

KLAMATH PROJECT

HEARING
BEFORE THE
SUBCOMMITTEE ON WATER AND POWER
OF THE
COMMITTEE ON
ENERGY AND NATURAL RESOURCES
UNITED STATES SENATE
ONE HUNDRED SEVENTH CONGRESS

FIRST SESSION

TO DISCUSS KLAMATH PROJECT OPERATIONS AND IMPLEMENTATION
OF PUBLIC LAW 106-498

MARCH 21, 2001



Printed for the use of the
Committee on Energy and Natural Resources

U.S. GOVERNMENT PRINTING OFFICE

73-055 DTP

WASHINGTON : 2001

For sale by the U.S. Government Printing Office
Superintendent of Documents, Congressional Sales Office, Washington, DC 20402

COMMITTEE ON ENERGY AND NATURAL RESOURCES

FRANK H. MURKOWSKI, Alaska, *Chairman*

PETE V. DOMENICI, New Mexico	JEFF BINGAMAN, New Mexico
DON NICKLES, Oklahoma	DANIEL K. AKAKA, Hawaii
LARRY E. CRAIG, Idaho	BYRON L. DORGAN, North Dakota
BEN NIGHTHORSE CAMPBELL, Colorado	BOB GRAHAM, Florida
CRAIG THOMAS, Wyoming	RON WYDEN, Oregon
RICHARD C. SHELBY, Alabama	TIM JOHNSON, South Dakota
CONRAD BURNS, Montana	MARY L. LANDRIEU, Louisiana
JON KYL, Arizona	EVAN BAYH, Indiana
CHUCK HAGEL, Nebraska	DIANNE FEINSTEIN, California
GORDON SMITH, Oregon	CHARLES E. SCHUMER, New York
	MARIA CANTWELL, Washington

BRIAN P. MALNAK, *Staff Director*

DAVID G. DYE, *Chief Counsel*

JAMES P. BEIRNE, *Deputy Chief Counsel*

ROBERT M. SIMON, *Democratic Staff Director*

SAM E. FOWLER, *Democratic Chief Counsel*

SUBCOMMITTEE ON WATER AND POWER

GORDON SMITH, Oregon, *Chairman*

JON KYL, Arizona, *Vice Chairman*

LARRY E. CRAIG, Idaho	BYRON H. DORGAN, North Dakota
BEN NIGHTHORSE CAMPBELL, Colorado	BOB GRAHAM, Florida
RICHARD C. SHELBY, Alabama	RON WYDEN, Oregon
CHUCK HAGEL, Nebraska	TIM JOHNSON, South Dakota
	DIANNE FEINSTEIN, California
	MARIA CANTWELL, Washington

FRANK H. MURKOWSKI and JEFF BINGAMAN are Ex Officio Members of the Subcommittee

COLLEEN DEEGAN, *Counsel*

DAVID BROOKS, *Democratic Senior Counsel*

CONTENTS

STATEMENTS

	Page
Craig, Hon. Larry E., U.S. Senator from Idaho	3
Crawford, John, Farmer, on behalf of Klamath Water Users Association, Klamath Falls, OR	51
Foreman, Allen, Chairman, Klamath Indian Tribes, Chiloquin, OR	23
Horne, Alex J., Ph.D., Professor, Department of Civil and Environmental Engineering, University of California, Berkeley	55
Marbut, Reed, Intergovernmental Coordinator, Oregon Water Resources De- partment, Salem, OR	31
McDonald, J. William, Acting Commissioner, Bureau of Reclamation, Depart- ment of the Interior	7
Nicholson, Roger, President, Resource Conservancy, Fort Klamath, OR	39
Smith, Hon. Gordon, U.S. Senator from Oregon	1
Spain, Glen H., Northwest Regional Director, Pacific Coast Federation of Fishermen's Associations, Eugene, OR	40
Walden, Hon. Greg, U.S. Representative from Oregon	3
Wyden, Hon. Ron, U.S. Senator from Oregon	2

KLAMATH PROJECT

WEDNESDAY, MARCH 21, 2001

U.S. SENATE,
SUBCOMMITTEE ON WATER AND POWER,
COMMITTEE ON ENERGY AND NATURAL RESOURCES,
Washington, DC.

The committee met, pursuant to notice, at 2:08 p.m., in room SD-628, Dirksen Senate Office Building, Hon. Gordon Smith presiding.

OPENING STATEMENT OF HON. GORDON SMITH, U.S. SENATOR FROM OREGON

Senator SMITH. I would like to welcome you all to this very important hearing on the Klamath Basin. We particularly welcome our colleague, Greg Walden, my Congressman. And when you are done, you are welcome to come up here and participate on the stand with us. We welcome all of the witnesses who have traveled here today to discuss the critical water issues of the Upper Klamath River Basin and the operations of the Federal Reclamation Project for this year.

Last November, at a forum in Klamath Falls, I made a commitment with Congressman Walden that the first hearing of the Water and Power Subcommittee for the 107th Congress would be on this issue.

The events of last November have made the committee system a little more challenging, but I am confident that this subcommittee will be able to successfully address the issues in a bipartisan manner.

In the interest of time, my statement will be brief, but my message clear. It is not a reasonable and prudent alternative to provide no water to irrigators this year. Period.

Our human stewardship cannot be rejected as we attempt to improve our environmental stewardship. We cannot escape the fact that we are experiencing a serious drought in the Klamath Basin. Weather cycles are inevitable.

One of the purposes of our legislation last year was to minimize the impacts of drought. At the present time, however, there is a crisis beyond urgent.

We have heard from literally hundreds of people in the Klamath Basin, particularly in the Klamath Project area, whose very livelihoods are at stake. The family farmers and ranchers of the Klamath Project have devoted a century of their labors to a noble activity that serves their communities and our country.

Recently, they have endured bad markets. They have been told, also, that they may experience newly devastating impacts due to lack of water. In fact, I understand that even now impacts have begun to occur, due to the incredible uncertainty that has existed for some weeks.

The Government must do everything in its power to avoid serious impacts to these communities. Certainly, the law must be obeyed, but it is critical that agencies exercise the greatest flexibility possible and manage through this drought, as we have in the past, so that no interest bears the entire consequence of a dry year.

I hope to learn today exactly when there will be some reliable information about the availability of water, since every passing moment has consequences. As conflicts for water have increased in the past several years, so has our attention to the Upper Klamath Basin.

Last year, we enacted the Klamath Basin Water Supply Enhancement Act of 2000, which Senator Wyden and I sponsored in the Senate. The purpose of that law is to increase water supply and quality for the benefit of all interested parties; however, if this year is not handled properly, long-term solutions present a false hope for irrigators in the basin.

Today, I hope to hear the specific progress and plans of the Bureau of Reclamation for completing the studies authorized last year.

Last November, also, we found a great willingness of the Klamath Basin residents to deal constructively with these complicated issues that confront them. The time and effort put forward by many individuals and organizations, much of it voluntary, is genuinely impressive.

At the same time, we heard of obstacles to local solutions and frustrations with them, and how these efforts would pay dividends. I hope to promote the continued effort of citizens to shape their future and urge Federal agencies to embrace this goal.

And I look forward to hearing from the witnesses, but now we will turn to my colleague, Senator Wyden, and then to Senator Craig.

**STATEMENT OF HON. RON WYDEN, U.S. SENATOR
FROM OREGON**

Senator WYDEN. Thank you very much, Mr. Chairman. I think you have framed the issue very well. I think we understand that there is an immediate crisis in our part of the country with respect to this issue.

As you know, you and I wrote legislation with Congressman Walden that looks to the long-term issue, the Klamath Basin Water Supply Enhancement Act, but what really counts now is bringing these parties together—and they are certainly going to have all the information on April 1st—and coming up with an effective response to an immediate crisis.

The fact is, it can be done. I see our friend, Senator Craig here. The County Payments legislation that we teamed up on was recently described as the most important bill for the Forest Service in three decades. People did not think that could be done. People did not think the Steens legislation could not be done.

So, it is critically important that we look to an immediate response from these Federal agencies. We have agencies that deal with refuges. We have agencies that deal with salmon and suckers. But at the end of the day, they have to deal with all of the parties in a responsible kind of fashion.

When you bring the stakeholders together, the Federal agencies have to be partners who are responsive, partners who are flexible, and partners who are trying to come up with effective solutions.

The fact of the matter is that in low water years, emotions always run high, but the Klamath Basin is a particularly serious problem because it is not going to be just fish against farmers if there is no action here. There is going to be just chaos that is community-wide.

We are glad that Congressman Walden is here today. We are going to work, as we have again and again, in a bipartisan fashion.

I am very pleased that Senator Craig is here to join us, as well. Senator SMITH. Thank you, Senator Wyden.
Senator Craig.

**STATEMENT OF HON. LARRY E. CRAIG, U.S. SENATOR
FROM IDAHO**

Senator CRAIG. Mr. Chairman, let me show us something. Look at this. This is Oregon, Washington, and Idaho. And of course, the Klamath Basin is right in the middle of all of that. That is project stream flow, March 1, 2000, for spring and summer. Light orange is 70 to 90 percent of average. Bright orange is 70 percent or below.

That is all of us. That is the crisis that is not projected. That is the crisis that will be. And that is why I am here.

Not only have you got to solve your problems, we are going to have many of them to solve in Idaho and a lot to solve in the Pacific Northwest. Whether it is fish and irrigation or hydro and energy production, we are all going to have to come together this year, as we have never before, to get us through the summer and into the fall.

With the initiatives that you are taking, Mr. Chairman, in a variety of areas, I have asked the FERC to come into the region. They will be in the region on April 27 with system-wide hearings in Boise for all of us to look at the reality of what we can get done with the power of the Federal Energy Regulatory Commission. And that, along with this, is very important.

So, you are building a valuable record on how we get these problems solved.

Thank you.

Senator SMITH. Thank you, Senator Craig.

Congressman Walden, welcome. And the mic is yours.

**STATEMENT OF HON. GREG WALDEN,
U.S. REPRESENTATIVE FROM OREGON**

Congressman WALDEN. Thank you, Mr. Chairman, Senator Wyden, Senator Craig. Thank you for letting me come and share some comments with you.

It is a pleasure to come before your committee today. I only wish it were under better circumstances.

Mr. Chairman, I know that all of you are aware that the situation facing the Klamath Basin this spring and summer is, indeed, a crisis.

An entire community, an entire species, and a way of life are threatened, due to the lack of water and, I believe, mistaken Federal policy. As a crisis, the situation in the basin requires immediate and bold action. And that is why we are here today.

The Klamath Basin, which sits in my congressional district in southern Oregon, and in Congressman Wally Herger's district in northern California, is a microcosm of the most complex water, agricultural, natural resource issues in the west.

Water in the basin is a multi-State resource. And there are many competing demands for water that includes farmers, fish, tribes, and wildlife, among others.

The families who farm on the Klamath Project do so at the request of, this, our Federal Government. They were invited. They were asked. They were requested to come here. They built a community out of once fallow ground. And their contribution to the economy of Klamath County has become invaluable.

It is estimated that agriculture in the basin contributes \$250 million to that region's economy. Its activity provides the bedrock upon which the economy of Klamath County is based.

Until recent years, water supplies, especially to farming in the basin, were considered adequate. When there was shortage, farmers and other interests in the basin tightened their belts and made do.

Now the same Federal Government that invited these farmers to grow a crop and make a life and settle the West on projects like this, has, in effect, turned against them.

The Government is telling farmers that there can no longer be any compromise. The shortnose and Lost River sucker species, as well as the coho salmon, now trump their water needs at every turn. And, in fact, just Monday, the National Marine Fisheries Service called farming on the Klamath Project an unacceptable risk to coho salmon.

One can assume that the farmers now think the same of the coho. This is no way to save a specie. We need cooperative efforts.

It has been extremely frustrating the last few years to try to understand the basis for the Federal agencies' actions. I was dismayed when, on January 19 of this year, the staffs of Federal agencies signaled that they might require reservoir elevations and river flows to be maintained at levels that would devastate the Klamath Project.

These requirements nearly exceed the total amount of water that has existed in the entire Upper Klamath Basin in most, if not all, years, even without Klamath Project irrigation or use of water by wildlife refuges.

No one can say that it is reasonable to assume that we are going to store more water than in most water years we are able to store, let alone without cutting off all the irrigation in the refuge.

The agencies are seeking to place, I believe, a grossly disproportionate burden on the farmers of the Klamath Project. No matter how much water is used by others, no matter what the source of impacts to fisheries throughout the entire Klamath Basin, the

Klamath Project alone is asked to guarantee specific instream water levels to try to mitigate for the problems. In a basin with many competing water interests, it is ludicrous to require just one of the interests to guarantee basin-wide flow level.

Legislators from Oregon have pointed out that the State of Oregon, in 1905, authorized the use of the bed of Upper Klamath Lake to store water for irrigation and for that purpose only. They wonder, how is it that agencies at the Federal level can now demand this water be sent downstream to try and resolve problems in the Klamath River in California, when, apparently, there is no equivalent regulation of activities in California that contribute to the problem. Farmers alone cannot be expected to carry the burden of increasing flows to unreasonably high levels.

As I alluded to earlier, water shortages are not new to the basin. Last year, Congressman Herger and I sponsored the companion bill in the House to that of yours, Chairman Smith and Senator Wyden, here in the Senate.

It would move us toward increased supplies for fish and farmers alike. I look forward to learning what the Bureau of Reclamation, represented here today, has done with that authority Congress granted them to increase water supply in the basin.

We cannot stick our heads in the ground and allow the devastation in this community to go forward. We need more water. We need more water storage. There are steps I believe we can take to meet the needs of fish and farmers.

Water is currently flowing down the Klamath River at a rate of 1,300 cubic feet per second. That is water that could be saved and stored for use during this summer.

The Bureau of Reclamation continues to steadfastly adhere to the rigid regime, despite what I believe is convincing empirical evidence that shows previous drought year river flows have been as low as 450 CFS, without adverse impact to fish.

Indeed, it appears that it is only the Bureau's "best guess" that more water from the Klamath Project will mean more vibrant salmon populations at the mouth of the river, because there is no evidence that links flows at Irongate Dam to adverse impacts to salmon populations. And if there is, I hope to see it.

Federal Government cannot continue its pattern of taking water away, based on guesswork, especially when those decisions will have such incredibly negative impacts to real people in that basin.

Fortunately, the Bureau of Reclamation has the authority to revisit this flow regime under the auspices of the 2000 Operations Plan to account for and adequately address changed circumstances, such as the drier than normal conditions that we are now experiencing. To date, the Bureau has not acted.

I, along with Congressman Herger and you, Mr. Chairman, have requested the Department of the Interior intervene immediately to reduce Klamath River flows at Irongate Dam to allow Upper Klamath Lake to fill to capacity.

In addition, in the upcoming 2001 Project Operations Plan for the upcoming season, flow schedules must afford the flow level flexibility that has existed in the past.

As you know, the California-Nevada Operations Office of the U.S. Fish and Wildlife Service released its draft biological opinion on

the status of the endangered suckers in Upper Klamath Lake. There is, however new information that casts serious doubt on the Service's hypothesis that higher than historic lake levels equate to improved sucker populations.

Dr. Alex Horne from the University of California, Berkeley, who is here with us today, I hope, will be sharing this information with your subcommittee.

While the serious ramifications of the Service's lake level recommendations would seem to warrant extreme caution and a close look at alternatives, including Dr. Horne's study, I am concerned that the Service's California-Nevada Operations Office has not taken this information into full consideration.

Dr. Horne's study presents significant new information and poses new and unanswered questions about lake level science.

I believe the draft bi-ops, both for the sucker fish and for the coho, must be put on hold until adequate time is available for the new Administration and the public, at large, to review those studies.

Moreover, in the interim, the only information that can be reasonably and legally relied upon as the basis for project operations is the 1992 bi-op, under which farmers, fish, and refugees were all able to get by in low water years of 1992 and 1994.

The agencies and Congress should also offer strong support for the constructive on-the-ground recovery efforts that have been proposed by the Klamath Project water users. These efforts, developed by the men and women who know the land best, are innovative, and they deserve our attention as a new water plan for the basin takes shape.

Furthermore, I do not believe anything in this approach precludes completion, if necessary, of the new Endangered Species Act Consultation in an orderly manner and on a reasonable schedule with full participation by the effected parties.

In conclusion, Mr. Chairman, I believe it is irresponsible to suggest a lake level of 4,140 acre feet, and do not believe, for a moment, that such an alternative is either reasonable or prudent. If accepted, this opinion will cause grave damage to the waterfowl that call the refuge home, to the family farmers who are drawn to the basin by the very project water the Federal Government now seeks to take away.

I will continue to stand up for a reasonable plan for this year, and will—that will allow adequate water supplies for our farmers and for our refuge. It is time for the Federal Government to understand the people who farm here have a right to exist, too.

Thank you, Mr. Chairman. Thank you, committee members.

Senator SMITH. Thank you, Congressman Walden.

Greg, we would invite you to come up here and pre-warn you that we may have a vote at—sometime between 2:30 and 3 o'clock. So, we will turn the gavel over to you when we do that. We want to keep this hearing going, because we have this room until 4 o'clock.

So, we will invite our first panel up: J. William McDonald, the Acting Commissioner, Bureau of Reclamation, Department of the Interior. He will be accompanied by Mike Spear, Manager of California-Nevada Operations Office, U.S. Fish and Wildlife; and Mike

Connor, Director, Secretary's Indian Water Rights Office, Department of the Interior.

And obviously, we want to hear everything you have to say. And as efficiently as you can say it, is great, given the constraint we are under.

So, thank you for being here, Bill. We will start with you.

STATEMENT OF J. WILLIAM McDONALD, ACTING COMMISSIONER, BUREAU OF RECLAMATION, DEPARTMENT OF THE INTERIOR

Mr. McDONALD. Thank you very much, Senator. I appreciate the opportunity. Likewise, Senator Wyden, we appreciate the opportunity.

My name is Bill McDonald. I am the Regional Director of Reclamation's Pacific Northwest Region, appearing today in my capacity as Acting Commissioner of the Bureau of Reclamation, pending the appointment by the President of a new commissioner.

We certainly appreciate the invitation to participate in today's hearing on Klamath Project Operations and Implementation of Public Law 106-498. Particularly, I appreciate the opportunity to appear on behalf of the Department.

Accompanying me, Senator, as you have indicated, are Mr. Mike Spear, who is Manager of the California-Nevada Operations Office for the Fish and Wildlife Service, and Mr. Mike Connor, who is the Director of the Secretary's Indian Water Rights Office.

With your permission, we have submitted my prepared statement in advance.

Senator SMITH. Without objection, we will be glad to take it.

Mr. McDONALD. We would be glad to enter it and summarize it.

Senator SMITH. Thank you, Mr. McDonald.

Mr. McDONALD. As you well know, Interior has been working with constituents in the Klamath Basin for several years to develop a long-term management plan for the Klamath Project resources.

This effort will certainly be enhanced by the enactment, last November, of the Klamath Basin Water Supply Enhancement Act. The Act authorized and directed, as you well know, the Secretary to study the feasibility of three projects and programs.

And while monies were not appropriated for those studies, we are using funding appropriated for Reclamation's water resources initiative, which is within the operating budget for the Klamath Project. And that will enable us to initiate implementation of all of the authorized items this year.

With respect to each of the those three, very quickly, in terms of the feasibility study of increasing Klamath Project storage capacity and yield, in December 2000, we released an appraisal level report, which examined the desirability of raising the Upper Klamath Lake by as much as two feet.

We are taking steps required to initiate this study this year, by preparing the plan of study and the budget estimate and all the other things that are the initial steps in a feasibility study.

We have also completed a cursory review of existing information to determine if it would be feasible to raise Gerber Dam an additional three feet. And likewise, with available funding, we are pro-

ceeding to prepare the plan of study and move down the road on that.

A second item authorized by the new law was development of groundwater supplies. Several things are being done there. I will highlight just two.

In fiscal year 1999, Reclamation had already entered into a cooperative agreement with your Oregon Department of Water Resources to study the potential of obtaining supplemental groundwater supplies in the Klamath and Lost River Basins in Oregon.

I am pleased to report that in this current irrigation season, we will be pump-testing an existing well to determine yield and aquifer capacity characteristics. And if long-term pumping appears to be feasible, we will have the money available this year to prepare the plan of study and be ready to move into a full feasibility study next year.

The second major activity is that we had—pardon me—entered into a cooperative agreement in 1999 with the California Department of Water Resources to examine groundwater in that State's portion of the Klamath and the Lost River Basins. And data is being collected over a 3-year period to assess the potential for groundwater augmentation. And again, funds are available. And we are moving forward, as scheduled.

The final thing the law authorized was something called Innovative Solutions. The main thing we are doing this year is we are initiating, in the face of the drought, a 1-year pilot program that we call the Irrigation Demand Reduction Program to determine irrigators' interest in receiving payments in lieu of applying their surface water to irrigated lands.

We have received approximately 550 proposals from irrigators willing to forego water on their irrigated lands in exchange for a total payment of about \$20 million.

Reclamation, however, in this fiscal year, is budgeted only for about \$2.8 million. If we are able to make those arrangements, that \$2.8 million would translate into about 30,000 acre feet of water.

In addition, we have initiated a groundwater acquisition program this year to, again, purchase from willing sellers—all of this is based on willing sellers. We have evaluated 15 proposals. Ten have been selected at a combined cost of approximately \$1.2 million. And that water, if in fact acquired, would provide about 37,000 acre feet.

The act, of course, directed the Secretary to compile a variety of information and to complete some ongoing hydrologic surveys in the Klamath Basin. And I can report to you that, again, out of available funds for fiscal year 2001, all of that is continuing.

Let me—I will turn my attention to this year's water supply situation and the operation of Reclamation's Klamath Project. As you well know, Reclamation is in consultation with the Fish and Wildlife Service and the National Marine Fisheries Service over project operations.

Reclamation received the Fish and Wildlife Service's draft biological opinion, or BO, last week. We received the National Marine Fisheries Service's draft BO just this Monday; 2 days ago.

Both draft BOs conclude that the historic operation of Reclamation's Klamath Project would jeopardize the continued existence of

the pertinent listed species. The coho, downstream from the project; the suckers in the project.

Thus, in accordance with the Endangered Species Act, both draft biological opinions propose reasonable and prudent alternatives.

Both of those draft opinions have been made available by Reclamation, in the last several days, to the Tribes, to water users and to others. They are publicly available.

Reclamation is, of course, in the process of reviewing the drafts right now. And both Reclamation and the Fish and Wildlife Service are also reviewing the report prepared by the consultants for the Klamath Water Users Association concerning Lost River and shortnose suckers, which report we received about a week ago.

Reclamation and the two fishery agencies have scheduled a meeting with the Tribes and the Bureau of Indian Affairs next week to review and discuss the draft biological opinions. I can, likewise, assure you that we would be more than glad to make ourselves available at any time this week or next to meet with water users and others about those draft biological opinions.

Reclamation has made preliminary analyses of the impacts which the draft opinions would have on project water supplies this year, given that it appears that we are headed toward a near record drought.

Our computer modeling run suggests that the draft opinions could result in no water being available from Upper Klamath Lake for project irrigation or the National Wildlife refuges, which are associated with the Klamath Project.

Furthermore, it appears to us that in this year's drought situation, the flows proposed by the National Marine Fisheries Service in their draft opinion cannot be met without violating the lake levels proposed by the Fish and Wildlife Service for Upper Klamath Lake in their draft opinion or vice versa. If lake levels—if lake elevations were to be maintained—pardon me—in accordance with the Fish and Wildlife Service's draft opinion, then the river flows proposed by NMFS below Irongate Dam could not be maintained.

The Department is acutely aware of the exceedingly difficult situation faced in the Klamath Basin this summer, relative to tribal trust assets, the conservation of listed species, the economic well-being of the local community, and the water supplies for the National Wildlife refuges.

I can assure you that the involved agencies will be working together—are working together over the next 2 weeks to look for solutions which are consistent with our legal obligations, while considering the interests of all others.

It remains our intent to reach and announce decisions regarding project water supplies by the first week in April, and to finalize and issue the biological opinions, and our associated final decisions by then or very shortly thereafter.

