Laura Ziemer
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October 27, 2013

The Honorable Tom McClintock,
Chairman
Subcommittee on Water and Power
United States House of Representatives
1522 Longworth House Office Building
Washington, DC 20515

The Honorable Grace Napolitano,
Ranking Member
Subcommittee on Water and Power
United States House of Representatives
1522 Longworth House Office Building
Washington, DC 20515

Re: **Statement of Laura Ziemer in October 29, 2013 Oversight Hearing on *A Roadmap for Increasing our Water and Hydropower Supplies: The Need for New and Expanded Multi-Purpose Surface Storage Facilities.***

Dear Chairman McClintock and Ranking Member Napolitano,

Thank you for the invitation to testify today on behalf of Trout Unlimited (TU) and its 150,000 members nationwide. I have had the privilege to work for many years with TU's volunteers to restore local streams, and engage young people in TU's work to conserve, protect and restore our Nation's watersheds. I live and work in Montana, and have experienced first-hand the devastation of prolonged drought in an already-arid land.

Westerners experience water scarcity at a number of different levels. Extended drought creates problems for individual rancher and farm operations struggling to find enough river flows to irrigate crops, and for the fish that find that their habitats have heated up, shrunk, or just plain dried up. Swings and cycles in regional weather patterns create basin-level scarcity that affects not only irrigation districts, but also municipalities worried about meeting water demands. At the largest scale, whole sections of the West can experience such dry conditions that fires compound the problem of not enough water to go around, and whole assemblages of aquatic species are pushed to the brink of extinction. In the past year alone, blue-ribbon trout rivers in Montana have been closed to fishing due to low river flows; drought has continued more years than not in the Colorado River basin since 1999, causing a razor-thin margin between water supplies and demand within the basin; and, in August the Bureau of Reclamation announced that it would cut releases from Lake Powell by 750,000 acre feet next year—a first since the construction of Glen Canyon Dam created Lake Powell over 40 years ago.

The seriousness and scale of these problems is why I've dedicated the last 15 years of my professional life to finding collaborative solutions to water scarcity in the West. I've pioneered collaborative approaches to creating new water supplies with Montana ranchers, created working architecture for drought response plans that operate at the basin scale, and assembled diverse coalitions of interests to come together around innovative changes to water management across multiple, large river basins. Although these approaches vary in scale and focus, the one thing they have in common is building the trust to apply creativity to difficult, long-standing problems born of too many demands and too little water in arid lands. I have learned a couple of things over the past 15 years of walking irrigation ditches and listening to ranchers' needs that I would like to share today.

My message is simple: On the ground throughout the West partners are coming together to find innovative solutions to water scarcity challenges at a variety of scales. Congress should encourage cooperative stakeholder processes to solve storage challenges, and provide adequate funding for cost-effective programs that catalyze cooperative solutions, such as key Farm Bill programs, and the Bureau of Reclamation's competitive grant and basin study programs.

1. Upgrading Irrigation Infrastructure: A Cost-Effective Source of New Supply.

First, I've learned that the largest and cheapest reservoir of new water lies in the miles of irrigation ditches and laterals dug with shovels and plows over a hundred years ago. TU has worked with individual ranchers, farmers, and large irrigation districts to design, fund, and upgrade irrigation infrastructure to salvage this new water supply and apply it to multiple uses: irrigation, municipal, and restoration of river flows. TU has worked in partnership with ranchers and farmers across eastern Washington's Methow, Wenatchee, Yakima, Entiat, and Okanogan river basins, in Idaho's Salmon, Little Lost, and South Fork Snake river basins, Utah's Bear River, Colorado's Gunnison River basin, and in Wyoming's Bear, Big Horn, Green, North Platte, Snake, and Wind river basins. TU has also worked with California's wine growers to improve their irrigation practices while improving stream flows. Personally, I've worked with individual ranchers across Montana's upper Missouri, Yellowstone, and Clark Fork river basins on dewatered tributaries to upgrade headgates, convert long, leaky ditches to pipes, and replace flood irrigation with pivots. I've also worked with large irrigation districts on the Rocky Mountain Front to line canals holding more water than the river from which they're diverting, in order to turn some of that water back to the river-- the Sun River.

