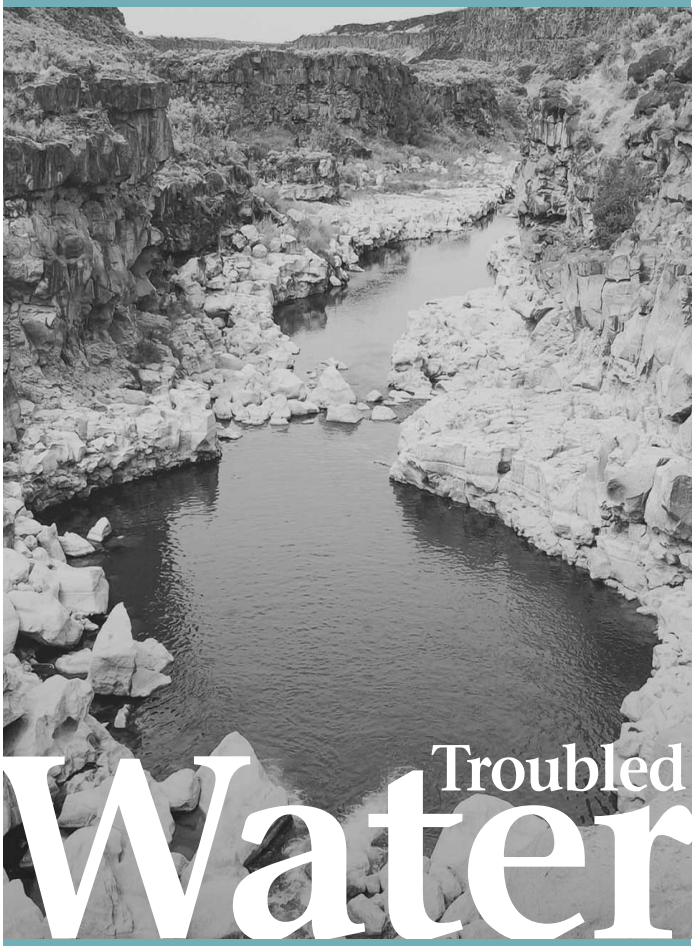
TRANSCRIPT



Troubled Water

ANDRUS CENTER FOR PUBLIC POLICY

The Idaho Statesman

IdahoStatesman.com • Always Idaho

Transcript

Troubled Water

Exploring solutions for the western water crisis

Tuesday and Wednesday, April 19-20, 2005
Jordan Ballroom, Student Union
Boise State University

Presented by:

The Idaho Statesman
IdahoStatesman.com • Always Idaho

©2005 The Andrus Center for Public Policy
This document is also available in PDF format at www.andruscenter.org.

Conference Schedule

Tuesday, April 19, 2005

9:00 AM	Welcome and Introduction Cecil D. Andrus, Chairman, The Andrus Center for Public Policy Robert Kustra, Ph.D., President of Boise State University Leslie Hurst, President and Publisher of The Idaho Statesman
9:15 AM	Keynote Address: "The Global Water Situation: Crises in Management" Richard A. Meganck, Ph.D., Rector of the UNESCO Institute for Water Education in Delft, The Netherlands
10:00 AM	Audience Question-and-Answer Forum Moderated by Governor Andrus
10:15 AM	Break
10:30 AM	Address: "An Investor's Approach to Water Scarcity" Joan L. Bavaria, President, Trillium Asset Management Corporation, Boston, Massachusetts
11:00 AM	Question-and-Answer Forum Moderated by Dr. John C. Freemuth, Senior Fellow, Andrus Center
11:10 AM	Discussion: The Global Balancing Act: Water as a Right and a Commodity Moderated by Rocky Barker, Environment Reporter, The Idaho Statesman Maude Barlow, Chairperson of the Council of Canadians Patrick Cairo, Senior Vice President, Suez Environnement North America Jan Dell, Vice President, Industrial Business Group, CH2M Hill
11:50 AM	Audience Question-and-Answer Forum Moderated by Rocky Barker
12:00 PM	Break
12:15 PM	Lunch — Student Union
12:30 PM	Luncheon Address: "Water in the American West: The Fight Goes On" Patricia Nelson Limerick, Ph.D.: MacArthur Fellow and Professor of History, University of Colorado
12:50 PM	Audience Question-and-Answer Forum Moderated by Governor Andrus
1:05 PM	Break
1:20 PM	Discussion: Whiskey's for Drinking; Water's for Worrying Moderated by Marc C. Johnson, President of the Andrus Center Michael Clark, Executive Director, Western Water Project, Trout Unlimited, Bozeman, Montana John W. Creer, President, Farm Management Co., Salt Lake City Karl J. Dreher, Director, Idaho Department of Water Resources John Echohawk, Executive Director, Native American Rights Fund, Boulder, Colorado

John W. Keys III, Commissioner, Bureau of Reclamation, Washington, D.C.
John D. Leshy, Former Solicitor, U.S. Department of the Interior; now Professor of Real Property Law, Hastings School of Law
Patricia Mulroy, Director, Las Vegas Valley Water District
Norm Semanko, Director, Idaho Water Users Association

2:50 PM Audience Question-and-Answer Forum
Moderated by Marc C. Johnson

3:00 PM Presentation: Real Solutions in a World of Scarce Water
John Tracy, Ph.D., Director, Idaho Water Resources Research Institute, University of Idaho

3:45 PM First day adjourned.

Wednesday, April 20, 2005

9:00 AM Address: "The Perspective from Washington"
Mike Crapo, United States Senator, R. Idaho (via satellite)

9:15 AM Audience Question-and-Answer Forum
Moderated by Carolyn Washburn

9:30 AM An Andrus Center Dialogue: The West's Worst Nightmares: Drought, Thieves in the Night, and Thirsty Lawyers
Moderated by Marc C. Johnson, President of the Andrus Center
Maude Barlow, Chairperson, Council of Canadians
L. Michael Bogert, former Counsel to Governor Dirk Kempthorne
Patrick Ford, Executive Director, Save Our Wild Salmon
Karl J. Dreher, Director, Idaho Department of Water Resources
John Echohawk, Executive Director, Native American Rights Fund
Dan Keppen, Executive Director, Family Farm Alliance, Klamoth Falls, Oregon
John W. Keys III, Commissioner, Bureau of Reclamation
John D. Leshy, former Solicitor, U.S. Department of the Interior
Patricia Mulroy, Director, Las Vegas Valley Water District
Rep. Bruce Newcomb, Speaker, Idaho House of Representatives
Patrick A. Shea, former Director of the Bureau of Land Management
Michael J. Sullivan, former Governor of Wyoming
James C. Waldo, former Water Advisor to Governor Gary Locke, Washington State

10:45 AM Audience Question-and-Answer Forum. Moderated by Marc C. Johnson

11:00 AM Discussion: Advice to the Policymakers
Cecil Andrus, Former Governor of Idaho and Secretary of Interior
John W. Keys, III
Rep. Bruce Newcomb
Governor Michael J. Sullivan

11:30 AM Governor Andrus adjourns the conference.

Table of Contents

Tuesday, April 19, 2005

Welcome	Cecil D. Andrus, Chairman, The Andrus Center for Public Policy Robert Dustra, Ph.D., President of Boise State University Carolyn Washburn, Executive Editor of *The Idaho Statesman*	1
Keynote Address	"The Global Water Situation: Crises in Management" Richard A. Meganck, Ph.D., Rector of the UNESCO Institute for Water Education in Delft, The Netherlands	3
Question Forum	Moderated by Cecil D. Andrus	9
Address	"An Investor's Approach to Water Scarcity" Joan L. Bavaria, Presidnet, Trillium Asset management Corporation, Boston, Massachusetts	13
Question Forum	Moderated by Dr. John C. Freemuth, Senior Fellow, Andrus Center	15
Discussion	The Global Balancing Act: Water as a Right and a Commodity Moderated by Rocky Barker, Environment Reporter, *The Idaho Statesman* Maude Barlow, Patrick Cairo, Jan Dell	16
Luncheon Address	"Water in the American West: The Fight Goes On" Patricia nelson Limerick, Ph.D., MacArthur Fellow and Professor of History, University of Colorado	26
Discussion	Whiskey's for Drinking; Water's for Worrying Moderated by Marc C. Johnson, President, Andrus Center Michael Clark, John W. Creer, Karl J. Dreher, John Echohawk, John W. Keys III, John D. Leshy, Patricia Mulroy, Norm Semanko	33
Question Forum	Moderated by Marc C. Johnson	46
Presentation	Real Solutions in a World of Scarce Water John Tracy, Ph.D., Director, Idaho Water Resources Research Institute, University of Idaho	48

Wednesday, April 20, 2005

Address	"The Perspective from Washington" Mike Crapo, United States Senator, R. Idaho (via satellite)	57
Question Forum	Moderated by Carolyn Washburn	60
An Andrus Center Dialogue	The West's Worst Nightmares: Drought, Thieves in the Night, and Thirsty Lawyers Moderated by Marc C. Johnson Participants: Maude Barlow, L. Michael Bogert, Patrick Ford, Karl J. Dreher, John Echohawk, Dan keppen, John W. Keys III, John d. Leshy, Patricia Mulroy, Rep. Bruce Newcomb, Patrick A. Shea, Michael J. Sullivan, james C. Waldo	63
Question Forum	Moderated by Marc C. Johnson	80
Discussion	Advice to the Policymakers Moderated by Cecil Andrus Participants: John W. Keys, III, Rep. Bruce Newcomb, Govenor Michael J. Sullivan	81
Adjournment	Governor Andrus	82

Participant Biographies 83

Troubled Water

Exploring solutions for the western water crisis

April 19-20, 2005
Presented by:
The Andrus Center for Public Policy
The Idaho Statesman

Tuesday morning, April 19, 2005
9:00 AM to Noon

CECIL D. ANDRUS: Welcome, ladies and gentlemen. My name is Cecil Andrus. I'm chairman of the Andrus Center for Public Policy at Boise State University. We welcome you here this morning to discuss the troubled waters. Those of us in the west think of the drought as being a very local situation, but water is a global issue. It's renewable, but it's finite in any given year. Without water, of course, life could not exist.

The Andrus Center for Public Policy and *The Idaho Statesman* joined together to bring this major issue to the forefront in a very timely manner.

Depending on where you live, the global concerns are equally important. Sometimes it's a flood, sometimes it's a drought, sometimes it's contamination. For those of you that did not see the Sunday edition of *The Idaho Statesman*, it shows the picture of a woman who has walked miles to go to a well in an underdeveloped country. More than 1.2 billion people do not have access to quality water, a situation that the United Nations is looking at. We'll hear some of that from our keynote speaker this morning.

Today, we plan to start out with our keynote speaker, who will discuss the local, national, and global issues. With his background, he is well qualified to do that. Then we will go through the schedule you see in your program, and we will finish up tomorrow with, we hope, some solutions and evaluations by people that will have the opportunity to be with us the whole time.

Let me thank, particularly, the Trillium Asset Management Group and Lisa Leff, who contributed not only financially but with time and energy to bring the conference together. I'd also like to thank the sponsors, and I call your attention to the program. Listed on the back are all the sponsors. This is a 501(c)(3) organization, and without the help of the sponsors, it would not be possible to raise the necessary funds to put this together. I would like to express my appreciation to them and also to the volunteers. All of those people you see working out front are volunteers.

There are three men you'll see a lot of during this conference. First, Marc Johnson, the president of the Andrus Center. He is also a volunteer and helps pro bono. He is one of the partners of the Gallatin Group, a public affairs/issues management firm with offices throughout the Pacific Northwest and in Washington, D.C. You will also see Dr. John Freemuth, the Senior Fellow at the Andrus Center and a professor here at Boise State University. If you look at the bios and don't find him, just know that we were a little short of paper... I know he'll get even with me somehow. The third one is Rocky Barker, the environment reporter for *The Idaho Statesman*. He was a Visiting Fellow for the Andrus Center a couple of years ago, and he continues to serve pro bono as an advisor. Those three fellows you will see from time to time.

My landlord is here, president of Boise State University. Dr. Kustra came to us a couple of years ago from Eastern Kentucky University where he was president. He has worked cohesively with the Idaho Legislature, but we'll see when we see the funding for higher education.

Following him will be Carolyn Washburn, Executive Editor of *The Idaho Statesman*, and she will give a welcome for the paper.

With that, please let me now present the president of Boise State University, my friend and landlord, President Robert Kustra.

DR. ROBERT KUSTRA: Thank you, Governor. It's great to be with all of you people in the middle of all these drought-resistant plants. Good morning and welcome. It is a delight for me, as president of Boise State, to join you for a few minutes this morning and to share a couple of thoughts.

It is almost two years since I arrived in Idaho. I can still remember my first trip here. It was my very first trip to Idaho when I came here to interview for this job. I was thinking

this morning, as I entered this room, that this was my first stop, and it was just about two years ago to the day that one of the west's most famous and best nature writers, Rick Bass from Montana, was on the campus that first night in Boise. I came to hear him, and I thought, as I listened to him, would the day ever come that I could count myself a westerner? I must tell you, ladies and gentlemen, I still feel new to Idaho in many ways, but I do feel proud to call myself a westerner and proud to be with you today.

At the same time, I feel challenged by the looming western water crisis before us, and I am honored that we have so many people with us today who are willing to learn, collaborate, and join hands to find a solutions to these vexing problems.

Years ago, the Idaho Board of Education gave to Boise State University a statewide mission in public affairs. Those were years long before Boise State's size and stature would rise to the point where we could legitimately, as we do today, call ourselves a metropolitan research university. As a university in a metropolitan area that has seen incredible growth and, along with it, of course, increased water usage and as a university that has attracted a faculty known not only for its teaching excellence but also for its research on problems facing the state of Idaho and the Treasure Valley, it is fitting that we would host this conference today, presented by the Andrus Center for the Public Policy and *The Idaho Statesman*. Today, our faculty in the geosciences, engineering, economics, political science—just to name a few—wrestle with questions of public policy that must be informed by scientific inquiry and problem solving. It is our honor today to welcome international experts, who are joining us to discuss the problems and solutions to the looming water crisis in the west.

Once again, we acknowledge and thank Governor Andrus for his leadership in bringing back to his home state the same brand of thoughtful, independent leadership that characterized his years of public service. We thank Leslie Hurst and Carolyn Washburn of the Statesman for their leadership in this conference. If you took a look at *The Idaho Statesman* this morning, you saw that the lead editorial is about this conference and the challenge before us. As they said in the editorial, westerners have spent more than a century inventing new ideas to move water across the landscape. We will have to be just as creative to address and serve the changing demographics of our region.

We are delighted to have you with us today and wish you the best in the proceedings today and tomorrow. Now, let me introduce Carolyn Washburn.

CAROLYN WASHBURN: Thank you, Dr. Kustra and Governor Andrus. *The Idaho Statesman* is proud of our partnership with the Andrus Center, which actually dates back to 2000. We appreciate Governor Andrus's leadership and working with us to examine challenging policy questions in a bi-partisan manner. Together, since 2000, we have convened six public policy conferences on issues ranging from forest fires to the role of the media in covering the west to national security, the fate of rural Idaho, and the future of the U.S. Forest Service.

All of these conferences have built on the reporting of *The Idaho Statesman* to some degree but none more than this one. *Troubled Water* comes after more than a year of reporting and more than two or three years of ramping up to it to examine how drought, the shifting economy, and increasing conflicts over water are reshaping our state. Reprints of the section we published in January are outside in the lobby if you haven't picked one up. We published it as one section instead of over multiple days, and we hoped the Legislature and our readers could use it as a reference point while everyone tried to figure this out. Disputes among farmers, fish producers, dairies, industry, and communities have been the center of the debate in the Idaho Legislature for two years. The state, the federal government, and the Nez Perce Tribe just completed an historic agreement that resolves the Tribe's claims to waters of the Snake River.

But disputes remain in play. Idaho was the fourth fastest-growing state in the nation in 2004, and as our state becomes more urbanized, we must become more innovative in stretching our water resources. Idaho is our special corner of the world, and we sometimes get caught up in our own disputes and forget that water scarcity is a worldwide problem. Most of our readers take water for granted because it's always there when they turn on the tap. Yet one out of five people in the world are without access to safe drinking water. Half of the world's population lacks waste purification systems.

I'm pleased that the Andrus Center and *The Idaho Statesman* have been able to assemble such a presitigious group of experts, activists, policymakers, and business leaders to help us all learn more about the choices we face in Idaho, the west, and the world.

Thank you for being here to be part of the

discussion and the solution. Thank you.

ANDRUS: Carolyn has been the Executive Editor at the Statesman since 1999, but she served her apprenticeship here some years prior to that before she went back to other newspapers and then waited for her opportunity to come home. We appreciate not only your being here with us today but also your continued involvement.

Now I have the pleasure of introducing to you Dr. Richard Meganck. He and I have several things in common: We both attended the graduation of his daughter and my granddaughter from a private institution a year ago. We both said, "Boy, are we glad that expense is over." Now we're looking at graduate school. Richard, maybe we'll have to take a deep breath and fulfill that commitment also.

Dr. Meganck is the Rector of the UNESCO Institute for Water Education, located in The Netherlands. He has a 27-year history of working in education, in water issues globally, and, for the last 20 years, with the United Nations. The Institute has 70 or 80 instructors and more than 700 graduate students enrolled in their programs. He is a man who understands the need for water, both from a quantity and a quality standpoint. He is a man who can give us a look at the world situation. Richard, we welcome you to the podium, and then we will have a brief question-and-answer priod at the conclusion. Dr. Meganck.

RICHARD A. MEGANCK: Ph.D.: Good morning, everyone, Governor Andrus, Mr. Johnson, distinguished guests, colleagues, all. It is a privilege to be here today in this most beautiful part of our country and to have been asked to address this particular audience. I want to be above the board with you. I am an Oregonian although we have lived and worked outside the United States for nearly 30 years with the Inter-American and United Nations systems. I have, however, made a distinct effort to stay abreast of principal land-use issues in the United States and particularly in the Pacific Northwest.

I realize that the United Nations is not universally revered in these parts, but that's a discussion for another day. Perhaps combining the fact that my roots in development began with the United States Peace Corps some 35 years ago and my heritage here in the west will allow you to give me the benefit of the doubt here today.

As the Governor mentioned, nearly a year ago we shared an honor as we sat on the dias at Walla Walla, he to present his granddaughter and I to present my daughter with their hard-earned degrees. My daughter studied hydro-geology, an obvious defect that I lay to a small kink in her DNA. Afterwards, the Governor and I had a small moment to speak, nothing formal, just small talk about a common friend, Mr. Martin Goebel, the Founding President of Sustainable Northwest. Yet, by the time I returned to Holland, an e-mail from Marc Johnson had already arrived, inviting me to this conference. So much for small talk, the power of the cyber world, and the influence of one of my former students like Martin.

I was privileged to have studied water management in the mid-60s, long before it was recognized as an issue of global importance, long before political futures were intimately tied to its management, long before wars were attributed to its access, and long before millions of lives hung in the balance, given its availability and quality. I say "privileged" because water science and management were clearly cutting-edge topics if not unusual academic pursuits in those days. One either studied watershed management or civil engineering. Today, it would probably be a more difficult exercise to list those fields of study that do not relate to water management, so complex and integrated has this field become.

The topic I have been asked to address, "the global water crisis," is a very broad one, and it would be presumptuous of me to claim familiarity with all related aspects. Therefore, I am going to attempt to focus on a couple of major water issues confronting the world and then take a leap of faith in presenting a few concepts about our progress to date.

For better or worse, water is at the very top of the international agenda - finally - largely driven by scholars, policy specialists, decision-makers, private and public investors globally, and the international community. The UN Commission for Sustainable Development has had water at the very top of its agenda for the last two years. Last month, on World Water Day, Secretary General Annan inaugurated the "UN Decade for Action: Water for Life." In September, the international community will meet to review progress on the Millennium Development Goals (MDG), one of which calls for reducing by half the number of people who do not have access to clean water or sewage services. My own Undersecretary General at UNESCO, Mr. Koichiro Matsuura, made water one of the organization's three priorities for the coming years. The largest component of the World Bank portfolio and of the Global Environmental Facility last year was in loans and grants to the water sector, both to manage

the resource base and to facilitate its use. The private sector is equally committed, investing billions of dollars in water management. Rotary International is considering water as a theme to replace its 25-year effort to eradicate polio. Not less than 150 regional and international water-related meetings will take place prior to the IV World Water Forum in March of next year in Mexico City.

Water is also at the very heart of the development debate and is as cross-sectoral an issue as any on the horizon. You can't talk about health without talking about water. Ditto that for agriculture, by far the largest use; industry with ever increasing demands, indeed all aspects of life relate to and depend upon this natural resource. Margaret Wertheim put it succinctly in an editorial in the L.A. Times recently when she said, "Pick a crisis, any crisis the world is facing today: civil war, famine, AIDS, malaria, land mines—all pale in comparison with the problem we face regarding water 'enormous in scale and brutal in consequences, especially for the world's poorest...'" (Wertheim, 2004)

Although water is the most widely occurring substance on earth, only about 2.5% of it is freshwater. Of that amount, some 99% is stored in ice caps, glaciers, or deep aquifers and not readily available to us. That fact notwithstanding, by almost any measure, the amount of available freshwater on the planet is sufficient for all of our needs — all 6 billion of us, all domestic, agricultural, and industrial needs.

What is available to maintain the ecological base of our planet in surface water, reservoirs, and shallow water lenses and wetlands is estimated at some 42 cubic kilometers of water annually, which moves continuously through the hydrologic cycle. We call this renewable water. Assuming all this was available exclusively for mankind, it would total about 7,000 cubic meters per person per year. By the year 2030, when our numbers reach 8 billion, we will still have 5,000 cubic meters per person per year. As I said, that's a lot of water by any measure, at least twice what we actually need to sustain life and to power the global economy at current growth rates for the foreseeable future (World Resources Institute, 2000).

Posing an academic question then, one might logically ask, "With all that water, do we actually have a water crisis at the global scale?" You know the answer to be a firm "yes," and it is a crisis increasing in its urgency. But why? The title of this conference is a bit prophetic as to what I will say.

The Achilles heel in the global water equation results from a combination of uneven distribution geographically in terms of population and in time, given flood and drought cycles, seasonality, and the impact of global phenomena, such as El Nino and La Nina, long-term climate change, etc. These are compounded by mismanagement, corruption, competing and inefficient use patterns and consumption rates, and a huge gap in the numbers of trained professionals to manage this resource and its related infrastructure — all affecting the quantity and quality of freshwater available.

The World Water Council summarized the situation recently in stating: "Apart from the physical problems of availability, the water crisis is really more a crisis of management resulting from bad institutions, bad governance, bad incentives, and bad allocation of resources. In all this, we have a choice, we can continue with business as usual and widen and deepen the crisis, or we can launch a movement to make water everybody's business," (World Water Assessment Programme, 2003).

While there are differences in how water is used and abused in the West of the United States as compared with other parts of the world, few would argue against the concepts that water is every bit as contentious an issue here as it is anyplace or that water has become a commodity at all levels of public and civil society and in nearly every corner of the globe. In fact, it can be argued that it is the limiting factor for continued investment and progress. One can quite literally say that water can either divide us or help form bonds and agreements that make us better neighbors — and at all levels of social, political, and economic organization.

Now I'd like to note a few more facts and figures. I do this with some trepidation, as one can find so-called "facts" to support just about any point of view. While scientists rarely agree on these issues, it is widely accepted that one-third of the world's population is likely to face severe water scarcity by the year 2025. There are an estimated 1.2 billion people who currently survive without sufficient quantities of freshwater; that's one person in six in the world. Double that number who lack access to adequate means of disposing and treating human waste; that's one in three globally. And I haven't even mentioned the word "quality" in the same breath as the word "water." Put those two together, and you can easily add an additional half billion people to these numbers. Where are these people?

Of the 1.2 billion that don't have adequate supplies of water, nearly two-thirds are in Asia. Combine that with Africa, and you exceed the 90 percentile. On the sewage and sanitation issue, the same trends hold true. That should give you an indication why there is such a push for investment in these parts of the world. It is a more complex argument than I am prepared to defend in this paper, but investment in technical assistance can be an efficient one. In fact, ODA (Overseas Development Assistance) has long been recognized as a form of enlightened self-interest. I am not an economist, but I have heard economists argue for many years that investing in a developing country — particularly in basic infrastructure and services — helps sell manufactured goods as well as consulting services from this country. And America is a magnet — some would say the envy of the rest of the world — in that regard.

In the vicious poverty/ill health cycle, inadequate water supplies and sanitation are both underlying cause and outcome: invariably, those who lack adequate and affordable water supplies are the poorest in society (World Water Assessment Programme, 2003). Depending on the source, 5,000 to 10,000 people die each day, 2 to 3 million each year, from water-related diseases, mostly diarrhea, parasites, and dehydration, mostly children under the age of 15, and mostly preventable. Some 68% of people hospitalized in the developing world are there for similar reasons, according to the World Health Organization.

Demand for water based on population rates is another measure of importance. Asia, for example, has about 36% of the world's water resources and some 60% of the world's population. North and Central America has about 15% of the world's water and only 8% of its population. But that's only part of the picture. Investment in the water sector has, until about 10 years ago, been concentrated in the developed world. Construction of dams, without question a controversial issue, has helped provide drinking water for much of the world's population, increased agricultural output through irrigation, eased transport, and provided flood control and hydropower. On the other hand, altered river flows have affected the natural flow regimens to the point where the Nile, Yellow, Ranges, and Colorado rivers are so depleted by withdrawals for irrigation that in dry periods, they fail to reach the sea. Wetlands and inland water bodies are also drying up, and aquifers are being drawn down faster than they replenish — a situation that threatens future progress — particularly in large parts of Asia and Africa. I don't have to remind this audience that there are always costs associated with benefits. But today, 90% of dam construction is occurring in China, India, Iran, and a smattering of other nations. And it's interesting that most of this investment is from national sources or private banks. Development banks are so fearful of the backlash from large segments of society that it is rare that loans are approved for this end.

Another major global water trend emanates from falling water tables being recorded on every continent, North America included. This map shows freshwater withdrawals as a percentage of a country's annual renewable water resources. If withdrawals exceed a threshold of replenishment rates, which obviously varies depending on the ecological situation but which experts put in the range of 20-40 percent, natural ecosystems, which support economic development, will be put under stress. Many countries already exceed this threshold, and some countries withdraw more than 100 percent of their annual renewable water by pumping fossil water from deep aquifers, essential mining water since it is not renewable except in a geologic time frame.

National figures also mask much of the world's water stress because of its uneven distribution and because per capita demands include water used by all sectors (Worldwatch Institute, 2004). Whether a country or region is water-rich or water-poor depends in part in how much of the global endowment it receives relative to its population size and the composition and vigor of its economy. Canada, for example, ranks near the top of water wealth; yet, Dr. Bill Cosgrove, the former president of the World Water Council, notes that the Great Lakes Commission has determined that the U.S. and Canada are already withdrawing all of the water that we can from that basin—the result being a decision not to withdraw any more water from that basin unless it can be compensated through better management. That's where more than half of Canada's population lives and where some 60% of its GDP is generated.

In the west of Canada, farmers are in the fourth year of drought, a drought that's severe enough to have impacted Canada's GDP. This drought is not like the ones we see in other countries because the base flow of water in that region is melt from the glaciers, and the glaciers are retreating. It's quite possible that within 20 years, there will be no more base flow, and droughts may be more severe. That situation is

probably not too distinct from that being faced by parts of the western U.S. I hope beyond hope that the experts are wrong and that we are not really facing the worst fire season in 40 years in Oregon, but as you know, the snowfall, even in the high Cascades, was nearly insignificant this past winter.

Poor places usually make heavier demands on water resources than water-rich ones because in drier climates, crop production also uses such a higher percentage of the total water budget. And don't forget that many countries of the world have agrarian-based economies. Egypt, for example, uses almost twice the water on a per capita basis as does Russia, not because they waste water but because 100% of their crops require irrigation whereas only 4 percent of Russia's do. Some countries are water-poor due to politics. Eighty-four percent of the flow of the Nile originates in Ethiopia, nearly 100% of which is claimed by downstream Egypt, the result of a long and complex history. The point is that natural water scarcity does not necessarily imply deprivation—nor does natural endowment imply access (Worldwatch Institute, 2004).

Withdrawal on a per capita basis on the other hand is one of the most confounding in any discussion about water and relates as much to standard of living as to water availability and the structure of the economy.

The situation has reached critical levels in certain parts of the world. What do I mean by "critical"? It is obvious that when a country is withdrawing water faster than it can be replaced, a critical situation has been reached. "Water stress" is the condition when less that 1700 cubic meters of water is available per person per year, while "water scarcity" is defined at the point when less than 1000 cubic meters per person per year is available—for all uses. The UN has defined water "stress" and "poverty" from an individual basis — between 20 to 50 liters of drinking water per day per person within a kilometer of the user's home.

Remember the figures I used earlier when I said that there was indeed a lot of water in the world? Well, the sad fact is that the number of countries classified as water "stressed" or "scarce" is increasing fast. Others with an abundant natural endowment waste more water on a per capita basis than others have. For example, Turkmenistan uses nearly all of its water in the agriculture sector while Canada's agriculture sector uses relatively little water as compared to industry.

Consider this. Most of the nearly three billion people to be added to the world's population by 2050 will live in countries where water tables are already falling and where population growth swells the ranks of what Lester Brown, President of the Earth Policy Institute, recently called "hydrological poverty" (Brown, 2004).

The World Bank expects Sanaa, the capital of Yemen, where the water table is falling by six meters annually, to have exhausted its water supply by 2010. Quetta, a provincial capital in Pakistan was originally designed for 50,000 inhabitants. It now exceeds one million, all of whom depend on a mere 2,000 wells, pumping fossil or non-renewable water from deep aquifers. Millions of villagers in northern Mexico and western China will have to move in the coming years because of a lack of water. In China, the Gobi Desert is growing by 10,400 square kilometers per year. Eighty-eight villages in Iran have been abandoned as water supplies have been exhausted in the last ten years. In Nigeria, desert lands are increasing by 3500 square kilometers each year. And I should mention that it doesn't take but a quick flight over Phoenix to determine that this oasis city of golf courses and nearby alfalfa fields defies its natural water endowment. This luxury comes at a price of depleting aquifers and water imports from the distant Colorado (Worldwatch Institute 2004).

In some ways, what's happening in parts of Africa doesn't sound too much different from what happened in our own country when three million people from the southern Great Plains left during the Dust Bowl. Undoubtedly they were an earlier version of what we now define as water or environmental refugees. Is there a point where we can say no more development? It's not a politically viable option, but a choice that will be made in many developing countries, given draw-down rates.

The list goes on. There are many more complex issues that I could mention. Among them, <u>transboundary water management</u>, affecting some 260 river basins worldwide, more than 70 in this hemisphere. It's probably sufficient just to mention the Columbia and Rio Grande river basins to bring the point home that this is an important issue. But if you think this region has problems with the Columbia, for example, involving two countries, try the Danube with 17 countries, the Nile with 10, or the Amazon with 9 countries. In mid-March, I was in Palestine where 100% of the water is owned by its neighbor Israel. Politics aside, this is a very unenviable position for any country.

<u>Water quality</u> is another Gideon's knot in the water equation. Even though water quality has

improved in North America and Western Europe in the past 20 years, worldwide conditions are degenerating, largely the result of increased and more intensive agriculture and large urban and industrial areas.

Water pricing and the battle over privatization is another major issue. Brazil and Mexico are going down the public management path. Chile and Bolivia are going down the private management path. Bolivia was just in the news last week as riots broke out over the decision to charge farmers for water — a first for that country. Promoting water pricing, though not very popular in development countries, is an effective tool to avoid depletion. The poor spend disproportionately more of their incomes on drinking water than privileged sections of the community that enjoy piped water. A growing number of stakeholders agree that it is necessary to link existing pricing policies to the quantities used, the pollution produced, and even family income. You may find these concepts to be, as my 16-year-old daughter says, a "no-brainer," but they are revolutionary concepts in much of the world.

In May 2000, *Fortune* magazine declared that "water promises to be to the 21st century what oil was to the 20th century: the precious commodity that determines the wealth of nations." The point of this statement, of course, is which nations — and corporations — will control water and how water-scarce nations will become increasingly beholden to those who control the supply.

Water as a human right is beginning to emerge as an international issue and one that will undoubtedly keep lawyers busy for many years into the future. The development of new technologies and even reviving old technologies to address water problems is gaining more currency in the development banks. The scale of investments vs. environmental impact vs. the influence of NGOs in this debate continues to impact investment decisions. Local initiatives vs. national development objectives is another issue on nearly every continent. It is obvious that issues we do not lack. You can, I hope, understand why I had to limit myself to a few.

Ladies and gentlemen, I realize that much of what I have said has concentrated on the demand or the gap side of the global water issue — the negative message. Let me assure you that all is not negative. I would like to conclude on a positive note by mentioning five specific advances, all within the context of the Millennium Development Goals (MDGs},the blueprint for development, agreed to by all 191 member states of the United Nations some five years ago and all offering a modicum of hope that we are on the right track. I ask you to think incrementally and also at the local level. Think like a Rotarian or a Peace Corps Volunteer — one inoculation at a time, one standpipe at a time, one sanitary latrine at a time. But allow yourself to think in this manner within the context of the MDGs or other broader objectives.

First, I want to note an issue that is at the very heart of progress in any field — education and capacity building. Even if vast sums of funding were to be released for infrastructure investments, the fact is that nearly all countries lack the numbers of sufficiently trained individuals to get the job done. Frankly, it doesn't do any good to invest in a treatment plant if no one is charged with its maintenance. My Institute has conducted a preliminary training needs assessment for the water sector. Initial estimates indicate that, in the context of the long-term management of what the MDGs are calling for, a 300% increase in the number of trained water managers will be needed in Africa. Asia will need to double the number of technicians and professionals, and Latin America will require at least a 50% increase — a staggering challenge. The Directors of the South Africa Water Authority told me a couple of months ago that there were 3,000 water-related jobs currently available in his country alone. That's where an Institute such as UNESCO-IHE comes into the picture. My Institute is the only UN body authorized to confer accredited MS and PhD degrees. We have trained some 13,000 post graduate water engineers, scientists, and planners/policymakers in its 48-year history, a drop in the bucket. But with our partner institutions around the world, that number is increasing rapidly to more than 1,000 ech year. And what I am most proud of, in terms of our programs, is that 98% of our students return to their countries of origin. We are not part of the brain-drain mechanism.

Do we need more trained people? Without question. And new programs like the graduate water resources program at Oregon State University can help. Also, developing country institutions are making great strides. I recently attended a graduation ceremony at the University of Science and Technology in Kumasi, Western Ghana for some 3,800 graduates. By the way, their engineering and science degrees are recognized by the most important academic institutions in the world for advanced study,

including some of the best in this country.

Everyone doesn't need a graduate degree to contribute. Short courses for technicians are also increasing. We have reached an additional 10,000 practitioners in that manner. Distance learning has opened up many new avenues from which we haven't yet realized the full benefit or even calculated the numbers participating. So there is a lot of challenge, but a lot of hope in this regard, perhaps one of the most effective and efficient investments any country can make as part of its technical assistance programs. Small steps along the right path.

Second, the very fact that the international community set measurable targets is meritorious. At least we can determine if and by what factor progress is being made. How will we know when we "get there" in terms of meeting our water needs? We probably won't — precisely that is. It's not a point on a linear graph but rather like that elusive term "sustainable development," a way of defining a direction we should take.

Let's take the water access issue in this context. As I note, the UN wants everyone to have access to water within a kilometer walking distance. To meet that goal, approximately 175,000 new connections a day for the next 10 years have to be provided. And remember this gap in coverage has almost nothing to do with water scarcity or a country's natural water endowment.

So how are we doing? Not bad at all is the short answer. Approximately 83 percent of the world's population has access to freshwater, up by 6 percent since 1990. We are probably on track to meet that MDG by 2015 in larger parts of the world, according to the World Health Organization and UNICEF. Unfortunately, there are large sections of sub-Saharan Africa and Asia where we will fall behind the MDG target. Small steps in the right direction.

Third, I want to note the levels of ODA, Overseas Development Assistance — the commitment from the developed world to the developing world as a percentage of GDP. Yes, the U.S. is the most generous people in the world in terms of gross contributions, but we are at the very bottom of the OECD [Organization for Economic Cooperation and Development] countries in terms of the size of our economy. Last month, the Board of Governors of the World Bank, including the U.S., voted to increase that institution's development program by nearly a third to $34 billion. The Scandinavian countries have now been joined by Britain, France, Luxembourg, Spain, Ireland, The Netherlands, and Belgium in making policy decisions to reach the stated goal of ODA at 0.7 percent of GDP. Here I have to be somewhat humble because the U.S. is only discussing an increase to the 0.2 level, up from the current 0.15 percent level (*International Herald Tribune*, 2004, 2005).

I also want to note, off the record, that it was very interesting to read the transcripts of Paul Wolfowitz's comments in his hearing to be president of the World Bank. He committed his new institution to working with countries to reach this 0.7% GDP level as a reasonable goal. I don't know if it was political talk or conviction. We'll have to see in the future.

Neither development nor investment are four-letter words in my opinion. They are, as Jeffrey Sachs, the Columbia University economist who headed the Millennium Development Project, recently stated "requisite to improving the quality of the human experience," which is how I define sustainable development (*International Herald Tribune*, 2005).

Investment levels are only part of the equation, however. Talks on agricultural subsidies are intimately related to the competitiveness issue as are debt-forgiveness and sector incentives. I also want to note micro credit, the single most successful lending program in the history of the World Bank in terms of payback. These are loans of between $25 and $2,500 to individuals to start businesses. The Bank enjoys a 97% payback rate, higher than that of large borrowers. One could logically ask if it is not also more efficient in terms of impact on development. Nobody at the Bank is willing to give me an "on the record" answer as to the efficiency of these loans as compared to the big loans. Once again, small steps in the right direction.

Fourth, improving management and governance. Here I am really going out on a limb, given the nearly endemic nature of corruption. Strengthening local, national, and regional institutions is essential to ensure water planning and effective management processes. Lack of coordination and lack of integrated policies often result in defective pollution control and inadequate environmental approaches. Beside this, there must be local ownership of initiatives, involving local communities and local experts in setting priorities, planning, implementing and evaluating projects. This will ensure the long-term sustainability of policies and projects. Investment is a political decision, but the success of these contributions depends on many other factors. Governments are finally starting to take note of the importance of good governance.

Perhaps it is the constant oversight process of NGOs, perhaps the new conditionality and accountability of the lenders, and perhaps it is expanded access to decision-making processes. Advances are being made on all of these fronts, and it is a very positive signal. There is a water crisis, but it is a crisis of management resulting from bad institutions, bad governance, bad incentives, and bad allocation of resources, as I noted earlier. So any advance in this regard is worthwhile.

Fifth, advances in technology are assisting in sharing information in the traditional north-south pattern, but also in the south-south and, believe it or not, in a south-north direction. Water conservation methods are as old as civilization itself. Not everything needs to be "state of the art"; at times, "state of the need" fits the bill. Maybe they, too, are small steps, but I feel they are steps in the right direction.

Some of you may feel that I have cited "soft" measures of advances. Perhaps you are correct, but they do set the stage for a more sound future. They are the foundation of a new reality in the way in which we address the global water crisis. Because it is through providing a better understanding of water that we realize that water is essential to everything that has to do with life and livelihood.

