



Update on Statewide Water Supply Initiative – Yampa/White/Green Basin

Statewide Water Supply Initiative Background

The Statewide Water Supply Initiative (SWSI) has identified how much water Colorado will need to help meet the needs of its growing population. By 2030, Colorado will have an additional 2.8 million residents and a total population of 7.1 million people. Most of the state's population (87 percent) will be along the Front Range from Pueblo to Weld County. However, the fastest growing areas will actually be on the West Slope in the Colorado and San Juan/Dolores/San Miguel Basins Table 1 summarizes the population changes by river basin.

Table 1 Population Projections by Basin

Basin	2000	2030	Increase in Population	Percent Change 2000 to 2030	Percent Annual Growth Rate
Arkansas	835,100	1,293,000	457,900	55	1.5
Colorado	248,000	492,600	244,600	99	2.3
San Juan/Dolores/San Miguel	90,900	171,600	80,700	89	2.1
Gunnison	88,600	161,500	72,900	82	2.0
North Platte	1,600	2,000	400	25	0.7
Rio Grande	46,400	62,700	16,300	35	1.0
South Platte	2,985,600	4,911,600	1,926,000	65	1.7
Yampa/White/Green	39,300	61,400	22,100	56	1.5
TOTAL	4,335,500	7,156,400	2,820,900	65	1.7

Source: Colorado Department of Local Affairs Demography Section

SWSI is an 18-month study by the Colorado Water Conservation Board (CWCB) to take a comprehensive look at how Colorado will meet its future water needs. During the 1990s, Colorado was the third fastest growing state in the nation, surpassed only by Nevada and Arizona. The recent drought also highlights the importance of understanding how Colorado will manage water during times of increased scarcity. SWSI's approach to this problem is to both develop technical data and work with local interests and water experts to obtain consensus on the issues, identify where data are missing, and to understand the obstacles to meeting our water supply needs.

Working with Basin Technical Roundtables consisting of multiple interests (water providers, local governments, agricultural users, recreational interests, the environmental community, and the business sector interests) from Colorado's eight major river basins (Figure 1), SWSI is a "bottoms-up" process to make sure local expertise and knowledge is incorporated into the study findings. These roundtables have identified water supply needs ranging from ensuring that municipal and agricultural users have a safe and reliable water supply, to providing water for recreation and the environment – important drivers for our economy.

Statewide Municipal and Industrial and Self-supplied Industrial Demands

SWSI has examined current water use and supply and has also estimated future water needs based on a per capita water use methodology. Per capita water use was



Figure 1 Colorado's Eight Major River Basins

obtained from over 75 percent of Colorado's water providers, and the data they provided were then combined with population estimates from the State Demographer's Office to develop future water demand projections. The results are shown in Table 2 for the year 2000 and year 2030. The state's eight major water basins will need an additional 630,000 acre-feet (AF) of new water by the year 2030 to meet projected demands, 53 percent more water than is being used today. An acre-foot of water is approximately 326,000 gallons. These projected water demands are reduced by

anticipated water conservation savings as a result of the National Energy Efficiency Act, which established mandatory standards for water use efficiency for certain plumbing fixtures.

Table 2 Preliminary Statewide Gross Municipal and Industrial and Self-supplied Industrial Water Demands–2000 to 2030

Basin	Total 2000 Gross Demand (AF)	Total Projected 2030 Gross Demand (AF)	Projected Conservation Savings (AF)	Increase in Gross Demand (AF)	Identified Gross Demand Shortfall (AF)
Arkansas	256,900	354,900	18,600	98,000	16,400
Colorado	74,100	136,000	7,800	61,900	4,000
San Juan/Dolores/San Miguel	23,600	42,400	2,400	18,800	5,000
Gunnison	20,600	35,500	2,100	14,900	1,800
North Platte	500	600	—	100	—
Rio Grande	17,400	21,700	1,400	4,300	—
South Platte	772,400	1,182,100	68,700	409,700	41,800
Yampa/White/Green	29,400	51,700	900	22,300	—
TOTAL	1,194,900	1,824,900	101,900	630,000	69,000

Columns and rows may not add up exactly due to rounding

Understanding **how** future water needs will be met is the real challenge that SWSI will be examining in more detail over the next 4 months. To date, the study team has identified how the major water suppliers plan on meeting their 2030 demands. This inventory of solutions includes conservation, water reuse, water transfers, enlargement and re-operation of facilities, and new facilities. Examples of some of the

projects include: Colorado Spring's Southern Delivery System, Denver's north system improvements, Northern Colorado Water Conservancy District's Windy Gap FIRMing Project and Northern Integrated Supply Plan (NISP), greater utilization of Ruedi and Wolford mountain reservoirs in the Colorado River drainage, and enlargement of Elkhead Reservoir in the Yampa/White/Green Basin. A more complete list of how our future needs will be met is still under development. Once it is developed, we will have a full understanding of how much remaining unmet need there will be and begin to focus on how to close the remaining gap between supply and demand in the year 2030.

