pay a payment in lieu of taxes
or a mitigation- transition mitigation payment. So if you’re actually buying water out of
agriculture and the land is changing type from irrigated to dry land, you have to pay a
difference in value so the local community is not disadvantaged. There’s a statute that
requires the acquiring city to make payments to defease bonds—so if the county has
issued bonds on the irrigated ground, the cities are expected to pay their share until those
bonds have been fully paid off. There are statutes that deal with water quality. There are
statutes that deal with a limitation on how much a change of water right can occur
without additional constraints being applied, and that number is a thousand acre feet, and
there is a statute that is called the Agricultural Protection Act, which has as its purpose to
allow agriculturalists to go into court and change- and quantify their historic consumptive
use and to change the potential uses from agricultural loan to agriculture plus municipal
industrial and other uses so that those farmers are in a position in the future to rent, lease,
or sell their water to a municipality or a third party user while at the same time preserving
their right to stay in agriculture if they so choose. I’m almost- I’m about ready to wrap up
here. I want to hit a couple of terms. In Colorado we talk about buy and dry. That means
we’re the- where a city comes in or a third party comes into a farmer, simply buys the
farm, busy the water, and dries it up and move the historic consumptive use to another
beneficial use at some other location. Or as Doug explained, alternative transfer
mechanisms which tend to look at rotational fallowing—a farmer owns a thousand acres,
what he does is make a commitment with a city or with a farm organization that two
years out of 10, three years out of 10, five years out of 10, he will take some percentage
of his ground completely out of production, let it lay fallow, and make that amount of
water, that amount of consumption available to a third party, usually a city. I have been
working on figuring out alternate transfer mechanisms for the last 15 or 18 years. They
are very complicated. Farmers have a greater expectation of what the water is worth than
cities do, but at the end of the day, we’re all going to have to work together if it is our
intention to allow agriculture to remain successful in these basins while at the same time
ensuring that our population receives the water supply it needs. I want to end by
emphasizing: Throughout the greater West, somewhere between 70 and 80, 85 percent of
all water consumed in our river systems is consumed in agriculture. That means that
somewhere between 25 percent down to 15 percent of the water is required to sustain our
domestic municipal use. I hope you understand that you can add a whole lot of people
and not really impact agriculture that much. It doesn’t require a destruction of agriculture
to find sufficient water to operate cities. I want to emphasize again: Our state of Colorado
is very different from Idaho in that we have very limited water supplies that we’re trying
to make things happen on. The Rio Grande this year has- will have and a flow of around
300 thousand acre feet of water total. Of that, about 140,000 acre feet will have to be sent
downstream to New Mexico and Texas where Albuquerque, El Paso, Las Cruces also
depend on it. So, ladies and gentlemen, you probably run 300,000 acre feet through this
system every week, and that is all we have to deal with on the Rio Grande. So when
we’re talking about transfers, when we’re talking about how agriculture can use or not
use its water right, then we’re missing a bunch of zeros. Finally, it doesn’t matter whether
you have surplus supplies, as you may hear sometimes, or have very low supplies, low
levels of supply like we have in Colorado. Everything is tied together. There’s nothing
that goes for free. Water supply- volumes of water supply, large ones or small ones, are
really as you analyze them, the critical issue is how much are you going to consume,
where are you going to consume it, and how are you going to ensure that you don’t over-
consume to the detriment of either your neighboring states or your neighbors? I’m happy
to answer questions if you have them and I want to thank you very much for letting me
come today and chat with you about this stuff. I am honored and I wish you all a good
conference. Thank you.

[applause]

JF:  Okay, we have a lot of time for questions. Let me start with one. I think that we have sort
of asked them already to think about it and they’ve touched on it a little, and that’s sort of
interstate water compacts. And for both of them, what is your experience
with interstate
water disputes and do you see the Treasure Valley ever having to contend with
downstream states for Boise River or Snake River water? Here’s some mics so you don’t
have to [inaudible].

R:  I certainly have some experience with interstate disputes. I have been involved in the
disputes under the South Platte Compact, the Republican River Compact, the Arkansas
River Compact, the Rio Grande Compact, and the Colorado River Compact. In some
instances, it is preparing for the inevitable conflict, in others it is defending the conflict,
and in others it’s trying to clean up after the conflict. I represented the state of Colorado
for 23 years as its lead counsel in the Supreme Court conflict Kansas versus Colorado
and the Arkansas, and so- and I’ve actually worked on the water quality issues both on
the Colorado River, in addition to water quantity issues, since 1979. I personally don’t
see that your- that absent at a significant increase in consumption within Idaho that there
is any significant likelihood that you will have a compact conflict on the Boise River or
the Snake River. It just- the volumes of water are big enough that the likelihood that a
shortage would become so severe that the lower basin states would either sue for an
apportionment or seek the negotiation of a compact. I suppose it’s possible, I suppose that
the climate issues Doug has described, or endangered species issues, could result in that
pressure if they- if flows were required that were so high that they needed to- that Idaho
needed to curtail water rights in order to meet them, as in Colorado’s case occurs on the
Rio Grande. But absent those sorts of factors, I don’t see it as a really significant threat.

K:  I’ve worked on interstate water disputes probably more than any other issue in my career,
to be honest with you. My first job out of college was working on the ACT-ACF dispute,
and I’m guessing probably nobody knows what that is. Those are- that’s the acronym for
the Appalachia-Chattahoochee-Flint Alabama-Coosa-Tallapoosa River Basins shared between Alabama, Georgia, and Florida, of all places. You wouldn’t think of a Southeastern U.S., but yeah. I was- I was hired in the, geez, mid 1990s to solve that dispute and it’s still in front of the- well, I guess the Supreme Court made a significant ruling last year, I believe. But it’s still not settled. So clearly I have a history of incompetence on this issue because I didn’t make any progress at all there. I’ve done work in China and in Vietnam and in Korea and in Australia on- all in interstate disputes. In the U.S. I’ve- besides the one I mentioned, I’ve worked with between North Carolina and South Carolina interstate water disputes, most of my research now is on the Colorado River Basin and a lot of the dispute there is around the interstate compact there. So I’ve seen a lot of different flavors of interstate water conflict. I’ve seen the- how a lot of different compacts work, and I’ve seen how it works in places without compacts. And just as- I say all of that to then say, ditto. I agree with your analysis. I wouldn’t worry about it here. There’s just too much water here and just not enough pressing demand here for me to think that a conflict on the Boise or Snake with downstream neighbors is- I mean, that’s way down the list of things you should be worried about.

JF: Okay, thanks. I don’t know if this is yet relevant for us, but it’s an interesting question to be asked. Fort Collins requires land developers to have some amount of water available for transfers out of agriculture. Is this an effective way to ensure adequate municipal supply? Either one of you, or both.

R: Yes. It is. It has spinoff social aspects, but as I showed you on that cartoon map, Fort Collins is within the red blob and it is- the land developers are taking land around Fort Collins that were historically in irrigated agriculture and they’re building houses on them, and so Fort Collins is simply ensuring that those individuals dedicate to the town a sufficient percentage of that formally used water- water used in agriculture to the city so that the city can provide sufficient supplies to those commercial establishments, single-family homes, and for lawn and garden irrigation.

JF: Doug?

K: I guess I’ll just add that there’s a lot of towns on Colorado’s Front Range, including Fort Collins, that where the cities get really nervous about population growth because they know you know, that’s a demand that they’re going to be expected to meet. And so there’s a lot of these—and they take different flavors—but there’s a lot of these rules that say, where they put the pressure back on the developer that says we’ll issue your building permit and we’ll annex that land you want to build on and we’ll do all those sort of things, but you gotta bring water to the city and to our system. And so it’s just a- you know, again there’s various mechanisms to do it, but it’s just a way for cities to try to put the pressure on developers to find the water.

R: But this is easy to do, in my opinion. And the reason is because those farmers are growing crops like alfalfa, which consumes 2.8 to 3.2 acre feet per acre depending on how many cuttings you get. Potatoes 1.6, grains 1.4 to 1.6, native hay 1.7 to 1.8, and as you take each acre out you get that amount of historic consumptive use as a result of
removing that land from irrigation. And what are you replacing it with? Houses, green grass, roads, and other things. And those generally use somewhere between .4 to 1.0 acre feet per acre. So the demand that you provide sufficient water for the development of those acres into a community isn’t particularly onerous in most cases.

JF: So this is a bit of a can of worms question, but probably needs to be asked in terms of science because we discussed earlier that in some cases Idaho and Colorado, at least, approach things like conjunctive management the same way. But, there is a great deal of skepticism in Idaho when it comes to anthropogenic climate change. What impacts will that skepticism have on our ability, do you think, to plan for our water future?

R: Doug should start with that because he knows what it means.

[laughter]

JF: What’s it mean, Doug?

K: You don’t use that term, anthropogenic? Human-caused climate change? You know, it’s funny to me that when I hear people talk about climate change as a controversy or as a political issue, because in the water management community, there’s no ideology about climate change, or- it’s just- this is just what they’re doing with their- what they have to do with their lives. This is just the reality. The reality is the snow melts earlier than it used to. The reality is that you lose more to evaporation than you used to. The reality is that the soils dry out more and so more of that runoff gets captured by soils. I mean, the reality is that the first frost of the fall comes later, extending your growing season out on the other side. All these- you know, the reality is all the thermometers say it’s two degrees warmer. They’re thermometers, you know? So, you know. So you know, so the water managers that I deal with, you know, this is- I mean, I tell people this all the time. I got into this field ‘cause I’m interested in water management and how farmers deal with cities and how you know upstream folks deal with downstream folks, all this sort of stuff. That was, I thought that was going to be my career. My career got hijacked by climate change, because every meeting I go to the things people are talking about are, “gee, this reservoir doesn’t fill like it used to,” or “it fills earlier than it used to,” or “if we make the same schedule of releases from reservoirs that we used to, that’s not enough to keep stream flows through the end of the summer season like it used to, ‘cause it- things get stretched.” And so that’s- it’s just the reality of what people have to deal with. Now, the political part is the anthropogenic word here, the human-caused word. I don’t think there’s any doubt it is human-caused, but you can throw that aside, I think, if you want to, if it makes you happy. Throw that aside and say we don’t know what’s causing it. You still gotta deal with it. I mean, we don’t know what historically has caused a lot of things, but you still have to deal with things, you know? So. But let’s just start thinking- and the other part of this is the world’s going to get hotter the next two or three decades regardless of what we do. The greenhouse gases that trap heat are already in the atmosphere. They live up there for a couple of decades. The West is going to get hotter, here’s going to get hotter for the next two or three decades, no matter what the world does regarding energy an other things. When you start thinking much longer term—50
years, 100 years, so on and so forth—that’s when it gets important just whether or not you acknowledge the human role in what’s happening, because if you do acknowledge the human role then you’ll want to know support things like the transition to renewable energy, that sort of thing. But in the short term, I mean, the stuff’s already happening and it’s going to continue to happen in the short-term. You can throw out all ideology and politics, that’s just the reality.

R: I happen to agree fully with Doug in his response, at least to the extent that I say to water managers, “Don’t worry about why. Just accept the reality that things in the climate are changing, and they are changing in ways that are contrary to our interest as Westerners needing to use water to continue our success economically, socially, and in other ways.” Let me just give you a couple of examples that I think are instructive on the question of climate change or variability. In the state of Colorado in the 1960s and 70s, we had a snow pack where snow was on the ground for several months every year that covered about somewhere between half and two-thirds of our state. Everything above maybe 7,000, 75 hundred feet. Today if you look at the satellites, there is only about a quarter to a third of the state that is covered throughout the winter, that’s 95 hundred and up, with snow. Snow is our watershed. Granted that in higher elevations snow is deeper, but if you cut out almost half of the former snow shed, that is a ton of water that is no longer coming out on the runoff curve. The second issue that we need to face is that in the Rio Grande, which gets approximately seven inches of precipitation in the agricultural area a year, the runoff peak has moved forward 30 days. That is really significant because the last frost has not moved forward 30 days, so where in the old days you planted a crop and the runoff got there right about when that crop really began needing a lot of water so you didn’t have to have a lot of storage, today you are getting that runoff before the crop is ready to start growing ‘cause it’s still freezing at night. Now it doesn’t make any difference to the farmer or to the water manager why, but it is a reality. The third thing that I would point out that has had a significant impact on this is what we call dust on snow. The Great Basin, Southern Utah, Northern Arizona, even in- actually all of Arizona and New Mexico, has significantly dried out and has been significantly impacted by man’s activities in significant part, four-wheelers and other off-road vehicles that now break the desert crust in long lines which allows the wind to get under the crust and begin to move dirt. And we are now seeing enormous dust storms with almost every major storm front coming through the deposits on the snow in Colorado’s mountains, and it changes the albedo from clean snow, which is close to a hundred down to 50 or so because of the darkening of the dust in the snow cover which causes it to melt even faster without regard to the temperature changes. So those are all things that you know you can say, “Oh well, I don’t believe that in orthogenic impacts, climate change is you know whatever it is.” It doesn’t make any difference to any of us because we have to deal with when does the runoff start, how much is it, how fast does it come, and how can we use it. So, you know, let’s acknowledge that there’s change and plan to deal with it.

JF: Of course, the real cause of climate change is Planet X, which is due in about a week, right? So we have- and if you don’t know what I’m talking about, good actually. We have a couple of questions about technology and how it’s improved our ability to have better data in terms of water disputes and so forth and so on. Are we relying more on good
science and satellite data and so forth rather than legal disputation affidavits and things like that? Is it improving our decision-making?

**R:** My answer is yes, it is. There are a whole number of ways in which that’s true. At least in Colorado we now require meters on all wells in the state with reporting at least annually to the state of Colorado. That allows us to calibrate to a higher degree of certainty our groundwater surface water interchange models. We have groundwater models in on every major basin and we now understand how much actually is being pumped versus what was estimated to be pumped. In the old days when you build a model, you went to the FAO publications, the Food and Agricultural Organization, and you looked at the curves and then you looked at crop statistics and you figured out how much crop was being grown. Then you went to the FAO curves, you figured out how much water that took, and that’s what you assumed was coming from a field that was watered with a well. We now have meters on all those wells so we know exactly how much is being used. We have satellite images now where we can actually look at what the health and vigor is of the crops so we can understand whether the crops are in deficit or not. There are just— it has been enormously helpful, and once we get more years of this data compiled, I’m confident we will do an even better job of tracking the actual fate of all of our water supplies.

**K:** I will agree with all that, and I’ll just add the observation that in most places that I know of where there is a lack of data, monitoring data about how water is used, how much is used, what it’s used for, the answer is always the same as to why. Because it’s not a technical problem, it’s because it’s a political problem. People don’t like having their water use habits monitored. They don’t like having to report how much they use, they don’t like agencies spending public monies to do that. That gets overcome slowly and incrementally. That’s a constant struggle.

**R:** You cannot rationally and properly manage water resources without accurate data. It’s absurd to say that the state shouldn’t know how much water you’re using because you interact with your neighbors, you interact with downstream states, you interact with the public in various views on how water should be used. We ought to have a data set that actually puts aside all of the impassioned breast-beating arguments that we go through where the facts actually matter so that we can make good rational public decisions about how we should move forward so that you all can armor yourselves if we go into an even drier time, and you are in a position to look back and say, “This is what we’ve been doing.” And then it allows you to evaluate suggestions on how you should change to better respond to the new conditions. Without information, you are just making haphazard guesses, and they very rarely turn out as well as you’d hoped.

**JF:** Maybe time for one more question here, and it kind of underlies the discussion that happened in the first panel. And David, I think this is more for you, but Doug certainly you can weigh in. In Colorado, if an irrigation district’s lands become urbanized and the district continues to supply irrigation water to the subdivided land, would there be any change in the amount of water the district would divert to the urbanized parcel?
We have very few irrigation districts, as the term, you know, public districts, that are in the middle of heavy urbanization. We have conservancy districts that provide units of water to land, but there are- all of these are publicly tradable, water marketable. And the irrigation district supply generally will go down as water is moved into municipal and urbanized uses. In part because, as Doug pointed out earlier, the cities like- or maybe like in your question, professor, like Fort Collins require that the shares that were associated with that land be transferred to the city of Fort Collins, and then Fort Collins provides the water supply. And the irrigation district delivers the water to Fort Collins. In other instances, you see that at some point in time the irrigation district is approached by the state engineer and it’s suggested that they’re diverting more water than they have a beneficial use for and they need to cut back or reassign their shares in a way that allows them to continue to be beneficially used.

David, thank you. Doug, anything to add to that?

I’ll just say that in principle, and any basin, any stream that’s fully-appropriated, which describes the vast majority of Colorado if not all of Colorado- and there’s a change in land use, so there’s- and a corresponding change in water use, the principle always is there can be no net increase in consumption. I mean, it’s- to the extent that some water is shifting uses, you’re shifting the historic consumptive use to a new use, but you know. So to the extent that there’s an increase in use for an urban use that has to be offset by a corresponding decrease in use by the agricultural use, the devil is in the details as it always is. But the principle is pretty clear that these sort of shifts from one type of landscape to another are expected to be done in a no-net increase of consumptive use.

Okay, before we thank our panel, when we’re done, there’s two food stations behind you. There’ll be plenty of time to assemble your meal, eat, and so forth before we have our lunch speaker. But before we all get up, join me in thanking our two panelists in this great presentation.