I can assure you, on behalf of the Department, that we are doing our very level best to address the problems which we understand all of us confront.

Mr. Chairman, that concludes my oral remarks. I and the panel would be glad to trade or respond to questions.

[The prepared statement of Mr. McDonald follows:]

PREPARED STATEMENT OF J. WILLIAM McDONALD, ACTING COMMISSIONER, BUREAU
OF RECLAMATION, DEPARTMENT OF THE INTERIOR

Thank you for the invitation to participate in today's oversight hearing on Klamath Project operations and implementation of Public Law 106-498. I appreciate the opportunity to be here today on behalf of the Department of the Interior (Interior).

KLAMATH PROJECT OPERATIONS

Interior has been working with the constituents in the Klamath Basin for several years to develop a long-term management plan for Klamath Project (Project) resources. While this plan is being prepared, the Bureau of Reclamation (Reclamation) has prepared annual operating plans explaining how competing project demands will be met. As part of the long-term project operation planning process, Reclamation is consulting with the Fish and Wildlife Service (FWS) and National Marine Fisheries Service (NMFS) regarding impacts of the project operations on endangered suckers and threatened coho salmon. FWS and NMFS recently provided Reclamation with draft biological opinions, an important step forward in developing the long term plan. Reclamation will continue to work with FWS, NMFS, project beneficiaries, Indian Tribes and others regarding completion of the biological opinions. The management alternatives in the biological opinions will help Reclamation develop alternatives to consider in the long-term project operation environmental impact statement.

The 2001 Operations Plan is scheduled to be issued in early April. The operation of the Project includes delivery of water to irrigation contractors and waterfowl refuges and providing water consistent with trust obligations to Klamath, Hoopa Valley, Yurok and Karuk Indian Tribes and the requirements of the Endangered Species Act (ESA). To assure that project operation is consistent with requirements of the Endangered Species Act, Reclamation is engaged in Section 7 ESA consultations with the Fish and Wildlife and National Marine Fisheries Services regarding effects to endangered Lost River and shortnose suckers, threatened coho salmon, and steelhead salmon that have been proposed for listing. Interior is committed to continue working closely with the irrigators, Klamath Basin Indian Tribes, and other stakeholders in developing the 2001 Operations Plan. While final decisions have not yet been made, it will be very difficult to fully meet the competing demands for water this year.

Facing such limited water supply, Reclamation is using important new tools in an effort to enhance the water supply. A pilot water acquisition program is adding flexibility to the planning process and should help Reclamation achieve the goal of reasonable, though limited, allocations to non-ESA and non-tribal uses. It is important to note that Reclamation has received considerable assistance from the Klamath Water Users Association and has coordinated closely with state and local government agencies in implementing this water acquisition program.

IMPLEMENTATION OF PUBLIC LAW 106-498

Now I would like to report Interior's progress in Implementation of Public Law 106-498, the Klamath Basin Water Supply Enhancement Act (Act).

Recognizing the importance of enhancing water resources in resolving the difficult Klamath water conflicts, Reclamation in 1997 entered into a partnership with the States of Oregon and California and the Klamath River Compact Commission to begin a Water Supply Initiative. Based on information collected through sustained public outreach efforts, Reclamation has identified 95 potential projects.

Reclamation has subsequently requested and received funding to begin appraisal level studies to identify projects meriting further feasibility investigation. Expanding availability of groundwater, and increasing storage in existing project reservoirs were given priority under this program. An appraisal study was completed for raising Upper Klamath Lake. In addition, Reclamation initiated groundwater investigations in partnership with Oregon and California, and began a water marketing study in cooperation with the Klamath Water Users Association.

Public Law 106-498 provides Interior important authority and direction to advance efforts begun under the Initiative, and authorizes additional important feasibility studies. Representatives of Oregon and California are very interested in expanding the partnerships initiated with the Water Supply Acquisition Program by participating in the feasibility studies authorized in Public Law 106-498. Reclamation will be working closely with the States over the next few months to develop a comprehensive strategy for full implementation of the Act.

The Act authorized and directed the Secretary of the Interior to study the feasibility of:

- Increasing the storage capacity and/or yield of the Klamath Project facilities while improving water quality, consistent with the protection of fish and wild-life;
- Developing additional Klamath Basin groundwater supplies; and,
- Finding innovative solutions in the use of existing resources, or market-based approaches, consistent with state law.

Using funding previously provided for the Water Resources Initiative, Reclamation has been able to initiate partial implementation of the Act as follows:

Increasing Klamath Project Storage Capacity/Yield: In December 2000, Reclamation released an appraisal level report examining the desirability of raising the Upper Klamath Lake as much as two feet to elevation 4145.3 feet. The report considered two alternatives: 1) construction of new dikes and sea walls, and modification of existing dikes to contain the lake within its current boundaries, and 2) acquisition of lands inundated by raising the lake without structural construction or modification to contain the lake within its current boundaries. Option 1 is estimated to cost \$125 million and option 2 is estimated at \$129 million; the cost of either option is approximately \$800 an acre-foot. A feasibility study would consider environmental impacts and costs and benefits of raising the lake. The study is expected to begin on a limited basis during Fiscal Year 2001, using existing funding from the Water Resources Initiative.

Reclamation also has completed a cursory review of existing information to determine if it is feasible to increase the storage capacity by raising Gerber Dam an additional three feet. Feasibility of this project is considered likely, and collection of engineering data has begun. A plan of study is in preparation during Fiscal Year 2001, using existing funding from the Water Resources Initiative.

Developing Groundwater Supplies: In Fiscal Year 1999, Reclamation entered into a cooperative agreement with the Oregon Water Resources Department to study the potential of obtaining supplemental groundwater supplies in the Klamath and Lost River Basins in Oregon. Preliminary results indicate good potential for high production wells in the aquifer underlying lands irrigated by Shasta View Irrigation District. These wells should have a low impact on other wells in the area. In the 2001 irrigation season, an existing well will be pump-tested. If long term pumping appears feasible, a plan of study will be prepared regarding the potential to drill additional test and production wells.

Reclamation also entered into a cooperative agreement in Fiscal Year 1999 with the California Department of Water Resources (CDWR) to examine groundwater in the California portion of the Klamath and Lost River Basins. Since the Fall 1999, CDWR has performed semiannual water level measurements on 35 wells. Data will be collected over a three year period to assess the potential for groundwater augmentation.

In addition, Reclamation provided funding for a cooperative study by the Oregon Department of Geology and Mineral Industries and the U.S. Geological Survey (USGS) to determine the geologic potential for additional groundwater availability in the Wood, Sprague and Williamson River valleys. Information gained from that study could be used to initiate a full feasibility study.

Innovative Solutions: Reclamation recently initiated a one-year pilot Klamath Basin Irrigation Demand Reduction Program to determine irrigators' interest in receiving a payment in lieu of applying surface water to their irrigated lands. Results of the program will aid in development of a long-term demand reduction program. Reclamation received approximately 550 proposals from irrigators willing to forgo surface water on their irrigated lands in exchange for a combined total exceeding \$20 million. Reclamation's Fiscal Year 2001 budget for implementation of this program is approximately \$4 million.

Reclamation also initiated a groundwater acquisition program to purchase well water from willing sellers. Of 15 proposals received, 10 were selected at a combined cost of approximately \$1.2 million. The acquired water will provide up to 37,000 acre feet for use in meeting Klamath Project needs in 2001.

Public Law 106-498 directed the Secretary to complete ongoing hydrologic surveys in the Klamath Basin conducted by the USGS. The study is scheduled to be completed in Fiscal Year 2005. The Act also authorized the Secretary to compile information on native fish species in the Upper Klamath River Basin, upstream of Upper Klamath Lake. A compilation of existing information is currently underway, and will be used to determine the necessity of further studies.

Interior is committed to continuing implementation of the Act in partnership with the States. As soon as feasibility reports are completed, Reclamation will forward them to the Congress.

LEGAL ISSUES

The legal obligations associated with Klamath Project operations, including the need to operate the Project consistent with the Endangered Species Act (ESA) and the federal trust responsibility to the Basin's tribes prior to diverting water for irrigation, have been confirmed by the courts in *Klamath Water Users Protective Association v. Patterson*, cert. denied.

The Department currently faces various legal challenges asserting that Project operations violate ESA standards. Commercial fishermen and environmental plaintiffs have sued Reclamation regarding instream flows for the threatened coho salmon in the Klamath River in *Pacific Coast Federation of Fishermen's Ass'n. v. U.S. Bureau of Reclamation*, asserting Reclamation violated section 7 of the ESA because it operated the Project without a biological opinion from the National Marine Fisheries Service (NMFS). In the midst of another lawsuit, NMFS must make a final decision whether to list Klamath Mountains Province steelhead as threatened under the ESA by April 1 pursuant to a federal district court order in *Federation of Fly Fishers v. Daley*. Finally, the Department recently received separate 60-day notices of intent to sue from Klamath Tribes and environmental groups for asserted violations of the ESA regarding the endangered sucker species in Upper Klamath Lake, and the threatened bald eagle. All of these legal actions could affect Project operations significantly.

This concludes my prepared testimony. I am pleased to answer any questions you may have.

Senator WYDEN [presiding]. Mr. McDonald, our apologies, because we are going to have some votes. And Senator Smith has to run——

Mr. McDONALD. I understand.

Senator WYDEN [continuing]. To catch the vote. And as soon as I ask questions, I am going to run and get a vote. We are anxious to hear from Congressman Walden, as well. And there are a variety of committee rules that are going to make this something of a logistics kind of feat.

I guess what has troubled me about all of this is that if you are a farmer in this predicament, you have got to see that the Government has a sense of urgency. And when I hear about feasibility studies and all of the various terms that are being thrown around, that does not convey what Congressman Walden, Senator Smith, and I are hoping to convey. And that is, we have got to have some immediate answers between now and the next couple of weeks. And again and again, what the Government does just seems disconnected from the real world that we are facing.

I was just in rural Oregon this past weekend for town meetings. And it gave me a variety of other examples, as well. The deadline for crop insurance for the farmers in the Klamath Basin was March 15, for example. The biological, you know, plan comes out April 1. And what farmers want to know is why could those have not been coordinated? Why could those have not, at minimum, been brought together? NMFS has one set of water levels and Fish and Wildlife has another set of water levels.

I guess the one question that I would like to ask before I go and run off here for a few minutes is, what will you do now, immediately, for the next two weeks, to help us turn this situation around?

Mr. McDONALD. What all the agencies, Senator, are doing in the next 2 weeks is giving their undevoted attention to reaching a final decision, so that we can indicate to people what that decision is. And we certainly understand the urgency of dealing with the concerns that you have.

Senator WYDEN. With all due respect, that does not mean a whole lot to me and, I think, farmers and folks in rural Oregon. I mean, what I think is critical is that everybody has got to get some water, (a). And (b), everybody is going to have to give a bit. Nobody is going to be able to get everything on their wish list.

And I am going to run and catch this vote. I wish that Congressman Walden was allowed to keep this going, but Senator Smith will be back here in just a minute. And maybe that gives you a few minutes to flush out the answer, because what we want to know is exactly what these agencies are going to do to try to come together in the next couple of weeks to respond to what all three of us have outlined is the problem.

All right. I guess we have reached a procedural interim solution. And counsel will ask some questions at this point.

[Pause.]

Senator WYDEN. We are not in an interim procedural solution yet.

[Laughter.]

Senator WYDEN. Very, very good. We have counsel here to keep the hearing open. Congressman Walden will ask some questions. And a couple of Senators will be back in a few minutes.

Mr. McDONALD. Thank you, Senator.

Congressman WALDEN. Thank you, Senator.

See, if I took the gavel, that would mean I would be a Senator. And since both Oregon Senators are already here, one of them would have to give it up, and I—

[Laughter.]

Congressman WALDEN. I work for me.

Mr. McDonald, one of the big concerns of the draft Fish and Wildlife bi-op is the Bureau of Reclamation's failure to screen the Aid Canal diversion. What is the status of this project?

Mr. McDONALD. I am sorry. I do not know. Mr. Spear, do you know, for some reason?

Mr. SPEAR. Our opinion went back and required the screening. It is my understanding there has been lots of discussions and studies up to the time. And there is a team of people working on it. And there are some—I think there is an expectation it will be done in 2002. 2002 is the time when it is expected to be completed.

Congressman WALDEN. You said you went back and looked at a record of this. How long has this been pending or—

Mr. SPEAR. Well, it was in our 1996 opinion, I believe. And it went back and asked that the screening be done. It has not been done. And so, we reemphasized it again. But meanwhile, there has been a group of people working, between ourselves and the Bureau and others. And right now, the plan is to have it completed in 2002.

Congressman WALDEN. Do you have the funding, Mr. McDonald, to do that?

Mr. McDONALD. Unfortunately, I cannot comment on the President's budget request for 2002, of course. Let me offer, Congressman, to confirm an answer for the record, and follow up after the budget request comes out and answer that part, specifically.

Congressman WALDEN. Given that Fish and Wildlife requested this back in 1996, has the Bureau put in a request for funding in any of the years since that was in the 1996 bi-op?

Mr. MCDONALD. I do not know. I will be glad to respond for the record. I am sorry I do not have that information at my fingertips.

Congressman WALDEN. Mr. Spear, do you know? Has anybody ever asked for the money?

Mr. SPEAR. I do not know whether it is in the budget—was in the budgets or not. Actually, I need to correct something. It was in the original 1992 opinion, not the 1996.

Congressman WALDEN. So, this is 9 years. Nobody can tell me whether anybody has even asked for funding.

Mr. MCDONALD. I will get you the answer, sir.

Congressman WALDEN. Okay. Mr. McDonald, can we talk for a moment about the Hardy study? I hear more about this study from people I represent than—well, there is a long list of issues I hear a lot about, but can you explain to me why other technical staff are excluded from being able to participate or observe or—you know, this came up in our Klamath Falls hearing we had. What is the rationale there? Why can others not participate?

Ms. MCDONALD. I understand the concerns. Mr. Connor is prepared to respond.

Mr. CONNOR. Thank you. With respect to the Hardy report, there has been a process in developing the report, particularly the phase II Hardy report, that has involved a number of Federal, State and tribal representatives.

As you indicate, though, there has been some concern about the participation of specifically, as I know it, the irrigation districts' representatives is part of that process.

That determination was made that there was concern over their participation, due to concerns about violations of the Federal Advisory Committee Act, FACA. And that is not of a concern if just Federal, State and tribal governments participate in the process.

Now, there is even some concern with the perspective that FACA is at issue. And I think what we are doing and what the Department is doing, at this point in time, is saying, based on the process, where it is now, and the Hardy II report is not complete at this time, it is still being developed, there is an opportunity to have the irrigation districts represented as other interested parties participate in that process.

They can participate through the remaining meetings that will be available. I think that information has already been conveyed to those representatives. They will be able to participate in the meetings that are leading up to Dr. Hardy explaining his preliminary draft recommendations before it goes to the draft report, and also, through the peer review process.

The Department has already established a peer review team to evaluate the Hardy phase II report. The Department is certainly open to recommendations on additional peer review experts to be involved in that process.

And then, finally, even once the draft report is issued, there will be a public comment period, at which people can participate.

Congressman WALDEN. Well, Mr. Connor, with all due respect, and my memory may fail me—I would have to go back and look

at the actual testimony from the meeting we had in Klamath Falls—but a similar question was asked then. And we were told they were open to including these other technical people, and then they were excluded.

I hope you understand what we are getting a little frustrated with all of this. And I would be curious to know if there are other similar such studies going on in your agencies—any of you—where people are included that are not part of the group you have recognized.

Are there? Are any of you aware of any similar sorts of studies where these outside technical people are allowed in, where FACA is not invoked?

Mr. CONNOR. I think there is an ongoing process that involves the Klamath River Task Force. And that was a committee established pursuant to 1996 legislation, the Klamath River Fisheries Restoration Act, I believe.

Congressman WALDEN. I do not mean just in the—do not limit yourself just to the Klamath Basin. I mean, across Federal agencies, here.

Are you aware of others, where these sorts of technical people are allowed in the process?

Mr. CONNOR. I am aware of specific processes in which there is a more diverse group of folks. And we do that as part of negotiations that are ongoing. For instance, Indian Water Rights matters.

I think the issue that came up in the Klamath—for example, the Hardy phase II report is the attempts to build a collaborative—to get a consensus on an approach. And when you do that as part of a process, it invokes the concerns of the Federal Advisory Committee Act. And that was the basis for here; that concern being made.

And the other processes, I am just not aware of. I know the ones that we deal with, it is part of just an open forum. It is not a consensus-building process. And so, there is not that same concern.

Congressman WALDEN. So, is it fair to characterize what you said, then, that it is more important to have a consensus-building process that excludes a major group here from involvement, than to come together with a report that everybody can agree on? And what good is the report, if you exclude these people?

Mr. CONNOR. That is a concern, based on the limitations of Federal law. Now, I think what we are trying to do, in recognition of concerns, is see what can we do, given those concerns and the frustrations that have been expressed. And because we are kind of past—what we want to do is, before the recommendations come out, bring people into the process, so it is not purely a matter of commenting on a draft report, et cetera.

There is a process now, because we are past, you know, basically, consensus on the methodology, et cetera. But there is still a basis for interpreting Dr. Hardy's results and recommendations as a result of those methodologies. And we think that is where it is proper to bring people into the process.

Congressman WALDEN. Well, I think I would disagree with your decision on that, but I respect your point of view.

Senator SMITH [presiding]. Thank you, Congressman.

Bill McDonald, can the Department provide, by this Friday, to this committee, the contracts and scope of work for the Hardy phase I and phase II studies?

Mr. McDONALD. Mr. Connor will respond, Senator.

Mr. CONNOR. Senator and Congressman Walden, you all sent a letter to Secretary Norton regarding this specific issue. And the Department is preparing a response. And we anticipate including the scope of work as part of that response, as per your request in that letter.

Senator SMITH. Will we have it by Friday?

Mr. CONNOR. I am not sure what the exact timing is. It is on a fast track to get that response out to you in writing.

Senator SMITH. Thank you.

Mike, the draft biological opinion seems concerned that the project actions will take 1,000 bald eagles. But since the project's long-term plans include water delivery to the wildlife refuge, I am wondering where that service comes up with the taking of 1,000 eagles.

Mr. SPEAR. I admit that is confusing. What we are required to do is to provide incidental take coverage. And the broad definition of "take" includes such things as harm and harassment. So, in a very literal sense, it may fit the definition.

We do not expect 1,000 eagles to be killed or maybe even one. But the change and the lack of water, to the extent that eagles' behavior will be changed if there is less water, if there is less food available, it could fall in the category of.

So, frankly, to be safe and to provide the protection, we just simply provided the incidental take coverage for whatever occurs as a result. We do not expect there to be any massive eagle die-offs. It is a non-jeopardy opinion.

But rather than get involved in a situation where people are quibbling about whether or not they are affected, it gave very broad coverage.

Senator SMITH. You think it is unlikely that a court would look at that language and interpret that, even though we are getting water to the basin, to the refuge, that we are going to be killing 1,000, and they would use that against farmers.

Mr. SPEAR. To the extent that we have heard that comment a few times in the last week or so, since our opinion has been out, we are going to be looking very carefully in how we write it in the final, so that we do not run into that problem.

Senator SMITH. That would be appreciated, because I think that presents a very—it gives a very different impression than the one you have just described. And I think it can be more artfully described.

In the draft bi-op, Mike, let me read you something that concerns me. It is on page 171. "Implementation of RPA"—reasonable and prudent alternative; that is what those initials mean—"allows the project to meet its intended purpose in most years, once demand is decreased, to provide water for irrigation and refuge use."

I am focusing on the phrase, "once demand is decreased". I read that to mean that farmers are going to be put out of business. Is that what that is that a pre-determined objective?

Mr. SPEAR. Not in those terms of putting farmers out of business, but I believe that most people who have looked at this situation in the Klamath Basin needs—think that we need a combination of supply increases, supply augmentation, conservation, changes in demand patterns, et cetera, and probably some change in demand.

And so, I would say that that is shorthand for the sense we have to—there will be a new balance in the future that I think we have to find as a result of the legislation you put in.

Senator SMITH. Because of the water storage.

Mr. SPEAR. And that we will have to take a hard look at the whole basin. And there are lots of different factors. And one of those factors will likely be some demand reduction as a result of conservation or changes in the total number of acres irrigated.

Senator SMITH. Well, since this is just a draft bi-op, I hope the final draft will take that out, or at least make clear, in explicit terms, that farmers are a part of the equation, because I think that tells them they are the reason there is going to be a decrease in demand.

Does the Fish and Wildlife Service actually consider it reasonable and prudent to have no water deliveries to agriculture in any one particular year?

Mr. SPEAR. I guess that is difficult to answer in those sort of stark terms. And unfortunately, that is the kind of stark situation we are in.

I think that when you look at the project operations, it would be argued that within the project operations you could have a situation in an extreme drought that that would be a reasonable and prudent activity in order to avoid a jeopardy situation for either the suckers or the downstream salmon.

Senator SMITH. If that is the case, I am wondering if you can think back with me to years like 1992, 1994. The Upper Klamath Lake elevations were well below those in the current year. And the lowest ever was, in fact, 1994. The Klamath River flow at Irongate Dam was much lower than average, according to the records I have seen.

Do we have any evidence that adverse effects to fisheries occurred in those years, compared to any other year? And if so, what were they?

My recollection is, the farmers got water, and what was the damage? Those were severe drought years.

Mr. SPEAR. Well, we have had—the situation has gotten steadily worse since that period of time. And what we have done in this opinion is bring the science and the biology up to date with where we are.

And fundamentally, we believe the sucker situation is—we are in a position that we cannot afford a significant probability of a large die-off. The sucker population, as a result of three big die-offs in the nineties—1995, 1996, 1997—losing a great percentage of the adult suckers is in a position where another large die-off could potentially put it in a position where it would be very hard to recover the species.

Senator SMITH. And what—

Mr. SPEAR. And that is what this opinion is about. It is basically saying we are in a very precarious situation. We must take actions to try to minimize the probably for a large die-off.

And even there are situations where we have seen in the past, in drought years—some drought years did not have big die-offs. On the other hand, you did not get recruitment in some of those years.

Senator SMITH. Do you have any—to what do you ascribe the big die-off?

Mr. SPEAR. The big die-offs in 1995 and 1996, we believe that, fundamentally, it is this—the problem of low dissolved oxygen, as a result of the low water quality, temperature—

Senator SMITH. Low water levels—

Mr. SPEAR [continuing]. Lake levels, et cetera. A combination of many things. It can be affected by wind, temperatures, nutrient loadings. The situation is simply getting worse.

Senator SMITH. What I am understanding, though—I believe to understand is that the lake levels, now, are much higher than in those years, but it did not—those years did not warrant a total cut-off of farmers, but somehow it does now.

Mr. SPEAR. Since 1997, the lake levels have been kept at 39 or above. And we are now calling for 40. We are going up one foot higher as a result of this opinion.

And you know, very simply put, during periods of holding the lake levels at 39, we have seen die-offs. We feel that we need two things.

First of all, keep from having die-offs, but also provide cover—spawning habitat and cover for juvenile fish that will be provided by the higher lake levels in the spring and early summer.

So, we are trying, both, to keep the older fish from dying off and get some strong age classes of young fish. We need a few years in a row to get some strong cohorts that will carry on for the future. We are relying very heavily on a 1991 cohort at this stage. It is our only strong year class that we have.

Senator SMITH. Okay. Michael Connor, can you tell me who is making the selection for peer reviews? Who is making that decision? And my guess, is this—can this be characterized as an independent peer review that is being selected?

Mr. CONNOR. My understanding that the selection of the peer review was done by a recommendation of Dr. Hardy discussed as part of the technical review committee that exists, that has been participating in this Hardy phase II report process. And they have developed this group of internationally known experts to sit on the peer review team and provide some feedback on the preliminary report. And that is how it stands at this point in time.

Congressman WALDEN. Mr. Chairman, if I could follow up on this issue.

So, did I hear you correctly, then, it is the people who have been doing the technical advising now in the Hardy study are picking the people who will do the peer review? Is that what you said?