Water lies at the center of all development. Poverty reduction is not possible without delivery of clean water to the 12 billion people who do not have access. If we want to reduce the number of children under age 5 who die, if we want to raise the number of children attending schools, if we are talking about feeding more people, we can't do it without water. If we are talking about reducing poverty through economic development, we can't do it without water infrastructure and management systems. The UN recently reported that the single most important step that we could take for development is to relieve women of the task of gathering fuel wood and water. These tasks take an average four hours each day for more than 60% of women in developing countries.

Last week, Prime Minister Tony Blair noted that—and I quote—"I fear my own conscience on Africa and I fear the judgment of future generations when history properly calculates the gravity of the suffering around us. I fear those generations asking this question: How could wealthy people, so aware of such suffering and capable of acting, simply turn away and busy themselves with other things?" (*International Herald Tribune*, 2005)

Now to my final question: Do we, in the developed world, have an obligation? I think we definitely have an obligation. The question of solidarity is very important. Within any community, there are some that are richer than others. But we need to think in terms of a Marshall Plan for the water sector.

There are some countries that don't have the economic base to be able to build the water infrastructure that they need. And then I argue that the international community has the same obligation towards solidarity. Those countries that are richer have an obligation to help the countries that are poorer to get water — water for development, water for life.

Thank you.

ANDRUS: Now Marc Johnson and John Freemuth, who have hand mikes, will walk around through the audience. If you have a question, we're going to have about 15 minutes in which you have the opportunity to ask Dr. Meganck a question. Then we will have a break and keep the conference on schedule. Another thing this gentleman and I have in common is that we both attended Oregon State University. Of course I was some years ahead of him. He left OSU with a doctorate, but I didn't. If you have a question, hold up your hand. No speeches.

AUDIENCE: I'm interested in your thoughts about the role of the American West. You think of these massive global problems; yet we are quite preoccupied with our own problems. What would be the best possible outcome if we were able to think globally and still attend to our own problems? How would those two dimensions work together?

MEGANCK: Thank you for the question. There is indeed an interesting dynamic. Remember when we speak of the west, we are speaking of the North American West, which includes Canada and Mexico. Even in water-rich countries, Brazil for example, there are large sections of Brazil that are in the ninth year of a severe drought.

Two things come to mind. First are the initiatives and the sharing mechanisms that are provided through groups such as Rotarians, Lions Clubs, other international service clubs, the Peace Corps, and education exchange programs. My own daughter, after we left Japan and before we went to Europe, decided to go to Argentina, almost to Patagonia, to an area that has severe droughts. The potential of sharing at

the individual level has always been impressive to me. I noted that I was a Peace Corps volunteer, and I tell people that I got into the development business in the basement, not in the penthouse. It makes a vast difference, from my point of view, at what level we are entering this debate. We can be fairly pejorative and talk down to people, or we can actually join hands and be partners.

The second thing that occurs to me is the untapped potential of the international community in this regard. We do have mechanisms in place. Some of them can be highly bureaucratic and very frustrating, but if we do nothing else — for example in the Commission for Sustainable Development —we do bring decision-makers together in a civil environment where ideas can be exchanged. There is a tremendous amount of information being exchanged. Last night, I arrived from China, from Beijing, where I was at a conference in which people from western North America were sharing ideas with Chinese officials. There were 240 people at that meeting, all involved in some aspect of desertification, land reclamation, ecological restoration, etc. The cross fertilization of scientific principles, ideas, and practical applications is tremendously effective.

I do not look for the UN General Assembly to solve these kinds of problems. I don't look for a world body to be able to sprinkle some magic dust on the world and have these problems go away. I see a lot of hard work, particularly starting at local levels. The United Nations has also opened up its policy forums and decision-making bodies to the non-governmental world. Ten years ago, Boutros Boutros-Gghali opened up the UN bodies, including the Security Council, to approve non-governmental organizations to listen to the debate in the General Assembly. They have a voice. They have no vote, of course, but they are providing a means of cross-fertilizing the rather stagnant political debate with scientific information and shared experiences. So I would cite those two or three mechanisms as ways that our knowledge and information can benefit the world.

We have to be willing to at least explore south-north suggestions here. Agriculture is a very old discipline, and they have been doing it for thousands of years in parts of the world. I think we can benefit from those ideas.

SENATOR LAIRD NOH: Sir, you have not commented on the role of hydro-electrical power and development and how that may or may not be compatible with the other challenging demands for water resources. Do you have some thoughts there to share with us?

MEGANCK: Yes, I noted the important role that dams have played, and as I also noted, a very controversial issue. The whole issue of electricity and hydropower is indeed a very important one. There are potentially other solutions that can contribute, but it is critical, obviously, to advancing societies. Most water in developing countries is pumped water. There is a lot of surface water, but it also requires electricity to move and treat and distribute. However, when I mentioned that we have to have 175,000 connections a day each day for the next ten years to meet the millennium development goal, I'm not talking about water coming out of a tap in everyone's home. If water is available a kilometer away and can serve 500 people, then that's 500 connections. We can be efficient in terms of scale in reaching these goals by using a more realistic standard than our western or European or North American standard. If we try to apply our standard, it won't work. We won't reach those goals.

There are currently 180 dams under construction in China. There are 88 dams under construction in Iran, nearly 100 in India. These dams are going to do good things, and they are going to impact the environment. It's a good and bad scenario.

I would also like to note one experience that I had. Several years ago, I was on the outskirts of Sao Paulo, driving on a Saturday just to relax. I came around a bend and saw seven homes, hovels really, made out of discarded materials—everything you can imagine — tin and cardboard and plastic. In the center of those homes, there was a satellite dish, and I stopped, mustered my courage, and talked to these people. I asked them where the satellite dish came from, and they said that they had worked and saved for it and that it had cost $1700 U.S. dollars and could receive 95 channels, most in a language they didn't speak. Then I noted the children sitting on the ground, all with distended bellies full of parasites, and I asked about that. They said, "Well, yes, all kids have parasites." I asked where they had to go for drinking water, and they said about five kilometers. I asked where their sewage was deposited, and they pointed to the little river course running behind their home.

I had worked in development for 20 years, and just when I thought I was the expert to give advice on these kinds of things, I received a cold bucket of water in my face, so to speak.

When you think you know the answer to these problems, you better step back, learn to be humble, and learn from the people what their priorities are and where their monies are going. That's a roundabout way of saying that, for these people, electricity, which came from hydropower, and the satellite dish were more important than other things that we might judge as being important.

There is a local context that, even after working 30 years in development, I find at times I cannot penetrate. That's just a fact of life.

ANDRUS: If it takes another ten years and if we're losing from 2 to 3 million, mostly children, each year to intestinal disease, you're looking at 20 to 30 million if those numbers keep going. It's a disaster globally that we can't let continue.

AUDIENCE: Desalination. Do you think that the desalination is at least part of a practical solution?

MEGANCK: Indeed. It is part of a solution. There are places in the world where it is a large part of the solution. It's a very important technology. There are technologies that go along with the desalination issue, membrane technology. It's very expensive, but my Institute has been working on it. In fact, we just received a major international development prize for developing a low-cost membrane technology that can be used to desalinate salt water. It's very easily applied in the developing world. It is an important technology and one that will play a more important role in the future. Large investments are being made in these technologies. Unfortunately we can't get to the solutions without investment in research and development, so it is indeed a longer-term solution at the commercial industrial scale. Certainly it's a part of the answer.

AUDIENCE: I'm concerned with the growing private financing of development in countries like China and India. If the World Bank is involved, is there a requirement for some level of negotiation with other countries in a shared watershed? The Mekong in China is a good example where China is putting in five hydroelectric plants that scientists say will devastate Vietnam and Cambodia. I'm wondering if you can comment on what institutions or recourse is available to less powerful downstream states.

MEGANCK: The Mekong is a particulary complex one because China owns the upper watershed, of course, where the water is produced, and there are five downstream countries. Downstream countries, to a degree, are at the mercy of the owner of the watershed. At the same time, there are political processes in place. The Mekong Commission is an interesting one. The five downstream countries comprise the Mekong Commission and only last year was China invited as an observer to the process. If I were designing it, I would have China as the focal point since the water is either going to come or not come from China and the upper watershed. It's not only the Mekong. There are many many other transboundary watersheds, and it runs the gamut in terms of these issues. One here in Central America is the San Juan River Basin between Costa Rica and Nicaragua. Most river courses are divided down the middle between sharing countries. In this case, Nicaragua owns 100% of the river water, and its border goes over to the bank of Costa Rica. So Costa Rica asked, "Why are we going to invest in the management of that water and keeping sediment out of it? There are no benefits." But there are benefits because over the years, conventions have been negotiated, providing access to Costa Rica fishermen. If the estuary is sedimented over, neither Costa Rica nor Nicaragua will have access to water. So I look for transboundary issues and shared watersheds to really be a motivator for good, for cooperation.

We are hopeful that our Institute will be the winner next month in a decision that is being made now in the United Nations: where to house the water cooperation facility. This will be a mediation facility, which is one step short of an arbitration or going to the International Court of Justice, located in The Hague. What the United Nations hopes to do by establishing this water cooperation facility is, first of all, to save millions if not hundreds of millions of dollars in legal fees, to avoid conflict, and to provide countries an apolitical venue where they can come and put all the issues on the table, seek the advice of scientists in terms of the reality of what they think they are confronting, and then come to some mediated decision to avoid wars, to avoid other types of civil conflicts, to avoid stone-throwing across a river course, and perhaps to avoid going to international courts or to other binding arbitration.

ANDRUS: To stay on schedule, I will have to bring to an end the question-and-answer period. Let me express my appreciation to Richard for giving us a global look at a problem that, as Carolyn has pointed out, we don't recognize until we turn on the tap and the water doesn't come out or we're trying to get a third cut of alfalfa and the water is turned off in August. Then we think, "Oh my goodness, there is a crisis." There is a crisis already worldwide. Please join me in expressing your appreciation to Richard for giving us that global look.

Now we're going to have a short break. I'll see you back here in 15 minutes.

***

10:30 am Address: "An Investor's Approach to Water Scarcity"
Joan L. Bavaria

ANDRUS: OK, here we go. Ladies and gentlemen, let me re-introduce to you Dr. John Freemuth, Senior Fellow at the Andrus Center for Public Policy at Boise State University. He will conduct the next session. John.

JOHN C. FREEMUTH, Ph.D.: Good morning. We're going to run our next session just like the last one. I'll introduce the speaker, Joan Bavaria, in just a moment. She will give her remarks to us, and then there will be some time for questions afterwards.

Joan is the founding president and CEO of Trillium Asset Management, Inc., an employee-owned investment advisory company with 33 employees and approximately $800 million under management. It serves clients with concern for the social and environmental impacts of their investments. She has received numerous awards. *The Investment Advisor* magazine named her one of the 25 most influential people in the planning profession, and in October 2000, she was honored by Global Green USA president, Mikhail Gorbachov, with the Millennium Award for corporate environmental leadership. I would like to thank her, along with with Trillium again, for being a sponsor of this conference.

The title of her address today is "An Investor's Approach to Water Scarcity." Ladies and gentlemen, Joan Bavaria.

JOAN BAVARIA: Thanks, Governor Andrus, Rocky, and John. It's really a pleasure to be here in Boise. We have four offices in our company. At one point, we had three and were thinking about opening a fourth, which we thought would be in Portland. But Lisa Leff felt she had to live in Boise, so she sent me about a foot of material on Boise, which I read. So I know a fair amount about you, and in the length of time we've had the office here, a little over five years, it's become one of my favorite places to go. I just love the city. It's so much in the middle of so many things.

What I will do here today is give you an overview of investor strategy and just explain what we do. My job is to talk about investors and water. In preparing my remarks for today, I found that I really had to deal with what we do and how we do it in order to relate you to the outcomes around water.

The previous speaker actually talked about how everything is implicated around the world, almost all systems through industry, through business. Long term, intermediate term, and short term, just about every industry is implicated. We'll talk about the issues we deal with, and they have to be issues that we can get at. We're investors. We're not government or an NGO. We're private, so we have to find issues that we can actually leverage somehow through our ownership. I'll give you some specific company examples of where we've gone.

Trillium stands for three goals. First is good investments. We are an investment company, registered by the SEC. We're a regulated investment advisor, but, we also care about the process through which dollars are made for our clients. In other words, social equity. Does the process of making money disrupt society? Is it somehow unfair? Does it levy burdens where they shouldn't be levied? Third is ecological sustainability. We care very deeply about how the ecology is affected in our process of making money. Again, this is a circle of connectedness. It's not just three leaves; it's also explained by that circle.

Trillium actually commissioned a study by the Pacific Institute last year. As a result of that study, Steve Lippman, who is in the audience somewhere, was on CNBC Squawk Box, because water is a hot issue. That study was commissioned to look at the impacts on investments and the impacts on the company of the water scarcity and purity issues. The one thing we need to emphasize is the connectedness.

What do we have available to us? We have ownership. Ownership means we're a public company. We own stocks, bonds, mutual funds. We actually do put some of our assets into micro-credit, micro lending. What we're talking about here is primarily stock ownership of equities in

companies. What I'm focusing on here today is that ownership.

We try to choose companies in our client's portfolios that are more progressive. We love catching companies doing something right, using a technology that is very positive. Then we become active shareholders. We engage the companies in questions around their management, around processes that might be, in our view, destructive. This dialogue collaboration piece of our activity is very important because we bring together all stakeholders. It's not just Trillium. It's Trillium plus a community group plus an advocacy group plus perhaps even a government regulator or bank that might be implicated in the outcome of the company's business. Then if all fails, we will file shareholder's resolutions. These will often be put on the company's annual meeting ballot. Sometimes we go to the company's meetings and actually present these shareholder resolutions publicly. Over 50% of the time, when we get to the shareholder resolution stage, we are dialoguing with the company in a constructive process, and the resolution never hits the ballot.

In the process of organizing shareholders, Trillium actually is a company that is completely dedicated to this process. Part of our objective early on was to reach out to other stakeholders—other investors, research organizations, advocacy groups—and bring them into the process so that we could understand what the issues are and integrate them into our dialogues.

CERES was founded in 1988 in response to environmental issues and companies. CERES basically brought together almost all the NGOs working on the environment in this country along with the City of New York pension, the California pension, the Interface Center for Corporate Responsibility, and other big shareholders along with the community to which we belong, the socially responsible investment community. All these stakeholders came together over about a year and eventually authored what were then called the Valdez Principles. CERES named it that because right in the middle of constructing the principles in early 1989, Exxon actually did a great thing for us by running a tanker aground in Alaska and creating a brouhaha that lasted throughout the whole year. I said it was a great thing for us because lots of times, it takes that kind of event, unfortunately, to get the attention of the public. In that period of 88,89, there were dirty beaches, there was Bopahl, and there was the Exxon Valdez. Naming our principles "Valdez" did not, however, make friends with Exxon.

CERES' core program was twofold: to create a mission statement for business entities and to initiate a long-term program within which environmental reporting would become as accessible and predictable as financial reporting. Using the FASB (Financial Accounting Standards Board) as a model, we assumed that the evolution of metrics and standards and data collection and distribution would take decades. We were quite surprised at the speed with which this reporting process caught on as companies saw the value in being early adopters and helped mature the process.

One of the CERES ten principles was a mandate to report on management systems and their results. This principle has evolved to a worldwide collaboration known as the Global Reporting Initiative. The GRI is now based in Amsterdam and is a collaboration among advocacy groups, CERES, UNEP (UN Environment Programme), accountants, business, and governments in 51 countries with over 600 companies now reporting on the format.

Summarizing the key investor goals with CERES and with other social issues, they include a plan (mission statement, code, strategic plan), data and information about the operation, transparency, feedback loops with stakeholders, and subsequent re-casting of the mission as new information becomes available.

Potable water access has been identified for Trillium Asset Management as a key issue. It is obviously critical for many businesses but also for communities, agriculture, and the ecosystem's health.

Wall Street's traditional view of any scarce commodity like water is to attempt to identify ways to make money on it. It has identified water treatment and delivery as well as bottled water, water utilities, and delivery infrastructure as fast-growing sectors. Industries impacted by water include agriculture, apparel, banking, beverage, chemical, forest products, insurance, mining, oil and gas, aluminum, technology, transportation, and utilities. We are targeting the beverage, restaurant, technology, and utility industries for activism at this time.

The issues for socially responsible investors include, literally, the viability of the company and the industry but also the health of the community and environment, the equitable distribution of the resource, sustainable practices, and the protection of a valuable biological asset.

One of the effects of climate change will be to exacerbate water shortages in some

areas. We have worked with CERES, the UN, state treasurers, union representatives, and investment professionals, who are all fiduciaries of pension funds and who are urging companies in which they invest to address the risks and opportunities they face with climate change.

Recently, professionals representing $800 billion in investment assets gathered at the UN in New York to urge companies to consider climate risk. Leading companies in the utility industry, American Electric Power and Cinergy, have acknowledged climate change as a serious problem and have pledged to take steps to mitigate their carbon emissions and look at other ways they can help slow climate change over time. As with almost all of our projects, there is a very long list of collaborators.

Coca Cola believes water is one of the greatest challenges they face, and it is in dialogue with stakeholder groups to address environmental and community issues. 2.90 liters of water are used to produce one liter of product, and around the world, Coke uses 297 billion liters of water a year to produce soft drinks.

Another example of a water-related dialogue is Intel. Intel uses water to clean chips. Now, after urging from community and investment activists, Intel offsets 50% of its freshwater needs through water reuse, but it is being urged by shareholders to use new technology that would replace water as a cleaning agent and save billions of gallons of water in the Ogallala Aquifer.

Starbucks recently purchased Ethos Water and has a stated mission of wanting to help children around the world get clean water. Starbucks will have donated $1.25 million by year's end 2006 to help support water projects in the developing world.

These are but a few of the ways that we and other socially responsible investors are using their leverage to help protect our water around the world. It's a vital campaign.

Thank you.

[NOTE: As the result of technical recording problems, the first part of the Question and Answer Forum with Ms. Bavaria was not recorded. It begins again below in the middle of her answer to one of the audience questions.]

BAVARIA: . . .The Synergy AEP, the electric power dialogue was actually one of the more powerful dialogues we've ever had with an industry. Utilities are very emphasized, and agriculture is difficult because it's not a public company kind of industry. Again, one of the things I said in framing my remarks is that we have to work with whomever we can work with as owners. But we often get involved, coming in from supplies and customers, in agriculture and other industries.

AUDIENCE: How do you go about gathering and analyzing the scientific information that is the underpinning for understanding water scarcity and its risks? I want to interject that INTEL doesn't withdraw water from the Ocallala in Albuquerque. It's the Albuquerque-Middle Rio Grande aquifer. OK.

BAVARIA: How do we go about assessing the scientific information? We depend on the non-profits and studies like the Pacific Institute's studies. We do generate some of our own information, but we depend on non-profits, on governments, and on other research organizations. We almost never misquote—as I just did—we use credible studies, and we are very careful in our scientific background checks before we get into dialogues. I might also add that many of our dialogues have members from the Union of Concerned Scientists right in the room with us, people that are specialists. We bring stakeholders who have a stake, i.e. the very people who might have a strong opinion, the people who, away from the table, might cause trouble over an agreement that is reached — we bring everyone into the room. Often Trillium or CERES acts as a convener. We bring stakeholders together so that they can talk and find a solution among themselves.

FREEMUTH: Ladies and gentlemen, please join me in thanking Joan for taking time to visit with us today.

We'll just take a minute here to bring up our next panel and our moderator. As the panel comes up, it's my pleasure to introduce a good friend of mine and clearly the one who got us thinking that we wanted to do an Andrus Center conference on water, and that's Rocky Barker, the award-winning journalist from *The Idaho Statesman*. He's about to put out a book with Island Press on the fires at Yellowstone, and he has found some great new insights. Apparently Hollywood is interested in his book, and the way Hollywood wants to tell the story of fires at Yellowstone is absolutely fascinating in terms of distortion. If you have a chance, ask him to tell you about it. Ladies and gentlemen, Rocky Barker.

ROCKY BARKER: We are very lucky today, after a wonderful opening, to have a very prestigious panel to discuss the water issues. These are people who are on the ground and are debating and working on water issues in hundreds of countries all over the world. On the end is Patrick Cairo, Vice President of Suez North America. It is the second largest water services company in the world, and they provide treatment, purification, and distribution to both large cities and rural areas.

Next to him is Maude Barlow, chairperson of the Council of Canadians, one of the world's leading voices in advancing the idea that water should be treated as a human right. Take a look at our little booklet. Each of them has much larger biographies. Maude, for instance, has written a number of books and was the founder of the Blue Planet Network.

You have already met Dr. Meganck, who will join us at the end. Next to him is our third speaker, Jan Dell, Vice President of Industrial Business Group at CH2MHill. She has worked with both government and private industry to help make their water operations sustainable. She has worked all over the world and can help us understand what industry is doing now and what some of the opportunities are, things from other countries that we can use here in Idaho and the west.

I'd like to start this discussion with Maude Barlow. Why do you feel so strongly that water should not be treated as a commodity?

MAUDE BARLOW: Thank you very much, and thank you for the opportunity to be here in this beautiful city with all of you. I live in Ottawa, Canada, but I've just been in New York City where we are launching a campaign for a convention on water as a right, so it's very important to be here to share that with you. In fact, I'm going back because this is the committee for "Unsustainable" Development at the UN's annual two-week meeting at the United Nations, and they are looking at the issue of water right now.

We are on the cusp of very important decisions around the world's water. As you've heard this morning and as you probably know, living in an area where water is increasingly a concern, we have the twin problems of growing scarcity on one side and water inequality on the other. What Richard said is technically correct: we have the right amount of water in the world to sustain us all for future generations; however, we are polluting, depleting, and diverting the current sources of surface water so quickly that we are destroying our groundwater systems faster than they can be replenished. So we have these twin crises we are facing.

The world is having to deal now with the question of who should make decisions on what we suddenly understand to be a dwindling precious supply of freshwater. There are basically two sides although people will say they can all work together. Increasingly, I don't think this is true. You're going to see two different views emerging. One is that water should be put on the open market for sale and should be priced. In fact, the pricing question can happen either within the public realm or private realm, so that should be set aside. This side is promoted by the World Bank; a fairly new institution called the World Water Council; the big water companies like Suez; the big bottling companies like Coca Cola, Nestle, Pepsi, and others; and many of the powerful northern countries, particularly the countries of Europe that are the host countries of these big corporations.

They increasingly see water as a form of blue gold, which is what I called my book. They believe water is to this century what oil was to the last.

On the other side are those of us who believe very very deeply that water is different from other things. We're not against the private sector—running shoes, and cars, etc.— although we'd like them to be produced fairly, sold fairly, produced without damage to the environment, and produced sustainably. But we believe that this increasingly scarce resource is absolutely necessary for life and is irreplaceable. Therefore, it should be outside of the market. We answer the question of who owns water by this: Water belongs to no one. It belongs to the earth, to all species, and is a fundamental human right. It must be guarded by all of us so that it is sustained for generations to come.

The debate we're going to have this morning will be between a civil society movement, increasingly very strong around the world and of which I'm very much a part, and companies like Suez and the World Bank, which backs Suez. Suez is at the heart of this debate. Suez is a founding member of the World Water Council and works very closely with the World Bank, which advocates for privatization of water as a conditionality in the Third World. It's very very controversial from Manila to Johannesburg to Buenos Aires. The controversy is on Suez and the other water companies. The *Economist* magazine said recently that those companies are losing the battle in the developing world.

In the end, what we're going to have to ask ourselves is how we achieve a sustainable future for water. To me, it rests on two principles. First is massive conservation, reclamation of fouled waters, and care of what we have. The other is water justice. I would put to you that no corporation in the world that has to be competitive, particularly internationally, can sustain itself operating on the principles of conservation and equity.

BARKER: Well, Patrick. You've heard the opening salvo. . .

PATRICK CAIRO: Let me start, if I can, by saying that I agree with most of what Maude has said. Fundamentally, in the countries in which we operate, particularly in the developing countries, the water is owned by the countries, by the governments, and they establish their rules. We are a service company.

The problem with water is that most of the water that comes to the ground or is in rivers needs to be treated so that it is safe. It needs to be brought to the dwellings and the individual homes. We heard about people suffering because they must go over five kilometers to get water. Our job, as a company, is to help bring water to those people in a reasonable way. But that costs money to accomplish. The fundamental question is: Who is going to pay that money?

There are people that are extremely poor and cannot afford to pay for their water. They need to be supported. They need to have lifeline rates or, in many cases like in South Africa, they need to have a certain amount of water, say six liters per month, that is free. We operate in South Africa with some companies that bring forth this water under the purview and structure that the governments have established in terms of the tariff.

There are two fundamental things you need to understand, First is that our company in those developing countries does not own the water. Number two, we do not set the tariffs. We operate under those functions. We are a service company. Suez is about a $50 billion company worldwide. On the water side, it's about $11 billion. We service about 110 million people throughout the world. About thirty of those are in developing countries. Out of those thirty, about nine or ten or so are below the poverty level. We've connected about three million additional people in the last seven years in some of the operations we have in different parts of the world. Now that, compared to what we heard this morning as far as the challenge of the Millennium Development Goal, is really not enough when you think about 175,000 additional connections a day that we need, but we've tried to do our part. It's not enough. We need to go further, and I won't disagree with that. But fundamentally, we in the private sector can bring a certain level of expertise that is needed in those developing countries to ensure that the systems are sustainable.

The reason the World Bank went to the approach that it did in recent years is that in the early 90s, a lot of the money it gave was going toward building new facilities, and those facilities were never operated. They were cannibalized in days after the ribbon-cutting ceremonies occurred. I've seen many of those plants, and I'm sure Maude has as well. I'm sure what the World Bank was looking for was to ensure that there was going to be proper operation and proper maintenance of those systems so that, in fact, it could sustain the service to those people. That's what our company is all about. I hope in further discussions we can elaborate on all that.

BARKER: Maude, talk about that a little bit. I'm interested in how we pay for these services if the companies can't make a reasonable profit to do it.

BARLOW: First of all, there is a difference between not-for-profit private agencies and for-profit corporations. It's true that in some countries we don't have the level of government or lack of corruption that enables water to be delivered. But many developing countries owe a huge debt to the north, and they can't deliver health care or water or education or anything else because they are spending all their extra money paying back the debt to the World Bank and the International Monetary Fund. So let's start with remembering that. However, there are countries that have corruption and have problems beyond their abilities now to deliver that water.

But the World Bank could be promoting non-profit agencies that are there for that transition period. But Suez is among the top 100 of the Fortune 500 companies in the world, making the kind of profits that exceed the annual revenue of most of the countries in which they operate. This is a huge transnational that has a very controversial record all over the world.

You talk about bringing water into communities that can't afford it. I remember standing in Orange Farm, which is a township in South Africa, and watching as Suez built a pipeline, which was installed right up to people's

homes, which are really hovels. There is a tap there, and it's a miracle. But in between the pipe and the tap, there is a water meter, and you have to pay to get the electronic key charged up, and then you have to touch the key to the water meter. You can watch every drop you take being charged.

These people are the poorest people in the world, and they can't afford it. What's happened is that the government sets the rate with the World Bank and Suez, but they do it on what's called a "full cost recovery basis," which means the companies have to be guaranteed a certain rate of return, a profit for their investors. What you have here is not a company that's here to deliver water because they care about people having water. They have to maintain a certain level of investment. That's built into the contract, and some of these contracts actually guarantee a certain level of profit, whether or not the company makes a profit. The World Bank will actually guarantee to fulfill this. Make no mistake, most of this money is World Bank money.

I watched as people looked at this water meter, shook their heads, picked up their buckets, and walked down to the little rivers that have cholera warning signs on them. In the last two and a half years, ten million families have been cut off water in South Africa alone because they can't afford it. This is under a privatized system. This system is delivering the best water in the world to those who can afford it. People who cannot afford it are being cut off. I can tell you many many stories like this from around the world.

BARKER: Before you respond, I think a lot of people in this room don't understand the basic argument you're having is about how the World Bank puts restrictions on loans it makes for water development. Isn't that what we're talking about here?

BARLOW: Yes, it's called conditionalities. Part of the structural adjustment of the World Bank and other regional development banks. They have been doing this since the 1980s when they started giving huge loans to developing countries, but then the interest rates jacked up. So the countries couldn't pay back their loans. So the World Bank and the IMF and other banks came in and said, "In order to get loan renegotiation, you must redefine and readjust your economy to a North American type market economy." So they wanted them to privatize health care and education and to end public pensions for their seniors. They allowed the privatization of their energy and transportation systems, shifted over from agricultural exports to mono-agricultural exports instead of sustainable farming.

The latest is water, and there was a very big international investigation, called "The Water Barons," by an international team of journalists. It came out two years ago. They found that the World Bank's conditionality on water has dramatically increased in the last five years. Now they are saying in almost every case, if you want a loan, you have to take one of these big companies. We're going to tell you which one, we're going to tell you the conditions, and we're going to underwrite the profit. I'm telling you in country after country, there is such a fight against this that, in some cases, it is close to a civil war.

BARKER: Some of the reason is what Patrick told us. Previously, they had given money, and these treatment plants were not taken care of. They wanted to make sure that these services were going to be delivered.

BARLOW: I know Patrick wants to speak to this, but let me just say that the alternative to bad government is not a faceless transnational corporation that doesn't respond or report to anyone locally and is not responsible. If they make a mistake and have to leave, the local community is stuck with it. The alternative to bad government is good government. We all have a right to that.

BARKER: Patrick, you're dealing with this, but take us back to South Africa.

CAIRO: I hope we won't be chasing each other all over the globe, but let me stay with South Africa first. The situation in Johannesburg is that we have a management contract there. It's not a concession, which is really the full service responsibility. We have seven people there, paid on an incentive basis, with strict performance improvement incentives. Those performance improvements in those systems often entail reducing the loss of water—what we call unaccounted-for water—in the system. In most of these developing countries, about 60% of the water is actually lost through leaking pipes before it reaches the users. A good example is Mexico, which has a very severe water shortage and loses about 50% of its water. In the real poor areas of Mexico, which is the southeastern portion, it's not served because 50% of the water is lost.

Fundamentally, the difficulty with these systems is that they really need to be improved, and, yes, it is important to have capacity-building. Most of the people, when we go into those systems, are people from those countries. We put a few outside people to bring in the practices from other places that we know, but they are local companies.

I want to speak about your comment that we are a faceless company. I don't believe that's the case at all. Basically, it's a public company, and I hope Joan becomes a shareholder of our company after she reviews our conditions. Most of the people we have are people that are on the ground in those operations. They are the ones that are really responsible for taking care of things, and we haven't walked away from these contracts.

Buenos Aires was a really wonderful story until about three years ago in terms of the improvements we were able to bring. When the Argentinian peso dropped to a third of its value, we essentially had a bankrupt company there. We had invested over $2 billion over ten years to make improvements. We had to take a $700 million loss as a company to write off the impact that occurred in Buenos Aires. We did not leave Buenos Aires. We continued to operate there. Obviously, we have not been able to continue the investments because we can't get credits for that, but we've continued to operate. Probably the most satisfying thing for our people in Buenos Aires is that during the crisis—and we took it on the chin—is that the people in Buenos Aires continued to pay their bills. We have 85% peyment of those bills, even during the times of hardship. Why? Because there was customer satisfaction in terms of what we brought, in terms of improvements. Are they perfect? No. Are there flaws still in Buenos Aires? Absolutely. But fundamentally, we are not a company that walks away from our obligations.

BARLOW: I do want to say something about Buenos Aires. Buenos Aires is one of the worst examples of corporate malfeasance in the world around water. The rates have dramatically increased. Water was cut off to the poor. Despite huge rate hikes, the consortium defaulted in a $687 million loan in 2002. Water rates increased every single year. As a result, over 95% of the city's sewage is directly dumped into the Rio del Plato River.

Don't listen to me. Listen to Fernando de la Rua, one of the former presidents during Suez's tenure there. He said, "Our water rates, which were said to be reduced by 27% have actually risen 20%. These price increases and the cost of service extension have been borne disproportionately by the urban poor. Nonpayment for water and sanitation are as high as 30%, and service cutoffs are common with women and children bearing the brunt and with health and safety consequences." This man was mayor of the city and had wanted the contract. I can give you stories from Laredo, New Jersey, Milwaukee...

BARKER: Let's stick with Buenos Aires right now. I'm going to give Patrick one more on this.

CAIRO: Let me tell you the Buenos Aires story in a nutshell from 1994 to today. I went to Buenos Aires in 1994 when it started. One of my responsibilities with Suez was their technical services operation. I was in Europe for seven years, so I got to see the evolution of the system.

In 1994, most of the time, in the summertime, you had dramatic shutoffs for lack of water because the treatment plants just weren't being run. The San Martin plant, which is about a billion gallon a day plant and is the main plant in Buenos Aires, had wonderful trees growing in the filter galleries. So about a third of the plant wasn't functioning. Within a year and a half, we had that plant functioning. We corrected a lot of valving problems. We were able to supply water on a sustained basis to the city.

The second part of the problem was that they had no disinfecting of that water to speak of. So within about a year, we had a disinfection system put into place. The next thing we focused on was a wastewater treatment facility. We built two wastewater plants, and an old one was put back into operation.

Now the World Bank tender for Buenos Aires called for five treatment plants. We decided, with the support and approval of the government, that we would focus on connecting new customers, particularly for the sanitation area, rather than focusing on wastewater. Since that time, we have connected over 1.6 million additional persons, 800,000 of which are in the poor areas in the city where they have lifeline rates to support them.

That's the story on Buenos Aires, and that was working effectively until three years ago when the currency situation brought us to the point that our dollar-denominated debt that we brought in wasn't sustainable. Now honestly we had provisions in the contract that the tariffs would be adjusted if such a crisis occurred, but

it's an impossibility for the governments to do that. They couldn't triple tariff rates because then exactly what Maude was predicting would have occurred. People just wouldn't have been able to pay.

So we've struggled through the situation; we've kept the operation going; we're trying to see if there is a way to restructure things. We cannot invest as a company directly, which brings us back to the main topic of discussion we should be focusing on. Water in these developing countries is not going to be self-sustainable. I agree that the World Bank's model of trying to make water systems fully sustainable will not work if over the 30% of the population is poor, and that's what you have in most of those countries.

If you have ten or 15%, which is often what you see in the United States, then you can set up cross-subsidy rates. You have that situation where the rich are paying a bit more so that the poor can have some discounts or some lifeline rates. You can't have that in developing countries because there are just too many poor people. You're going to need just outright aid to make this thing function, not loans from the World Bank.

BARKER: I'm going to expand this. Jan, you work as a consultant for a lot of industries that go into many of the same countries where this debate is going on. They have to deal as a private company with the situations they walk into. Can you enlighten us a little bit about what can be done? What are we going to do to meet water needs for industry and agriculture in countries all over the world?

JAN DELL: Thanks for the invitation. It's really hard to segue from that conversation. I'm fascinated as an engineer. I'm trying to be logical in all this. That's the one take-away message I'd like to give all of you. Water is a solvable problem. This is not climate change where no one knows what the cause is, whether there is an irreversible reaction, and all the rest. Water is actually solvable. We saw the numbers. We know where the water is. There is technology. But is it a political issue? I, too, have seen lots of wastewater treatment plants that were built and not operating. I'd like to be a moderator and pose the question: What are some examples of places where it is working? What are the factors that have made it work? Let's focus on the future.

Common sense is what we need to think about. I want to show two things. This is the third water conference in which I have spoken on global water scarcity and where I have found Fiji water. The first time was in Brazil when I was speaking to all the Nike suppliers. Why was water imported into Brazil? The second time was talking about China water scarcity a year ago in London. Fiji water was at the hotel. Now what comes to mind? Sure, there is water here. What are the CO2 emissions involved in bringing in this water? What is the climate change involved in bringing this water here? This is an absurd practice. I know you must have nice water in Boise that we can drink.

The second time I said this—and it was reproduced in print—I came home and found out that this is Fiji's number one export. This is probably why they are able to build hospitals and schools. So it's a contradiction. It's absurd, but on the other hand, it has social value.

I have a confession. I'm from Los Angeles, a native Californian, and we do love your water. This is Sunday's *Los Angeles Times*, and the big left hand article is "Raising the River by Razing the Trees." This article says people are actually considering cutting down trees throughout Colorado and throughout the west so we can promote runoff into the Colorado River and then to Las Vegas and other places. This is absurd. Just to let you know, we in California don't want that to happen.

Actually, I'm really an expert on working around the world, and I'm here to be an optimist. Industries around the world are getting the message, often because they are getting the message from Trillium and other groups. They see water as a real risk to their license to operate and their license to grow. These are business words that are compelling at the CEO level. I have meetings with CEOs of oil companies, beverage companies, apparel companies. Water is an issue because they want to continue operating, and they want to be able to grow.

In the example that Joan gave about Coca Cola, they didn't lose their license to operate because they didn't have enough water at the factory. They had a license, and they had the technology to drill a deep well in India and get enough water to send Diet Coke around India. But the village didn't. They relied on local water from rain water, and there had been a drought for three years. So the villagers watched the company send the product out while they had none. It was an issue outside the fence line. That's the next thing that companies are really getting. I think Shell originally coined the phrase "outside the fence line." They realized that

outside the fence line is where their company also lies.

Last fall, a major auto manufacturer in South America realized that water diseases in their community were causing serious work effects for their employees. They realized that they had to solve not only their own issues but also the issues in the community to be able to produce their goods.

So there are a lot of examples I can give. I personally work with GAP and Nike, and they are doing great things around the world. Here's another one. I'm working with those companies to really make efficient operations to use the least amount of water in Bangladesh, Cambodia, China. Here's a number to remember: To process textiles, it takes 160 pounds of water per pound of textiles. For Coca Cola, it's three to one. Does anyone know how much water it takes to grow one pound of cotton? 29,000 pounds by flood irrigation.

When I drove in from the airport yesterday, I saw a bumpersticker on a van that said, "Advocate for Agriculture." I thought maybe I shouldn't give that statistic, but I have to. When you look at the lifestyle of the product, industries are forced to be really efficient, but when you look at 29,000 pounds of water by flood, only 9,000 pounds by drip irrigation. But only 7% of the world's cotton industry uses drip irrigation.

I'm here to give you the message that industry is getting it because it's dollars and cents. And then I wish that we could all apply common sense to this problem.

BARKER: Well, I liked your question so well I'm going to ask it. Maude, we've heard a lot of things that are wrong, in your view, with privatization. Give me an example of someone who is doing water development right, who is managing water right in the world, whom we can learn from, something that gives us a model that will help us, perhaps even here in Idaho.

BARLOW: First of all, I want to say that if you're worrying about trees being taken down around streams, let me tell you that in Canada, we're really worried about Los Angeles, too. We're really worried generally about what is going to happen to Canada's water because most of our water flows north. A couple of years ago, a Canadian journalist asked George Bush how he viewed Canada's water, and he said he said he saw it as part of America's water security.

You know water is in NAFTA as a good and an investment. Once we turn the tap on, we are required, as we are now under proportional sharing with our gas and oil, to continue to export to the United States. We are all really nervous. We have stopped several exports of water to the U.S. through tough political work in Canada, but it's just a matter of time we think.