[applause]

Our lunch speaker is here. He has a pretty long complex presentation, and we want to make sure we have plenty of time for it, and then if we have time for questions we will certainly entertain them. I’m happy to introduce Mr. Roland Springer, the Snake River Area Manager of the U.S. Bureau of Reclamation. He oversees the facilities and activities throughout our Snake River Basin here from Eastern Oregon through Western Wyoming. He’s worked for Reclamation in Salt Lake City, Boulder City, Nevada, and Washington D.C., and as a consulting water resource engineer and management consultant. He has a BS and MS degree in Civil Engineering from MIT and an MBA degree from Cornell and is a professional engineer and project manager professional. Join me in welcoming Roland Springer.
RS: Well, thanks John. I’m sure you guys all got excited when you heard him say I have a long, involved, and complex presentation. That’s exactly what you want to have at one of these, it really helps the digestion during lunch. So, I will do my best to help you here. I do have a lot of slides. A lot of them will- I’ll go through pretty quickly. One of the things I want to- basically I wanted to share with you some of the history of the Bureau of Reclamation, how we came to be, our history here in the Treasure Valley area on the Boise and Payette Rivers, and how we fit into this community and what we see coming up in future years, some of the challenges we’re dealing with right now. I’m grateful to the Andrus Center for inviting me to give this speech. Given that this is a policy group here, I would like to delve a little bit into policy that formed Reclamation and kind of set the stage for where we are today. As you know, water is a dominating factor in the Western-American prehistory and history. You probably heard either today or other times about three percent of the earth’s water supply is fresh and about 77 percent of that water is frozen. And here in the western U.S. we have a disproportionate lack of share in that water. And so it’s- we have good land here, but we need to bring in water to make that land grow crops. And so we have to have agriculture, have to have irrigation for our agriculture here in the western U.S. So first, and okay let’s see if I can figure this out. First a little bit of overview of Bureau of Reclamation. Here’s- there’s some stats on the slide, which I can’t see very well, but we have nearly 500 dams, 58 power plants, 245 million acre feet of storage, and about nine billion dollars in agricultural benefits throughout the West. We are the largest water resource management agency in the United- in the West and the tenth largest utility in the United States. We service water to about one third of the irrigated agriculture in the West with 180 authorized projects. And when we talk about project, it’s not what my project management professional brain would call a project, it’s an authorized system of dams, hydropower plants, and other facilities, typically within a watershed; it might be one dam or it might be many dams. That’s what we call a project. And each of them are individually authorized by Congress, and so we have to abide according to these authorizations as we work. Our staff is leveraged by irrigation district staff. We have contracts with many irrigation districts who actually manage a large amount of this federal infrastructure in Reclamation projects. I see a few folks here who work with irrigation districts who manage federal facilities, and they will say they love working with the federal government because we are very simple. [laughter] So, it is a challenge, but it’s a valuable service, so Reclamation has a workforce of about 5,000 people throughout the West. So here’s some photos of some of our benefits here. We have, I think that’s- we store water. I’ll just let you read them. There’s just three here. You can look at what they say. I can’t remember the exact order of them. So we do these things, we enable agriculture. We also generate power.
Reclamation is a large force in hydropower. You see that we’re second only to the core of engineers in total annual power production. We’ve got 58 hydroelectric power plants within installed capacity of around 15,000 megawatts. We have a residential load that we meet of about nine million people and about 700 million dollars in annual power generation, and that’s renewable carbon-free energy, although I know some people might argue with that. So we are big in hydropower. This is a photo of Grand Coulee Dam. This is the largest power producer in the reclamation portfolio, and actually if you take that dam away, we lose half our power production right there. So Grand Coulee equals the sum of the other 50 some odd power plants in reclamation. It’s huge. The scale of the photo doesn’t- I don’t know how many people here have been to Grand Coulee Dam, but it’s giant. You can’t tell by the scale. That dam is about a mile long and about 550 feet high. You see a power plant on either side of the spillway and another plant on the bottom of your screen. There’s a total of 24 turbines there, and you see on the upper side of the dam you see a small pump generating plant. That’s actually pretty big, but you see the lines going up towards the lake at the top of the screen. That lake is Banks Lake, and its water is pulled out of the Columbia River through that generating station. It’s very big. Here’s something to help you understand the scale. Those are people standing inside the scroll cage- the scroll case of the dam. That’s what the water goes through just to reach one of those turbines. So Grand Coulee was a big part in the- even in the World War II effort as it produced the power to power the aluminum industry that enabled the aircraft industry in the Seattle area and helped us win World War II. So we operate big, we have big projects, and even the ones that are small seem pretty big. Big picture, Reclamation- the direct economic value of Reclamation’s activities is about 19.6 billion dollars annually with a cumulative economic contribution of about 55 billion dollars. So the story of Reclamation is largely an economic one, and we- because it’s that we often have conflicts within our water management. There’s people who have a variety of interests that they represent. There’s fisheries issues, environmental issues, people say our dams destroy rivers and kill fish, and- but we look back to history of why they’re there. And actually, we think about that as we plan future projects. One of my pet peeves is oftentimes people confuse us with BLM. I tell folks, I work for Bureau of Reclamation, they say, “Oh, BLM. My uncle works there. How about them sage grass.” And I say, no, it’s Bureau of Reclamation. Now if you would have thought I worked for the FBI because I said Bureau, that would be okay and I’d just let you believe that. But I correct the m. And we’re called Bureau of Reclamation because we were enabled, we were put in place to you might say reclaim the desert by bringing irrigated agriculture to it. You can see, let’s see, you can see our mission there on the screen to- now I can’t remember it since I’m on the spot. You see it there. It talks about water and related resources in managing water and related resources in the public interest, benefitting the environment- I think I have it pretty close. So this mission was based on irrigation and dam building, but really it was much bigger. I would argue that it’s- our mission is really related to climate and
nation-building. So here you see the reclamation states we call them, it’s the 17 Western
states, basically west of the hundredth meridian. You see we’re in the Pacific Northwest
Region. We operate fairly independently among our different regions. This is a map of
the rainfall distribution across the United States. You see at about the hundredth meridian
it goes from greens to yellows and reds, and we know that’s the way the climate works.
Well back in 1902 when Reclamation formed, people had finally understood that, but
back when the West was settled and the Midwest was settled and the Great Plains, that
wasn’t actually what people understood. So here’s a slide relating to the concept that rain
follows the plow. Now, you look at that and you say, “Wow, fake science.” But back then
it was real science, people really believed and they had scientific evidence saying that
when you start moving to places that were formally dry and you started building systems
and irrigating the land, well by golly, it starts raining. And that’s what happened in the
1870s and 1880s. And there were noted scientists who supported this. There was a Cyrus
Thomas, a climatologist, after studying the history of Colorado in the recent years—there
weren’t many years of record—he concluded that the increase in moisture was permanent
and that it coincided exactly with the first homesteaders cultivating the land. People
really believed this, many folks did. Their explanations for this were- there were a variety
of them. One of them was that plowing of the soil for cultivation exposed the soil’s
moisture to the sky. Also, smoke from trains, newly-planted trees and shrubs, and the
metal from rails and telegraph wires increased rainfall. Another one, increased vibrations
in the atmosphere due to human activity created additional clouds, of course, from which
rain fell. And they even had widespread dynamiting of the air to increase these vibrations.
So there was a lot of- there was science behind this, people really believed this. So that
theory was partially responsible for the dramatic settlement, especially of the Midwest.
There’s the said- millions of people move west, they start farming, it’s nice and moist for
some reason, of course because of their activities, and then the 1890s come along and the
climate reverts back to more of a normal pattern. According to a PBS series, they said
during the 1870s and early 1880s, unusually heavy rainfall made these claims sound
plausible that rain follows a plough, and within 10 years, nearly 2 million people had
sunk their roots into the prairie soil. But when the wet years finally came to an end, the
high plains became again became a place where only the most determined could hang on.
So here you see some settlers in Nebraska in a short poem related to their experience and
what brought them out there and how they could stay. It was just too dry for conventional
agriculture. This might be analogous to some of today’s climate challenge that we have.
We have invested a lot in the West and we see it drying out. I worked on the Colorado
River in the- around the turn of the current century, and we thought it was bad, and it’s
only gotten worse. And are we dealing with a new climate regime? What do we do? How
do we deal with those factors? So these people developed irrigation, they sunk a lot of
money into it, states and private entities started building systems, but they didn’t have the
financing, oftentimes the technical expertise, to make these work. And so lots of projects
failed and what happens? They call their Congressman to help bail them out even though
they’re very free-loving, independent people. They realize they probably couldn’t handle
this on their own. So Congress passed- let’s see, I think I’m at the right slide. Uh oh.
Okay. So Congress passed a few laws to help deal with this irrigation problem. 1866, an
act allowed canal rights of way over public land. You may have heard of the Desert Land
Act, the Carey Act, the Canal Act all up through the 1890s but they didn’t really fix the
problem. Nationwide concern was expressed that the arid west was going to become the
next Appalachia, a drain on national resources and not an asset. So people knew they had
to reclaim the desert, so our irrigation projects would come to be known as reclamation
projects; that’s why we’re called the Bureau of Reclamation today. A big champion of
these projects and federal involvement in Western agriculture was found in Teddy
Roosevelt. Even from Thomas Jefferson’s time on, he- we heard about the agrarian ideal,
which Roosevelt also espoused. And you see some of the quotes there about how
important this agrarian ideal is to us as a nation. In Roosevelt’s 1907 State of the Union
Address, he stated that “the work of the Reclamation Service”—that’s us, Reclamation—
in developing the larger opportunities of the western half of our country for irrigation is
more important than almost any other movement.” And he goes on to say how much it
helps for family farms and homemaking, which meant putting homes on small plots of
land for farming. And we still have that ethos in America today. We like the idea of the
family farm, even though it’s probably not economically viable. We never hear about the
small family automobile factory or maybe the small family internet company. But there’s
in farming we seem to think that’s a good thing, and of course we’ve seen that change
even here in the Treasure Valley as we’ve seen small farmers sell out either to larger
operations or to developments, which I think you probably is on many people’s mind
here. So, these western interests wanted federal help, and it was a big debate in
Washington for many years. Of course we had arid but fertile land that wanted water, we
had Western public opinion saying we should do it, there was precedent set by the federal
government. They had invested in roads and lots and ports and other types of
infrastructure in the east, and just like in the east, this is the infrastructure we need to
build an economic base. So when Teddy Roosevelt became president in 1901 after the
assassination of President McKinley, he became a big champion for this and he, in an
address to Congress in 1901, he said, “It is right for the national government- it is as right
for the national government to make the streams and rivers of the arid region useful by
engineering works for water storage as to make useful the rivers and harbors of the humid
region by engineering works of another kind.” So pro-irrigation planks had found their
way into both the Democrat and Republican parties around 1900. So this intersection of
climate and nation-building coalesced to form the Bureau of Reclamation. The
Reclamation Act was passed in 1902 and the house report accompanying that legislation
had a few similar comments. And I quote, “To delay national aid in the reclamation of the
arid West is to retard the healthful growth of our country, or to aid in the reclamation of
the desert and establishing there a home-owning population will not only vastly increase the strength and prosperity of the nation, but it is a duty to which the government cannot escape, which is paramount in importance to every other duty now laid upon the American people.” So, great support for reclamation, this federal investment. And it was really up-front funding, as I’ll mention in a little bit. And we might contrast that now to the way Reclamation operates. If I need to participate in a project, typically the partner has to come with funding, typically 50 percent up to a hundred percent, and even for O&M work we deal with- that has to be up-front funded. So the times have changed in relation to the way we’re funded. So Reclamation was founded in 1902. It was part of the U.S. Geological Survey until 1907, and we were called the U.S. Reclamation Service. You see the Secretary of the Interior in the middle, and I think it’s on- yeah, on the left we have, what is that, Charles Wilcott over there? Yeah. I put Charles on the left we have- what is that, Charles Walcott over there? Yeah. I put Charles on the left. So he became the Director of the U.S. Reclamation Service and Frederick Newell was the Chief Engineer. That name Walcott might sound familiar if you’ve ever been to Lake Walcott, which is held behind Minidoka Dam near Rupert. And the name Frederick G. Newell might sound familiar if you’ve ever been to my building over by the Fort Boise Community Center, which is named after Frederick G. Newell. And interestingly enough, we share that building with the U.S. Geological Survey. So that building takes us back to our roots. Last summer, the Newell family came through on vacation. They actually stopped and they looked at the building and they had a picnic in front of it. It was really neat to see his grandchildren there at our office, and they have actually donated some of his memorabilia to the Bureau of Reclamation. So from 1902 to 1907 we built a lot of projects- we started building a lot of projects. We had about 30 projects that we began, and we also developed a robust study program for potential projects. As I said, in 1907 Reclamation became independent from the U.S. Geological Survey, and then in 1923 we got our current name, the Bureau of Reclamation. So the basic principles we operate under are that federal monies spent on Reclamation project need to be repaid by the beneficiaries. And if you talk to any of our irrigation district friends here, they will say that is still the case. And the project should remain federal property, even when the users repay the federal costs because of the public benefit. Now that is not quite the case anymore. We do do title transfer a good amount. And then also, Reclamation generally contracts with the private sector to build our projects. So the Reclamation Act of 1902 had established this precedent of social overhead, and Congress was willing to invest money in these enterprises in return for the social benefits that it would capture. Now hydropower came along a little later, and in the 20s and 30s. This is actually the Boise Diversion Dam power plant. That was built to help construct Arrowrock Dam upstream and provide the power. But there was a lot of debate around hydropower at Reclamation facilities, but that pretty much ended when Hoover Dam was built and provided that great power supply in the Southwest, and ever since we’ve been a great generator of
hydropower. And the hydropower revenues have helped pay a large amount of the federal investment in these structures, so that helps in the other purposes. In summary, we’ve had about 70 Reclamation projects before World War II, and the majority of our 180 projects were authorized and billed afterwards. You might have heard of one of our commissioners Floyd Dominy, who was the Commissioner from 1959 to 1969. Under Mr. Dominy, Reclamation was really a construction juggernaut, and I’ve heard stories that senators would line up to see him and figure out how they could be part of the Reclamation program with all the money and the nation-building that was going on. So those might be- we might call that our glory years. Now our infrastructure’s largely built and we need to maintain it, we need to find ways to use it better and to supplement it where we can. So as we leave the story of Reclamation, I will focus on the Boise Project and how- what we’ve done here in the Boise and Payette Rivers, because it’s really a microcosm of the Reclamation story that’s played out across the West. We have a pretty healthy project here with a lot of infrastructure built as part of it. You see here the Snake River Area Office which I manage—that’s the geographic boundaries, you see we go over to Jackson Lake in the east and we go up to Lewiston and a little north in Idaho and we cover Eastern Oregon. The lighter green is really the Boise Project within the state of Idaho, and so I’m going to focus on that area. A little bit on the history: Lewis and Clark passed through the Snake River, that’s probably the first recorded history of people going on the Snake, but they entered from the Clearwater up in the north and came out at Lewiston and went all the way down to the Columbia. That was in around 1805. The first recorded history of Euro-Americans passing through was in about 1811, when the William Price- the Wilson Price Hunt party came through. Has anybody heard the story of Wilson Price Hunt and the Astorians? Fascinating, fascinating story. But they came through working to build a fur empire in the Northwest. Mr. Hunt was from New York City. He was a self-made fur magnate, we might say, and he wanted to control the Pacific Northwest fur trading. And so he sent a ship around Cape Horn and he sent an overland party to meet up at the mouth of the Colombia in a place that they called Astoria. And one of the most hardy members of the group that Wilson Price Hunt put together for the overland expedition was this woman who you see here, her name is Marie Dorion. She was the wife of one of the French voyageurs who paddled the canoes up the Missouri River as part of this expedition, and she did this expedition with two young boys ages two and five, and it turned out she did a lot of the expedition pregnant as well. And she was a survivor. I happened to read a book last year, there’s Mr. Hunt there, and you can see a book that was written about it called Astoria. It details the whole expedition and even prior to the expedition how they built the business case, how they founded the voyagers in Canada, and all the other- all their challenges as they crossed. You can see, I think it’s in the black line, the route that they took. First they paddled up the Missouri, then they went over land, they ended up in the headwaters of the Snake River. They decided not to take the route that Lewis and Clark followed because it seemed he had
some run-ins with the Blackfeet, probably of his own making. And so those folks weren’t too friendly to the Easterners at that point. But they entered the Snake River from the Hoback and figured it would be a nice flat float all the way down to the Columbia and the Pacific Ocean. And I think probably most of you will probably realize it wasn’t that easy. So they built 15 canoes out of logs, they started down the river, and they hit the rapids in the Snake River Canyon up in Wyoming, and after losing a few boats they decided to go over land and they headed north. They ended up spending winter in that area just a little while, and then they found the Henry’s Fork and kept on going down. And then they thought it was smooth sailing. It was nice and flat, great plain. And they got as far as the two names for it, the place is called Star Falls or it’s called Caldron Linn. Who here has been to Star Falls slash Caldron Linn? Amazing place. I think it’s cooler than Shoshone Falls. And it’s about 10 miles west of Burley. So we were there- and by the way, it’s running now. It doesn’t often run, but we have enough runoff and we’re releasing enough, so you should go see this this weekend. This is what they saw, this is looking upstream, and this is what they ran into. And just looking downstream over that falls, this is what they looked over. And they lost some of their canoes here and they lost some of their men here, and they decided they had to go over land from here on out. And so they went- they split into two parties. Marie Dorion stayed with Mr. Hunt in his party, they traveled to Boise, they found some good food there because it was really a trip of deprivations to that point. So they finally end up making it out to the Columbia after crossing the Blues of course in the middle of the winter. And that’s where Marie had her third child, which died about nine days later, probably from malnutrition. They were starving, but they made it. And about a quarter of that expedition didn’t reach the Columbia River, didn’t reach the mouth of the Columbia. So those are the first folks that passed through the area, and of course we know of the Oregon Trail, the people going towards Oregon, we know of the miners that came into Boise, and how that started building an agricultural economy. Here I have a slide of the Boise Project. You see the Arrowrock Division, they’re on the Boise River, and you see the Payette Division- sorry- yeah, the Payette Division up on the northern part of it. So that’s- this is a project that was authorized in fairly early Reclamation years. Folks in the area realized they couldn’t get much water out. That had the same problems I talked about before. The New York Canal was built; it had a width of about 14 feet and it could carry about 200 cubic feet per second, which doesn’t supply a lot of land. [Adey Foot], who had developed the canal, he was out of options and so he wanted the federal government to help him on that canal as well. Pretty much all the irrigation we had was along the Boise River. So we had about 148,000 acres of irrigation, which is not too bad, in the early 1900s. But the- with the formation of the Reclamation Service, folks went to Reclamation and said, “Hey, we could use project here.” And so that Boise Project was authorized. And there’s a couple things that made it so we could invest here in the Boise area, and that’s something that we see even now. The first one was that there- Reclamation has a hard time dealing with
individual landowners and small canal companies, so one of the conditions was that they formed together as a single entity. And so people here got together and they incorporated into the Boise Payette Water Users- sorry, the Payette Boise Water Users Association, and that was the original group that was going to operate these projects. Now most of the canals here in the Boise area are operated by the Boise Project Board of Control, and they do a great job of it. And also, these canals had to be consolidated into a single operating entity and that would let Reclamation provide water according to existing water rights. So that happened as well. So I’m going to give you a quick overview of how you build a Reclamation project. And since I can’t see too well from here, I’m gonna- yep, hey that worked. I’ll turn this on and we’ll start with- we’ll look at how this project was developed. First of all, it takes a lot of money, it takes a lot of time, it takes a lot of planning, but it doesn’t take as much planning as it takes now, you probably all realize. So the first facility that was built was the Boise River- Boise Diversion Dam, and that was made to lift water up to the New York Canal. I have some historical photos here. This is as they were beginning to put that diversion dam in. here’s as it’s nearly complete. And here’s what that diversion dam looks like today, and you can see the power plant that was built a few years later on the right side of the photo. Looking down on this photo, you can see how this diversion dam lifts water up into the canal that’s on the right side of the dam. That’s the top of the New York Canal. So that was the main purpose, to lift the water up. Didn’t have a lot of storage in it. Well, now you see we- after we built the diversion dam, we started working on the canal. This is just a couple pictures of-photos of construction of that canal. We increased the depth from 12 to 40 feet and we increased the capacity to the vicinity of 2,000 cubic feet per second. So that could provide a lot of water to those lands. There’s what the New York Canal looks like today. It didn’t go through homes at that point, it was all just empty land waiting to be irrigated. And sometimes bad things happen. This is in the upper reaches of the canal during a flood in the 1940s that washed out. Luckily, it was all in farmland at that point. And I’ll say Boise Project Border Control continually lines canals, monitors the canal, takes good care of this canal, so I wouldn’t worry too much. Okay, then we, then we build Deer Flat Reservoir to hold the waters from that canal, and also to supply waters further downstream. That had three embankments plus a dike, so that was a large construction project within itself, again, built by the Bureau of Reclamation. Here they are working with their modern machinery of the time building one of those embankments, and some more modern machinery, and there’s the finished product. Here is it looking today. This is an embankment on the north side and this is the one on the west side, and you see the canal leaving to provide waters further downstream. So now we have a dam, we can divert into the New York Canal, we have a lake further downstream that holds this water so we have a lot of agriculture we can supply. The problem is, we don’t have a reliable supply of water. There’s no storage behind that Boise Diversion Dam. So along came Arrowrock- the Arrowrock Division, and Arrowrock- within the Arrowrock Division, the
Arrowrock Dam, which we built in 1911 to 1915 I believe. And there’s a theme that goes through the construction here. We all often have transportation issues when we build dams. Here you see the first public railroad operated by the federal government. We had to actually put in a railroad from the end of a spur at Barber all the way 17 miles up to the dam site. The project was authorized by the president in 1911 and my attorneys tell me that I can’t do anything without authorization. Well it turns out we just kind of took over and started this railroad in 1910, about a year before this authorization happened. You know, there’s some good things about not having good communication. And so we had the railroad, and it was authorized. So here’s how you build a dam. First you build the transportation, you build a railroad to get people and materials to the site. There’s that United States Reclamation Service train. I would love to see it today. I have no idea where it is.