Mr. CONNOR. I think that is how the process is evolving.

I am sorry. I guess I should not guess at answers, Congressman Walden. It was Dr. Hardy, actually, in consultation with the Justice Department, who has the contract, and the Bureau of Indian Affairs, who selected the present make up of the peer review team.

Congressman WALDEN. Who selected the present make up of the—whatever it is—the technical advisory committee to the Hardy study, then?

Mr. CONNOR. That was, I guess, an invite to the interested agencies that could participate in the part of that process. And that review team that has been participating in this process is made up of representatives of the Bureau of Indian Affairs, Bureau of Reclamation, the Fish and Wildlife Service, National Marine Fisheries Service, California Department of Fish and Game, the Hoopa Valley Tribes, the Yurok Tribes, and the Karuk Tribes—I think I have got them all—and the U.S. Geological Survey.

Congressman WALDEN. Any farm tribes in there? Well, I guess that is the concern I keep hearing, the one I share is, do we have the fox guarding the chicken house here? I mean, is it the same people are going to look—in effect, it seems like, pretty much, an inside game.

Now, on the Bay Delta study in Cal-Fed, was FACA involved—was invoked there?

Mr. CONNOR. I am not sure if it was or not.

Congressman WALDEN. It was involved. It was invoked. I am seeing somebody in the audience say that. I was under the impression it was not.

Mr. SPEAR. Mr. Walden, I have been involved in Cal-Fed and we do have a FACA charter committee, and we also have a science team provided for on the Cal-Fed committee. And they are in—they have been involved now for about the last 9 months. And they have been bringing together various peer review efforts on various matters.

We go to the science advisor, who then, you know, selects a board to review issues.

Congressman WALDEN. So, FACA—you have had these involved under the FACA for the last 9 months. Is that what I heard you say?

Mr. SPEAR. I am saying the overall Cal-Fed has a FACA chartered committee, but we have also provided, you know, a science advisor to the Cal-Fed, which is a State-Federal team—

Congressman WALDEN. Right.

Mr. SPEAR [continuing]. That then provides appropriate peer review on the topics as they come up.

Congressman WALDEN. Are you familiar with the Bay Delta study, that preceded Cal-Fed?

Mr. SPEAR. Yes. I am involved in that.

Congressman WALDEN. Was FACA involved—invoked there?

Mr. SPEAR. Yes.

Congressman WALDEN. From the beginning?

Mr. SPEAR. Yes. It was set up very early on to have the public advisory committee.

Congressman WALDEN. So, are there outside technical people looking at this? I mean—

Mr. SPEAR. Daily.

Congressman WALDEN. Why are they not in the one I am talking about, then, the Hardy study? What is the hang-up here? Why can they not be included?

Mr. CONNOR. My understanding is that the concerns were FACA related. And be that as it may, and I am certainly no expert in FACA, I think, right now, we understand the frustration and want to involve other parties, and believe that for whatever—there is a point in the process, now, where we are at, where we can open up the process to other parties.

And too, I think—and this is going to be part of the Department's communication—we are very open to having additional recommendations on who should sit on the peer review team. And if that comes through, the Water Users Association representative participate in that process, we are willing to look at that. If they are qualified to do the peer review, then we are open to those recommendations.

Senator SMITH. I think that needs to happen. And I think the unfortunate thing in all of this is that it looks, to this person, to this Senator, that there is already a pre-ordained conclusion. And the farmers have not been part of this equation.

They have already been notified there is no water for the year. And that frankly means there is no farm community in Klamath Falls next year. I just do not think that that ought to be the policy of this government. And so, whatever you can do, within the law, within the bounds of equity and fairness that are a part of that law, give them some water.

Senator WYDEN.

Senator WYDEN. Thank you, Mr. Chairman.

I want to come back to the question that I asked right before we broke.

Everybody that I talked to on this issue understands that the best and most valid solution is that everybody gets some water and everybody gives some water. That is what it really takes to get, you know, this done.

We have two of the three major players here, in terms of Federal agencies—Mr. McDonald and Mr. Spear. NMFS is not here, but I would like you to take us through the nuts and bolts of what is going to happen when you leave here, over the next 2 weeks, to try to come up with something resembling the solution, you get some water and you give some water.

I mean, who are you going to talk to at NMFS? And how are we going to go about, over the next two weeks, dealing with this crisis?

Mr. McDonald? Mr. Spear.

Let me try to respond first, Senator.

It seems to me, the focus among the agencies is going to be two-fold. First and foremost, we obviously need to put our collective wisdom together and see if reasonable and prudent alternatives can be shaped in a way consistent with the requirements of the law and tribal trust assets that achieve a result that yields some project water at the same time. And that will be, I think, what we devote ourselves to.

Senator WYDEN. Give us an example of a reasonable and prudent alternative, so that we can ask our constituents, people who give us an election certificate, whether it is reasonable and prudent. What would be an example?

Mr. MCDONALD. I am not prepared, having, myself, not read the biological opinion still in process to comment on that. We have got our staff busy with it.

As we indicated, we are having meetings next week. That is the issue that will be in front of all of us; the two fishery services, from their perspective, trying to judge if the legal requirements of the ESA can be met; from a Reclamation perspective, trying to look for what is technically and economically feasible that meets that jeopardy standard at the same time.

And then, between the two fishery services, obviously, there have to be discussions about the requirements of one set of species versus the other set of species, and the problem I alluded to, based on our initial modeling run, that it appears we cannot simultaneously achieve the end results of both draft biological opinions at the same time.

Senator SMITH. Especially this year, right?

Mr. MCDONALD. In this water year.

Senator WYDEN. Mr. Spear, what is going to happen when you all leave here today?

Mr. SPEAR. Well, I think what happens between this draft and final stage—and of course, this is extremely compressed when we get these out versus when they have to be completed.

If the first thing that people look at—and we have received the report from the ag community about the science on the lake levels that is under review, but it really is a matter of sitting down—and usually this is under the aegis of the action agency, in this case the Bureau of Reclamation, pulling the parties together in some form, you know, whether it is a group here or a there, but somehow getting the parties together.

You know, first, you have got to look at the science. What are the other views about the science? And we have another viewpoint put in front of us. We have just now gotten the NMFS report and reactions to that. What are the views of the science?

There will be discussions required between ourselves and National Marine Fisheries Service. We were aware, when we wrote our opinions, and you will find similar language in each, that this year was so bad there is even a competition between our opinions.

So, we will have to work with National Marine Fisheries Service to set up rules; most likely, some sort of parameters that says if this happens, then a precedence will be given to salmon; if this happens, then a precedence will be given to the suckers, to try to balance out on a real-time basis as the year goes along, how do we make decisions from that point of view.

But then the tribes, the fishery community, the irrigators—you know, sort of, some brainstorming. What are all the places you can get water? To what extent can—you know, Reclamations—purchase of water or demand reduction.

From our refuge point of view, one of the things that we are already doing and that we have approached the—most appropriations committees last week to allow us to get moving on our pumping. We hope to be able to provide some wells. And we have done some studies and—where we have completed the studies to allow us to drill some wells to bring on about 20,000 acre feet of water

for this fall to help us alleviate about one-third to a half of our crisis problem on the refugees.

So, we have some action underway there. Obviously, it will be a very intense time. I will go back over a couple of key factors.

Exploring the science. What are the other viewpoints out there? Can you find a way through this with credible science?

Secondly, looking at the options for water supply, and to what extent there is demand reduction capabilities for this year.

Putting all that together and hopefully then coming out with something that is "an RPA" that provides some for everybody. As we stated in the beginning, by Mr. McDonald, we cannot over-emphasize the fact that this is not just a drought year; this is a minimum, a worst case situation; not a good time for anybody to be having to deal with the new information.

Senator WYDEN. Gentlemen, again, I am just not clear what the nuts and bolts are going to be all about over the next couple of weeks. There is no question in my mind that your agencies do intend well. That is not what is in question. But I think, if you are the community, you want to know who is going to meet with whom. And you want to know when the meeting is going to take place.

For example, just as I listened to the answers—for example, it was not clear to me whether there were going to be immediate meetings between you and the stakeholders, which is what I think is important. I think that is what Senator Smith and Congressman Walden were saying, is that we think that given how urgent the situation is, we need you two and NMFS to meet immediately with the stakeholders. And so, that is, sort of, my version, nuts and bolts, of who is meeting with whom.

Mr. McDONALD. I am confident we can commit to that as early as tomorrow, if the stakeholders are available and wish to do it, as many of them are here or back in Klamath or probably a combination of all of those.

Senator WYDEN. Great. The stakeholders have told Senator Smith, Congressman Walden, and myself that they are ready, willing, and able to meet immediately.

So, now, we have determined that you are going to meet with them; that your agencies—and you will get the NMFS people, you know, there, and the other—

Mr. McDONALD. We will certainly ask them. And I cannot imagine that they will not be available.

Senator WYDEN. And then you just answered the when question; that that can be tomorrow.

Mr. McDONALD. If they are in town and they would like to do it, we will do it tomorrow, or the area manager can head for Klamath and do it there Friday.

Senator WYDEN. That sounds like a bit of progress.

Thank you, Senator.

Senator SMITH. Okay. Well, thank you, gentlemen, for being here. Your testimony is appreciated. And your efforts, in the next 2 weeks, are doubly appreciated. We really do hope that you can find a resolution to a very difficult problem. We recognize that.

Our next panel will consist of six gentlemen. There will be two others sitting behind them, if they wish, for consultation or support.

These next witnesses are Allen Foreman, chairman of the Klamath Indian Tribes; Reed Marbut, intergovernmental coordinator, Oregon Water Resources Department; Roger Nicholson, president, Resource Conservancy; Glen Spain, Northwest regional director of the Pacific Coast Federation of Fishermen's Associations; John Crawford, who is a farmer; Dr. Alex Horne, professor, Department of Civil and Environmental Engineering, U.C., Berkeley. Accompanying John Crawford will be David Solem. And accompanying Alex Horne will be David Vogel.

We welcome you all. And we are glad you are here. We will start at this end. Allen, nice to have you here, nice to see you. Welcome. We will start with you.

**STATEMENT OF ALLEN FOREMAN, CHAIRMAN, KLAMATH
INDIAN TRIBES, CHILOQUIN, OR**

Mr. FOREMAN. Thank you, Mr. Chairman, Congressman Walden. I see Senator Wyden is out right now. So, thank him, also.

The Klamath Tribes appreciate the opportunity to present our views on the water problems in the basin. In order to understand the problem appropriately, it is important to understand the historical roots.

In the Treaty of 1964, the Tribes were guaranteed the water needed to support our fisheries and other resources. As I listen today, I am not sure that that is a component in a solution. And as I understand it, the treaties are the universal law of the land. And they are very important here.

Later, when the Government invited the farmers into the basin and suggested that water would be available, the Government did not tell the farmers about the Tribes' water rights. They suggested there is water available for all and they did not tell them.

And then, for nearly a century, the State of Oregon has been issuing permits without regard to tribal water rights, and until recently, without regard for the natural health of the rivers, lakes, and marshes.

It would be incorrect and unfair to blame the Klamath Tribes or any of the Tribes for the current water shortage. The real problem is that demand for the water in the Klamath Basin has been allowed to exceed the supply. There is just no other way to put it.

I hope that everyone can understand why the Tribes continue to defend their water rights, in the same way all other users and everyone else in the basin seeks to reinforce their own rights and claims.

It is hard, this year in particular, for anyone to think about a future, when the present looks hopeless; particularly in agriculture. We know—we at the Tribes know that livelihoods are at risk, but we would like to remind you—all of you—that overuse of water has severely damaged the livelihoods of our own families. We have suffered for years. We are in the same situation. And I am not sure that there was any hearings concerning that at the time.

We no longer have the salmon runs that nourished us. They were extinguished in one heartbreaking act. No one seemed to care at that time. Our sucker fisheries have been closed for a decade.

Now, people are suggesting that the fish may be dying because of too much water. This is nonsense and based on the false as-

sumption about the depth and chemistry of the Upper Klamath Lake. It is also based on a failure to understand the physical habitat needs of the fish. The amount of water available for the fish today in Upper Klamath Lake is much less than what nature provided when the fish thrived. There is much less water available.

Harvesting fish is our heritage and our legal right. It is important to our livelihood, as any other crops grown in the basin. An artificial scheme to support just enough fish to keep them from extinction can neither satisfy the commitments of the Treaty nor the Endangered Species Act.

It certainly will not allow the Klamath Tribes a livelihood. The Federal Government's responsibility to our people will not be met until the fish populations are restored to harvestable levels, not just maintain their existence.

I want to emphasize that while there are serious errors of fact in the fish recovery plan offered by the Water Users Association, we are very pleased to see that the Water Users are joining the Tribes in recognizing that the fish are, in fact, in trouble, and that a comprehensive plan must be developed to restore the Klamath Lake and its tributaries.

Most important, it is a good faith and good sense, shown by the Water Users, in recognizing, as the Tribes do, that the fish are in trouble because the health and productivity of our waters have been decimated.

We also believe, very strongly, that the Federal Government has a responsibility to the farm families, who, like the Klamath Tribes, now depend on a water system that is simply not capable of meeting the current demands.

We, as a people, who, for years, have felt the pain of being unable to meet the demands of our families and subsistence needs of our families and communities. We do not want to see our friends and neighbors in the agricultural communities suffer. That is not what we are about. Sharing the benefits of nature's bounty is one thing, but now we must also share the adversity caused by decades of ineffective resource management.

Today, we all need to focus on the present problem. The Tribes have been a leader in a search for an effective solution to the water problems. The goal must be in restoring and sustaining a healthy and functioning system to support multiple uses. That has to be the long-term goal.

This is the stewardship for which we believe that the creator expects of us all. Solutions need to involve all parties, including the downstream users and the downstream Tribes.

We have put forth a framework for a comprehensive settlement proposal that will really work. We need to repair damage so water quality and habitat can improve for fisheries.

We need to restore the Tribes' ownership of our homelands, which contains a significant portion of the watershed so that our people can restore the health of the forests, the streams, the springs that nurture our water supply, and so that we will be able to restore a much needed subsistence base.

We need to reduce the demand on the system to a program that fairly rewards the agricultural community for retiring land, so that the remaining lands can be sustainably farmed. It is not our inten-

tion to cut agriculture back—I mean, to cut out agriculture completely, but we want to make sure that those that are in business can maintain and stay in business effectively.

The basin will not regain its health by trading symptoms while avoiding the causes of our water shortage. We will not recover healthy fisheries by trying to put the fish in Klamath Lake on a life-support system or treating them as if they were in an aquarium.

We need to restore nature's productive capacity in Klamath Basin. Otherwise—this is an important point—we will be back here at hearings like this next year and the year after, and every water-short year to come, unless we get a long-term solution.

So long as it is consistent with the recovery of our fisheries from the lake, the Klamath Tribes will be as flexible as possible regarding the delivery of irrigation water from the lake.

We have outlined a comprehensive restoration proposal, based on extensive discussions with the Water Users Association, other ranchers and farmers in the State of Oregon and their own people. Not surprisingly, the current crisis is a predictable result of the Federal Government making more promises than it can keep.

Those of us who face the consequences of those empty promises cannot build a future by turning on each other. The fisheries, the farming communities, the Klamath Tribes culture, and the economy, they are all at risk.

I would like to ask this committee to provide the leadership, so that all of us who live in the Klamath Basin can work together for a lasting solution, not an inadequate quick fix.

Senator Smith, we all need real help. Congressman Walden, we need real help, so that—we need real leadership from you, from the Congress, from President Bush, and these agencies. Please help our great Nation see that for all our people and cultures, for all the extraordinary wildlife and natural beauty of southern Oregon and northern California, the Federal Government that created these conflicts can and must take responsibility for helping us restore the sustainable Klamath Basin.

[The prepared statement of Mr. Foreman follows:]

PREPARED STATEMENT OF ALLEN FOREMAN, CHAIRMAN, KLAMATH TRIBES,
CHILOQUIN, OR

Good afternoon, Mr. Chairman and members of the Subcommittee. My name is Allen Foreman and I am the Chairman of the Klamath Tribes of Oregon. I appreciate my opportunity to offer testimony before this Subcommittee on behalf of the Klamath Tribes. It is timely to have an oversight hearing which focuses on the Klamath Project in Oregon, including implementation of P.L. 106-498 and how the Project might operate in this water short year. There is a drought in the Upper Klamath Basin which stands to adversely affect the Klamath Tribes' treaty protected fishery, waterfowl populations of international importance, and local farming interests.

Mr. Chairman, thank you for your attention to these issues. The present water crisis dramatically underscores the paramount natural resource problems in Southern Oregon that have been brewing for a century: all beneficial uses are threatened because of terrible water quality conditions combined with serious over-appropriation of the water supply by the federal and state governments. The crisis faced this year by farmers, by the natural system and its fisheries, and by the Klamath Tribes is the predictable, inevitable result of careless land and water management by the federal government. Until we restore the productive function of the Upper Klamath Basin watershed, short-term fixes will simply leave us poorer, and no better prepared for the next crisis. This will be true whether we pay for quick fixes in dollars

or in damage to Upper Klamath Lake and its fisheries. Policymakers must clearly understand that demand for water must be reduced to levels that can support sustainable agriculture and that uses of land must contribute to, not retard, the restoration of decent water quality to our rivers and lakes.

The federal and state governments have overtaxed water supply by promising too much water to too many people. First, the United States acknowledged in the Treaty of 1864, the legal and property rights of the Klamath Indians to water sufficient to meet the Tribes' hunting, fishing and gathering needs. Later, the United States encouraged non-Indian settlement in the semi-arid area of the Klamath Project by suggesting that this same water could be used for agriculture. Finally, since 1909 the State of Oregon issued water permits in over appropriated streams and water bodies without regard to pre-existing federal commitments.

The Klamath Tribes stand ready to work with you and your staff to rectify the problems which vitally affect the United States' Indian treaty and fiduciary obligations, the environmental integrity of the Basin, and the well-being of Indian and non-Indian farmers. We are pleased to see the Klamath Water Users joining us in recognizing that the fish are in trouble and that a comprehensive plan must be developed to restore Klamath Lake and its tributaries. While their proposal is, as we explain below, in many ways flawed, it nonetheless suggests to me that we will somehow find a way to come together to restore the Klamath Basin we all care for so deeply.

Before proceeding further, I would like to remind you that over-use of the water has already severely diminished the livelihoods of our Tribes' families.

- We no longer have the salmon runs that nourished us. They were extinguished in one heart-breaking act.
- Our sucker fisheries have been closed for over a decade. Some people try to claim the fish are dying because of too much water. This is nonsense. Well intended nonsense, perhaps, but nonsense none the less. The amount of water available to fish in Upper Klamath Lake is today much less than Nature provided when the fisheries thrived, as the federal government's own scientists will tell you.
- Waterfowl populations are severely reduced due in part to inadequate water supplies at lakes and marshes in the Basin.
- Mule deer populations are at all time lows, below even the modest goals of state wildlife managers.
- Important plants like wocus, sedges, and tules are in limited supply due to fluctuating water management decisions.

Harvesting fish is our heritage and our legal right, as important to our livelihood as harvesting any other crop grown in the Basin. An artificial scheme to support just enough fish to keep them from extinction might satisfy the Endangered Species Act. But that will not allow us a livelihood and will not fulfill the commitments of the Treaty. The federal government's responsibilities to our people will not be met until fish populations are restored to harvestable levels.

We also believe the federal government has a responsibility to the farm families who, like the Klamath Tribes, now depend on a water system that is simply not capable of meeting current demands. In that light, my testimony will provide:

- 1) an overview of existing federal laws and legal obligations relating to federal water management in the Klamath Basin, including obligations to protect the property rights of the Klamath Tribes;
- 2) summary comments on the Klamath Water Users Association's proposal to lower water levels in Upper Klamath Lake during this drought year to meet agricultural needs;
- 3) recommendations on drought relief measures that can be taken this year; and
- 4) a concrete proposal for a long-term solution that addresses underlying water-related problems through a comprehensive Indian water settlement proposal being advocated by the Klamath Tribes in Oregon's Klamath Basin water rights adjudication.

My testimony makes three general conclusions: First, the Klamath Project must operate according to existing federal statutes, legal obligations and priorities imposed by Congress and federal courts. Regardless of the weather, federal water management is governed by the rule of law. That legal framework must guide Project water operations during this year. Second, while the Tribes share the goal of obtaining for all Basin water interests any useful federal assistance during times of drought, excessive lowering of Upper Klamath Lake in the face of substantial scientific studies counseling against such a step will only exacerbate long term Basin water problems. It is not appropriate to consider exposing the Lake's fisheries to even greater risk when the provisions that might make such a risk acceptable are

not yet in place. There are other effective means of drought relief which this Subcommittee can and should be provide consistent with existing federal laws and legal obligations by:

- a) continuing and increasing existing agriculture drought relief to Project farmers;
- b) providing technical assistance to Reclamation and Basin farmers to develop a basin-wide agriculture water conservation plan that can be implemented with federal funding assistance;
- c) ensuring that the Klamath Basin water supply augmentation feasibility studies mandated in P.L. 106-498 are completed by the Bureau of Reclamation in consultation with the Klamath Tribes, State of Oregon and agriculture community; and
- d) facilitating prompt, high-level state and federal policy consideration of the proposed Klamath Indian water rights settlement, discussed below, which is the only comprehensive means yet identified to provide a long-term solution to the underlying water problems being addressed by the Subcommittee.

Third, to facilitate policy consideration of the Basin water rights settlement as the key to long-term solution of Basin water problems, the Klamath Tribes request the Chairman's leadership in bringing the Secretary of the Interior, Governor of the State of Oregon and other diverse parties together to expedite consideration and further development of the Tribes' settlement proposal. Principles for the proposed settlement have been submitted by the Klamath Tribes in the Alternative Dispute Resolution process established in Oregon's Klamath Basin Adjudication. (See Attachment A,* copies are available upon request, due to legal requirements compelling its treatment as a confidential settlement document.) It is important to remove barriers to speedy consideration of that settlement by federal and state policymakers. A Basin water rights settlement is the only vehicle having real potential to comprehensively solve the acute water supply, demand, quality and allocation problems which, together with related endangered species and tribal trust and property right issues, fuel the present crisis.

1. The Klamath Tribes have property rights that are a vital interest in the water issues presently before the Subcommittee and the Tribes are an indispensable party to Basin water solutions.

Because the Klamath Tribes have clearly established property rights associated with the water and fisheries of Upper Klamath Lake—which is the major water storage facility for the Klamath Project—the Tribes are a major stakeholder in Klamath Basin water matters. The Tribes are indispensable to resolving the short-term and long-term underlying water issues raised in this hearing on a government-to-government basis in partnership with this Subcommittee, state and federal governments.

By way of background, in *United States v. Adair*, 723 F.2d 1394 (9th Cir. 1984), the court held that the Klamath Tribes own a federally reserved water right, with a time immemorial priority date, to Klamath Basin waters in a sufficient quantity to support treaty hunting, fishing and gathering activities. *Adair* left quantification of that right to the State of Oregon's pending Klamath Basin water rights adjudication. As trustee for the Tribes, the United States filed extensive water rights claims in that proceeding which include significant water claims in Upper Klamath Lake which can conflict with—and could preclude—Project water use. Federal protection of the Klamaths' property right to this water is part of the United States' trust obligation owed to the Klamath Tribes. See, *Department of the Interior and Bureau of Indian Affairs v. Klamath Water Users Protective Association*, — U.S. — (U.S. Sup. Ct., No. 99-1871, Mar. 5, 2001).

The federal government's trust obligation to protect the Tribes' property interests in Upper Klamath Lake—which include two treaty-protected fish species listed under the Endangered Species Act, as well as water rights in the Lake—is not subject to debate. In *Klamath Water Users Association v. Patterson*, 204 F.3d 1206, 1213 (9th Cir. 2000), the court examined the respective water rights of Project irrigators and the Klamath Tribes and held that the Klamaths' water rights are superior, stating:

The irrigators aver that the existence of the Tribes' senior water rights are irrelevant to the current dispute, and that the district court's conclusion that the Tribes have senior water rights should be vacated. The district court found that the irrigators' water rights were subservient to senior tribal water rights. See, *Klamath*, 15 F. Supp. 2d at 996.