Also, I want to put out here that under the General Agreement on Trade and Services (GATT), which is the new services negotiation of the World Trade Organization, they are talking about water as a service. If they add water as a service, which is being advocated by Europe because Europe has the big corporations that it wants to promote, what will happen in a city like Atlanta—which made a contract with Suez, decided it was a terrible mistake, and undid the contract—is that they would no longer have that option, once they signed under the GATT. I just want to put this out here because it's a terribly important piece of information. The World Bank, the World Trade Organization, NAFTA, the World Water Council are all institutions that are promoting the commodification and privatization of water.

I also want to say what's missing from this panel is a voice from the Third World who has lived under one of these systems, so I feel I have to be that voice although I am from Canada and not from the third world. I work a lot with people who are working in this area, and when you talk to grass roots groups around the world, you find that anyone who has lived under one of these privatizations of water will tell you it isn't working, and they want their system back. That doesn't mean they haven't had their fill of their own corrupt or inadequate or too poor government. What we're talking about is local democratic control over water.

So I'll answer your question now. Two thoughts. One is that in most of the so-called developed world, we still have public water systems, and they are still very well run. I don't know why we're tampering with something that is very well run on a not-for-profit basis because of some ideology that comes along and says that the private sector can do it more efficiently. This is where the common sense comes in. If it isn't broken, why are we trying to fix it?

In my country, we have about 99% of all our water and wastewater treatment in public hands, and 99% of it is very well done. So there are those examples. Japan is another example. They don't have much water; you can drink it out of the tap, and it's all publicly controlled. Yet they are flirting now with the whole notion of privatization.

Some countries that are struggling to maintain local control—the one that touches me most is Cochabamba in Bolivia, which was the first of these privatization in which Bechtel was brought in. Bechtel is not a water company, but they set up a water subsidiary, and the water subsidiary dramatically increased the rates by almost 300%. There literally was a civil war. People shot, and the army came out. Martial law was declared. They were successful in getting rid of the company and forcing the World Bank to rescind its position on privatization. The local people have formed a water company, and they have had help from groups like the Canadian Union of Public Employees. Our public sector employees in Canada have helped them financially and done transfer of technology, which the World Bank could be facilitating. They could be facilitating public-to-public expertise instead of Manila going private. It's just a mess. It was a mess before, and it's a worse mess now. What they could have done is bring in the experts from a public system like Japan at very little cost, at much less cost than servicing these big private companies, and taught the people in the Philippines how to run water on a not-for-profit basis.

Just one last statement on this notion of common sense. Even if a company is operating above board, is not corrupt, is not guilty of charges that have been laid against Suez and Vivendi—and they are well documented—any corporation in business for profit must find profit. So for every dollar you put into public water delivery, you have to take anywhere from 15 to 30% for your investors. Something has to give. That's only common sense. Suez is in the water business, not the rescue business. You can't be in the rescue business and, in the end, make money for the investors. That is just common sense.

BARKER: Patrick, you are in the water business, but you also are in the connection business. You're connecting a lot of people. Maude just talked about "outside the fence," and we were brought into Bolivia a little bit. You've got a debate of your own in Bolivia that has gone both ways. Can you briefly talk to us about both the success and challenges that you face in the developing world in doing this?

CAIRO: I don't want this to be a political debate in which the candidates never answer the question and just make statements, but I have to get back to a couple of points that Maude made because I can't let them go unanswered.

All I can tell you is that I am very familiar with Maude's web site, Public Citizen, and others. But I think there are two sides to the story. Please read her web site. Please read our web site as well. Please read some of the other agencies' web sites. We have plenty of documented results of successful projects that have been studied by academic groups in many parts of the world. Those things are available as well. To get a full picture of what's going on, don't just read Maude's web site because I think you will see the worst of the worst and some distortions, I may say.

Having said that, let me focus on a couple of issues. You talked about Cochabomba. You talked about a lot of different places. Actually, unfortunately, the reality of the situation is that most of the systems, let's say many of the systems in developing countries are not working well. I could go on with the statistics of operation, but basically, believe me when I say they are not working well. It's not just the loss of water. In many cases, we are also talking about massive corruption in the systems. In many cases, there is a huge overabundance of people working on those systems.

When we took over in Buenos Aires, there were 7,000 people working in that system. We couldn't figure out how there were 7,000 people. It turned out that 3,000 people were on the payroll of Agua Argentina because they were retired military people, and there was no retirement program for the military. So what they did was carry them on the water charge. Fortunately, before we took over the operation in 1994, that was corrected. But there are plenty of situations where the water system just isn't functioning properly or the governance of that structure isn't working properly. That impacts everyone. That impacts the rich, but particularly it impacts the poor when we have those situations.

Now specifically to your question about what's going on in Bolivia. Cochabomba was a bad situation. Without going into the whole history of the thing, basically the way it was structured with the bank and with the government and with the company there, the rates went up 60% the day the concession took over. That's a ridiculous thing. It's a ridiculous thing, an unconscionable thing to do before any services are improved. What's the basis for that? Naturally the thing went haywire.

Now we have another situation in La Paz and El Alto, which for about ten years was a very well-

running system. We brought a lot of additional service connections to La Paz, a very impoverished area, and we connected almost 125,000 additional people. The trouble is, particularly in El Alto, that the population has continued to migrate and grow into that area that was outside the perimeter of our concession. Today, those people have risen up and said no, they will not accept the continuation of those systems. We've taken the blame as well as the government has for not evolving and restructuring the contract to include additional help.

Let me give you an example because this is an issue for which, as we speak, they are trying to find solutions. We may or may not continue to be there, but I think fundamentally, you have a very interesting situation. In La Paz and El Alto, the government wanted to have a self-sustaining water system. It just can't function because you have too many poor people there.

Recently, the government has come back and said we have to obtain—I think it's $27 or $28 million—additional aid so that we can bring in 150,000 additional people. That's the only solution. It has nothing to do with us. It has to do with infusion of additional capital from funding sources or from giving sources external to that operation to make it sustainable. I think that's what you need in developing countries.

BARLOW: I'm going to agree with something. We're going to agree that this is a huge problem, particularly in poor urban centers where, as you say, poor people are moving in from the rural communities, and nobody—not the public or the private sector—knows fast enough how to keep up with them. I absolutely agree with that.

Let's remember that part of the reason they are being pushed off the land is that they are being taken over by large agribusiness and also, in India, by Coca Cola. Coca Cola is going into small rural communities all through India, setting up bottling plants, and drinking the local systems dry. It's a huge problem, really one for your ethical investments to look at, believe me. Coke is just hated in India. There is a whole "Quit India Coke" campaign going on at the moment.

What happens is that these people are coming into the urban communities, and no one knows how to take care of them. The people in El Alto have taken to the streets. There have been riots, people hurt, and the president has actually agreed to the protestors to ask Suez to leave. Suez is saying, "Maybe," and the World Bank is saying, "We're going to sue you for money because we want all our money back." The poor little country of Bolivia can't afford it.

My point is that when you have a problem of that immensity, the profit motive shouldn't be part of it. The profit motive is fine in certain areas. I'm not against business, and I'm not against trade as long as we have Fair Trade rules. But I think there is an argument to be made that water is different from running shoes and shower curtain liners and cars. Water is precious for life; we're running out of it; and the profit motive has no place there.

When you look at taking those 200,000 new residents that you're not able to service in El Alto, which is the core of the concern, I would say that if you didn't have to make a 15% to 20% or 25% investment profit for your investors, that's where that money would come from. As a conditionality, the World Bank could just as easily go in and say, "For no profit, we're going to bring in a not-for-profit agency or whatever. We're going to work with the government, and these are the conditions." The condition in Buenos Aires should have been that you bloody well take those 3,000 people off the payroll. Why could that not be a conditionality as opposed to"The only way to do this is to hand it to a for-profit transnational."

I don't think we're arguing that the problem is easily solved or that the governments have done everything well, but in a world where we are seeking more democracy, it seems to me that handing these services over to for-profit transnationals is a step away from democracy.

BARKER: I'm going to weigh in here. I asked Dr. Meganck to stick is around so that, after we have heard our lively debate, he might be able to offer us a little bit of analysis as a professor, sitting on the sidelines.

DELL: Do you have a Nobel to give him when he is done?

MEGANCK: Martin Goebel can testify that there are very few times when I have been at a loss for words. The title of this conference, again, is prophetic. There are, of course, no easy solutions to any of the issues that have been raised today, and there are points on both sides of the equation.

I'd like to make a couple of points. based on my own experience. The first assignment that I had when I joined the UN system in Mexico was in a very very poor area in Northern Mexico. They were impoverished farmers who were

growing a very impoverished bean crop, based on rain which rarely came, 13 millimeters a year in the driest parts and up to 10 centimeters in other parts. I was sent there to establish an ecological reserve, and nobody in the whole region had any interest in an ecological reserve.

It took me a couple of months to discover that water was the crosscutting issue. General Motors had just built an assembly plant in the same watershed. It took me about a year to convince General Motors that the best they could do for their corporate image was to donate a well. The water was very deep, and General Motors took a long time to decide. They finally decided to drill a well for these people. Overnight, their bean production trebled. They abandoned overgrazing of goats, which they had no interest in doing, and they abandoned overcutting of a very impoverished pine forest, which they had been selling for firewood in the city. And they abandoned also the most destructive of all practices: collecting organic soils to sell in the city—which, in a desert area, take millennia to build up—for use in flowerpots for city dwellers in Monterey.

This was a revolution for these people because it actually allowed them to do what they were capable of doing, which was to grow beans. In addition, with help from IFAD, which is the financial arm of the United Nations Food and Agricultural Organization, 7,000 dwarf fruit tries were put in. In this part of Mexico, there is a dormancy period required to grow these crops. They began exporting fruit in just five years to Texas and other places in the southern United States.

What they really wanted to do was be farmers. They wanted to be independent farmers. I have a tremendous respect for local decision-making that allows people to see the profit from their decisions in a relatively short time frame. Remember I started in this business as a Peace Corps volunteer after my master's degree, making $112 U.S. dollars a month. My father began to question my sanity when I did this, as you might imagine. The point is that local people know the problems best, and local decisions are many times the most equitable and the most efficient.

I've heard today in this debate several things, and I want to just note a couple. I'm sorry, Rocky, but I don't have any crystal ball on these issues because the issues have evolved over my career, at least, where at times I question whether or not we can ever come to solutions. But I know that we must. We must dedicate ourselves to finding solutions and to deliver water, particularly for people's survival.

I've heard the issue of subsidy brought up, and I believe there is some validity in the point that the rich—not only the rich in a given region but also the World Bank and corporate transnationals—should have a commitment to subsidize water for the poor.

There are very few issues—and I'm speaking now as an individual, not as a UN representative—I have found in the current Administration that I can agree with, especially terms of managing our national resources. But I will say one thing that I am in favor of, and that is that the development banks should have a much larger component of their portfolio in the grant sector than in the loan-lending sector. There must be a commitment from these large institutions, whether it comes from ODA. Everybody can take credit for contributing. I don't care who gets the credit, but I would like more money to go to the poorest of the poor. I think that the corporate sector might be able to look at a larger spreadsheet, a global spreadsheet, in determining what they can do locally. I don't know that every single project has to render the highest profitability for shareholders. Obviously at the corporate level, they must deliver, but I think there can be a contribution a component in a larger profit-making venture. So they, too, can make a contribution.

In Holland, we have to search for money like everybody else, and I frequently have interactions with Royal Dutch Shell Corporation, one of the largest corporations in Holland. In every discussion, they open up the discussion, regardless of what we're talking about, with the fact that they are producing more water than they are producing oil. Of course, they are drilling down through water lenses, so of course they are producing water. I don't know about the renewability or sustainability of much of that water.

There is a growing awareness on the part of the corporate sector, and I will say this in their favor. When presented with facts, they will react. I know that Suez itself has made a contribution. It has made a contribution to training, and we have funded professors at our institute, paid for by corporations. So there is a contribution I am personally aware of.

I also want to note that publicly-owned water processes, while they are working to try to fix the issue, have to confront the very real fact that corruption is almost endemic in certain regions. It hurts me to say that because coming from an international organization, we are

forced to work with the public sector, first and foremost, and to bring in other sectors as the problems demand. But there is an awful lot of loss, not only loss in the engineering systems, but also loss because of corruption.

The final comment I would like to make before trying to come up with some kind of a summary is that there are problems with groups such as the World Water Council, and I must admit publicly that I have been a member of the Board of Governors of the World Water Council, and I am an alternate member of the Board of Governors presently. Yes, there have been debates in the World Water Council that have been dominated by the private sector. One of them is the support for large dams and another one is the support, at least public support, for privatization issues. However, there is a growing commitment in groups such as the World Water Council to the real needs of the heavily-indebted poor countries, the poorest of the poor, where I continue to feel we must express solidarity on behalf of the human species.

So I'm sorry, Rocky, that I do not have a magic bullet to throw at this discussion. It's healthy that we do continue to debate this, and it's very very healthy that advocate groups are being allowed access to public decision-making forums such as the CSD. I should be at the CSD right now, but given the commitment I made to Marc Johnson more than a year ago to be here, I'm here and not in New York. Still, I feel a forum like this can make an invaluable contribution to the debate and to solving problems at a local and regional level. I, as an international civil servant, go with a lot more ammunition in my back pocket to bring to these debates.

BARKER: Thank you. And I want to thank all of you. It helps us here in Idaho to see that water fights are not something just for us. Hopefully we carry away with us also some ideas for ways that we can help resolve our own fights.

ANDRUS: Rocky, thank you very much. To our panel, thank you very much. Jan, to you and Richard, I apologize that our two antagonists dominated the hour. Well, let's move on to lunch. For those attorneys in the room, let me remind you that you get 7.25 hours of C.L.E. credit, so fill out those little cards and leave them with Martha Wharry, our volunteer legal counsel, who is just outside the door at the registration table. Our speaker at noon is Dr. Patricia Limerick, who will talk about water in the west. Marc Johnson will then conduct a question and answer period.

With that, we'll go to lunch.

***

Troubled Water

Exploring solutions for the western water crisis

Luncheon Address by: Patricia Limerick, Ph.D.
Professor of History, University of Colorado

Water in the American West: The fight goes On

I am a big fan of the Andrus Center and its great work, and so that alone would make the chance to speak today a welcome and valuable experience for me. But it is also a great pleasure to be on a stage with Governor Cecil Andrus, whom I consider to be the rock star of western politicians. As a Western American historian, I endured for years the frustration of thinking that I had arrived too late to meet the really interesting historical figures. I would have very much enjoyed meeting John Wesley Powell or Theodore Roosevelt, for instance, and it was an irritation to have arrived too late to chat with them. But it did finally dawn on me that I had appeared on the planet in time to meet some absolutely extraordinary people, people who will make future historians envy me my opportunities to be in the company of these consequential actors. Being at this conference with Governor Andrus is indeed one of those enviable opportunities.

When I joined Boulder Rotary a few years ago, I became a great enthusiast for the exciting new concept of speeches that could be only twenty minutes long, with ten minutes for questions. As we say at Rotary, the speaker is actually free to talk as long as he wants. It's just that if he goes past 1:30, the rest of us will be out in the parking lot, saying goodbye, just as he gets to his punch line (if he ever does). So I am pleased that the Andrus Center and Rotary seem to be in cahoots in their event-planning. I have been given the standard Rotary time slot, and I will do my best to squish the "academic within" and stay within the twenty-minute plan.

This gets me to the tough part: With just a few minutes to make the case for the helpfulness of Western history in the cause of arriving at positive and productive solutions to today's water dilemmas, what can I do with the vast history of Western water fights?

To explain my selection of topics and approaches, I begin with a confession. In my maddest and wildest fantasies, the historian would be permitted to serve society as a combination of umpire and family therapist. As in the title of my talk, the fight over water would go on, but if historians could act as referees and counselors, the fight would go on with a significant reduction of bitterness, resentment, and *ad hominem* attacks and with a significant increase in clarity when it comes to the issues of substantive disagreement. So I will try to make a case for this wild fantasy by proposing some unexpected ways in which historians could help in moderating the water fights.

I'll begin by offering a challenge to the most common use of history in contemporary natural resource fights. This is an enormously popular use of history, one that makes every participant, momentarily, into a practicing historian, even if the practice does not meet professional standards of care and caution, evidence and logic. The activity I refer to is the West's most popular political, intellectual, and cultural sport: the sport known as "blaming the other guy." Every natural resource conflict has its own version of this sport, but its basic styles of play do not vary much: You take a problem (the over-allocation of water, the suppression of fire and the build-up of fuel in public lands and forests, the pressure on the interior West to provide natural gas to the national energy economy, the clean-up of the sites of nuclear weapons production — to pick a few of the most visible ones), and then you blame another group of people for creating, causing, and/or exacerbating this problem. You blame them, as well, for the obstacles that make it difficult to find solutions. While you do this, you scrupulously refuse to look at your own participation, and the participation of others in your occupation or interest group, in the creation of the problem.

After years of just watching this sport and wishing that Westerners would spend less time blaming each other and more time finding solutions and taking responsibility for putting those solutions into action, I have recently rethought this strategy. The undeniable fact is that human beings love to blame each other; they enjoy it; they are good at it; and they do not change their ways when a historian pleads

with them to give it up. Besides, blaming does draw people into thinking historically. As they engage in acts of blame, they are at least paying attention to the past because they are getting out of the ruts of the present moment and asking the question: By what process did we get to our current condition? As a historian, I have to believe that attention to history is a step in the right direction.

So my present operating method is now this: Don't ask people to quit blaming each other. Instead, try to put this well-represented human gift, talent, and enthusiasm to good use. Ask people to go ahead with the blame but to use it as a starting point toward a more expansive and productive way of thinking about our problems. Ask people, most importantly, to reflect on the fact that nearly everyone in the West gets blamed by everyone else for the problems of western water use and allocation. Here is my preliminary list of the people who, at one time or another, have had blame shoveled onto them for the problems and conflicts bedeviling our current water systems: engineers; city-dwellers; farmers; ranchers; fishermen; miners; loggers; urbanites; land developers; office-holders in federal and state bureaucracies; elected officials holding office in city, county, state, and federal bodies; utility managers; conservation biologists; champions of biodiversity; hydrologists; climatologists; chemists; advocates of recreational rafting; ski resort operators; judges; and lawyers. Indeed, it is one of the great pleasures of being a history professor that we are considered to be so inconsequential and powerless in these matters that it is only a very desperate person, who, having run out of all other candidates to blame, would be reduced to trying to blame historians.

When you review the long list of those who get blamed for the West's water problems, you have to notice that there is a positive lesson waiting to happen here. Over a long history, all Western occupations and interest groups have played some role in getting us into our present dilemmas. We are all, more or less, sources of and contributors to the present problem. The obvious lesson of that historical recognition is that responsibility is widely distributed. In a manner that I hope we can redeem from condemnation and lamentation, the study of history truly invites us to notice that we are all complicit in producing today's problems, and if we are complicit in the production of the problem, we had better also be complicit in their solutions.

Our society is impoverished when it comes to rituals and ceremonies that can help us recognize and manage our demons while unleashing our better selves. So I will take the occasion of this speech to propose a couple of new holidays which I would hope would serve this cause. My first suggestion is called "Hydro Blame Day." Here's what we do for this important new holiday: We pick one day a year — or if this proves insufficient, one day a month — and, unleashing our natural impulses and enthusiasms, we spend that day blaming each other in every way imaginable for our water problems. On Hydro Blame Day, no one takes responsibility for anything, and everyone accuses everyone else of having caused all the problems. The only requirement for proper conduct on Blame Day is that we have to alternate speaking and listening, so, yes, of course, everyone you speak to will be blaming you, but then that party has to keep quiet while you return the favor. At the end of Hydro Blame Day, we will all have given free play to the human enthusiasm for blaming. We will all have vented and relieved tension and pressure. We will all then be ready to shake hands and admit that responsibility and accountability are actually widely shared and far more important than blame, and we can spend the next month (or year) until the next Blame Day actually trying to figure out what went wrong and what we can do to correct it.

The desired results of observing Blame Day mirror a phrase used by the minister William Sloan Coffin in the 1970s, playing on the title of a well-known pop psychology book. Rather than diagnosing the human condition as a matter of "I'm OK, you're OK," Reverend Coffin used to say it would be far more accurate and productive to rephrase this as "I'm not OK; you're not OK, and that's OK."

Consider, as one prime illustration of this principle, that complicated character, John Wesley Powell. In environmental circles, Major Powell is often remembered and celebrated as the fellow from the 1870s who plunged far ahead of his times in asking Americans to acknowledge the limits and constraints of Western water. And it is certainly true that Powell did show some remarkable courage in refusing to be steamrollered by unrealistic optimism. In his famous declaration to the Second Irrigation Congress, meeting in Los Angeles in 1893, Powell told the delegates that there was simply not enough water to realize their dreams and hopes. "What matters it whether I am popular or unpopular?' he said. "I tell you, gentlemen, you are piling up a heritage of conflict and litigation over water rights for there is not

sufficient water to supply these lands."

Well, that was a memorable moment in Western water history,. You cannot help wondering what fresh and new ideas might be available to us in the early twenty-first century if more public officials took their inspiration from Powell and prefaced their remarks on water by quoting that striking line, "What matters it whether I am popular or unpopular?" Perhaps we could create another holiday in tribute to Major Powell's example, a holiday we will call Unpopularity Day when office holders are encouraged and even expected to make unpopular statements, and voters are required to express dismay and disappointment if their elected officials do not say things in the course of that day that go against the grain and make their constituents think in fresh, if also crabby ways.

That Los Angeles speech was a moment that launched Major Powell toward canonization on his way to being St. Powell of the Environmentalists. But Powell was a human being, which means that he was a complicated guy. Powell was also a utilitarian who expected, and even supported, the de-watering of the West's streams and rivers to support irrigated agriculture. William deBuys, editor of an important collection of Powell's writings, notes that Powell's "readiness to cut down trees to increase water yield alarmed conservationists of his day." Powell was, in deBuys summary, "resolutely utilitarian in his approach to natural resources." Biographer Donald Worster quotes from Powell's famed *Report on the Lands of the Arid Region (1878)*. "All the waters of all the arid lands will eventually be taken from their natural channels," Powell predicted, "And be totally consumed." Remarks like that one were not exactly a call to arms to rally supporters of the preservation of intact nature. Worster's summary of Major Powell's complexity is worth quoting at some length:

> *"Powell's views of nature and technology, of economic progress, and even of railroads were more tangled than we usually remember. He did not hesitate, for example, to use the railroad to join his exploring party. He called for building dams, for transforming the arid lands into an agricultural empire, though at the same time he extolled the wilderness and criticized ruthless corporations. To discover the man behind the celebrity, with all his ambivalence and contradictions, is to discover a more complicated America."*

John Wesley Powell makes, in other words, a complicated and difficult-to-manage hero for advocates of any contemporary cause, which is the best reason of all to pay attention to this historical figure. He reminds us that the people of the Western past were too complicated to be jammed into the category of simple good guys or simple bad guys. That reminder, in turn, gives us the opportunity to realize that twenty-first century Westerners come with similar complications, making an effort to divide good from evil, virtue from sin, white hats from black hats, an unproductive use of our time and energy.

Now, for my next enterprise in trying to position the historian as referee or family therapist in the water fights, I turn to the long-lived hope that nature will make our decisions for us. In the late twentieth century and the early twenty-first century, Westerners who see themselves as following in Powell's footsteps have often declared that nature has used the supply of water to set a firm and clear limit to the growth of the human population in the West. By this argument, any geographical location comes with a determined "carrying capacity," and when humans or mule deer or prairie dogs or songbirds or ponderosa pine exceed that carrying capacity, they will soon be subject to the discipline of exceeded resources and declining numbers.

As a historian, however, I find the "carrying capacity" argument less and less convincing. Human beings, the record of Western history tells us in multiple ways, are a very different set of biological beings from other species. Perhaps the biggest difference is this: mule deer, prairie dogs, and songbirds do not found or attend Colleges of Engineering or Colleges of Law. Human beings have extraordinary ways of rearranging the physical environment: They can transfer agricultural water rights to others, and they can then transport water from rural places to urban places. Of course, at some point, especially with prolonged drought, the limits of engineering ingenuity might be reached, but just the simple practice of rigorous water conservation could significantly expand the numbers of Western residents who could be supported even under conditions of drought.

In other words, Western history makes it clear that the concept of "carrying capacity" operates in a very different framework for human beings than it does for other species. One conspicuous example of that is the recurrent tension between popular thinking and the findings of archaeologists on the subject of the abandonment of Mesa Verde and other Southwestern ancient

dwelling sites. Archaeologists keep declaring that the abandonment of these sites was a very complicated, multi-variate, multi-causal event, and yet a number of environmental advocates ignore the archaeologists and keep making Mesa Verde into a clear parable of human presumption, defiantly exceeding the natural limits set by water supply. By telling us over and over again that drought was just one factor in the fate of Mesa Verde, the archaeologists are trying to give us the really quite positive message that human will, human choices, and human custom have been and will remain factors of great importance and consequence.

For the historian, the effort to transfer the decision-making authority to nature arouses some sense of deja vu. In the 1850s, as the tension over slavery escalated, some American politicians argued that there was no need for this struggle. In an under-recognized aspect of Western water history, these politicians—Daniel Webster conspicuous among them—claimed that nature had already addressed the question of slavery's expansion, relieving Congress of this burden.

Historian David Potter summarized Webster's appeal to nature, a political authority in the debates over the Compromise of 1850. Restating with superb effectiveness an idea that had been advanced by President James K. Polk and Senator Henry Clay, Webster argued that it was supererogatory to insult the South by discriminating against the South's institution in an area where physical conditions would exclude it in any case. "I would not take pains to reaffirm an ordinance of Nature nor to re-enact the will of God." By this faith, the West was simply too dry to support plantation agriculture; nature had acted as legislator or even as monarch, and used water to define and declare slavery's limits.

But for all this effort to shift the burden of decision-making onto nature, the Civil War happened anyway, and the conditions of agribusiness with irrigated farming in California and the Southwest depending on migrant labor, came over the next century to bear an uncomfortable resemblance to the hierarchy of power in the pre-Civil War South. Aridity did not save the nation from the Civil War, nor will aridity now step forward to act as legislator or land planner and relieve us of the burden of making our own decisions. The decisions rest with us. We are in the midst of a great experiment to apply democratic procedures to the management of water, and we may as well give each other an occasional break, even cut each other a little slack as we pursue this consequential and stressful experiment.

This truly is one of the most important experiments taking place on the planet. From the origins of the conservation movement, the project of centrally planned resource use moved into a difficult relationship with the theory and practice of democracy. Advocates of conservation, like Theodore Roosevelt and Gifford Pinchot, frequently declared that wise resource use was in the best interests of "the people," and yet experts—not "the people"—would make the key decisions. As everyone in the room knows better than I, the most recent response to this contradiction between democratic rhetoric and elite decision-making has been a widespread movement to form watershed coalitions, groups of "stakeholders," representing different occupations and philosophical positions, but sharing a loyalty to their place of residence.

Enthusiasm for this movement can sometimes make the observer a little nervous: In the pursuit of shared understanding and common goals, will scientific expertise become just another point of view, an equal—but no more than equal—occupant of "a seat at the table" of decision-making? No doubt scientific expertise has a number of episodes of hubris to do penance for. No doubt science expertise could profit from repeated reminders of the constraints that social and cultural conditions pose. But it does seem more than possible that the penalty for past arrogance could be set too high, to a point where skepticism toward expertise deprives watershed residents of knowledge that will, in fact, determine the success or failure of their undertakings. For the historian, each of these watershed coalitions is its own instructive exploration of the question, "Can natural resource management and democratic process work together in ways that we haven't had a chance to imagine over the last century?"

Perhaps most consequentially, there is a question of patience and efficiency. All through the field of resource management, federal and state agencies have mandated all sorts of processes, venues, and arenas for "public participation." Whatever its virtues in the restoration of democratic faith, public participation is time-consuming. Hours, days, weeks, months, and years can pass while the discussion continues, feelings are shared, objections are raised, concerns are expressed, and alternatives are considered. Do we have the capacity for the endurance we will need to sit in our chairs and listen to stakeholder after

stakeholder? Given that question of efficiency, what are the prospects for public participation helping us arrive at wiser ways of water use and allocation?

That gets us to my final effort to make a case for the value of history in dealing with the current water crisis. The collection of beliefs known as "Jeffersonian agrarianism" has exercised extraordinary power in Western history. In my first year in graduate school, I was assigned to read Thomas Jefferson's *Notes on Virginia*, and certain of classic Jeffersonian statements have never left my mind. Jefferson wrote,"Those who labor in the earth are the chosen people of God, if ever He had a chosen people, whose breasts he has made His peculiar deposit for substantial and genuine virtue."

At the time I was first reading Jefferson's classic statements on the way in which a democracy must rest on an agricultural base, I had my full name listed in the New Haven phone book. Thus I periodically received phone calls from weirdos pleased to see the name of a single woman next to a listed phone number. One morning, before 6:00 AM, I had gotten up to finish *Notes on Virginia* when one of those phone calls came in. "What," said my caller in a breathy voice, "are you doing?" Well, I thought to myself, maybe this is an opportunity to test the new powers I am acquiring by going to graduate school to get a Ph.D. So instead of giving the person the sort of answer that the caller was evidently hoping for, I answered with full disclosure: "I have gotten up early to read for my class," I said, "and I am reading Thomas Jefferson's *Notes on Virginia*. My professor has told us to pay particular attention to the tension between Jefferson's loyalty to agriculture and his recognition that factories and cities would play a growing role in the American economy. I have been reading with particular interest the passages in which Jefferson displays his ambivalent pastoralism and in which he wrestles with the anxiety that wage-earning workers would not have the same political independence that farmers, who could always feed and shelter their own families, would be able to maintain. Now remember, Jefferson took the rainfall and soil of the East Coast to be the norm and the standard, and so he left us quite a vexing legacy when it comes to the question of how his agrarian vision would apply to the West."

After a minute or two of this commentary, my obscene phone caller hung up, no doubt wishing that the people who produced phone books could place a special coded warning mark next to the names of young women who were enrolled in Ph.D. programs. But this was, certifiably, an ignorant and ill-informed caller, a state of affairs measured by the fact, not that he found my commentary so unbearably boring. Had he had a better sense of Western history, who knows? Maybe he would have found my commentary unbearably stimulating. After all, there is no way to miss the fact that Thomas Jefferson's ideas — and his contradictions — have proven to be of enormous consequence in the lives of those who followed him on this planet, and there is no better place to see this than the American West and its use of water.

Was the interior West really suitable for agriculture in the nineteenth century? Was it logical, reasonable, sensible, and economically wise to try to turn it into a region of farms? The objective answer — taking into account the uncertain precipitation, the high elevations, and the distance from markets — would have to be, "Maybe not." Did those obstacles keep farmers and federal officials from undertaking to make the West suitable for agriculture? Of course not. From the farmers who soon moved in to take advantage of the market for food presented by mining towns, to the engineers who went to work to reshape the West after the creation of the Reclamation Service in 1902, there are plenty of examples to show that much of the history of this region has been shaped by an effort to reconfigure the West in the form of the Jeffersonian agrarian dream.

Was that a mistake? Was it an error from which we are now, in the much-proclaimed and discussed shift from Old West to New West, trying to recover? Do we have the political capacity — or the cultural capacity or the emotional capacity — to look at this broad sweep of history and to ask ourselves serious and searching questions about the values we received from our agricultural heritage in the West? Before the people in this room representing agricultural interests become dismayed, let me make clear that I am personally a supporter of means and mechanisms that will support the retention of an agricultural economy in the West. In truth, small farms and ranches are cultural resources in themselves. In many western places, the farmers and ranchers who remain among us are living ties to an important past. In a development of considerable political consequence, enthusiasts for open space have, more and more, come to realize that the maintaining of farms and ranches, whatever they may do to transform ecosystems, can be essential to keeping views open and horizons clear. So there are, in my

judgment, some substantial and convincing arguments to defend the generous allocation of water to agriculture in the West.

Yet the long-running importance of the urban West also deserves our attention. When we think of the nineteenth-century West, our thoughts go toward the wide open spaces and toward the work of fur trappers, ranchers, farmers, loggers, and miners — participants in quintessentially rural enterprises. And yet towns and cities and the enterprises associated with towns and cities were equally important features of nineteenth century Western life, important to the degree that urban enterprises — especially shops, stores, and merchandising — could themselves be classified as key economic features of the Old West.

To make the point about the importance of urban life in the nineteenth century West, my friend, Quintard Taylor, a historian at the University of Washington, made a much under-recognized inquiry into the Census records of the late nineteenth century. First, he defined two occupational categories: cowboys and clerks. He made his definition of "cowboy" very expansive, including ranchers, herders, and drovers. Then he looked at the census for 1870, 1880, and 1890 in the Western states and territories. Quintard Taylor found that, in 1870, cowboys comprised 1.4% of the Western workforce. In that same year, clerks were 1.7% of the working population. More clerks than cowboys, then, in this formative year for the West. Then in 1880, the cowboys narrowly outnumbered the clerks. 38,000 cowboys in 1880 and 35,000 clerks. By 1890, after the great decline in the cattle industry in 1887-1888, the clerks left the cowboys in the dust. 61,000 cowboys and 114,000 clerks; cowboys at 2% of the workforce, and clerks at 3.7%. Making a semi-educated guess, I would imagine that if we looked at movies set in the West, the proportion would be 99.9% movies about cowboys and 0.1% movies about clerks (though I do remember in the cowboy movies, some wimpy characters, fussing with account books and wearing shirts with high collars and very susceptible to flustered panic over the pending arrival of the outlaws — not exactly what you'd call an affirmation of Clerk Pride.) Despite his statistical advantage, the urban Western clerk awaits his recognition and his cinematic muse, which tells us something important about popular memory and the West, especially the sentiment we attach, in really rather unconscious and unexamined ways, to particular Western occupations and economies.

Since I am starting to approach serious violation of Rotarian rules on the brevity of speeches, I conclude with the point that is most compelling to the historian hoping to improve the quality of the Western water fights, and that is the wish that Westerners could be persuaded, invited, and coaxed into thinking in larger units of time. When it comes to Western water, the shortness of the election cycle is an ungainly and unfortunate match to the length of the planning horizon that would so dramatically improve our thinking about water and its use. We need, in other words, to experiment with strategies to take the needs and rights of our descendants seriously. We need some way of persuading ourselves to believe in the reality of posterity and in our responsibility to factor the needs of posterity into our decisions and into calculations of our own action and conduct.

So I conclude with a proposal for another holiday, "Take Posterity to Lunch Day." To the stranger or visitor, Take Posterity to Lunch Day will be mystifying and difficult to decipher. It will consist of many people going out to lunch and sitting at tables by themselves. But there will be a placemat, silverware, a menu, and a glass of water at the empty seat across the table from each luncher. The real action will be taking place inside each participant's mind as he or she tries to imagine a representative from posterity occupying that empty seat and to take seriously the idea that the people who are not yet born are serious and real, that posterity has rights, and that people in the present have obligations to posterity. People living in the Rockies will have a particular advantage with this ceremony because they can direct their vision toward the mountains, plains, canyons, and mesas, and this astonishing landscape should give a boost to our attempts at long-term thinking. But the key moment will come with the bill. According to the ritual of Take Posterity to Lunch Day, when the bill comes, you are supposed to take it, hand it back to your waiter, and say," Actually, my companion will pay this bill." At that point, the ritual calls for each waiter to raise his eyebrows and say, "You are going to try to make posterity pay for your lunch? You can't hand this bill to someone who isn't even here yet!" At that point, the ritual calls for the person who has just eaten lunch to say, "Well, yes, of course I ate the lunch so I ought to pay for it. I don't know what I was thinking." After a few celebrations of Take Posterity to Lunch Day, the world will simply have to be a better place. And on Take Posterity to Lunch Day, the lunchers will be particularly encouraged to sit at their tables and contemplate — and keep their hands off — Posterity's glass of water.

It is a wonder and a miracle of life on this planet, a wonder we far too often take for granted, that water circulates and is replenished; that the atmosphere continues to draw water from the oceans; that the rains and snows continue to fall on land; and that the streams and rivers continue to run. Posterity will benefit from that cycle, but posterity also requires of us some good-faith attention to long-range thinking. As we try to rise to this challenge, I offer my final observation. The record of Western history is full of improbability; historical change is full of surprises. History is not a conveyor belt or a moving sidewalk; we are not creatures of fate, riding passively along on trends or patterns. We look for fresh and innovative approaches to the problems we face; history does not and cannot constrain us or our imaginations. As constrained by our history as we may sometimes see ourselves, as fenced-in as we may feel by the decisions and actions taken by our predecessors and ancestors, we are actually operating, as they were operating, in a wide arena of choice.

We are free — to use a phrase Wallace Stegner sometimes used to conclude his speeches — "to dream other dreams, and better."

***

Troubled Water

Exploring solutions for the western water crisis

Afternoon Session: 1:00pm to 5:00pm
Discussion: "Wiskey's for Drinking, Water's for Worrying"

CECIL ANDRUS: We have an outstanding group of people on the panel this afternoon, and they will be introduced by Marc Johnson. The title of this discussion is "Whiskey is for Drinking; Water is for Worrying."

With the panel this afternoon, we move into western water and the subject of the drought. Let me introduce to you the man who will introduce the panel and who will be the moderator, Marc Johnson. Marc is the president of the Andrus Center for Public Policy, a pro bono position. He volunteers his time and does a whale of a job keeping things moving. In his professional life, he is one of the partners of the Gallatin Group, a public affairs/issues management group with offices throughout the entire northwest and Washington D.C. So he's a busy fellow, but he has given us his time today. Mr. Marc Johnson.

MARC JOHNSON: Good afternoon, everyone. Would you join me in acknowledging the fact that there are few people in the United States or the western United State who could assemble, as former Governor Andrus has done, such an interesting group of people to talk about such a contentious damned problem.

One of the beauties of the Andrus Center and one of the notions that we have tried to cultivate over the last ten years is the notion that we can talk in a constructive and civil way about these important and terribly difficult issues. The Governor has really put his imprint on that approach. Please join me in thanking him for being willing to do that.

Well, now that we have solved the global water problem this morning and clearly took that one off the table, we can move on. We were informed by Patty Limerick at lunch that history is a guide of sorts as to how we might think about some of these contentious issues. We have assembled a very distinguished panel this afternoon from a variety of perspectives to drill down to some of the issues that confront us here in the west. As the late Mark Reisner, author of *Cadillac Desert*, once reminded us, "The West has a desert heart." That's a good place to jump off today.

Let me introduce our panel. At the far end of the table is Mike Clark, Director of the Western Water Project for Trout Unlimited. His responsibilities include work in Idaho, Montana, Wyoming, Colorado, Utah, and California, states that are pivotal to these discussions of western water. Next to Mike is John Creer, president of the Farm Management Company. In that role, he manages the agricultural lands that are owned and operated by the LDS Church, a significant land owner and land operator in the west. John is a farmer and former counsel to the American National Cattlemen's Association. Next to John is Karl Dreher, known to many local folks here. He is the senior director of the Idaho Department of Water Resources. Karl just entered his third four-year term in that job; he is an engineer by training and a past chairman of the Western States Water Council. Next to Karl is John Echohawk, executive director of the Native American Rights Fund, a position he has held since 1977. He is consistently regarded as among the 100 most influential attorneys in the nation, a graduate of the University of New Mexico, and a member of the Pawnee Tribe of Oklahoma.

