

“The report outlines how future municipal water demand can be met without sacrificing Wyoming’s invaluable wildlife habitats and agricultural resources. The Smart Principles that are expounded on in the report are a profound set of ideals by which water planning of any kind should follow. As we continue to meet future demands the sustainability of our wildlife habitats and agricultural resources will depend on creatively implementing projects that follow the Smart Principles as well as encourage conservation and cooperation among water users.”

—Chad Espenscheid, P.E.
Arrow Land & Water, LLC



Filling the Gap

THIRD IN A SERIES

Meeting Future Urban Water Needs in the Platte Basin, Wyoming Executive Summary



WESTERN RESOURCE
ADVOCATES



Stream of Benefits

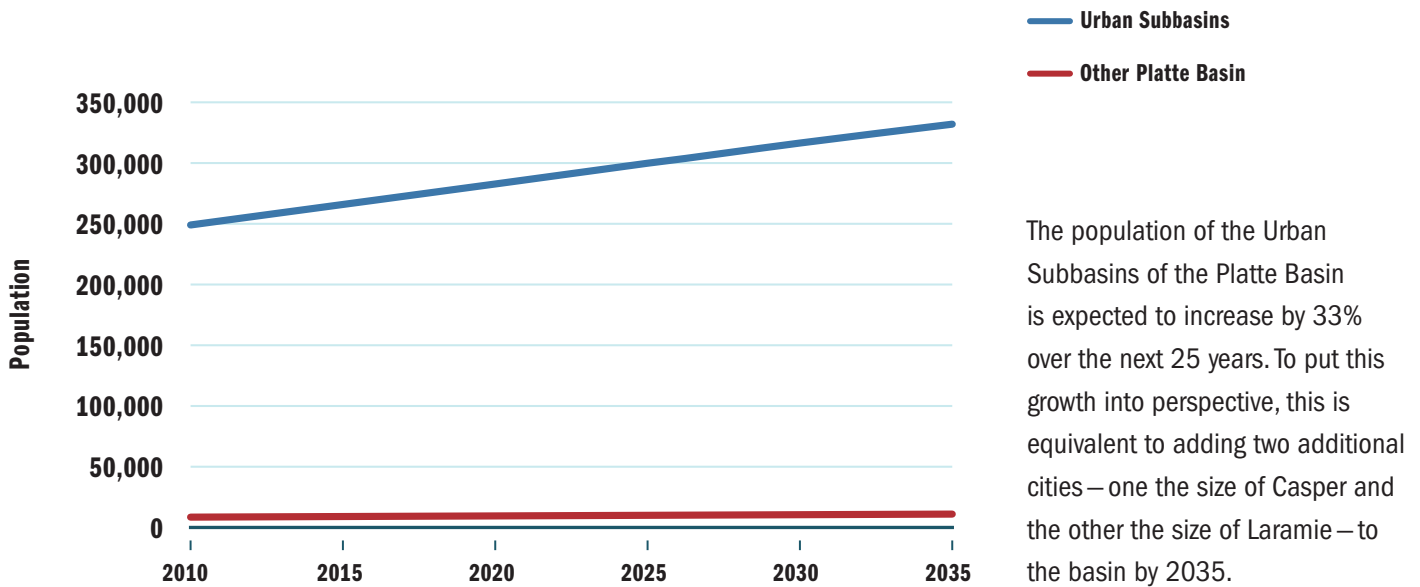
Surface waters from rivers and streams are not only the lifeblood of the state’s agriculture and urban areas, they also play a critical role in supporting Wyoming’s world-class, vibrant outdoor recreation industry. The Outdoor Industry Association has estimated that in 2012 alone, consumers spent \$4.5 billion in outdoor recreation activities in the state. Using data from the National Survey of Fishing, Hunting, and Wildlife-Associated Recreation (National FHWAR Survey), and the U.S. Bureau of Economic Analysis (BEA), this report also finds Wyoming at the very top of the list among all continental U.S. states in freshwater fishing expenditures as a percentage of state gross domestic product (Figure 1). Equally important, recent surveys show an overwhelming majority of Wyoming voters consider themselves conservationists, and believe that low levels of water in the state’s rivers are a serious cause for concern. Maintaining healthy rivers and streams is a very important issue for Wyoming residents and the state’s economy.