And then of course once you’re ready to start building, you bring in the dignitaries, and they have their photo opportunity. You see second to the left is Frederick G. Newell, who by now was the Director of the Bureau of Reclamation. Then you get to work. First you build a town basically around your construction site. So this is the town that was built just downstream of where Arrowrock Dam now stands today. It was- had a capacity of about—it was built for about 900 people, and at the peak it had 14 hundred people living here. They had a post office, they had a school, they had a YMCA, they had a dance hall, they had hotels, it was a wonderful place to live if you wanted to live somewhere for two or three years. And then of course you have to deliver the newspapers with your train and your kids. Then the next thing you do is you build a diversion tunnel to divert the river around the dam site, and that way you can construct where the dam’s going to be. This is them constructing that tunnel and here’s the upstream end of the tunnel before they started constructing the dam. Now moving through, then you gotta excavate to get out to the bedrock, ‘cause you gotta have a really strong foundation for your dam. So this is them doing those excavations. Here’s a couple of shots of the bedrock. You can see there has been water flowing over that bedrock. They had to excavate down quite a ways to get to it. And you can see the undulating character of that rock. If you look in the center of the photo there, you can see a man standing in there. So this is serious divots in this rock. But it proved to be a very good foundation for the dam because it can hold on to all these columns of rock here in the bedrock. Then you start excavating for your materials. This is a steam powered crane loading up the railroad cars. And then you start building your forms. See, there’s the forms for the sluice gates at the very bottom, you put in the rebar for those, then you install your sluice gates, then you put in some more forms and you start pouring concrete. Then of course you add some more gates. Now Arrowrock Dam proofed out some concepts that we used in building Hoover Dam. Some of those was active temperature monitoring—they actually embedded thermometers within the dam structure and they put in contraction- yeah, contraction joints that would help the concrete cool. Here’s- that’s a 21-ton valve that they installed into the dam. So you just keep on pouring concrete, placing forms, building it up, and sometimes you do it at night.
because you’re on a fast schedule, and then you put a road on top of it. Then you gotta work on the spillway, so these are the drillers working on the spillway. You can see their lack of hardhats. I went to Hoover Dam and they told me that that’s where they invented hardhats, and I guess I have to believe them because they didn’t have them here. You install that spillway shoot on the side of the dam, get a finish at the bottom, and then your dam’s built. That’s all you have to do. Piece of cake. So- and then of course you have another party and you invite the community and you celebrate the completion of the dam. So- well, let me go back a little bit. So Arrowrock Dam was the tallest dam in the world for about nine years after it was completed, and it was overtaken by this dam. So I’ll give 20 bucks to anybody who can tell me what this dam is. Seriously. Hm? No, not Owyhee. Nope, you got the wrong continent, so I’ll help you out. This is Schräh Dam in Switzerland. That took over the title from Arrowrock Dam. There’s a lot of dams in Switzerland as well. And here it is last year as we released these high amounts of flow. So now we have a good water supply in the Boise River and we’ve still got problems in the Payette. We haven’t been able to complete everything we need to, the only thing we’ve done is built a little one siphon under the Boise River to provide some of the drainage water over to the Payette. This is an iconic photo. This is near Parma, and I believe this- let’s see if I can- I believe that structure is still standing. So you might go and try to find that. I haven’t verified that, but I’ve been told by a reliable photographer. So we start working in the Payette. The first dam we built around the 1920s was Black Canyon Dam. You can see this is looking upstream where Black Canyon came to be. You can see the line where the crest of the dam was, so we built that dam to provide- there’s two things we did with Black Canyon Dam. First one was help the Emmet Irrigation District, who was in- their canal would be on the left side of this picture. Their canal started about 16 miles up the canyon, and it frequently washed out and they had all kinds of problems with it. So a dam would make it much easier to manage their canal. And the second one was to provide water to new lands, and that would be from a new canal installed on the right side of this photo. And that canal is now run by the Black Canyon Irrigation District. So there’s the dam nearing completion. Again, we have railroad and transportation problems. There was the Oregon Short Line Railroad had a track on this side up here, and that made it so we couldn’t raise the dam high enough to actually get water into that existing canal. We were 25 feet short. And so what did we do? Well, we called our engineers, and they said, “Well, we can put in some hydro pumps right here and we can pump water uphill,” so there’s a turbine aside from the power plant turbines, it’s a turbine that spins and it drives a screw that lifts water up to the top of the dam and it goes in a pipe over to that Emmet Irrigation District Canal. And it’s fed by gravity to that new canal on the right side. So again, transportation and water supply often are linked together. And then of course, here’s a current map. You see the canals on either side of the dam irrigating those lands, and we also added new canals as this project progressed. The next one was Deadwood- again, same issue as we had in the Boise. We had a dam to
divert water but we didn’t have water to divert, so then we built Deadwood Reservoir in 1962 probably the most remote section of my Boise River Operation. Here is that dam going up another beautiful concrete arch dam, and this is the mail service coming in during winter. The first workers had to come by dogsled to get there. Transportation is a big issue, and any of you who have been there, you know about the transportation challenges getting to that reservoir. There it is operational. And then finally, our largest reservoir, which is Lake Cascade, which we built and to really firm up the water supply for that Payette Division. There’s the dam at Lake Cascade. Again, we had to reroute a railroad as we were doing it. And you can see the economic impact there, the recreation economy there. But even still, we have droughts. This water supply isn’t perfect, so we have to manage through droughts and other issues. Here’s some benefits you see of that Payette Division: Orchards, agriculture, here’s some cherries. In 1950, some people- they won the lottery to get the first piece of land off some of these new lands. Great change to their life. But again, we still have floods. It’s not perfect. And then finally, Anderson Ranch Dam, also built to firm up the supply on the Boise side. So that completed the Reclamation Boise Project. You can see I counted through the- let’s see, we’ve got about seven or more dams that we built there in this long project that took more than 50 years, and then you see the last dam that was built, that’s actually a core of engineers dam, Lucky Peak Reservoir. But we operate that as a system for flood control with Anderson Ranch and Arrowrock Reservoirs. And here’s some of the benefits on the Boise side. This is lettuce farming, this is a coal-powered tractor, sea potatoes. I don’t know if you can read the little label that’s in the center of that photo, that’s stacks of sugar, amalgamated sugar, and that says, “To Ms. Housewife.” So, there we go. Lots of benefits, we see how times change. And here’s the- here’s hops being grown there supplementing the barley that we grow on the east side of the state. Recreation’s a big impact there. This is some early recreation on Anderson Ranch, this is people floating the Boise in the 1960s. So this is a resource that all kinds of people use, and again, what do you know, we still have flood challenges. This was prior to Lucky Peak, but it’s something as you know seeing last year we are still very careful of and we coordinate very closely with the core of engineers on. Let’s see. So that’s how you build a project. I’m not sure how I’m doing on time. I’m getting close here. I’ll figure out where I am on my notes. So current day, you see- I’m going to turn this off. You see some of the fruits of some of the work that Reclamation has done. We’ve got 476 dams, 348 reservoirs, including Grand Coulee on the left and Hoover Dam on the right, and many would say our mission’s been accomplished. But there’s still a lot of work that we have to do, even having accomplished these things, providing water and hydropower and agricultural benefits, which we see here, and also lighting a big chunk of the West. And luckily it’s still a little bit darker here than it is on the east side of the U.S. We still operate according to state water laws because the water is a resource of the state, and we see the state’s primacy in their water laws, so we work with the state very closely. I might say that our
mission statement could be reworded as, “Reclamation ensure the economic viability of
the arid West by providing reliable, sustainable, and affordable water supplies.” You can
see how these cities grow up around Reclamation projects and the importance of them.
So what do we have to do today? What makes us relevant? Well, first of all we have to
keep these assets running. This is Minidoka Dam. In 2015 we finished constructing that
new spillway you see with those big gates and we put in new gates for that Southside
Canal you see on the right side of the photo. That feeds to the Burley irrigation district.
And we have- there’s a lot of infrastructure here. We hear about aging infrastructure, and
I think we do a pretty good job of keeping that infrastructure functioning. We have to
deal with a changing climate. This is an example of climate projections in the Yakima
Basin. You can see, on I believe it’s the black line, how currently most of the runoff
comes in the spring as the snow melts and it comes out nice and slow so we can actually
use it while it’s melting. But you look at a few of the scenarios, and that water might
come during the winter more as rainfall when it comes off all of a sudden. So, same
amount of water, but we might need to have a little more storage to be able to make use
of it when we need it. We’ve got environmental challenges, invasive species challenges,
so- although that looks like a nice stucco’d wall or something, it’s actually quagga
mussels. And so luckily we don’t have them here yet, but we’ve experienced them in
Reclamation, we’ve done a lot of research on figuring out how to deal with them. That’s
another challenge that we have, and we have to work with our partners at the state in
dealing with that. We deal with other values that probably weren’t prevalent back when
these facilities were constructed. Here you see some stream flow restoration projects
we’ve done, putting log barbs in. This helps preserve these rivers that are still out there
and are still valuable to us. And we have to think about fish passage now for salmon and
other species. This is a Cle Elum Dam in Washington, and you can see on the right side it
looks like this nice big tubular water slide with multiple entries into it. We tested that at a
lab in Denver, and actually that’s something no matter what the elevation of the water
behind the reservoir, those fish can swim into these channels and take the water slide
down and end up down in the river on the downstream side. It costs a lot of money to do
these things, but as a nation we’ve recognized the importance of doing that. Let’s see.
Also, we’ve- we also are very serious about water conservation. We have a number of
grants that we give every year to irrigation districts and others who don’t have any
affiliation with Reclamation. You can see here’s a canal-lining project—we have a
number of these we give grants for every year—water measurement projects so we can
measure- so the state can do better accounting, the irrigation districts know the water
they’re using. Also piping so this valuable water doesn’t seep back into the ground. But
as we’ve- as many of us have talked about before, groundwater is an issue, and some of
this seepage has supplied the groundwater, so even though we pipe to conserve water,
there’s other ripple issues that we have to deal with. We do headgate automation, that
really helps the irrigation districts managing their supply. So these are things that we’re
doing now. Here in Idaho, we are participating in many of these challenges that so many
of us spend our time on. We’re looking at potential new storage. We’ve just kicked off a
feasibility study with Idaho Water Resource Board looking at additional storage at those
three reservoirs on the Boise River. The state’s looking at storage behind Island Park
Reservoir in Eastern Idaho—again, one of our facilities, and we need to participate in
that. We’ve dealt with groundwater issues and how to help with recharge in the Upper
Snake in the winter when we’re releasing water because of high conditions. And
sometimes old policies and old contracts and old laws get in the way of doing that, so we
have to be really creative as a community in dealing with these issues. We all have a goal
of managing water well and we have to figure out what our constraints are and how to
work through those constraints. We have lots of constituents now. You can see our old
building that’s still over there across from where DWR is, but we have lots of
constituents who have a lot of interest, and we work to meet those interests, and
sometimes we don’t meet them equally and people aren’t happy with us. But we really try
to meet the needs of economics and nation-building and other values that have been
created since then in relation to environment and fisheries and those kind of things. So we
need solid policy analysis, we need people that know the issues, but we also need people
that understand why and how we got where we are. And through coming to meetings like
these and sharing these thoughts, we can start to understand each other’s perspectives.
We can understand why the federal government sometimes seems really hard to work
with. We’re dealing with a very long history. And- but we’re also trying to help the
community move forward. So I’m thankful for this opportunity to share this message
with you and share with you a little bit about Reclamation and how we work and how we
do business. Many of our partners are here in the room and I know this is- we have
problems that never get easier, they only get harder, they only get more complex. It takes
solid policy analysis, which I thank the Andrus Center here and Boise State for training
people to participate in these hard challenges, and I thank all of you for being part of this
community and paying attention and caring about this significant economic asset that we
have here in Idaho. And with that, I think I’m done. Yeah, I can take some questions.
Should I take this?

[applause]

JF: Or I can take this and you can stand there.

RS: Okay. I’ll talk loud, I’m a professor, unless somebody shows me how to turn this on. So-

JF: You can just push that.

RS: I’m trying to push it.
Okay. All right, so first question coming in a minute, but has everybody noticed the great irony here? We bash the federal government, maybe justifiably so sometimes, but without the federal government and what it did in terms of building these water projects and other things later, we wouldn’t probably be here to bash the federal government. The old Bernard DeVoto line about parts of the West saying, “Shut up, get out, and keep the money coming in” is still something in our history—and Patty Limerick knows it better than I—that we at least need to be attentive to as we move into the future. So Roland, the first question: Can you discuss the agency’s perspective on the, you know, on your challenges of an ever-changing diminishing snowpack for the Treasure Valley?

Okay, so yeah. A little bit about that. We recognize that there is change happening in our hydrology and in our snowpack. I’m- there’s a lot of data and projections that show some of the things that I talked about in my presentation that while the total water may not decrease in this area, here in the Pacific Northwest the projections aren’t as dire as we see in other places, but the timing and the way that snow and that precipitation comes down could change, which would make it harder to access. And so that’s one of the reasons I think we need to think about different storage potential or different ways of managing our water better, because it doesn’t come off as slowly-melting snow in the spring and into the summer. I think that’s one of our big challenges that we have to deal with in figuring out how to change that distribution and timing and amount.

You can all say to part of this, “You weren’t here then,” but here’s the question: When we think about the history of Reclamation in Idaho, what should we keep in mind about the Teton Dam collapse in 1976?

Teton Dam in 1976. So, just- you’ll be able to figure out my age pretty quickly, but that collapsed on the day I turned 10, and so that’s a monumental event in my life. Teton Dam taught us a lot within Reclamation. It actually was the beginning of Reclamation’s Dam Safety Program. When that dam was built, there were a number of risks that weren’t adequately addressed, I might say. First, there was foundational issues. We were never able to have a solid foundation as we pumped more and more concrete and grout into that volcanic rock there. Didn’t have a solid- a great foundation to allow water to seep around it. And also when we saw problems, what we saw an opportunity I should say when we had a really high runoff year the year after we constructed that dam. And we filled it faster than the specifications allowed us to, and some say that could’ve caused the seeping through the structure and eventually also contributing to the demise of it. What did we learn, what do we do about Teton Dam today? Who here has been to the Teton Dam site? Okay, most of you. Another great place to go. That dam is still sitting up there, of course there’s a gaping hole through it now and another gaping hole that was created
for research. It’s still authorized, it could still be built. It would take a lot of money, it
would take a lot of political clout, and I won’t take any sides on whether it should be
built, but it is an authorized project, and it sits up there and it waits. Now we do have
irrigation on either side of that river now, a lot of through electric pumps that pull out the
water there. Interesting to note that if any of you have kids that go to BYU Idaho, tell
them they shouldn’t go play around in it. So it turns out there are tunnels and there are
shafts in that dam which have been sealed off to the public and to me, to all of us. People
keep on going around and they use cutting torches and they cut through metal bars and
they blast through concrete and they go party down there. And so- and that’s really
worrisome to us. We need to get control over that because it’s really a safety issue. Those
are confined spaces and people could get hurt or killed down there. So that’s- you know,
that’s something that we deal with with this infrastructure that’s now a relic. But the
water could be captured. I know that Teton River has significant environmental benefits,
you might say, as a free-flowing stream. It’s a beautiful river, there are tons of cutthroat
tROUT in there, it’s a beautiful place to be. So we’ll see what happens with that dam.