Next to Mr. Echohawk, John Keys III, is the 16th Commissioner of the Bureau of Reclamation. A 34-year veteran of the Bureau—you're going to find a steady job one of these days, John—he has worked on issues in the Great Basin, the Colorado River, the Columbia River, and the Missouri River. He is a professional engineer, and we're happy to have you back in Idaho. Next is John Leshy, another distinguished attorney, former Interior Department solicitor, now a Distinguished Professor of Law at Hastings College of Law and a graduate of Harvard Law School. The rose among these thorns is Kay Brothers, the Deputy General Manager of the Southern Nevada Water Authority, an engineer and operator of a major water system in an extremely fast-growing area of the American West. She has worked for the authority since 1986 and is an environmental engineer by training. We're delighted to have Kay with us today. She agreed to come after it became

impossible for her boss to join us. Last but not least is Norm Semanko. Norm is president of the National Water Resources Association as well as executive director and general counsel for the Idaho Water Users Association. He, too, is a lawyer. We're going to have some fun with these folks this afternoon and hopefully drill down to some important issues that confront us here in the west.

Commissioner Keys, I'm going to start with you, sir. Here we are, April 19th. We have just started into another irrigation season in most of the west. Canals here in southwestern Idaho are starting to flow. As we sit here on this Tuesday afternoon in April, tell us, from your perspective, what kind of water year we're going to have in the west in 2005.

JOHN KEYS: I could use this as a crystal ball, and it would do as well as any other crystal ball I could use. It is a mixed bag. It is probably no different than water years we have seen in the past. There are some areas of the west that have good snow pack; there are some that have no snow pack; and there are a lot in between. The winter that we are coming off is an absolute typical El Nino year. If you take one of the drought maps on the web, you will see the desert southwest being wet. We have runoff forecasts in the 200% of normal range for Southern California and a lot of Arizona. We have 150% in parts of New Mexico. In the northwest, parts of Washington, parts of Oregon and Montana, we have some irrigation districts that will get no water this year. The state of Washington has declared disasters as has the state of Montana. The northern parts of Oregon have done so as well, and Wyoming is considering such disaster declarations. In between, we have basins that have 130% of normal and basins that have 60% of normal.

You say the west has a desert heart. That is absolutely right. We live in a arid part of the country, one that depends on irrigation for agriculture and a lot of our streams for the waters we live by. It will be a challenging year in some places.

I look back to the theme you have here, "Whiskey's for drinking; water's for worrying." You're darn right it's for worrying. I look back to the time when I went into office in 2001. I walked in the door, and they said, "We shut the water off in the Klamath Basin last month." So we worked at it and got some water flowing by the end of the year.

But at the end of that year, Secretary Norton called me and the Assistant Secretary in, and she said, "Where in the rest of the western United States is the next Klamath, and where is the one after that?" We started a program called "Water 2025" to try to get a handle on where those hot spots in the west are and where they will occur in the next 25 years. We have put programs together for water conservation, for challenge grants for districts and cities, and we're trying to address the need for water conservation.

JOHNSON: Is there a Klamath in our future right now?

KEYS: There are a number of places where Klamath conditions exist. I think that we are down the road toward addressing some of the conflicts and crises in those areas to keep them from happening. But with the right sort of conditions, there are places where it could happen.

JOHNSON: I want to invite all the panelists to get into this conversation at any time. I purposely did not ask anyone to make any prepared statements so that we could really have a conversation here. Don't be bashful about jumping in.

But I want to follow up on what Commissioner Keys has said and give each of you an opportunity to comment from your perspective on the current situation.

Karl Dreher, many of the folks in this room are going to be interested in your answer to my second question: Is there a Klamath in our future, and, with all due respect, are you sitting on it?

KARL DREHER: Perhaps I'm sitting on a situation that's not quite the same, but it's certainly volatile. I'm sure that some in the audience know that I've been working the past weeks on issuing a subsequent order in response to demands for water-right administration that were filed by seven surface water entities, canal companies, and irrigation districts that rely on natural flow in the Snake River in the area of the American Falls Reservoir. They also rely on storage releases from Bureau projects. That order, barring any computer problems that sometimes bug us, should be available tomorrow morning.

JOHNSON: To the lawyers, don't move. Stay in your seats. It's not being posted till tomorrow.

DREHER: That situation is, in large part, driven by the drought situation we're in. I don't see anybody out in the audience that would have been alive in 1902 or so, but the fact is that the drought that we're experiencing in the Snake River Basin is more than the worst drought on record. We've done some statistical analysis and, to the best of our ability, tried to glean out the statistical characteristics of this sequence. It appears to have a recurrence interval of something greater than 500 years. The thing that's remarkably disastrous about this current drought sequence is the fact that it's been essentially six years of back-to-back dry years, well below normal. That's the part that we haven't had in the Upper Snake Basin before. We're had drought periods, but even during the 1930's, the drought was interspersed with years that weren't so bad. Not this time around. We just have never experienced anything quite like it.

So you can say, "I thought the 30's were the Dust Bowl days. I don't see a Dust Bowl in Idaho, and I still see farm trucks on the roads, hauling produce to the markets. How can that be?" The reason is the organization that John Keys works for, the Bureau of Reclamation.

In the 1930's, we didn't have the extensive system of reservoirs on the Snake River that we now have. Those reservoirs have made the difference between not going through as bad an outcome as happened in the 1930's and being able to withstand something far worse than the 1930's. Those reservoirs are essentially empty. That's overstating it a little bit because, as of April 1st, there was about 200,000 acre feet more water physically in storage than there was on April 1st a year ago, but we don't know what we're headed into this summer.

No one can predict the weather. Some of us are put in the position of having to make predictions, and we do the best we can. But the water supply is a variable thing, and the way it comes off is a function of not only the climate but also the interlacing of the priority dates for the various rights to divert that water. Depending upon the weather, you can have two years of very similar water supply and yet have a much different outcome in terms of who gets natural flow and how much storage accrues to the reservoirs.

For those that live in the Treasure Valley or the Payette Basin, it may sound like I'm not all here because it doesn't seem so bad. All I can say is that you haven't experienced what has been going on in the Upper Snake. This year is really the first year that the drought area has crept into some other areas like the Treasure Valley. But don't let the present reality deceive you. What we're going through is bad, and it could get worse.

JOHNSON: Norm, put your national leadership hat on for a moment, and give us your perspective on what we're looking at in 2005.

NORM SEMANKO: I agree with a lot of what John and Karl have already mentioned. I was in Washington, D.C. last week for a National Water Resource Association meeting, and the thing that sticks in my mind is the comment from John Sullivan from the Salt River Project, who talked about the fact that they now have good water conditions, ample water in Arizona, but over the last seven or eight years, they have not had that. The reason they were able to get through that dry period, the reason they were able to keep the economy going was that the reservoir system did its job. It stored water; it had the water available there for folks during the dry periods. Now that has filled back up.

We're in a period where we're hoping that our system will fill back up, and we're seeing that across the west, depending on which side of the line you're on. It's pretty much a north-south divide. Talking to our folks from the 17 western states last week, I know that those of us who are on the Western States Water Council, which is meeting in Boise later this week, will hear horror stories, depending on which side of the line you're on, about the drought continuing or stories about potential flooding. It seems to be feast or famine in the water business. It just points out in all these areas the need to manage, the need to plan for the future.

JOHNSON: Which side of the line are you on in Las Vegas?

KAY BROTHERS: Again, you'll hear how reservoirs have saved the Colorado system. In the Colorado system, we have about four years storage, 60 million acre feet, that both Lake Mead and Lake Powell can hold. They are down below 50%. Some want to drain Lake Powell. If that were the case, Lake Mead would be empty. So I'm very glad we have Lake Powell. In our planning process for Southern Nevada, we were counting on Interim Surplus Guidelines, which the Bureau came forth with a few years ago, to provide excess water for us through 2016. Those guidelines were based on Lake Mead levels. Those levels are such now that that water supply is no longer available to us. We were very

fortunate to be able to reach an agreement with our good friends in Arizona that they were going to be giving us water in the future. "Giving" is not the right word, but we are paying them for future water supplies.

All this is to buy us time. Interim Surplus Guidelines were to buy us time as well as the Arizona Bank and the Bank we have in the Las Vegas valley. Now California is actually banking water for us to develop our instate resources. We are just embarking on two large EIS's, one to bring in rural groundwater from eastern and central Nevada. We are also looking at bringing in Virgin River water down the I-15 corridor into the Las Vegas Valley. They are hugely expensive projects to develop our in-state resources and to extend our water supplies for the valley.

I was thinking during the luncheon talk about the environmental regulations that came in the 60's and 70's. These two projects are probably some of the biggest water supply projects since those environmental regulations have been put in effect. Again, what 2005 brings to us is reservoirs that have saved us on the Colorado. We do pull water out of Lake Mead. Our upper intake is at elevation 1050. If the drought continues, that could be dry perhaps by 2011. We're embarking on another $650 million project to extend our intake. In fact, we have a third intake into Lake Mead in case our upper intake goes dry.

JOHNSON: John Creer, give us your perspective from where you sit as a director of major agricultural operations. Before you answer the question, give us just a thumbnail of the scope of your operations in the western states.

JOHN CREER: We have farms in 37 states and a number of foreign countries. As I listen to the water report, I'm taking notes because we'll be interested in knowing what our water year will be like. As I look back over the last several years, our most serious problem has been in Utah where our water irrigation runoff has been severely short. We've had to curtail farming operations.

The one I'm most worried about is the Snake River Valley. You mentioned that they might consider pumping. Most of our farms in those areas are leased out to farmers. In that area, we have already made concessions on rent in anticipation that they will have less farming than in the past.

A lot of our operations in the west are also ranches. Ranches are much more vulnerable to drought than irrigated farms for the reasons you stated: The dam projects allow us to irrigate. In Montana, we've had a number of dry years to the point that we have dramatically reduced our stocking rates. We have one ranch in Wyoming where have also had to reduce stocking rates. So I have to say that in central Wyoming, Nebraska, Utah, and Texas, the water conditions on the ranches are much better than they have been in the past. We welcome that.

One of our strategies is diversity. There are going to be droughts. Everybody at this table would say we are going to have drought years. The thing we're worried about is the consecutive nature of these years. When is it going to stop? With the idea that there will be droughts, we try to acquire farms in different weather arenas so that we can accommodate to that problem. That means we'll never have a year in which we don't have a ranch that has have good water, but we also won't have a year without a ranch that is in drought.

JOHNSON: Mike Clark, give us your take on what we're facing in 2005.

MIKE CLARK: It's a major concern for all of us, and we can't predict where it is going to occur. We know there will be dry spots around the west. We have an amazing system of storage facilities that have been built in the last 100 years in the west. We have new laws, new rules, and new concerns. As science understands more and more how these systems are related and how wildlife and fish deal with these changes in our water systems, our society is making different decisions. So what's important now in a time of drought and in a time of very rapid population increase in the west is to make the dialogue very broad to reach out to many different segments of our community to talk about how we manage these issues.

For example, in the Upper Snake River alone, there are now over 1400 jobs generated by fishing, both directly and indirectly. Those jobs would be affected in that river system. I think we will see a major shift as our society deals with drought year after year. We're going to have to come up with some new ways to make decisions and to manage water.

JOHNSON: We'll come back to that point, but I want to give John Echohawk and John Leshy a chance to comment on the current situation. Then we'll comeback to your point, Mike.

JOHN ECHOHAWK: Well, Marc, we have Native American tribes located all over the west. Drought conditions are worse some places than others. Our tribes are feeling those different kinds of situations. Some are in fairly good shape, some are facing the same urgent crises that the water managers here at this table and in the audience are facing. It's a tough time.

As a lawyer involved in representing tribes in litigation or direct negotiations over water rights, I do know that at a time like this when we do have drought, it really heightens the urgency to resolve these issues. When you're in negotiations and you're in a drought cycle, it really increases the attention of the parties on these issues, sometimes for the better, sometimes for the worse. The same way in litigation. Overall, people that have been around in the west know that sooner or later, your time is going to come. It's really important to be ready for that time and to have the certainty that comes with the resolution of water rights, whether it be through litigation or through negotiated settlement.

JOHNSON: John Leshy?

JOHN LESHY: Well, without minimizing the dislocations and problems caused by the drought—it's obviously pretty serious in some places—there is room to pat ourselves on the back in a certain way. The storage systems that we put in place have really bailed us out in a number of respects.

We are also learning how to manage water a lot better. We do a lot more groundwater recharge than we used to. We do a lot more conjunctive management of surface water and groundwater together in some pretty sophisticated ways. That's all to the good. We're a lot more flexible. Actually, we're a lot more adaptive in a way. We're talking to each other more than we used to about these water issues. That's all very positive.

On the negative side, I'd express two concerns. Nobody knows whether this is just a normal cyclical drought or whether climate change is rearing its head here and we're looking at some sort of major long-term change. The modeling that's been done—and it's still relative crude—suggests that you can have some very serious, very long-term dislocations as we build up carbon in the atmosphere. So that's the big unknown, but it's a big cloud that hangs over this water management situation.

The other cloud is the endangered species/environmental problem. Every major river system in the west has an endangered species problem, and endangered species protection is driving the management of these rivers to some extent. We all know why that is. We've built a lot of dams. We've changed the characteristics of the natural river systems in these places. We're learning how to deal with that problem, but we still have a long way to go.

JOHNSON: Mike Clark, back to your point about—if I understand you correctly—needing to do more of what John Leshy was just suggesting. We need to do more talking with each other, and we need to do a better job of identifying what the options are before we get into the crisis where, as Mr. Echohawk says, we pull up the drawbridge when we get into a crisis situation.

MIKE CLARK: Yes, we need to have some system of dialogue that extends throughout our western communities, one that allows citizens to engage in open discussion about the future and how vital water is to that. We need to be teaching our citizens how these systems work. John is right in terms of what impact the Bureau has had. We have a system now that is quite dramatically effective in many ways. We have to figure out the best way to use it, given the role of science and new science that is emerging, whether it's about endangered species or the interactions of people and wildlife and the land.

I don't think we have that dialogue structure set up yet. It may be one of the most vexing and important decisions we face as a society in the west, which has been characterized by small towns, open dialogue, and people being able to talk to each other. How do we construct a dialogue about water that helps us in a very conscious way to find the future of our communities in a way that's balanced, that recognizes the value of agriculture, industry, and recreation and the quality of life that is increasingly driving the population increases in the west? People are coming here for the quality of life because they love the open spaces. How do we keep that in a time of change?

JOHNSON: Follow up on that, Mr. Keys

KEYS: Marc, I think there is another dynamic that fits in with what Mike is talking about. Certainly, we are girded for the battle that is here now with the drought action teams, with some funds, trying to do different operations, etc. But, the drought we're in, almost any drought, is a wake-up call to look at how we're dealing with water use. The biggest fear we have is that when

the drought breaks and leaves, we're still short of water.

One of the problems that Kay Brothers works with in Nevada is that between 1990 and 2000, the state of Nevada grew by 60%. If you move that up five years from 1995 to 2000, you'll probably find the same thing. The state of Colorado grew by 40%. The state of Idaho grew by over 30% as did the state of Utah.

We don't know whether we're in the fifth year of a five-yaer drought or whether we're in the fifth year of a ten-year or even longer cycle. But the fear is that when that thing breaks, we're still short of water. The challenge to us is how can we be ready for those new uses and expanded uses that we're working with now and not be short of water.

JOHNSON: How do you answer that question, Kay? How do we get ready for that?

KAY BROTHERS: If there is one silver lining that the drought has created for Las Vegas, it has started to teach us the value of water and the importance of conservation. We have an extreme conservation program we have put in place the past ten years, but very seriously in the past two years. We spent $22 million the last fiscal year to have people take lawns out. We're in the desert. We don't need Kentucky blue grass. One of our sayings is that if you just walk over your lawn to mow it, probably you don't need it. I think we're spending about $32 million again to continue this program. Taking out turf has been part of it, but also people are following watering guides more, and we have more enforcement of waterways. If anything has been good about the drought, it has shown that, in the west, we have to be efficient. That's the take-home message. To continue to have the population that appears to want to live in the west, they will have to realize that they must live in the west as you should live in the west—with very efficient water use.

JOHNSON: Mr. Dreher.

DREHER: I want to respond to that in a couple of ways. First, I want to clarify something for folks that maybe don't deal with water rights administration and shortages on a day-to-day basis. Many in our population believe that, because there are shortages, there must have been an over-allocation. Playing off some of the remarks by our luncheon speaker, these are individuals that seek to blame somebody. The easy answer to them is that it's simply a matter of over-allocation. That is not the case. The whole system of water laws in the west, the Prior Appropriation Doctrine, is based upon the presumption that there will be periods when there is not enough water to go around. Hence the priority date.

Some think that the west should not have allowed the establishment of any rights that couldn't always be filled, but if the only rights that were granted were the rights that were always filled, there would be no purpose in the priority date. The prior appropriation system that we have is very efficient but it's harsh. When you go into periods of water shortage, if you have the senior right and you're not applying water in a wasteful way, you get the first opportunity to use it. If you're junior, you may not get anything. It's harsh, but it is efficient. I would like for people to remember that the central tenet of the system of laws that we have is the presumption that there will be times of shortage.

The second thing is conservation. Conservation plays an important role in certain circumstances, but it's not the panacea in terms of addressing water shortages. Let me give you an example from here in Idaho, a situation in which we avoided a Klamath, if you will. It's the story of the Lemhi River. The Lemhi is remarkable because there are no dams on the Lemhi River. The upper reaches of the river are prime spawning habitat for salmon. To get to the habitat during spawning season, there obviously has to be water in the river. Again, remember that there are no dams in the Lemhi, so there is no way to store high flows in the springtime and then to release those flows later on in the summer when the river might otherwise be dry. But the Lemhi isn't dry in the summer even though there is not a lot of rainfall in the Lemhi Basin in the summer. Why is that? It's because those inefficient irrigators in the Lemhi divert large quantities of water in the springtime, beyond what they necessarily need to irrigate their crops. That extra water that is diverted beyond what the crops need recharges the alluvial aquifers that are associated with the Lemhi River. So later in the summer, there is a return flow from groundwater to the Lemhi that provides water for salmon.

There are some in the conservation community that would look at those early season practices and say that's wasteful. But I'm here to tell you that if those practices were stopped and those irrigators were allowed to divert only the absolute minimum amount of water that they needed, the Lemhi would go dry in the summer, and we wouldn't

have the salmon returning that we have.

Now I mentioned that this is a way of avoiding a Klamath-type situation. I don't remember the year when there were two dead salmon found at an irrigator's point of diversion, and it brought the situation to a head. National Marine Fisheries was ready to initiate enforcement action. They held off at the request of the state. NOAA Fisheries wanted to see more water in the river, and their answer to that was not to divert as much out in the early season. Remember what I described would happen from that practice? But we, as a state, put together a solution for the Lemhi whereby at times, when it was appropriate, the irrigators, under a system that we developed, went without diversions to keep water in the river when the salmon needed to get up the river to the spawning habitat.

The Bureau of Reclamation has been an indispensable partner in that in terms of bringing money to the table that could be used to rent water from willing lessors. Even in the midst of these drought years, the success of that effort in the Lemhi in terms of returning salmon and increasing reds has been remarkable, but it wasn't all about conservation. That can be a two-edged sword.

JOHNSON: What I think I am hearing here is that these things are working out, but it's so tenuous, so delicate that if one little piece here gets changed, something really bad happens over here. If Las Vegas doesn't get on a conservation kick in a major way, we'll wake up, as the Commissioner says, and the drought will be over, but we'll still not have enough water. It seems so delicately balanced. Is that something we're just resigned to living with in the west for the rest of our days? Mr. Clark?

CLARK: No, I don't think so. I think that if people have good information, they make good decisions, and you have to look at each watershed and look at how it's been managed over time. You have to keep looking at these situations as they evolve. Are we managing a system with all the information we know? I think it's important to have a broad range of people involved in these discussions.

JOHNSON: Tell me how that would work differently from the way we're doing it now, in your view.

CLARK: It depends on what state and what watershed you're in. The more diverse a range of people you have talking about how water is managed, the better off we're going to be. In some ways, our system is fairly closed now. It's a system of irrigators, property-owners, and agency people, talking about how to manage the system. In general, that functions in a very rational way. When you have drought and concerns that may be larger than a particular system, concerns that need to be brought into play, it gets more complicated.

For example, someone said it's a harsh system, but it's efficient. It's efficient for human use, but it may not always be comprehensive for the full range of life that lives on these systems. We need to make sure, as we make our decisions about water management, that we're looking at as broad an array of factors as we can to include wildlife, fish, and the health of the land.

JOHNSON: John Leshy?

LESHY: In a way, it is delicate. First of all, I agree with Mike that you need information, and sometimes we don't have it. Where we do have a lot of information about how these hydrologic systems work, we can usually work our way through the problems. The big picture reality is worth keeping in mind. In all of the western states, agriculture uses about 70 to 80 to 90% of the developed water supplies. It's a huge amount. Even in California with 35 million people, it's still 75% agricultural water. That's good news in a way because to feed the growing urban populations, you only need to take a very small percentage of that water and move it from agriculture to urban areas to meet growing urban needs. You don't have to dry up agriculture. Agriculture controls such a vast amount of water in most states that it just needs to give up a little.

Second, in terms of environmental needs, usually when you have information, you don't need a lot of new water to protect species. You need to have releases in a somewhat different pattern. You might need a little slug of water at certain times of the year, and that sort of thing. So the environmental demands are not great in absolute terms, and the urban demands are not great compared to the amount of water controlled by agriculture.

That's all sort of positive. You can work your way through these problems with good information, good will, and flexibility on all sides. You can't build your way out of it. We've built dams everywhere they could be built, basically, so structural solutions are really not

possible on any major scale, and they don't need to be. That's what we have learned the last ten or fifteen years when we stopped building dams 20 years ago. We are solving these problems with intelligent solutions like Las Vegas tearing up the turf and that sort of thing.

JOHNSON: Mr. Semanko, is it that easy?

SEMANKO: I would respectfully disagree. It depends on where you are. In many places, maybe the last of the great projects has been built, but it would be news to folks in California that no more dams are going to be built. I think it would be news to folks in this area that are looking at the potential of raising some existing dams or doing other structural things that perhaps don't impact the environment as much as you might think—recharge projects, for example.

With regard to development, we have too much of the "we- versus-them" mentality. Justice Greg Hobbs, a former practicing water attorney in Colorado, came to Idaho and spoke to one of our seminars. He said, "Us is them." We are all the same: the federal government, the Bureau of Reclamation. That's us. We helped build those projects; we paid to have them built. We need to realize that we are all in this thing together.

During lunch today, Dr. Limerick talked about small communities being part of the irrigation projects and development, and it's very true. Look at pre-Reclamation Act, and you see the Carey Act. You see private development coming into southern Idaho, and you see irrigation tracts laid out over hundreds of thousands of acres. An integral part of those irrigation developments was the cities of Buhl and Kimberly, named after the developers that put the money into the projects. They were meant to be communities that grew up side by side with irrigated agriculture.

So we're in this together, and I don't think we should look at it as "us versus them." We need to talk so we can figure out how to do it in concert. A perfect example in this valley was featured by Rocky Barker in his article on Sunday. The Legislature spent a lot of time talking about it and passed legislation dealing with the fact that we have a vast system of irrigation in the Boise Valley that already delivers surface water to the areas where it is needed for subdivisions, parks, schools. Why don't you tap into that system and use it? The water is available, and it's just as good as the groundwater for purposes of irrigation of lawns and landscaping. We've seen that trend over the last ten to fifteen years in this valley. Those entities need to work together with the municipalities, with the developers, with United Water on the potable supply side and plan it together, rather than do the us-versus-them them thing.

So I'm kind of back to where Michael started. We did that with the Nez Perce agreement. We sat down together and worked through the problem. We did that in the Lemhi Basin. One of the things that is holding us up right now is exactly what Patricia talked about during lunch. Being a good Catholic, I like that model. I don't like so much the Whitman Massacre model. Unfortunately, too many of us are still holding that litigation card and slamming it down on the table, very hard at times. Some are not willing to sit down and work through the process, and we find ourselves spending tremendous resources in court, fighting control battles rather than solving real problems on the ground.

JOHNSON: Commissioner, these lawyers are sounding awfully reasonable.

SEMANKO: Well, you don't want me to get started telling lawyer jokes.

KEYS: Marc, the thing that keeps us off the knife edge you talked about on how to manage water is the storage system. It keeps us from having to go to the call every year on water. It keeps us from having to cut off folks every year because we have that storage behind us. In this state, we have an extension of that storage system that makes it even better. That's the water bank system. This state was a pioneer in water banking and being able to take excess storage water or excess surface runoff water, put it in a bank, and make it available to somebody else. The "willing buyer-willing seller" concept has made it possible to meet needs when we couldn't find the water anywhere else.

You can argue till the cows come home about whether we need new storage. There are some places that need new storage. Period. There are some basins that don't. The challenge to us is to decide where new storage is necessary. Norm is right. In California, we're looking at new storage to help meet the requirements of the delta's water needs. Other basins may not need new storage. But I'll tell you that the water banking system that has been pioneered in this state extends that storage system another step, and a lot of people need to take advantage of it.

JOHNSON: Let's argue a little bit about storage. John Leshy, I think I heard you suggesting that we're not going to do that much anymore.

LESHY: I wouldn't say we'll never build another dam, and certainly recharge projects have some advantages. The observation I would make is: Costs matter. I'm not a huge believer in the market, but costs matter. If you look at the cost of new storage, particularly surface storage, it is enormous because we have already built on all the best sites. We have over-controlled most of the rivers, and we don't get very much additional storage out of a new project on an already dammed river. Everything else gets more efficient in our economy, but construction costs don't, for obvious reasons. You're still moving dirt, and there is no more efficient way to do that than the way we've done it forever. So construction costs actually keep inflating, and we can't figure out a way to make that more efficient.

So new dams are very expensive, and you have to compare them to the cost of the incremental supply you're getting with the new dams compared to other ways of getting that water. Las Vegas found out that they could save a lot of money and produce a lot of water by just paying people to take their lawns out on a voluntary basis. That was a substitute for a new dam somewhere, and it turned out to be far far cheaper than going through the trouble, expense, and time delay of building a new storage facility.

We find those opportunities all over the place. That's why I say I just don't think we're going to build our way out of this.

JOHNSON: Ms. Brothers, is he right about that?

BROTHERS: I think he's right about that. We're looking at creating a new dam for the Virgin River water. We're going to divert water from the Virgin, put it in a dam, and actually pump it to Las Vegas. That's pretty crazy, and it's very, very expensive. Dollars are inflating almost every day as we see construction costs go up. But what's why conservation becomes very attractive, being able to do flexible deals, going back to banking. What we've done with Arizona in working out a deal to utilize part of their supply for a fixed amount of time is very workable. When you start looking at costs at $1300 per acre foot, you're talking about very expensive water. That's what we're talking about in the future.

One issue is that we don't have an agricultural base. When we start talking about the cost of water and building facilities to bring in water, it seems to me that if we could have times where we could go across state lines and draw your options, we could, at times, use that agricultural water that we needed. It makes a lot of sense. The more flexibility you have, it makes a lot of sense.

JOHNSON: That's a good point, and I want to come back to it. Mr. Echohawk, where do you come down on this issue of storage and the need for more of it?

ECHOHAWK: Each tribe is different and has different needs. As a result, they will have different positions on these storage issues, depending on their situations. Most recently, the Mountain Ute and Colorado Ute, as part of their tribal water rights settlement, are constructing a dam off-stream so that they can store their water that they got from the settlement in that facility and use it as they need it and also be able to lease portions of it out to others. Up here in this area, most people are aware of the issue of the dams on the Lower Snake River, and the position of one of our clients, the Nez Perce, has been that those dams need to come out to save the salmon. We weren't able to get that in the settlement that went through here recently in Idaho. That settlement did a lot of things to try to preserve the salmon as best they could within that framework. That issue continues to be a source of concern for the Nez Perce Tribe.

JOHNSON: Does anyone else want to make a comment on storage?

DREHER: One aspect that is being left out of the discussion as far as storage is that it's not one-dimensional. Many of the projects were multi-purpose projects, and they do more than just store water for subsequent consumption. I'll use the Boise River Basin as an example. Most people that buy desirable residential property along the river corridor don't think about the days of floods. Of course, we spent a fair amount of time talking about droughts. But remember the recurrence interval for the drought that's occurring on the Upper Snake. It's something that has a recurrence of about 500 years. Extreme events happen.

Most people that live along the Boise River

don't know that the flood protection provided by the reservoirs upstream is limited to controlling a 100-year event, not a 500-year event. The drought will end someday, hopefully soon, and there will be floods. It will be unacceptable to the city of Boise and other cities that allowed development too close to the river to experience the loss of property and possibly the loss of life. The only way we know to control extreme events like that is with a flood control project. So a city like Boise, which is growing and going to have significant growth in the future, has a need to provide more flood protection for what's already here. Combining additional water supply with flood control makes a lot of sense. Is it something people would buy into today? Probably not. I predict the day will come when they will. I hope it can be pro-active as opposed to reactive.

KEYS: I didn't want to leave you with the impression that we are going to run out and build a dam on every stream that's left.

JOHNSON: Well that would be tradition for you guys, wouldn't it?

KEYS: No, that's not right. I disagree with that because I think it's been very judicious in the past. What I would say is that there is a need for certain types of storage. Karl hit on parts of it. Let me give you an example. We release water from Hoover Dam to Southern California, and it goes down the river. It takes from three to five days to get from Hoover to the last diversion at the All American Canal. When we release that water, in transit we get a storm on the lower part of the basin. They don't want the water then. What happens to it? It goes to Mexico. It's wasted from our system. The judicious placement of a small reservoir there can add many times its capacity and ability to manage water to the best use of its water right. That's the type of storage I think we'll see in the future.

The concept of a large federal facility being built in the future is gone. One of the things we'll probably wrap up with tomorrow is looking at how the reservoir or the dam of the future looks. I will tell you that it won't have a federal label completely on it. It will have a federal label, a state label, a local label, and maybe even a private label on parts of the storage space there. So the name of the game in the future is doing it right and having the right set of people involved in it.

SEMANKO: I'm going to try to bail John out a little bit on the dam-building comment. Not long after the Reclamation Service was formed, the National Reclamation Association—now the National Water Resources Association—was formed. The Idaho Reclamation Association is now the Idaho Water Users Association. The point is that politics is local. When you have support in a local area because of a flood control need, because of a municipal project, because of something that benefits the environment, etc., that's when it is likely to get built.

So I come back to the point I made originally, which is that not one size fits all. It's not going to be the same in every part of the western United States. There are places where those projects are needed, and they will be built, whether they are done with private, federal, or state funds, or some combination of capital.

JOHNSON: Mr. Leshy?

LESHY: I want to go back to a point Kay made. I'm afraid it might get lost othersie. She talked about the dam they are going to build on the Virgin River. Correct me if I'm wrong, but you're building that basically for political reasons, that is as a result of a political problem: You can't reach agreement with Utah about using the Virgin River, and you have to control it inside the state. The point here is that the basic water management problems are not technical; they are not even climate-related. They are really institutional and political.

I want to be positive here, and I think we are doing better in dealing with those problems, but they are basically institutional problems. We haven't had really good institutions to do things other than build dams and help us through a drought like the one we have now. But in this new era, we have to figure out how to manage water better and have better management institutions.

I am optimistic that we are getting better. Instead of building a new dam, why doesn't the city go have a fallowing agreement with somebody growing annual crops and say, "OK. pay the farmer every year, and in that one drought year out of eight, we're going to take your water. You're not going to grow crops, and we're going to use it in the city." We buy an insurance policy. That's a perfectly sensible way to manage a water system, and it's a heck of a lot cheaper than building a dam to supply the same amount of water. And we're doing more of that, so I think we're overcoming some of these problems with pretty intelligent management solutions.

BROTHERS: It's not just Utah. It's the law of the Colorado River, and Mr. Keys can step in at any moment. Once the water enters the main stream, then it becomes system water. You can't color it red for Nevada or blue for Arizona. It becomes the whole system, and that's the law of the river. We have to divert it, take it out before it becomes system water to be able to claim a state water right.

LESHY: So you're building a dam you wouldn't otherwise build because of the way the law of the river operates.

BROTHERS: That's correct.

CLARK: Just one quick comment. We have a system of managing water in this country that tends to say that if any water comes into a system and is not fully utilized, it's wasted. I don't think it's wasteful to allow water to reach Mexico from a natural event. So let's be a little thoughtful about that.

KEYS: Every year, the treaty requires the release of water to Mexico. Every year, since the treaty was signed in 1944, the United States has delivered a million and a half acre feet of water to Mexico from the Colorado River for them to use however they please. The water that's left belongs to the United States, and it belongs to one of those states in the basin. Certainly, if through an operational quirk, water is left over that we could catch and make more beneficial use from, I think it's imperative that we do that.

JOHNSON: Mr. Creer, I'm interested in whether you're gleaning anything from this conversation that you're going to take back and apply to your management regime on your properties.

CREER: I think there are two or three things that would be said by a farmer. We look at water each year as our life's blood. We don't get very esoteric about how we feel about our water supply. We're pretty serious about having it being delivered to our farm and maintaining our ability to use it to raise crops and to make a living.

JOHNSON: So "long term" is from here to harvest.

CREER: That's exactly right. For example, when you talk about building new dams, a farmer would normally say, "Yes, that's a good idea because I would benefit from storage water. That's something that's good for me." He would also say, "Now wait a minute. Is that going to be like the old Bureau of Reclamation programs where I'm limited on the amount of land I can irrigate with Rec water? Since farming is a different business today than it was when that law was passed, is that a wise thing?"

So I think there are some things along the way that we can do to fix things if we decide to. Your issue of discussions with farmers and other users is a good one, but we ought to talk about about it when there is water flowing. It's hard for a farmer to talk about it when you're taking the water he needs for his farm.

So the idea of discussion is a good one, and there are inter-basin problems, community problems, and farmer problems that need to be solved.

JOHNSON: In the time that we have left, I'm going to ask each one of you to respond to this question: If you were in a magical world and were able to sprinkle pixie dust on part of these problems, what one thing would you like to see done, changed, modified, addressed that would help us deal with troubled water in the west? Mr. Clark, what one thing would you do?

CLARK: I think we need to be talking more to each other. The best thing we could do in communities across the west is use the drought as an opportunity to say, "What kind of a future do we want for our community, and how do we share what we know?"

JOHNSON: Mr. Semanko, what one thing would you do?

SEMANKO: I'm going to be pretty specific. There was a water hearing in front of the United States Senate a few weeks ago, and I testified there in front of Senator Domenici and others. It's still important a couple of weeks later, believe it or not. That is we have over 3 trillion gallons of storage capacity in the state of Idaho, and many of those dams are getting old. Some would like to see them go away, but here we are talking about additional storage. So the idea of removing reservoirs that store water, that are providing irrigation water, providing water for subdivisions and municipalities, and for other purposes in these multiple use facilities is not something that I think should be seriously considered.

How are we going to deal with those aging infrastructures, those old dams? The water users helped pay to build those things. They need in essence to be rebuilt. Arrowrock just completed a $30 million project, and the water users were expected to pay their proportional share, which was 46%. The rest of the nation gets to pay 54% for flood control, fish and wildlife benefits, and all those things. The ability of the water users, the ability of the federal treasury to pay for those things is a real challenge, as John Keys would tell you. We need a better system, and the Bureau has been working on that. To be fair to them, I don't it's just their problem. I think it's the individual states, the communities, and the water users as well that have to figure out a way to pay for that aging infrastructure to be repaired. It should be different than the system we have now. It should be something that will allow those projects to stay in place for our progeny, for the future.

JOHNSON: Can you explain in 45 seconds what that would look like?

What you would like it to look like?

SEMANKO: I can tell you what happened with Arrowrock, which is not maybe the way to do it. Under the system that the Bureau has now—and John may want to comment on this—basically any work that is done on the dams has to be dealt with as operation and maintenance expense. That's a kind of pay-as-you-go thing. The $30 million would have to be paid during the time the project is being done. That means 300% increase on assessments for folks that benefit from the dams. Senator Craig was able to get legislation passed that spread that out over a 15-year period of time. The problem with that is that the Bureau, the federal government, has to take the hit on that one, had to pay the difference in the meantime. So you need a program, in our view, more akin to the old Rehabilitation and Betterment Act program that allows those costs to be spread out over time. The capital doesn't necessarily have to come from the federal government. We should be looking at private lenders as well. Perhaps even bonding is something that we would look at.

American Falls was rebuilt by American Falls District with bonding, so there are a lot of different alternatives. We need to have a plan in place on how to deal with the aging infrastructure we have.

JOHNSON: Ms. Brothers? What one thing would you have us do?

BROTHERS: I don't know if you can change human nature, but it would be for us to accept change. We tend to look at the past and think we want our lives to continue, our homes to continue, and our west to continue as it was in the past, and that's not going to happen. As we talk about the law of the river and some of the other western issues, if we could actually accept that we are going to change—because it's coming—and realize that flexibility and partnerships are essential, and acknowledge that the whole is greater than the sum of its parts. Those things would benefit us.

Now I'm in the midst of trying to talk to rural Nevadans about perhaps coming up and taking water out of their basins for urban Las Vegas. That's very difficult. They don't want things to change.

It's human nature. I don't know whether you can build a dam, but our lives are going to change in the next ten to twenty years. We're going to see much more change than we had in the last ten to twenty years. If we don't establish programs through which we can forge partnerships, talk to each other, and come up with solutions, it's going to be very difficult for the west to continue to grow.

JOHNSON: Mr. Leshy?

LESHY: I guess I would argue for more education, understanding, information about how we use water, who pays, how much, what sectors of society use it, in what amounts do they use it, and what the impacts are. This is to put in a plaudit for the Idaho Statesman and Rocky Barker's writing in that supplement. We need more of that. There is an incredible amount of misinformation and misunderstanding out there about our water system. If you told the average Californian that agriculture uses 75% of the water in the state, they would be shocked. How can a state with 35 million people tolerate that?

If we understood the sort of subsidy systems built into water, how much people are paying, how much the government is subsidizing various uses, that would be very healthy. It would improve the way we make decisions. We need a lot more actual government investment in information-gathering on things like groundwater.

We really haven't talked about groundwater here. In many parts of the country, that's a huge and growing problem that we aren't coming close to solving, and there is a huge amount of ignorance about groundwater management and supply.

So we need more public investment in that kind of stuff. So it's sad in an era when we have demonized government and look on it as the enemy in lots of ways. The government is essential to solving these problems, apart from private ownership vs. public ownership of these systems. The government has to be involved. Water is just too fundamental a commodity. I worry that, culturally, we are not supporting government in that effort.

JOHNSON: Mr. Creer, what is your one big thing?

CREER: As farmers and ranchers, we need to continue to make our contribution to conservation in water use. For example, there are ways to graze a watershed that will keep the water on the land. The best reservoir is not in a pond but under the grass. If we can do that—and we can do that—we should. We also should use GMO's [genetically modified organisms] to get better varieties that are more drought-resistant. We are in the age where genetics will make a huge amount of difference as chemicals made a huge amount of difference in the last decades.

The other thing is to use technology to stretch our water. Someone mentioned drip irrigation. What they must have been talking about is underground drip irrigation. If you put those drip tubes underground a few inches, your water use can be cut by half and your yields can substantially increase. We can do more of that, but we will be very attentive to the cost of doing that.