Growing Water Demands

Almost half of the population of Wyoming lives in the cities of Cheyenne, Casper, Laramie, Douglas, Rawlins, and Torrington. Collectively these cities are referred in this report as the Urban Subbasins of the Platte Basin. Under a medium growth scenario, the population of the Urban Subbasins is expected to increase by 83,000 residents, to a total of 332,000 people by 2035 (Figure 1). That is the equivalent of adding a new city the size of Casper, and another one the size of Laramie in the next 25 years.

Increasing population in the Platte Basin will be a primary driver for growing water demands in Wyoming. Accounting for the effects of passive conservation, which occurs when inefficient water appliances and fixtures are replaced over time with new more water efficient ones, water demand for the 332,000 people and related industry of the Urban Subbasins will be

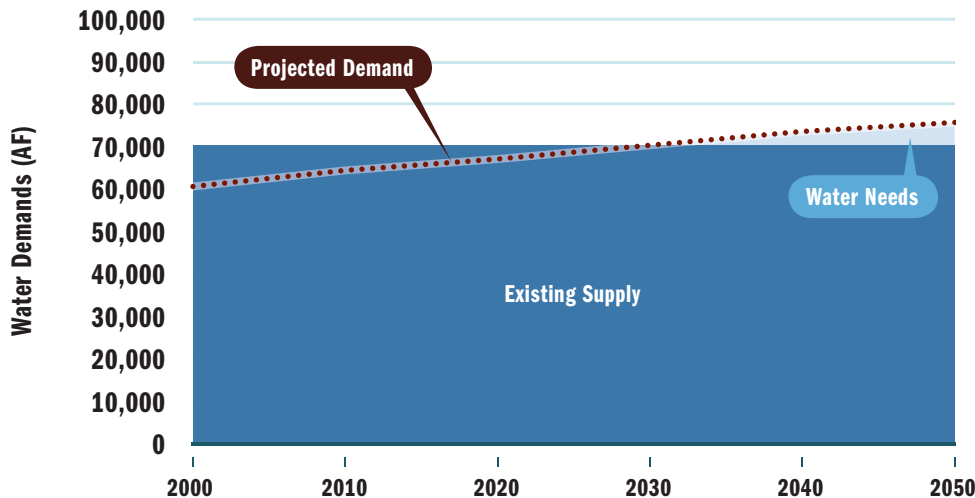
FIGURE N° 1 POPULATION PROJECTIONS FOR THE PLATTE RIVER BASIN.



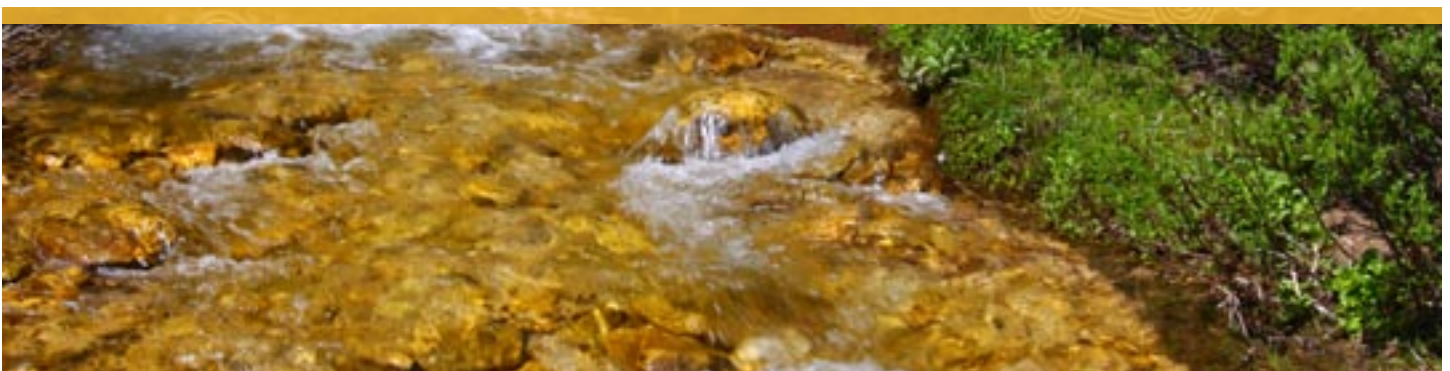
approximately 76,000 acre-feet (24.8 billion gallons) in 2035—an increase of 15,000 acre-feet (4.9 billion gallons) per year from today’s use. Some of the major cities in the Platte Basin have already bought, developed, and built most of the water supplies and water supply infrastructure needed to meet these demands. With existing supplies of 70,600 acre-feet annually and projected demands in 2035 of 76,000 acre-feet, the Urban Subbasins will need an additional 5,400 acre-feet by 2035 to fully meet projected demands (Figure 2).