Montana's Sun River Irrigation Infrastructure Upgrade. On the Sun River, the Bureau of Reclamation's WaterSmart competitive grant program helped cost-share these large-scale infrastructure improvements. This program is an excellent example of successfully getting federal dollars to the ground to solve water scarcity conflicts in a cost-effective way. Prior to embarking on the WaterSmart projects, those of us working collaboratively in the Sun River basin conducted a multi-year, comprehensive inventory of potential new sources of water to make irrigation supplies more secure and provide instream flow benefits to the chronically-dewatered Sun River. The Sun River flows 70 miles across Montana's Rocky Mountain Front to the Sun's confluence with the Missouri River near the city of Great Falls, and irrigates 117,700

acres. The Sun River supplies two irrigation districts serving hundreds of water users and the Broken O Ranch--the largest irrigated ground under a single ranch in Montana (17,000 irrigated acres). We investigated: new storage, adding storage capacity to existing Reclamation reservoirs, pump-back systems, lining canals, converting from flood to pivot irrigation, and replacing aging siphons and turn-outs. For each of these approaches, we conducted a preliminary feasibility review and cost estimate, and after this initial screening, narrowed the focus down to 14 alternatives for a more detailed feasibility analysis and cost comparison.

The projects emerging from this comprehensive, comparative analysis ranged from adding capacity to an existing storage project to upgrading irrigation water conveyance systems. New storage options did not pass the initial feasibility screening based on their high cost per acre-foot of water. The most cost-effective storage option analyzed in depth was adding 26,000 acre-feet to the existing Pishkun Reservoir. This had an estimated cost of $29 million, providing new water supply at $1,115/acre-foot. On the other hand, one of the conveyance system projects that we ultimately pursued with Reclamation's WaterSmart funding converted 4,860 feet of leaky ditch to PVC pipe, producing 4,158 acre-feet of water for a project cost of $222,367. This provided new water supply at $53/acre-foot (21 times cheaper than adding storage capacity to Reclamation's Pishkun Reservoir). Three more infrastructure projects are in various phases of development and construction that will provide even more water savings.

Washington's Wenatchee River Irrigation Upgrade. It was about 1866 when the Pioneer water users first began diverting water from eastern Washington's Wenatchee River—the Civil War had just ended, and the West was opening up. Pioneer services 107 water users on over 375 irrigated acres. TU worked with Pioneer to change their point of diversion from the flow-limited Wenatchee River to the Columbia River, thereby protecting over 38 cubic feet per second (cfs) in the Wenatchee River, improving habitat for imperiled spring Chinook, steelhead and bull trout. Pioneer Water Users benefitted by adopting the most sophisticated irrigation system in Washington State that will last through the next century: the whole system is managed by a "brain" that dictates how the pressurized system rotates water use among five pumps, which manages use from 10 gpm to 3000 gpm. The instream benefit to the Wenatchee is complemented in the Columbia by the fact that the system is based on demand. Withdrawal from the Columbia River only occurs when and at the volume that water is needed by the agricultural users, creating additional water savings. This collaboration between TU and Pioneer also increased the water security for the town of Wenatchee by transferring saved water to their municipal supply. Although not a simple project—17 separate permits were obtained and 12 funders contributed to the project—its $3.4 million total cost for 7,823.5 acre-feet provides municipal, irrigation, and habitat benefits for imperiled species at $435 per acre-foot of water savings—not to mention also creating over 40 jobs during six months of construction during the recession. This project demonstrates the effectiveness of leveraging Bureau of Reclamation funding with state and federal salmon recovery funds, along with county, conservation district, and water users' contributions, that were all key to the success of creating multiple benefits.

Wyoming's Rock Creek (Bear River Basin), Infrastructure Upgrade. In Wyoming, TU has worked across six river basins with Wyoming ranchers and farmers to find ways to improve irrigation infrastructure while also creating benefits for wild and native trout. TU's work with Wyoming rancher Truman Julian illustrates our approach. In the southwest corner of

the state, TU and Julian Land and Livestock found common ground around upgrading a flood irrigation system to gated pipe. This increased the yield on the ranch's grass hay while benefitting Bonneville cutthroat trout. The project also included the installation of new diversion structures to eliminate annual maintenance requirements, improve riparian conditions, and allow upstream fish passage throughout the year. The partnership with Julian Land and Livestock led to partnerships with other landowners in the drainage. Irrigation efficiency projects are now complete on every ranch from Rock Creek to the confluence of the Bear River to improve flows and habitat conditions for native fish.

On the ground throughout the West, ranch and conservation partners are coming together to find innovative solutions to water scarcity challenges that modernize infrastructure, benefit producers, and restore fisheries. Congress can help encourage this collaborative work by passing a five year Farm Bill so that conservation programs like the Environmental Quality Incentives Program and the new Regional Cooperative Conservation Partnership program, which is included in both the House and Senate versions of their Farm Bill, will be available to irrigators. Please note the attached letter from a diverse group of agriculture and conservation groups urging Congress to pass a 5 year Farm bill reauthorization. Other programs which Congress should provide adequate funding for include the U.S. Fish and Wildlife Service's Fish Passage Program so that it can help with irrigation infrastructure upgrades that benefit fish and water users. Finally, real, on-the-ground progress is made through funding the Bureau of Reclamation's WaterSmart grants, Cooperative Watershed Management grants, Reclamation's funding through Cooperative Agreements, and the Bureau's Basin Study programs. These programs support not only individual projects, but also multi-faceted, collaborative approaches being developed at the basin scale, such as the Yakima River basin process described below.