JOHNSON: Mr. Dreher, what is your one big thing.

DREHER: Well, from a little broader perspective perhaps. We've done a lot of things to implement and improve water management, and there is a lot more that we could do. To me, the biggest impediment to doing more, across the west, is that people just take water for granted. They assume that as long as they turn on their faucet—and their monthly bill is just an irritant—there is no problem. It's amazing to me that people will not think twice about paying whatever the cost is for a gallon of bottled water—$7.50, I think—but here in Boise, the average cost of treated water is about 85 cents per thousand gallons. Water probably has more value than 85 cents per thousand gallons. Whether it's through elimination of subsidies or through whatever mechanisms, if we, as a society had to pay the real costs for how it is used—whether for human consumption, for agriculture, or environmental purposes—we would be a lot better at using it and managing it.

ECHOHAWK: Just like Norm, I was invited to participate in the Senate Natural Resources and Energy Committee Water Conference two weeks ago in front of Senator Domenici and Senator Bingaman. I talked about the need for the federal government to pay its fair share of Indian water rights settlement costs. We got started when Governor Andrus was the Secretary in the 1970's, trying to resolve these Indian water rights cases. Since that time, we have completed nineteen of them, including the Nez Perce settlement here and the settlement down on the Gila River in Arizona last year. Twenty other tribes are involved in negotiations now, and all those negotiations are going on the rocks because the federal government is showing up and telling us they are broke and can't pay their fair share of these settlements. We're halfway through, trying to resolve these Indian water rights issues in the west, and all of a sudden we have the federal government pleading poverty. We can't allow that to happen. Otherwise, we are doomed to litigation—the tribes, the states, and private water users in the west—a fight to the death, real winners and losers. In the end, we're all losers because it will destroy our communities and our ability to live together as neighbors. We have to find a way for the federal government to do its part.

JOHNSON: Commissioner, I saved you for the end. You can't answer by saying you're going to make it rain.

KEYS: I wonder if you had something in mind like shoot all the attorneys.

JOHNSON: Well, that's an idea.

KEYS: It sounds a little Pollyanna-ish, but I will tell you that one of the mechanisms that we have used in trying to address some of the endangered species problems is called "adaptive management." Adaptive management means that you're not just approaching a problem by trial and error, but you're taking your best shot at what you need. You do that, and then if it needs a tweak or a major change, you do that. We've been very successful in some of the larger rivers in bringing species back with an adaptive management approach. More is involved than just federal money. The days are gone when

we could just go to the federal treasury and say, "Give me the money." But when we can go into a basin and have the state people there, the people who know water rights inside and out, the irrigation people who have the contracts for a lot of the water in the storage, the environmental groups and the fish folks who know what's required—when you get all those folks together, we can solve some of those problems with an adaptive management approach in the future. Does it need new storage. In a lot of cases, no. In some cases, some is needed.

The adaptive management approach is one we have seen work in Colorado, and we're seeing it work in New Mexico. We're seeing it work even in this basin to a limited degree. If we could wave a magic wand, that may be a way out of it.

JOHNSON: It sounded as though you were saying, "If it can work here, it can work anywhere."

KEYS: Well, I wouldn't say that.

JOHNSON: Ladies and gentlemen, we have time for a few questions. John is back here with a microphone, and Rocky is there as well.

AUDIENCE: I'm getting a little flustered because I think a big part of the puzzle here is going to be water re-use. We have the technology, and I know they are doing it other places in the world and in the United States. The big buzz word here locally was that DEQ had promulgated new land application rules. Well, hurrah, but it should have been done 20 years ago. We seem to be so behind the curve. This valley is pumping millions of gallons every day. We're using it once. We're spending millions of dollars to clean it up, and it goes down for someone else's water rights. Isn't re-use important?

JOHNSON: Do you want someone in particular to answer that?

AUDIENCE: I would think Mr. Leshy or Ms. Brothers would have experience with that. I'm sure they're using recycled water in her jurisdiction.

BROTHERS: Yes, we are. In Las Vegas, if we treat the water and return it to Lake Mead, then we get to use it again. We get what is called return-flow credits. In essence, we are using all our Colorado River water by treating it and returning it to the lake. Besides that, we've launched a huge program of satellite facilities for re-use, treating that water to put it on golf courses. Even if we get credits for putting it back, it makes much more sense, instead of having water quality problems in Lake Mead, to treat that water and use it where a supply of potable water could be used.

We could take a fresh acre foot out of Lake Mead. It's cost effective if you look at the environmental costs and also power costs to pump it up the valley. But it is actually about the same as treating potable water from Lake Mead. It's that expensive to re-use it.

LESHY: A couple of additional thoughts. It's part of the solution in some situations, and this goes back to a point Karl made earlier. The water rights system, and I'm speaking as a water lawyer here, is all interdependent. One person's water return flow is another person's water right. So you can't just say, "OK, everyone is going to re-use water." You would completely discombobulate the system. So you can't really do it that simply.

The other thing is that with the Clean Water Act, one of the true and unnoticed benefits of the Clean Water Act is that it made huge new supplies of water available, effectively by subsidizing the treatment of wastewater. All that wastewater now has tremendous value because it's now clean and available for use. So the whole water use system is tremendously interdependent.

Another way to put it is that there are many many more water users out there than there is water because of the fact that the uses are so interlocked.

KEYS: I might just add to what John said. I think it is more that just re-use. It's multiple use. Take the Snake River at Palisades on the South Fork of the Snake River, the water held in Palisades is used for recreation, for fish, and for power head. It's diverted for irrigation. It's diverted into some of the industry there. That happens somewhere between 20 and 30 times between there and the ocean, so it's re-used many times. Multiple use is a way of life with the water rights system in a basin.

John talked about wastewater re-use and recycling. Reclamation has a program where we actually cost-share with cities all over the western United States where, for the last twelve to fourteen years, we have been putting monies into these cities where they are recycling and re-using water and using it for different purposes,

all the way from salt water intrusion barriers to actually using it on nursery crops and that sort of thing. So it is being done. Could it be done more? Absolutely. We made a statement one time that the unused sewage water is our next river to tap if we have to. The only problem is that it's expensive. Kay's estimate was that its cost is equal to the treatment of water. In some cases, it doesn't even get there, but in most cases, that's a good estimate to use.

JOHNSON: Karl?

DREHER: There are other ways of re-using water. I'll give you an example here in Idaho that works very well. We worked with an irrigation entity in the Payette River and the City of McCall. There is an exchange that takes place. Rather than the City of McCall treating its sewage effluent and re-using it, what happens is that they exchange their treated effluent with the irrigation entity. The irrigation entity takes the treated effluent for irrigation, and the city of McCall takes the native flow and diverts that into their water supply system. So we are doing that, across the west, in different ways.

Economics plays a big part and also people's ability to accept it. The city of Denver constructed a pilot re-use plant 20 years ago and showed that the technology would work. But people weren't willing to do it. They didn't want that re-used water. It's always puzzling to me. If you go to a different setting, the Mississippi River, for example, where one community uses water, treats it, and less than half a mile down the river, the next community diverts it out, in essence using treated sewage effluent. Yet, because people didn't know it, it didn't matter. When people knew it, it wasn't acceptable.

KEYS: What Karl didn't say was "Toilet to tap is not sexy."

JOHNSON: You're going to need a better slogan, Commissioner.

SEMANKO: I just wanted to mention that the Nampa-Meridian Irrigation District in this valley several years ago sold 35,000 acre feet back to the Bureau out of Lucky Peak. People asked how they could do that because not only do they provide farmers in this valley but also a number of subdivisions. What they've done on the re-use side is that, after the irrigation water is used on the fields, it does through a series of drains back to the Boise River. They have more than replaced the 35,000 acre feet and fueled entire new subdivisions in this valley by pumping water out of drains that has been used for irrigation and is more than adequate for the uses in the subdivisions. We're seeing more and more of the pump-back type and reclaimed water systems.

JOHNSON: Justice Budrick?

JUSTICE BURDICK: I'd like to talk to Norm about infrastructure repair. How far out are we before that becomes a critical problem on the Snake? If the federal government is no longer the deep pocket, what impact is that going to have?

SEMANKO: We are in the middle of it now. Arrowrock was just finished. The work on Minidoka Dam, which was one of the first Reclamation projects in the Magic Valley area, probably should be underway now. They have moved the NEPA work back to FY 2007, and they plan on doing the $30 million project sometime after that. That is not a dam safety project. It's not something that fits into any of the other existing programs, so the districts are expected to come up with their share of the cost. Of course the federal government will have to come up with their share of the non-reimbursable cost. The Bureau—and John may want to interject here—is looking at different ideas, some loan guarantees to help us out with the private sector in lending some money. The answer may lie with the private lending sector. Depending on what happens with certain projects, if there are additional benefits to the state, perhaps the state may want to get involved through the Water Resource Board or other mechanisms. I don't think there is a one-size-fits-all, but it's safe to say, you're not talking about the 1902 reclamation, the 40-year pay-back type of program. That's just not in the cards.

KEYS: I would add to what Norm said that all across the west, the big irrigation facilities were built in the early part of the 20th Century, and a lot of them are approaching 100 years old. A lot of them needs fixing, and some of it's very expensive, into the $100 million range. How do you find ways to finance that type of work in the financial climate we're in these days? In the old days, we had a program called Rehabilitation and Betterment. We had a small loan program, and we could put monies into those. Those days are gone. We're trying now to look at a loan guarantee program. As Norm said,

we would go through and reallocate the costs because, in the old days, irrigation was 100% of the allocation on a lot of these projects that now are used for fish, for recreation, for water quality control. There are a lot of uses out there. We can reallocate it and make it reasonable for each one of the participants to do loan guarantee. Then, working through the private financing institutions with a guarantee of the United States, which uses the facility as collateral, we can guarantee a loan for whatever it takes. We think it has a lot of possibility.

JOHNSON: Governor, we're out of time. Please join me in thanking our panel.

Let me just quickly mention that, tomorrow morning, after Senator Crapo's talk, several of these people will come back. We will play through a hypothetical where the doomsday that some of these folks were talking about today is played out to its ultimate worry or good conclusion. So that should be fun.

Thank you very much. Great panel. John Freemuth is up next to introduce our closing segment.

JOHN FREEMUTH: Folks, don't leave. We have about half an hour to go here, and we're not going to take a break so we can get you out on time.

Our last presenter today is someone I've gotten to know recently. He's come to Idaho from the Lake Tahoe area. It's John Tracy, the director of the Idaho Water Resources Research Institute at the University of Idaho. John has actually had a nice little brainstorm. After this conference ends tomorrow, he's brought together those of us at the various universities in Idaho—there is a stunning amount of water expertise in this state—to get together and talk about how we can work collaboratively in terms of education in the water area to see what kind of graduate degrees and other kinds of applied research we can collectively do better than any of us can do on our own. That's the buzz word today, and it's very commendable.

What John would like to talk to you about today for about 25 minutes is "Real Solutions in a World of Scarce Water." Ladies and gentlemen, John Tracy.

JOHN TRACY,Ph.D.: I'd like to thank the Andrus Center for inviting me to speak today. I realize that I'm speaking after all of these others presenters, and what you're going to find out is that they pretty much hit every topic I planned to cover today.

This isn't rocket science at this point. It's a matter of trying to figure out how to make all this work together.

I'm going to look at real solutions. What everyone seems to go to right away is technologies. Are there technologies that can create new water? When we talk about water shortages, a lot of people are out there saying, "Hey, can we actually go out and make water? Not take away someone else's water but actually make new water?" Well, believe or not, there are ways to do that, but there are always costs with these water creation technologies. I'd like to talk about that a little.

Then I'll get into the question: Where did this water shortage come from? Not from the perspective of increasing demand but the conflict over water shortage, which is coming about through an historical change in our perceptions of what water is used for in the west. And finally, what will it take to resolve our water conflicts?

The first thing I want to cover is water conservation technologies. It's come up quite a bit already in the discussion, and what are they? Then look at water re-use technologies, and then the water creation technologies.

<u>Water conservation.</u> We have what is called flood or furrow irrigation. These systems are usually pretty inefficient in terms of water use. Efficiency of water use is defined as the ratio of water applied to the actual water used by the crop. So if you apply four acre-feet of water to an acre of crop and it uses two, you have 50% efficiency. If you apply four and it uses four, you have 100% efficiency. The furrow systems, if your operate them pretty well, can operate around 60% efficiency. If you go to low-energy persistent application systems, they can get up to 80% or 90%. It's a much more efficient system. It's out there and has been implemented a lot in the western United States within the last twenty years.

If you look at municipal systems, how can you be more efficient there? I'm not talking about individual homeowners. I'm talking about the systems themselves. The way they become inefficient is that pipes leak. Pipes always leak. You always get cracks. How can you make this more efficient? One of the ways is monitor flow/monitor pressure. There are systems that can identify this and have automated control systems to shut off leaks when it detects drops in pressure or losses in flow in a section of pipe.

Just to give you and example of the types of efficiencies that can be gained here, there is

a study that was done in Kansas of small water systems. They looked at systems where there were no meters on the houses whatsoever. They looked also at systems that had meters. The per capita water use of treated water in the plants was 250 to 300 gallons per day person in the unmetered. It was 160 to 200 gallons per day per person in the metered. Their conclusion was that when people saw water, they used less water. Then they went out and actually measured it. The people were using the same amount of water. Metered systems allowed them to understand when they had leaks in the system. In the unmetered systems, water just went in, it went someplace, and there was no way to know where the leaks occurred. By actually putting in more sophisticated leak detection systems, you can gain efficiencies in the municipal systems.

Finally, we get down to the personal systems. You can start looking at high-efficiency appliances, such as low-flow toilets, low-flow washers, showers, etc. But the big one—and Kay Brothers brought this up—is native vegetation landscaping. Native vegetation landscaping is already adapted to the climate and the region. That is, it uses about the amount of water that would happen there anyway. It tends to be pretty efficient in that fashion. Even if you have more water, the native vegetation tends to be more robust. It will survive the wild swings in temperature in the climate there. Native vegetation does mean ripping up the turf or ripping out high water consumptive plants and putting in plants that are more adapted to the region. Depending on the aggressiveness of the application, water savings can be up to 50 or 75% at the home. You can do significant water savings, especially with vegetation management.

I was talking to a developer in Reno who went wild on this. He developed a house out in the subdivision where they get five inches of rain each year. His per capita water consumption at his house, with his kids and his wife, was nine gallons per person per day. The average in Reno is over 250. It was a great example. Capital expenses were very high, but how little water he used was very impressive.

Now we get into water re-use. There is the agricultural water re-use system that probably came about around 30 years ago, probably even earlier, when water became scarce. You simply just collect your tail water, move it back up the system, and re-apply it. Even if you do this type of system, the best you can get out of it is about 85% efficiency. There are always losses to the system. But if you go over to the Middle East right now, if you go to Jordan, Israel, or Palestinian Authority, they have gone to greenhouse operations. They use them for cut flowers, flower seed production, vegetable and fruit crops. In Mexico, they have gone to chili peppers, tomatoes, herbs, basil, cilantro in greenhouses. Water use efficiency: over 300%. That means that you divert one acre foot of water, you're using it over three times. They can actually get up higher than that. You can get to the point where the only water leaving your operation is that going out in your crop. There are problems with getting too high a level of efficiency in these systems, but in terms of agricultural systems, you're getting to the point here where greenhouse operations truly do get into the water conservation. That is, you're using it, the water evaporates, the crop condenses in your system, and you re-use it. So that's an interesting application that you're starting to see in the western United States.

There are applications of this all through the western United States, especially in those areas where energy is not a consideration, where there is enough solar radiation to drive these systems or there are enough geothermal resources to be able to operate these systems.

Water re-use municipal systems. Well, I wouldn't call it "toilet to tap," but this is the "treatment plant to golf course." A lot of treated sewage effluent is used for golf course irrigation, municipal landscaping, water-features, and, actually in the Carson Valley down in Nevada, opening new agricultural lands. Bentley Ag Systems bought the sewage effluent from the city of Gardnerville, piped it out to about a thousand acres, and is irrigating a thousand acres of new agriculture there. In the City of Reno, the market for sewage affluent is tapped out. They bought it all; there is no more to buy. It's about as valuable a resource as the water coming out of the Truckee River. It's interesting that it is all purchased now, all that's available.

Then there are the personal systems. Some people got in trouble for this in Colorado a few years ago during the drought. It's a system where you actually use drainage water from dishwashers, washing machines, and washing cars to irrigate landscaping. The Colorado State Engineer put out a warning and said, "You can't do that. Use it once, it goes into the treatment system, it is treated, and it goes into the river." You're not allowed to re-use that. So it's an interesting area, but in small rural areas, I've seen people with their washing machine hoses draining right out into their garden. That is

not unusual, and it's a re-use system at a very personal level.

Let's talk about creating new water. This is something that is not used extensively in the west, but it's used in some places. Cloud-seeding. I wouldn't say there is controversy in the public sense around cloud seeding, but in the academic sense, there is a ton of controversy. The theory is that you introduce nuclei to encourage precipitation in those storms that have moisture but no nuclei to form the precipitation. It's mainly used to try to enhance snowpack, except in those areas where it's trying to disperse hail, which is not so much a water creation technology as a risk mitigation policy. You can do this by flying planes through the storms, you can put in ground stations. The main uses for this, if you look at who is footing the bill for this, is hydropower. Hydropower has paid for it quite a bit in the past, but it's been fascinating with deregulation of the energy industry that they are paying for it less now. Agriculture has lobbied for this and has had some success in Nevada where they have actually had cloud-seeding activities in the northern Nevada watersheds.

The big problem is that its effectiveness is still uncertain. When you start looking at the studies, you have the true believers on one side and the skeptics on the other. You look at the data, and you can come to conclusions either way. So in terms of the effectiveness of this, nobody really knows. In terms of investment, people will pay for it to a certain point because it's not that much money. It's not proven to be effective, but it's not proven to be ineffective. So it's still kind of in the fuzzy grey area.

The next one is water purification. This is the salination effort. If you look at the desalination of salt and brackish water, there are two types of general processes. There is something called "phase-change de-salination." It turns water into vapor and then condenses it in some fashion to get water, and you have brine on the other side. Processes such as multi-stage flash, multi-effect boiling, vapor compression in solar stills are called "phase change." These use more energy in the process, but they are also better for treating sea water.

Membrane processes filter the salts out. They are better for brackish water, waters that have lower salt concentrations. The main one is reverse osmosis, but there is another referred to as electrodialysis, which isn't used very much.

In terms of notable facilities, the largest facility in the world is in Saudi Araabia, and it treats 112,000 acre feet per year. In the western U.S., this would be able to irrigate about 27,000 acres, so if you can imagine a desal plant with that capacity, it is truly amazing. It treats sea water for water to be used for municipal and agricultural purposes in Arabia.

In the United States, the largest membrane plant is actually in Florida, and it treats brackish water for water used primarily for municipal purposes, and it can treat 29.7 million gallons per day. It doesn't operate year round, but if it did, this would be the equivalent of about 30,000 acre feet of water. That's quite a bit of water. It operates during the drought period, but it's interesting to note that the state with the largest amount of desalination facilities is actually Florida right now. We think of Florida as being fairly wet, but in coastal regions around the United States, desalination is being used quite extensively for municipal purposes, and we'll see a lot more of that.

We have these technologies. We have conservation, we have re-use, we have water purification. The question is how much will this cost us? Believe it or not, saving water can cost us water. Director Dreher brought this up and explained it very well, but I'm going to go through an example again, just to drive the point home. It can cost us in water quality and it can cost us in energy.

In terms of water quantity cost, conservation and re-use can lead to situations of what I call, "paying Paul to rob Peter." You actually encourage people to use the water and actually rob it from the downstream users. If we look at a river system and we say, "OK, we're going to divert water." The water diversion goes on the field. You end up with evapo-transpiration and consumption. The definition of efficiency is consumed versus diverted. What happens to the non-consumed water? Typically, you'll end up with direct return flow to the channel or indirect return flow to the groundwater. If you up this efficiency, what you're doing is stealing from the flow would have returned downstream.

This is a difficult situation because what will happen in time, especially if the return flow passes through the groundwater, is that if you have a low efficiency system, you'll end up with this blue curve. The blue curve shows that you will have less peak flow during the summer months, but you'll have sustained flows over the wintertime. If you have the higher efficiency system, you'll have higher flows in the summer, but you'll be down to a situation where your base flow in the non-summer months will be much lower. There are river systems that survive

off this low flow. The Carson River in Nevada would dry up every July if they didn't divert the water. There would be flow downstream. The Lemhi is another situation like this. One of the most extreme circumstances is the East Snake Plain where the move to higher efficiency agriculture has led to a decrease in groundwater recharge which has led to reduced spring flows down at Thousand Springs area.

So when you look at conservation, you realize all you're doing is retiming the flows. You can do that to your benefit or you can do this to your detriment, but understand what you're doing here. You really are changing the timing and amount of flow; you're not really saving any water here.

What is the water quality cost of conservation? In a classic system, you can end up with soil—and irrigation water always contains some elements of dissolved salts—but the evapo-transpired water contains almost no solids. So what happens over time? The dissolved solids slowly build up in the soil. The only way to remove these is to leach them from the soils. You can create a serious water quality problem in this circumstance. So if you're looking at conservation, this is something else you have to understand. You can create water quality problems that are so severe that you can take land out of production, and this has happened many places around the world, especially in the Middle East. This is particularly bad in most arid regions.

Re-use. Re-use is kind of tricky because besides its lack of personality, it has a potential to be a pathway for pathogens. That is what everyone is concerned about. Now in municipal treated systems, there are high levels of treatment, and most municipal systems can treat to this level. So for municipal re-use, I don't think there are many examples of problems out there. It's something that has been handled and thought of, and pretty risk-averse strategies have been devised to make sure this isn't a problem.

The problem with re-use always comes down to the personal level. Remember the washing machine hose going straight into the garden? I wouldn't do that. There is too much risk, if you are using washing machines or car wash, that you will get something in your garden that will cause you problems in the future. So for re-use, I think you hve a good chance for employing re-use in municipal systems, but I wouldn't do it unless you have some sort of reverse osmosis system to send your water re-use through, and that probably would not be practical.

What are the water quality costs of purification? The effluent, which is the brine, is really nasty stuff. Some treatment methods can treat it with 75% efficiency, which means the effluent is four times as salty as the influent. Water can be disposed of in the ocean if you have any interchange, and it's usually not a problem. If you have closed bays, problems occur if you dispose of the brine in a closed bay.

Finally, energy costs. When we talk about purification in desal, just to give you a perspective on this, I'll compare the energy required to treat one acre foot of sea water compared to the energy required to lift groundwater. With the energy required to desal one acre foot on sea water, you could lift the same amount of groundwater two miles. So desal has its costs on the energy front. Now reverse osmosis is less, one third less.

In the California Coastal Commission's paper on desalination, they pointed out that pumping water from the Colorado River to Los Angeles would take one third of the energy cost of desal. Desal, if it's the only option, is a good option, but the energy needed is extensive. The problem with putting more load on the energy system is that if you're competing desal water with groundwater or with surface water, you could run into a situation where you increase the energy load on the system to the point that it's not cost effective for the groundwater user to pump the groundwater anymore. If you think about the Bell Rapids water purchase, why are they going out of production? Why is that water being purchased? Because it's too expensive to pump it up to that level. So you do run into a problem that is a mixture of what it's costing you to deliver this new water. If you're putting a load on the energy system, it could actually make it prohibitive for other people to use the water in the system.

Where do our water conflicts come from? Why are we even concerned with this technology? Why are we pushing into it? In the watersheds I've worked in, I've seen that there are two levels of conflicts that go on. Personal conflicts that arise between competing water use interests, and this is where the saying, "Whiskey's for drinking; water's for fighting over," comes from. Then there are the institutional conflicts that arise from different uses of water. For the most part, we're talking about the institutional conflicts although the personal conflicts sometimes drive the whole conflict at the watershed level.

Let's look at the uses of water. I like to break them down into consumptive and non-consumptive uses. None of these water users is

purely consumptive or purely non-consumptive. I broke them out into water users that are mostly consumptive and those that are mostly non-consumptive. Consumptive water uses are those in which the water used is lost to the river system permanently, i.e. irrigated agriculture. It's diverted, it's put on the land, it evaporates, it's gone. Non-consumptive uses are uses where water is needed at specific time and flow rates and can then be used by other interests in the river system. Examples of these are hydropower, shipping, recreation, ecology, mining, and logging. We've forgotten about where mining and logging fit into this. Consumptive uses are typically irrigation, municipal use, power pooling, some recreation, and some ecology.

If we look at consumptive uses from 1850 to the present, you'll see that ag has been the big consumptive user ever since we've started developing the west. But what's happened in the last 25 years, in particular, is that consumptive uses—municipal, ecological, recreational, energy—have been increasing, taking a bigger piece of the pie. Overall, our uses have expanded quite a bit here. Ecological uses of water are waters that we have to deliver that evaporate and are gone, but we have to deliver the water to maintain ecological systems.

If you look at the non-consumptive uses, you find some interesting things. The non-consumptive uses have evolved over time, but if you go back to 1850 and look at the non-consumptive uses of water, we used it for mining and logging more than anything else. We used to ship logs down rivers, using water. Lake Tahoe used to be dammed, and it built up. Then they would break the dam with all the logs behind it and float them down to Reno. In California, they used hydraulic mining. The water associated with hydraulic mining is just astounding. Over time, those uses have significantly decreased. Now there is a tremendous amount of water use in the west to maintain shipping, and there is a large amount for ecology, recreation, and energy—primarily through hydropower.

One thing you have to remember. Ecology was using the water all along. 150 years ago, there wasn't a constituency out there clamoring for water use for ecology. Ecology was still using it. It was there. Water was flowing through the systems. It is our perception now of what a competing use for water is. So the conflicts start arising because water uses have changed dramatically in the last 150 years. Kay drove this point home: adaptation and change.

As the water uses have changed, it's driving the conflicts. It's not like we're in a situation now that the climate is so drastically changed that our water supply is vastly different than it was 150 years ago. We've gone through droughts. We've gone through wet periods. We're in a situation where the values as a society are changing in regard to what we think water should be used for.

Another source of the conflicts is the growth of non-consumptive uses. They have become more dominant in the last 50 years. Before that, it was primarily focused on consumptive uses. This growth in non-consumptive uses is driving this issue, not so much in conflicting with water rights, but with how the rivers should be governed.

Technology has driven consumptive use to be more consumptive, and this is more of a problem than we think. We think that technology will solve our problems, but most of the times in which it's been implemented to solve water shortage problems, it has driven us to a point where our consumptive uses are so consumptive that they create more water problems.

Society's values have changed significantly. In the 1800s, rivers were an expendable resource. You read about the American River in Sacramento, and if it weren't for the port that the river served to allow ships to come up and deliver goods to Sacramento and ship goods out, they would have loved to have gotten rid of the river. That river was evil. It was flooding every year. It was a problem. Go to 2000 and look at Sacramento. Now the river is an integral part of the city's economic growth. You think of Boise. You think of Reno. These cities view the Boise River and Truckee River as so integral to their community and such a valuable resource that all of a sudden, the question is, "What are these rivers for now?" They are just part of the economic picture in these towns in the west. These changes have led to new voices demanding changes in the governance of river systems, and that's where inherently the conflict arises. When the river system was governed simply by diverters, it was pretty simple to get into a room and talk about it. When a river system all of a sudden has to be governed by diverters, by municipal interests, by ecologists, by recreation interests, new voices are saying, "Hey,I, too, have a seat at the table. I have a right to talk about how we govern the flows in the river." Well, that will bring conflict because nobody likes to give up their political power, and when new political power comes in, there is always an argument to not allow it. Once

it's in, there is always discomfort in entering into that discussion.

So how do we solve our conflicts? You notice up here I have education, involvement, understanding, and adaptation. I don't have technology because technology is not a problem solver. Technology is a tool. So when we look to solving conflicts, we have to remember that technology is a tool just like our political systems, just like our social systems, and just like our economic systems, and it should be treated as such. There is no technological fix for any of our water problems, and there never will be.

Education. When you get involved in a watershed, if you go out and say, "Hey, we need to do something else with this river because we're having problems," the questions you should be able to answer before you get into this discussion are: Where does your water come from? What are the boundaries of your watershed? What is the natural quality of water you use? What affects this quality? What else is water used for in your watershed?

Where do you find answers to these questions? You go to universities; you go to state agencies; you go to federal agencies. There are a lot of resources out there.

Let me give you an example of why you need to get educated. I started working in the Walker River Basin, which had this problem with a terminal lake in which salts were building up. In the first meeting I went to, there was a group of people suggesting, "There's a lot of water in this lake. There is 2 million acre feet. Vegas needs water. Let's sell it to them." The TDS in the lake was 12,000 milligrams per liter. The limit for water you would want to use for municipal purposes is 500. This water was polluted water for any municipal use. So that was the argument.

On the flip side, there was a group of environmentalists saying, "This is twice as salty as sea water, and it is so bad." Actually, it was half as salty as sea water. If you can't even get the facts right, there is no hope in the debate. When you walk in and start talking, one of the first things you should do is get yourself educated on these basic questions, or it's really not going to help the debate at all.

Second, get involved. In the state of Idaho and many other western states, they have formed Basin Advisory Groups or Watershed Advisory Groups. There are existing systems now with people that are chairs, board members, etc., and for those people I have some advice. For the existing discussion forums for water issues, eliminate barriers to involvement and ideas. One of the most frustrating things is going to a meeting and feeling you have no voice in the meeting, no way to get involved, no way to add to the discussion.

Have a transparent set of protocols for forwarding action. I've been in watershed meetings where people talk for a while, then somebody walks out and says, "This is what we"re going to do." How did that decision get made? The answer is something like "I just had a feeling that's what we should do." That's another practice that causes problems because if you don't feel you have a voice and you don't feel you have any say in the decision-making process, you are going to find a mechanism to get a voice and have some say, and that mechanism typically ends up being litigation.

Seek out broader involvement. Don't just wait for people to walk in. Reach out into your community and see if there is anyone else who feels they have something to say about the river. The fisherman that is standing out there may have an important view of how the river should be operated or what the river should be used for. Ask him if he wants to come to the meeting.

For groups trying to enter into the discussion, identify the existing forums, use state resources for help, identify resources you bring to the forum. If you're coming in, there is nothing more irritating than saying, "This is what I want." No. Go in and say, "This is what I can offer." You may have things to offer to these groups that they don't have. You may be able to organize river cleanup efforts. You may be able to bring technological information that they don't have. That's something important. The second you show that you can invest your time and bring resources to the forum, you will probably get heard.

Finally, engage in the debate, not the argument. It's OK to have points of view, but don't go in and try to start an argument and assume everyone else is wrong and you're right. If you engage in what would be a healthy debate, you probably will get people to start listening to you. If you engage in an argument and try to pick fights, you'll probably get thrown out of the meeting.

Understanding. This is different from education. Understand the source of conflict. This is one that I always find exasperating. Management for ecological and human benefit. Ecological systems in the west develop under high levels of variability and uncertainty. They like it. Ecological systems like variability. Human systems don't. This is an inherent source of

conflict. A number I've times, I've sat in meetings and heard, "Well, if we just managed the water for ecology..." Guess what? The ecology is better off if we don't manage the water. Human systems are better off when we do. Some balance needs to be reached, and if this conflict isn't admitted up front, there will be problems later on.

Understand the differences in how an hydrologist, economist, or ecologist view the water. If you understand the background of the person talking, you'll understand the language that they're using. An economist looks at water as a tradable resource. A water right holder looks at it as a property right. An hydrologist looks at it as something that flows downhill. An ecologist looks at it as something that sustains the ecology. Their language will reflect these points of view. If someone starts speaking and you're not sure of their identify or background, you will quickly find that they will use language that will be inflammatory in other circles. If you understand what this language is, it will have no intention of being inflammatory. So understand the different disciplines and backgrounds.

Understand your adversary's assumptions and points of view. That is, walk in your neighbor's shoes for a while. The short-term benefits of this are rather cynical. If you understand their points of view and assumptions, you'll have better ways to phrase your arguments. You'll stop preaching to the choir and start preaching to the heretics.

The long-term benefits are modification of your points of view. The more you understand someone else's points of view, the more you will start softening and modifying your points of view. It's not a bad thing. That's a good thing in the long run.

Understand the watershed and river as an integrated system. Technology is a tool, not a solution. Robust solutions are only ones that work holistically. When you look at the watershed, understand how all elements work together, including other resources that are used to manage the water resources system.

Adaptation. This is huge. Both the environmental and social goals are ever-changing. As we're seeing with potential global warming, with short-term and long-term droughts, our societal goals have changed in the last 150 years, and they will change in the next ten years. They will change in the next twenty-five years. What does this mean? Help develop decision-making processes that can involve knowledge, nature, and a vision for river change. As John Keys was mentioning, adaptive management seems to be the buzz word out there. I've worked in adaptive management systems for quite a while now. Adaptive management systems are best when they are set to adapt to ever-changing visions and goals. So if you work for a process that allows your goals to adapt, then you probably have a system that will be set up to help resolve water conflicts as you move out into the future.

One way to think about this, in terms of the ultimate adaptive management system, is that it's our democracy. You think about the 2000 election and the potential meltdown that could have occurred over the differences in what amounted to a few votes in a state, whether they were counted or not. We moved on. We accepted it, and we moved on. There was a lot of debate, but there wasn't a meltdown. It was a changing culture. Some people liked it; some people didn't. As we're moving toward a point in managing our water in the west where we conclude that it should be managed on a regional basis, not a watershed basis we need to develop forms of watershed governance that have that level of robustness in being able to adapt to those situations, make decisions, and move on. If we don't we're headed into a crisis. If we do, we will always have some level of conflict and we'll always have debate, but in the future, we'll be able to make decisions, move on, and adapt as we find out we were right, we were wrong, or our views are changing.

Thanks for your time.

FREEMUTH: That was a lot there, to say the least. Pretty provocative stuff. If we only had state boundaries along watershed lines, that would be one step. We have time for a couple of questions for John.

AUDIENCE: Does the public interest, not being an immediate water user, have a place at the table in making water decisions? and does our Legislature understand that?

TRACY: I think the public interest is inherently written into water law. A defined use of water has to be beneficial. That may not be your public interest, but it is something that is inherent in the law. If a water use is just not beneficial in any of the public's mind, it should be revoked. That's pretty much the way western water law reads. In terms of changing public interests, that's where one of the difficulties comes in. How water has evolved is that there is a predetermined right even if social interests are changing, so we're still holding to the old system

of rights.

In terms of the Legislature, I don't know. I don't get involved in Legislatures enough to know what they understand. I am asked questions by legislators, primrily at the federal level, and I've responded to them. So I assume there is a fair amount of interest, but that's not something I've become really involved in.

FREEMUTH: The Speaker is here, but we'll leave him out of it for right now.

AUDIENCE: Just a technical question. Where do you see the role of non-native trees in a native landscape plan?

TRACY: That's an interesting question because I don't think you can give a blanket answer. I do know that a lot of non-native trees, in particular some of the Russian olives, were planted because they grew quickly if they were irrigated. So they ended up being probably not the best thing for a native landscape, but it's kind of a generalization. There are vegetation species that come from climates similar to ours that can adapt fairly well here. They may be very useful in the landscape. There are others that are definitely invasive and not productive.

AUDIENCE: I'd like to address your point of irrigation efficiency in the Snake River Plain aquifer. What I heard you say is that irrigation conservation could possibly be worsening the problem, the quantity problem. What about the consequences of surface water runoff, erosion, and phosphorous input into the river? If irrigation efficiency isn't a good solution, could you suggest what is for that area?

TRACY: With the LEPA [Low Energy Precision Application] systems, there are two defined benefits of the systems. One is lower energy use. There is no question but that with the amount of water delivered to irrigated crops, you use less energy than for these high efficiency systems, just because you're moving less water. The second one is potentially a water quality benefit, but that has to be qualified quite a bit. In the situation where you could potentially build up salts in the soil, you then have to flush them out. But by being more efficient in irrigation, there is no question but that you definitely reduce your runoff of sediment phosphorous nutrients from the field.

For the second part of your question, most crops are pretty tied to the fact that if you use a certain about of water—on alfalfa, for instance—you get a certain amount of alfalfa. You can be efficient in your application of water, but in the end, the alfalfa, to grow to a certain amount, uses a specific amount of water. That's just the way it is. The solution is to grow less crops. Well, if we have massive crop surpluses, fine. But when you get to the point where you're balancing out your crops with your needs, you can't do much more unless you go to a greenhouse-type solution. That's about it. That's one of the harsh realities of agriculture in the west: to grow the crops, you need to use water. You can go to different types of crops, but in the end, the market is determining what is going to be used out there and what people are interested in. So you end up in this pre-defined relationship. Sorry, but there is really no better solution than that.

AUDIENCE: John, in your presentation, you talked about resolving conflict. How important, on the other hand, is it for the community to gather around and celebrate the accomplishments that they make as part of this conflict resolution process? I didn't see that in your presentation.

TRACY: That's a good point. I think it's very productive. I've been in several watersheds, and the one that springs to mind is Lake Tahoe. Once a year, they get together, stand around, and say, "We're doing a pretty good job." When you get to the end of the year, with everything that goes on, with the politics of getting the funding to do projects, with the pain of working through all the red tape, you get to the end of the year and say, "You know, we did accomplish something." It reinvigorates and re-energizes people to go out and say, "OK, what do we want to accomplish next year." In that respect, it's very critical.

It's also good in the sense that as watershed efforts grow, that is a good mechanism to bring in other points of view and perspectives. That celebration can bring people together in a very non-confrontational fashion to say, "Hey, look at what we accomplished. Maybe we do have the capacity to achieve additional goals or maybe modify the vision of what we see for the river." I could see that as being a really important element, and I hadn't thought about putting that in my remarks.

FREEMUTH: John Tracy, thank you very much.

ANDRUS: Just a few housekeeping matters.

Don't leave your little name tags behind. You need to be wearing those little tags to participate tomorrow. To the attorneys present, let me remind you to fill out the little tag for continuing education, 7 hours and 15 minutes. Turn those in as you go out, and Martha Wharry will be there to collect those.

I'd like to just take a moment, on behalf of the Andrus Center and the Idaho Statesman, to express our appreciation to all of you for your participation and especially to the people who participated up front today, that outstanding array of talent and individuals who have contributed.

I need your help at 8:55 AM tomorrow morning. You need to be in here—if I have to be out there with a buggy whip and help you on the way—because Senator Crapo will be speaking to us via satellite. In Washington, D.C., they start that little hummer right at the minute, and they turn it off at the minute. So tomorrow morning, you'll see me running around out in the lobby if you're not in here.

My appreciation to the volunteers who helped all day. We've had a busy day today, and we'll wrap it up tomorrow with the hypothetical. The title is: "The West's Worst Nightmares: Drought, Thieves in the Nights, and Thirsty Lawyers." Then we'll have a wrap-up session. Governor Sullivan, former Ambassador to Ireland, was scheduled to appear, but he was called back to Ireland to settle some kind of dispute. But we will, in fact, have a full panel to put together the solution page on the conference.

It's been great. Thank you, ladies and gentlemen. See you tomorrow morning.