It is worth noting that the gap assessment of this report is meant to inform water supply planning from a state and basinwide perspective, and the data presented herein should not supplant individual water provider information for local planning purposes. Furthermore, the water supply gap is projected for the Urban Subbasins as a whole, and does not take into account more localized water supply and demand issues, such as climate variations and water infrastructure system flexibility. This aggregation of data to a multi-subbasin level assumes a more dynamic and integrated water system along the Platte Basin than what currently exists today, a goal worthy of pursuing.

FIGURE Nº 2 FUTURE WATER NEEDS OF THE URBAN SUBBASINS.



The Urban Subbasins will need annually an additional 5,400 acre-feet of water supply by 2035 to meet future demands.



Our Water Management Portfolio

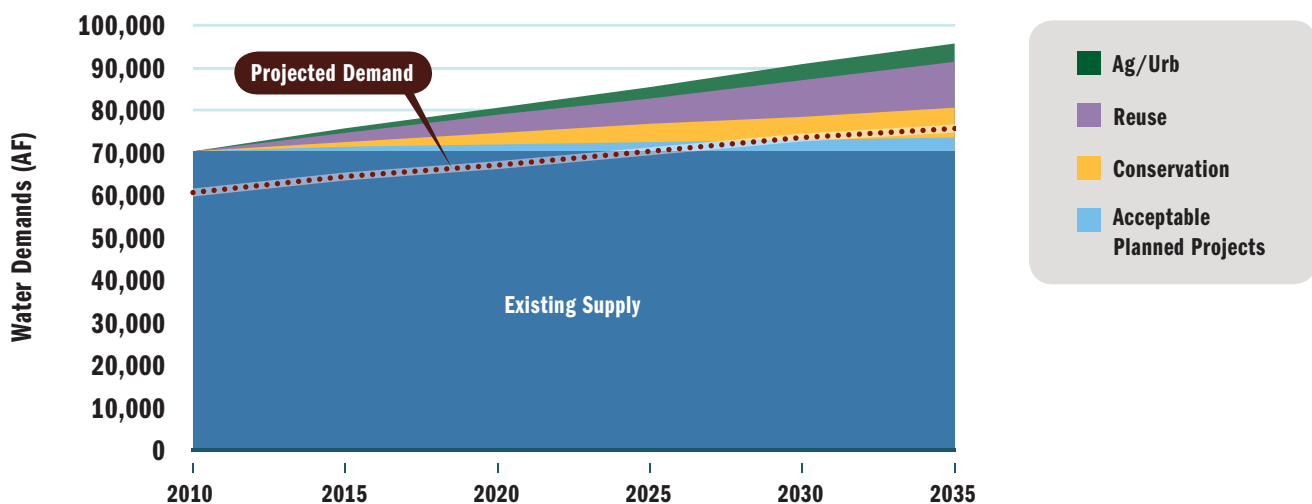
As advocates for the protection of Wyoming's rivers and natural heritage, Western Resource Advocates and Trout Unlimited believe it is imperative for water planning to account for instream flow needs and minimize the adverse environmental impacts of water supply strategies. This report explores four strategies for meeting growing water needs in the Urban Subbasins:

1. Acceptable planned projects
2. Water conservation
3. Reuse, and
4. Voluntary water sharing with the agricultural sector.