*The attachments have been retained in subcommittee files.

Similar to its duties under the ESA, the United States, as a trustee for the Tribes, has a responsibility to protect their rights and resources. See, e.g., *United States v. Adair*, 723 F.2d 1394, 1408-11 (9th Cir. 1983)

* * *
 We have held that water rights for the Klamath Basin Tribes “carry a priority date of time immemorial.” *Adair*, 723 F.2d at 1414. Because Reclamation maintains control of the Dam, it has a responsibility to divert water and resources needed to fulfill the Tribes’ rights, rights that take precedence over any alleged rights of the Irrigators. Accordingly, we hold that the district court did not err in concluding that Reclamation has the authority to direct operation of the Dam to comply with Tribal water requirements.

See also, *Department of the Interior and Bureau of Indian Affairs v. Klamath Water Users Protective Association*, *supra*.

The Klamath Tribes are sensitive to the fact that quantification of their water rights has the potential to disrupt junior water uses in the Basin, including Project water use. Accordingly, several years ago the Tribes approached the State of Oregon, the Department of the Interior and Project water users to explore interest in developing a comprehensive Indian water rights settlement that addresses the underlying Basin water problems on a comprehensive “win-win” basis.

Since then, significant progress has been made in fashioning a water settlement negotiation framework and in developing principles for a comprehensive Basin water rights settlement. Congress often enacts federal legislation approving and implementing Indian water rights settlements that protect both existing water use and newly quantified Indian water use through a variety of means. Such an approach must be used in the Klamath Basin where water shortage, poor water quality, endangered species issues, and habitat restoration must be addressed so that existing water uses can be protected while Indian water needs are provided for. Such a result would place all of us, including the Subcommittee, on a path to resolving all of the water issues presently before us. As discussed below, no other forum exists which can provide this relief in one package. The present water crisis should prompt all parties to address the water settlement as an extremely high priority.

2. The legal framework for federal water management must be adhered to, even in drought years.

The legal guidelines for Klamath Project water management have been clearly set forth by the federal courts and the solicitor for the Department of the Interior. See, *Klamath Basin Water Users Protective Association v. Patterson*, *supra*. See also, *United States Department of the Interior Regional Solicitor Memorandums, dated July 25, 1995* (Attachment B hereto)¹ and *January 9, 1997* (Attachment C hereto).² Under federal law, Klamath Project water must be managed—in order of legal priority—for Endangered Species Act, federal Indian trust (including senior water rights), agriculture and wildlife refuge purposes.

Accordingly, Reclamation is not free to manage the Klamath Project in derogation of the property rights of, or the fiduciary duty owed to, the Klamath Tribes; the United States must protect the endangered, treaty-protected fish species resident in Upper Klamath Lake.

In order to comply with the Endangered Species Act, it will be necessary for Reclamation to secure an updated Biological Opinion this year to incorporate almost ten years of intensive scientific studies. These studies were mandated by a Biological Opinion in 1992 and were demanded by people who doubted the water needs of the fish. The studies show quite clearly that those needs are real. See, *Klamath Tribes’ Letter to Secretary Norton, dated March 2, 2001* (Attachment D hereto); *Environmental Organizations’ letter to Secretary Norton* (Attachment E hereto).

As explained in those letters, the law requires that where, as here, significant new knowledge bearing on protection of endangered species is acquired, that knowledge must be incorporated into a Biological Opinion to inform Project operations in order to protect survival of endangered species and to respect tribal property rights

¹“Reclamation must exercise its statutory and contractual authority to the fullest extent to protect the tribal fisheries and tribal water rights. Reclamation must also, consistent with its statutory, contractual and trust obligations, fulfill the rights of the project water users and the refuges.” *Id.* at 10.

²“Pending completion of *the [State of Oregon] adjudication, Reclamation is authorized and obligated to manage and operate the Klamath Project consistent with all of Reclamation’s responsibilities and obligations concerning senior water rights, tribal trust resources, Project users’ contractual rights, the Endangered Species Act and other requirements mandated by law and within the authority of the Secretary.” *Id.* at 11.

in the Lake fisheries. That science must guide the operation of the Klamath Project according to the legal priority described by the federal courts.

3. The proposal to lower Upper Klamath Lake during the drought year in order to meet agricultural needs is scientifically flawed.

There is no doubt that all appropriate and legal steps should be taken to help farmers adversely affected by the lack of water this year. The Tribes are in full support of such relief. However, a proposal recently put forth to lower Upper Klamath Lake in order to free up water for irrigation use is neither scientifically nor biologically sound. It will subject endangered fish to enormous risk of a sliding nearer to extinction and will only exacerbate the water problems of the Basin.

The recent proposal ignores the rigorous analysis of fifteen years of data provided by a variety of agencies, institutions, and individuals. The Lake and its fisheries have been studied closely by scientists from the U.S. Fish & Wildlife Service, the Bureau of Indian Affairs, Oregon State University, the University of California at Davis, the United States Geological Survey, the Klamath Tribes, and private consultants. This work is exceedingly well documented, incorporating voluminous data sets collected over many years and carefully analyzed and presented. This work clearly indicates that both fish habitat and water quality will improve if Lake levels are maintained above those implied by the recent proposal.

The proposal stands alone against the great weight of these authorities and, unlike these authorities, does not provide a rigorous analysis of the enormous amount of information available regarding the Lake. Instead, it relies on what it puts forth as general limnological principles. Similarly, the proposal's assertion that fish will not thrive in deeper water simply flies in the face of reality and history. The Lake elevations recommended by the many authorities listed above are the levels actually experienced in the Lake for decades—indeed, for centuries—during which the fish are known to have thrived.

The proposal is also flawed in its heavy dependence on highly artificial techniques to provide habitat and survival for the fish. Creation of artificial spawning beds watered by pumped water, biomanipulation of Lake organisms, artificial aeration of water, and similar proposals all treat only the symptoms of the Lake's problems. We will not recover healthy fisheries by trying to put the fish in Klamath Lake on life support systems or treating them as if they were living in an aquarium. Until the real underlying issues are directly acknowledged and dealt with, Lake fisheries will continue their decline toward extinction.

Finally, it should be noted that the proposal will, over time, create the appearance that maintenance of the fishery not maintenance of agricultural water deliveries is unnatural and inordinately expensive. The proposal will require large amounts of funding forever. Once the artificial systems are in place it will begin to be said that they are being required by the fish, and it will be forgotten that they were put in place to service the demands of agriculture. While this problem in itself may not be a fatal flaw, it is indicative of the shortsightedness and poor foundation of the proposal.

4. Recommendations for agriculture drought relief measures for this water year.

While the Lake lowering proposal should not be implemented for the above reasons, there are other effective ways to provide agricultural stakeholders with effective drought relief which the Klamath Tribes fully support. First and foremost, federal monetary support can keep Project Irrigators whole during the drought period. These are the traditional means by which our Nation addresses agricultural problems brought on by drought. Even in an average water year like 2000, the Department of Agriculture invested billions of dollars into the agricultural economy to support farming that was unable otherwise to survive. See, *Klamath Falls Herald and News* (Nov. 29, 2000) article entitled "Farms harvest millions of federal dollars" (Attachment F hereto). These funds should be made available to Basin farmers this year, too, to ease the problems caused by drought. Similarly, funds associated with "buy-out" programs (see, *Klamath Falls Herald and News*, "Growers to discuss buy-out," Nov. 15, 2000 (Attachment G hereto)) should also be made available. Given that scale of federal financial support for Klamath Project agriculture, protecting the government's original investment through more financial aid to keep the farms going during this drought makes sense. Spending a relatively small additional number of federal dollars certainly makes a lot more sense than trying to save the irrigators by destroying what is left of the Klamath Lake fisheries and the Tribes' treaty rights.

And the Demand Reduction Program (see, *Klamath Fall Herald and News*, "Bureau of Reclamation Announces Pilot Irrigation Demand Reduction Program," January 1, 2001 (Attachment H hereto)) should be supported by the Subcommittee and

additional funds secured as necessary. In these ways Project agriculture can stay whole while Reclamation meets its other legal obligations with superior priorities during the water short year.

Another necessary step includes P.L. 106-498 whose promise is yet to be fulfilled. Last year Congress began addressing some of the underlying imbalance of water supply and demand by enacting that law. The Klamath Tribes supported this legislation as a starting point in restoring the balance. Unless all potential water supply augmentation possibilities are carefully studied and feasible projects identified and implemented, the promised progress will be unavailable. The Subcommittee should encourage the Bureau of Reclamation to follow through on this work and should provide the necessary funding.

All of these are interim steps and temporary solutions. The long-term solution to the water problems that are the subject of today's hearing lies in hammering out an equitable and workable Basin water rights settlement agreement. The Klamath Tribes have advanced a set of principles we believe are integral to such a settlement to: 1) protect existing water uses; 2) protect important fishery resources that have been brought to the brink of extinction, which includes resolution of Endangered Species Act issues; 3) address tribal trust and land recovery needs, and quantify tribal water rights; 4) address water quality and habitat problems that are some of the underlying causes of the water crisis; 5) facilitate water demand reduction, water conservation and supply augmentation; and 6) help ensure that the parties' water rights are put to the intended beneficial uses.

The urgent need for prompt action is highlighted by this year's drought. The settlement proposal should be taken up at policy levels by the state and federal governments. The Tribes will put in as much time and energy as the task requires. We call on the Subcommittee to do all in its power to remove all barriers to speedy development of the proposed Basin water rights settlement.

CONCLUSION

In conclusion, the Klamath Tribes are here because we are committed to finding a lasting, effective solution to Klamath Basin water problems. That solution lies in recovering a healthy, sustainable Basin that can support the livelihoods of us all. We have put forward a settlement framework that so far is the only vehicle that can help us all reach that goal. We urge vigorous support of that framework and pursuit of an Indian water rights settlement in the Klamath Basin.

Thank you.

Senator SMITH. Thank you, Allen. You mentioned, Allen, there was one event that extinguished the salmon. I am sincerely asking this. I do not know what that is. Can you identify that for me, and just for my own information?

Mr. FOREMAN. Sure. The salmon once came up from the ocean into the Klamath Basin.

Senator SMITH. Into the Upper, as well.

Mr. FOREMAN. Into the Upper Basin. Into the tributaries to the Klamath Lake in great abundance. I have an uncle, in particular, who fished salmon as a child. And the dams went in there and brought those off. So, that is—

Senator SMITH. That is what you are referring to.

Mr. FOREMAN. Yes.

Senator SMITH. Do the Tribes fish the suckers, as well?

Mr. FOREMAN. Not at this present time. We have closed off any fishing of the suckers, because they are—we saw, through several decades, that they were reducing in numbers.

Senator SMITH. I see.

Mr. FOREMAN. And so, we closed off our fishing of them.

Senator SMITH. But there was a time that they were.

Mr. FOREMAN. Definitely.

Senator SMITH. And that is what you were referring to the economic hardships, the subsistence culture that was there. This has been the part that is no longer a part of this. I do not want to

mischaracterize what you are saying. I am just asking, for my own information.

Mr. FOREMAN. Absolutely, Senator. They were—not only the fisheries have been lost to us as a food, which is, as I mentioned earlier, it is important to us than any other crop grown in the basin.

The deer herds and waterfowl have been reduced to the point to where it is a struggle to be able to survive on the subsistence from them.

Senator SMITH. Do you have—I mean, I would love to find the Solomon-like solution, the long-term solution. And ultimately, that is the only thing that we can find that will work for everyone, but I think you have in mind some sort of contraction of the farm community. Do you have a sense of how much it must contract?

Mr. FOREMAN. I think—obviously, I mentioned that we have a proposal out there, and basically, a long-term solution. In the short-term, I think it would not do anyone any good to additionally put the suckers at risk of the chance, as I heard mentioned here earlier, that they would be lost forever.

I do not know that that would be any good, but we are willing to work with anyone for a solution. We really do not see much merit in the quick-term fixes that have been suggested, because they are going to institute a program of large amount of dollars coming in to set up the quick-term—aeration, for example.

And it is something that is going to have to be carried on forever. It is going to have to be done year after year after year. And we really do not advocate that type of solution. We want to restore the system to what the system originally was.

And there is a tremendous need. I support any program, financially, to help the ranchers and farmers this year and in the short-term.

Senator SMITH. I do not know the specifics of the proposal you have out there. What has been the response of the Department of the Interior to it and the State of Oregon?

Mr. FOREMAN. The State of Oregon—and of course, it was the subject of the last ADR meeting—in our Alternate Dispute Resolution meeting. And the State of Oregon presented it at that point.

The proposal that we have out here is not set in stone, but it is all the items in there that we listed are important to us. And we want to sit down with the different groups and talk about these.

Senator SMITH. We will do that with you, Allen. Thank you for being here.

Mr. FOREMAN. Thank you.

Senator SMITH. Reed Marbut, the mic is yours.

STATEMENT OF REED MARBUT, INTERGOVERNMENTAL COORDINATOR, OREGON WATER RESOURCES DEPARTMENT, SALEM, OR

Mr. MARBUT. Thank you, Senator Smith, Congressman Walden, and members of the committee. My name is Reed Marbut. I am the intergovernmental coordinator for the Oregon Water Resources Department. I have submitted written testimony and would ask that that be included in the record.

Senator SMITH. Without objection.

Mr. MARBUT. I appear here on behalf of both Director Cleary and Governor Kitzhaber.

I think the first comments should be that we have not—Klamath County has not been officially declared a drought, but that is just because the paperwork has not moved. I was told today on the phone that Klamath County will be the first county enrolled for declaration of a drought.

As a part of the declaration of drought, we are hoping that some Federal assistance can become available that might not otherwise be available. But it is my understanding that Klamath County has submitted a request to the Drought Council for declaration of a drought. The Drought Council is meeting this week. And we think that it will go forward to the Governor for a final declaration. That, as I say, may help; maybe not.

This 2001 season may go down in history as way more than a drought. It is clearly a drought crisis. And we, in government—and I do not think any individual can do anything about the weather—but we certainly can do something about our reaction to the crisis.

On page three—and this is a reiteration to some of the things that Allen has discussed. On page three of my written comments, I clearly describe that this is a federally engineered basin. And I give you a litany of—and just for the record—the Federal activities in the basin. It is classically over-commitment, as Allen has stated.

We have treaties with Tribes that committed water. We have a national park—Oregon's only national park; a national wildlife—four national wildlife refuges. The basin was open to homestead. And those homesteaders are expected to be able to get water. And in fact, they filed applications with the State and received water rights.

There is a Reclamation Project; again, more water. National forests—two—three national forests; more water. Wild and scenic water designation; more water. Wilderness areas; water. And six hydroelectric producing facilities in the Hydro Project.

That follows up on Allen's position at the end of his discussion that with this over-commitment, we are now going to need a strong Federal commitment to get us by this year and future years.

The Water Resources Department is involved in a number of forums with respect to the Klamath Basin. Obviously, the first and most obvious is the adjudication, but remind you that there is also the Compact Commission. And Director Cleary serves as a member of that commission.

We have 700 claims filed in the adjudication, and 5,000 contests. Ultimately, once this adjudication is completed, it will be the job of the State of Oregon to allocate and regulate the water in that basin.

Let me point out, and it should be noted, that of the 700 claims, over half are filed by the Federal Government, and no fees were contributed to the adjudication process for that. That entire burden is riding on the backs—excuse me—of the claimants who did pay fees and the taxpayers of the State of Oregon.

The Department has initiated an Alternative Dispute Resolution, which we hope will prove fruitful as time goes by.

I want to stop here and follow up on something Allen said, and that is the settlement offer. The Klamath Tribes have truly been

a leader in the ADR. They deserve the greatest credit for coming forward with constructive approach to this process. The current settlement proposal that they have provided—and I encourage the Tribe to make a copy of that available to the committee and have it as a part of the record.

It is presented in the greatest spirit of cooperation and progressive leadership. It provides some elements that could get us out of long-term repeated crisis. And we hope that the entire community respects it in the spirit in which it was offered.

I think, probably, Senator Smith, you asked Allen how that has been received with the Federal agencies. We are concerned—we, in the State of Oregon, are concerned that it is not perhaps receiving the respect from the Federal agencies that it should. We are hoping that the spirit of the new Bush administration for supporting locally-driven solutions will be reflected in a commitment by the Federal agencies to support the Tribes in their offer of settlement and not attempt to structure that settlement from Washington.

We think we, in the community, with the Tribes' leadership and the leadership of the irrigation community, can achieve settlement. And that settlement cannot only include the adjudication, it can include Clean Water Act issues, basin restoration, wetlands restoration, and of course, the ESA.

We hope that this community can express its support any way that gets the attention of the Federal agencies, so that they will support us, and we will not have to worry about sending it to the black hole called Washington.

Senator SMITH. Reed, I will do everything I can to get that kind support. I just think it is imperative. It is the only way this will last and be meaningful to everybody concerned. And I have talked to Secretary Norton last Friday about this very thing. And I think there is a lot of willingness on her part to get involved at a policy level to achieve that very thing.

And obviously, we have to deal within the bounds of the law, but I think the spirit of this administration is to give effect to things like what is being proposed locally at the Oregon salmon plant. This is how it works. As opposed to just gridlock, we can actually make some real progress. So we will do that.

Mr. MARBUT. Thank you, Senator.

Let me conclude, quickly, by indicating Oregon's perception—and I do not mean to point fingers, call names or anything—perception of some of the Federal processes that were discussed earlier when the former panel was here, and that is the perception that we see—and it may not be the intent, but it certainly comes forward as what we see—and that is there is two earmarks of the Federal process. It is pretty simple. Secrecy and inflexibility.

There was discussion about the fact that the Hardy program, the States were involved. The State of Oregon has never, not once, received a request to participate in that, nor suggest peer review possibilities.

We have not been involved. We are not even on the mailing list for the early biological information, BOs that have come down the pike. We receive these. We often find out about activities in the Klamath Basin by reading it in the Herald News, and then we go searching for copies, and we find copies. But we are not included,

up-front, in these discussions. We are not asked our opinion as to expertise. There is a lot of that in the State of Oregon, as you well know.

This is a bit different than it occurs in a number of other areas; the Deschutes Basin, the groundwater work, where we were involved early on; the Columbia River activity. And of course, the Governor has been a leader in that area.

Again, this is a perception. I do not want to be saying I am telling how they do this, how they structure and how they do it, only what our perception is.

The Governor has asked me to come here and ask the very—take the same position that you expressed earlier, and Senator Wyden stated earlier, and that is what is needed here is flexibility. We requested that, and it was received in 1992. We requested that, and it was received in 1998. And we reiterate that request. And it is a part of our written testimony.

We want flexibility. It appears that everybody is going to have to share the shortage. And we would hope that we can take advantage of every bit of technical information available to verify that flexibility and maintain the legal standards that we must.

With that, I would like to conclude my remarks. Thank you, Senator.

[The prepared statement of Mr. Marbut follows:]

PREPARED STATEMENT OF REED MARBUT, INTERGOVERNMENTAL COORDINATOR,
OREGON WATER RESOURCES DEPARTMENT, SALEM, OR

INTRODUCTION

Mr. Chairman, members of the Subcommittee, I am Reed Marbut, Intergovernmental Coordinator for the Oregon Water Resources Department. I am pleased to provide this testimony on behalf of Governor John Kitzhaber and the Department in support of S. 2882, the Klamath Basin Water Supply Enhancement Act of 2000 (P.L. 106-498) and the water supply augmentation efforts authorized under that law. When fully implemented, P.L. 106-498 will benefit interests both within and beyond the Klamath Basin who depend upon and value the Basin's water for economic, tribal, and environmental purposes. We request that this testimony, along with the attached remarks we provided at the November Klamath Community Forum, be included in the Subcommittee's record.

The Klamath River Basin, like many river basins in the arid, western United States, is chronically short of water for both its natural ecosystem and the ever increasing needs of a modern society. The Basin is home to a multitude of native fish, waterfowl and wildlife species that depend on an abundance of clean water in the Basin's lakes, streams, wetlands and refuges. In addition, the Basin supports a large, robust agriculture and recreation community. Finally, the Klamath is an interstate river with substantial tribal and federal interests, and is thus subject to all the complex issues related to multiple jurisdictional authority.

KLAMATH BASIN WATER RIGHTS AND WATER ADMINISTRATION

The State, through its Water Resources Department, is involved in multiple forums seeking resolution of water resources issues in the Klamath Basin. The Director sits as a member of the Klamath River Basin Compact Commission, which administers the 1957 Klamath River Basin Compact. [Pub. L. 85-222, 71 Stat. 497 (1957)]. In recent years, the Compact Commission has become increasingly engaged in efforts to find solutions to conflicting demands for water throughout the Basin. The Department also is responsible for the administrative proceedings in the Klamath Basin Adjudication. This Adjudication will document rights to water established before 1909 under state law as well as federal and tribal reserved rights. The Klamath Adjudication was initiated in 1975 as a McCarran Amendment general stream adjudication. There are over 700 claims in the adjudication, 400 of which were filed by the United States and the Klamath Tribes.

The Klamath Adjudication is the first in Oregon to involve complex federal and tribal reserved right claims. All adjudication claims were filed by April of 1997. Over 5000 contests have been filed in the Department's administrative process. Resolution of the contests and the final determination of these rights could be lengthy and costly for all participants. In addition to the private and federal adjudication claims, the Department has also issued permits for appropriations initiated after 1909. Ultimately, the Department will be responsible for the regulation of all water rights according to priority and entitlement. (It should be noted that no adjudication fees have been paid so far by the federal or tribal claimants, thus state taxpayers and the other claimants are absorbing all of the adjudication administrative costs.)

KLAMATH BASIN ALTERNATIVE DISPUTE RESOLUTION (ADR)

In 1997, after all the claims had been filed in the Adjudication, the State, in consultation with other interests, initiated an Alternative Dispute Resolution Process (ADR) to seek resolution of conflicting claims for water. With hundreds of claims and water rights, and with heightened awareness of environmental issues, including water quality concerns and the listing of several threatened and endangered fish species in the Basin, water allocation is approaching crisis. Unless we can identify constructive and balanced alternatives, we will be faced with the impossible choice between protection of the Basin's nationally significant environment and continued existence of the equally significant agricultural industry of the Klamath valley community.

Competition for water has become intense in the Klamath Basin, and is complicated by interstate issues, environmental statutes, and previously unrecognized tribal rights. The Department realized the adjudication could only address some of the conflict. When rights are decreed by quantity and priority date, there may be winners, but it is certain that there will be losers, including claimants whose needs are legitimate. The adjudication, by itself, cannot increase the amount of water available; nor will it address water quality issues. The ADR is intended to produce settlements that can address multiple interests and needs and thus avoid the need for lengthy, costly, and uncertain litigation.

2001 WATER SUPPLY EMERGENCY

Recent snowpack, precipitation, streamflow and water availability analyses by state and federal agencies indicates we may face a water supply emergency for the 2001 season. Unless there is a complete turn-around in the climatic conditions between now and summer, there is no question we will be facing a serious water supply shortage. Current forecasts indicate that there will not be enough water to meet even minimal irrigation needs and the various wildlife refuges may be denied water altogether. Local officials have expressed concern that all emergency measures be considered. On Monday, March 19, 2001, the Governor received a request for a drought declaration from the Klamath County Board of Commissioners. Pursuant to state law, the Governor will refer the Commissioner's request to the state drought council for consideration at their March 23 meeting.

Governor Kitzhaber is supporting the Department in its efforts to work with local interests and the federal agencies to develop programs for both short-term emergency drought relief and long-term water supply options. In the near-term, we are working with the Bureau of Reclamation to find ways to provide some form of relief for Project irrigators who may not receive a full allocation of water. These efforts involve both demand reduction programs and supply augmentation, including development of groundwater sources to replace depleted surface water supplies. In the long-term, we are working with a number of interests in the Basin to develop dependable water supply and conservation concepts, along with watershed restoration initiatives.

In addition to these efforts, we are committed to the ongoing Klamath Basin Alternative Dispute Resolution (ADR) process. Fortunately, almost all the various interests in the Basin are actively involved in the ADR and seem willing to bring not only problems but solutions to the table. Hopefully, our collective effort will produce solutions that will benefit all entities and interests.

