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RESPONSE TO BERTON L. LAMB'S PRESENTATION ENTITLED
INSTREAM USES AND RECREATIONAL VALUE OF WATER

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I appreciate the opportunity to speak to you this afternoon. Dr. Lamb left me the opportunity to speak particularly from the standpoint of a biologist.

Maybe some of you anticipate that I will attempt to contradict what Dr. Lamb had to say. I don't intend to do that. From a biologist's standpoint, there are some very desirable aspects of instream flows. In New Mexico, some of you probably realize that instream flows are not always recognized as a beneficial use as they benefit fish and wildlife resources.

It may or may not be necessary to change the legal definition of beneficial use, but I think that fish and wildlife resources are an important subject to consider in New Mexico. Recent data for New Mexico indicate that fishermen and hunters, not including hikers and other non-consumptive users, spend \$150-\$160 million a year in the state. Expenditures for fishing and hunting at the national level have been doubling approximately every five years, so the economic growth of fish and wildlife values is quite substantial. Also, non-consumptive users, such as hikers, bird watchers, canoeists, etc., often would consider instream flows desirable when these flows benefit their activities.

At the present time, opportunities to do something in New Mexico to enhance instream flows are not particularly good. Part of the problem is that surface waters in the state are either already fully appropriated, or in some instances, over appropriated. Unallocated flows are not available to be used for instream flows. There does not seem to be much potential for enhancing instream flows in the next few years by water conservation measures such as the use of evaporation retardants, improving irrigation efficiency, etc. If we are to develop instream flows for fish and wildlife resources in the next decade, we must either divert water from some other beneficial use or modify the prevailing manner and timing of water transfers within the state's river systems.

Some critics of maintaining instream flow feel that diverting water for fish and wildlife purposes will substantially reduce water available for more worthwhile uses. I would like to speak to that concern quickly by asking some questions about exactly how fish use water. Do fish use water up? Is the water destroyed? Is it made less usable downstream? In what way is the water used? In fact, fish are essentially non-consumptive water users. If water of appropriate quality is made available in the proper amounts and at the right time to maintain instream flows, it doesn't make any difference what that same water is used for later. Depending on the eventual consumptive use, water used to maintain or

enhance aquatic habitats can even benefit from that use. For example, water used to grow channel catfish becomes more desirable for irrigation of rice because of the nutrients added by the fish. At the opposite end of the spectrum, fish species called tilapia can improve the quality of water coming from sewage settling ponds by removing excess nutrients from the waters being released back into river systems.

Other benefits of instream flows relate to the use and enjoyment of rivers by the general public; in this case, you and I, people that use rivers for canoeing and swimming, obviously benefit. But additional aesthetic values are derived by hikers and picnickers who recreate or persons who live near rivers. As a biologist who makes a living from teaching and researching fish and wildlife resources, I am interested in endangered species like the snail darter and the Gila trout as well as populations of sport fish species that fishermen would be more interested in enhancing by improving instream flows. My upbringing in the Missouri Ozarks makes me more aware of the aesthetic desirability of rivers with permanent flows. Thus, my professional and personal background increases my interest in fish and wildlife resources and my concern for preserving instream flows. I am interested in acceptable ways to temporarily divert water for non-consumptive uses made possible by instream flows.

I think there are several possibilities for providing instream flows in New Mexico in future years. If you read the report that Lee provided on strategies for preserving instream flows in New Mexico, you will find that the authors are somewhat pessimistic about the effectiveness of several of the different strategies that were listed. I think that pessimism was generally related to the prevailing attitudes about reserving instream flows in New Mexico when the report was written. However, I see on the horizon in New Mexico, as well as in the rest of the United States, the potential for changes in public attitudes concerning the uses of water. I think it's a foregone conclusion that uses of water in New Mexico are going to change. Those changes are going to be, in many cases, influenced by economic issues. Although it may not be readily apparent to many of you in the audience, fish and wildlife resources are a major economic force that eventually will be fully recognized.

People like to go hunting and fishing. The likelihood for greater consideration being given to fisheries and water-based recreation in the future will be mandated by public pressures for enhancing these forms of outdoor recreation. How this increased consideration is handled from either a legal standpoint or a consultation standpoint is yet to be seen. But the rapidly increasing public demand for water-based recreation in the Southwest will become obvious to decision makers.

I'd like to predict a few areas in which changes are likely to occur in the near future, five or ten years from now. Lee talked about the possibility of purchase of water rights. Who is going to purchase water rights for fisheries or for other instream flow uses such as canoeing and rafting? There are actually several sources that could be utilized. One of them is in the form of an excise tax that is automatically paid by fishermen on the fishing tackle they use. There is a potential for this revenue source being increased three or fourfold in the near future,

which would amount to a substantial annual allocation to New Mexico for the eventual benefit of the fishing public. The potential for using these funds, which are referred to as Dingell-Johnson or D-J funds, for direct purchase of water for instream flow uses is a distinct possibility. In many instances, the amount of water which needs to be purchased is not large. If fairly low minimum flows were guaranteed for several state rivers, fisheries managers could either develop or enhance a sport fishery; whereas without that water, there would be no fishery or one much below its potential. So, with increased funds and the ability to predict the outcome of enhancing instream flows, the likelihood for purchasing water rights to benefit fisheries will grow in the next five years.