Our integrated portfolio approach more than fills the projected needs of the Urban Subbasins while protecting the state's rivers, economy, and quality of life (Figure 3). Importantly, this portfolio meets future needs more cheaply and without the need for new, large, environmentally-damaging transbasin diversions that have been a hallmark of traditional water supply planning.

FIGURE Nº 3 *FILLING THE GAP PORTFOLIO FOR MEETING THE PROJECTED DEMAND OF THE URBAN SUBBASINS.*

Our balanced portfolio of water supply strategies more than fills projected needs in the Urban Subbasins communities while protecting Wyoming's environment.



Acceptable Planned Projects

Some of the structural water supply projects currently proposed for meeting Platte Basin water needs could be acceptable from an environmental perspective if designed and implemented pursuant to our smart principles. This report refers to these projects as “Acceptable Planned Projects” (APPs). The APPs highlighted in this report are the Laramie River Pipeline and Belvoir Ranch, which collectively can provide 3,040 acre-feet of new supply annually by 2035.

Conservation

Published literature and multiple studies indicate that per capita water use can be significantly reduced over the next 25 years through conservation techniques, practices, and technology. Accounting for both active and passive conservation savings, a 20 percent per capita reduction in water demand between 2012 and 2035 would result in an annual reduction in water demand of 16,650 acre-feet by 2035 (Table 1).

Achieving water savings from a high conservation strategy will require an immediate and enduring investment in conservation programs. Many of these strategies are already being implemented in the Platte Basin and other Western communities. In addition, water utilities should not be expected to do this alone: achieving the proposed conservation levels will require a sustained, coordinated effort between utilities, the state, city planners, private industry, the general public, and the conservation community. By dedicating a little more than half of active water conservation savings to meeting future needs, 7,100 acre-feet of “new” water will be made available annually by 2035.

TABLE Nº 1 ALLOCATION OF CONSERVATION STRATEGY’S WATER SAVINGS.

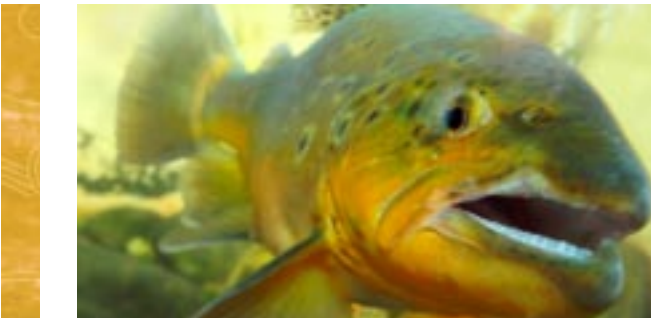
	M&I Passive Conservation	M&I Active Conservation	Total Acre-Feet
Savings allocated as reduction in future demand projections	100%	0%	4,850
Savings allocated to meeting future demands	0%	60%	7,100
Savings allocated to system reliability	0%	40%	4,700
Total			16,650
% of total savings for the conservation strategy	Passive Conservation	Active Conservation	
	30%	70%	

Reuse

Reuse is becoming an important strategy to meet Wyoming's growing water demands as the costs and challenges of developing new water supplies increase. Although existing reuse is limited in the Urban Subbasins, significant potential exists to increase reuse, and communities are already planning to develop this potential. As an example, the city of Cheyenne plans to increase reuse in the future by 4,150 acre-feet per year. This report also identifies more reuse opportunities that can provide an additional 6,380 acre-feet to the Urban Subbasins in the following decades, for a total increase of reuse of 10,530 acre-feet by 2035.

Ag/Urban Cooperation

The agriculture and urban cooperation ("ag/urban") strategy presented in this report is premised on agreements based on rotational land fallowing and temporary water leasing. These agreements would lease water to municipalities at a price attractive to irrigators, and on schedules that are sufficiently reliable for municipal suppliers and that are established well in advance of actual reallocation of water. Based on studies conducted in the Platte Basin, and assuming the physical and administrative structures are put in place over the next 20 years, voluntary and compensated ag/urban cooperative water sharing arrangements can provide 1,900 acre-feet of new supply annually by 2035 without permanently drying irrigated acreage. This amount represents .003 percent of the total Platte River agricultural consumptive use of water. Water supply from Cheyenne's Monolith Ranch (2,500 acre-feet) is also included in this category because it is a municipal acquisition of agricultural water whose yield is not taken into account in other sections, even though the Monolith Range purchase does not exemplify the ag/urban cooperation strategy.