JF: Please don’t misquote him that he said people at BYU Idaho party a lot, all right? I did
not hear that. [laughter]

RS: There’s something about the honor code, right? I don’t know if that counts.

JF: Any more questions? Well, Roland, thank you a lot for visiting with us today, very
informative.

RS: You’re welcome. Thanks for having me.

[applause]

JF: Our next panel’s at 1:30, so you can take a quick break as we assemble that panel.

Panel: What are the water quality implications of the urbanization of agricultural land?

JF=John Freemuth, TH=Toni Hardesty, DM=Dick Manning, RM=Ralph Myers, SB=Stephen
Burgos, HS=Hawk Stone

JF: Okay folks. We want to get the next panel started. It’s a bit bigger. Okay, so a quick
announcement on the nametags before you leave—and there’s a reception afterwards of
the course—so after you’ve gone to the reception, you leave, we’ll have a box out for the
nametags. There are members of the Andrus Board here I wanted to thank for coming and
acknowledge: Elaine and John French from up in Sun Valley Ketchum are here with us
today, Jenna Whitlock, who you might want to corrall, she was BLM director when the
Bears Ears was designated a national monument. She has stories. And then Wendy Jakewood, which I assume most of you know, former legislator, member of the Andrus Board, and has helped our students here a lot with internships and so forth. There’s one more member who, number one on behalf again on the Andrus Center and Tracy Andrus and everybody we want to thank for her service, who’s also your moderator, and that’s Toni Hardesty, who, first of all, I want to thank Toni again for being on the Board and for moderating this today. She of course was DEQ Director for years and now is a state director of the Nature Conservancy here, so very experienced and committed to all things environmental. Toni will introduce your panelists.

Great. Thank you, John. All right, good afternoon. So this is an opportunity to switch gears a little bit. This morning we talked about water quantity, which sometimes I refer to as the water with the big Q. But this afternoon we’re going to talk about water quality. Sometimes I call it the little q because oftentimes it’s a little bit of an afterthought when you’ve been talking about water quantity. But I think as you’re going to see and hear and hopefully most of you share, water quality is as equally important an issue as water quantity. I am pleased today to have four panelists here. Their full bios are in the program, but I’m gonna tell you a little bit about each one of them and then we’re going to kick it off with some questions and discussion. So first we have Dick Manning. Dick, if you can raise your hand. He’s an environmental author and journalist. His work has appeared in a host of well-known and prestigious publications, including the New York Times, American Scholar, Autobahn, and Outside. For over 15 years, Dick has been reporting on important environmental issues that are relevant to us in the West. Prior to his career in journalism, he worked as a consultant on agriculture, poverty, and environment to the McKnight Foundation, the Rockefeller Foundation, and the Food and Agriculture Organization of the United Nations. Next to him to the right is Ralph Meyers. Ralph manages water quality planning and compliance related to the licensing and operation of Idaho Power’s hydroelectric projects. Over his 29-year career with Idaho Power, he has developed and implemented strategies and actions related to Idaho Power’s hydro operations and water quality in the Snake River. He has also participated in development and implementation of TMDLs for several reaches of the Snake River and its tributaries. Right here next to me we have Steve Burgos. Steve is the Public Works Director for the City of Boise. Steve has over 20 years of experience in the environmental industry as a private consultant and in the public sector. Steve oversees a wide range of water-related issues for the city of Boise, including waste water treatment, sustainability planning, water resource planning, and storm water and flood plain review. And at the far end of the panel we have Hawk Stone. Hawk is a Surface Water Specialist for the Department Environmental Quality, my favorite state agency I might add. Hawk has worked on water quality issues throughout the state of Idaho. Hawk has led the planning effort for the Watershed Plan for the streams in the Lower Boise Rivershed, bringing
interest from agriculture, urban, and environmental interests to address pollution in a rapidly urbanizing watershed. He has also developed a comprehensive valley-wide map of all surface water and irrigation and drainage canals. And that are your panelists. So, to kick this off the first question I have is along the lines that poll after poll that has been conducted in the Treasure Valley, it shows residents put water quality at the top of their priority lists when asked which environmental issues are most important to them. So in general terms, from your vantage point and role—and we have many vantage points and roles and perspectives up here—how would you characterize the status of the water quality situation in the Treasure Valley area? And I’m going to ask Hawk to lead off with this one.

HS: Hello? There you go, it’s working. Hello, everyone. I started with water quality in this basin about 17 years ago, and I just thought I’d share one of my first experiences, which was on a field crew collecting a bug sample from Mason Creek and sinking up to my thighs in mud in the creek. And to go from that perspective to working on the basin-wide TMDL—perspectives are important. So in terms of water quality, all of the major streams in this basin are impaired by something. It’s the most widespread pollutants are sediment and E.coli, and perhaps the most visible pollutant is phosphorous and nutrients. There’s also temperature, and upcoming are pesticide pollutants. In general, water quality decreases as you move down the Valley, from starting fairly clean up top until it reaches the Snake River where the river itself is impaired by a list of pollutants. Of course, with those extra pollutants come extra opportunities, and there are projects happening in the valley now that take advantage of the higher pollution levels further down, such as the Alkali Drain pilot project and the Dixie Drain Phosphorous Treatment project. Overlaid on the water quality problems that we have here in the Valley are the problems of physical hydrography, and that makes this valley a little different from some of the other water quality programs we work on in the state in that the Valley- a lot of the streams in the Valley- one person’s stream is another person’s irrigation facility. A lot of the streams here don’t look like normal streams to us; they’re straightened, they’re deepened, they’ve been used as drainage facilities. And that leads you back to this question of perspective. Where I live I have a canal that runs through my property, and to me and to the other people who take water from that canal, it’s a facility. It’s a lateral. Yet, I talk to my neighbors who maybe don’t take water from the canal, and they don’t call it those words. They call it, “stream, creek,” ‘cause in places it does look like that. And one of the things I see changing in the Valley is that people’s expectations of water quality here, it kind of varies depending on what you’re used to and your history and what you use it for.

TH: Anything to add from any of the other panelists?
DM: Get this thing live here, there we go. So my issue is water quality, that’s why I write a lot about water quality all over the place. And the reason that I am tapped for this panel, I think, is I did a piece for High Country News, oh, four or five years ago about water quality in the Snake River. It’s not my first exposure to the Snake River at all. As I was walking in here, I got struck with a flood of memories seeing the display about Frank Church out front, ’cause one of my first jobs as reporter for the Idaho Falls Post Register in 1979 was to interview Frank Church. And so I got to know him and know a little bit about Idaho then. But since I’ve done a lot of other jobs around the world, and my career is kind of a mile wide and an inch deep, like a Western river in that way. And I write about water quality a lot just because rivers, to me, are an accounting. They account for the quality of the people who live there in terms of water quality. But lately my job has been pretty easy and included the piece I did here on the Snake River, which was to write about agriculture, because I can go to any place— if I want to write about bad water quality, all I have to do is say, “Where do we do agriculture?” And that’s where it’s deteriorating in this country right now. And I’ve done a lot of work in the Midwest where I’ve talked to— I’ve interviewed hunters, for instance, who wouldn’t take their hunting dogs out in the field without a bottle of water any longer because if they drank out of the streams, the dog would die. And that’s largely because of nutrient pollution in those areas. And it’s happened because of two things: One is the Clean Water Act essentially— and court decisions since—exempted agriculture from point source rules. So we don’t regulate point source stuff very well. The more important thing that’s happened is the intensification of agriculture to depend on nitrogen fertilizers. And nitrogen has become such a big deal in agriculture now that that’s become the primary nutrient across the country, and it’s no different in the Snake River at all, largely because of two things: One, the dairy farms around Twin Falls, but also the fact they’re growing corn, and corn is the big user of nitrogen fertilizers. So there’s a U.S.G.S. report, for instance, that talks about the nitrant load in Snake River which says that- and we all look at the feed lots around Twin Falls and say, “That’s gotta be pretty hard on the river.” And they are. Believe me, they are. We say, “Well, that’s gotta be a source of nitrogen in the river.” And it turns out more nitrogen is coming from the cornfields themselves because of the fertilizer used there. So one of the earlier iterations of the question that was put to the panelists today was that this confrontation we talk about between urbanization and agriculture and are we really- how does that affect water quality to convert agricultural land to cities. And my take on that, no matter where I go in the United States, but even here as well, is that that’s a gain for water quality. That’s positive, and that any time that we stop industrial agriculture from having its way with our rivers, we come out ahead. Now, I can qualify that, and I was brought here to say something heretical and I did. [laughter] But we’ll talk about that as we keep going.

RM: Makes my comment seem kind of bland after that. This- you know, the question you get a lot when you go out there and you meet with folks in the public as you’re out collecting water quality data or doing stuff that you know, the first question’s, “Well, how’s the water quality,” when they find out you’re out there looking at it. And you know, my thought always is, “Well, what do you want to use it for?” ‘Cause I think you know, you look at issues like whether it’s excessive nutrients in the river, well, that’s not necessarily a problem if you’re irrigating with it. Now, if you’re- if it’s causing algae blooms and you’re hunting dog wants to drink the water, then that’s a problem. So I guess that’s, you know, that’s just one perspective that comes to mind when you know you hear results about that water quality is an important component to people. What’s the expectation there? What’s their perspective? Kind of like what Hawk mentioned. Specific to conditions, what we’re seeing in the Snake River, we’ve been doing water quality monitoring since the early 1990s, in some places on a regular basis, so we can start looking at trends. You know, a lot of times we hear, and the things that get reported out, are the more negative things in a lot of ways, but we’re seeing statistically significant improvements in total phosphorous concentrations coming into Brownlee Reservoir. So down in the Snake River near Weiser. Over that time period, phosphorous levels have declined in that stretch, and there’s no reason to expect that they’re not gonna continue to. Along those lines, still we’re seeing, again, statistically significant improvement in dissolved oxygen levels within the reservoirs and downstream of Hell’s Canyon Reservoir, and I think related to those upstream improvements of water coming into the reservoir. Now the other part of that is, you know, we do seem to be seeing more nuisance algae blooms, nitrate levels are going up. So you know I guess the thing there is I think it’s important to recognize there are successes out there but, you know, there are also places where we need to keep working and we need to keep looking at where things can be improved. And then the other aspect that I want to mention that’s related to water quality but not a direct measure of that I think is the willingness and interest in other groups and stakeholders to be involved in cooperative water quality improvement projects. I mean, a lot of our mitigation programs related that we’re proposing related to Hell’s Canyon Complex, our strategy is to try and work with other stakeholders, work with doing- looking at improvements upstream of the reservoirs, and trying to improve the water quality that’s coming into the reservoirs as a way of improving conditions in the reservoirs. But when you do that, you got the outside of the scope of control of the company and you start having to work with other groups, and that was you know one of the main questions that we had and that we got as we were proposing these water quality improvements is, “Well that’s all good and fine, but are you going to get people who want to work with you?” And you know since that was a major question, we spent the past few years working through that, setting up pilot projects and trying to work with folks, and I gotta tell you, I was pretty skeptical going into it but I’m totally convinced now that if there’s a reason to be doing the work—funding helps, if you can come in and
offer some financial assistance and working with folks—there’s a real interest out there in making things better. And I think that’s important.

SB: Just two things to add. One would be that I think water quality is a relative kind of concept. We think back to the 70s and the Boise River, we had in some instances the river running red because the slaughterhouses. So compared to then to what we have today, I’d say water quality’s pretty good. So in many ways, the Clean Water Act, the way it was developed back in the early 70s, it was kind of like a sledgehammer to deal with a huge problem nationally. What I think I’m finding now as we move forward is—and Hawk alluded to it—we have all these different types of constituent issues that are really vexing, and they don’t just exist in a vacuum. Sediment interacts with phosphorous, which impacts temperature. And so moving forward, we gotta start thinking about more kind of the scalpels that are going to be required to address these more finite problems that the river, you know, we can’t just concentrate on the phosphorous dial and just turn that down to zero, because then we still have sediment issues to deal with and we still have temperature issues to deal with, so from my perspective I think we’re at a point now where the sledgehammer worked to a certain extent, that we’ve got some of those major issues figured out, we still have issues to deal with moving forward, and from our perspective, a project like the Dixie Drain is more of a scalpel to deal with maybe how the Clean Water Act can’t get to things, alluding to the non point source issue that’s out there. So- and I think the other thing is that we have- we have examples now of where we have partnered. Ralph was alluding to it’s going to take partners sitting down at the table. I would argue that the lower Boise River TMDL for phosphorous is a- if you ask folks nationally, they’ll look to that as a gold standard of how a TMDL comes together. We had ag at the table, they played a role, they bought in. The cities were there, Stormwater was there. And so I think we have some models on how to move forward on water quality issues and the balancing of urbanization and agricultural operations, and we have some example projects of how we worked together to do that. So.

TH: Great. Thanks, go ahead.

HS: I have a comment about the sledgehammer, the tool we have, from a regulatory perspective. As Steve mentioned, it was the Clean Water Act, and the framework we used was developed to address point sources of pollution mostly, factories spewing out pollutants straight into rivers, and it perhaps isn’t the most elegant tool for the problems we face here. I mentioned how the streams here are—maybe they’re streams, maybe they’re irrigation facilities—well, the water quality standards that we use to evaluate them are the same standards that we apply to streams up in the wilderness and up in Bear Valley and up in places that don’t have the human footprint. And sometimes it feels like a square peg in a round hole. The TMDL framework is—and I’m sorry with the acronyms,
Total Maximum Daily Load—it’s a budget, a pollution budget for the river. But when a sizeable portion of that budget comes from non point sources of pollution that are exempt from the Clean Water Act regulation, it makes a very difficult tool to use to clean up water. When you have a sizeable point source pollution, which we do have for phosphorous from the wastewater treatment plants, then negotiations and compromises can happen. But that’s harder when you’re dealing with something like sediment or E.coli that’s almost entirely non point source.

TH: On that note, you- Dick has shared with us his perspective with regards to this conversion from agriculture to a more urbanization environment as being a positive for water quality. I’m guessing though for many of you as you’re dealing with this, that while you may or may not agree with that, but it certainly is different in the challenges that are being faced, like from a city of Boise as you’re seeing this conversion and some of the issues you’re dealing with. So maybe Steve, you could comment on that?

SB: Sure. I think, you know, certainly there’s no- it’s not breaking news that we’re growing, and I think there was an article recently that suggested we’re the fastest-growing metropolitan area in the U.S. So we’ve gotta get our hands around the additional flow that we’re going to be dealing with from urbanization. And I think we’re trying to get there, but it requires us to think differently about what it is that is coming to us from our citizens, this used water. Historically, we have allowed it to be defined as wastewater, and we’ve talked about it that way, sewers. And we created this concept that these, like, the wastewater treatment plants that are in and around the Valley, they’re almost like the water equivalent of a landfill, right? We just want to put this over here and we don’t want to deal with what we’re sending there. And I think a big shift when we start seeing urbanization happen is thinking differently about these waste products that are coming to us. And I say products very deliberately. They are products. We are pulling things back out of the water that come to use because we know it has value. So I would use the example of, there’s this product called Struvite. It’s basically phosphorous, a form of phosphorous, that we recover now at our West Boise Water Renewal Facility—and notice I didn’t say wastewater treatment plant. It’s a water renewal facility, we are renewing resources there. So I think a big part of this urbanization and the growth of cities is changing our view of waste, and it’s almost like a circular economy. I brought with me a prop. And so this is actually treated effluent from Orange County, and it’s been treated to a drinking water standard, and so it’s bottled and you can drink it, and some people might be cringing a little bit, the ick factor. But this is important because I think what- when I start thinking about urbanization, it’s almost like we need to break down barriers between these different silos that we have created for ourselves. It’s- yes, it’s ag water, I understand we talk about drinking water and I understand we talk about waste water, but it is all one water. And when we start to manage it together, I think we’ll find
better solutions. And so this is an example of taking one silo, wastewater that now is
drinking water, and it has a funny little tagline on here that says, “Tastes like water
because it is water.” [laughter] And so the point being that a drop of water is a drop of
water. We have allowed ourselves to get it segmented and this silo will not talk to that
silos because they’re different types of water. Well I don’t think that’s true, and so when
we think about moving forward, we have to have conversations across those silos to deal
with this ag to urban interface because- we have to have farms. We have to have them.
And we have to figure out how to work together to make sure that we’re addressing water
quantity and quality issues. I think there are some solutions out there, and when we break
down some of those silos.

TH: I have a couple questions here that have come in that are related to this whole idea of ag
versus urbanization. So one of the questions is, how do you address the fact that some
studies have shown that lawns pollute more than two to three times that of ag land? So,
perspectives from the panel on that?

DM: That’s really interesting, and it brings up a point, because we need to refine when we talk
about urbanization. And so this morning for instance, people were talking about it in
terms of subdivisions, and we know that’s what growth looks like in the West in a lot of
ways: sprawl, essentially. So in Montana for instance about- I looked up the statistic- but
more that half of our houses in a very rapid growth period have been built on lots larger
than 10 acres. And that’s crazy. I mean, we’re using up the landscape, but a bunch of
resources, we’re paying for fire protection on those places because they’re out in areas
where they shouldn’t be and all that stuff. And it’s true that those places tend to use more
fertilizer, pesticides, and water than a farm, and so the average of nitrate load on a
bluegrass lawn would embarrass a corn farmer in Iowa. And so it’s how we do cities that
counts, and in fact we should be doing cities- and so one of the things that’s happening
right now, and this is a really positive development, is that first of all, the West is the
most urbanized region of the country. That’s something we need to chew on for a while,
because we think of ourselves as rural. We are not. We live in cities; Westerners are
urban people. But it’s also the most vibrant area in the country in terms of the growth of
cities right now, and Boise is no exception to that, it’s the leader in that. But there are
other cities like that—Bozeman in my state for example, Missoula where I live, but
certainly Denver—those cities have incredibly vibrant economies and they’re changing.
They’re called creative class economies, educated economies. The people there are doing
things like revitalizing urban cores, so they’re going back into density again. We’re going
back down there and stopping sprawl and living together in cities. They’re doing things
like preserving open space. So I think of time- the signature act of my town Missoula
occurred 30 years ago when we passed a bond issue to have open space outside the town.
And I said, “Well that’s unique, my town’s very cool.” Well if I go to any of those
creative class economies in the West right now, they’re all doing the same damn thing. 
It’s because people insist on it, they want that. They insist on sustainable agriculture, so if 
I look at sustainable agriculture where it’s happening, it’s happening just outside those 
cities. So the positive thing—and it’s almost market-driven—is that we are at the same 
time we’re doing this growth, we are changing the nature of cities, and that changing 
nature gives us tools we can harness to do things better all across the board, and that’s 
really positive development.