However, notwithstanding efforts of local participants and the State's commitment, it is the federal government that must provide the major building blocks and funding for a lasting solution to the Basin's water supply/demand imbalance. The Klamath is a classic example of a federally engineered Basin. The U.S. Government signed treaties with a number of tribes in the Basin, promising water in the process; it dedicated a national park and four national wildlife refuges which must have water to exist; it opened a substantial area of the Basin to homestead by irrigators many of whom also applied for and received water rights under state law; to provide

water for a number of these homesteaders it established the Reclamation Project with state support; it created three national forests and designated several wild and scenic river corridors and wilderness areas, all with significant water needs; it licensed a major hydroelectric project with six generation facilities on the Klamath River in Oregon and California; it enacted the Endangered Species Act and declared a number of the Basin's aquatic species threatened or endangered; and it enacted the Clean Water Act and mandated that the Basin's water quality be improved.

Clearly the U.S. Government has promised the Basin's water many times over while also imposing numerous requirements on the storage and use of this water. And just as clearly, the U.S. Government must address these resource conflicts. In our view, especially in this dry year, a just approach would spread the water burden among all the competing demands, rather than placing it all on one interest. The federal government did not cause the water shortage emergency of 2001, however, past federal actions and policies are clearly significant components in the Basin's drought vulnerability.

ENDANGERED SPECIES ACT AND 2001 PROJECT OPERATIONS

The U.S. Fish and Wildlife Service (USF&W) just released its 2001 draft biological opinion for operation of the U.S. Bureau of Reclamation's Klamath Project. In this opinion, the USF&W asserts that the level of Upper Klamath Lake must not fall below certain minimum elevations, including a minimum elevation of 4140 feet above sea level in September of 2001. Without evaluating or questioning the biological soundness of this opinion's conclusions, including the minimum lake levels set out in the opinion, the State of Oregon recommends that the federal agencies seek opportunities for flexibility in its operation of the Project. This is the same recommendation that the State advanced in 1998 in its comments on the Bureau of Reclamation's 1998 Klamath Project Operation Plan.

It should be noted that, in addition to the USF&W biological opinion concerning the endangered species in Upper Klamath Lake, we expect that the U.S. National Marine Fisheries Service (NMFS) will soon publish its biological opinion concerning protection and recovery of the Klamath River coho salmon. It is anticipated that this opinion will call for significant releases of water from Upper Klamath Lake. It is important to ask whether the Upper Klamath Basin and the Klamath Project can or should be used as the sole or primary source of water to meet federal trust obligations or Endangered Species Act (ESA) responsibilities throughout the Basin. Under both the USF&W biological opinion and the expected NMFS opinion, project water users in the Upper Basin bear the full burden of meeting these federal responsibilities. Moreover, the alternatives presented in the USF&W biological opinion fail to adequately address the federal government's obligations to project water users, as reflected in the Reclamation Act of 1902, the Project's authorizing legislation and subsequent implementing measures.

In our plea for flexibility in Klamath Project operations, the State of Oregon recommends that the burdens of the ESA, tribal trust obligations and the longstanding commitment to the irrigation community, be balanced equitably, with long-term sustainability of all interests as an overarching goal. We believe the USF&W, in its 1992 biological opinion, adopted such a balance. The 1992 Opinion allowed for occasional deviation from the firm minimum lake levels in emergency water shortage years. Implementation of this sort of flexibility could save the Klamath irrigation community in this crisis environment, while still protecting other interests.

We note that a new impact evaluation and plan for recovery of Upper Klamath Lake endangered fish prepared by a respected limnology expert is now available. This plan could help to verify the biological reasonableness of the lake level flexibility we urge. We believe it is possible to complete the USF&W and NMFS Section 7d consultations in a way that will allow implementation of a 2001 operation plan that will not irretrievably commit resources to the detriment of endangered species or tribal trust obligations nor deprive the Project irrigators of water for essential needs.

The state is also concerned about the practical impacts of the new biological opinion on project water users. In this dry water year, it is clear the project water users will suffer significant financial losses. However, the message being delivered to project water users is that they will pay the full cost of a collective public and Basin responsibility, with no opportunity for collaborative discussions among affected interests to seek a more equitable approach to addressing the hardships of this dry year. Clearly this is the wrong message to be delivering at a time when the state is seeking good faith participation by all affected interests in its ADR process. We have also been advised that the potential impact of the new biological opinion has had an immediate effect on the availability of agricultural financing in the Basin.

Understandably, few lenders are willing to underwrite cropping plans for this season without greater assurance concerning the risk of water curtailment. As such, it is essential that Project operations be given flexibility as soon as possible to stretch available water supplies and equitably spread the burden of shortages across all Basin interests.

CONCLUSION

We will do everything in our power to encourage the federal agencies to search for flexible, creative and balanced solutions and to participate in a collaborative processes in a meaningful way. We have gone to court to uphold the State's adjudication under the McCarran Amendment and we will use every bit of persuasion we can to encourage all parties continued participation in the ADR. We are optimistic that long-term solutions can be found; however, we recognize that the short-term does not look optimistic. The Bureau of Reclamation has allocated some \$4.0 million to help alleviate some of the critical shortage this year. We hope to find other short, and long-term options through the ADR, implementation of P.L. 106-498, and other ongoing efforts, and we ask for support from Congress in these ventures. Thank you for your interest and assistance.

MEETING THE GROWING NEEDS OF THE UPPER BASIN

REMARKS BY PAUL R. CLEARY, DIRECTOR, WATER RESOURCES DEPARTMENT

Thank you for the opportunity to participate in this community roundtable discussion and deliver these remarks on behalf of Governor Kitzhaber and the Oregon Water Resources Department.

The Klamath Basin has become a national focus for environmental issues, especially those issues related to water. It is essential that national policy makers respond to this focus in ways that recognize the local ramifications of their decisions and actions. The Basin's economy and culture are dependent on an abundant and balanced supply of water for agriculture, fish and wildlife. However, decisions made without involvement and support of the Basin's stakeholders can undermine efforts to develop an equitable, comprehensive approach to management of the resource. We cannot ignore the delicate balance between water use demands and protection of the environment as we attempt to plan for the future. We also cannot ignore the need to directly involve the Basin's stakeholders in the crafting of those plans.

The Oregon Water Resources Department is currently engaged in the adjudication of water rights in the Klamath Basin. The adjudication will determine the priorities of private, federal and tribal water rights, and thus is key to future regulation of water uses in the Basin. To date the Department has dedicated some \$2 million in funding to the adjudication proceeding in order to complete the administrative phase of the adjudication as soon as possible. However, it must be acknowledged that the effect of the adjudication is to create a list of senior and junior rights—those who can depend on receiving water and those who will not have a dependable supply.

Given the finality of the adjudication process and the potential winner-loser result, Governor Kitzhaber and the Department believe an alternative process for resolution of water apportionment decisions is essential. With the Governor's active support, the Department initiated an alternative dispute resolution (ADR) process in the fall of 1997. At a minimum, the ADR has created a forum for exchange of information. It was also designed to produce settlements that address interested parties' water needs and avoid lengthy, costly, and uncertain litigation. Our monthly ADR meetings have been attended by representatives of most of the stakeholders, tribal governments and interest groups in the Basin, including those portions of the Basin located in California. Negotiating groups have been established, some of whom have made significant progress. We believe the ADR can be used, not only to settle adjudication claims, but to develop collaborative approaches to meet tribal trust, Endangered Species Act (ESA) and Clean Water Act requirements.

Neither the ADR nor any of the other Basin problem solving ventures will succeed unless solutions are developed from the bottom up with all stakeholders are at the table. State, federal, tribal and local stakeholders must be fully engaged in the process. Those at the table must be authorized to negotiate and committed to the development of compromises and long-term settlements. Likewise, non-governmental stakeholders must have a voice in the governmental decision-making process, including decisions affecting operation of federal water storage and irrigation facilities and programs. The most obvious of these is the Bureau of Reclamation's Klamath Project. The Klamath Basin community generally, and the irrigation stakeholders in particular, must be involved in Project operation planning and decision-making.

The State of Oregon is at the table, fully committed to help seek solutions, and supportive of all available approaches to solving the Basin's water issues. Solutions will likely include a broad range of efforts from watershed and wetland restoration to water supply augmentation and water demand management. In addition, we are confident that the Basin's stakeholders are committed to a constructive, solution-oriented dialogue. We also urge the federal agency stakeholders to be full partners in that dialogue. This is not to say that the local federal representatives have not attempted to seek community input. However, it is critical for all governmental entities—state, tribal and federal—to be fully committed to engage local stakeholders in the decision-making process. Local stakeholders must be part of federal decisions concerning Project and refuge operations in order to be motivated to participate in the implementation of those decisions.

Time is growing short to resolve the Klamath Basin water issues in a collaborative and comprehensive manner. We do not have time to re-hash all the mistakes that have been made, nor should we allow those mistakes to be repeated. The State is encouraged by the Congressional delegation's interest in these matters. Federal commitments and resources are essential to resolving the many complex water issues in the Basin. We hope this heightened interest results in a renewed commitment by all parties to become part of the solution in the Basin.

Senator SMITH. Do you have a question?

Congressman WALDEN. If I could, Mr. Chairman.

Reed, I just want to follow up with—Hardy's study seems to be stuck in my mind. Have you requested of these agencies or has the governor, of the ability to participate in this process?

Mr. MARBUT. Oh, yes.

Congressman WALDEN. And which ones have turned you down?

Mr. MARBUT. The requests are in the form of letters for information and oral requests. And it is not necessarily a turn down, as much as it is no action.

Congressman WALDEN. No response?

Mr. MARBUT. No response. And in some cases, we were told the process we have set up has a—I do not want to improperly phrase this or in an accusation, but this is the way the process is designed. And you are not on that list.

Congressman WALDEN. So, the State—what you are saying is the State of Oregon is not on the list.

Mr. MARBUT. That is right.

Congressman WALDEN. I do not get it. I would love to, maybe at the end of this panel, have the Federal folks come back and explain. Do they say that is it because of this FACA ruling or—

Mr. MARBUT. We have not pursued the—the excuse is we are trying to maintain a—obviously, we are in a very delicate position. We are the adjudication. We are the independent decision-maker on the water rights. We are the facilitator on the ADR.

We do not want to force our posture in any particular place where we—I do not want to say unwelcome—where we see other organizations carrying on a process that they feel they must carry on in their way, we are not attempting to force our way in the door, because we have, very frankly, bigger fish to fry, so to speak.

I mean, we have got things we need to get done. And we have a forum. And we are hoping to encourage participation there, rather than create impediments to the participation by forcing our interests.

We would hope that we would be welcomed into this process.

Congressman WALDEN. Is there any representative from any of the State agencies that is welcome in this process?

Mr. MARBUT. Not that I know of.

Congressman WALDEN. Thank you, Mr. Chairman.
Senator SMITH. Roger Nicholson.

**STATEMENT OF ROGER NICHOLSON, PRESIDENT, RESOURCE
CONSERVANCY, FORT KLAMATH, OR**

Mr. NICHOLSON. Thank you, Mr. Chairman and Congressman Walden.

I appear before you today as a rancher and as president of Resource Conservancy, which represents non-project lands in the Klamath Basin. Non-project lands encompass over one-half of the irrigated land in the Klamath Basin. For the most part, these lands lay to the north of Klamath Lake and are a large part of the watershed of the project lands.

I would like to say that we are—as non-project irrigators, we are very, very supportive of the project irrigators and their desire to have both short- and long-term water desires. We are an agricultural community. And we need water for both the project and the non-project clans.

And with saying that, I will have to say that I am going to limit my comments today on Public Law 106-498, rather than on the other issues that have been described, even though they are very important issues to us.

How Public Law 106-498 is implemented is very important to non-Federal irrigators. I know the majority of the comments today will be directed at the Federal project lands and operations, but water issues know no boundaries within a basin.

Upper and Lower Basin water users face many of the same problems. And usually, any answer to these problems will require the cooperation of everyone.

With that said, I would like to focus my remarks on what we feel were missed opportunities under Public Law 106-498, and what might be done to re-open these doors of opportunity.

First, there was no real effort by the Bureau of Reclamation to reach out through the Oregon Department of Water Resources to work with non-Federal project users. A tremendous opportunity exists, working with the Upper Basin landowners, developing groundwater sources, water storage facilities, and improvement of the yield of the watershed through ecosystem enhancement.

A specific example can be given on how these efforts can be used to develop a win-win situation. Crater Lake National Park's domestic water supply comes from Annie Creek, a tributary to Upper Klamath Lake. A good chance exists that in the near future this water supply will be denied due to earlier date calls on Annie Creek.

A possible solution would be for Crater Lake National Park to have a well drilled on private lands. This would be in exchange for subordination to the National Park's use of Annie Creek water resources. Private landowners have indicated an interest in drilling a large well to augment irrigation water supplies. This type of project has never been done before, but we feel it should receive special consideration.

If National Park Service funds were available, a large well could be drilled and an endowment upkeep and operating budget created. A large augmentation well would allow less surface diversions from

Annie Creek. Less surface diversions would leave more water instream for fishery resources.

Also, more water instream would mean more water flowing into the Upper Klamath Lake, thereby helping the lake fishery and helping supply the needs of project users. We are excited about the possibility of these win-win situations.

We are told that no funds are available for these types of projects, which seems to fly in the face of the purposes of Public Law 106-498. All available funding seems to be dedicated to short-term retirement of water rights in project lands, because of water shortages.

While this is a laudable program, we do not see the connection with Public Law 106-498. We thought funding under this law was to develop a long-term augmentation and not for a Band-Aid approach.

Mr. Chairman and members of the subcommittee, there are many opportunities to augmenting water supplies in the Klamath Basin. We, in the Upper Basin, want to do our part. However, to do this we must try new methods; we must have strong management; and we have to develop solutions that make sense on the ground.

We appreciate all the work that has been done to date by you and your staff, but we still have a long way to go, and we stand ready to help.

Thank you, Mr. Chairman. Thank you, Congressman Walden.
 Senator SMITH. Thank you, Roger.
 Glen Spain.

STATEMENT OF GLEN H. SPAIN, NORTHWEST REGIONAL DIRECTOR, PACIFIC COAST FEDERATION OF FISHERMEN'S ASSOCIATIONS, EUGENE, OR

Mr. SPAIN. If I could have the staff bring that a little forward, so that we could see it, because I will—we will want to refer to it.
 [Chart.]

Mr. SPAIN. Thank you, Senator Smith.
 Thank you, also, Congressman Walden.

I am here as an Oregonian. And I am also here as the Northwest regional director of Pacific Coast Federation of Fishermen's Associations.

PCFFA is the west coast's largest organization of commercial fishermen. We represent small and mid-size family fishermen in every port on the west coast, through either our associated members or individual members.

One of the things that I base my premise on is that family fisherman who are, after all, family food providers, also have a right to survive in the Klamath Basin, and that family fishermen's jobs are just as important as family farmers' jobs. We are, in fact, family food producers, all. And we find ourselves, all too often, in the situation where the needs of Upper Basin water users are pitted against the needs of the Lower Basin water users, including the fishing industry, itself.

This is very counterproductive. And it is a result of a crisis that is fundamentally an over-appropriation and misallocation crisis. It is—you know, Water Resources in Oregon will tell you that most

every basin in Oregon is now over-appropriated at least part of the year.

These kinds of crises are endemic, and they will get worse, unless we do one of two things; preferably both. We have to reduce demand in some way that is rational and equitable to the people involved. And we have to increase supply.

As you know, Senator Smith, we were a strong supporter of S. 2882, which now is Public Law 106-498. We very much appreciate your leadership. I testified before this very same committee in 1994, when Senator Hatfield had field hearings in Klamath Falls, and made the same pitch, basically, that we need to augment the water supply and store more water, so we get away from the over-appropriation problem.

The other problem is that—and I have to chide you both a little bit for fragmented thinking, insofar as we typically put great faith in political boundaries and not hydrological or ecological boundaries.

Two-thirds of the Klamath Basin is in California. A great number of people depend on the water released from the Klamath Project through Irongate Dam, including our industry and many lower river communities. And the inriver communities of the Tribes, the Yurok and Karuk Tribes, we are all stakeholders.

I am very much in favor, Congressman Walden, of a stakeholders' input process, but we are all stakeholders. We cannot have a resolution to these problems that involves only the Upper Basin and Upper Basin interests. We have to be everywhere.

Many of the problems are not ESA driven. As you know, many farming problems are driven by global trade issues, by producer and processor capacity leaving the basin. Those are serious problems and cannot be attributed to either the ESA or ultimately to water use issues, although, those have exacerbated a lot of these issues.

We have a lot of similar problems. We have a lot of solutions that we can work on with—and I am certainly happy on behalf of our constituency, which includes a great deal of coastal communities in Oregon.

As you see from the table here, the majority of fish—salmon, particularly, the fall chinook—coming out of the Klamath Basin go both north and south. Roughly, 30 percent of all salmon harvested in this region, from Coos Bay to—Coos Bay, Oregon, from Fort Bragg, California, come from the Klamath. Now, these are not ESA listed species. They are fish that require water. They require clear, clean, cold water in some abundance. Many of these are hatchery fish, originating at Irongate Hatchery, which is right below Irongate Dam. It is 100 percent dependent on whatever flows are released from Irongate Dam.

The other problem with this is, not only if we wind up with major fish kills because of lack of water or poor quality water downriver, we wind up with huge economic losses for coastal communities in Oregon, as well as in northern California.

But another factor of fish management is that we are operating coast-wide on a weak fish management structure. That means the weakest fish is the limiting factor for harvests on all fish. However

many fish there are, from however many hatcheries, we cannot catch them, if there are major fish die-offs in the Klamath Basin.

And those are impacts; economic losses in the tens—nearly \$100 million in economic losses that cascade all the way from Monterey, California, up to the Canadian border.

So, what happens in the Upper Basin, how much water is released from the Upper Basin, the quality and quantity of that water directly impacts jobs in every coastal community from Northern California all the way up to the Canadian border.

We have a very strong interest. In addition to that, one of the problems is that the Karuk Tribes and the Yurok Tribes are not here. They have tribal treaty rights that amount to water rights in the lower river. They have a big stake in this game, just as much as the Klamath Tribes do, and for the same reasons. They need to be here at these kinds of hearings, as well. I understand they submitted some written comments for the record.

Senator SMITH. Just for the record, Glen, admittedly, this is Upper Tribes, because that is where Oregon is, but—

Mr. SPAIN. I understand.

Senator SMITH [continuing]. Senator Feinstein is a member of this committee and she has offered to hold a hearing on the Lower Klamath issues, as well.

Mr. SPAIN. That is a very good idea. I would suggest that should be in Eureka.

Senator SMITH. Yes.

Mr. SPAIN. Total losses, right now—salmon—in the Lower Klamath have been about 89 percent. In other words, we are at 89 percent of historical numbers. That is a huge loss. That translates to, roughly, 3,780 lost jobs in lower river communities. That translates to a net of economic drag—a net economic loss of over \$75 million. And this is why I say this is a misallocation process. We need water in the lower river.

The Upper Klamath system uses about 30 percent of the total volume of the river; not 2 percent. I have heard that figure. And that is a bogus figure. And I supplied some of the citations for you in my testimony—about 30 percent in dry water years. And that is a serious drain on the whole capacity of the river system; particularly important in the dry season, as the fish are coming up to spawn. And that is where it is crucial.

Some of the solutions—I mean, Senator Wyden, rightfully so, challenged the agencies to come up with a nitty-gritty list of what they can do in the next few weeks, because we really need to do. One of the solutions, clearly, is get more money to take advantage of these 550 farmers who are willing to forego—because of economic reasons and global trade issues and things like that, willing to forego the farming to provide the water.

Right now, by my account, roughly, \$27 million short in that program. I would suggest a special appropriations—emergency appropriations for this drought emergency would be appropriate. The other thing, of course, is we need an immediate declaration of emergency, so we can focus some Federal funds that already exist; we do not have a big bureaucracy.

There are programs where we could provide a win-win. There are inherent conflicts between row crop agriculture and the wildlife ref-

uges, Tulelake agriculture. There are also well over 500 lots outside the Tulelake wildlife refuge for sale. Why do we not leverage those; give them over on leases, so that the people in the refuge have some replacement land that they can make living at, outside the refuge, then restore that to wetlands?

Now, wetlands is an undervalued asset. Seventy-five percent of the wetlands in the basin have been lost, historically. And this is one reason we do not have a lot of water to buffer droughts.

Now, my estimates—our little calculation, one acre of wetland with one acre foot of water will store 325,000 gallons of water. That is a lot of water for a lot of wetlands.

In addition, those wetlands serve filtration functions to clarify the water; they serve fish and wildlife functions. There are a lot of things that we can do there, in terms of the wetlands. And the irrigation community has been really a leader in looking at wetlands restoration, because they know it means more overall water to get us through periods like this.

Another thing that can be done is Link River is—there is a proposal on the table, being thoroughly looked at, to raise Upper Klamath Lake by a couple of feet. I think that makes excellent sense. And I certainly support that effort, assuming we can get an environmental analysis out of that, and that it is not going to damage any of the property ownership around the lake. And that can be taken care of.

Those are some things—obviously, urgent emergency conservation measures, triggered by a declaration of drought, including recompense programs for farmers who will simply have to defer making a livelihood from that source, simply because there is not enough to go around.

And my office and my organization, as the west coast's largest organization of commercial fishermen, coast-wide, stands ready to aid your offices at anytime for any of these programs, and to lobby with any of the irrigation community or any of the agencies on the Hill to get money, because I think that, of all things, getting some infusion of money through disaster relief programs, and through a willing seller, purchase some water rights, right now, is the best thing we can do for the next 4 weeks.

[The prepared statement of Mr. Spain follows:]

PREPARED STATEMENT OF GLEN H. SPAIN, NORTHWEST REGIONAL DIRECTOR, PACIFIC COAST FEDERATION OF FISHERMEN'S ASSOCIATIONS, EUGENE, OR

Good morning. I am the Northwest Regional Director of the Pacific Coast Federation of Fishermen's Associations (PCFFA), the west coast's largest organization of commercial fishing families. PCFFA represents thousands of working men and women of the west coast commercial fishing industry and has member fishermen's associations and individual members in ports from San Diego to Alaska.

We are a major west coast industry, generating many billions of dollars annually to the region's economy, and supporting tens of thousands of jobs in coastal communities as well as providing high quality seafood for America's tables and for export. However, it is no exaggeration to say that many of those coastal fishing-dependent economies are now in economic crisis as fisheries have declined coastwide. This is particularly true for salmon fishermen, who have suffered enormously from the loss of salmon habitat and the de-watering of many of our most productive salmon-bearing rivers and streams. This impact has hit especially hard in the Klamath Basin. Now the Klamath River suffers from major fish kills as a result of low flows to such an extent that we now have several basin species listed under the federal Endangered Species Act (ESA), including once abundant coho salmon.

The Klamath Basin (9,691 sq. miles) was once the third most important salmon producing river system in the nation, producing an estimated 660,000 to 1,100,000 million adult fish annually. Now river conditions are so bad that most of these runs are either gone or so reduced in numbers as to be nearing extinction. At present, the "recovery" goal for this system is to return at least 97,500 natural spawners to the system each year, a very modest goal that has still never been met. Even if met, this still means a total reduction of Klamath salmon populations by 89%. As a result, commercial fishing is almost non-existent throughout the ocean area in which Klamath salmon most frequently travel, the "Klamath Management Zone (KMZ)."

A big part of the problem for downriver salmon is reduced water quality and quantity from upper river sources because of the Klamath Project. The Klamath Basin works as a hydrological whole, and what affects water quality in the upper basin has a huge impact downriver.