Our portfolio would provide more than 5 times the amount of additional water needed to meet the 2035 demand of the Urban Subbasins without the need to build large environmentally damaging transbasin diversions and without drying up agricultural lands.

Looking beyond the traditional approach of building new large-scale, environmentally damaging transbasin projects, the portfolio of APPs, conservation, reuse, and ag/urban sharing described in this report would provide 19,600 acre-feet (6.4 billion gallons) of water *in excess* of the Urban Subbasin's 2035 demands.

Recommendations

This report offers several key recommendations for water planners and policy makers to consider carefully when forging Wyoming's water future. We believe these recommendations can help Wyoming chart a path forward to meet the future urban water needs of the Platte Basin without sacrificing the state's majestic rivers and streams, or the important freshwater recreational industries.

- ✓ Meet the projected Urban Subbasin's gap with balanced strategies that are more cost-effective and environmentally friendly than traditional transbasin projects.
- ✓ Protect Wyoming's rivers, streams, and lakes as an integral part of any future water development strategy. Outdoor recreation and non-consumptive uses of water for fishing, rafting, and other uses are worth billions of dollars annually to the state's economy and are critical to Wyoming's quality of life.
- ✓ Pursue only those projects that can be constructed and operated according to the Smart Principles.
- ✓ Implement more aggressive water conservation strategies. Conservation is often the cheapest, fastest, and smartest way to stretch water supplies. Urban Subbasin utilities have significant opportunities to boost their existing water conservation efforts.
- ✓ Maximize the role of water reuse to meet the future needs of Wyoming's Platte Basin residents, and work to improve public perception and acceptance of reuse projects.
- ✓ Cooperate with agriculture on voluntary water sharing agreements that benefit both municipalities and the agricultural community without permanently drying irrigated acres. Alternatives to "buy and dry" transfers present the best opportunities for Wyoming's future.

Significant strides have already been made in the Platte Basin pursuing projects that adhere to the Smart Principles and the water conservation and reuse strategies presented in this report. By further adopting these recommendations, Urban Subbasin communities can more than meet their water needs while minimizing impacts to rivers and streams.

Smart Principles

Beginning in 2003, Western Resource Advocates, Trout Unlimited, and the Colorado Environmental Coalition (now Conservation Colorado) developed a set of smart water supply principles as a guide to assure protection of rivers and other natural resources against the damage that often results from structural water supply projects. These principles, further refined and adapted in this report for Wyoming, are:

- 1— Make full and efficient use of existing water supplies and reusable return flows before developing new diversion projects.
- 2— Expand or enhance existing storage and delivery infrastructure before building new facilities in presently undeveloped sites and develop water supplies incrementally to better utilize existing diversion and storage capacities.
- 3— Integrate water supply systems and share water resources among multiple water users to avoid unnecessary new diversions and duplication of facilities.
- 4— Design and operate water diversion projects to leave adequate flows in rivers to support healthy ecosystems under all future scenarios, even if water availability diminishes in the future as a result of climate change or other factors.
- 5— Seek to develop multipurpose projects that spread the costs as well as the benefits across different users, including agriculture, recreation, municipal, the environment, and others.
- 6— Ensure transfers of existing water rights to municipalities are voluntary and compensated.
- 7— Involve all stakeholders in decision-making processes and fully address the adverse impacts of new transbasin diversions.



WESTERN RESOURCE ADVOCATES

2260 Baseline Road, Suite 200
Boulder, CO 80302
Phone: (303) 444-1188
Fax: (303) 786-8054
Email: info@westernresources.org

Western Resource Advocates' mission is to protect the West's land, air, and water.



250 N. First Street
Lander, WY 82520
Phone: (307) 332-7700 ext. 12
Email: schristy@tu.org

Trout Unlimited's mission is to conserve, protect, and restore North America's coldwater fisheries and their watersheds.