SB: Yeah, that’s an interesting point you make about cities, and I think that’s one of the- a big 
initiative for us is density. Really pushing that infill in that urban core, even outside that 
urban core, to increase density to then tie back to the concepts of like a green storm water 
infrastructure that’s actually treating the water before it goes into the groundwater. And 
so another part of the Clean Water Act is our storm water management permit, which 
requires in the future green storm water infrastructure retaining on site, kind of returning 
cities to the pre-development hydrology. That’s really important from a water quality 
standpoint, and so for us density is really important, it’s something we’re focused on 
moving forward. Yes, we do have some of those developments that are more, would be 
considered quote unquote sprawl. But we’re trying our best to encourage folks to increase 
densities, ‘cause I think that’s a better outcome from so many different perspectives, not 
just from a water quality standpoint, but from transportation issues, etcetera. It really 
helps with this urbanization question.

TH: Okay, so next question. As we look out 10 years, looking at both the Treasure Valley and 
other kinds of communities like it in the West, are there things that you see—in addition 
to growth, urbanization, climate change, etcetera—that we should be putting in place now 
that are going to help us deal proactively with those kinds of issues? What is it we can do 
at this point in time that might be proactive versus reactive?

HS: So I could imagine thinking of this in terms of the way the Boise River Greenbelt came 
about. By forward thinking ahead of time, a resource that the whole community benefits 
from was able to be established in a fairly contiguous manner. I see the biggest change 
happening in terms of expectations of where people live and the water quality, and 
similar to a manner of the Greenbelt, by thinking ahead of time and realizing that what 
are now irrigation returns, or creeks in poor condition, could be a resource for the 
community and things that people like to live by, and treating them as a benefit that is an 
attraction to people would stand us in good stead for the next decade.

RM: I think the one thing that we see there is just the uncertainty with that. And how- I guess 
in my mind, the best way to deal with that is to put together water quality improvement 
programs that have the necessary certainty and rigor that you need to get through the
regulatory process and make sure that there are meaningful measures, but at the same
time, don’t lock into things that 10 or 20 years down the road when the world we live in
and the situations change in a way that we’re never gonna get perfect foresight at this
time, you need to look ahead as much as you can, but also be able to deal with the
uncertainty. And that’s been a pretty tough balance for us with- we’re dealing with hydro
licenses that are lasting for 30 to 50 years, and we’re expected to put together mitigation
packages, mitigation plans, that are going to work for the terms of the license. And just
given the uncertainty, the- you know our approach has been like I said to look at how
much certainty we can put in those measures and deal with it the issues the way you see
them now, but also be able to deal with adoptions and being able to deal with changes
over time. And it’s a struggle, but I think anything we can do to build that adaptability in
while still giving the assurances that folks need on the short term is going to be important
in being able to manage things into the future.

SB: Certainly when we look 10, 20 years out, there’s a lot of opportunity. And we just
finished a climate adaptation assessment—again, we’re not going to get into the why,
we’re just trying to get our head around if it’s going to happen, what are we as a city
trying to do to proactively get ahead of those issues? And so I would- all of you, I don’t
know if you drove across the river today, but it was flowing at about 46 hundred cfs. This
time last year, maybe it was more in May, we were upwards around 9,000, 10,000 cfs
screaming through the system. We know that that’s probably going to be more the normal
than not in the future because it’s been alluded to I don’t know how many times today
about this idea that the runoff’s going to come sooner. So how do we adapt to that? How
do we create a resiliency in our system where all of us sitting down start talking about,
hey of that 46 hundred cfs that’s flowing right now in the river, maybe we should divert a
thousand of that off into some kind of recharge project south of Boise. I know the Water
Resources Board is interested in recharge. We’re potentially interested in recharge. So I
think there are opportunities out there if we’re willing to sit down and start talking and
having substantive conversations past the “I take a position that I represent only the
municipality and I’m not going to listen to what anybody else has to say,” or ag, or pick
the silo that I was talking about earlier. I think the time is now, the opportunities are
there, I just think we need to start having more substantive dialogue. This is a start, and
it’s just a start. A more substantive dialogue amongst the key players, I think there’s
some win-wins out there. We just have to start talking about it.

TH: Ralph, we had a question come in specifically for you. It says Idaho Power is working
with a non-profit on water quality in the Snake. Please tell us a little bit about that work.

RM: Yeah, that’s our Snake River Stewardship Program. And the basic purpose there is to
address the water quality issue- temperature issue below Hell’s Canyon Dam. So what
we’re finding is that because of the presence of the three reservoirs, Brownlee, Oxbow and Hell’s Canyon, temperature conditions in the fall are delayed in how they cool down. Fall Chinook come up as spawn in the river below Hell’s Canyon Dam, and so for a short period of time in the fall during the spawning season, the water temperatures don’t meet the [salmon] spawning standard below Hell’s Canyon Dam, and so our task was to come up with a measure that would address that. And essentially, it kinda came down or comes down to two alternatives. One would be to put a temperature controlled structure in Brownlee that would be able to selectively pull cooler water off of Brownlee, the deep parts of Brownlee, and run it downstream when we need it to cool temperatures in the fall. The other was looking at it from the perspective of when we look at the temperatures and the conditions below Hell’s Canyon Dam, there have been one or two years over the past 20 years when temperatures during the spawning period were above what laboratory studies in the scientific literature shows is likely having a negative effect on Fall Chinook. The rest of the conditions are- it’s over the standard, but from the work we’ve done and looked at it, it’s hard to demonstrate that there’s a negative effect there on the spawning fish. So the- what that did is it allowed an approach where we could look upstream in the river above Brownlee Reservoir where we know the summertime temperatures are actually causing fish mortality. I mean we had documented Whitefish kills in the river upstream of Brownlee Reservoir in the summertime. And so the places ties in with the nonprofit that was asked about is back in about 2011 or 2012, we teamed up with the Freshwater Trust, and they’re a conservation group and they were originally based out of Portland. They now have an office in Boise as well as I think an office in California as well, so they’ve expanded some. But they have implemented programs and developed programs over mostly up in the Rogue system in Oregon where they- the utilities have been able to deal with a temperature issue by essentially- in that case it’s trading- developing riparian conditions that promote river cooling as opposed to putting in a chilling tower or something like that. And so similar to the issue we had in- or we saw some similarities there where we were with Brownlee and the selective withdraw tower and what we felt was a better solution was to go out and get a much broader landscape scale benefit. And so we’re working with them on being able to do upstream improvements, which include changing the physical features of the Snake River Channel itself where we’re- in the areas we’re working, where we’re making it deeper, higher velocities, so that it can get back to some of those ecological functions that it’s no longer able to support given the reduced flows that now come through the system because of upstream developments. And then another major component of that is working in the tributaries to develop riparian areas, develop better or in a lot of cases just develop any kind of riparian on the tributaries as a way to reduce thermal loading and approve habitat and temperature conditions in the tributary to offset the elevated temperatures for that brief period in the fall below Hell’s Canyon Dam.
TH: So we mentioned earlier, a couple panelists mentioned the fact, that non-point sources are not regulated. So we had a question come in saying, should non-point sources be regulated and have there been long-term trends which support this premise?

SB: I’ll take a stab at it. Considering how functional D.C. is right now, I’m sure we could amend the Clean Water Act to get [laughter] non-point sources included. So, you know, the lower Boise River TMDL, how it was developed is that the cities- if they need to, as we’re growing, the additional waste level- waste allocation- to Hawk’s description- the original budget that you might need for additional phosphorous to put in the river, that can only be gotten through trading. That’s how the TMDL was written. The trading will occur when folks get on non-point sources of pollution, i.e. drains that are coming back to the river, and there are treatment systems there to get to those pounds of phosphorous that then the cities will use to augment their growth. So we have a mechanism within the TMDL—and I would argue that’s the scalpel—that we have a mechanism for us to get to some of that non-point source that the city’s going to need for growth. And that was a very deliberate move in the TMDL as maybe a way we can start getting to that non-point source. So that’s one example.

DM: Which brings up an interesting question of justice for urban residents, because what’s really happening there is city residents are paying to treat that waste the farmers don’t treat. And because they’re not regulated—it’s not because they’re bad people, good people, anything like that, it’s because that’s the way the law reads—and so you end up subsidizing that pollution because that total TMDL standard is a load on everybody, and if somebody doesn’t pay then somebody else does. And that becomes- so if you gather what I’m saying here, is yes, they should be regulated in some way. That’s what brought the cities into compliance with the issues. You know, and back up a second, ‘cause the Clean Water Act is really important in this. And if- the Clean Water Act passed Congress because the Cuyahoga River caught on fire from industrial pollutants. And the Cuyahoga River’s in Ohio. Well, you know, two years ago, three years ago, the Toledo River, the river that flows through Toledo I should say, was- there was a state of emergency declared because of toxic algal blooms in the Toledo River and John Kasich had to send in bottled water to everybody in Toledo, one drainage over. That’s where we are. But we need to think about the political realities of that, not just the Clean Water Act, but all of our key environmental legislation passed in the early 70s. That’s what we’re running on today, all of our environmental gains have been made in the early 70s. From where I sit and from where- the political question is this: We could not pass that legislation today. We couldn’t have passed the Endangered Species Act, we couldn’t pass the Clean Water Act today. As it was- forget about the improvements, where we’re really headed. So the problem really becomes a political one in a lot of ways, and that’s kind of the fix we’re in. And you’ve heard people talk about local solutions and doing this thing and other
things in groups. That’s where we are, and that’s not all bad. That’s really not all bad. But
that’s kind of where the political realities are is, or where- from a Clean Water
perspective, yes non-point should be regulated. But political reality is it never will be, so
we’re going to have to adjust in some other way.

HS: So working from the situation that we find our self in and are likely continue to find our
self in, it becomes a question of how do you incentivize the non-point sources to improve
the conditions in those waters. Steve mentioned there’s trading mechanisms, we can use
that rather blunt TMDL tool to incentivize it, but we need to make it easy and to put a
value on the pollution so that those trades can occur.

TH: Another question came in that says when perhaps twice as much ditch water is delivered
to a lawn that can be consumed by it, what is the water quality implications of this? So
you basically have more water being delivered to lawn than it’s needed and probably
runoff occurring from that.

HS: It depends on the situation, and maybe this could be paralleled on the large scale with
farm fields too. If you’re delivering twice as much water and it flows on and flows off,
yes, you have a pretty serious potential water quality problem because it carries sediment
and extra fertilizer with it. But if you’re applying it in a more precision manner, perhaps
by sprinklers, then not so much. More is retained on site. You don’t see runoff from
sprinkler fields. And the same would be true of lawns. If that water is just unused and
flows down the ditch, then presumably it enters the river later, but if it’s a flood irrigation
situation where too much is being applied, then perhaps that’s more of an education
situation that can be resolved. That again is one of those examples that maybe could be
incentivized. If we can value what the clean water and what the pollution is worth, then
we can make money available to convert from flood irrigation to sprinkler irrigation,
thereby reducing runoff, thereby keeping water in the canals or maybe not using it at all
and reducing the runoff down the drains so that those drains are now filled with cleaner
infiltrating groundwater and not farm field runoff. That helps the river and it helps save
water too.

RM: Yeah, I think maybe one of the keys to look at there is why is twice as much water being
delivered to the lawn? You know, we’ve done a couple of projects, one with the
Riverside Irrigation District down there at the mouth of the Boise and the Snake to help
them be able to improve their water delivery system and reliability while at the same time
giving us the benefit of keeping phosphorous out of the river. Along the same lines, up in
the Grandview area, helping to fund the farmers up there to convert from flood gravity
irrigation to sprinkler, which if you implement the sprinklers properly, you can
essentially eliminate runoff into the river. And in both of those cases, you know, neither
of those groups—the groups we’re working with—really had a need or an interest in any
of the inefficiencies or the way they were doing business other than that was the way they
were set up and you know they needed some motivating to change things. So I guess, you
know, I’m not familiar with the lawn issue, but I think a lot of times we don’t necessarily
look at or try and get at what’s the real need of who you’re dealing with? And I think a
lot of times there are solutions there where you can come up with something that works
pretty well and really is not a hardship and in some ways may even be better for the
different stakeholders and people you’re working with.

TH: On that note, one of the other questions is with regards to education. What role does
education play, whether it is helping people understand the fact that in some cases there is
a lot of finger-pointing, where people from subdivisions think it’s all agriculture that’s
the problem, and maybe people from subdivisions don’t understand the portion that they
are contributing with regards to fertilizing their lawn. What role does education play as
we move forward?

SB: I think it’s hugely important. We have the Boise Watershed and that’s focused for the
City of Boise through the Boise Environmental Education Process. The watershed is
focused mostly on children, but I think we also recognize that our ratepayer education is
becoming just as much a priority. The watershed is focused on broader water issues, not
just water quality issues. So educating ratepayers on these bigger questions, I think Ralph
brings up a really good point on the idea of that example you used on the lawn, why are
they using twice as much and do they know there may be better approaches that could be
used? We’re dealing with—some of you may have heard—a recycling issue here in
Boise. Made my gray hair even grayer over the last two months. Fundamentally though,
that’s a question about how- we can keep recycling it, but maybe there’s that reduce reuse
piece that we’ve kind of forgotten about within the recycling world. I think it could also
apply to the water world, where we’ve gotten to the point where we react to these
problems that are coming to us based on our current water use. I think there’s room for
education on how to reduce and reuse rather than just deal with the problem at the back
end. And that could save us a lot of money and a lot of heartache, so I think there’s other
solutions to be thinking about, and education is certainly a huge part of that.

HW: As well as outward focused education. I would share that when I was writing the TMDL
for the streams in the lower Boise, I found that I had an awful lot to learn as well. By
going out in the field and touring some of what I had previously imagined to be creeks, I
found they looked very very different from what I imagined they would look like and I
saw how they were being used. That also led to ideas and potentials for improvement,
and I felt like maybe that went the other way too. When I talked to the irrigation district,
maybe there were ways of looking at it that weren’t part of the way that had always been
done. And we start seeing those collaborations come together when people take the time
to learn from each other. So I think it’s important that education be- that as regulators and advocates and users of water, we educate ourselves as much as the public.

TH: Steve, you mentioned the fact that with regards to money. And one of the questions that has come in- I’ll be curious on all of your perspectives. They say: As a nation, we enjoy the cheapest, safest food in the world. From your perspective, is society willing to pay to help keep water pristinely clean?

SB: I would say yes based on not just anecdotal information that we hear, but I could point to a number of surveys or recent votes that we’ve had in Boise. So last year we- or two years ago we passed the open space levy, and 74 percent of Boiseans said basically, “Charge me. Charge me for something that I value and want to contribute money to.” Subsequent to that we did a survey on our water renewal program. We started asking folks, “Are you interested in us pursuing alternative approaches, whether it’s to resource renewal or different ways to think about water?” And resoundingly we heard back from citizens, statistically relevant survey, telling us, “Yes, we’re very interested in that.” And then of course the next question is, “Are you willing to pay for that?” And that’s where the- usually in most cities, the rub is there we see a drop off on the percentages. And I’m here to tell you that didn’t happen in Boise. It was probably about a 77 percent wanted us to pursue these innovative approaches, and probably about 72 percent said, “I’m willing to pay for it.” The next big question is how much. We haven’t asked that yet. But I think those are two very specific examples where our city values these outcomes. And if you can frame it in exactly that, a value proposition, folks are willing to pay additional money when they see the value that comes out of it. And so it’s incumbent upon us as city leaders to frame it properly, and frame it fairly too. It’s not just painting this panacea of just give us the additional money and all your problems will go away. It’s not that. It’s gotta be an honest conversation. But I’m emboldened by and I’m encouraged by the fact that our citizens are consistently giving us the feedback that if you frame it properly, we’re willing to pay more. We’re willing to pay that additional to see the value that we get out of the whatever the infrastructure is.

RM: And I’ll put in a plug for the technical part of that relative to the framing it properly and the value. I think if you implement projects and people need to spend some money to do a project that’s successful and gets what they want, you can have support for that. But you know, just trying to get support for projects that aren’t based on good scientific principles and in- done in a way that’s going to get the results, I think that’s where you lose that support and I think once you lose support, it’s a way bigger climb to ever get it back than to maintain it along the way.
DM: That area of being willing to pay is where the market-driven solutions come into play a little bit, and one of the areas I followed over the last 20 years is grass-fed beef. That’s really critically important, and the growth in that particular area, but in sustainable ag in general, has been far faster than we thought it could be. And it is because people are willing to pay. When you ask them, “Will you pay 50 percent more for this steak that you just bought at the good foods store in Missoula right now?” they’d say, “Yeah, I do.” They sell them out. They do real well. And why that’s important I think is because it doesn’t take much, okay? So I once asked a guy in Iowa, “If you converted 10 percent of the land in Iowa to permanent pastures, which is what grass-fed beef, what would happen to your environmental problems?” And he said, “Well, they’d go away. We’d lose flooding because we’d have these barriers that we so we can control runoff, we control flooding. We’d have some nutrient sinks to support close to the rivers. And all those things are worth.” It doesn’t take much to convert 10 percent. So those market solutions, while they sound a little quixotic, or say, well what’s 10 percent going to do? Ten percent does a lot. It does a lot if we have the ability to plan and do things. And with the market driving and then people getting good quality beef out of the deal, I’m not seeing a downside to any of this.

SB: Let me just add one thing, Tony. The idea that we’re trying to change that dialogue around wastewater, that kind of goes back to the value that all cities bring through wastewater treatment. So we’re not just doing that to give ourselves a new name, we’re doing it because we need to change the discussion we’re having with the public on what we at the City of Boise, City of Meridian, City of Nampa, what they do with that treated effluent. It’s not just—like I said, it’s not just a landfill for water. There’s a lot of resources that come out of that and it’s really great work that the professionals do. And I think when you frame it a certain way, the public starts to think differently about what service is provided.