***

Troubled Water

Exploring solutions for the western water crisis

April 19-20, 2005
Presented by:
The Andrus Center for Public Policy
The Idaho Statesman

Wednesday morning, April 20, 2005
9:00 AM to Noon

CECIL D. ANDRUS: Welcome, ladies and gentlemen, to the second day of our conference on Troubled Waters. It is my pleasure this morning to introduce Carolyn Washburn, Executive Editor of *The Idaho Statesman*, who has been with the Statesman since 1999. Our partner in this, *The Idaho Statesman*, is represented by Carolyn Washburn. Carolyn, I guess you'll have to do a little soft-shoe dance until the satellite comes on.

CAROLYN WASHBURN: I've never danced with Governor Andrus before. I'm pleased that we were able to get some time with Senator Mike Crapo during this conference. He has worked for years on water issues facing Idaho and the west. Senator Crapo is serving his second term as the U.S. Senator from Idaho, first elected in 1998. Before that, Idahoans elected him to three terms in the U.S. House of Representatives. Here in Idaho, he served in the Idaho State Senate from 1984 to 1992, including four years as President Pro Tem. In the U.S. Senate, he serves on the Budget Committee, which has power over some things we talked about yesterday, so think about that as you frame questions for later.

Senator Crapo also serves on the Agriculture, Nutrition, and Forestry Committee; the Banking, Housing and Urban Affairs Committee; the Finance Committee; and the Indian Affairs Committee. Significant to this discussion, Senator Crapo also serves as co-chairman of the Western Water Caucus, established to educate other members of Congress about water issues in the west. He has received many awards from interest groups for his work on water issues, including the "Water Statesman of the Year" award from the Idaho Water Users Association; an Award for Outstanding Contributions to Pacific Coast Fisheries from the Pacific States Marine Fisheries Commission in 2003, and the Groundwater Protector Award from the National Groundwater Association in 2001 and 2002.

We heard some discussion yesterday about the role of the federal government in supporting initiatives, financially and politically, to improve access to water in the west and even around the world. Senator Crapo will speak to some of that and then take your questions for a few minutes. Be thinking about what you heard yesterday and what we need from Washington and have your questions ready. We have limited time with both the Senator and the satellite, so I am giving a prize in the form of my undying gratitude to the first person who jumps up with a question to get the ball rolling. I have a few of my own to get us started, but I'd rather hear from you.

I think we have the Senator from Washington. Hello!

SENATOR MIKE CRAPO: Hello. Can you hear me?

WASHBURN: We can hear you now. Welcome. You're on.

CRAPO: Thank you very much, Carolyn. I appreciate this opportunity to speak to you. As usual, I wish I were out there. It's getting to be that muggy time here in Washington, D.C. when the humidity levels are so high that I just have to stay inside as much as possible.

My topic today is the federal role in water management policy. It's quite a topic, but I thought I would approach it by first going back a little bit historically and talking about what the federal role in water policy has been. Clear back as far as 1866, the federal government made a positive declaration that it would defer to states in terms of water management, allocation, and use. Even up until today in the Bush Administration, the federal government has continued to state that its policy—"2025" is the name of it—is to defer to states and to try to let states have primacy in the management, allocation, and use of water.

That being said, that is not exactly how it has played out since 1866. As I prepared for these remarks, I went back through and looked

at what the federal government actually has done with regard to water management over the years. There is a tremendous amount of of federal involvement that sets the stage for what the federal role may be. I'd categorize these aspects of the federal involvement in a number of different ways. I've come up with four different categories in which the federal government has played a role over the years.

First is the regulatory role. In other words, the federal government basically steps in and says, "Even though we are saying that the states have primacy over water, we are going to regulate it." This has been done in acts such as the Endangered Species Act, the Clean Water Act, the Safe Drinking Water Act, and the Wild and Scenic Rivers Act, and everyone out there has been dealing with TMBL [Total Maximum Daily Loading, a scientific term related to water quality]. The list of federal legislation in which the federal government either claimed actual control of water or regulated water could go on.

This regulatory role by the federal government has generally not been focused so much on allocation of water as it has been on the quality or quantification of water, like the Clean Water Act. When you get into the Endangered Species Act and its ramifications, then you start seeing the federal government moving very aggressively to actual management of the allocation and use of water. So there is first that regulatory role the federal government has in fact asserted.

The second role I would call incentive. The federal government, primarily through the farm bill but also through a number of other programs, has a tremendously large environmental and conservation effort underway, much of which addresses water. In the farm bill, for example, in Idaho we have just recently had an experience with the Conservation Reserve Program [CRP]. We've had historic experiences with the CRP program, which takes land out of production, though not land so directly involved with water. We have the wetlands legislation and many other aspects of the farm bill that provide incentives and support for landowners to use their land in ways that provide what the federal government deems to be a beneficial use of water for other environmental or conservation objectives. That's what I would call the incentives part of the federal role—the regulatory being maybe the stick, and the incentives being the carrot—which the government has used to encourage land use practices that facilitate its desire for the kind of water policy it wants to see adopted.

The third is a role in which the federal government has been quite involved. I don't have a name for it, but generally it is research and support. There is a tremendous amount of research and data collection that goes on through the U.S. Geological Survey. We have all the research that is funded in our state university system, much of which is related to water policy. That kind of activity by the federal government is also well established. In that context, you can see a trend for even more of that. There is legislation before Congress right now called the National Drought Preparation Act in which it proposes to create a national council to prepare us on a national basis for how to deal with drought—everything from studying it and putting together drought plans to drought relief in the end, if that becomes necessary. So you see the federal government also stepping into this research and support role.

The final category is outright financial support—disaster relief assistance, drought relief—assistance that often comes up in one context or another in one part of the country or another in our negotiations over appropriations policy as we move through each year's budget. The reason I go through those is to lay the parameter of what the federal role has been in water policy, notwithstanding its stated declaration that it will defer to state law and state primacy.

Over the years, I've seen this gradual increase in federal involvement in managing water, whether through regulation or incentives or other ways. I've become concerned as one who believes more that state government should have the true prime role in managing water. Therefore, I've introduced in the past the State Water Sovereignty Act. That bill has never really gone anywhere because if my bill were enacted, it would supersede a lot of the federal efforts to step in and manage decisions that I believe should be made at the state level.

That debate is underway, and in that context, it seems to me that the topic I've been asked to discuss comes into this frame. With the drought that we see in the west, in the eastern United States, and around the globe, and as we see the pressures for water allocation and use increasing from many different perspectives, how will we in the west deal with it, particularly in the context of our United States Congress? What is the federal role in this entire process?

From what I have heard about the discussions that you had yesterday, I'm entirely in agreement with the direction I understand

the remarks have been going, i.e., that we must focus on developing collaborative, consensus-based decisions, driven largely from the local and state level, and then brought to Congress for ratification.

A good example of that would be the Snake River Basin Adjudication agreement, which recently went through the Idaho Legislature and the Congress and which was approved by the tribes and all of the other relevant parties to that negotiation. I know there was a lot of disagreement out there about whether this was a good thing or a bad thing. That is what is going to happen when these issues come together. What happened was that very difficult issues were raised, and over a period of years they were discussed and resolved by the local and state level decision-makers. The solution was then brought to Congress, to the state legislature, and to the tribal councils. The resolution was achieved without having the federal government step in and direct the outcome. That is, in my opinion, a good example of what we must try to do at the federal level.

Congress is going to play some kind of a role. History has shown that. Whether it's through regulations, incentives, or management, the federal government has shown that it is going to play a role in the management, allocation, and use of water. We can continue, as we should, to try to make sure that, to the maximum extent possible, Congress recognizes its stated policy of deferring to state sovereignty, but we must also recognize that with almost every major decision, there will be a federal piece of it, and Congress will play a role in it. It might be to create more incentives to help us solve the problem, as we did between King Hill and Milner with the CRP program, which is going to take 100,000 acres of Idaho land out of production. It might be to negotiate with them on the Owyhee Initiative, which I am hopeful will be a reality soon in terms of the management of the river systems. It might be some other approach to try to reform the Endangered Species Act to try to get a more species recovery-oriented solution put into place. One way or the other, the agreements that we negotiate at local levels must be the things that drive our solutions nationally.

If that doesn't happen, then what I believe we will see in Washington, D.C., is that the solutions will be driven by other dynamics. If you look at this country today—and these will be rough guesstimates—two-thirds of the population of the United States lives east of the Mississippi River. Population is going to have an effect on how the west manages its water. Right now, because of the dynamics we have in Congress, we still have a willingness to listen to locally-driven solutions. If there is no locally-driven solution, there will be a solution driven by the large population centers. If we don't come forward with our own proposals, states like California, Texas, Florida, New York, and others are going to have a much larger voice in the management of Idaho or western water than Idaho itself.

Another dynamic is that today, whether one is on the side of those who believe in absolute state sovereignty and believe that the federal government should get out of the whole process or those who believe that the states aren't doing the job right and that the federal government should step in and solve the problem in a particular way they advocate, the reality is that in the United State Senate, the dynamics are so close that neither side is going to be able to outdo the other and impose its position. Only if we develop consensus-based solutions will significant issues like water policy battles be resolved effectively in the United States Senate. When we can come to the Senate with a consensus built among a large group of valid stakeholders on the issue, we can then address issues in a way that will help us to build the necessary consensus at the local level and sustain it through the efforts to filibuster or even to threaten vetoes at the executive level. Without that kind of consensus-based, locally-driven decision-making, we are faced, frankly, with either no ability to achieve major policy changes at the federal level or the likelihood that any major policy changes that take place will be driven more on the basis of national population.

One last concluding comment. These dynamics I've talked about in the country are also applicable to Idaho. I was reading a recent report that indicated 74% of Idaho's population resides in just five counties: Ada, Canyon, Bonneville, Twin Falls, and Kootenai. The point is that even in Idaho, we have a changing dynamic. The Idaho Constitution, right now, provides that agriculture gets a priority in the decisions about how to manage and allocate the use of water, but other uses are starting to demand that they be addressed. It is this clash among different possible uses of water in Idaho as well as the same clash that will occur between different uses of water nationally that mandates that we come back to locally-driven decision-making, the kind that generates the consensus that helps us to move forward in Congress.

With that, let me stop and throw it open to questions.

WASHBURN: I'll get us started. Senator, you talked about the Nez Perce agreement as being a model process, but that was consensus funded by the federal government. It was local consensus, but the money to make it work came from the federal government. Yesterday, John Echohawk said there are about 20 other negotiations on tribal water rights underway, but the message from the federal government is that it's broke and can't help. Can we really execute these local consensus agreements without federal money, and what is the federal government's commitment?

CRAPO: First of all, when I talked about the SRBA, I don't mean to say that it is the only model to be used. It was one example of a locally-driven decision process that came to Washington rather than coming to the people from Washington. Having said that, Mr. Echohawk's comments about the federal budget situation here are right on target. Today, we are looking at a $400 billion deficit. Our needs for homeland security and for national defense are escalating.

The economy is growing back, and the more it grows and the more stable we can make our economy, the better our budget picture will look. The fact is that right now, outside of national defense, homeland security, and the entitlement programs, over which Congress and the president have no control, the rest of the federal programs are basically being held to a flat line of growth. In fact, if you take the national defense and the homeland security budgets out, the rest of the discretionary part of the budget is either flat-lined or a little bit negative with perhaps a 1% reduction. We have to recognize those political realities.

Having said that, I do not think we should start down a road that suggests that the federal government has to fund every collaborative effort. In fact, I don't see a reason why the federal government must provide the funding behind collaborative efforts. When it is available, that's wonderful. I have no problem with the federal government helping when it can to facilitate collaboration. But there certainly is no reason why collaboration cannot take place without federal resources.

AUDIENCE: I'm Bill Sedivy from Idaho Rivers United. I hope you're feeling well. With your desire for increased state sovereignty over water management issues, how do we reconcile that with the fact that rivers and ecosystems don't adhere to state boundaries?

CRAPO: Bill, you always ask tough questions. One of the toughest is what to do when you are trying to adhere to state sovereignty and you have water that crosses state boundaries. Idaho is a perfect example of that with our river systems and the way we interact with Oregon and Washington and other bordering neighbors. The answer there, in my opinion, is that as we work in a state to try to develop the decisions on a sovereign basis, when we have water that is not solely attributable to one state and more than one state has jurisdiction, we need to develop what a multi-lateral agreement, a pact among different states as Idaho, Oregon, and Washington have done. When those agreements can't be worked out, then that probably means that we're going to have to have some kind of resort to either a judicial resolution or, as I think your question was implying, a national resolution where the federal government steps in and says that when there is a dispute between states, the feds will have to provide some kind of a solution.

Again, my preferred approach would be that the states work together to come up with their proposed solution and suggest it to the federal government, rather than having the federal government step in and impose that solution. I really do believe that, although we must recognize the fact that the federal government has asserted a role and will continue to assert a role in the management, allocation, and use of water, we should keep in place the deferrals to the states and communities to the best extent we can. We will then be more capable of generating the kinds of creative, effective solutions that work on the ground, crafted by the people who live and work where the issue is. When we can do that and then send those decisions to Washington for ratification, we will have better solutions, and we will have better buy-in by the people impacted by those solutions.

AUDIENCE: Senator, I am Joel Connelly from the Seattle Post Intelligencer. We are in a part of the world that is in the midst of a six-year drought. Up north, in British Columbia, Environment Canada is predicting more dry years, more 100-year fire cycles, which now seem to come every two or three years. Given the water crisis in this part of the world, given the fact that we depend upon water for our irrigation, our power, and our fish, can we afford, for our own

security, to continue what seems to be a national policy of doubt and denial—particularly in the Bush Administration—on climate change and global warming?

CRAPO: Were your words doubt and denial?

CONNELLY: Yes

CRAPO: We may get into a little bit of a debate over this. I wouldn't characterize the Bush Administration's position in that way. Clearly there are different approaches by those on different sides of the issue in regard to climate change. I believe the Bush Administration has put forward a very solid proposal in its energy proposal, being worked through Congress right now, which will help us address these issues. I know that there are those who would like to address them in different ways, but I don't believe the Bush Administration is refusing to address them or to recognize them. What we have here is a disagreement about how to recognize them. Although I don't know that we want to get into all the differences about how to approach the problem, it seems to me that if you're looking at something like the Kyoto agreement and the decision to try to get the United States to enter into the Kyoto agreement and honor it when we were not expecting the same kind of commitment from other nations around the globe, there is just a disagreement among many of us. That would simply have shifted the location of the problem rather than addressing the problem itself. There is no disagreement about the fact that we need to do something. There is a disagreement about what it is we need to do.

Having said that, there is also a lot of agreement. We have a tremendous effort by the Bush Administration and by many of us in Congress to address a lot of the climate and air quality issues that are raised by the climate change concerns. Again, there are those who think these initiatives do not go far enough, but I don't think it's correct to say there are no initiatives or efforts underway.

AUDIENCE: Senator Pat Shea from Salt Lake City. You use the phrase about the stakeholders. Who will decide who is valid and who is invalid?

CRAPO: The reason I laughed when you asked that, Pat, is that I've been trying to build collaborative efforts ever since my first year in Congress in 1993. The first time I tried to do a collaborative process, it was in Ketchum, Idaho, and it was on trying to bring people together for the Boulder-White Clouds Wilderness discussion. I thought I had invited every person and group I could think of, and I missed a couple. They picketed my meeting. I found out in my very first effort that you have to be broad and willing to bring in the people and the interest groups that have a legitimate interest in the outcome of the decision. What I've also learned over the years is that the process of identifying those groups is generally one that must be done at the local level by those involved who know the people and know the players. There has to be a sincere, honest effort to get it done. If it is not done, a group that has legitimacy, should be in the process, and is left out can almost always assert itself in a way that is detrimental enough to the process to bring it down. That's why I say that I can't give you a formula and say, "These are the groups that are legitimate and these are not." In each case, a sincere honest effort must bring to the table enough of the stakeholders to ensure that the right groups are at the table and that there is enough solidarity so that no interest group is left out that can bring the process to a halt.

I want to make one other point. There are many many groups that believe that they should be the ones at the table, representing a given interest. At some point, a decision has to be made as to how many of those groups satisfy the need for that interest to be represented. You can't have every single landowner group. You can't have every single environmental group be a part of every single collaboration, but you have to have enough of the landowner groups and the environmental groups so that the others who are not at the table believe that their interests are being adequately represented. I have just talked generally about the issue without giving you a specific example, but, again, if you don't do it validly, then your effort to build consensus is doomed from the outset. You will not have sufficient interests at the table to accomplish the true objective of building the consensus.

AUDIENCE: Dave Greegor. We have a state drought management plan that I'm sure you've probably seen. As far as I'm concerned, when I worked for the state, it seemed to me to be pretty gutless. When you talked about locally-driven initiatives, do you think it's important to have a state drought management plan at this point in time that has some teeth to it?

CRAPO: I don't know the details of that State Drought Management Plan, so I can't comment on whether it's adequate or not, but I do believe it's important to have such a thing. In my remarks, I mentioned that there is a proposal on the table here in Washington for a National Drought Planning Act to be implemented. That act, itself, if it were implemented, would provide a lot of federal support for helping states develop state management plans. There is some resistance to that because of the obvious argument that we don't want the federal government telling the states how to do things, etc. But we do want the federal support where we can get it because it does provide, as Carolyn's question earlier indicated, a significant ability to accomplish objectives that couldn't be accomplished without that federal support. So I personally would be open to the idea of having a federal drought protection effort underway, one that was focused on providing the support, incentives, and backup to the states to help them identify what should be in a drought plan, then to help them put those plans together and, if necessary, to fund the ability to implement those plans.

AUDIENCE: John Peavey. A number of years ago, I got involved in looking at the cloud-seeding activities that California does. They do a great deal of it, and they are doing more and more each year, so it must be working. Over in eastern Oregon in the Steens Mountains, the ocean side is very moist with lots of trees and growth, and the eastern side is the Alvord Desert, some of the driest country in the world. That cloud-seeding is just like raising that Sierra Crest another thousand or two thousand feet higher. Is there any thought back there at all of looking at the downwind effects of cloud seeding? I don't know what Oregon and Washington are doing, but that is an issue that would be broader than just one state.

CRAPO: You raise a very interesting question, and I honestly don't know whether that issue is being addressed back here. I can certainly raise the issue, and I do know a lot of things are being looked at here such as desalination research and drought protection efforts. I haven't heard about that one, however, so I'll check into it.

WASHBURN: We have time for one more question.

AUDIENCE: Scott Campbell. In the context of your efforts to modify the Endangered Species Act, I'd like you to speak to what I feel is the history of citizen-suit litigation that has far expanded the intent of a number of the federal legislative actions, such as the Clean Water Act, the Endangered Species Act, the Clean Air Act, and others. Can you speak to whether there are discussions back in Congress about modifying any of the citizen-suit provisions and perhaps placing some limitations on these actions that really go beyond what Congress intended with regard to the original legislation?

CRAPO: Scott, that's a very good question. Let me just start out by saying that what we are doing in trying to reform the Endangered Species Act is the same kind of thing I was talking about in building consensus collaboratively. We are working with broad stakeholder groups, trying to make sure everyone is at the table, to find what is doable. We are finding that there is a tremendous amount that is doable in terms of endangered species reform, things that all sides agree will help us move the ball forward.

In that context, however, I haven't seen at this point a real likelihood that we will be able to change in a dramatic way the basic structure of the citizen-suit provisions of these statutes. I just don't see that we have the ability to build sufficient consensus to get that kind of a change through Congress at this time, even though I agree with you that there are concerns that should be addressed. We're trying to find what's doable and what's achievable.

We have, however, identified a number of areas where a tremendous amount of the litigation does occur and where a tremendous amount of resources are sucked out of the system that could have gone to resource recovery or species recovery. Instead, they are going into litigation and are, in fact, causing not only delays in the management of species but they are causing the utilization of agency resources for litigation and studies rather than for on-the-ground species recovery activities. In those areas where we are finding such litigation, we are finding some consensus, where we can fix the issues that are causing the litigation. We hope that will significantly reduce the basis for litigation over those issues. I believe that we have a good shot at addressing the litigation side of it in that context.

There are those who would like to see it done with a different approach, but we are seeking to do the achievable. We have identified possibilities for seriously addressing the issues

of where our resources under the Endangered Species Act are going and re-directing them away from litigation into species recovery efforts.

WASHBURN: Senator, thank you for getting us started today and setting the stage for the last part of our discussions.

ANDRUS: Senator, Cece Andrus. I just wanted to join Carolyn in thanking you for giving us your time this morning to participate. On a personal note, I want you and Susan to know that you have been in our prayers as you face this health challenge. I understand the prognosis is excellent, so everyone in this room joins me in wishing you well. Thanks very much, Mike.

CRAPO: Let me thank you, Cece, and everyone there for putting this conference on. This is a critical issue for Idaho and the West.

ANDRUS: When you come home, we owe you lunch or dinner, your choice.

CRAPO: Thanks, I'd love it.

ANDRUS: Carolyn, thank you and *The Idaho Statesman*, once again, for handling this portion of our program. Now I will re-introduce to you Marc Johnson, and we need the panelists to take their places, please. Marc will be the moderator for this next part, and I'll remind you that the title is: The West's Worst Nightmare: Drought, Thieves in the Night, and Thirsty Lawyers.

MARC JOHNSON: Thank you, Governor. Good morning, everyone. A couple of years ago, at an Andrus conference, we were struggling with finding a format beyond the typical panel discussion that you often see and that we enjoy doing, and we seized upon creating a different kind of discussion format. It's what we call the Andrus Center dialogues. We've done these a few times before and have had a lot of fun with them. I will force these folks this morning to take off the hats they wear every day in their jobs and assume some other roles. I will lay out a scenario for them that will force them to confront what John Leshy suggested yesterday is something none of us can really envision.

What if the circumstances that we face right now in 2005 were demonstrably worse? What if the drought continues for another ten years? What if the snowpack is at an all-time record low all across the Pacific Northwest and the Rocky Mountain states? That's the essential premise we are going to work with this morning. We're calling it "Drought, Thieves in the Night, and Thirsty Lawyers."

So welcome to the future of the west, the regime that Mark Reisner, author of *Cadillac Desert*, said has a "desert heart." Let's fast forward ten years from today. It's 2015, and the irrigation has just begun in many parts of the west. A very large portion of the west, along with big chunks of the southeast and the Great Plains, have been experiencing long-term shortfalls of winter snows and summer rains since the 1990's. Some people are fondly remembering those relatively wet years of 2006 and 2007, but they are a distant memory here in 2015. It's damned dry in the west. The reservoirs behind the dams are dry as well. It's one of the driest years in recorded history in places like eastern Idaho and northern Nevada, and there is a perfect storm of surface temperatures in the northwest. The north Pacific and the North Atlantic have produced a combination of dry summers filled with wildfires and warm winters, which reduced the amount of snow needed to fill up the reservoirs.

There was some precipitation in the region around the first of the year of 2015, but it was rain falling on snow, so the runoff was immense, causing flooding in some parts of the region. The Bureau of Reclamation is now predicting that none of the reservoirs in our part of the world is going to be close to filling up this year, in part because the always-brilliant Corps of Engineers, anticipating the usual heavy runoff, drained all the reservoirs, and the snowpack never came to fruition. Of course, this is a hypothetical situation; this never really happened in the real world.

Yesterday, we heard on the international front some things about drought. Now this esteemed panel is going to examine some approaches, purely hypothetical, that we might consider if the conditions become much, much worse than those we face today.

Let me quickly introduce the panel. Pat Ford, Executive Director of the Save the Salmon Coalition, long-time environmental advocate and leader in the Pacific Northwest. You met John Leshy yesterday, Distinguished Professor of Law at Hastings College, former Interior Department Solicitor General during the Clinton Administration. Next to John is Jim Waldo, a very talented attorney from Tacoma, who was the principal negotiator and facilitator for former Governor Locke in the state of Washington on a variety of water issues. Next is John Echohawk, Executive Director of the

Native American Rights Fund, tribal advocate and an attorney of considerable standing on water rights issues. Commissioner Keys is back with us today. Welcome to Michael Bogert. He is an attorney now in private practice in Boise. He helped the state of Idaho negotiate the Nez Perce agreement that dominated so much of the recent legislative activity.

Next to Michael is Kay Brothers. You met Kay yesterday. She is the Deputy General Manager of the Southern Nevada Water Authority. next to Kay is Pat Shea, former director of the Bureau of Land Management in the Clinton Administration, now in private practice in Salt Lake City. Next to Pat is the Speaker of the Idaho House of Representatives, Bruce Newcomb, farmer, rancher, water expert, chief advocate in the Legislature for the Nez Perce agreement. Next is Dan Keppen. Dan is the Executive Director of the Family Farm Alliance, a coalition of family farmers, farm advocates, and irrigators in 17 western states.

Next is our Director of the Idaho Department of Water Resources, Karl Dreher, whom you met yesterday. Please join me in welcoming these panelists.

I should say, in the interests of full disclosure, that Rocky Barker and John Tracy, whom you met yesterday, helped me put together this hypothetical, so if there is anything you don't like about it, they are responsible.

Kay Brothers, you have been such a success in Las Vegas that you have a new job. You are now directing the Los Angeles Water and Power Authority. Congratulations. Respond to my scenario here. 2015. Colorado River water supplies are extraordinarily limited. Population growth has continued in Southern California. What are some of your options in trying to address this demonstrably worse drought condition?

KAY BROTHERS: I would like to say that I've always wanted to live in a state that had a Colorado River agricultural base. I think if we're really in that dire situation, moving from Las Vegas to Los Angeles Water & Power probably won't do me much good because we're on the Colorado. If anything would have to happen to get through conditions like that, we would have had to come together as the Watershed of the Colorado River. I would hope that we would be able to put together agreements that cities would be using water very wisely, that we would have the same conservation plans. One thing we have seen in Southern Nevada is that you can't have one city next to another doing something different or you don't have the community behind you to actually conserve. If we had dire straits like that, we would have the agriculture community recognizing that the cities have to have water first if they are using the water efficiently.

JOHNSON: So you're going to rely on the good will of the farmers to take care of your city customers?

BROTHERS: Well, I don't know that it's the good will. I think it's probably that they are compensated for doing that.

JOHNSON: You're going to pay through the nose, aren't you?

BROTHERS: I think we talked yesterday about how expensive it is going to be to develop additional water supplies or a buffer against diminished water supplies, and we could pay farmers to become more efficient as an insurance policy. We have dry-year options in which we pay farmers when it's wet years for them to actually put in efficient measures to become more efficient in farming. Then when we have to exercise those options, we have that insurance policy so that we're more able to have water for the cities. Again, the city must be efficient before this would work. The real win-win situation is some type of partnership in which you are providing money for agriculture to do efficiencies while the good years are there. When you get to the bad years, you exercise those options. We have to look across the boundaries of the Colorado system because Nevada doesn't have the luxury of the agricultural base to rely on. We have to look at the watershed community, not the state community to rely on.

JOHNSON: Mr. Keppen. You have a new job, too. You're running the Imperial Valley Water Authority, the water users. She's coming after your water. How do you feel about that?

DAN KEPPEN: It's a familiar feeling, not necessarily from Las Vegas. Speaking of Las Vegas, we had our annual meeting in Las Vegas about a month and a half ago, and we had representatives from all the western states there. The theme that came out of that meeting when all the states reported on what's happening in the west was: Look, we have all this demand, this tremendous urban growth. We have these new environmental demands out there, and the

water to meet those demands is either going to come from new supplies or it's going to come from agriculture. It's already happening.

Yesterday's panel discussion was very interesting. It seemed as though many of the panelists agreed that we do need to develop some enhanced supplies. A lot of people recognize that the era of big dam building is over, especially with a large federal involvement, but there are plenty of projects out there that could be developed in an environmentally sensitive way.

JOHNSON: So we need some new storage?

KEPPEN: Absolutely. That will help, but it will not be the silver bullet. We need new conservation and partnerships. Water marketing is flourishing. That will continue to flourish. Drought management will help. There is a whole suite of things that can be done, but you can't just ignore storage.

JOHNSON: We're in a crisis though. Are you going to advocate building new dams?

KEPPEN: New dams. Expanded storage. Conjunctive management Our alliance just released a database at a Congressional field hearing last week and put out a call to the folks at the local level throughout the west. We said, "Look, give us your ideas. What are some water supply projects that could be done?" We received 80 proposals, ranging from canal lines to conjunctive management to offstream storage to even a few onstream storage. There is water out there that can be developed. We just need to change the regulatory environment so that things can move forward now.

JOHNSON: Mr. Ford? You're the executive director of the No New Damn Dams Coalition. We don't need any more stinking dams, do we, especially with concerns about endangered species? Mr. Keppen is talking about loosening regulations so it's easier to build these dams.

PAT FORD: My sense, Marc, is that the Californians that I represent would be pragmatic enough not to say "No more dams." In a crisis, they would be focused enough on the things they care about to say, "Boy, you're really going to have to show us a project that makes sense economically in this crisis condition," because fish and wildlife values are highly economic—far more in 2015 than they were in 2005. In other words, many more jobs and much more economic value are being attached to fish and wildlife throughout the west, but including California. Show us a project that will have a significant actual, long-term impact that is beneficial for the water crisis while taking account of the same kind of crisis, in a different way, that is affecting instream values.

Given those tests, I suspect we would see very few opportunities for large dams, maybe none, but we'd be looking for ways to help people and to help the landscape with different kinds of structural projects—even some we may not have invented yet—while still trying to hold to a template of: Here's the system; here's the water; here's what nature put out there. In the crisis conditions of drought and climate change, let's try to give that system and the creatures in it, including people, the maximum ability to adapt and be flexible in moving forward and to know that change has occurred. In other words, the solutions from the past are not going to be adequate for a crisis of this kind.

JOHNSON: You've set the bar pretty high for Mr. Keppen. That's a pretty high hurdle to get over. We're in a crisis.

FORD: I think the crisis in the dollars has set the bar pretty high for Mr. Keppen, not me.

JOHNSON: Let's assume for the moment, just for the sake of the discussion and because I want to create conflict and turmoil here, that he can't get over your hurdle. His proposal doesn't meet your very strict set of criteria. Are you going to sue the bastards?

FORD: The question assumes . . .

JOHNSON: Mr. Leshy is itching to get into this as your counsel.

Let's say it's an endangered species issue. That never happens to impact water development in the west... Let's say that there is a very significant endangered species issue associated with Mr. Keppen's new dam project.

FORD: Assuming that litigation would be required, that the project had gotten the go-ahead from federal and state agencies...

JOHNSON: It's a crisis, and the politicians are responding. They're ready to build.

FORD: Then the test would be this, in my

view. Yes, we would sue if we felt that the things that we care about in this crisis, which include jobs, are in danger. I'll make that clear. I'm not going to put myself in an environmental box for anyone. That box no longer exists in 2015 in relation to these issues.

JOHNSON: A forward-looking environmentalist...

FORD: If we felt that the harm to the people of California and to what they care about in the streams was great, we would have to seek—we'd be crazy of we didn't seek—ways of meeting the perceived need this project was meant to fill by other, less expensive, more flexible means and hope that we could find something there. We would be trying that, knowing it would be difficult. At the same time, we would be in court.

JOHNSON: You're being extraordinarily reasonable. I appreciate that. Mr. Leshy, as Mr. Ford's counsel, you're going to be more interested in some of the ideas that Kay Brothers laid out, aren't you? More conservation? Perhaps we can find a marketplace solution to this, beyond building dams?

JOHN LESHY: Sure, if you just consider the raw facts. First of all, if you're talking about new projects, you're talking about ten years to deal with a crisis that is quite immediate. It takes ten years at least to get a project on line that has any significant effect. You're talking about huge amounts of dollars. Where are those dollars going to come from? The Imperial Valley is sitting there with 2 million acre feet of water that they pay $10 or $12 an acre foot for. Los Angeles would pay $2000 or $4000 for those same acre feet, a huge disparity in economic value. When you talk about building more projects for more supplies, when you have that disparity, it won't work. The market will solve this problem.

JOHNSON: Let's assume for the sake of my conflict here that the suit is joined. You're going to sue over an endangered species issue. Judge Bogert. Welcome to the fight. A remarkable political deal was struck with Senator Feinstein, Senator Craig, and the new Governor of California, Bill Clinton, and you got somehow appointed to the federal court in California. The case is before you, and Mr. Leshy is representing the No New Damn Dams Coalition. Mr. Shea is representing the Bureau of Reclamation. Frame the debate from the Bureau's perspective, Mr. Shea.

PATRICK SHEA: We have a charter that requires us to provide potable water for all communities, and we do recognize, as Mr. Leshy said, that the project may take ten years. But we've been working with the oil and gas industry on the now-dry holes and believe we can begin filling those quite rapidly with surplus water, both groundwater that we can pump and water that we can divert on a pay basis from Imperial Valley. We recognize there may be some inconsequential adverse effect on certain species, but the people of Los Angeles need the water; it's consistent with our charter. Our dams may not be as high as Hoover Dam, but they are certainly going to supply the water Los Angeles needs.

JOHNSON: Mr. Leshy? You're before Judge Bogert here. You're representing the guys who don't want to build this new dam.

LESHY: First of all, the laws are on our side. The regulatory system that is in place makes these projects difficult, and I think we can demonstrate amply to Judge Bogert that they are not needed and that the law ought to be enforced.

SHEA: Can I add one thing? President DeLay had a few problems in 2005, but he rose again. The Patriot Act was was extended to allow for emergency powers to deliver potable water to large populations. Some of the laws that Mr. Leshy fondly looks back on have been superseded by the Patriot Water Act.

JOHNSON: Ms. Brothers, are you going to be interested in joining this suit? Which side are you going to be on?

BROTHERS: Absolutely. We see that our flexibility needs to be there. If you're providing water for a city, you're going to be looking at options for more storage that would be provided during drought times. You'll see the city looking for flexibility. They will be looking at that in terms of flexibility they can have with agricultural communities also.

JOHNSON: Judge, are you going to let Mr. Echohawk intervene in this case, representing the tribal interests?

MICHAEL BOGERT: Well, of course, on a couple of bases in 2015. Perhaps Mr. Echohawk

represents a tribe with a particular interest in Endangered Species Act issues. In that case, he might be very well aligned with Mr. Leshy and Mr. Ford's clients, depending on the posture of the case or the claims made. But certainly in the federal government, we understood this in the SRBA settlement: The federal government has trust responsibilities vis-a-vis the federally recognized tribes. To the extent that we have an ESA component—and I think we have stipulated that there will be a big piece of this action under the Endangered Species Act— certainly the federal government will have to be at the elbow of whatever tribal interests might be at stake and protect those. So that would certainly be a part of the people at the table and the stakeholders potentially intervening or otherwise if there were pre-litigation discussions.

JOHNSON: Tribes are in, Mr. Echohawk. Talk to the judge about what your interests are in this case.

ECHOHAWK: Tribes, even though they are often seen as not involved or concerned about these issues, are, in fact, involved and are concerned. These endangered species, more often than not, involve species that have a very real significance to tribes from a cultural and religious perspective. They would get involved from that viewpoint and utilize the environmental laws to buttress their arguments, based on their treaties and the obligations of the federal government as trustee to protect those tribal water rights under those treaties. We would expect the court to understand the cultural viewpoint in addition to the legal arguments we make on the treaties and the trust responsibilities.

KEPPEN: John, the irrigators will name the dam after you. . .

JOHNSON: The Echohawk Dam. Judge, normally you would take this case under advisement for six or eight months, but this is a crisis. We need a decision. How say you?

BOGERT: There will be two phases. Usually the M.O. of this type of litigation is that the plaintiffs will expect some immediate decision by a judge to affect the federal government's behavior in some capacity—be it under the ESA or the Clean Water Act—so there would probably be two phases to the case. At that point, it would be incumbent upon a court to make sure that all the appropriate stakeholders are there. That having been said, this is probably not as common as it should be in the federal judiciary, but to the degree that courts and good judges can act as facilitators for some short term needs in order for longer term discussions to move on, this might be an opportunity for a federal judge, depending on what the cases seem to say about the Endangered Species Act or about the Clean Water Act and if they evolve the way they have gone over the last two or three years, Mr. Leshy is right. Perhaps the case is a little bit more advantageous to those who would say that federal acts of Congress are impermeable to economic considerations, which tends to be the counter argument to those cases. Perhaps, if there are short term operational needs in this time of heightened crisis in the good state of California, there could be some discussions of short term settlements as the long term phase of the case moves on, provided you have everyone at the table to make those decisions.

JOHNSON: So you're not going to give us a decision? Are we going to build this dam or not? Sounds like a judge, doesn't he?

BOGERT: Of course I would take it under advisement, but certainly with the theme of coming up with a short term, stipulated settlement. If the issue is the dam going up, it would be a multi-year process. Mr. Leshy and Mr. Ford would have to give me a better idea of what their claims precisely would be and whether they have a significant probability of success on the merits.

JOHNSON: You're winning, Mr. Ford. You're getting a delay here.

FORD: Well, I'm not sure I'd call that a win in the context you have laid out, which is a significant west-wide crisis. I think the real action in the scenario is not in court, although we would certainly hope to succeed in court. The real action is in the political arena and the combination of consensus work and conflict work. I would tend to view the federal government, under President Tom Delay, as not a friend to what I care about. I won't speak for John, but I suspect he might feel the same. I suspect a lot of people in California might feel the same.

My opportunity in the political realm to find solutions that work enough to try to keep some sort of civic unity going in this kind of terrible crisis rests with, to be frank, a little bit wider

demographic than this panel reflects—relative to gender, race, occupational status, and age—and in trying to figure out with that kind of a dialogue in California and with the help of creative public officials who want to be helpful, like the Senator we heard this morning, ways of achieving what the cities need, what the people who care about streams and rivers need. We would know that we were going to end up disagreeing about some things, having winners and losers on certain things, but trying to move forward past that to the longer term crisis. In other words, a dam on a river is a bad thing, but the crisis you've laid out is a worse thing. That crisis has to be attended to, regardless of the outcome of this specific fight. I believe the people I represent would want to do that and would be crazy not to do it.

JOHNSON: I was really hoping Judge Bogert would give me a ruling so that, serving as the Ninth Circuit judge, I could overrule him. Let's assume for a moment that this debate continues to rage, and Ms. Brothers is still trying to find water and solve this problem.

Interior Secretary John Keys, it's going to come right back to you, isn't it? The courts are going to say, "We can't really resolve this in the near term." Fix this, somehow. What do we do?

JOHN KEYS: Secretary Keys goes back to some stuff that was going on when he was the Commissioner. When he was Commissioner, he had this program with the Secretary called "Water 2025." Part of that program was to look at desalination and try to get the cost of desalting sea water down 50% in the next ten years. This is in 2015, and as the drought deepened, the federal government put more research money into it, and lo and behold, it happened. Instead of $650/acre foot to desalt sea water, it now costs $300, and it is well within the realm of following through in California with desalting water for water supply and for Ms. Brothers to come from Nevada, build a desalting plant on the ocean to desalt a half million acre feet of water, and give it to California in exchange for 500,000 acre feet of water out of the Colorado. So she can solve her problem in Nevada. So there is one way that gets started.

JOHNSON: How does that sound, Mr. Keppen? Is that starting to get to what needs to be done here.

KEPPEN: Again, we support 2025 in the Imperial Valley and elsewhere in the west. It is a little weak in the fact that there are really strong components for developing new supplies, so again, I think we can demonstrate that there is a lot of demand management going on in the west. We keep hearing calls for more and more demand management. In agriculture, we will continue to do what we can, but where is supply enhancement going on? It's just about to disappear, I would say, except in Southern California, Arizona and some of the conjunctive management projects that are going on. I would support what Secretary Keys has done in the previous ten years. And I hope there would continue to be emphasis on trying to enhance supplies.