Unfortunately, diversion of natural waterways and draining of wetlands has taken an enormous toll on the Klamath Basin's ecology and wildlife. More than 75 percent of the Basin's wetlands have been drained and converted to agriculture. As a result, fish and wildlife populations have declined dramatically. For example:

- Klamath River Coho salmon are now listed as a federally threatened species and all species of salmon are now extinct above Irongate Dam because that structure provides no passage for fish;
- Waterfowl numbers in the Klamath Basin have declined dramatically, from a peak of more than 6 million ducks and geese to less than 2 million birds. These declines have cascaded through the whole Pacific Flyway as well as affected ESA listed species such as the bald eagle. 80 percent of all migrating waterfowl on the west coast use the Klamath refuges as a stopover on the Pacific Flyway.
- Since 1965, waterfowl use days on Tule Lake National Wildlife Refuge have declined from 88 million to less than 25 million;
- C'wam and qadpo (i.e., the Lost River and short-nosed suckers), once widely abundant and a mainstay in the diet of the Klamath Tribes, are now also on the endangered species list.

The Klamath Irrigation Project and other development in the upper Klamath Basin has had three major impacts: 1) wildlife habitat has been destroyed; 2) water quality has been degraded; and 3) the natural water storage capacity of native wetlands and other habitats has been lost. The hydrology of the Klamath River has been greatly altered, both reducing the overall storage capacity of the system as well as compounding the competition for water that is the impetus for this hearing.

A number of restoration projects are underway in the Klamath Basin, but without real change in overall water and land management, the current state of affairs is simply unsustainable. According to the U.S. Fish and Wildlife Service, for example, if water management proposals now under consideration by the Bureau of Reclamation are implemented, 12,000 to 18,000 acres of the 23,000 acres of wetlands on the Lower Klamath National Wildlife Refuge will go dry during the fall waterbird migration in half of all future years. Smaller but still significant impacts would occur in an additional 28 percent of future years. This year, for instance, the refuges may go dry entirely, devastating protected bird populations from all over the west coast who use the Pacific Flyway.

In recent years, water quality from the upper Klamath Basin has been so poor that massive salmon die-offs have resulted far downstream. Even the Iron Gate Hatchery cannot operate with water conditions so poor as they have been in many recent years.

Ecological restoration in the Klamath Basin can help ensure a healthy economy and high quality of life in the region. The Klamath River Basin should support vibrant and economically valuable Native American, sport, and commercial fishing, and wildlife/wildland-oriented recreational opportunities. The Klamath Basin can also support a healthy agricultural economy that is ecologically sustainable. But most of this is not possible without a better division of existing water supplies between these interests. The restoration and augmentation of additional water storage through wetlands restoration and other means, as contemplated by P.L. 106-498, should also be our highest priority.

CRUCIAL ECONOMIC IMPORTANCE OF THE KLAMATH BASIN TO WEST COAST FISHERIES

Both Oregon and Northern California coastal communities are directly affected economically by the environmental degradation that has been allowed to occur within the upper Klamath Basin by the operations of the Klamath Project.

First off, Iron Gate Dam in Northern California (just south of the Oregon border) is the end of the line for Pacific salmon, since it was originally built with absolutely no fish passage, and all salmon runs above that dam are now extinct. More impor-

tant for this discussion, however, is the diminished water quality and quantity flowing through Iron Gate Dam, coming directly from the Klamath Irrigation Project. Water released by the Klamath Project has for many years been of such poor quality, and such minimal quantity, that Iron Gate Hatchery (the largest and most important salmon hatchery in the basin) functions only very poorly or not at all. Iron Gate Hatchery uses river water for its operations. Whenever river water is too hot, too polluted or just too little in flow, that hatchery fails! Even if some juvenile fish do emerge from that hatchery, in many years in-river hot water temperatures and pollutants are so bad that water conditions kill them quickly.¹ Furthermore, declining water quality and nitrate pollution coming out of Iron Gate Dam² lead to downriver water quality problems that extend for many miles downriver, which also disrupts natural production of wild salmonids.

It is not just hatchery fish that suffer, but many wild runs as well. Salmon must have cool, clear and abundant water just to survive. The extremely high volume irrigation diversions managed by the Upper Klamath Irrigation Project have, as a disastrous side effect, literally de-watered several key salmon spawning grounds in the Klamath River below Iron Gate Dam for parts of most years. It is not uncommon to lose 25% or more of all salmon nests to dewatering, in spite of all efforts to save them, amounting to a huge economic loss to coastal salmon fisheries and triggering major fisheries closures.

Even the water that is released from the Klamath Project is often filled with agricultural fertilizers, pesticide residues and waste from runoff in the fields. These pollutants in and of themselves can kill much of the aquatic life below the dam. Young salmon and salmon eggs are much more sensitive to toxic chemicals than fully mature adults, and scientists have already documented many long-term and debilitating problems, including developmental deformities, as a result of chronic pesticide exposures in even very small amounts well below current exposure standards.³

In essence, the lower river system has been engineered to be, and is often treated as, nothing more than a huge drain for the Upper Klamath Basin. However, the Klamath is not a drain, it is a river, and its ecological needs must be respected. This means that adequate water quality and quantity must be released from the Klamath Project sufficient to support salmon spawning and rearing, which in turn supports coastal salmon-dependent economies and communities.

Unfortunately, the way the Klamath Irrigation Project is currently managed has greatly changed both the amount and nature of natural river flows we get downriver. Prior to Project construction, the Upper Klamath contributed as much as 35% of the total flow of the whole Klamath River at its mouth in a typical August. Today that contribution is less than 5%, as well as being of very low water quality.⁴ In other words, the total impact of Project operations has been an order of magnitude reduction in total flows below Iron Gate Dam, a complete change away from natural seasonal flow characteristics, and highly degraded water conditions for what remains and is released. These highly degraded conditions are clearly major contributing factors in overall salmon declines in the lower Klamath Basin, often resulting in major fish kills.

Klamath River salmon, once they reach the ocean, swim both north and south where some portion of them are then available for harvest. In the past, roughly 30% of all fall chinook landed between Coos Bay, OR and Fort Bragg, CA, for instance, were Klamath River stocks in origin (See Table 1). Thus when these fish decline,

¹ Salmon are cold-water fish and need cold water or their eggs will not hatch. Mortality of incubating salmonid eggs greatly increases as water temperatures rise from 56 F. (13.3 C.) to 60 F. (15.6 C.), which is usually considered the lethal limit. Water temperatures downstream from just below Iron Gate Dam downstream routinely exceed this lethal limit through mid-October. Spring-run chinook spawn from mid-August to mid-October, and fall-run chinook spawn from mid-September through early-December. High water temperatures at Iron Gate have thus greatly narrowed the spawning windows for both these subspecies and also greatly reduced the range of ESA-listed coho salmon by blocking access to cold water tributaries.

² Nitrate laden runoff from agricultural fertilizers creates algae blooms which steal dissolved oxygen from the water that fish need to breathe. The fish die of suffocation.

³ See for instance, *Diminishing Returns: Salmon Decline and Pesticides*, a publication co-sponsored by the Institute for Fisheries Resources, available on the Internet at: <http://www.pond.net/~fishlif/salpest.htm>.

⁴ Figures from *Initial Assessment of Pre- and Post-Klamath Project Hydrology on the Klamath River and Impacts of the Project on Instream Flows and Fishery Habitat*, Balance Hydrologics, Inc. (4 March, 1996) prepared for the Yurok Tribe. There is a fiction being espoused by upper river irrigation interests that the original flows above Iron Gate dam were only 2% of total Klamath river flows at its mouth, but this number is patently incorrect. The actual percentage varied seasonally, but peaked at about 35% in a typical August according to 1911-1913 flow records and was above 25% from July-October when those flows were most important.

as we have seen in recent years, major fishing ports from Ft. Bragg, CA to Coos Bay and Florence, OR are severely impacted economically. Currently, all ocean and recreational salmon harvests within this “Klamath Management Zone (KMZ)” is specially restricted by the Klamath Fisheries Management Council or by state agencies to promote recovery of these severely depressed fish. As a result, when stocks are low (as we have seen for many years) most commercial fishing in the KMZ area is either closed or severely restricted, resulting in tens of millions of dollars in losses.

The Klamath stocks are also key indicator species for harvest levels all the way from central California to the Canadian border. All of our ocean salmon fisheries are now managed on a “weak stock management” basis. This means that the weakest stock becomes the limiting factor on ALL OTHER FISHERIES, regardless of how abundant those other stocks might be. The requirement to avoid catching any severely depressed Klamath chinook stocks, or any ESA-listed coho, therefore limits harvest opportunities on all the otherwise abundant (hatchery origin) fish populations from the California Central Valley well into areas above Oregon.

In other words, it costs fishermen tens of millions of dollars in lost economic opportunities just in order to reduce fishing impacts to a minimum on all these severely depressed Klamath River stocks. Klamath-driven closures and restrictions thus result in lost fishing opportunities for ports as far south as Monterey Bay and as far north as to the Canadian border.

Restoration of the Klamath Basin’s salmon production is thus critical to the future of salmon fisheries over much of the west coast north of central California.

OVER-ALLOCATION OF KLAMATH PROJECT IRRIGATION WATER HAS DEVASTATED WATER DEPENDENT COASTAL COMMUNITIES

To be blunt, the Klamath Project has simply over-allocated the available water. As a direct result, there is too little water for downriver salmon production (and ESA listings there), too little water to maintain fish in the upper Klamath lakes (and ESA listings there) and too little water provided to the national wildlife refuges (and major bird kills there). The Klamath Project is simply using more than its fair share, leaving far too little water to maintain overall aquatic health.

The fact that there are several species of Klamath Basin fish already on the Endangered Species Act list, serious problems with Iron Gate Hatchery operations, and major downriver fish kills nearly every year now should tell us that something is seriously wrong. What has gone wrong is that there are too many acres now irrigated in what has historically always been a very dry and water-limited basin. We will face increasing water conflicts unless the Project either reallocates and conserves the water it now has, including making sure we have adequate instream flows for fish and wildlife and to the refuges, or more water storage is developed quickly. Frankly, things are so bad now that we must do both.

The fate of downriver and ocean salmon fisheries are directly tied to the quality and quantity of water released by the Bureau or Reclamation through Iron Gate Dam. In spite of our arbitrary political boundaries, the whole basin is hydrologically interconnected. Thus, as we have seen, whatever happens in the Upper Klamath Basin dramatically impacts downriver fishing-dependent communities and their allied businesses. In past years, as water released past Iron Gate Dam has been reduced in total flow and become more and more saturated with nitrate-laced runoff, sediment and agricultural chemicals, these downriver impacts, particularly on fishing-dependent communities, have accumulated to the level of an economic disaster.

Downriver economic losses have already been staggering. Roughly 3,780 family wage jobs have already been lost in these downriver fishing-based economies (representing a net loss of economic impacts of \$75.6 million/year) by the failure to protect and restore salmon within the Klamath Basin, and several thousand remaining jobs are now at risk.⁵ While Klamath Project operations have not been the sole factor leading to recent major in-river fish kills, poor water quality, nitrate pollutants and too little in-river flows directly related to over-appropriation of water by the Klamath Project for agriculture have certainly been a major factor.

Every dead salmon in the lower river is another fish that can never be harvested, and will never provide income to hard-working downriver salmon fishermen. Right now very little fishing is allowed in the Klamath Management Zone for just that

⁵These are estimates done by the Institute for Fisheries Resources (IFR) for an as yet unpublished report, *The Cost of Doing Nothing: The Economic Burden of Salmon Declines in the Klamath Basin*, based on reconstructions of historic salmon runs and using standard, well accepted economic analysis.

reason, because the fish are simply not surviving increasingly hostile river conditions.

We support the right of upper Klamath farmers to a fair share of the water, but the irrigators are not entitled to take it all. Sufficient water must be reserved for salmon production for our industries and our families as well, both for sound biological as well as sound economic reasons.

Water left in the river has just as much economic value to coastal Oregon and Northern California ports as it does used on the ground for Klamath Falls agriculture. A fishermen's job is no less valuable than a farmers, a fishermen's family no less deserving.

Millions in federal funding is now going toward salmon restoration in the Klamath. It does no good to pour millions of dollars into ecosystem restoration when federal funds are also simultaneously used to de-water rivers we are trying to save. It is much cheaper to prevent disasters than to fix them once they have occurred.

WATER PLANNING MUST BE ON A BASIN-WIDE BASIS, INCLUDING BOTH STATES
AND ALL INTERESTS

It is all too often forgotten in Oregon, my home state, that roughly two thirds of the Klamath Basin lies in California. Thus the Klamath Irrigation Project, which over the years has reduced the total flows from the upper Klamath River to California by nearly an order of magnitude and polluted the whole upper river, has had tremendous impacts over the border in California. In a real sense, Oregon has simply exported its pollution to California.

Any solution to Klamath Basin water issues MUST involve elected officials as well as the agencies of both states. Any solution MUST also involve the full range of stakeholders, including the downriver Northern California coastal communities that have seen their fisheries-based economies systematically strangled, and also including the lower river Tribes whose cultures have been violated and whose fishing rights have been rendered all but meaningless.

Unfortunately, the Bureau of Reclamation has long managed the Klamath Project simply to provide as much water to irrigators as possible, but without regard to the environmental consequences or to other downriver and coastal economic sectors. The consequence has been to create unnecessary conflict between Tribal rights, fisheries and wildlife on the one side with Klamath Falls farmers on the other, a conflict that is unnecessary and ultimately counterproductive. In a wet year, these conflicts were apparent and pervasive but largely ignored by the Bureau and therefore unresolved. Now, in this extremely dry year, these conflicts have reached crisis.

CONSERVATION AND INCREASING SUPPLY IS IN EVERYONE'S BEST INTERESTS

Since at least July, 1994, when I personally testified on these very same issues before this very same Subcommittee in a field hearing in Klamath Falls, we have been strong supporters of efforts to increase overall storage of water in the Basin. Specifically we supported the Smith-Wyden Bill (S. 2882) in the 106th Congress, now P.L. 106-498, as a good if belated beginning, and we commend both Senators for their efforts in this regard.

Now we urge this Committee and other Members of Congress to fully fund P.L. 106-498 and urge the Administration to include that funding in the President's Budget. No good idea is worth much if it cannot be implemented.

Inherent in P.L. 106-498 is language that also allows us to look at some creative solutions:

"Sec 2(3): The potential for further innovations in the use of existing water resources, or market-based approaches, in order to meet growing water needs consistent with State water law."

This means finding creative ways to better conserve and reuse existing water supplies, as well as considering a water marketing system to make more efficient economic use of the supplies we do have. All these are proven methods.

Conservation, in the short run, is the only option that we have this year to stretch water supplies to their furthest for all users. Making more efficient use of a scarce resource also makes sound economic sense. For this year, the Bureau should put everything it can into increasing conservation for water within the basin. This includes urban uses as well.

We continue to strongly support P.L. 106-498, want to see it fully funded, and look forward to helping with its implementation.

FARMERS SHOULD STOP BLAMING THE ESA AND GET TO WORK SOLVING
THEIR REAL PROBLEMS

As small-scale family food providers, commercial fishing families are very similar to, and generally very sympathetic to, the plight of upper basin farmers who may be facing a year with no water because of forces over which they have no control. However, we must also inject a note of reality into the current near-panic. The problems facing upper Klamath Basin agriculture are not primarily driven by either water shortages (except on a short term basis) nor the increasing need to protect flows for fish and wildlife. Nor can the blame be ascribed, as some would have it, to the Endangered Species Act, which is after all only the messenger. Upper Klamath Basin farmer's problems are much more pervasive and systemic, including:

1. Climate and Location of the Klamath Basin Is Not Ideal for Agriculture: The high elevation of the upper Klamath in and around Klamath Falls, and the resulting reduced growing season with both late and early frosts, has made it difficult to grow a wide variety of crops. Reliance on traditional temperature-hardy crops such as onions, sugarbeets and potatoes, however, has created problems in itself because these commodities are in oversupply in both U.S. and world markets.

Likewise, Klamath Falls is not near the major transportation hubs of the region, and so has more difficulty and expense in shipping its produce to markets than many other regions. These problems add to the cost.

2. Many Upper Klamath Farming Operations Can No Longer Compete in World Markets: Because of the additional transportation costs, short growing seasons, and other added costs of Klamath Falls agriculture, many growers can no longer compete in the world markets. Many Upper Klamath Basin potato farmers, for instance, chose last year to plow their potatoes into the ground because they would have lost money competing on saturated and depressed world markets. Klamath Basin cannot even compete cost effectively with potato production in Idaho, much less foreign markets, and the same is true for many of its products.

3. Processing Capacity Has Left the Basin: Secondary or value-added processing is one major way agriculture remains profitable and serves a variety of markets. However, potato and sugar beet processors and other processing plants have left the basin, largely because of the first two factors mentioned. It is no longer economically feasible for major processors to remain in the basin because of transportation costs, limited and uncertain production, and oversupplied world markets.

4. Conflicting Uses: Some 20,000 acres of the national wildlife refuges (public lands) is now leased out to private parties for row crop farming. Oddly, these lease lands have first call on water that would otherwise go to the refuge. In other words, even when the refuge wetlands themselves are threatened with drying up, the farms on the refuge continue to receive full water! Additionally, those farms are allowed to use pesticides and agricultural fertilizers that are well known to damage wildlife in the refuges. Lease land farming on the refuges is clearly a conflicting use, and should be phased out by nonrenewal of these leases, which are on five-year renewable terms. In order to keep those farmers whole, there are a number of opportunities at present to simply move lease holders to farmland now for sale outside the refuges on a willing seller willing buyer basis, and this would be a good use of federal funds, freeing up additional water for the refuges as well as allowing those farmers who wished to continue in operation to do so.

Most of these problems have little or nothing to do with ESA listed species, but rather with the costs of production, conflicting uses, global gluts and an increasingly volatile and interconnected world market. Klamath Basin farmers are far more oppressed by world trade agreements and increased global competition than by any endangered species.

The impacts of global competition have been devastating on Klamath county. Income from farming in Klamath county declined 93 percent (in real terms) between 1969 and 1997 and now represents only two-tens of one percent of total county personal income. Agricultural services accounted for six-tens of one percent of total income in 1997, a slight decrease since 1969.⁶ This is why so many have recently offered to sell out, well before the current water crisis has hit the region. The reality is that many of those traditional farming operations in the basin are simply no longer profitable.

Fortunately the Klamath County economy has been diversifying in recent years, and the farming sector now accounts for only about 6 percent of total county employment. Most new jobs in recent years, and those projected over the next several

⁶From *Economic Profile of Klamath County, Oregon*, an economic study by The Wilderness Society (2000), available from The Wilderness Society, 1615 M. Street, Washington, DC 20036 (202) 833-2300.

years, will be in other sectors as the economy matures. The Klamath County economy will survive, and even thrive in the long run, if traditional agriculture within the county is cut back to more sustainable, and ultimately more profitable, levels.

A NEW RESTORATION VISION: THE KLAMATH COALITION

PCFFA is here today not only as a major industry but also as a member of A Coalition for the Klamath Basin, a broad based alliance of organizations dedicated to conserving and restoring the Klamath Basin. The Coalition includes local, regional, and national conservation groups as well as PCFFA as the Coalition's largest industry group. In addition to PCFFA the Klamath Coalition's founding members include The Wilderness Society, Klamath Basin Audubon Society, Klamath Forest Alliance, Oregon Natural Resources Council, the Sierra Club Oregon Chapter, WaterWatch of Oregon, and the Institute for Fisheries Resources (a PCFFA affiliate). Part of our effort has been to articulate a positive vision for how the Klamath Basin ecological problems could be addressed in creative ways while maintaining a balanced use of the resource, including agriculture.

In February, 2000, the Klamath Coalition released a Conservation Vision for the Klamath Basin at a workshop in Klamath Falls, Oregon. More than thirty organizations in Oregon and California have now endorsed our vision. We have discussed our vision with and received input from farmers, Tribes, federal agencies, and other leaders in the Klamath Basin and are very pleased to have this opportunity to submit this document as an attachment to this testimony.

Two main themes run throughout our Conservation Vision. First, the three major ecological problems in the Klamath Basin—loss of fish and wildlife habitat, degraded water quality, and altered hydrology—are interrelated, and restoration efforts should seek to address these problems together. Past diking and draining of wetlands have not only damaged wildlife and fisheries habitat, these actions have also degraded water quality and eliminated much of the natural water storage capacity in the Klamath Basin. Restoring native wetlands and other habitats can improve water quality, reestablish the natural water storage capacity that has been lost, improve wildlife habitat and provide more flows for downriver fisheries.

Second, the Klamath Basin should be addressed in its totality. Activities in the upper Klamath Basin have a profound impact on the ecology, economy, culture, and quality of life in the lower Klamath Basin and along the Oregon and California coast, particularly true with respect to both in—river recreational fisheries and the marine commercial fishing industry. Water diversions and developments in the upper Klamath Basin threaten the very survival of coho salmon and other anadromous fish in the Klamath River, which in turn greatly limits fish harvest of otherwise abundant salmon stocks in order to protect these weakened stocks.

The vision of our coalition is to restore a healthy, naturally diverse, and productive Klamath Basin ecosystem by reestablishing, to as great a degree as feasible, natural hydrological conditions and ecological functions throughout the entire basin. This should be accomplished through a comprehensive, ecosystem restoration program. Certainly appropriate water storage augmentation as contemplated in P.L. 106-498 will help that process.

The goal of these efforts should be to restore “normative” conditions, under which ecological processes occur using natural patterns of variation, throughout the Klamath Basin. This does not mean restoring the basin to its original state, which is an impossibility giving a growing human population. By this we mean that the Klamath River and related habitats should be managed so as to approximate or mimic the natural rhythms under which the fish and wildlife of the region evolved to the greatest extent feasible.

Viable populations of native species should be restored to the Basin. Migratory birds should once again darken the skies. Salmon stocks in the Klamath River should be restored to a level that not only satisfies the requirements of the Endangered Species Act but also supports Native American tribal rights, and the commercial and sport fishing economies of river and coastal communities in Oregon and California.

We have proposed an array of specific actions that are described in the Vision. Many of these actions can be taken cost effectively, with few impacts to existing uses and will in themselves contribute substantially to the regional economy. Wetlands restoration, for instance, adds greatly to the water storage capacity of the whole basin and (unlike reservoir storage) also adds to the ecological integrity of the

system by adding additional wildlife habitat, buffering the effects of drought, and providing downriver flows for fish and wildlife.⁷

All these actions are doable—if we make the wise investments necessary to bring that about. P.L. 106-498 can certainly become one of the vehicles for making that possible.

SURVIVING THE IMMEDIATE WATER CRISIS

There is now little doubt that this will be one of the driest years on record for the Klamath Basin. Farmers, fishermen and wildlife are facing a crisis now that, unfortunately, long-term projects for water storage will not be able to address in time. However, there are several things that can be done immediately or in the short term to prevent water conflicts, to aid distressed farmers and their families, and to move the upper Klamath Basin toward a restoration program to prevent such conflicts in the future. These include:

(1) Termination of Lease Land Farming in the Wildlife Refuges and Use Lease Lands Water to Keep the Refuges Viable: Many basin farmers now have private land for sale on the open market in areas outside the refuge. There is a proposal to buy these for-sale farmlands using a combination of private land trust funds and federal funds, and then to lease these lands back to the local irrigation district so that the district can sublease those lands to farmers now leasing within the refuges as replacement lands as they are moved off the refuges. This would recapture more wetlands for the refuges (i.e., add more total water storage), eliminate conflicts between farming and the refuges, and give those farmers now leasing lands on the refuge itself replacement land for row crops at a comparable price. It appears to be a win-win solution to these conflicts and should be pursued actively. In the meantime, no new farm leases on refuge lands should be issued and those which can be terminated should be.

(2) Terminate Terminable Water Contracts: Many water contracts are terminable by their terms in low water years. The farmers holding these contracts know this, bought them with that in mind, have planned financially for that eventuality, and are expecting them to be terminated this year. They should be terminated immediately. Higher priority user contracts and fish and wildlife needs must be serviced first to the extent possible, and even so, many of these uses will not get sufficient water this year.

(3) Implement Stringent Conservation Measures: Every possible way water can be conserved should be implemented as soon as possible. This includes updating closed-system irrigation technology (rather than open ditches), and encouraging planting of low water use crops. A fund should be established to help farmers pay for transition to new irrigation systems, to plug leaks, and to help pay for other emergency conservation measures. Conservation always makes sense.