HS: And thinking just a little more about how the public perceives itself, I see this as almost a question of self identity. I mean, we care about water quality, that’s important to Boiseans. We frame our community around water-related things. Think of the Whitewater Park, the Greenbelt. In- I wear a different hat for part of the year—I run the Idaho Forest Practice audits where DEQ is inspecting forestry operations, and at our most recent audit there, we found 96 percent compliance with the forestry rules. And people would ask me ahead of time, well, what do you expect to find, and surely people aren’t going to be obeying these because they’re mostly out in the woods. And there’s 96 percent, and why is that? And I think in large part it’s because the foresters see themselves as stewards of water quality as they go about their work. That’s how they differentiate themselves from Brazilian foresters or other parts of the world. And so that
sense of identity and just a core factor of our being here is that we care about water quality. There’s a lot of good will here that can be used.

TH: Steve, there’s a question specifically here for you about the City of Boise and are you open to a graywater program?

SB: Umm, hmm. I think a graywater program is an interesting concept. It would be challenging from an infrastructure standpoint to try to figure out is it on a case-by-case basis per home, is it another piping system that we would use the graywater to get it to some other treatment? There’s a lot of questions there that would come up. At first blush I think it’s probably- there would be a fair amount of dollars tied to that. And we think there might be better outcomes using the current infrastructure that we have, but that’s an interesting question.

TH: So are there things that you have seen as you look at neighboring communities, states, where they’ve got maybe some similar challenges or have had some similar challenges that we’ve got here and things that we should draw from or things that you would like to point out that you think are really worth considering for some of the challenges we face here in Idaho with regards to water quality?

RM: I guess the- I mean one thing that comes to mind is trading. And I know that can be a good thing or a bad thing depending on how folks look at it. But you know we’re- in dealing with- I guess the question about the non-profit conservation group that we’ve been dealing with on our Snake River Programs, and you know in working through water quality issues in the boundary water between Idaho and Oregon, you know, my perception is that trading has been used more say in Oregon than in Idaho and again, you know maybe something that we’re not getting as much use or value out of here. Steve kind mentioned relative to the market there’s a lot of issues but that’s one thing that comes to mind that we don’t appear to be using that tool as much as my perception of what’s being done in other- in Oregon or other states.

DM: I’ve just been looking closely at a community with that very question in mind and the reason I’m looking at this community is I look at rivers across the country, I see deterioration, mostly through nutrient loading. And I know of only one river that’s better than it was 20 years ago. Much better. And it’s the Big Blackfoot in Montana. So you know, if you’ve seen the movie A River Runs Through It, that’s the river. And why it got better had nothing to do with the film—well, kind of. It raised money off that. But it had a lot to do with a rancher named David Mannix. And he’s a grass-fed beef guy. But he also had a rule. And I interviewed a bunch of people who didn’t know I knew David or knew about this at all and I said, you know, what’s going on? They all quoted the same thing to me, the rule. And they say is, “It’s the 80/20 rule.” And what it says is that we
live in this great place and our commitment to it has made our values similar, so we agree on 80 percent of the stuff no matter who we are, if we’re a mill owner, we’re a rancher, we’re all those things. So let’s talk about that, let’s do this community cohesion, get this community functioning as a community and then these other problems will start to be dealt with in some other way. And it’s actually worked there over the course of about 30 years. So I think that that’s a good thing for other communities to think about.

HS: There’s examples in the Northeast of people trying to use new measures. Again, that square peg round hole problem with the TMDL. So as urbanization comes, we get more impervious surface and people trying to write TMDLs based on impervious surface to reduce runoff. A lot of these things end up running into core challenges though because of the precise wording of the Clean Water Act. I think what has worked well so far for us though, and maybe we can learn from neighboring states, is the groups that we assembled to try and solve the problem such as the Lower Boise Watershed Council. I’m then in a position to take these ideas that maybe don’t quite fit into the regulatory framework and use them in an implementation framework to try and change things and improve things on the ground.

SB: I think when I look to other states—I don’t know that we have just a great example of it, but I think the idea of integrated water management comes to mind to help solve a lot of the broader issues. Going back to getting rid of some of the silos, the temperature issue that Ralph alluded to—we’re looking at a potential solution where we- in lieu of these chillers at the end of our renewal facilities, we would take our treated effluent, we’d put some of it in an irrigation canal, the Farmers Union Canal, we have a contract with them to do that. We’re working through the regulatory hurdles on that right now—and then the in-stream solutions would be in-stream restoration projects up and down the river, and we’d work with some of the other cities to hopefully team up on some of those projects. If we were to take that water out and put it in the Farmer’s Union, we’d have to work hopefully with the irrigators, maybe to get some water in the river to keep our flows up. So you can start to see how all these things start to interconnect and the idea that we would throw our hands up and just say, “You know that’s just too hard, just put a chiller at the end of the treatment plant and call it good.” That just doesn’t sit well with me. And you know, I might be naive I suppose, but I’ve been called worse—but I think if we just keep talking about some of these solutions that are out there that, again, there are wins that are available to us if we just start to think on a more integrated basis across those different silos that we’ve allowed ourselves to be put in.

TH: All right. So we have maybe just another minute or two. If you guys have any parting words of wisdom or final comments you’d like to share.
I'll just say that I couldn’t agree more with what Steve just said. Bringing people together whose interests maybe haven’t always aligned and also pulling that 80 percent, the things that you do have in common, whether it’s a care of water quality. For myself, I found it was maps. When I sat down with somebody with a map and we looked at how the water flowed on the land, we found connections and interests that didn’t exist before, and that collaboration and bringing together different groups to solve problems in unusual ways is- I think that’s our future.

Yeah, you know in general the regulations are necessary to drive the process and the way things happen, but I think the real success stories and the places- the way you’re really going to make a difference is through what’s been- I think the common theme up here is that we gotta break the silos down, we’ve gotta work together, and we gotta come up with solutions that work. And you know it’s- regulations definitely have a place, but it can be a struggle sometimes within the existing framework to implement what’s what I think are good effective projects. We need to just keep working at that and make sure we do that and don’t give up and take the easy solution.

Yeah, I guess change is coming. We know it’s coming. We see it in our basin, we see it across the West, so I think it’s an opportunity now to be proactive and not wait for a crisis to hit us. Let’s get ahead of it so we can actually say, “Hey, we got a plan moving forward to actually deal with with growth, to deal with this urban ag interface.” I think the opportunity is now. We’re at a time in- from our perspective at the city, we’re in a really interesting time in our city’s history, and there’s a lot of challenges ahead of us, but there are tons of opportunities to solve those unique challenges and set ourselves up to do it differently. We get told a lot, “Well, Boise was Denver 30 years ago.” Well, I don’t want to be Denver 30 years from now. So how do we do it differently? It’s right before us, so we just need to keep talking and I think things will come up that- we’ll surprise ourselves.

Well, thank you all. Join me in thanking the panel.

[applause]


We finished a little quick, so if you want to do a quick stand up break before our last speaker, who will be worth hearing, do it, do it do it and we’ll get you back here pretty quick.
Closing Speaker

JF=John Freemuth, PL=Patricia Limerick

JF: Okay everybody. We’re gonna have our last speaker, who you really are going to want to hear. Okay. Get that group over there. All right, so our next speaker- this is not the first time she’s spoken at an Andrus conference. She came and was our luncheon speaker I think at Troubled Waters a few years ago. I’ve known her for a long time in that there was a time when the Hewlett Foundation funded a get-together of all these centers for the- in the West that studied, well, various parts of the West, various issues and so forth. And we’ve struck up a friendship over the last 10 or 20 years, so this is a great pleasure. And I know Governor Andrus really enjoyed her company as well. So Patty Limerick is the Faculty Director and Chair of the Board of the Center of the American West at the University of Colorado Boulder, and probably the best-known center that covers Western things I think. She’s also a professor of environmental studies and history. She’s also the Colorado State Historian and is on the National Endowment for the Humanities Advisory Board called the Council on the Humanities, nominated by President Barack Obama in 2015 and confirmed by the Senate. So that’s not just any other appointment, right? She’s the author of Desert Passages, The Legacy of the Conquest, Something in the Soil, and A Ditch in Time. She’s a frequent speaker and columnist for the Denver Post, and something that she and I agree on and have in common is she’s- except that I’m a policy guy, not a historian, though without history we can’t do anything—bridging the gap between academics and the general public to demonstrate the benefits of applying historical perspective to contemporary dilemmas and conflicts and for making the case for humor, as you’re going to see, as an essential asset of the humanities. A recipient of a MacArthur Fellowship and the Hazel Barnes Prize, the University of Colorado’s highest award for teaching and research, she has served as President of the American Studies Association, the Western History Association, the Society of American Historians, and the Organization of American Historians, and the Vice President for Teaching of the American Historical Association. She received her BA from UC Santa Cruz and her PhD from Yale. Welcome, Patty.

PL: Thank you.

[applause]

Well, this is really a great pleasure and I’m very indebted to John Freemuth, who I will just note is the 2018 Boise State University Distinguished Professor.
And of all my writing activities in the last year, getting to write a letter for that was one of the greater pleasures. Those Denver Post columns [in the path] I must say to do that. It was also great to be here in anything involving the name Cecil Andrus. He was a complicated story, I did a series of interviews with the former Secretaries of the Interior, and I got to interview him for that. Came to Boise to do that. And then agreed to come to a conference he was having a few months later in between those two events.

My first husband died of a stroke, and so the first trip I took to speak at an event after some very tough times was to come here, and Governor Andrus was very very kind to me on that occasion. So it is a huge honor to be here and to make a tiny step of expression of my gratitude to him. So I am spending time quoting Thomas Jefferson and John Adams and that key phrase in their correspondence says something about our circumstances in 2018 has put me in a complete frenzy for quoting that. Jefferson and Adams quarreled very intensely during the founding of the nation, and they did not speak to each other or communicate to each other. And then their friend Benjamin Rush went back and forth and negotiated a discussion between them in correspondence. They never met in person. And they wrote back and forth a giant collection of letters, and in the midst of that correspondence they wrote to each other. One said at first, “We must explain ourselves to each other before we die.” And the other responded and said, “Yes, we must explain ourselves to each other before we die.” And I think that’s something we should just all go around quoting in 2018, ‘cause it’s not happening everywhere in the nation right now. So that is the phrase that I would like to start with before I turn to a somewhat sillier vein here of limericks, which are not anywhere near as solemn as anything in the correspondence between Lincoln and Jefferson. So years ago, I went- I just wanted to say, one of the great things about being at this conference— and I think Doug and I might be distinctive in having such pleasure in this—we are out of the Colorado Basin and nobody has talked obsessively about California. [laughter] Hasn’t that been, like bomb? Soothing bomb not to have to keep hearing about California? I was at a Arizona water conference probably 20 years ago and good, Heaven’s sake, we couldn’t go more than a, I don’t know what, four and a half minutes without remarks about California. And so that caused me to write a limerick, which is not- it’s so important to say- is not my point of view, but I am summing up some of the atmosphere at that Arizona Water Conference.

When California falls into the sea, its neighbors will shout out with glee. The state was our bane, causing trouble and pain, and now that’s it’s gone, we are free.

[applause]
[laughter] So, that is not my angle, but good Heavens it was in the atmosphere at that Arizona conference. So, how pleasant to be here where we don’t have to talk obsessively about California. I think I might have come with some expectation that this might work as a logical construction: California is to Colorado, and to our opinions in Colorado, maybe what Oregon and Washington are to Idaho in terms of the downstream user that doesn’t understand us and our rights and privileges, but I’m not sure what the discussion of the compacts, I’m not- I think that logical arrangement is not really as convincing as I thought, but I’ll look forward at the reception to getting more edified on that. When I wrote a book on the history of water in the Denver zone, it’s called *A Ditch in Time: The City, The West, and Water*—that title *A Ditch in Time* came from the fact that it had an incredible boring title and a friend asked me what was the- so I’m trying to come up with a better title and this friend said, “What was the pattern with the Denver water department?” And I said, “Well, they didn’t wait for shortage to hit, they were always looking ahead, kind of like a stitch in time.” And then we froze and went, “Ha. A Ditch in Time.” That’s where that came from. That Denver water habit of looking ahead has not made it beloved in other parts of the state. It was for many years a very aggressive imperial power claiming early water rights on the Western slope through prior appropriation. It’s seen in many ways as still to this day in some parts as the City of Colorado as an evil empire I guess. And I will get back to that question when I get to the issues of cities and rural areas and their relationships. And yet, Denver Water has gone through very sizeable changes over the last- since 1990 in the Two Forks Defeat, so, might want to reflect on that a little bit as well. Well, two other- so this is the only book on natural resources or really on anything under the sun, that has a limerick between each chapter. [laughter] It’s a very nice feature, and they sum up a lot. So I thought, in an uncanny way, some of the discussions- I dunno, we’ve heard, what, 10 or 12 repetitions of the very important point, variations, but that in fact an urban population can grow quite a bit and water use does not necessarily escalate proportionately. So over and over we’ve heard that and I thought, this is an interesting thing because apparently I had a deeper understanding than I realized at the time. This is a limerick from the book, it’s called The *Tangled Ties of Growth an Water*. It’s published- written in 2011 and published in 2012, so here we are:

The West left settlers aghast,
it was dry, it was rugged, it was vast,
they thought water was the trigger for making towns bigger,
an idea whose time is now passed.

So, that sums up an observation that many better-informed people made today, so I’m proud of that. [laughter] Historians are very pathetic when it comes to prophecy and

73
prediction. We are- have licenses to operate in the past tense and it doesn’t go well for us when we move over into the other lane, present tense. But if you stay really alert it’s okay, but boy if you start moving over into the future tense you’re going to be pulled over, they’re going to look at that degree from Yale, gonna say, “You have no license to operate in the future tense.” But the temptation still comes up. In the case in that- when I seem to get that right. Then this one I don’t know if it’s prophecy or prediction, but it certainly seems to have come up in our conversation in terms of the smaller communities, small but still sizeable communities—Doug was making that point—, that are really the ones that do not have established water rights or infrastructure and are pushing to get resources from agriculture. So here it is:

Throughout the American West,

the suburbs have made us all stressed,

they have eaten up farms, set of fiscal alarms,

and given the cities no rest.

[laughter] Doug, would you sign off on that one? Well, you can’t sign off as an author, that would be plagiarism if you did that, but you can certainly certify the material there.

So I will say that the underpinning of my talk is how by writing *A Ditch in Time*, I escalated the amount of time I spent with water managers. I’d always done some of that as an applied historian, but boy when *A Ditch in Time* came out I really got out there, and I’ve been at American Water Works, Groundwater Association, all kinds of operations and hung out and fraternized in a big way, and here’s the fact: I carry a torch for water managers. And I will say that the person who really pushed me over the edge on that was a really nice man at a conference in Northern Colorado—water manager, career fellow—and he came up to me and he said, “I am so glad you wrote this book.” I said, “Thank you.” And he said, “My wife read it and that has made a huge difference in our relationship.” [laughter] And I thought, well this is very remarkable. And he said, “She read that book, she put it down, and she said, ‘I am so glad I read that. Now I know what you do.’” [laughter] So marriage counseling is not really in my domain, but we’ll end actually on that note of what historians might do in that line of work. So there were many occasions where I got, oh I don’t know, dismayed or certainly fatigued with the Chinatown syndrome that the nation suffers from. I don’t know if you’ve noticed that, but that really reprehensible human being Roman Polanski—who we would not want as a model for our young people at any time—he does a very effective film, Chinatown. It is not historically accurate. In order to have the noir atmosphere of the 1930s, he takes the LA water development in the Owens Valley and moves it two decades. Now that’s really gonna work for historical accuracy if you take something from the first decade move it to the 1930s. And it is a powerful movie, and thousands of Americans I’ve encountered seem to think that makes them knowledgeable on Western water history. [laughter] I
don’t know that I’ve ever seen anything quite like it. If I say something about being interested in Western water history, they’ll go, “Oh, I saw Chinatown.” Well, if you saw a movie about Martians and life on Mars, if you saw a science fiction movie, would you say, “Oh, I know about Mars?” I don’t think so. You would say, “I read a book, I saw a strange movie.” But for whatever reason, Chinatown is very pernicious and it still gives a very distorted, oh I don’t know, just improbably widely accepted notion that if it involves the West and it involves water there’s something kind of dark up there. It just seems like a piece of nonsense that we must challenge at every moment. So what I want to do now is go through three quick segments here, pretty quick segments, so we can have some time for a discussion. First I want to make some observations on the history of Western water, not the Roman Polanski version, and I will want to be accenting the complexity, the contingency, the improbability of that story, and the whole package of this little section is to be an anti-fatalism treatment program, to counter any sense of inevitability and entraptness and historical processes that are beyond our- the reach of our own wills and our own decisions. Then I will shift to several items of conventional wisdom about Western water that I think deserve a rough workout and significant filtering and sometimes pruning. Then I will have some ideas about communication and education on Western water issues, and to the best of my ability I have been trying to take in things set up here and base the talk on that. So I shall- getting more strenuous. Other people my age do crossword puzzles to keep their minds agile, and I accept John Freemuth’s invitation to summarize a complicated conference. So who needs a crossword puzzle when you have John Freemuth to challenge your mind? So, okay. So, I will start off with a few big observations about the history of natural resource use, but particularly water use. And the first one is a really really big framework, a gigantic framework, and I think it helps us navigate through many of the issues that have come up today. It’s rarely discussed in any public framework, and not even that much among historians. So, here is the big framework. The practices that we know as conservation, the considered careful use of resources, the thought of longer horizons in time, the process of trying to think what would benefit the majority, what kinds of tradeoffs and sacrifices must people make to be part of this enterprise, those practices of conservation originated in very centralized regimes of power. So I am speaking about the kings’ estates where you would have- the king would have a large block of land and he would rule over that and keep it for his own preferences, usually in hunting, and he would have gamekeepers who ruled over that and who had very powerful forms of enforcement with poachers, with locals who were not doing what he wanted them- what the king wanted done on his estate. One of the great points that I’m making here is that you are now encouraged to read the book we all snuck around and read when I was a child, now you have a good educational reason to read D.H. Lawrence’s Lady Chatterley’s Lover, which we always had to hide a copy from our parents and read secretly, but now because Oliver in Lady Chatterley’s Lover is a gamekeeper, now when you are reading that and people say, “You’re reading that rather
off-color book,” you can say, “Yes, I am learning about the origins of conservation in this book.” [laughter] Conservation in some sense, not in others I guess. So anyway, so kings, aristocrats, colonial governors, colonial governors traveling to distant places with naturalists and scientists, those are the people who really began intense engagement with the practices that we now consider under the framework of conservation. So that makes the American experiment with conservation enormously important, globally important, because the experiment we have been engaged in over the last hundred and forty years, hundred and fifty years, since the start of federal land management in public lands ownership with Reclamation and so on, last hundred and twenty five, hundred and thirty years, that is one giant consequential experiment in testing the compatibility between democracy and conservation. So shifting out of that framework of centralized authority, which certainly makes it easier, the last panelist talking about regulation--yes, you’re in my framework here. So it is hugely consequential, and every day, you might even say every hour, in a water manager’s life is an important data point in that big experiment. How does that work, to be surrounded by constituents and individuals and citizens all wanting something from you as you navigate through this conundrum of how you take practices that are much easier to implement if you are doing it from a top-down, distance centralized authority. How do you make that work in the democratic republic? In those terms, I think there are reasons to feel that we are watching something like progress, even when there are interesting switches and turns and contention. So for instance, when I-I think it was Jeff Robinson was talking- Robins was talking about the litigation, or litigiousness, and Doug as well, I thought, you know from a Western historian’s perspective, I’ll take it. Litigious- showing up in courtrooms as opposed to showing up on battlefields? I’m okay with that. That’s a form of progress that so many of our primal struggles for dominance, resource allocation of goods we want, that we go to court for that rather than going down to Main Street or going into a battlefield. Maybe it’s especially conspicuous in Indian rights to see the actual brutal physical battles move into courtrooms. That’s kind of a cool transition from a Western historian’s point of view, how nice to fight with oral argument rather than other forms of combat. And if we are now seeing some kind of evolution to a follow-up stage of collaboration and cooperation and negotiation, well if that doesn’t count under the term progress, I don’t know what we’re holding out for. So there are ups and downs, the experiment has no conclusion yet, it continues. I think there is enthusiasm for this idea, because of course that’s a giant experiment, and to use a beautiful phrase used by one of my students many years ago, “When shifting paradigms, it is important to remember to put in the clutch.” Now, this makes no sense to many people who have joined us on the planet, because I think something like two percent of the cars sold in the United States have standard transmission, so. There’s actually a story in the New York Times, maybe 20 years ago, “Daddy, What’s a Clutch?” So for those who remember that term, it is important to remember to put in the clutch. Historians can be good for that but that’s quite a shift to go
from the centralized power. To show the peculiar appeal of this idea, I gave a talk oh
seven or eight years ago at the Moscow at Salt Lake University of Utah, and I had
brought with me a little plastic tiara, a little purple tiara. And I had put that on the
podium. I gave the last few minutes of my speech with a tiara on making decrees,
because what to do with that 1922 compact, how to adjust it—that was the subject of the
conference—I thought it would be easier if I just took an imperial power and offered
decrees on- not the technical water court sense of decrees, but just to say, “Okay, the
1922 compact badly underestimated the flow of the Colorado River. As a regal authority
here, I shall now declare that that must be reckoned with. That must be thoroughly
reckoned with.” So anyway, so I give this talk, the last 10 minutes I’ve got the crown on,
I take it off. The audience only wanted to ask questions of the queen. It was the most
preposterous thing I’ve ever seen.