2. Cost-Effective New Storage in Expanding or Re-allocating Colorado Projects.

TU is not opposed to new storage. New, small-scale storage can implement water supply strategies that TU supports, such as water reuse and flexible water sharing arrangements between agriculture and municipalities. In other cases, new storage projects can be designed and operated to deliver multiple benefits—to irrigation, municipalities, and to stream flows. Finally, it can be a lot cheaper, faster, and smarter to re-allocate or expand an existing reservoir than build a new one. In fact, TU, working with other conservation partners, have together identified 102,000 acre feet of new, potential water supply in Colorado to meet the Front Range's growing water demand, across an array of expansions and re-allocations of existing projects, as well as other strategies such as water re-use.

Rio Grande Reservoir. The Rio Grande Reservoir in southern Colorado delivers irrigation water to the farmers and ranchers of the San Luis Valley Irrigation District. The project is over 100 years old, and the State of Colorado has placed it under storage restrictions because the structural integrity of the dam is in question. The District is in the process of rehabilitating the dam which will allow for increased storage in the existing reservoir. Much of the added capacity at the Rio Grande Reservoir will serve the purpose of making more reliable deliveries to the farmers and ranchers of the San Luis Valley Irrigation District. The District, however, is also in discussions with the Colorado Division of Parks and Wildlife, TU, and others about the possibility of allocating some of that new capacity to meet other purposes, namely

interstate compact delivery requirements and improvement of stream flows in the Rio Grande River. As such, the project has the potential to provide multiple benefits, including recreational and environmental purposes that are important to TU and the local community.

Windy Gap. For a decade, the Northern Colorado Water Conservancy District has proposed to "firm" the yield of its existing Windy Gap Reservoir by increasing the amount of water the project delivers from the Colorado River to the Front Range. TU had opposed the proposal because of our serious concerns about its impacts on the already-stressed Colorado River. Earlier this year, however, after many years of discussion, TU and the Northern District reached an agreement. Under the agreement, Northern will: curtail diversions as needed to avoid high stream temperatures caused by low flows; release water from storage as needed to create high spring peaks flows to flush sediment on a prescribed schedule; put several million dollars on the table to construct a by-pass channel around the Windy Gap Reservoir, which currently is a source of whirling disease and dangerously high stream temperatures; and, has offered up several million more dollars to restore Colorado River habitat. With these conditions implemented, TU believes the project will leave the Colorado River healthier than it is today. The success of the Windy Gap firming project is its dual benefits: an increase in 32,000 acre-feet annual yield of water supply and environmental benefits to the Colorado River.

Chatfield Reservoir. On Colorado's South Platte River flowing north through Denver, TU has weighed in as supportive in concept of the Army Corps of Engineers' plan to re-allocate 26,000 acre-feet of storage water in the Chatfield Reservoir from flood-control to provide 8,000 acre-feet of annual yield for irrigation and municipalities. Although TU has concerns that the currently-proposed operation of the new capacity could deplete flows downstream, thus damaging the health of the urban reach of the South Platte River, TU is working with project proponents and regulators to address these concerns. Although still in process, the Chatfield Reservoir re-allocation is an example of a water supply solution that doesn't require new concrete, just new thinking.

3. Multi-Stake Holder, Basin-Study Collaborative Planning Produces the Best Proposals for New Storage.

Finally, I've learned over the years that the best solutions are usually *not* the easiest ones. The innovative work I've done with TU has involved a lot of listening to what other people need water for. New storage, likewise, is best planned and carried out in a multi-stakeholder, basin-study process that considers a variety of alternatives, looks carefully at hydrology and future water supply forecasts, and embeds storage into a multi-pronged approach for addressing water scarcity. The Yakima River basin study and resulting collaborative plan, completed as one of the Bureau of Reclamation's Basin Studies, is one example of this process. The Yakima plan recommends new storage as one solution among a range of other approaches.

Yakima River Basin Plan. In fact, the Yakima River Basin Integrated Water Resource Management Plan has seven distinct elements, all designed to allow communities, fish, and farming to thrive in an arid land. The Plan's seven different approaches are: 1) open fish passage at six existing dams; 2) structural and operation changes to existing dams to add storage capacity, increase water use efficiency, and improve salmon habitat; 3) increase new surface water

storage; 4) groundwater recharge and storage; 5) investment in irrigation efficiencies and water conservation; 6) promote water transfers through water markets and water banks; and, 7) habitat enhancement and watershed protection through headwaters habitat acquisition, floodplain restoration, and other tributary improvements. This suite of alternatives to draw from in moving forward with Plan implementation underscores that no one, single approach can address water scarcity in the Yakima basin. Rather, it is the multiplicity of approaches—from new surface storage to investing in the basin's "green and blue" infrastructure —that provides resiliency to water scarcity in the basin.