(4) Declare a Water Emergency: Klamath Basin is in the middle of a drought which constitutes a serious water emergency. Like any other farmers nationwide suffering from natural disasters, farmers in that basin should qualify for disaster relief funds. Do whatever is necessary to qualify those farmers for emergency relief funds to help compensate the many who are likely to have little or no water this year, particularly if the water is needed to meeting fish and wildlife and Tribal rights obligations.

(5) Meet all Fish and Wildlife Obligations to the Greatest Extent Possible: Obligations under the ESA to prevent extinction of valuable public resources, and obligations to Tribes to provide instream flows sufficient to assure fisheries and protect their culture, are primary obligations that the courts have ruled must be satisfied ahead of Bureau obligations to water contractors. *Klamath Water Users Assn. v. Patterson*, 204 F. 3d 1206 (9th Cir. 1999), cert. denied, 121 S. Ct. 44 (2000). See also *O'Neal v. United States*, 50 F. 3d 677 (9th Cir. 1995). This is the law of the land. Though not as clear in the courts, the same policy considerations should also apply to protection of migratory bird species on the national wildlife refuges, which are protected under the Migratory Bird Treaty Act and under international treaties. Obligations to public resources must be met first, under the law, by public agencies before meeting the needs of private farmers to make a profit using public water.

It is unfortunate that in very dry years like the one coming up, that limited water supplies may create hardships for some farming families. We should seek to do all

⁷Wetlands is nature's best water storage system. One acre of wetlands holding one acre-foot of water. for instance, has stored 325,851 gallons of water which would otherwise be lost to evaporation or waste or floods. Wetlands naturally release this water into the system to buffer the effect of droughts and seasonal rainfall. (1 acre-foot = 43,560 cu. ft. x 1,728 cu. in. per cu. ft. = 75,271,680 cu in. of water. One gallon = 231 cu. in. Divide one by the other = 325,851 gallons/acre-ft. of wetlands storage).

we can to: (1) avoid such conflicts by increasing the overall water supply and making the most efficient use of the water we do have through conservation and sustainable land use practices, and; (2) where cutbacks on irrigation water do cause hardships, take all reasonable and necessary steps to see that farmers are reasonably compensated for the hardships they must endure through no fault of their own.

In the long term, however, the efforts contemplated under P.L. 106-498 to augment the current water supply will help moderate and perhaps eliminate some of these conflicts in the future. We fully support P.L. 106-498 and urge its full funding.

Attached: Table 1 (retained in subcommittee files.)

Senator SMITH. Thank you, Glen.

John Crawford. I do not want to hurry anybody, unnecessarily, but we do not have a long lease on this room.

**STATEMENT OF JOHN CRAWFORD, FARMER, ON BEHALF OF
KLAMATH WATER USERS ASSOCIATION, KLAMATH FALLS, OR**

Mr. CRAWFORD. Thank you, Mr. Chairman.

Senator SMITH. Tell us what you want us to know. We are anxious to hear.

Mr. CRAWFORD. I think that, first of all, it is necessary that you know who we are. And we are small family farms in the Klamath Basin. Corporate farming America has managed to avoid the Klamath Basin. So, our basis is still small family farms.

We are veterans of World War I and World War II, who were invited by the Bureau of Reclamation onto these reclaimed lands that were ceded from the States of California and from Oregon to the Federal Government for the purposes of reclamation and irrigation.

It is necessary to understand that the Klamath Project was probably one of the most appropriate projects in all of the West, because it was superimposed on open water and marshlands that consumptively used between 400,000 and 600,000 acre feet of water annually.

The use by agriculture averages—and the refuge—included averages something under 500,000 acre feet of water. We have not intruded on the use of the river or the elevation of the lakes. Certainly, that is not the case.

We are second, third, and fourth generation descendants of those homesteaders who were made a promise by the United States, and they had some obligations, as well. The first of their obligations was to repay the cost of construction of that Klamath Project. And that was done in its entirety.

They were also charged with creating communities from the ground up. And at a peaceful demonstration in Klamath Falls, a week ago, the first lady veteran to receive a homestead was one of our initial speakers. And she spoke of doing just that; living in a building drug from the old Japanese internment camp at Newell; raising four children; sending them all to college; and doing so on her homestead that she received in Tulelake.

We also had a mission to feed a hungry world. And we have upheld each and every aspect of our part of a bargain. Now, the obligation that the government has to us must be upheld, as well.

The proposed operations for today need to be looked at in the context of what happened, historically. Senator Wyden asked the question, what could be done, now? Everybody wants to know, what can be done, now? We have to know what is possible for us to do; for farmers, refuges, sucker, and salmon. In order to know

that, we have to take a historic look at what has happened over the last 10 years.

From 1991 through 1994, we had three low water years. Mr. Spear referred to the viable and most numerous year class of suckers, which is in 1991. The water elevation at Upper Klamath Lake in 1991, a drought year, was 4,138, two feet below the proposed elevation in the current biological opinion.

There were no significant fish kills regarding suckers in either 1992 or 1994. The salmon run that returned to the Lower Klamath River—fall chinook, that is—in 1995, following the lowest flows in the history of the Klamath River in 1992, was the best run that we had had in 44 years.

It was noted that that was insignificant, because a good many of those fish were hatchery fish. On the other hand, in 1996, another important and large run of fish came up the river that was comprised of 78 percent 4-year-old fish that were naturally spawning fish occurring in the mainstream Klamath River.

In 1992, we were able to flood up 94 percent of the traditionally flooded wetlands within the wildlife refuge systems. Be it, they might not have been flooded up as deeply as the Fish and Wildlife Service would have wanted, but 94 percent is a laudable goal in—given the shortage of the resource in that year.

Through this 10-year period, agriculture has initiated or supported basin-wide wetland restoration and recovery projects—projects that compromise one of the most ambitious efforts of this kind in the world today. This proactive restoration support goes well beyond the obligations of the Endangered Species Act.

The impacts proposed in the NMFS BO and the U.S. Fish and Wildlife Service's BO to these communities that we have talked about are this, basically: Small communities, such as Tulelake, California; Bonanza, Merrill and Malin, Oregon, are being asked to shut down their farms; to shut down their businesses; to close their schools; close their churches; and move on from the land. In no one's eyes, can that be deemed reasonable or prudent.

What do we need? What we need is a time-out from the issuance of biological opinions with questionable scientific basis and validity. We need to turn away from subjective management with questionable benefits and disastrous impacts to communities.

The Departments of the Interior and Commerce must be convinced to consider current drought conditions; past drought operations and their impacts; to utilize the new information that is available to them on suckers; to evaluate dam removal, as part of this process, when it comes to Chiloquin Dam.

At the same time, we need to take a legitimate look at the lack of knowledge that we have on the Klamath River, as compared to 12 years of flow study development on the Trinity River; and a secretarial decision coming from Secretary Babbitt that put 50 percent of the historical flow back into that river. That was not only to sustain the endangered coho, that was to recover the endangered coho.

So, we have to make a legitimate comparison in the same watershed for the same fish as to what 85 percent of the historical flow, which is averaged in the Klamath River, what that impact is as compared to the 50 percent on the Trinity River.

It is time to insert some common sense, some reasonableness, and some flexibility into the section 7 process. History shows us that we can do this. No resource needs to shoulder a disproportionate share of the burden of drought.

The flexibility of historic operations will cause no extinctions. Endangered suckers and threatened salmon may, indeed, have benefited from project operations during drought.

Agriculture and the refuges suffered the most severe impacts, but they have been able to survive until now.

[The prepared statement of Mr. Crawford follows:]

PREPARED STATEMENT OF JOHN CRAWFORD, FARMER, ON BEHALF OF KLAMATH WATER USERS ASSOCIATION, KLAMATH FALLS, OR

Chairman Smith and members of the subcommittee: Thank you for inviting the Klamath Water Users Association (Association) to testify at this hearing. I am John Crawford, a farmer and member of the Board of Directors of Tulelake Irrigation District (TID). TID is an Association member as are nearly all the irrigation districts that receive water from the Klamath Project. I am accompanied by David Solem, who is the Manager of the Klamath Irrigation District, who will help answer any questions. We are both past presidents of the Association.

For the community forum sponsored by Senator Smith last November, the Association prepared a detailed written statement. Rather than repeat those matters, I have attached the statement, as well as the statement of Tulelake Growers Association, to this written testimony.*

My testimony today necessarily focuses on the severe threats faced by our farm families and communities who rely on the Klamath Project. In my irrigation district, at this time of the year, we normally have been to work in the fields and made use of the water supplies through the Klamath Project irrigation system we have paid for. Just over two weeks ago, we were told not to use any water until further notice and warned of the potential for severe shortage.

For myself and my neighbors, this threat is devastating. Banks will not talk to farmers. Farmers have already let some workers go because of uncertainty. Seed salesmen, equipment dealers, car dealers, hardware stores, paint dealers, local government and schools, are at tremendous risk. The anxiety and tension throughout the community are tremendous.

The situation is all the more painful considering that we are here at the invitation of the United States. In 1905, a reclamation project was authorized to promote settlement and agriculture. The Klamath Project was brilliantly conceived. It was superimposed on areas of open water and marsh, such that our consumptive use of water on the reclaimed, productive farmland is not believed to be significantly different from pre-Project water consumption and evaporation in those same areas. That same design, and the system's operation, result in extremely efficient use of water. Settlers and homesteaders, including the veterans of world wars who were given preference in homesteading, made a pact with the United States. Water users agreed to repay the costs of Project construction and finance its operation, in exchange for a water supply made available through Project facilities. We have kept our end of the bargain, and fulfilled the vision of the Reclamation Act. The United States must, and can, honor its commitments to us.

On March 9, our communities, descendants of turn-of-the-century settlers and even a few of the last homesteaders, held a peaceful rally to support agriculture, our communities, and our heritage. The crowd was addressed by long-time family farmers, high school students, farm employees, and business owners. Information on that rally is being furnished to the subcommittee. It is humbling to speak to you as a representative of those communities.

The unfortunate fact is that the threat to our community is not simply dry conditions, but a threatened regulatory drought. On January 19, 2001, federal agencies issued a total of three documents in which agency staffs threatened wholesale changes in the status quo. One was a letter from the National Marine Fisheries Service threatening to insist on unprecedented high river flows in the Klamath River. A second was a memo from the U.S. Fish and Wildlife Service (USFWS) threatening to insist on unprecedented high elevations in Upper Klamath Lake, a threat that has been recently perpetuated by USFWS staff in a draft biological opin-

* Attachments to this statement have been retained in subcommittee files.

ion. A third was a draft proposal from USFWS staff threatening to change water availability on Klamath Project lease lands. It is these threats, not the dry conditions, which in reality create our current situation.

These developments have led to media sensationalism, and even rumors of invoking the Endangered Species Committee ("God Squad") for ESA exemptions. This makes great press, and incites the opponents of agriculture, but is thoroughly unnecessary.

I emphasize that these threats also are built on the strange reality we face in the Klamath Project. No matter how much water is used by others, or exported from the Basin by others, no matter the impacts of overfishing or the many forms of habitat modification throughout the Klamath Basin, we in the Klamath Project are asked to guarantee instream water levels to mitigate for those conditions. The burden we are asked to bear on one segment of the Klamath River system (flow at Iron Gate) is grossly disproportionate to the highest requirements even under serious consideration on the Trinity River, a major Klamath River tributary. Yet, that decision on the Trinity is being made on the basis of a comprehensive flow study and there is no such study pertaining to mainstem flows at Iron Gate.

We know from a century of experience that we can manage our way through the present drought. The dry conditions of 1991, 1992 and 1994 were no less challenging than those we face today. Yet, we managed to allocate water in those years so that no interest experienced any greater damage than any other. Farms, and fish and wildlife, continued successfully. Indeed, the low lake elevations of 1991 produced an unusually abundant number of suckers in Upper Klamath Lake. We observed no significant fish kills during the low lake elevations of 1991, 1992, and 1994. Yet, we observed significant fish kills in the higher water years of 1995, 1996, and 1997. Below average flows at Iron Gate in the Klamath River have produced relatively high salmon runs. On the other hand, artificially high releases of warm water from Project storage have had detrimental effects to Klamath River salmon. In the past few years, we had more abundant water supplies to work with than in the early 1990s, and we have tested the consequences of different water management schemes. We know enough to recognize that variability is a constant. We cannot ignore real facts, such as the population successes of fish species in relatively low flow and lake level conditions and the lack of evidence of benefit from deviating from historical Klamath Project operations.

I stress that while we are committed to preserving agricultural families and communities, we are not "anti" any other interest. Ironically, at a time when we face a major challenge, significant efforts of our Association have been directed at environmental improvement. Together with Ducks Unlimited and California Waterfowl Association, we have recently recommended to USFWS a number of constructive measures to improve the water supply of our local wildlife refuges and enhance habitat values on farmland. Our joint letter is attached. Within the last month, we have developed a detailed report with specific, aggressive recommendations to recover the endangered sucker species. We want to see things happen on the ground that benefit fish and wildlife. We, irrigation water users, are actually promoting removal of a dam, in order to restore vast areas of spawning and rearing habitat for endangered suckers. These recent actions are but a continuation of the activities of the Association dating to 1993, when farmers reached into their own pockets and funded an Initial Ecosystem Restoration Plan for the Upper Klamath Basin.

Is there self interest involved in our environmental activism? Yes. I derive as much enjoyment from the fish and wildlife in the Klamath Basin as anyone you can name, from the fishery resources of Upper Klamath Lake to the fisheries resources of the Klamath River to the waterfowl and wildlife on my land and the lease lands that I farm. In addition, however, Klamath Project farmers simply are not stuck on saying "no" to the environment. We must take care of farmers, communities and our fish and wildlife. Everyone with those goals will be a welcome partner in our efforts.

The question for the moment is whether we have thrown away the historic flexibility of the Klamath Project, and with it the entire Klamath Project and wildlife refuges themselves. There is a gravely destructive downside to destroying that flexibility, and it is completely unnecessary. We encourage the subcommittee to promote the overall welfare of the Klamath Basin, as we do. Right now, family farmers and rural farming communities, such as Tulelake, Merrill, Malin, and Bonanza, are being told to shut down farms, close their businesses, close their schools and churches, and move, based on subjective management that we have no reason to believe will benefit the listed species. This is completely unnecessary. Flexible drought operations and cooperation, which have served all interests in the past, can do so again.

Senator SMITH. Thank you, John.
Mr. CRAWFORD. Thank you.

Senator SMITH. I also wanted to thank you, sir, for coming. And we look forward to learning from your scholarly perspective.

STATEMENT OF ALEX J. HORNE, Ph.D., PROFESSOR, DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING, UNIVERSITY OF CALIFORNIA, BERKELEY

Dr. HORNE. Mr. Chairman, thank you for inviting me to this important meeting. In the interest of time, I will submit my written testimony, and I will just pick out a few of the highlights for you.

Senator SMITH. Pleased to receive it.

Dr. HORNE. For the last 30 years, I have been a professor of ecological engineering at UC, Berkeley. And ecological engineering is a way of manipulating and managing the environment that tends to use sustainable resources.

We use a lot of photosynthetic solar and wind, which might interest your committee in other aspects; particularly, of course, in wetlands, which is the ideal method primary for wastewater treatment. So, it is the green engineering. So, I think it is particularly appropriate for this particular community.

My education is in zoology, biochemistry, limnology, and oceanography. I have worked, I think, in just about all the continents; hundreds of reservoirs, lakes, rivers, streams, deep oceans, for just about every kind of agency from the Federal Government down to individuals.

In particular, for this particular question here, I have designed a number of systems which have saved the lives of hundreds of thousands of fish and taken out hundreds of tons of nutrients and continue to do so until this day.

Now, I cannot restore the world to what it was. None of us can. For instance, we can get rid of species of fish that have been introduced by—from other countries, and which flourish in our systems.

So, what we have to do is do the best we can with what we have. And that tends to be what civil engineers, which officially I am also, it is happening. I think, in this case, there are a number of methods which we could use to solve some of the problems.

In essence, what we have is an inelastic supply of water. And to some extent, the supply of water, in volume, can be replaced by making the water you have of a higher quality.

Now, let us look at the particular case here. I was retained in October by the Klamath Water Users Association to look at the relationships between lake depth, water quality, and fish kills. And my recommendations appear in the plan, which is protecting the beneficial uses of Upper Klamath Lake; a plan to accelerate recovery of the Lost River and shortnose suckers.

And with me today, in the audience, is David Vogel, who is a fisheries biologist, who worked with me on this project.

I have—unlike most people, I seem to have read the biological opinion. And I have also read a number of other documents. I first did work, actually, in Upper Klamath Lake back in 1970, I am afraid to say. My first work came out when I was working on Clear Lake—our Clear Lake, which is California's Clear Lake, because the lakes are very similar, but they have some similar—they have some important differences.

So my problem was, is there a fish kill related to water quality? And yes, there is. But is it related to water level? Well, there are five reports of major fish kills. The average height of the water at those times is about .6 feet above the average. And some of them occurred when the water was one or two feet higher. And one of them occurred when it was lower.

There, once is a coincidence. Twice, maybe. But five times? It does not seem to me that water level, alone, is a cause or even the main cause. And if we read the biological opinion, there is a lot of good data in the biological opinion. A lot of good studies have been done. My colleagues, fellow scientists, and others have done excellent work and made measurements.

I have taken that data and used that data. I may not particularly agree with all of their conclusions, but I think the data forms a nice study base for us to make decisions on.

And my conclusion is that the water quality; particularly, the lack of oxygen, the lack of dissolved oxygen in deep water or the deeper water, the bottom of the lake, anyway, or whatever it is, is the prime cause that we can see right now of these fish kills.

I do not think this is in particular disagreement with anybody else's ideas. The Bureau of Reclamation and biological opinion seems to concur with that opinion.

Well, I spend a lot of my time working with lakes and reservoirs where this very system is the problem. Some of these—like I am working with one in Australia right now—the water is only five or six feet deep. But, nevertheless, we can do something about it. Some of the ones I have worked with are very large; as large as the Upper Klamath Lake.

I would like to show a few overheads, so that I might illustrate what I mean here. You have copies of all of these submitted to you. So, they are available for you to look at.

Senator SMITH. Doctor, just a question. Have you ever been involved in a peer review?

Dr. HORNE. In a peer review?

Senator SMITH. Yes. Connected with this lake.

Dr. HORNE. Not connected with this lake, no. Though, I have followed its progress over the years, because I have heard most of the people that work in science here—in fact, the last time I heard something was in November, when Eugene Wells, an eminent limnologist, presented his ideas about the lake.

I do not think I disagree with most of these ideas. It is not that the studies are wrong; it is how can we fix the lake, rather than does this cause that. Some of the does this cause that turned out not to be too involved.

[Slide.]

Dr. HORNE. The effective sediment and anoxia—anoxia is no oxygen in the lake is—is—affects the water quality. If we have too much algae and too much eutrophication, which is too much algae, we get lower oxygen in the lake bottom. No argument about this one. Lower oxygen releases undesirable water quality chemicals. I do not think there is any argument about this one. An addition of oxygen reverses this situation.

If we reduce the nutrients coming from in the lake or from outside the lake, we will eventually cure the problem. The difficulty

is reducing nutrients outside the lake is rather hard to do. Some of these nutrient recyclings and increases in nutrients may actually be due to the fact we have exotic fish in the lake. It is not just as simple as saying, "We stop you. We stop you." It is not even a TMDL process.

Some of the nutrients come from the atmosphere. It is more difficult. But internally, we can do something. And we can do something quickly, which is part of the idea here.

Now—this is going to be hard to do, standing up, but imagine your lake is only this deep. There is never going to be an oxygen shortage in the bottom, because there is an inexhaustible supply in the air that can be mixed in.

As the lake gets deeper, it becomes more and more difficult to stir the lake around until you only get a lake that is about 40 feet, then the bottom part becomes completely isolated and remains that way all summer. This is the way most reservoirs are.

Somewhere in between is a critical level where you have not got enough mixing to get oxygen down to the bottom. This is what is happening in this lake. It just so happens that Klamath Lake, as run now, within a few feet it is going up and down, is at that critical level.

And I will illustrate this with a couple more slides.

[Slide.]

Dr. HORNE. This is the one-way route to problems, but here is what—when things are good. We have few algae in the surface water. This is presumably what Klamath Lake was like many, many years ago, perhaps; certainly a bit better than it is now. Lots of oxygen in the deep water.

Now, remember, this scale here can change. If we were in Algeria and it was very hot, the vertical scale here might only be six feet or even two feet. If we were in the open ocean, the scale might be 200 feet. It depends how warm the day is. It depends where the lake is. In the case of Klamath Lake, this is somewhere between five and ten and twenty feet deep.

When there is oxygen at the bottom, iron, phosphorus, and things like hydrogen sulfide and ammonia, which are toxic substances, remain in the bottom.

Senator SMITH. It puts pressure on them to stay at the bottom. Is that what you are saying?

Dr. HORNE. No. What happens is this secret thing here called the oxic microsome. There is a little layer at the bottom of the lake that is healthy. It is about that thick, or even thinner.

[Indicating] It can be as much as a centimeter or two. Lake Tahoe, it is five centimeters. It can be as little as a millimeter.

That tiny boundary prevents things like hydrogen sulfide, phosphorus, iron getting through. It is small, but it takes out the toxicants and holds them in non-toxic form.

What happens is, when algae increase, we have a self-perpetuating situation, which is typical of many lakes, including Klamath Lake. If we have a lot of algae, we have an anoxic microsome at the bottom. Once it is anoxic, everything pours out. So, you could imagine the deeper parts of the lake are like fountains of ammonia, hydrogen sulfide, phosphorus, and iron, which go out and increase

the—it is just a self-perpetuating process. This is common the world over.

Well, one way, obviously, is to reduce the nutrients and to reduce the algae. That takes a while. And like I say, some of these things may be due to internal cycling, like exotic fish.

So, what can you do? This is an example of—

Senator SMITH. Can you tell me, Doctor, what exotic fish we are talking about?

Dr. HORNE. Yellow perch is one.

Senator SMITH. Yellow—

Dr. HORNE. There is usually fairly small fish. There is lots of them. They compete with native fish, because they are usually eastern fish—

Senator SMITH. They are not native.

Dr. HORNE. They are not native.

Senator SMITH. Who put them there?

Dr. HORNE. They got there accidentally.

Senator SMITH. Okay.

Dr. HORNE. We will say it that way. They are not really good fishing fish. They are usually bait fish. And when you finish fishing, you tip your bait out.

Senator SMITH. Okay.

Dr. HORNE. And some of them survive very well. They are a nuisance all over the West.

Senator SMITH. Okay.

Dr. HORNE. Okay.

Senator SMITH. They are not endangered.

Dr. HORNE. I wish they were. I think most people would.

[Slide.]

Dr. HORNE. This is an example of a reservoir of about 425,000 acre feet, which is a little smaller than Klamath Lake, but it is—it had—155,000 fish died in one day in the fish hatchery below. So, as you can imagine, there was a lot of trouble. Now, this was in the 1986 drought.

The solution suggested by the agencies was increase the water level. That, of course, would mean less water for the city of Oakland, in which—who operates this reservoir. So, a compromise had to be looked for.

What I did is, I said, “I do not think the lower water is to blame for the kills. I think it was because we had no oxygen in the deeper water.” I suggested using oxygenation. We found a system; installed a device that adds pure oxygen, in fact six tons a day, to the bottom of the lake; started in 1993. The nutrients declined. The algae declined, reversed eutrophication, and most importantly perhaps, there has been no fish kills due to water quality problems in the 9 years since.

Senator SMITH. Never, since.

Dr. HORNE. Never.

Senator SMITH. So, you really did hit on it.

Dr. HORNE. You get lucky sometimes.

So, I can conclude that lower water, though a problem and though it was involved, was not the key factor. And you could get around it some other way. Now, this is an artificial system. It is a life support system, as you rightly put.

Maybe in 15 years' time, with other things, we can figure out other things to do—maybe 10 years' time, maybe even 5 years. But right now I cannot see any other way to keep those fish abundant.