All these lawyers and water men- they’re all going,
“Actually, my question is for the queen.” So I had to keep putting this silly tiara on and
speaking imperially. But I think what that was was a sense of we are wearing down from
time to time with this experiment. This shift to democracy and decision-making over
particularly water, but other natural resources, we wouldn’t mind just a fun interlude
where we pretend that a person wearing a plastic tiara carries authority. And we’ll get
over that and we’ll go back to our jobs. But anyway. So there’s that. The second big
framework—this is certainly not succeeded as a household term—but in this book A
Ditch in Time, I tried to introduce an important phrase for characterizing at least the last
century of American life, and I’m just very surprised to see how little impact it has made
on the public and on the journalism profession, but here is the phrase for the last 125
years: The era of improbable comfort made possible by a truly astonishing but taken-for-
granted infrastructure. Now, the fourth time you’ve said that, it just rolls off your tongue.
The first three times there’s some labor in that. But that is where we are living, maybe
especially in the American West: The era of improbable comfort made possible by a truly
astonishing but taken-for-granted infrastructure. And it will be my hypothesis—because I
can’t do predictions—but I certainly think that the taken-for-granted part is winding
down. That- not to say that every bucky American who goes to a faucet and turns it on on
thinks of the connectedness, but I think the percentages are shifting. My hope for
escalating that shift and enhancing it is a very original idea of mine, which I think is very
brilliant, and that is that no dinner party is complete in the American West until you have
invited an engineer. [laughter] So when that has been checked off, then you can sit in
your improbable comfort around the dinner table and you can have someone there who
when you turn on the- when it gets dark and you turn on the lights, you can have
someone at the table who can help you get some reckoning with what had to happen for
you to have the comfort and the luxury. There I will say this is not- well let’s just say this
is quite popular among engineers, and they’re a merry people in ways that not everyone
who’s planning a dinner party has always had the chance to realize yet, so it’s a really
good idea and it helps very much in winding down that taken-for-granted part. I think a
lot of what we’re hearing today connects with that winding down of the taking-for-granted. The third big framework, and it’s one that John Freemuth mentioned as something I would probably say, and indeed I did have it in my plans, that the federal government is very central in this story. It is not by any means the only player in this story, but the fact that Westerners have strong feelings about the federal government is almost in direct proportion to how central and crucial the federal government has been in making it possible for us to live here and have strong feelings about the federal government. I am not a sentimentalist apologist for bureaucracies. I almost brought it up just hold it up at this point, as a member of the National Council on the Humanities, I do have a federal ID card, and it vexes me that it misspells my name. [laughter] And I have said to federal friends, “Boy, I would sure like to have a federal ID that actually has my name right.” And they say, “Good luck with that,” because I will be many transactions away from victory that I took part in planning sessions for the Bureau of Reclamation Centennial and then spoke at several events in 2002. To get to Lakewood, Colorado from my home, I walked out my door to the sidewalk and I got in a friend’s car and drove with him to Lakewood. Then after several meetings, we were given forms to fill out for travel reimbursements. I said, “I walked down my walkway and got into my friend’s car.” They said, “Oh, then you will have to fill out the forms to claim that you don’t have a travel reimbursement to ask for.” [laughter] I don’t want to fill out forms, I just want to walk down my sidewalk. So I certainly have had moments of thinking, I can kind of see how you might get an anti-government twinge or two from time to time, and if your livelihood really rested on that, I could see why that would be an issue and I appreciate very much the luncheon speaker saying that he knows why the federal government isn’t instantly— you don’t necessarily have a sense of joy when you know you have to go into a transaction with that. Sometimes you do, because sometimes there’s a wonderful set of public servants in all of those agencies, and so there are good reasons to dance to the— well, maybe you wouldn’t dance, I don’t know—but there are reasons to value and prize the public servants who often appear in those places, but it is a complicated relationship and in some ways our dependence as Westerners on those federal infrastructure creations, that’s a large part of the feeling. A fourth one involves—and he’s been in here for a moment at the start—well, not much about John Adams I think haunts us now, maybe I’m wrong about that, but boy is Thomas Jefferson one omnipresent figure in the shaping of our attitudes. This is my test proposition. Thomas Jefferson was such an effective and influential and central thinker, and in many ways was effective because he was responding so directly to the world around him so we still in ways that are not negative but consequential, we are still letting him do our thinking for us. And that comes in sometimes instinctual anti-urbanism, that cities are places that are—where humans do not prosper, where virtue is difficult to find. So for instance, I’m going to use my Denver Water example: We wouldn’t have to go very far at all walking around the Western Slope of Colorado to find people that feel that Denver Water is an evil force where urban
people drain resources from the virtuous Jeffersonian agrarians who are sometimes working on oil shale projects, because Jeffersonian agrarians have to make a living too, so anyway. So it’s not clear to me that the Jeffersonian agrarian is the bulk of the population on the Western Slope of Colorado, but the self-image of that. When Thomas Jefferson said so memorably that farmers are the chosen people of God if ever he had a chosen people. Well, they were certainly the necessary personnel for democracy. They were people who could support themselves, workers. You could exploit workers and bully them and by withholding their livelihood you could make them ineffective citizens, but a farmer could feed himself and his family. So that’s not madcap speculation, that made sense in a nation that was a vast majority of farmers. It’s not that now. I want to get- I’ll get back to the notion that the urban growth- urban and suburban growth in the interior West is motivated in very large part by the urbanites’ and suburbanites’ access to open spaces in the West, and those spaces are kept open in a significant way by farms and ranches. And if you de-watersed those, those would be unappealing—well, that would be a process of uglification. That’s not a technical term, but it’s used in Alice in Wonderland, so we can use that. So if you withdrew the water that supports ranches and farms, this region would really take a great downturn in aesthetic attractiveness, so it’s very intertwined, the growth in urban and suburban population. The farmers and ranchers are a very diminished percentage of the population, but they are an important cultural element and an important economic element. So to have Thomas Jefferson install in our minds such a hard and fast configuration of who are the virtuous people—the chosen people of God—and then this phrase he used—oh, why did such an influential man say such a thing? He said that cities were cancers on the- they were sores on the body politic. Well don’t say that, President Jefferson. That’s not going to help us over time when here we had people at the previous panel talking about the value of density. Well, why should they have to have a fight with Thomas Jefferson? He died in 1826, that was a long time ago. They should not have to have that attitude that density is somehow or other an affliction. When people live in urban density, their virtue is plummeting- that’s, that’s- Mr. Jefferson, take a rest is really what you end up feeling about this. And the way in which it has been the Jeffersonian dream of the individual living in nature, well has there ever been a better force for suburban sprawl and exurban sprawl if you have this notion that you will be a better and more virtuous person if you are living separate from your neighbors with an open view? My own solution on urban planning for the West and suburban and exurban planning would have been to prohibit picture windows, and all you could have if you had a suburban or exurban house, you could just have those little things they have in hotel doors, so- so many problems, so much disruption of wildlife habitats gone if you had had my land use planning advice. Anyway, Jefferson’s thinking is incredibly persistent, and he seems to be present in our midst when people say as if they knew it for a fact—I’ve been in their company in Colorado when they do it—“Denver Water drains the rest of the state of water and uses it selflessly for its urban population.”
Denver Water uses two percent of the state’s water to support 25 percent of the population. Well, okay. Now everyone has- in this room you will be attuned and you’ll notice I left out food in that statement. So every time someone in Denver buys a strawberry, that is an agricultural water transfer. Every time they buy an ear of corn. And so that calculation is not sufficient just to say that, and it is a kind of strikingly efficient use of water to support a population if you- even if you move that two percent up to include the agricultural products, that’s still something other than a drain on- it’s not a cancer on the body politic necessarily. So anyway, so the Jeffersonian heritage, that was our fourth item. And this is the point where people begin to despair and think, will there be 19 items? Will she ever end here? No. There will be one more item and that is two elements of improbability that I- well, I guess there are two more items but they’re very short. I wanted- as I said, I wanted to accent the unforeseeable, the unpredictable, the implausible, and there are two features of that in my fifth point here that I’d like to accent that nobody in the nineteenth century could’ve possibly seen coming, nobody in the early twentieth century could really have had any database with which to project and anticipate this. And I think I’m thinking of two particular features of American attitudes that are very powerful and American practices that are very consequential that no one could’ve seen coming. The two things are the emergence and growth of outdoor recreation as an economic force in the West—and for some communities, the economic force—and an attitudinal change that without which this other thing would never have worked, the unforeseeable revolution in public attitudes towards arid and semi-arid places. The nineteenth century Americans overland travelers found deserts to be a mistake of the creator. They literally would say that, that God left this unfinished. Something must’ve distracted him. Started on the sagebrush lands and then went back and worked on Pennsylvania some more, it’s unclear what happened there. But that notion that there was something very deficient and wrong about arid and semi-arid places, well good Heavens, what a transition. It was about 20 years ago I began to realize how, I think it’s tenable to say there is not one unloved square inch of land in the American West. Now, the aesthetic attitudes have changed, many people have had what they consider to be intense spiritual experiences in sagebrush places- sagebrush? There’s a whole culture around sagebrush? If you read any overland traveler from the mid-nineteenth century, they have very negative attitudes toward sagebrush. It’s the stupidest plant they ever saw, they can’t imagine why it’s there. Mark Twain wrote very mockingly and wonderfully about it. And now people treasure sage and sagebrush lands. So that is a dramatic change, as indeed many attitudes towards nature in the United States are. There have been reference to the Bureau of Land Management, and I’ll just say that one of the great things about the Bureau of Land Management standing in our lives is that every single time the American people develop an idea of a use for or a reason to appreciate or value nature, they add it to the BLM’s mandate. [laughter] And it’s really just quite a seis- like a seismic record of every change and attitude there. They never eliminate any of the previous ones, they just
keep layering them on. So. Well, that’s a whole other topic of BLM, won’t go there. So astonish the immigrant is a game I’ve proposed playing from time to time, where we imagine bringing nineteenth century pioneers into our present moment and we try to think what would be the most astonishing change in our times. I would certainly say the love of sagebrush would really just amaze anyone from that time period. I also have sometimes said that since every pioneer settler family wanted to have livestock and wanted to protect that livestock against predators, that the other way to astonish the immigrant would be to take the immigrant into a courtroom where a case on predator control was being tried. Bring the immigrant in and say, “Now in your times, you all did everything you could to kill bears and mountain lions and wolves and coyotes, and here in our time we have, here you’ll see over on that side of the courtroom, there are attorneys who went to law school in order to represent predators in court. In our time, predators have attorneys.” [laughter] And the immigrant would say, “That can’t be. That’s—there’s no imaginable reason for that.” A friend of mine is a colonial American historian. I told that story once and she said- or made that proposition once- and she said, “Oh Patty, you’ve got that wrong historically. Predators have always had attorneys. What’s new in our time is that animal predators have attorneys.” [laughter] So I say that just because I didn’t go to law school and I could’ve and I’m always tagging behind the lawyers and trying to figure out their better understanding of water law, so that’s why I told that mean story about predators. Okay, so now we are moving on to conventional thinking propositions that need to be rethought, rejected, pruned, filtered, and maybe reconfirmed sometimes. So here’s just a few- there’s a- I’ll go through three or four of them and then probably move on to the conclusion. The first one has had such a long run to American people, the notion that nature in its water supply can function, or does function as a legislator. So the early American explorers crossing the American West in the first years of the 1800s often reported that it didn’t look workable to them for American settlement. It was too dry. It was too dry. And they were often crossing at mid-summer, a little bit of a weird behavior occurred there, cognitive behavior, where front range of what’s now Colorado, Zebulon Pike and Stephen Long, they saw dry riverbeds, or almost dry riverbeds. And they were coming- they couldn’t leave the Midwest until the winter was over and the mud was hardened, so they get there in mid-summer and they’re looking and they see dry riverbeds. And a person might ask, “Why is there a riverbed there?” So there was an open door to think, “Maybe there’s more water in the spring runoff,” but they didn’t see that, so that’s where all those notions of the Great American Desert came from, that the American West was simply too dry, too dry to support conventional American settlement. And oddly enough, some of those early explorers thought—this might surprise you—they thought that’s a relief. That’s really good news. Why? The republic was young, they did not know how big a democratic republic could be, if it overspread itself geographically that could be risky, so as I think it was Zebulon Pike said, “Are people so prone to rambling will find their limits here.” And that seemed
good, ‘cause the Union could be overstressed. They also felt that this would be a solution
to conflicts with Indians, that if the whites didn’t want it this could be the permanent zone
of Indians. Anyway, the Great American Desert was- that idea was one of the ways of
saying nature will set the limits, nature will govern our settlement and our actions,
humans will be relieved of those tough decisions. In our time- in more recent times, mid-
twentieth century, it was often expressed as the carrying capacity, people with
environmental inclinations would say that the West came with limited water and so there
was a carrying capacity and we could only support so many human beings with that
amount of water. So there’s the same dream, that nature will set the limits just as the-
Pike and Long and others saw the Great American Desert then, some environmentalists in
the last half of the twentieth century, Edward Abbey, those folks, said, “Nature rules.”
Well, not exactly. The term “carrying capacity,” that works when you have mule deer,
you have prairie dogs. The remarkable thing about mule deer and prairie dogs—and this
is very good news—they don’t go to engineering school, ‘cause it is quite dreadful to
think what they would do if they had that power. But they don’t do that, and human
beings and the power and ingenuity of engineers, that’s something that nobody, none of
the Great American Desert supporters in the- or people putting that forward- saw coming.
So that is a really important reminder to us that it comes back to us and our decision-
making. Even when we are making our most earnest efforts to say, “Nature will legislate
for us, nature will set the limits on our actions,” that’s a pretty empty thought. A second
conventional wisdom item to note: If I had a dollar for every time—well, I’d probably
need a hundred dollars I guess to really get where I want to go with this—every time I’ve
been at a water conference and someone said, “Well, it’s the way Mark Twain put it,
“Water is for”- excuse me, “whiskey is for drinking and water is for fighting.” If I had a
hundred dollars for every time I heard that, I would’ve endowed the American West for
eternity. Would just be one- my organization would thrive. The problem is, we tried to
find out- we asked the people of the Mark Twain papers if Mark Twain ever said that.
There’s no evidence that he did—not surprising, it’s not a particularly witty remark,
Mark Twain would usually have something funnier than that—so if he were to revise it-
well, he never said it, but if he were to be summoned back and he were to look around,
get a little bit oriented to our times, what’s going on in our times, then I think this is what
the rewrite that Mark Twain would’ve- if he decided it was worth his time to try to save
this silly remark, “Water is for brewing for coffee”- excuse me, “whiskey is for
drinking.” That stands. Nobody has to rewrite that. “Whiskey is for drinking, water is for
brewing coffee for serving at watershed stakeholder meetings.” [laughter] That’s true.
That is what Denver Water did for eight or nine years and came up with the Colorado
River Agreement with the Western Slope- many units within the Western Slope and
Denver, and a very remarkable- we have— I just want to mention this in case anyone is
interested in learning more about it—on June 18 to the 20th, our organization Center for
the American West will host a group funded by the National Oceanic and Atmospheric
Administration with historians looking at particular Western communities they have studied and pooling case studies where Western communities confront a drought over the last couple of hundred years and said, “This is too serious for us to fight. We have to collaborate and cooperate. Or situations where Western communities confront a drought and said, “This is too serious for us to do anything but fight each other for the last drop.” So we’re going to have a very interesting set of case studies brought together on that, plus many Western communities that swung back and forth between that. A bad mistake in planning that event occurred and we only invited historians, and John Freemuth I hope is going to be free on June 18th through the 20th, and even though he is - well, we can just make him a- we can give him something that is as flawed I suppose as my federal ID card, but we can give him an honorary historian card if he can come to us and join that. And we’ll spell your name right too. So that is a reality, that many many many case studies have shown that water is too important to fight over. And we had several speakers making that point during the day, that it is something where people have had to say, “Well now we’ll have to figure out how to get along.” A third point of a conventional wisdom, and it is something that has just crept into popular understandings, one of our speakers was saying that the Department of Water Resources gets requests from citizens to do things that they are not in fact legally authorized to do, to bring together- convene groups of collaborating people, people in Colorado, many of them think that Denver Water’s charter gives them power over land use decisions, over settlement areas, over where developments can occur. And you can read that charter over and over and it’s not there. So that pretty widespread pattern of thinking that because water is so important the people who manage it have greater powers than they in fact have at this moment—not that that couldn’t change—that seems like a place to challenge conventional wisdom, and also to celebrate that there’s a mounting set of conversations in the last 20 years between water managers and land use planners. That’s good, but it is really important to recognize where the water people actually have some constraints on what they can do. Then a point on science and climate change. So everyone signs on today to the notion that science should play a key role and is an essential role for providing the data for intelligent decision-making, policy regulation, etcetera, but that’s harder than it seems. Scientists and engineering professionals have been given very little in the way of professional training on communication, and with affection and respect, I would say that climate scientists have not performed at the highest level in effective communication. That’s not to blame victims. There have been many efforts to make this terrain as complicated as it can be by many different factions, but it has not been a successful story of scientific communication. So when there were folks saying, very rightly very appropriately today, “We must give a large role for science,” I was thinking, then let’s give an even larger role for deliberation on how scientists can and should be involved in our public conversations. To say, “You just go off, get some data, present it to us,” that is not sufficient. I have a wonderful friend Randy Olson who is a science communicator guy. He wrote a book...
called *Don’t Be Such a Scientist*, and then he wrote a book called *Houston, We Have a Narrative*. Both of those books are really good, really elemental about how scientists might enhance their game and control more of their message. I was mentioning to several people that scientists are scrupulous, scientists and engineers, in using error bars and margin of errors, they present their findings often as probabilities and whatever kinds of findings there’s always an error bar, a margin of error. The public just speeds right past that and instantly begins quoting numbers with no attention to the error bar. I have a very nice idea of having every Western community have a bar that is called the Error Bar and to get admitted, to get past the bouncer, you have to admit to some kind of uncertainty. You can’t be allowed in there. And then in the Error Bar, young people flirt the way they would flirt in any bar, except that they would do so in probabilities and so that the young man says to the young woman, “What are the chances I’ve seen you here before?” And she says, “Well, let’s get some data on this.” And they get to work on their algorithm and they, “How many blocks do you live from the bar,” and so on and so. Anyway, that would just be a public education mode on science communication. Meanwhile, if we wanted to see- if we wanted just for relief for our minds to go to a zone where we often hear- where our chances are the best they can be for hearing civil productive conversations about climate change, water managers are the place to go. Partly, we heard some fine examples today of some people saying, “You know, let the question of why, let the anthropogenic thing”—come back to that at some other point—“deal with what we are seeing” and then there’s the moment of, “there are thermometers. Thermometers do not have political affiliations!” You didn’t say that, but I think that’s, “why here’s a democratic thermometer!” That- I’m getting feverish just thinking about it. That’s a really silly idea, but I love that idea. Anyway, Jim Lockhead, the manager of Denver Water, if he- I’ve seen him on panels where others are making long complicated answers to how much we should be facing up to climate change and Jim Lockhead just says, “I’m in the business of water management. It would be irresponsible to not be paying attention to this.” Over. So, that’s refreshing. Environmental Defense Fund organized a conference in Denver that I got to be the emcee for four or five years ago. Their collaborators were the Colorado Cattlemen’s Association. The excellent Terry Finkhauser, who is Vice President of Colorado Cattlemen’s Association, he and his- a bunch of his colleagues from there were just saying in the most forthright way, “Talk to us about drought, talk to us about fire, talk to us about flood. Let’s do that for a few years and then we’ll see if we can change the-” add a few other phrases to it, but start where we are all in agreement that we have concerns. And it was a very persuasive very effective notion. So you get into the world of water and there’s some hope. I’m going to now read a climate change limerick just to lighten it up from the book. Okay.