The possibility exists for obtaining water that could be used, let's say, in the Cimarron River Canyon for maintaining or improving the trout fishery, in a fishery that obviously has a high economic value. The New Mexico Department of Game and Fish, Cimarron Chamber of Commerce, or maybe even a public interest group like Trout Unlimited could decide to purchase a water right that would permit more effective management of that fishery. I think the potential for that happening in the future is quite good.

Fish and wildlife resources, specifically fisheries resources, may well be in a position to compete for the use of water in the future. Now before my comments raise any red flags to the farmers in the audience, those of you in the Mesilla Valley that are irrigating crops right now are actually fairly dear to my heart. I irrigate ten pecan trees myself, and I would just as soon see water continue to come down the Rio Grande. Think about that, though, in the context of additional values that irrigation water might have before it reaches your fields. In other words, would that water have any other beneficial uses before it reached this area to be used for irrigation? I would have some rather significant uses for water-based recreation which would not reduce water for agriculture in any way. If Elephant Butte Reservoir is considered from a recreation and fishing standpoint, millions of dollars are spent each year by New Mexicans and non-residents, especially from Texas. This reservoir has obvious economic value to the state in addition to its designed purposes of power generation and irrigation. The development of tailrace fisheries below Cochiti and Elephant Butte reservoirs, which might maintain salmonoid or other fisheries, is possible. A potential beneficial use of that water has not been realized simply because it has not been attempted.

Another major strategy for reserving instream flows in the future is through consultation between state and federal agencies. Colonel Roth mentioned that the Corps of Engineers are not necessarily the bad guys any more. Although there are some people and environmental groups that might disagree on specific water development projects, I have a number of biologist friends that presently work for the Corps of Engineers. I know their credentials; I know that they are very honestly considering alternatives which conserve aquatic and fisheries resources. I think that good potential exists for reserving instream flows by consulting with various state and federal agencies. I think this strategy will become more and more effective as the public becomes aware

of the fact that instream flows are in many respects desirable for them. Favorable public opinion for maintaining instream flows will facilitate new approaches to water use by resource managers.

Another strategy that I feel has a rather good potential is water management. Lee mentioned this option towards the end of his talk. I think there exists methods of managing water so that it can be used for many beneficial purposes, including maintenance of instream flows. Water management for the highest economic gain should not exclude instream flows which are essentially non-consumptive uses of water. Think in terms of what would be needed, for example, to maintain a year-round fishery in the Rio Grande between Elephant Butte and Caballo reservoirs. A fairly small amount of water released from Elephant Butte Dam during the non-irrigation season would maintain a year-round fishery. Of course, the water released would not be lost, but stored in Caballo Reservoir for use during the next irrigation season. This storage might cause some minor losses that would not be obvious; primarily in the form of greater evaporation from a shallower reservoir. The water lost because of increased evaporation would be the water consumed and paid for to maintain the instream flow needed for the fishery; not the water that is stored and eventually released from Caballo for other downstream uses such as irrigation.

In summary, the main point is that I am not only a biologist interested in fisheries, but also a citizen concerned about the most beneficial use of water to benefit both the state's economy and quality of life. I am not out to take the water away from somebody without proper reimbursement. From a recreation viewpoint, I would prefer some water staying in the stream and being used consumptively farther downstream. The longer water stays in the stream the greater potential it has for being used by more people for more beneficial uses.

Presently, an interdisciplinary group of researchers at NMSU, including myself, are examining the many beneficial uses of water in the Rio Grande drainage. What is it presently used for? What is it likely to be used for in the future? What is the potential for maintaining instream flows or minimum pools in reservoirs for recreational purposes? I think many of these questions need to be considered. Although some water uses may not be very likely in the next five years, eventually public pressure or increased federal/state interaction, combined with knowing specifically what is needed to maintain a fishery of "x" economic value, should enhance the likelihood of water management oriented towards maintaining instream flows.

I'm sure there will be some questions asked later that I will try to answer. Lee will be able to give you the broader national perspective. I look at instream flows from the standpoint of New Mexico, flavored by my Missouri and Oklahoma background. I think that water is very valuable in New Mexico; probably its most precious commodity. It is a resource that is likely to become the state's most seriously limiting commodity at some point in the future. The possibility of saline waters - who knows? At the present time our surface waters are a most precious commodity.

I will end by again saying that recreational fisheries should be considered a valuable part of our water resource and managed accordingly. Remember, fish and wildlife are basically non-consumptive users of water.

Thank you.