JOHNSON: How does that sound, Mr. Leshy?

LESHY: I can't see a justification for expanding supply when we have a huge supply available at relatively minimal cost with full compensation. So I think the case for new dams just can't be made in this crisis.

JOHNSON: Secretary Keys, how does the marketplace fit in this? How are we going to use the cost of water and the fact that Ms. Brothers is sitting on millions of dollars that she might want to spend on water supplies? How is the market going to work here?

KEYS: Deep into a drought, 2015. That means that in some places, we have been in it for fifteen years. The days of production of some of the crops is probably long gone. You might say that the maintenance of trees for the orchards and vineyards and a strengthening of the water banks are things we will have seen accomplished. We will see the shift of waters from one use to another without damaging the basic water right that is there for the economy at that time. In other words, through a water bank provision, you will have seen water shifted, on a willing-buyer-willing-seller basis, to those crops that have to have it or to those cities that must have it or to those cities that need the water in an interim while they wait on a new facility. Certainly, I don't think new storage should be written off. There are still basins in the west that need new storage. At the end of the 15-year drought, it will be very evident which ones those are. I don't think you should rule that out as a possibility.

JOHNSON: Let's explore this idea of the marketplace a little more. Mr. Shea, for a lawyer, there is always another client.

SHEA: I was disappointed that you and Governor Andrus refused to serve on the new board of the Panama Asset Yesterday, LLCK. We have a distinguished group of advisors, now that they have been pardoned by President DeLay: the executives from WorldCom, Enron, and Quest. The chairman is Martha Stewart herself. We formed a wholly-owned subsidiary of Halliburton, Inc., and we're looking at some absolutely excellent market-based exchanges where we would have aquifer storage, which I think is a wave of the future because it avoids the problem of evaporation. We are actively looking at expanding our cloud-seeding subsidiary, and then, with the change in the oil market, there are large vessels that are harvesting ice from Antarctica, where 80% of the world's water is located in frozen form. I do think we have to think of water as a commodity, and we ought to let the marketplace take care of the problem. Our executives, despite some setbacks in the early part of the 21st Century, are there, making sure the marketplace is going to work.

JOHNSON: So, to use a bad analogy, you're the Enron of water trading?

SHEA: Absolutely. We thought about that name, but we thought it might have less track than pay, so you heard Suez yesterday and Panama today.

JOHNSON: Does it help you at all in this water market that, over the last ten years or so, many states in the west have redefined or reinterpreted their definition of "beneficial use" to include municipal growth so that they can meet peak water demands by holding on to that water for municipal use?

SHEA: One of the most important charts that we have in our corporate headquarters, located in Los Angeles, is the monies we have contributed to the appointment of state engineers to the western states, and one of our major thrusts has been to redefine beneficial use. This idea that agriculture should have primacy is really an antiquated idea when crops are being grown around the world with far greater efficiency. We really need to look at the dollars, and beneficial use may be found on a grocery store water bottle rather than in a green field.

JOHNSON: How is this new market working for you, Mr. Keppen?

KEPPEN: Well, the water banking idea has been mentioned. We're actually doing that. I've been working at this job for about a month, and I worked for the previous three years in the Klamath Basin, representing the water users there. I've experienced disaster first-hand where, essentially, federal agencies shut off the supply that we had used for 95 years. In the years since that turn-off, the Bureau of Reclamation and the Department of Interior have done some very pro-active things to try to prevent that from ever happening again. The water bank is one of those elements.

I would take issue with your characterization of domestic agriculture and worldwide agriculture. The president of our association testified before the House Resources Committee last week, and he dug out a quote from the outgoing Secretary of Health and Human Services, Tommy Thompson, who said, "I cannot understand why the terrorists have not attacked our food supply because it is so easy to do." He said he worries every single night about the American food supply. We have to think, really, about the overall cumulative effect of continuing to crack down on American agriculture in the west, continuing to try to squeeze every drop of water out, the focus on downsizing federal irrigation projects.

Yesterday, Mr. Leshy mentioned that he would like to get information out in the open so everyone can see it. I would like somebody to take a look at what's happened in the last fifteen or twenty years with American irrigated agriculture in the west to determine how much of that has been taken out of production or converted to municipal uses. What is the cumulative effect of that going to be? We need to start thinking about western irrigated agriculture in terms of a national security issue, a national resource issue of the highest priority.

JOHNSON: Let me interrupt you now to ask a serious question, not necessarily Mr. Shea's outlandish hypothetical. In this scenario that I've laid out of a really, really severe drought ten years from now that is persistent, long lasting and devastating, how would you design a marketplace that work for you and the folks you represent? What would that look like?

KEPPEN: Idaho may have some good examples, and there are things that have been done in other parts of the west. The Klamath Water Bank is not a good model because it's really not a water bank like the Idaho Water

Bank. Basically, it's just a program that funds people not to farm or to use groundwater and to leave their surface water in the lake and the river. In a true water bank, you need to have an adjudicated base, and we don't have that in Klamath yet. It ought to be set up so that, in drier years, there are options in place, similar to what Mr. Leshy mentioned yesterday, where drier options are available, where farmers perhaps could get paid to idle their land or to use other sources. In Klamath, the water bank is set up every year. It's 100,000 acre feet this year, regardless of hydrology. That's not a true water bank.

JOHNSON: Ms. Brothers, how does the market work?

BROTHERS: A city can sit down with the farmers and strike a deal by which they're made whole, completely. Throughout the good years and the bad years, they have an infusion of capital to do things that they need to do, and also when you need the water, you can call it. I think it's a win-win situation for everyone.

The market also could work beyond the boundaries of your state. There is a lot of opportunity, depending on where the water might fall or not fall, to have some agreements with other states on the same watershed, like in the Colorado. You can extend that, and it maybe becomes a problem from upper basin to lower basin, but you can extend that, looking at the overall good for the basin.

I think win-win situations can still be out there. I don't think it's the private sector that will be providing those. It will be more of a public entity talking to farmers and looking at what's best for the public good and appreciating the farmers' situation also.

SHEA: Markets work, in my judgment, if public policy parameters are put around them. It does seem to me, given the value of the agriculture industry in the west and throughout the United States, you need to make sure in a future model that there is this compensation, that there is water banking so that in the crisis you're describing, there would be adequate means to allow them to sustain themselves through that period, even on an extended basis. That might require some kind of federal emergency subsidy. I do think we need to get into an exchange, regulated by local or state governments, that allows the exchanges to occur with greater rapidity than they do now.

JOHNSON: Mr. Leshy, that's what you're talking about, right?

LESHY: Exactly. I agree.

JOHNSON: Let's move along. Ten years from now in our hypothetical west, we're dealing with an entirely new question. How can we conserve the Columbia River Basin as an economic asset and also preserve its biological fabric. Totally new question.

Let me introduce the governor of the state of Washington, Jim Waldo. Jim, you did such a good job advising Governor Locke, back ten or fifteen years ago, that the people have put you in office. You ran on a platform that said you were going to restore some balance to the northwest's water resources. Idaho, particularly, has been drying up thousands and thousands of acres of irrigated land because of conflicts between surface water users and groundwater users and because of the end of a lot of subsidy programs that have supported those agricultural efforts. At the same time, the irrigation districts and the canal companies up in Idaho have been holding on to this water, even the water they have conserved through better irrigation practices. Your constituents downstream are concerned about that, aren't they?

JAMES WALDO: It will surprise the audience that there are differences between upstream and downstream states. This is another new development that didn't exist in the past and has now just occurred. We do have a growing population; we still have listed species; and we need a new compact for the Columbia River if we are going to move ahead in the future. What the state of Washington would like to do is to enter into an agreement with the farmers in certain parts of Idaho in which we would pay them to utilize their facilities, in essence, to be both a groundwater bank and a farm, to put water in the ground during the off-farm season. They get a portion of that to enhance reliability, and we get a portion of it delivered downstream. That means the Legislature in the state of Idaho will have a couple of interesting challenges in the water management program on how that will work within their state water right system. We are prepared, however, to pay you $200 million to help put such a system in place if you can deliver the quantity of water we're looking for.

JOHNSON: Your constituents are really going to benefit from this.

WALDO: Well, the downstream fisheries resource will benefit because it will get not only the quantity of water we need in these conditions, but also it will be colder water by virtue of having been in the ground. Our farmers have been moving to very efficient satellite-driven drip systems, but it makes the reliability of that water absolutely essential. There is no margin of error. As for them, they will lose their entire livelihood, and we cannot afford to run that risk.

JOHNSON: Mr. Ford, it sounds like he is on to something there. As a salmon advocate, do you like this idea?

FORD: In 2015, there will be a significant political consensus in the northwest, including, I hope, Idaho, that the biological asset of the Columbia River underlies the economic asset of the Columbia. There are near-term conflicts. There are no long term conflicts, and indeed there cannot be long term conflict between the two. Then you're looking at the issue just raised: Where is the value, in a market sense and in a public policy sense, in a new compact, which might have to be a formal compact that involves at least three states and at least nineteen tribes, potentially more. In that kind of an arena, people who care about salmon for their livelihoods, for their quality of life, or for their culture will be a part of fashioning that, and we'll do the best we can to fashion it in a way that works for the economies and people we represent. Three states, but the great value in terms of dollars, rests downstream in Washington and Oregon in that sort of an equation.

JOHNSON: Mr. Echohawk, how does that sound to you?

ECHOHAWK: It sounds pretty good to me. We have a growing recognition in this country that tribes, as sovereign governments and as owners of substantial water rights, need to be at the table when these compacts are negotiated. I think there is that understanding that exists here in the northwest. I hope that would continue into 2015. There is a similar situation going on right now for a number of tribes in the Great Lakes Basin of this country where the Basin states and provinces around the Great Lakes have come together and proposed a compact for the use of the Great Lakes, but the tribes in that area have been left out of that process. Of course, there are steps underway to remedy that. Hopefully they can take a lesson from the recognition that's occurred of tribal interests in this area.

JOHNSON: Governor, you're building up a pretty powerful coalition here.

WALDO: Not bad for openers. It was built in part on what you all built with your settlement here, for which I want to compliment the people of Idaho and the Nez Perce Tribe and the federal leaders. We did the same thing in the intervening ten years in the Walla Walla Basin. We reached a settlement with the Umatilla Tribe, using the combination of efficiency and groundwater recharge. During this drought, the Walla Walla Basin actually functioned the best of any of our basins in eastern Washington. So we don't have to guess at whether we can negotiate an agreement with the tribe, and we don't hve to guess at what the results would be. What we have to do is step up and be prepared to do it. Frankly, in our state, it will require the people of the state to pay a surcharge of $3.00 per person per year to be able to fund our water needs. During the drought is the time to ask them to do it, a time when they can appreciate the value of it.

JOHNSON: How do you think Governor Newcomb, upstream in Idaho, is going to feel about this deal?

WALDO: Well, he is such an ornery son of a bith that it's hard to say. On the other hand, I've heard that once he settles into something, he gets it done. So once we get over the preliminaries, and he can see that there is benefit to the state of Idaho and that he's not selling his people out but bringing something of benefit, I'm hopeful that we'll get it done. If not, I'm going to send my friend, John Echohawk, up to see him because they've had years of productive relationships.

JOHNSON: The Democrats in the Legislature, Governor, are saying you're ready to sell us down the river here. How do you feel about this deal? Congratulations on your election, by the way.

BRUCE NEWCOMB: Those Washington bastards have been trying to steal our water for years, but I would say. . .

JOHNSON: Remember, this is hypothetical...

NEWCOMB: It's the truth. My first obligation

is to the people of Idaho from a public policy point of view. I try to reserve all the water I can in Idaho for the benefit of the people of Idaho. Whatever agreement we were to reach with the state of Washington—and they have already set a precedent by coming up and leasing water from various irrigation projects on the Snake River, leasing it in turn to Bureau of Reclamation, taking it in turn out of Burbank, California, and putting it on their farms without us knowing about it. By the way, that's a true fact.

JOHNSON: So you're informed by history here.

NEWCOMB: Yes, I'm informed by history, so I have to retain this water for the people of Idaho. We could probably set up a water bank which we would have to monitor very closely. We could do it on an annual lease if we had sufficient water and if no one else in Idaho needed that water for any particular reason, much like we do on the 427,000 that we agreed to with the Bureau of Reclamation over the years for the salmon flush. Then we might be able to arrive at some agreement, but I'll guarantee you that the onus is going to be on them, not on us.

JOHNSON: Let's see what your chief water advisor has to say about this compact idea. Mr. Dreher? How do you advise the Governor on the entre from the downstream interests that want to cut this deal.

KARL DREHER: Tell me what the year is again?

JOHNSON: 2015.

DREHER: I retired in 2014.

From my view, a compact is too little, too late. It's not necessarily a good thing. The west has a number of compacts that function. Idaho has two compacts, one with Wyoming on the Upper Snake and one with the states of Utah and Wyoming on the Bear River. Those compacts do function, and they function well, but the difference between a compact that was established then versus a compact that would be established now is that one of the untested areas in case law is, because compacts have to be ratified by the federal government, whether such ratification would constitute a significant federal action that would include consultation under the Endangered Species Act and other factors. That's not a mechanism that would result in any sort of meaningful short term relief.

In the prior ten years in Idaho, we continued with the program that began in 2005, purchasing water rights from activities that had less economic value so that those rights could be used for more economic value. In fact, that effort grew to where the state formed an alliance with cities in the Treasure

Valley, and in order to preserve green areas, began acquiring farms, not so much with the idea that the farms would be dried up but with the idea that in times of shortage, that water would already be held in the public ownership, and the farms would continue by lease arrangement, but in the dry years, there was no longer a question as to who would be able to utilize the water.

JOHNSON: Governor Waldo there is not exactly warming to this idea. Do you have any legal leverage on them?

WALDO: Washington and Idaho share not only the Columbia River but obviously two aquifers, one under the Pullman-Moscow area. As in any multi-state area, the last resort, if one cannot work out some sort of accommodation, is obviously to go to court. I have spent my life in complex negotiations, and I believe the courts ought to be a last resort, but they are useful if you need them. Certainly Washington State would hope not to be in a position to have to utilize such a venue to resolve these issues.

The opportunity with my colleague upriver is to sit down and see if we can develop a plan, based on the experience in the southern San Joaquin that is going on today. The discussion of what could happen in California <u>is</u> happening in California today. There are groundwater banks where the cities are paying the infrastructure cost, and cities and farmers are sharing the water that is being put in those banks, which is now over a million acre feet. This didn't exist nine years ago. This is not a question of speculation; it's a question of will and money.

There is a way to take the flood waters, which you described had occurred this year and which are occurring with increasing frequency under the hydrological cycle we're in, and figure out how to use existing delivery systems for groundwater recharge and then having that water available later in the year. Idaho has the capacity to do a lot of that, and we have the funding to help cause that to occur.

I'm sure there is liability for the farmers while this is being done, and we just want to negotiate a fair share of that with the state of Idaho. If

that doesn't work out and we believe that excess water beyond their needs is being utilized, then obviously we might have to go to the last resort. Given our long history of working together, I would hope we wouldn't reach that point.

JOHNSON: Attorney General Bogert, is there a legal strategy to hold these guys off, these downstream interests?

BOGERT: Am I the Attorney General for Governor Newcomb? Having been defrocked from the federal court?

JOHNSON: You're advising Governor Newcomb. He needs all the help he can get. They're coming after his water.

BOGERT: The first thing the Governor and I are going to talk about is the threat, through these discussions, to Idaho's

Constitutional framework of our doctrine of prior appropriation. The first question that the Governor is going to ask me is, "Do we have any Constitutional concerns in our state by any compact negotiations?" I will advise him that our crack staff will take a look and see whether these negotiations have any threat of undermining what truly Governor Newcomb has pledged to uphold, protect, and defend, which is the fundamental framework of protecting our water through the state constitution.

That having been said, Plan No. 2 will be to ascertain whether a history of compacts indicates that they are indeed the panacea that perhaps Governor Waldo believes that they might be.

For instance, if you look at the history of the Colorado Compact, where you have had very specific numbers in terms of water delivery among several states, we can't say in the legal community that that compact has been all that successful nor has it been able to avoid federal judicial decision-making on disputes between states.

JOHNSON: Ms. Brothers, advise the Governor here a little bit about how these compacts work.

BROTHERS: On the Colorado, there has certainly been litigation, but recently we have seen a lot of movement in working through the existing compact in ascertaining flexibility. There are a lot of things you can do. The groundwater banking program that is now in place for the Lower Basin has helped in many ways. The security of the compact allows people to come to the table to talk about flexibility. Once you take that security away, they are again fighting with the mentality that says, "I have to protect everything I have." A compact gives a certainty that allows more flexibility.

BOGERT: Back to Governor Newcomb — I'm going to want to explore for him the position of the federal government. If Governor Waldo has an outstretched hand to us for some discussion with us about Idaho's perceived obligations to meet his water needs, I want to find out what we can receive in exchange for discussions under the Endangered Species Act, under the Clean Water Act, and what the states potential exposure would be through the lens of the federal government, which, more often than not, tends to track very closely discussions between states in this regard where there is a federal environmental law interface.

FORD: I'm looking at the politics of this, and I think everybody in the scenario is going to be doing that. The politics has changed from back in 2005 in ways that surprise nearly everyone. A key political factor is the extent to which communities of common interest across these three states—we're not talking about Oregon here, but they are in this ballgame, as is Montana, for that matter—have alliances, understandings, or conflicts among themselves. People who fish, people whose jobs depend on fish fight each other a lot and do not necessarily agree on things all the time. Can they agree on what they are trying to do politically across these state boundaries?

Farmers. Washington, Oregon, and Idaho farmers of various kinds have talked. They have talked, trying to figure out whether they have common interests or divergent interests. Where does that stand in 2015? One thing I'm pretty certain of is that there is a new factor in Idaho: the Idaho customers of the Bonneville Power Administration—Idaho Falls, Burley, and some of the co-ops—are hearing from BPA and from Governor Waldo that water is needed from Idaho downstream to generate energy in the mainstem Columbia dams in order to help keep their power rates low. That is having some effect in Idaho politically on the standing of those entities relative to others in Idaho who are resistant to the notion that downstream value can accrue back upstream to Idaho.

JOHNSON: Governor Newcomb or Mr. Dreher, do you see anything like that happening

from a political standpoint?

NEWCOMB: The comment was made earlier today by Senator Crapo that you have to bring together all the interests on all these issues because the dynamics and demographics of this state are changing. They are changing globally as well. For the first time in the history of the United States, we imported more foodstuffs than we exported this year. That shows that the demographics are changing as well as the ways water is going to be used in the future.

What we have to do is bring all the interests together—agricultural interests, legal opinions—and come up with a solution that's legal and that the federal government, the tribes, agriculture, municipalities, and environmental groups buy into so that we all share in the decisions regarding the changing uses of water. In this last session, we came up with a straw man proposal, basically, and implemented segments of that proposal, one of which was to take marginal land out of production through the CRP program or through other means, and that water would be held in abeyance for whatever future needs might be and what the Bureau of Reclamation and the state might agree to. As we change, we have to bring all these players together and come up with solutions. Rather than being tunnel-visioned and representing just one interest, it's incumbent on everyone to get together and share in the solutions.

DREHER: In an *Idaho Statesman* article dated April 20, 2005, it was reported that Boise was the number three or four most favorable place to do business. So we've been encouraging businesses from our downstream states to come to where the water is instead of trying to move the water to where they are. It's worked very well.

JOHNSON: An economic development strategy.

DREHER: The needs aren't quite the same as they have been projected. Idaho, for once, has a lot more political power than perhaps it had in 2005.

JOHNSON: Mr. Leshy

LESHY: I just want to point out one thing to add to the discussion. If you can't reach agreement among the three states, as Mr. Waldo pointed out, the remedy is to go to the United States Supreme Court, which basically acts as an umpire in these resource conflicts across state lines. In 2015, Supreme Court Chief Justice Jerry Falwell is actually very interested in taking a look at this issue. He is, of course, not bound by state law and has been reading about Noah and the flood in the scripture, and he is very interested in protecting the salmon.

JOHNSON: Mr. Shea, top that, Pat.

SHEA: In 1998, Secretary Babbitt, much in the tradition of Secretary Andrus, stepped into what people thought would be a irreconcilable conflict among Arizona, Nevada, and California. Through his political leadership, they negotiated a re-ratification, if you will, of the Lower Basin Compact. On the Columbia, unlike the Colorado where the Secretary is the river master, you're gonig to need that kind of political leadership that, at times, can knock heads together and make some sense and can offer some carrots to bring people to the table. If we don't have that, we're going to have lawyers feasting at the table and not resolve the problem.

One historic point: Thomas Jefferson and James Madison formed the Cadastral Survey in 1785. They were interested in using the cutting edge science at the time to survey the vast land holdings of the United States. They would be turning over in their graves, 220 years later, if these artificial lines that were drawn in the mid-part of the 19th Century begin to have Idaho versus Washington State when we ought to be looking at drainage systems. We ought to be looking at hydrological studies and meteorological studies that scientifically allow us to make better predictions than we do now. That requires basic research. We need to be able to fund universities, academics, and sometimes private sector researchers to come up with answers to avoid the conflicts that you've created in 2015.

JOHNSON: Mr. Keys, this is not all that incomprehensible to you, is it? That we could be in this situation in ten years in this part of the west? Inform our panelists here a little bit on your perspective on how this has played out in the Colorado case.

KEYS: If I were Secretary then in 2015 with mystical powers that were given to me in 2009, let me reincarnate Henry Carpenter and put him on the job. Henry Carpenter was the guy that negotiated the Colorado River Compact in 1922. He would establish a Lewiston Ferry as a

measuring point, etc. That being said, we have been down the compact road before in this basin. If you remember, a compact was negotiated among the three states in the late 40's and early 50's and was up for ratification. It was killed by the lack of ratification of one state in the basin. Had it been ratified, we would have a Columbia Valley Authority in place in this basin now, and the waters would be divided, the compact that Jim Waldo talked about. That didn't happen.

I think Karl is right. I don't know whether it's too little, too late, but the chances of having a compact in this basin are very small. There is a compact in this basin now, but it is not one that has been negotiated and agreed to among the states. That compact is the Northwest Power Planning Council, and it governs how we're trying to deal with the salmon and the power, etc. That being said, the chances of having a compact like the Colorado are very slim.

The Colorado River Compact is working. There are several things that make the Colorado River Compact work. One is storage. If you get down to the very bottom line of that compact, storage is what makes it work, and the addition of Glen Canyon storage gave that extra insurance policy to be sure that it's there. In the Colorado Basin, between Lake Mead and Lake Powell, there is 55 million acre-feet of storage. The annual runoff of the basin is arguably 14, 15, or 16 million acre feet per year. So you have three to four times the annual flow in storage to be able to meet compact requirements. You don't have that in this basin. The mean annual flow at Grand Coulee is close to 150 million acre-feet. Grand Coulee has about 10 million acre-feet of storage space.

So that being said and considering where we are, it could happen. I don't think it would take fifteen years of drought to get us to that point. Five years of drought have brought some areas of this state almost to its knees. If you took another five-year drought—say from 2010 to 2015 and where we are then in terms of development—it may have a much larger effect than the five-year drought we've just come through.

If you go back to the Colorado Basin, there is, right now, a very good understanding of who has what water. There is a good understanding of what happens if you have surplus water and who gets it. There are criteria under development for what happens in a shortage situation. There is also an agreement among the Lower Basin states on how to handle the Endangered Species Act. The Multi Species Conservation Program was just signed, a $650 million program, that gives 50 years of coverage under the Endangered Species Act for 26 species, those six that are listed now and the 20 additional ones that are of concern and could be listed. It is not a complete federal program. It is a 50-50 cost-share program. Those three basin states are putting up $325 million, and the federal government is putting up a like amount to be sure that we have a way to address those things. That's the kind of thing that is happening in that basin and that, in some instances, is not happening in the Columbia Basin.

JOHNSON: Kay Brothers, back to wearing your Las Vegas/Southern Nevada hat for a moment. What do you make of this discussion about a compact in this part of the world?

BROTHERS: John Keys has just given you reasons why a compact has worked on the Colorado. The compact was formed on the Colorado in 1922 and has continued to evolve through the 60's and continues to evolve through cooperation in the 90's in the ways John has just talked about—the surplus guidelines, the banking criteria.

Now coming up with a compact is very difficult because back in 1922, you didn't have an environmental stakeholder; you didn't have the number of stakeholders that you have now. That's allowed us to have certainty in the Colorado as to how much water we have, but we've also had to open up and introduce flexibility because of the other stakeholders at the table. I don't know that it would be possible to create a compact like the one we have on the Colorado today, but the flexibility, the discussions, and the willingness to change and to look at what happens, based on hydrology and needs must continue in this basin.

JOHNSON: Mr. Waldo?

WALDO: There is no question but that we've managed to make life more difficult for ourselves procedurally today than it used to be. Throughout the west, you're seeing the same thing that Kay just described on the Colorado. When a lot of water decisions were made forty or fifty years ago, the instream values and fish were viewed to be a nice thing to have around if you could, but if you couldn't, don't worry about it. We in the west are in the process of redoing that in every major basin that I know of. Right now, we're doing it piecemeal, often in response to litigation or the federal duty to consult, which

in my view is a lousy way to make long term decisions, not about the values to be achieved but about how we're going about it.

It's clear to me that we're in a climate shift in this northwest region. Three out of the four years I worked for Governor Locke were exceptionally dry years, not counting this one. Even someone like me who is pretty slow can say, "Gee, it seems to me that there is a pattern here." We have to figure out how to do some things differently and better.

Whether the compact is formal, inter-state, ratified by Congress or not, I think the solutions are out there if we define some goals, figure out the tools to get us there, and the challenges aren't any bigger than those faced earlier in the Columbia Basin. We take a lot of their decisions and actions for granted because they got them done. When you look at the times in which they did them and at what they did, they were phenomenal decisions. You can argue about the merits or the results, but there is no question that those people decided to do something significant when the payoff was probably 20, 30, or 40 years down the road.

We face similar circumstances, and we have a choice as regional leaders to accept the status quo on the Columbia, in which we don't have a veto so we worry about the problems and are afraid of changes. That's a disservice to the river and to the people of our state. The cost of inaction, whether it's exactly the scenario that Marc described or not, is out there ten or fifteen years. We have the time to get ahead of that curve, and I hope we do that.

SHEA: Pat Ford brought up something I would propose be the lens by which we view the future. If you think of a fraction as it relates to water use, the denominator has to be the biological basis. The numerator can then be the economic value. If you reverse that, and the economic value doesn't have a direct relationship to the biological basis, you are wasting your future efforts.

BOGERT: Governor Newcomb would consult on our happy Nez Perce days in terms of the agreement. It occurs to me that one of the great successes of those discussions was an acknowledgment by the irrigation community and by our good friend the Commissioner that certainly the Endangered Species Act and some federal law play an important role in terms of the outcome, be it biological, legal, or otherwise. We were able to achieve success through the Nez Perce settlement with stakeholders that may have never even conversed with each other on these issues. We did it by not conceding as a matter of law that the compromises we were all entering into were necessarily required but were important if we were going to get close enough to the middle to, for example, get the Commissioner enough coverage on his Endangered Species Act obligations—whether we liked them or not, whether we agree they were appropriate or not, whether we even concur amongst ourselves that, for example, 427,000 acre feet annually is even beneficial. It was nonetheless a discussion focused on what we all understood the people's interest to be. The only way the long term strategizing on the Columbia River will be effective is if the stakeholders in the discussion can acknowledge each other's interests without necessarily conceding that they have any legal exposure or any authority at all to go in that direction.

DREHER: I think there is another piece of it. We can talk about denominators and numerators, and I don't disagree with the discussion we've had, but the end result we were able to accomplish there happened because we had balance in the solution. If what we come up with does not have balance among the needs of the irrigators, the fish, municipal water users, power users, the environmentalist, and others, we will not be successful because we have pitted one against the other. If we have balance, it will work. The decisions that were made and the result that we have in the Nez Perce agreement show that. In looking at the future, if we don't have that balance, we still are short somewhere.

JOHNSON: Mr. Speaker, I'm going to give you the last word and throw you a soft ball. Obviously the Nez Perce agreement was successfully negotiated, and you were incredibly instrumental in getting it passed through the Legislature. It seems to be a model that we could apply to a lot of these very contentious water issues all across the west.

NEWCOMB: I think the Nez Perce agreement is the paradigm. The people who think that's a quick solution are not looking at in reality. Basically, the ground work on the Nez Perce started in 1996 and was not consummated until 2004. Actually. one of the most reputable mediators was Professor McGovern from Duke University. He has a national reputation, and I don't know why he took an interest and accepted the dollars when he could have made

much more elsewhere. I think part of it was that his significant other was at Berkeley, so he got a leave of absence to teach at Stanford Law School. Meanwhile, he mediated this agreement.

But it took from 1996 to 2004 to be consummated. It was very difficult and broke down in 98 or 99. Then people came back to the table again. Dell Raybould, who is a state representative here, was very much involved as well as Bert Stevenson, who is chairman of the Resources Committee in the House. It was a difficult negotiation, but it is the paradigm which can show the way in the future. It was successful, but it took a lot of effort, a lot of heartache, and a court-ordered mediation to get there. So developing these agreements is very difficult, and no one should kid themselves that they can be short term solutions.

JOHNSON: We have a couple of minutes for questions to panelists, either in their make-believe lives or their real lives. Rocky and John will help with the microphones.

AUDIENCE: This is another scenario into 2015. Crude oil prices have gone to $150 a barrel, and all energy costs are extremely high. We have convinced agriculture to give up their water for other uses, so we're going to be able drink but what are we going to eat, here in the west? We need to be a little more serious about considering the needs of agriculture in the production of crops as well as utilizing water with the greatest efficiency.

JOHNSON: Mr. Keppen, I think he teed you up there. . .

KEPPEN: Well, you know my position on it. It's a serious problem that needs to be looked at. I can sit up here and rail about it, but we're actually trying to come up with some specific recommendations to ensure that some of these processes take a hard look at that issue. NEPA, for example. We think that the agencies sometimes have different ways in which they want to apply NEPA on a particular project. We think that long term economic impacts related to agriculture should be considered by NEPA, just like other so-called environmental impacts. That's just one of about a dozen recommendations we're putting together right now, based on some case studies we're doing throughout the west.

I mentioned that storage projects have been offered up to be looked at. The next step we want to take is to try to figure out why none of them is moving forward. Is it economic issues, as we've heard? Is it regulatory? Is it environmental? What are the reasons. If some of these are decent projects and should move forward, we want to come up with ways to make that happen.

NEWCOMB: Just to follow up on that, the original farm program was called the Food Security Act. It was an outgrowth of the Depression and the Dust Bowl days. The purpose of it was to make sure that there was a secure food supply on hand for the American people. Along with GATT, NAFTA, and the WTO, we are now currently in a global economy, and that's why we're importing more than we're exporting as far as foodstuffs are concerned. So I think it is a concern, particularly in regard to what Tommy Thompson said about the vulnerability of our food supply.

The only thing you need to remember is that for years, we were the wheat exporters of the world, and it became part of our foreign policy. We would go to these other countries that needed our wheat and say, "You better do what we want you to do, or we won't export that wheat." Now that's reversed. If we're not careful, we'll be on the receiving end of that. If we become dependent on foreign countries for our food supply, they will say to us, "You be careful. You might have water, you might have air, but you need food to eat. You're not going to get it unless you do what we want you to do." It's a *quid pro quo* that occurs over time, and we need to be extremely careful and remember that it's a foreign policy question. It's also a homeland security issue to the highest degree.

We need to think about it carefully as we head down this road of changing the uses for water. We must always keep a segment of that water for food production.

SHEA: Patty Limerick is a historian in 2020. She may look badk to 2005 and say that one of the tragedies of that period, in my judgment, was the commodification of American agriculture. It was consolidated into corporations that had no relationship to the land as family farms and ranches had, and we lost an opportunity to protect America's secure food source. We need to get away from this notion that subsidies are bad because subsidies do represent cultural values. We need to have a Congress and state legislatures that are looking at corporate America, now corporate global America, and asking them, "What is their relationship to the land they own? It is going to be productive, not

just this quarter but in the next decade or in the next generation?

LESHY: Just a couple of quick facts. First of all, I'm not insensitive to the needs of agriculture, but the people in the west have to understand that there are no crops grown out here that cannot be grown and formerly were grown in vast quantities in other parts of the country through natural rainfall. The artificial irrigation starts out at a disadvantage, and when oil prices go to $150/barrel, a lot of groundwater pumping is going to stop because of the electricity costs of pumping very heavy water. It will also impact agriculture as well.

Food security is definitely an issue, but if you look at it from a national standpoint, the west is at a disadvantage because of its dependence upon irrigated agriculture.

AUDIENCE: I'm a Umatilla County Commissioner on the Oregon side. My question is: Would the Nez Perce compact have happened if there had not been court-ordered mediation?

NEWCOMB: In my view, probably not, for two reasons. First, if it was a legislative action or an interest group action, the chances of negotiating an agreement—because it would have to be done in the public forum—would be small because you cannot arrive at those conclusions and carry on intense negotiations if they are reported every day in the paper. So with court mediation, it does become augmentation of a judicial action where you negotiate behind closed doors. People can really lay it out there and know that it will stay in the room when they leave. Ultimately, the decisions that were made were made publicly, It probably would not have occurred if it had not been court-ordered mediation. Maybe what we can do is find judges that are quick to order those mediations, maybe Judge Bogert could get that done.

KEYS: I agree with what Bruce said, but remember that the court system is just as much a part of our water system and prior appropriation system as the state engineer is. At the time the Swan Falls agreement was done in 1985-86, the ultimate goal of the SRBA was to know who had what water in the basin. We had to get there, and settlement of the Shoshone-Bannock claim and of the Nez Perce claim was crucial to making that happen. So whether it was court-ordered or not, it had to happen. I agree with what Bruce said, but it is still part of that system that makes it work.

BOGERT: I have to give John Leshy some credit. This was on his desk for two years while we were deeply involved in the discussions on the framework. John deserves credit for the time he was working with us while he was at Interior. We were very close to an agreement when John left office. The Speaker is right about court-ordered mediation and being able to have settlement discussions where everyone could feel free to speak to each other, but clearly the litigation framed the decisions between the lawyers and the clients. Ultimately, people decided to move forward because of a fundamental risk analysis in the relationship between what the legal exposure was and what the risks were, should the litigation have proceeded any further. So what's hugely important in framing not only our state water law issues but our exposure under federal law to the extent that the federal government had just as much of a voice—and by the way, discharging its trust obligation to Mr. Echohawk's tribes as well—was the confluence of interests that ultimately led to that agreement moving forward.

JOHNSON: So the certainty of a deal, even though there were elements of it that no one was comfortable with, was better than the uncertainty of litigation?

BOGERT: Not to beat this one to death, but we in Idaho watched our irrigation brethren in the Klamath and in the Okanagan be led to slaughter in the Ninth Circuit while these negotiations were ongoing. So fortunately for us, we had very clear examples of just exactly what the charge forward was under the law. For example, is ESA even valid under the commerce law? We had vivid examples of our brethren in other states downstream that ultimately found themselves disadvantaged by proceeding forward.

JOHNSON: One more question, and then we'll wrap this up.

AUDIENCE: Yesterday, Director Dreher said that the doctrine of prior appropriation presumes water shortage and therefore can take care of these problems. That, of course, requires that someone enforce prior appropriation, and I'm sure the director knows the harsh reality of that. As a reality, when we've been faced with that in the past, we have built more dams, found new

water supplies, etc. Today our solution is to buy out water. We don't resort to prior appropriation as a matter of public policy. Recognizing that it may define part of the legal picture—not all of it because we do have the Endangered Species Act, the Clean Water Act, and tribal water rights to deal with—can't we admit, leaving legal issues aside, that as a matter public policy, prior appropriation is dead?

JOHNSON: Could you frame that in the context of your order today?

DREHER: Well, too many people believe that the prior appropriation doctrine and the body of laws that implement it begin and end with the priority date. It doesn't. The prior appropriation doctrine is alive and well. It is not dead, and when you have conflicts between uses that, unless settled, will result in the junior being shut off in favor of the senior, often that leads to some sort of stipulated agreement between the parties. That's a product of the harshness of the prior appropriation doctrine, and it's a good product. It does not reflect that it's dead.

I did issue an order late yesterday that implemented aspects of the prior appropriation doctrine as contained in Idaho law. I can assure you that if junior appropriators are not able to reach some accommodation, there will be curtailment. We have these periods of drought, we have unintended consequences of water conservation, and we have additional development that took place in times of plenty. For whatever reason, today there is an insufficient quantity of water to go around. So the prior appropriation doctrine will either produce a voluntary agreement on how the resource is going to be used or an involuntary agreement. Without the involuntary nature of the prior appropriation laws, there would be utter chaos.

JOHNSON: Ladies and gentlemen, in order to have these discussions, the panel really has to be on top of their game. I think you will join me in agreeing that they really were. Let's thank them for being such good sports.

Governor, we're now going to spend just a few minutes with you, Speaker Newcomb, Mr. Shea, and the Commissioner, trying to put an exclamation point on what we've heard.

ANDRUS: Ladies and gentlemen, we'll wrap this up quickly, but I'd like to express my appreciation to Marc Johnson. The hypothetical was put together to show you that this can happen. If you listened to some of the responses from these people, levity aside, you know it's a situation we hope we never face, but we'd better be prepared to face it if we have to.

Something I didn't mention when I introduced Marc Johnson was that Marc served as my Chief of Staff while I was Governor for most of the final eight years I served, and I want you to know that I taught him everything he knows. You did an excellent job, Marc. Thank you very much.

I'd like to exercise some executive privilege here and point out two things from this last discussion. One is that it took the federal government, the court system to force us to come to the Nez Perce agreement. They played a role, and now we say, "Boy, we're sure glad that's over. We're sure glad WE did that." Well, WE were a little late.

The Lemhi Project. It was bragged on by Karl and others here that the state did a great job in the Lemhi situation. The reason the state did such a good job is that NOAA fisheries said, "If you don't do something, you'll be in violation of Section 9 of the Endangered Species Act, and the fine will be $100,000 a day until you get it done." So then, WE went to the table and came up with a great deal. Now we say, "Aren't you glad that WE did this." But we did this only because we were forced to.

The point I want to make is that it's time those of us situated in this room and other rooms do that good job that we brag about BEFORE we're forced to. If we'll do that, we're going to relieve a lot of heartburn, and some lawyers won't make quite as much money, but we'll move along a lot faster than we've been moving.

I'm now going to join these three distinguished gentlemen, and we're going to quickly do a wrap-up, a summary of what has come out of this conference—and ask: Where do we go from here?

I'll start with Governor Newcomb—Oh, you haven't declared yet, have you, Bruce? I'm sorry I let the cat out of the bag. The Speaker will start off and then we'll go right on around.

NEWCOMB: Thank you, Cecil. I spent some time in the Water Resources Department in Twin Falls the other day. On the cork board, he had a photograph of a saying that had been engraved on a stone in 1904. It said, "Irrigation: Same as Litigation." It's really become evident that my father was right in saying, "Be sure to take care of your water rights. You will see

the day when water is worth more than gold." In the discussions we've had here involving multinational companies, public policies must deal with water, which is essential to life and to the quality of life. You want the market system to be the solution, but in my view, you don't want water to go to he who has the gold because it is essential to life and to the quality of life.