Climate Change Will Bring New Challenges to the West's Water Supply. The strongest expression of climate change predicted for the West will be through water. This makes the kind of comprehensive, collaborative planning process exemplified by the Yakima basin especially important. The only thing we know for sure about the West and climate change is that the weather is going to get more unpredictable. With less snow, more rain, and more frequent droughts and storms predicted, if you plan on building a bigger bathtub, you want to know that you'll be able to fill it, given predicted changes in precipitation. In addition, Yakima's proposed investments in floodplain restoration, headwaters habitat preservation, and tributary restoration mean that the basin will be more resilient to both droughts and storms, able to soak up high storm flows while slowly releasing water during a drought. A multi-stakeholder, basin-study process looking at a whole range of alternatives stacks the deck in favor of coming up with solutions to water scarcity that will be more resilient to predicted climate change impacts. The approach taken in the Yakima River basin plan to pursue seven distinct pathways toward water security means that agriculture, fisheries, and communities will all be more resilient to the impacts of climate change, and better prepared to adapt to the changes it brings.

Hydropower Also Faces Challenges and Opportunities from Climate Change. Just as with storage facilities, changes to timing and magnitude of streamflow will have an impact on hydro operations and in the cost-benefit calculation for new hydro development. The benefit of adding hydro at existing projects is that it can and should help to provide a revenue stream for re-investment in project upgrades and enhancements to aquatic ecosystem functioning. Such investments will help keep hydro production viable even in a changing climate. A roadmap for increasing hydropower supplies should focus first on existing infrastructure. This focus would prioritize power gains through efficiency improvements-- improvement and modernization of existing resources and equipment--and adding or expanding production at existing, well-maintained infrastructure, like federal storage facilities. A good pathway for such work is contained in Section 2009 of the Senate Water Resources Development bill, S. 601, which would authorize and promote development of hydropower at existing Army Corps facilities where no hydropower now exists.

In addition to adding hydro to existing federal storage dams, opportunity also exists to expand hydropower development in irrigation delivery systems, where water is already in motion for another important use. This type of energy development has the potential to be particularly beneficial for rural agricultural communities as in-conduit energy development can bring in rural, dispersed sources of power to irrigation districts and water users whose power needs are often far from the grid. That is why we were pleased to work with Representative Tipton and this committee to assist with passage of HR 678, Mr. Tipton's small hydro bill.

Congress can help by supporting multi-use authorizations at federal facilities. Such action would add power production and fish and wildlife as authorized purposes consistent with existing and primary project purposes. This would enable flexible management and allow for more creative solutions. Hydropower is a perfect addition to the discussion of water storage and supply – because anywhere water is moving, there is opportunity for power generation. The challenge is for hydro to remain an incidental benefit, not a primary driver, of out-of-river water use. Hydro additions to water delivery infrastructure can be used to help fund project improvements and aquatic restoration needs at the point of diversion. Just as new storage is best achieved in the context of a multi-stakeholder, collaborative, basin-scale approach, hydro is most successful when analyzed at the system level and power benefits are balanced against the cost of providing for multiple uses.

I'd like to close by describing a recent experience from Bozeman, Montana – my hometown. Our city, while less than 50,000 people, has nevertheless experienced some of the highest population growth rates in the entire country in the last decade—in some years growing at an astonishing 28%. Faced with a predicted water supply gap, the city engineers began moving forward with a large dam proposal in our municipal watershed. City leaders wisely decided to initiate a multi-stakeholder, long-range planning process before committing to the dam. As a participant in the process, we looked at a whole range of alternatives that were consistent with community values and preservation of important agricultural lands within our mountain valley. What we found was that on a 30-to-50-year planning horizon, there are a whole range of smaller, scalable water supply alternatives that were cheaper to bring on line than one big investment in new storage.

4. Conclusion.

While the magnitude, variety and scale of these water scarcity challenges are daunting, I remain both optimistic and inspired that we can find solutions that work. Every time I work with a Montana rancher who finds a new way to deliver water to his crops that will also leave a stream healthier, I am inspired by those who are true stewards of the land. As you will often hear them say, we are only here for a little while, but the land and the rivers remain. It is our

challenge to work with the West's rivers and the abundance of life that they provide, so that they in turn can continue to provide for future generations.

Thank you again for the invitation to testify on Trout Unlimited's experience regarding the need for new surface storage.

Yours truly,

Laura S. Ziemer