And if I was a fish, I would say, "Okay, Prof, it is not brilliant, but it will give me life for the next 5 or 10 years," while we do another bigger solution, while we get in all the people together and deciding what we can do here and there. It allows you to be flexible, with an inflexible water supply.

Senator SMITH. Have you—and as you look at the biological opinion, is any of this ever factored into a solution?

Dr. HORNE. None of this is factored into a solution, because all the solutions seem to be—it is a bit like the Bay Delta. Everybody was focusing on the striped bass, for example, and in fact, it was flows. But that is because everybody was working on flows, because they were funded to work on flows. Nobody was working on pesticides, because they were not funded to work on pesticides.

Eventually, some of the problems were tracked down to other causes than just simple flow causes.

Senator SMITH. Have you ever suggested this to anybody in the agencies as a solution? I mean, what you are telling me is, we are looking at the glass and it is half empty. But you are telling us how to see it half full and a real future for all of the interests and—in this room.

Dr. HORNE. Until this agency set up this particular system, there were not many of these that are successful.

Now, the Tennessee Valley Authority has huge systems using oxygen. They have enormous reservoirs; a million-plus acre feet; flows of 7,500 CFS. And they use oxygen in large quantities.

We took their data—in fact, the system we used is based on the TVA's work. I just take other people's data and apply it.

Senator SMITH. Doctor, you are talking about active management of the lake. Without active management of the lake, how long will it take to recover? Just setting aside all the human devastation to Tribes and to farmers.

Dr. HORNE. I am not quite sure of the question you are asking. That we take out a human influence or—

Senator SMITH. Yes. And just say that the biological opinions of the different agencies, which are not consistent and which cannot be achieved even in—when you put them together, they are both inconsistent. So, setting the other interests aside, if we just follow their recommendations, how long until this lake recovers?

Dr. HORNE. Well, it will never recover.

Senator SMITH. Okay. That is the point.

Dr. HORNE. I mean, you have got to make some more—you have got to do some active management upstream, as well, which I could show you the next set.

Senator SMITH. With active management, how long are we talking about?

Dr. HORNE. Good point. Just before I complete that, these are the actual data from this reservoir.

[Slide.]

Dr. HORNE. What we see here is soluble phosphate, which is of concern in this lake and other lakes in the world, on the vertical axis against time. Oxygen started in 1993. And you can see there

is a lot of phosphorus in the lake before we add the oxygen. After the oxygen, it drops a lot. The bottom figure here indicates chlorophyll, which is algae, which is one of the root causes of problems. And you can see chlorophyll was high before the oxygen, and it went low.

Now, this was a new finding. And I had to wait—you see, we have got several years—about 4 years' or 5 years' data before and about 8 years' data afterwards. Now, I can be sure it is not freak, it is not some fluke.

So, a bunch of us who were working on this—perhaps a half-dozen scientists—have begun to go around and say, “Look, these are methods we can use.” My own water district is installing one of these oxygenation systems this fall. The Contra Costa Water District has just installed one to the north.

So, it is a new technology. So, not everybody knows about it yet. How do we get these things out? We try. We publish documents. I published a document with some of this information in, recently. But these things take a while for everybody to find out.

Senator SMITH. Can we have it in 2 weeks?

[Laughter.]

Senator SMITH. Doctor, we have got an extension on the room, but I do not on my schedule. And I am going to leave this hearing open. The counsel is going to be here—got the gavel. This is legal. And Congressman Walden is going to close with questions and closing comments.

Dr. HORNE. Can I answer just one question?

Senator SMITH. Yes.

Dr. HORNE. And that was, you said, how long? If I skip to the back end of my presentation here, this is a very bad algae problem in upper Newport Bay, one of the richest communities, as you know, around.

[Slide.]

Dr. HORNE. The algae biomass is on one side, time is on the other side. We started in 1995 with the pre-data. We built these wetlands in—these are actually wetlands—we built them in 1996 and 1997. And we are down to 50 percent of what we had by this year.

You saw the results of oxygenation on the reservoir. They were instant; within the year.

Senator SMITH. Wow.

Dr. HORNE. And with that, I will—

Senator SMITH. Doctor, first, I thank all of our witnesses. You have been tremendous to come here. And this is important, but Doctor, you are the first ray of hope I have had in this Klamath debate since I have been in public life. And I cannot thank you enough. And we will talk some more.

Congressman WALDEN. Did you want to go on through your other—yes. Why do you not go ahead and—

Dr. HORNE. Maybe I could finish that off. We talked about the internal loading, which is the stuff coming out from the bottom; the toxicants and the biostimulants. I have demonstrated that those can be removed by oxygenation.

The extent to which they would remove and solve Klamath Lake's problem depends a little on the specifics of Klamath Lake.

I am giving you not the engineering detail, but the engineering overview right now.

The second thing we need to do is do something upstream; to do something with nutrients coming in. And we have talked about wetlands. There have been wetlands built, but I do not believe they have been built deliberately to clean up the lake and redress eutrophication. They have been built for various reasons.

I would like to show you, just briefly, what you can do with such a wetland.

[Slide.]

Dr. HORNE. This one involves the reversal of eutrophication. This was a river containing large amounts of nitrate, in this case, from housing and agriculture. We had an estuary that was full of large algae. We had a determination it was harmful to the fish.

And thus, I designed a wetland to remove the nutrients. The wetland started in 1997. It is an 80-acre wetland in this particular case. It removed 200 pounds of nitrogen a day. And we had the algae reduced by 50 percent.

[Slide.]

Dr. HORNE. Now, this is the concept we have to get into. Here is a couple of beavers. And the old one is talking to the young one. He is saying, "Sure, kid, you start by working for the ecosystem, but pretty soon you figure out how to get the ecosystem working for you."

And that is the essence of ecological engineering. And it is the essence of how a wetland works. We use solar power. We use the energy of photosynthesis to power bacteria to do the work that we want them to do. And since bacteria do not have a lobbyist, they cannot object to being asked to do that.

This is what this particular wetland, which is an urban wetland, looks like.

Congressman WALDEN. Although, I have seen some lobbyist that might fit the—never mind.

[Laughter.]

Dr. HORNE. And it also is in this case, it is a bird habitat. And not only do we have good removal of nutrients; we also have 122 bird species.

[Slide.]

Dr. HORNE. This gives you one example. This is the example in Irvine, in California. Nitrate came in at about 13 milligrams per liter. Two weeks later, or a week later, in this case, it goes out at about three-and-a-half. This is removal of nutrients of the grand scale. And the result, as I have mentioned before, was this one, which indicates the loss of algae as we pass along the system.

Congressman WALDEN. Dr. Horne, I wonder if you could give us some ballpark as to what would it cost to oxygenate a lake the size of Klamath?

Dr. HORNE. The cost—

Congressman WALDEN. How would we go about that?

Dr. HORNE. The cost to oxygenate a similarly—a lake of a similar volume, would run anywhere from about half a million to about \$3 million; the capital costs. It depends on how much oxygen you want to put in. And besides specific things, like where power is; whether you are using solar power; or whether you are using other alter-

native energy sources; and sometimes just the length of pipe. Electrical wire is pretty expensive stuff underwater. It is about \$150 a foot. So, that can crank up your prices.

Running costs, I would estimate, in the order of \$1,000 or \$2,000 a day. And you would use this for anywhere between 100 and 200 days a year.

Those are the kind of costs that are being—that, right today, are being used for Camanche Reservoir.

Congressman WALDEN. And if we were to do that, and say, got it going this year, what do you look at for fish recovery, then, to the suckers?

Dr. HORNE. Well, you imagine being a sucker. Now, I am no sucker biologist, but I have——

Congressman WALDEN. I have been accused of that.

[Laughter.]

Dr. HORNE. I have some training in zoology. And I have spent a lot of time on lakes. Most small fish—the young suckers and to some extent the adults—usually go down during the day. They like to get into deeper water.

Congressman WALDEN. All right.

Dr. HORNE. They cannot do that in this lake, because the deeper water is nasty.

Congressman WALDEN. All right.

Dr. HORNE. If you add oxygen, that is a whole more bigger habitat for them. So, suddenly, we have created, out of nothing, more habitat for suckers.

Their prey, small zooplankton, also would like to get down, too. But they cannot go down very far, because it is toxic down there. The fountain of toxicants that comes out from the bottom—ammonia, sulfide, which has not even been looked at in this lake, yet it is the cause of toxicity in almost all the lakes I have looked at, though it is real, had to be sure with fish kills, you know.

It is probably one of the chronic factors that perhaps increases the bacterial infection that the Fish and Game—Fish and Wildlife people think is a problem. Whether that is, you know, coming on—I think we all agree, diseases usually hit weakened fish. This toxicant is coming out of the bottom.

Now, what percentage is coming out of the deep part of the lake and what is coming out of the shallow part, I do not know. Supplemental oxygenation can be used for the deeper parts, too, other than the very deepest.

This is just a technology that seems to have worked well. And it seems to be a technology whose time has come. And I think it should be given a chance.

Congressman WALDEN. Are there any down sides to the environment from what you are recommending?

Dr. HORNE. We have not found any, so far. The TVA has been using this kind of stuff since 1974. They usually use it for their tailwaters. They cannot meet the standards for tailwaters, and they add oxygen at the back.

I, personally, have designed at least half a dozen systems where we have looked at everything, because some of these have been very controversial.

The one that I showed you at Camanche Reservoir, the East Bay MUD, Oakland's supply, was a criminal lawsuit for negligent fish killing. So we have everybody in the world examining the data very, very, very carefully. And the reports came out reasonably well. And we have seemed to come away with—in fact, what happened is we now have got the system so much that we can now generate our own electricity, because the water is now so pure, we can release it downstream. And the system is now paying for itself.

Congressman WALDEN. Wow. Would the same principle, same science apply, say, up in the Columbia River-Snake River system, involving salmon, or is that a whole different set of issues?

Dr. HORNE. Well, you have two issues there. One is just the issue of costs of the dam, and little fish and big fish moving up and down. But to the extent that you need to add oxygen if—I do not think oxygen is a problem on those reservoirs, to my knowledge.

I am also working on dam removal, but that is a different category.

This is for more still waters; though, further down the Klamath River, there was a problem of low oxygen. If there is low oxygen in a river, one of the—oxygen is \$50 a ton. That is a billion milligrams. It is .0008 centimeters per liter. And it takes quite a while to get rid of a liter.

So, it is a relatively cheap technology, even with increased power prices that we have now.

Congressman WALDEN. And if we were to install this in Klamath Lake, is this something you would need to run forever, or do you bring the levels down to a better healthier level in the lake, and then you do not have to run it as much?

Dr. HORNE. One would probably find, if it is like other reservoirs, you would run it for a while, and then we would need to run it less, because the algae would have gone down. Everything would have gone down. We would be able to operate the reservoir with more nutrients coming in than we really should. Until we got those nutrients back down to what they used to be, we could never switch it off completely.

I mean, I would like to retire it. And there is no reason, with an aggressive program of wetlands and other systems, you could not think about retiring it in one or two decades. But that is probably about the lifetime I would think you would need to work on. But the lake improvement, if it works, would be very rapid. I mean, you have seen the results.

Congressman WALDEN. Do you think it could be rapid enough, if installed in short order, a matter of months that—is there anything we can do this year to offset the—

Dr. HORNE. The delays are always for the environmental—I mean, there is about a month's contracting delay. It is about a month or so to build these things. The rest is the environmental impact statement.

And I do not know whether one can say, "Well, this is an emergency; that we need to try." And so we build a sort of pilot-scale project as part of other solutions. You know, this is just one, of course, of many solutions that you could use.

Congressman WALDEN. I know there are those who think the God Squad ought to be brought to bear on—on this particular situ-

ation. And you know, to the extent that is even being discussed is remarkable.

Dr. HORNE. Well, I can give you a similar—we had some problems in California in the early seventies, in the big reservoirs in southern California—the big southern—the big water supply reservoirs that were built as part of the State Water Project.

In those days, we were using aeration, where we were just adding air, not oxygen. Oxygen is much more efficient, because it is all oxygen. But in those days we used air. And I think we put those systems in pretty quickly; in a matter of weeks. They just got some compressors.

Now, you cannot—this is a little more sophisticated. This system, you cannot put it in that quickly. But the thing is only a few pipes and, you know, it is not an earth-shattering piece of equipment. And the guy who originally came up with the idea that seems to work well is still alive and working. He is a professor in Pennsylvania—in Tennessee.

Congressman WALDEN. Who?

Dr. HORNE. And a number of people are now working with these systems. Because, like I say, they have been installed here and there. And so, the ideal would be to get one in before the lake loses—runs out of oxygen. I doubt one could do that, because that is pretty quick. But you could get pretty near.

[The prepared statement of Dr. Horne follows:]

PREPARED STATEMENT OF ALEX J. HORNE, PH.D., DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING, UNIVERSITY OF CALIFORNIA, BERKELEY, CA

Chairman Smith and members of the subcommittee, thank you for inviting me to testify at this important hearing. My name is Alex Horne and for the last 30 years I have been a professor of Ecological Engineering in the Department of Civil and Environmental Engineering at the University of California, Berkeley. Ecological Engineering involves the manipulation of aquatic environments to improve water quality and wildlife habitat using renewable resources. It is the “green” version of Environmental Engineering. My education includes degrees in Zoology, Biochemistry, Limnology and Oceanography and I am the author of the best-selling textbook on limnology (the study of inland waters). I have carried out research on lakes and their management since 1964 and have worked on hundreds of lakes, reservoirs, wetlands, rivers, estuaries, and oceans in most continents. I have worked on shallow lakes and reservoirs and wetlands in the semi-arid Western United States. In particular, I have designed systems for large reservoirs that have stopped the deaths of hundreds of thousands of fish and have designed several large wetlands that remove hundreds of tons of nutrients annually. I have designed several systems that reversed eutrophication in large water bodies. I am actively working on other large systems, including a \$15 million five-method project in Lake Elsinore that uses in-lake techniques and watershed wetlands for the prevention of fish kills and eutrophication in several shallow lakes.

Upper Klamath Lake is the largest reservoir for the Klamath Irrigation Project. Its quality is poor, especially in summer, a condition that has occurred for many decades. The lake is also a habitat for endangered fish species. Poor water quality is a problem for these species and has been associated with fish kills. Recently, regulatory requirements have been proposed that would hold the lake at higher than historic elevations in the belief that could improve water quality and avoid fish kills. I was retained in October 2000 by Klamath Water Users Association to investigate the relationships between lake depth, water quality and fish kills, as well as to identify means for water quality improvement. My analysis and recommendations appear in the report entitled “Protecting the Beneficial Uses of Waters of Upper Klamath Lake: A Plan to Accelerate Recovery of the Lost River and Shortnose Suckers.” With me today is David Vogel, a biologist, who also contributed to the report.*

*The report has been retained in subcommittee files.

SUMMARY

In Upper Klamath Lake, as in many lakes, determining the cause of fish kills is extraordinarily difficult. Fish kills are rapid and unexpected and often occur at night. When a fish kill is discovered, the conditions that caused it have usually vanished. All parties seem to agree that eutrophication in Upper Klamath Lake causes poor water quality that directly or indirectly promotes fish kills. If the lake were less eutrophic fish kills would be reduced or eliminated.

Reversal of eutrophication is possible. The 1972 Clean Water Act funded domestic and industrial sewage treatment that reduced algae-stimulating nutrients and cleaned up many of the Nation's lakes and rivers. However, shallow lakes with large drainage basins have not been so easily restored, in part because nutrients come from many diffuse sources.

A major concern at Upper Klamath Lake is the effect of small changes in water elevation on eutrophication, the health of the fish and water quality. Most limnologists and lake managers believe that "more is better" in terms of lake size and depth. However, this is not always true in relatively shallow lakes. Fish kills in Upper Klamath Lake are not correlated with lake elevation. Fish kills have occurred at higher elevations and have not occurred at the lowest elevations. The same conclusion has been reached for other large shallow lakes. The only common factor is that kills occur in the warmest season and this weather condition results in periods of temporary thermal stratification. Unlike the more familiar seasonal stratification in deep lakes that lasts from spring to fall, temporary stratification lasts only a few days or weeks and may involve only small temperature differences. Temporary stratification is common in shallow lakes in warm weather. Following certain kinds of weather patterns, temporary stratification produces a layer of warmer buoyant water that floats on top of a cooler denser layer. The two layers do not mix for several days but when mixing (de-stratification) does occur fish kills can result. I conclude that this temporary thermal Stratification and DeStratification (SDS) is the reason for most fish kills in shallow lakes. I believe that others concur that SDS is an important, if not the only, cause of fish kills. In my opinion, SDS is the most probable cause, direct and indirect, of fish kills in Upper Klamath Lake.

The mechanism by which fish die from SDS is that during the temporary stratification in the warmest part of the year, toxicants and nutrients build up in the deeper water. When the water mixes again the fish are exposed to toxicants and have no refuge. The nutrients mixed into the surface waters stimulate eutrophication and algae growth and the process re-enforces itself over time. In particular, hydrogen sulfide, a highly toxic and soluble gas, is produced in sediments that are anoxic (lacking oxygen). Ammonia, phosphate and other undesirable chemicals are produced under the same anoxic conditions. SDS causes kills of fish and other water creatures in the summer in the very large Salton Sea where only the shallow edge water contains healthy biota in summer. Fish kills caused by toxic substances released by SDS are often rapid. However, if sufficient dilution is available, toxic effects may be chronic and the fish become sick rather than dead. During this time they are more susceptible to disease, especially gill diseases and hydrogen sulfide produced by SDS causes damage to gill membranes.

When temporary thermal stratification occurs in shallow water, the thickness of the buoyant upper layer is similar, regardless of the total depth. However, the thickness of the deeper less buoyant layer is very different and larger for the deeper water. Fish in water with only a thin deep layer are less likely to suffer SDS-induced toxicity than fish in water with a thick deep layer. The shallower total depth results in a smaller volume of deeper anoxic water relative to the fixed volume of the upper oxygenated layer. For example in relatively shallow water, if the two layers produced by temporary thermal stratification had equal volume and the sediment releases 1 mg/L of toxicants to the lower layer, then the toxicant will be diluted to 0.5 mg/L when the two layers mixed. If the water were one-third deeper, the lower layer would be twice the volume of the upper layer and the concentration of the pollutant when the layers mixed would be 0.67 mg/L. After mixing the deeper water would be more toxic to fish after mixing (0.67 mg/L of toxicant) than the shallower water (0.5 mg/L of toxicant).

For these reasons, the probable effect of requiring Upper Klamath Lake to operate to greater depth is to promote rather than discourage fish kills. At other relatively shallow lakes where I have worked, the presumption or argument was initially made, incorrectly, that deeper is better. It would be very unfortunate to repeat this experience, given the significant stakes involved.

SOLUTIONS

A major purpose of our report is to promote recovery of endangered suckers. This includes many measures identified by Mr. Vogel, which are described in the report. Suggested solutions to the water quality problems at Upper Klamath Lake include active and passive management strategies. Prime among these solutions are deeper water oxygenation and nutrient removal wetlands near the inflows. Oxygenation would prevent toxicity following SDS and would reverse eutrophication. Wetlands could remove nutrients before they reach the lake and thus reduce eutrophication. I have used these methods to successfully eliminate fish kills and reverse eutrophication in other lakes. Other methods to improve water quality are also described in the report. Studies to clean up the lake and reverse eutrophication and research to determine the effectiveness of lake management techniques should be carried out alongside the other studies at Upper Klamath Lake.

Congressman WALDEN. That is a question I would have for everybody at the table. Is there anybody that would object to pursuing this course of action? Based on what you know, realizing there is probably more out there. Is there—on the face of it?

Mr. SPAIN. Congressman Walden, it should be looked at, and should be looked at carefully, but I am concerned that we would be missing opportunities for long-term restoration by doing a technological fix and not reducing the nitrates from sources where we can reduce them.

I am very interested in the idea of using wetlands as a nitrate filtration system, because the wetlands serve bird habitat purposes. They clean up the water. They, you know, make the system function better biologically.

But when you commit to a long-term technological solution, as opposed to a biological solution, you are committing to long-term costs.

Congressman WALDEN. Yes. I know. But I thought what I was hearing Dr. Horne say is it is a combination of both. You use wetlands and other—

Dr. HORNE. Oh, yes. And there is actually another method.

Congressman WALDEN [continuing]. You know, the Deschutes Basin, I know.

Mr. SPAIN. We ought to look at it.

Dr. HORNE. There is a method called biomanipulation, which is the long-term sustainable way to clean up all lakes, but that requires a reduction of nutrients and—at least, give it a start with the oxygenation. You have got to do it for a while.

Congressman WALDEN. Others at the table?

Mr. FOREMAN. Congressman, we are talking about a lake which has an average depth of seven feet. You know, we are not talking—so, the depth issue here is not really the issue, but I would like to see more studies on this here, because if it is basically a scheme or whatever you want to call it to draw the lake down.

Let us say you draw it down four feet, you have got three feet depth there. You are going to have—I do not care what you say. You are going to have serious fish kills. And just—because the temperature, alone, on three feet of water versus seven or eight feet is going to adversely affect the fish.

Mr. SPAIN. There might be trade-offs, yes.

Congressman WALDEN. Can you respond to that? Because that seems to be the heart of debate here, is the lake level.

Dr. HORNE. Yes. That is the heart of the debate. First of all, where you would put the oxygenation system is in the worst spot,

which may be the fountain of almost all the toxicants, which is 30 feet deep. And if the lake goes up and down two or three feet, it makes no difference. That is still deep.

I cannot answer the temperature question. That is not my expertise. I can only note that there have been some low lake levels where there were no fish kills, but fish kills are notoriously difficult to be absolutely sure about.

Congressman WALDEN. All right. The State of Oregon?

Mr. Marbut.

Mr. MARBUT. No. We have—the State of Oregon is on the record as asking for flexibility in this matter. And the flexibility that was available in 1992 and we requested in 1998, we maintain that same flexibility should be pursued.

If this technology can give us, so to speak, some fish kill insurance to experiment with that flexibility, we would absolutely be in support of it.

Congressman WALDEN. Roger.

Mr. NICHOLSON. I think we would be very much in support of it. And it is a healthy and refreshing idea to see somebody come with a solution that is economically feasible, and perhaps, make everybody whole in this basin and get on with life and live as a community once again.

Mr. FOREMAN. All right. So, if I may interrupt just a minute. We are talking about maintaining a species from extinction versus restoring them to harvestable levels. And, as I mentioned earlier, I think that has got to be an important component of this, because we are starting from the bottom to begin with.

Congressman WALDEN. Right.

Mr. FOREMAN. And these species are nearing extinction. And just maintaining their existence is not the answer we are looking for. We want to get them to harvestable levels for at least our crops.

Congressman WALDEN. I understand. In your experience at Camanche and elsewhere, are you seeing that kind of restoration of fish?

Dr. HORNE. We have seen an increase in fish crop, yes.

Congressman WALDEN. Yes. Okay. There is just more turnaround—

Dr. HORNE. There is just more habitat available for the fish. We did fish monitoring experiments during the first two years. And the fish moved to a much greater part of the reservoir. So, there were more fish in the entire reservoir.

Congressman WALDEN. You looked on up the river, did you not, in terms of habitat for the suckers?

Dr. HORNE. I did not do that. David Vogel did that.

Congressman WALDEN. Oh, somebody did.

Dr. HORNE. Yes.

Congressman WALDEN. Yes. Okay. All right. Well, I have one other request from Senator Wyden, to ask each of you at the table to designate one person to speak for your group or organization viewpoint at the meeting tomorrow morning with the Federal agencies. If you are able to do that, it will be the first of many working group type meetings to be continued in the Klamath Basin and on this issue.

If it is possible, Sarah—yes. If you could let Sarah know who your designee will be, if not yourself, that would be helpful.

I cannot adjourn the meeting, because I do not—I am not allowed to touch the gavel, but our counsel can.

COUNSEL. Now, we will keep the record open for 2 weeks, as is our practice, for any additional comments and questions. A number of witnesses have been asked for follow-up information and other documents, if you can provide those to the committee.

The hearing is adjourned.

Congressman WALDEN. Thank you very much.

[Whereupon, at 4:32 p.m., the hearing was adjourned.]

○