Michael Bogert gets tired of hearing me say this, but I've spent the last three years going to water meetings three times a week with the Deputy Attorney General, Clive Strong. It just consumes your whole life. When you walk into those rooms where the negotiations are going on, you see a few clients and you see all these water attorneys. I started remembering the bar scene in "Star Wars," the one with all those creatures. I know you've all been in bars like that. You look into people's souls, and that's what they look like. When I saw these water attorneys, I saw horses with feed bags on. I started saying this, and Michael Bogert came into one of these last meetings and threw a feed bag in front of me. I looked at it and said, "Well, this is a legitimate horse feed bag, but yours is full of money, and I don't even have any oats in this one."

But when you hear stories from around the world and how people may have to walk a kilometer to find potable water or perhaps there is no way to find potable water, you realize how fortunate we are, even in the droughts we're having, to flush a toilet or take a shower.

It's really interesting to hear how the rest of the world is and to realize that even in a drought, we're fortunate to have had the Bureau of Reclamation and good people in place, particularly John Keys, working on our behalf. It's been a good thing for us. As a result of these kinds of seminars and discussions—they've been ongoing at the state level for three or more years or longer if you take the Nez Perce agreement back to 1996—we're now realizing what an important resource water is, how finite it is, and how we need to have best management practices in how we deal with water. If you look at efficiency and conservation, they are one and the same.

In Idaho, the Eastern Snake Plain Aquifer is unique in the world and is the largest reservoir in the state. In 1905, you had a CFS out of Thousand Springs of about 4200 cfs and then when the Rexburg district came on board in the early 1900s, they used flood irrigation on the Egin Bench. In fact, the cfs reached as high as 6400 CFS at Thousand Springs. Currently, it's about 5400 cfs, which is the measurement of what occurs in the health of the aquifer. In effect, by converting from flood irrigation on the Egin Bench to sprinklers, even though it seemed to be the most efficient use of water, it was really not efficient. It might be the most conservative way to use water, but in the end, it served to damage the recharge of the aquifer.

A lot of people think that just because you convert to sprinklers, you're making the best use of water. Ken Dunn, who used to be the director in those days, said that we should require people on the Egin Bench to use 60 acre feet of water per year per acre and never allow conversion to sprinklers. So when you start looking at the complexities of how water interchange works, we know we've done things in the past that were not the best for the health of aquifers or the rivers. It's a complex issue.

ANDRUS: John, thank you for being here and giving us two days of your life. John Keys was our state director of BLM, went into retirement, and some of us thought that maybe he ought to take the job he has now. I asked him the other day when he was going to come home and start rafting some of these rivers. He said, "I should have listened to you earlier." John, we're tickled to death that you're where you are, and please give us your thoughts.

KEYS: Governor, the thing I would leave with you, that I will take back with me—and it's something we're trying to develop in Reclamation—is the concept of cooperative conservation. What we heard yesterday and today is that there is no single part of the water industry that can do it by itself. Every one of us has to first honor the involvement that the other parties have, and then craft a solution so that we have the balance I talked about earlier today, balance that actually brings those needs into the equation and puts us down the road toward meeting all the future needs.

I was asked a couple of months ago what the dam or the reservoir of the future would look like. If you look at the physical facility, there will always be some improvement in concrete, but the dam itself will always look pretty much the same. But if you look behind the dam at the water in the reservoir or the financing behind that whole facility, you will see an entirely different animal than you see today. Most of the large facilities today were built by the federal government. They were built and the contracts were done, the water rights were done, etc. In the future, you will see, before those facilities

are built, agreements among the water users on who holds what water behind the facility and who puts what money behind the construction of that facility.

I'm asked a lot of times about whether the days of dam-building are gone. I don't think so because I've said many times, judiciously we need some new storage. I think the day of the large federal projects is over, and it will be replaced by these multi-purpose, multi-sponsored, multi-financed, multi-user facilities, and all of us would have a stake in the construction, the operation, and the benefits, That's where I see us headed, and I certainly see that from my agency and from other things we're doing at Interior.

ANDRUS: A low-head facility versus a gigantic facility.

KEYS: In some cases, that's right. There may be a requirement for a large one, but it would certainly not be some of the grand schemes that we've seen in the past. So Governor, it's my pleasure to be here, and as we get into the questions, I'd be happy to expound on that if we need to.

ANDRUS: Pat Shea, former director of the BLM, lawyer out of Salt Lake, a long time friend of mine, and, as you witnessed a while ago, rather glib smart aleck, but he's a scratch golfer.

SHEA: Let me make three observations. First, there has to be a political consensus that water is a fundamental right, whether it's in Idaho, the northwest, or around the world. The right to have potable water, easily accessible, is an absolute human right. The greatest cause of mortality in children under the age of five is diarrhea, and the diarrhea is caused by unsanitary water. As a fundamental right in 2005, we need to re-commit ourselves to funding opportunities around the world to do that.

Second, potable water is going to depend increasingly on good science. We, as a nation, are simply not paying attention to the kind of research that science needs to be doing on the efficiency side of how we use water, whether for agriculture of domestic use. We need to be able to fund that and be part of a international and cooperative effort in that regard. Sprinkler systems and drip systems certainly increase the efficiencies. What they're doing in Israel, in India, and in Pakistan represents a revolution in the way we will be producing agricultural products in the future. All that depends on good science.

As a culture, we have become lawyer-dependent, and I say that as a lawyer. We have a tendency, in my judgment, to say, "Let the judges and the lawyers decide," rather than girding up our own loins and saying, "What's the practical, affordable solution?" I would phrase it a little bit differently than Judge Bogert, honoring him again, that it's not a fundamental risk analysis question as much as it is an empirical scientific question. We need to have people, particularly young people, understand that.

Third, and this has been true from the very founding of our country, from the founding date of Idaho, good decisions require good political leadership. I would suggest to you that we have been negligent in allowing the political marketplace to be taken over as if it were a soap-marketing process as opposed to a political idea process. The marketplace works if people of good quality and good character participate. Where is the Cece Andrus of the future? or as I said to another group the other day, "What would Madonna say to Madame Curie?"

ANDRUS: Thank you very much, Pat. One of the benefits of being last is that the main topics have been covered. I would like to comment to Commissioner Keys that I would not like to see Mr. Carpenter be the person who negotiated a Columbia Compact because he negotiated the Colorado Compact. In 1922, probably working on their very best information, they allocated about 17 million acre feet of water when the mean flow of the Colorado runs 13 to 14 million acre feet a year. So you started out with a deficit right there that the politicians created, and it didn't really come to light until after the Central Arizona Project and some of the others started doing their allocation. All of a sudden, the city of Los Angeles said, "Where is all that water we've been stealing?" So keep Mr. Carpenter's theory and work with the science and the knowledge we have today.

Everyone agrees with the consensus idea, bringing everyone to the table. Don't wait till someone puts a gun to your head and try to solve it then. John Leshy first exposed the idea yesterday, and it's been reiterated several times since. You can get together with the people involved—insurance policy is what the counselor termed it—with the farmers involved every year, and they are paid every year so that later on when the water is needed for a higher and better use, the farmer still remains whole. That could take place in an area, a region. Take the idea that was exposed on the Lemhi and put

it on the Wood River or other rivers. We ought to be prepared to sit down and work out the smaller ones. We'll let these people worry about the big compacts, but we at the local level ought to be working on some of our own.

We have five minutes until the time I promised to get you out of here, so if you have a question—not a speech—I"ll let you come up and identify whom you want to direct it to.

AUDIENCE: This is for all four of you. Steven Wolf from Wallowa, Oregon, and we've looked at the world view, the state view, water compacts. In my basin, a small basin, 5,000 people, everything is privately owned. Due to costs, we were unable to rebuild a deteriorating dam, unable to get federal support for rebuilding, but those people own the dam. So here they are, faced with millions of dollars of cost that they can't afford, so they lease or sell their water rights off those 15,000 acres. The local community has no way to support the schools; they can't litigate the thing...

ANDRUS: And your question is...

AUDIENCE: How do you handle a situation like that?

ANDRUS: Let me give you an idea. The man sitting here, Martin Goebel, is head of Sustainable Northwest. He is very familiar with your area, Wallowa. Perhaps that is a project they can get into. There is a Dam Safety Bill that could possibly be of help to you. Martin, I'm assigning that to you.

AUDIENCE: (Inaudible question)

KEYS: I don't know about the future. I know how it was handled in the Nez Perce settlement. In the Nez Perce settlement, we in Reclamation are able to buy some additional water off some of the high pump lift area. We, as part of the agreement, are reimbursing the county $2 million in lost revenue. That's just one instance of how to do it. Your old agency used to do PILT [Payments in Lieu of Taxes] payments all the time when federal lands were involved. I don't know whether we are to that level or not, but that's something to consider.

SHEA: One other thing I'd suggest even though Fannie Mae has gotten a bad rap for its mortgage security markets, I do think some form of government security enhancement for maintaining open space and agricultural use—maybe a ten or twenty year subsidization—or at least a mortgage guarantee is in order. For the individual from Oregon, there might have been a bond to do the necessary repair work as long as there was a federally-backed guarantee on it. I think we need to begin to be creative in how the financial aspect of water allocation is handled.

ANDRUS: Ladies and gentlemen, we promised to adjourn by 11:30. It's 11:30. We've had a busy two days, and we've covered a lot of ground. I owe a lot of debts to a lot of people, Mr. Speaker and all the rest, John, Pat, and all the members who sat on the panels for being here and sharing with us their knowledge and advice. We look forward to a solution page, but don't let it come to Marc Johnson's 2015 and then say, "Oh, what are we going to do?" It will be too late.

Thanks very much for coming!

***

Troubled Water

Exploring solutions for the western water crisis

Participant Biographies

Cecil D. Andrus: Chairman, Andrus Center for Public Policy; Governor of Idaho, 1987 to 1995; Secretary of the U.S. Department of the Interior, 1977 to 1981; Governor of Idaho, 1971 to 1977. During his four terms as Governor of Idaho and his four years as Secretary of Interior, Cecil Andrus earned a national reputation as a "common-sense conservationist," one that could strike a wise balance between conflicting conservation and development positions. He played a pivotal role in the passage of the Alaska Lands Act and the National Surface Mining Act of 1977 and in the creation of the Frank Church River of No Return Wilderness Area, the Snake River Birds of Prey Area, and the Hell's Canyon National Recreation Area. Governor Andrus elected not to run again in 1994 and subsequently established the Andrus Center for Public Policy to which he donates his service as chairman. His awards include seven honorary degrees, the William Penn Mott Park Leadership Award from the National Parks Conservation Association, Conservationist of the Year Award from the National Wildlife Federation, the Ansel Adams Award from the Wilderness Society, the Audubon Medal, and the Torch of Liberty award from B'nai B'rith. In 1998, he authored with Joel Connelly a book about his years in public service: *Cecil Andrus: Politics Western Style*. He and his wife, Carol, have three daughters and three grandchildren.

Rocky Barker: Environment reporter for *The Idaho Statesman*. Barker has covered fires and other events across the West since 1985. He is a contributor to National Public Radio's "Living on Earth" program and is syndicated as a columnist in more than 60 newspapers across the West by *Writers on the Range*. Previously, he was columnist and reporter for the Idaho Falls *Post Register* when he covered the Yellowstone fires in 1988. He has written about such environmental issues as mining in Wisconsin, acid rain in Canada, rain forest protection in Hawaii, and fish and wildlife conservation in Africa and Russia. Barker is the author of *Scorched Earth: How Fire in Yellowstone Changed America*. This new history of the conservation and environmental movements focuses on fire policy and will be published in 2005 by Island Press. He also wrote *Saving All the Parts: Reconciling Economics and the Endangered Species Act*, which was published in 1993 by Island Press and was a finalist for the Sigurd F. Olson Nature Writing Award. The National Wildlife Federation awarded him its National Conservation Achievement Award in 1999.

Maude Barlow: National Chairperson of the Council of Canadians, Canada's largest citizens' advocacy organization with over 100,000 members, and the founder of the Blue Planet Project, which works to stop commodification of the world's water. She is also a Director with the International Forum on Globalization, a San Francisco-based research and education institution opposed to economic globalization. Maude is the recipient of numerous education awards and has just received honorary doctorates from four Canadian universities for her social justice work. She is the best-selling author or co-author of fourteen books. Her most recent publications are *Blue Gold: The Fight to Stop Corporate Theft of the World's Water* (with Tony Clarke), now published in 40 countries; *Profit is Not the Cure, A Citizen's Guide to Saving Medicare*; *Making the Links: A People's Guide to the WTO and the FTAA* (with Tony Clarke); and *The Canada We Want: A Citizen's Alternative to Deep Integration*.

Joan L. Bavaria: Founding President and CEO of Trillium Asset Management Corporation, an employee-owned investment advisor with 33 employees and approximately $800 million under management. It serves clients with a concern for the social and environmental impacts of their investments. The company has published research on social issues and investments since 1982, works with clients and companies on their social and environmental management issues, contributes significant resources to social activism and community

work, and donates 5% of its before-tax profits to charitable causes. Ms. Bavaria is Founding Chair of CERES and served as Chair from 1989 to 2001. In 1989, the Coalition released the ten principles for environmental management, now known as the CERES Principles. The list of CERES-endorsing companies includes Timberland, Ben & Jerry's, General Motors, Bank America, IT&T Industries, and Sunoco, the first Fortune 500 firm. She is currently on the Dean's Committee for International Development at Harvard University's John F. Kennedy School of Government. She sits on the Boards of CERES, Earth Justice Legal Defense Fund, and Earthday Network. She is on the Advisory Boards of the Union of Concern Scientists and the Greening of Industry Network. Ms. Bavaria has received numerous awards. *Investment Advisor* magazine named her one of the 25 most influential people in the planning profession, and in October of 2000, she was honored by Global Green USA and Green Cross International President Mikhail Gorbachev with the Millennium Award for Corporate Environmental Leadership. She was also lauded as "Hero for the Planet" by Time.com. Her education included Massachusetts College of Art, University of Massachusetts, Amherst, and the Chartered Financial Analyst program.

Laurence Michael Bogert: Attorney at Law, Perkins Coie LLP, Boise. From January of 1999 until September of 2004, Mr. Bogert was Counsel to the Office of the Governor of Idaho where he advised Governor Kempthorne and executive branch agencies on the legal implications of state policy and legislation with an emphasis on environmental issues and matters within the jurisdiction of the Idaho Department of Environmental Quality and the Idaho Department of Water Resources. Prior to coming to Idaho, he served Governor Pete Wilson of California and later worked briefly as counsel to the office of Governor-Elect Arnold Schwarzenegger where he advised the new administration and prospective appointees on ethical compliance under the Political Reform Act and other state law. His memberships include the Idaho State Bar, the California State Bar, the U.S. Supreme Court, and the Board of Litigation of the Mountain States Legal Foundation. He was ranked among the "100 Most Influential Idahoans" in 2002 and received the 2005 Distinguished Service Award from the Idaho Water Users Association. Bogert has authored several articles in the *Idaho Law Review* and appears frequently on panels and television discussion programs on a variety of legal issues. A graduate of the University of Santa Clara in 1979, Bogert received his J.D. from the University of Idaho College of Law in 1985 and studied at the National Law Center, George Washington University, 1994-95.

Patrick R. Cairo: Executive Vice President, Suez Environnement North America (SENA)and United Water. In that position, he is responsible for strategic planning and development with an emphasis on corporate restructuring and new businesses activities for the Group. He is also responsible for external relations with multi-lateral agencies and industry groups in the water sector. Cairo has been responsible for the realignment of major projects for United Water, SENA's water management subsidiary in North America. Cairo has over 30 years experience in the water industry, including 12 years with United Water and its parent company, Ondeo (now Suez Environnement). Until 2002, he served as Director of Technology and Research for Ondeo in Paris where he oversaw their technology and research centers around the world. Prior to that, Cairo served as CEO of United Water Services, following a three-year tenure with Ondeo as Director of International Water Development for North America. Cairo launched his career with the Philadelphia Water Department in 1969 and advanced through positions of increasing responsibility before being appointed Deputy Water Commissioner and Chief Operating Officer in 1986. He is on the Board of Directors of the Water Partnership Council and member of the National Council of Public Private Partnerships, the U.S. Conference of Mayors Urban Water Council, the International Water Association, and the AWWA. Cairo holds both a BS and an MS in civil engineering from the University of Pennsylvania. He is a Registered Professional Engineer in Pennsylvania and a Certified Water Works Operator in Pennsylvania, Class A. He has published over 60 papers and articles on water management and technology innovation.

Michael Clark: Director of the Western Water Project for Trout Unlimited. The Western Water Project is a six-state effort by Trout Unlimited to increase instream flows for fisheries and wildlife, thereby providing landowners more flexibility in managing their resources. States include Idaho, Montana, Wyoming, Colorado, Utah, and California. Clark has led six different non-profit groups over the past 30 years, including

Yellowstone Heritage, Greater Yellowstone Coalition, Friends of the Earth, and Highlander Center. He has served on over 20 non-profit boards.

Mike Crapo: U.S.Senator, R, Idaho. First elected to Congress in 1992, Senator Crapo is now in his second term as a member of the U. S. Senate. His public service began in Idaho where he served in the Idaho State Senate from 1984 to 1992. He is a member of the Senate Budget Committee, which drafts Congress' annual budget plan and monitors action on that budget. It also oversees the operation of the Congressional Budget Office. In 2001, he became a member of the Senate Agriculture Committee and is chairman of the Subcommittee on Forestry, Conservation, and Rural Revitalization. He also serves on the Senate Banking, Housing, and Urban Development Committee and was named in 2001 to the important Senate Finance Committee. Mike remains heavily involved in environmental issues ranging from updating and strengthening the Endangered Species Act to clean water to salmon recovery. He also serves as part of the Senate Leadership team with his appointment as a Deputy Whip, and he is the founder and co-chair of the Senate Nuclear Cleanup Caucus. Prior to his service in Washington, Senator Crapo was a partner in the law firm of Holden, Kidwell, Hahn & Crapo, and he is a member of the Idaho and California Bar Associations. He received his Juris Doctorate *cum laude* from Harvard Law School in 1977, and he graduated *summa cum laude* from Brigham Young University with a B.A. in political science in 1973.

John W. Creer: President of Farm Management Company, Salt Lake City. John Creer grew up in Spanish Fork, Utah. He served as National Vice President for Future Farmers of America before leaving for Austria to fulfill a mission for the Church of Jesus Christ of Latter-day Saints. He then attended law school at the University of Utah and, in 1967, received a Fulbright and a Bavarian State Scholarship to the University of Munich to study comparative law, completing his doctorate there in 1968 *cum laude*. Creer practiced law in Manhattan for three years and then served as counsel to the American National Cattlemen's Association in Denver. In 1978, he was named Director of Temporal Affairs for the Church of Jesus Christ of Latter-day Saints in Frankfurt, Germany. In January, he became president of Farm Management Company and plans to retire in August of this year. He is married to Mary Ann Gilmore, and they have four children and five grandchildren.

Jan Dell, P.E.: Vice President, Industrial Business Group at CH2MHill. Ms Dell is a chemical engineer (University of California at Berkeley) with over 20 years of experience on industrial projects extending across more than 40 countries. Much of that experience has been in China, Mexico, India, and other developing countries and has included experience with the social and economic conditions and resource con-straints of the regions. From 1987 to 1991, Ms. Dell was based in Asia and worked with government and private sector clients in the acquisition and deployment of water and wastewater treatment systems. She currently works with multinational clients in the chemical, footwear, apparel, toy, pulp & paper, entertainment, and petroleum industries to effect sustainability improvements in their business operations. She has led supply chain water programs for Nike and Gap for the past five years. Ms. Dell has given numerous presentations on Global Water Scarcity and Sustainable Business Practices at global forums, including World Bank and Business for Social Responsibility meetings.

Karl J. Dreher: Director, Idaho Department of Water Resources. Now in his third 4-year term as director, Mr. Dreher was appointed by the Governor of Idaho as the senior executive responsible for all aspects of the Department's multi-office services to the people of Idaho. He issues final decisions on all contested water rights matters that are brought before the Department, including matters involving the conjunctive administration of surface water rights and groundwater rights. Karl has more than 30 years of experience in developing and managing water resources, covering a broad spectrum of dis-ciplines, including water law, water policy, water treatment, environmental issues, interstate negotiations, planning, program project management, construction management, hydraulic analysis and design, structural analysis and design, and permitting for projects. He is a licensed professional engineer and earned his M.S. and B.S. degrees in the early 1970's from Colorado State University. He is the past chairman of the Western States Water Council, an adjunct of the Western Governors Association.

John Echohawk: Executive Director of the

Native American Rights Fund. A member of the Pawnee Tribe of Oklahoma, he was the first graduate of the University of New Mexico's special program to train Indian lawyers and was a founding member of the American Indian Law Students Association. John has been with NARF since its inception, having served continuously as Executive Director since 1977. He has been recognized as one of the 100 most influential lawyers in America by the National Law Journal since 1988 and has received numerous service awards and other recognition for his leadership in the Indian law field. He serves on the Boards of the American Indian Resources Institute, the Association on American Indian Affairs, the National Committee for Responsive Philanthropy, The Natural Resources Defense Council, and the National Center for American Indian Enterprise Development. John received his B.A. and J.D. degrees from the University of New Mexico, and his professional associations include the Colorado Indian Bar Association and the American Indian Bar Association.

Patrick Ford: Executive Director, Save Our Wild Salmon Coalition. Pat has lived nearly all his life in Idaho but only became an Idahoan when he returned after four years of college in New York City. He has been a full-time conservationist since 1977, except for six years when he wrote about conservation, mostly for *High Country News*. Pat helped found the Save Our Wild Salmon Coalition in 1992 and has worked for it ever since. He has also served on the boards of seven conservation organ-izations in Idaho, the Northern Rockies, and the Northwest. Pat lives in Boise, fortunately near his two daughters, grandson, and the mountains of central Idaho. He has made salmon the center of his work for 13 years because no other creature orset of creaturely connections to nature and culture have taught him more about oh-so-many things.

Leslie Hurst: President and Publisher of *The Idaho Statesman*, she was named to her present position in May of 2003. She relocated to Boise from Huntington, West Virginia where she was president and publisher of the *Herald Dispatch* and served previously in that role for the *Hattiesburg American* in Hattiesburg, Mississippi. Ms. Hurst has extensive experience in both the reporting and marketing sides of journalism, having reported for the *Shreveport Journal* and the *Columbia Missourian*. She was director of marketing for the *News-Press*, Fort Myers, Florida; the *Pensacola News Journal*, Pensacola, Florida; and *The Times*, Shreveport, Louisiana. Leslie is a recipient from the Gannett Company of the president's ring for excellence as both a marketing director and a publisher. She serves on the boards of directors of the Idaho Shakespeare Festival, the Boise Art Museum, and the Boise Metro Chamber of Commerce. She is a member of the Planning and Development Board Committee at St. Alphonsus Regional Medical Center and the Idaho Business Council Education Excellence Committee, including its Higher Education Comm-ittee. Leslie is active on the Board Diversity Committee for the Newspaper Association of America. She is a graduate of the University of Missouri with a bachelor's degree in journalism. She is married to John Severson, a photojournalist with the *Arizona Republic*.

Marc C. Johnson: Boise partner of the Gallatin Group, a Pacific Northwest public affairs/issues management firm with offices in Boise, Seattle, Portland, Spokane, Helena, and Washington D.C. He serves in a volunteer capacity as President of the Andrus Center. As President, he leads the effort to develop the Center's well-respected policy conferences and has overseen the production of the Center's white papers. Mr. Johnson served on the staff of Governor Cecil D. Andrus from 1987 to 1994, first as press secretary and later as chief of staff. He has a varied mass communications background, including experience in radio, television, and newspaper journalism. Prior to joining Governor Andrus, Johnson served as managing editor for Idaho Public Television's award-winning program, *Idaho Reports*. He has produced numerous documentaries and hosted political debates, and several of his programs have been aired regionally and nationally on public television. He is a native of South Dakota and received a B.S. degree in journalism from South Dakota State University. His community involvement includes a past presidency of the Idaho Press Club and the Bishop Kelly High School Foundation, and he serves as chairman of the Idaho Humanities Council and the Federation of State Humanities Councils.

Dan Keppen: Executive Director, Family Farm Alliance. The Alliance is a non-profit association that advocates for family farmers, ranchers, irrigation districts, and allied industries in 17 western states. Prior to joining the Alliance, Keppen was Executive Director of the Klamath

Water Users Association. In 2000-2001, he served for one year as Special Assistant to Reclamation's Mid-Pacific Regional Director in Sacramento. In that capacity, he advised and assisted with water management activities. From 1997-2000, he worked at the Northern California Water Association, a non-profit association representing 70 public and private water agencies in the Sacramento Valley. He also worked as a water resources engineer for Tehama County, California, and he is a registered Professional Civil Engineer in California. Keppen received his M.S. degree in civil engineering (water resources) from Oregon State University and his B.S. degree in petroleum engineering from the University of Wyoming. He and his wife, Dena, and their two children live near Klamath Falls, Oregon.

John W. Keys III: 16th Commissioner, Bureau of Reclamation, U.S. Department of the Interior. In that position, Keys oversees the operation and maintenance of Reclamation's water storage, water distribution, and electric power generation facilities in the 17 western states. The Bureau of Reclamation is the nation's largest wholesale water supplier and the fifth largest electric utility in the west. Keys places great emphasis on operating and maintaining Reclamation projects to ensure continued delivery of water and power benefits to the public, consistent with environmental and other requirements, and to honor state water rights, interstate compacts, and contracts with Reclamation's water users. A 34-year veterans of the Bureau, he has worked on issues related to the Great Basin, the Missouri River Basin, the Colorado River Basin, and the Columbia River Basin. In 1998, he received the Interior Department's highest honor: the Distinguished Service Award. A native of Sheffield, Alabama, Keys earned a Bachelor's in Civil Engineering from the Georgia Institute of Technology and a Master's Degree from Brigham Young University. In addition to being a commercial airline pilot and the owner of a Cessna 182, he is a registered professional engineer in the states of Colorado, Wyoming, Montana, and North Dakota. He has been a college football referee since 1970 and a high school referee since 1962. His wife, Dell, is a family practice physician and flies a Cessna 172.

Robert Kustra, Ph.D.: President of Boise State University, the largest institution of higher learning in Idaho and the state's only metropolitan university. Dr. Kustra served previously as president of Eastern Kentucky University, a comprehensive university of 14,000 students, located in central Kentucky. During his previous career in public service, he served two terms as lieutenant governor of Illinois, following a ten-year career in the Illinois Legislature, first in the House and then in the Senate where he rose to the position of Assistant Minority Leader. In both the legislative and executive branches, Dr. Kustra was known for his leadership in education reform, and he was the first lieutenant governor to serve as chair of the Illinois Board of Higher Education. Before entering elective office, Dr. Kustra held faculty positions at the University of Illinois at Springfield, Lincoln Land Community College, and Loyola University of Chicago. Born in St. Louis, President Kustra received his bachelor's degree from Benedictine College in Atchison, Kansas, his master's degree from Southern Illinois University, and his doctorate from the University of Illinois, Urbana-Champaign. All of his degrees are in political science. He and his wife, Kathy, have three grown children and two grandsons.

John D. Leshy: Attorney, the Harry D. Sunderland Distinguished Professor of Real Property Law, Hastings College of the Law, University of California. In that position, Mr. Leshy teaches property, constitutional, and Indian law and various natural resources courses. Previously, he was Solicitor (General Counsel) of the Department of the Interior throughout the Clinton Administration, worked on a congressional committee staff, was a law professor at Arizona State University, served in the Carter Administration at the Interior Department, was with the Natural Resources Defense Council (NRDC) in California, and served in the Civil Rights Division of the Department of Justice in Washington, D.C.. He was a Visiting Professor at Harvard Law School in the spring of 2004. Leshy has published widely on public lands, water, and other natural resources issues and also on constitutional and comparative law, including books on the Mining Law of 1872 and the Arizona Constitution. He is co-author of the standard federal public land and resources law casebook and one of the leading casebooks on water law. He has litigated cases in state and federal courts, has served on numerous commissions and boards and, for the past three years, has served as President of the Wyss Foundation, which supports land conservation in the intermountain West. Leshy is a graduate of Harvard College (A.B. *cum laude*, 1966) and Harvard Law School (J.D. *magna cum*

laude, 1969). Leshy's diversions include listening to jazz and classical music, playing piano, and running rivers.

Patricia Nelson Limerick, Ph.D.: Professor of History, University of Colorado. After four years as Assistant Professor of History at Harvard University, Dr. Limerick moved to the University of Colorado and became a full professor in 1991. Her distinguished career includes a MacArthur Fellowship in 1995, a University of Colorado Fellowship in 1989, an American Council of Learned Societies Fellow in 1989, and a Charles Warren Fellowship at Harvard in 1983. Dr. Limerick is the Chair of the Board and faculty Director of the Center of the American West at the University of Colorado. Among her many honors is the Hazel Barnes Price, the highest award for a faculty member at the University of Colorado. She has written frequently on the history of the American West and has authored several books, including *Desert Passages: Encounters with the American Deserts* and *The Legacy of Conquest: The Unbroken Past of the American West*. She is a contributor to *The Atlas of the New West* and is now at work, with William Travis, on *The Handbook for the New West*. Her professional service includes membership on the board of editors of the American Historical Review, president of the American Studies Association, and advisor on a Ken Burns documentary entitled "The West."

Richard A. Meganck, Ph.D.: Rector of the UNESCO-IHE Institute for Water Education, located in Delft, The Netherlands. The Institute has a faculty of 70 and a graduate student body of 400 and offers courses of study leading to Master of Engineering, Master of Science, and Doctor of Philosophy degrees in water management, water science and engineering, environmental science, and municipal water and infrastructure. His career includes 27 years working in international development and management of natural resources, 20 of those with agencies in the United Nations and Inter American systems. In six years with the UN Environment Programme, he was responsible for the Caribbean Regional Seas, Director for the 58-country Asia and Pacific Region in Bangkok, and Director of the UN International Environmental Technology Center in Osaka, Japan. He began his professional career as a Peace Corps Volunteer in Colombia, followed by four years as an assistant professor in the College of Forestry at Oregon State University. Dr. Meganck holds a Master of Science degree from Michigan State University and a Ph.D. from Oregon State University in Natural Resource Management.

Patricia Mulroy: General Manager of the Las Vegas Water District. Mulroy took over as general manager during one of the most arid periods in Southern Nevada's water history, a year when the city began growing at the rate of 3,000 to 5,000 residents per month, a growth rate that continues today. Water supplies were running out, five separate water agencies were each anxious to guard their own water. Recognizing that they must work together to achieve a regional solution to Southern Nevada's water problems, these agencies formed the Southern Nevada Water Authority in 1991 and appointed Mulroy as general manager. Also in 1991, Mulroy was appointed to the governor's negotiating team on the Colorado River. Since becoming general manager in 1989, Mulroy has been active in regional and national water issues as a member of the American Water Works Association and a board member of the Association of Metropolitan Water Agencies. In 1992, she helped found the Western Urban Water Coalition. She is also a member of the Colorado River Water Users Association and served on its board. In addition, she serves on the board of the Desert Research Institute and was the recipient of the University and Community College System of Nevada Regents' 1999 Distinguished Nevadan Award. Ms. Mulroy came to Las Vegas from Germany in 1974. She and her husband, Robert, have two children and are both active leaders in the community.

Bruce Newcomb: Speaker, Idaho House of Representatives. Currently in his 7th term, Rep. Newcomb is the longest standing Speaker in Idaho's history. Originally elected to the House in 1986, he has also served as Majority Leader, Assistant Majority Leader, and Caucus Chairman. Born and raised in Burley, Newcomb graduated from Declo High School in 1958. He attended Northwest Christian College, Stanford, and the University of Oregon, earning a Bachelor of Science degree. He is a farmer/rancher and is married to Celia Gould, who has also served as a representative in the Idaho House. Among his awards are the "Citizen of the Year" award in 1999 from the Declo Lions, the Honorary State FFA Degree in 2001, and the Outstanding Legislator of the Year award in 2002 from the National Leadership Foundation.

Norman Semanko: Executive Director and General Counsel of the Idaho Water Users Association. Norm represents the State of Idaho on the Western States Water Council and also serves as President of the National Water Resources Association. He was previously a shareholder in the law firm of Rosholt, Robertson & Tucker in Twin Falls and concentrated his practice in water law. Prior to his legal practice, he was Legislative Assistant for Senator Larry E. Craig in his Washington, D.C. office. Norm is a graduate of Georgetown University Law Center and earned his undergraduate degree in political science from the University of Idaho.

Patrick A. Shea, PC: Attorney, Salt Lake City, former Deputy Assistant Secretary of the Interior for Land and Minerals Management. In that role, he oversaw the Bureau of Land Management, Minerals Management Services, and the Office of Surface Mining—agencies responsible for the management of over 270 million acres of land and for all offshore drilling for oil and gas production in the United States. Before entering government service, Mr. Shea was a lawyer, educator, and businessman in the Intermountain West. Along with practicing law in Salt Lake City and the District of Columbia, Shea was an Adjunct Professor of Political Science at the University of Utah and taught at the Brigham Young Law School. In September 1996, he was appointed by President Clinton to serve on the White House Commission on Aviation Safety and Security. Mr. Shea teaches seminars on Land Use Management and Biotechnology for Federal judges. Prior to his private law practice, he served as General Counsel and Assistant Secretary to a private communications company, operating television, radio, and newspapers. He also served as counsel to the Foreign Relations Committee of the U.S. Senate. Shea is a native of Salt Lake City and received his undergraduate degree from Stanford University in 1970, a master's degree from Oxford University in 1972, and a law degree from Harvard University in 1975.

Michael J. Sullivan: Attorney with the firm of Rothgerber, Johnson & Lyons LLP. Governor Sullivan, who practices out of the firm's Casper, Cheyenne, and Denver offices, has a rich and varied background of public service. A former two-term governor of Wyoming, he served as U.S. Ambassador to Ireland in the Clinton and Bush administrations. He facilitated U. S. support for and implementation of the Good Friday Agreement. Mr. Sullivan was elected governor of Wyoming in 1986 and reelected in 1990. During his service as governor, he chaired the Western Governors Association and co-chaired the Alliance for Acid Rain Control. In 1995, after completing his second term as governor, he held a fellowship at the Institute of Politics in the Kennedy School of Government at Harvard University. His public service includes serving on the boards of the Allied Irish Bank Group, the Catholic Diocese of Cheyenne, the Ireland-American Alliance, Cimarex, Inc., and the Natrona County Hospital Board. Among his many honors are the Distingushed Service Medal from the Wyoming National Guard, the Outstanding Alumnus Award from the University of Wyoming College of Law, and membership in the University of Wyoming College of Engineering Hall of fame.

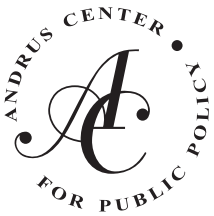
John C. Tracy, Ph.D.: Director, Idaho Water Resources Research Institute, University of Idaho, Boise. Dr. Tracy received his B.S. degree in civil engineering at Colorado State University in 1980 and his M.S. and Ph.D. degrees in civil engineering at the University of California at Davis. He has held academic positions at Kansas State University, South Dakota State University, and the Desert Research Institute. Dr. Tracy has worked on numerous research projects and authored or co-authored over 70 technical publications in the areas of watershed planning, watershed restoration, the development of modeling tools for environ-mental systems, and remediation of contaminated soils. His most recent work has focused on environmental planning at the watershed scale and has included studies in the Lake Tahoe Basin, the Lower Fox River in Wisconsin, and Walker Lake in Nevada. Currently, Dr. Tracy's research efforts are focused on developing more functional indicators of sustainable socio-environmental practices within western watersheds and how these indicators can be used to direct more robust watershed planning and management activities.

James C. Waldo: Attorney, Partner at Gordon, Thomas, Honeywell in Tacoma, Washington. Mr. Waldo graduated from Willamette College of Law in 1974 and accepted a position in the Ford Administration with the Labor Department. Since joining the law firm, he has pursued a career in complex negotiations and mediation. Currently, he is a working on a number of water projects in California and Washington State. These include facilitating discussions in California among Kern County water districts on

development of a regional Groundwater Management Plan. For the last five years, Jim has been the lead facilitator in the project to recommend scientifically-based changes to fish hatchery operations in Puget Sound and Coastal Washington. Earlier this year, he helped a number of parties resolve a major water quality drainage dispute in the San Joaquin River Basin that had been in litigation since 1964. He also helped resolve long-standing disputes over water allocations in the California State Water Project between the agricultural and municipal water contractors, which resulted in the "Monterey Agreement." For three years, he was retained by former Governor Gary Locke as his water policy advisor on numerous water policy issues in Washington State. This year, the American Water Works Association recognized Jim's work by selecting him to receive their National Award of Merit. His memberships include the Washington State Bar Association Sections on Environmental, Land Use, and Indian Law. Listed among his community activities is serving as trustee for Western Washington Univer-sity, chairman of Northwest Renewable Resource Center, and chairman of the Washington State Energy Strategy Committee. He was named among the *Best Lawyers in America* in the 2nd Edition and received the "President's Award" from the Association of Washington Business and the "Outstanding Citizen Award" from the Association of Fish and Wildlife Agencies.

Carolyn Washburn: Executive Editor of *The Idaho Statesman*. Washburn has held the position of executive editor since March 1999. A Cincinnati native, Carolyn holds a bachelor of arts in political science and journalism from Indiana University at Bloomington. She started her journalism career at the *Lansing State Journal* in Michigan as a business reporter, covering Oldsmobile and General Motors. She then worked at the Gannett newspapers in Rochester, NY, as a business reporter covering Eastman Kodak Co., business editor, and Assistant Managing Editor/metro. She first worked in Boise in 1993 as managing editor before returning to Rochester as managing editor of *The Democrat and Chronicle*. Carolyn held that position from 1995 until her return to Boise in 1999. She is past president of the City Club of Boise. Carolyn and her husband have three children—a 15-year-old son and daughters 9 and 7.

CONVENERS



The Idaho Statesman
IdahoStatesman.com • Always Idaho

MAJOR DONORS

The Gannett Foundation
Gordon and Betty Moore Foundation
Trillium Asset Management Corporation

SPONSORS

American Forest & Paper Association
Avista Corporation
Batelle Energy Alliance
BMC West – A BMHC Company
Clear Springs Foods
Coeur d'Alene Mines Corporation
Conservation Fund
Hawley Troxell Ennis & Hawley LLP
Holland & Hart LLP
Idaho Conservation League
Idaho Department of Fish and Game
Idaho Department of Parks and Recreation
Idaho Department of Lands
Idaho Department of Water Resources
Idaho Rivers United
Key Bank
Perkins Coie LLP
SJO Consulting Engineers
Skinner Fawcett
Trout Unlimited
United Water of Idaho
U.S. Bureau of Reclamation
Washington Group International
Wells Fargo Foundation

For further information:
The Andrus Center for Public Policy
P.O. Box 852, Boise, ID 83701
208-426-4218 Fax 208-426-4208
www.andruscenter.org
E-mail: info@andruscenter.org