*Climate change and the stressful life of water managers*
As the world proceeds to get hotter,
the power to predict will soon totter,
the baseline’s been battered, the norm has been shattered,
but everyone still wants their water.

So, there’s a lived reality. Okay, so there’s- yeah. Now a few last items on
communication and then some discussion. It’s really good several people have mentioned
some things of how we can wait for crisis and then we have an intense but agitated
conversation about water resources. It’s really good to be engaged in education and
communication that does not wait for crisis, the fact that several- many people have
remarked on the abundance of water and choices about what to do with the water in
Idaho. That’s really good. As an educator, when I hear people who are not educators
exult in the possibility of education, I think that’s actually harder than it seems. If- well. I
have freshmen and sophomores mostly in a class, and if they choose not to be receptive
of a responsive to your education program, then they don’t get educated. That- it’s their
choice. If they have to memorize some stuff for a test and then take the test, then they
will dump that information faster than any flushing mechanism any industrial engineer
has ever come up with for a plumbing system. So there’s so much that involves getting
attention and persuasion and consent, and also there are these darn millennials who have
all kinds of things going with social media, animation, with all sorts of forms of
communication, hip hop, etcetera. And Denver Water for instance—I think this is not
exactly millennial products— but when they wanted their greater diversion from the
Fraser River, the advocates for the Fraser River came back with a wonderful public
service ad a video that was around different places and it was a trout that- rather tall trout
that came walking out of the Fraser River and hitchhiked to Denver and held a sign
saying, “I need more water,” and so on. It was such a silly thing, and the Denver Water
fellow Jim Lockhead, the Director, just said, “We got beat on that. That hitchhiking
tROUT.” So there’s just all sorts of interesting things to be done with that. Denver Water
does have a toilet that runs across- a person dressed as a toilet- that at sporting games will
run across the field at halftime while the scoreboard says, “Don’t let your toilet run,” and
people run after the toilet- well, anyway. [laughter] So there’s all kinds of stuff for humor
that’s quite remarkable. The serious point is that water is the focal point, the hub, the
substance with the greatest relevance to every issue of land and natural resource
management. There is nothing of concern to Westerners that doesn’t in some way or
another connect directly to water. So whether it’s the forest fires, whether it’s growth,
whether it’s the quality- the origins of the Forest Service was to have the forest serve as a
watershed. That was the most important reason to create the Forest Reserve. So it takes
us whatever holds a citizen’s attention and concern and interest, that is a subject that will
connect to water. That’s good news, that connectedness, and it’s also the bad news
because you’re taking on- you can’t take on water without taking on the whole package.
So every issue that came up today is an issue that at its core is about how we live with our legacy from the past, what we keep as tradition and respect as tradition as we should, what we put forward for innovation and creativity. What should we keep, what should we change? That is the basic question that history presents to us. I was really taken with the word “waste” when it came up earlier today. I’m pretty sure that’s a direct delivery from the progressive era where progressives in the early 1900s were very concerned about waste. But that notion, that word has such an inherent pejorative meaning and in fact takes us in directions of agitation that we may or may not profit from visiting those areas. That was really really interesting. And the word “reallocation” was also- I mean, that’s the core. What do we keep from history and what do we change? Reallocation is quite a word and it has amazing complexity in all kinds of ways. So that, now we get to my actual concluding remarks: So, reallocation- just that word, I thought what a great exercise to get a bunch of millennials, get our students just hooked up to that. Various kinds of exercises to use the word without triggering alarm and panic and instead inviting this deeper historical deliberation. I don’t know what you could do with a video game, but I bet it would be better than anything I could propose. I’m sure that young people could come up with very clever ways of dealing with that. Well, all kinds of things, I guess I won’t go through a number of those. But markets, wouldn’t that be something? I mean, Lin-Manuel Miranda, Hamilton’s a big hit, he doesn’t need to work on that anymore. Why not get him to work on water and markets? Why not hip hop? Why not go with- I mean, who would’ve thought that hip hop could energize so many millions of people to care about Alexander Hamilton? So what I know about hip hop could be written a very very small index card and yet I can see the power it is having in this culture. And to keep- to get- to talk about water use in the future and not be making a very aggressive recruitment of millennials as the audience but also as the creators of the message, that is really missing a great chance. So I am now going to reminisce briefly about an Idaho Department of Water Resources meeting I went to four or five, six years ago? Seven years ago? And I thought in that group, it was I guess an annual conference, and I thought here are the people with whom I can share my hatred of lawns. So I spoke very ardently about how much I hated my lawn. And then I was to be on a panel a few minutes afterwards with a panel of farmers. So I went up to the three farmers afterwards and said hello and one farmer said to me, “Well that was quite a talk.” I said, “I’m sorry, was there a problem?” He said, “Well, you hit me where I live.” I said, “I did?” He said, “What do you think I grow on that farm?” Well, turf. Well. So that was one wonderful lesson of the difficulty of categorizing people by a quick impression thinking that I had some intuition in which I might be confident to know what someone thought before I asked the person what he or she thought. That was good. And it was just a useful way of then opening the door to later recognitions that for urban water managers, a lawn is a kind of alternative reservoir, it’s a cushion, if you were watering
lawns and then you were stricken with drought and scarcity you have someplace where
you can cut back without really seriously inconveniencing or threatening people’s
wellbeing, so those lawns for an urban water manager can be the place where there’s
water being used and if you had to cut that, in the case of a prolonged drought, it’s better.
It’s different. It certainly doesn’t interfere with any form of life but it doesn’t interfere
with things like showers and- it makes those things possible. So my easy, simple idea of
lawns as a really goofy use of water- that has not survived well. That’s why I think any
time we feel ourselves having a moment of conventional wisdom, loyalty to conventional
wisdom, it’s a time to rethink. At that same water conference—and I’m going to have to
find out- I know John was there—in the afternoon we had a very unusual presenter. We
were- our presentation was- and I saw it on the schedule and I thought, “I can’t think that
this could really be happening.” Well this was a session that came from a recognition that
water managers face significant stress in life. And they do. So there I am, here in your
community in Boise, and the presenter was a hypnotherapist. So I think, “This can’t
really be happening with all these water managers are going to be sitting here with this
woman telling us to close our eyes, to imagine ourselves in a hallway going down an
elevator, that doors open, we’re on a white beach, there’s blue water.” I thought I’m not-
I mean, I’m from Boulder, Colorado and I think this is dumb, so what will happen here?
So I’m sitting next to a guy from the department and we both kind of go, “Oh boy.” Then
we close our eyes, and then to our amazement it’s like 35 minutes later and we feel very
calm and we feel quite happy, and I assumed he would be very cynical and he was trying
to be, I assumed I would be cynical, I was trying to be, but we were both saying, “That
was pretty nice.” So that was the wildest experience I have had in the public intellectual
world of going through hypnotherapy with 300 people working in the field of water
management. After that, you have to say to yourself, “Anything is possible. There is no
limit to what we can do in public places.” So that is why I would like to end by asking for
your help with a really cool program that we have tried and we know it works and we
need to get it back out there, but it is an improbable way of communicating with a public
audience in a more energized way than we sometimes first think of when we think about
educating. So we started this 20 years ago. It’s called the Urban Rural Divorce. I play
Urbana- excuse me, I was Urbana Asphalt West, a friend played Sandy Greenhills West.
Sandy sued Urbana for divorce, he was tired of her stealing his water—that was very
primary—using his land for landfill, burdening him with unfunded mandates, keeping
him short on healthcare in hospitals and so on. So he goes, he had all the complaints that
are very familiar and lasting and legitimate and understandable. Then we had a child who
had grown up with very little guidance or supervision, Suburbia Greenlawn West, and
she drank all of our water and she was really intolerable. So we went around and we
performed that and it worked really well in a lot of communities. We did it at the Boise
City Club 15 or so years ago. It went really well. And then we let it kind of peter out.
Now after the November 2016 election, we are reviving it and we are recap- it’s
rearranged now, it is not a divorce trial, it is a marriage counselor’s last ditch effort to resolve the urban-rural conflict. So the marriage counselor is now going to have a script. It’ll be a kit, communities can take it, perform it however they would like. The marriage counselor tries to work with Urbana and Sandy and Suburbia. At any point she or he, the marriage counselor, can appeal to the audience, can say, “This seems like a locked conflict here. Is there any way- does anybody here have a way to break into that?” So it’s really more of a think tank than just a performance. So we have a revised script, we’re going to do a couple of practice readings with well-informed people, and then we will start trying to figure out how we can get this script out there for people to use. I think this is a really good idea because in fact the urban and suburban areas grow, as I already said, because of the attractiveness and appeal of the open spaces and a good share of those open spaces retain their attractiveness and appeal because they are maintained as farms and ranches. So getting this worked out, and particularly with the hinge on water, that is crucial to the wellbeing of the urban sector, the suburban sector, and the rural sector. And I end with a limerick from this 2012 book:

Rural and urban places
are tangled together like laces,
they’re like sister and brother, they depend on each other,
they have never been opposite cases.

Thank you.

[applause]

JF: We’ve got a little time, but you know we never want to keep people from the reception and the bar, right? So I don’t have any question cards now, some want to come up for a couple of minutes they want to ask them. But I want to ask one ‘cause I know Patty you’ve got a lot of experience with this. I’ve had some recent experience, and it’s taking a line from Princess Leia which is, “Help me, Obi-Wan Kenobi, you’re our only hope.” And putting Western governors in there instead. In other words, my impression of our Western governors is they’re bipartisan and in some of these collaborative deliberative urban-rural divorce, they’re our only hope right now for- they’re pushing a lot of collaboration on rangelands, on forests. Is that your experience just observing all this?

PL: We have a former director of WGA here. I think it is an extraordinary organization. I first got involved actually with in 1990 I guess, quite a few years ago. And there they are and they have been doing this- others have been in that world of trying to not go into Rs and Ds and spar, but to think what are the topics that we can take on in a collaborative way? And that is a very inspirational thing to see them. I got to do a presentation at their annual
meeting their annual winter meeting this year. So it’s really a great thing to see those folks being companionable and I gather, not to say anything about California, but I guess California kind of is in there and not in there from time to time, but that’s what we’d expect from California. So I want to add to your question though that universities and colleges and professors could be much more helpful than they are now. And that’s because to get information in a form that is temperate, that is moderate, that is not tailored to advocacy or activism, that is really a rarity to find people that will do that. I did a series in Boulder that was very strenuous for everyone, Boulder and Greeley, on called Fracking Sense. Many programs on hydraulic fraction which is very contentious, and we worked really hard to keep our credibility through that. It’s not a training program for academics for how to be a temperate moderate participant in a contentious society, but I think a lot of the younger folks are really engaged by that idea. My people of my age group with a few conspicuous exceptions, we went to college in the late sixties I think for quite a few of our contemporaries their sense of themselves is as protestors I guess was so well-settled that they were not going to be able to say, “Well, I’ve met some people who are my opposite number and really enjoyed their company.” They weren’t doing that as young people and they will retire without having done much of that. So that’s a shame. But there’s plenty of people who are in their 20s, 30s, 40s, 50s who would embrace that aspect of being a professor. So that is like, one of the hugest most gigantic most extraordinary renewable resource if we can connect it. I say renewable resource because the problem is almost exactly the same as the generation of electricity with renewable energy. The solar resource, the wind resource, is where the users who want that electricity aren’t. So you have to have transmission lines. You’ve got your solar and wind production, and those- that’s usually occurring at a great distance from the dense urban populations, so the transmission lines are huge. Same thing for universities and professorial knowledge, is that it is an enormous resource and the transmission lines are not in place by and large. You are a transmission line, so, that’s huge. So it does happen. And if you turn out to be a role model, then we’ll make it.

JF: Yeah, I just- universities, you think we’re liberal left bastions or whatever we are. No. institutionally, universities are some of the most conservative institutions in America about changing the way we do things. The world is not organized by departments, but we are.

PL: Right. Right.

JF: And we need you to demand that change though, you’re right, it’s happening.

PL: Can I just? A quote that the mystery writer Stephen King, whose books I cannot read because I would be too scared by them, but I did read his book on writing, and he says
that professors are by and large politically liberal—that may not be as true as it was when he said that—but he says, “When it comes to defending the practices in their profession, they are crustaceans in their chosen field.” And I don’t totally what it means- totally know what it means to be a crustacean in your chosen field but I think it’s one of those crabs that goes into a hole and just puts its claws out and won’t be budged on that. So if Stephen King has figured this out, it’s time to change.

[laughter]

JF: So I don’t have any more questions. Let me just say quickly and then we’ll thank Patty and we’ll move on to the reception is we will as usual have a white paper that comes out of this that’ll be brief, nonacademic, and suggest next steps in what we heard today and maybe what could happen next, all right? Like we always try to do with the Andrus Center conferences and the white papers that come. First, join me in thanking Patty for once again speaking with us.

[applause]

And the reception is down the hall in the Jordan Ballroom. I’m sure there will be people directing us and so forth and so on. Thank all of you for coming. It looks like almost everybody stayed the whole time. Hopefully we’re moving down the road to some kind of working together to deal with these issues ahead of time here in the Boise area because we’ve got that chance to do that. Thank you.

[applause]