SWSI has identified that most water providing entities are actively planning for future demand and have identified key projects to meet this demand. It is essential that these plans and projects move forward. If they do not move forward, alternative solutions will need to be implemented. SWSI has also found that the greatest needs for state assistance in meeting future water needs are with rural and small water providers and agricultural users.

Statewide Agricultural Demands

The Colorado Decision Support System (CDSS) modeling tool was used to estimate existing agricultural water demands in the Colorado, Gunnison, Rio Grande, San Juan/Dolores/San Miguel, and the Yampa/White/Green Basins. Agricultural use in the Arkansas, North Platte, and South Platte Basins were estimated using a variety of available sources. Table 3 presents an estimate of current irrigated acres and average total diversions (in AF) over a period of record for each basin. It is important to note that the number of irrigated acres may vary on an annual basis for each basin over the period of record.

Table 3 Preliminary Statewide Agricultural Demands

Basin	Current Estimated Irrigated Acres	Average Total Diversions* (AF)	Period of Record for Average Diversions
Arkansas	538,100	1,769,900	1999 – 2001
Colorado	237,700	1,986,900	1975 – 1990
San Juan/Dolores/San Miguel	254,900	810,100	1975 – 1990
Gunnison	263,500	1,726,000	1950 – 2000
North Platte	95,700	396,900	1993 – 2002
Rio Grande	632,700	1,514,500	1950 – 1997
South Platte	1,003,500	2,545,500	1993 – 2002
Yampa/White/Green	118,500	629,900	1975 – 1990
TOTAL	3,144,600	11,379,700	-

* Arkansas, South Platte and Rio Grande Basins include estimates of alluvial groundwater pumping

Agriculture represents approximately 91 percent of water used in Colorado for agricultural, municipal and industrial (M&I), and self-supplied industrial (SSI) purposes (Figure 2). SWSI projections indicate that it will make up 86 percent of the water use in 2030 (Figure 2). The greatest changes in agricultural water use are expected to occur in the Front Range as M&I growth moves into agricultural lands and/or as water is transferred from agriculture to support growth. Understanding the

impact of these changes on rural Colorado economies, and the effect on the open space provided by farms and ranches, is a key challenge for all Coloradans. In other areas of the state, localized decreases and increases in agricultural water use are also expected. A net increase in agricultural water use may occur in the Yampa/White/Green and the San Juan/Dolores/San Miguel Basins.

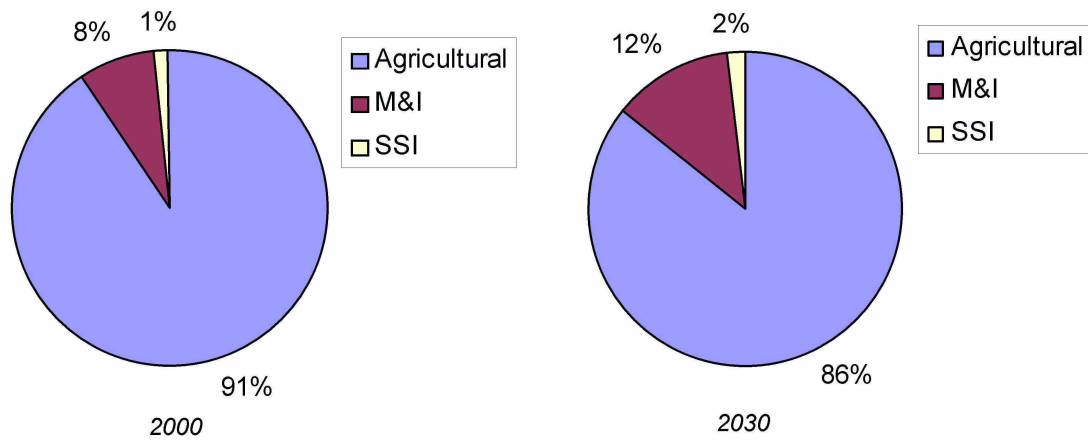


Figure 2
 2000 and 2030 Statewide Agricultural, M&I, and SSI Demands

Yampa/White/Green Background

By 2030, the Yampa/White/Green Basin will increase its demand by 22,300 AF. In SWSI, M&I is defined as all of the water use of a typical municipal system, including residential, commercial, industrial, irrigation, and firefighting. Large industrial water uses that have their own water supplies or lease raw water from others are described as SSI water users. For the purposes of SWSI, the regional water needs in the Yampa/White/Green Basin were evaluated on a county level. The population estimates were also aggregated into counties. Figure 3 shows the increase in population from 2000 to 2030 for each county. Table 4 shows the total population and percent increases for the counties of the Yampa/White/Green Basin.

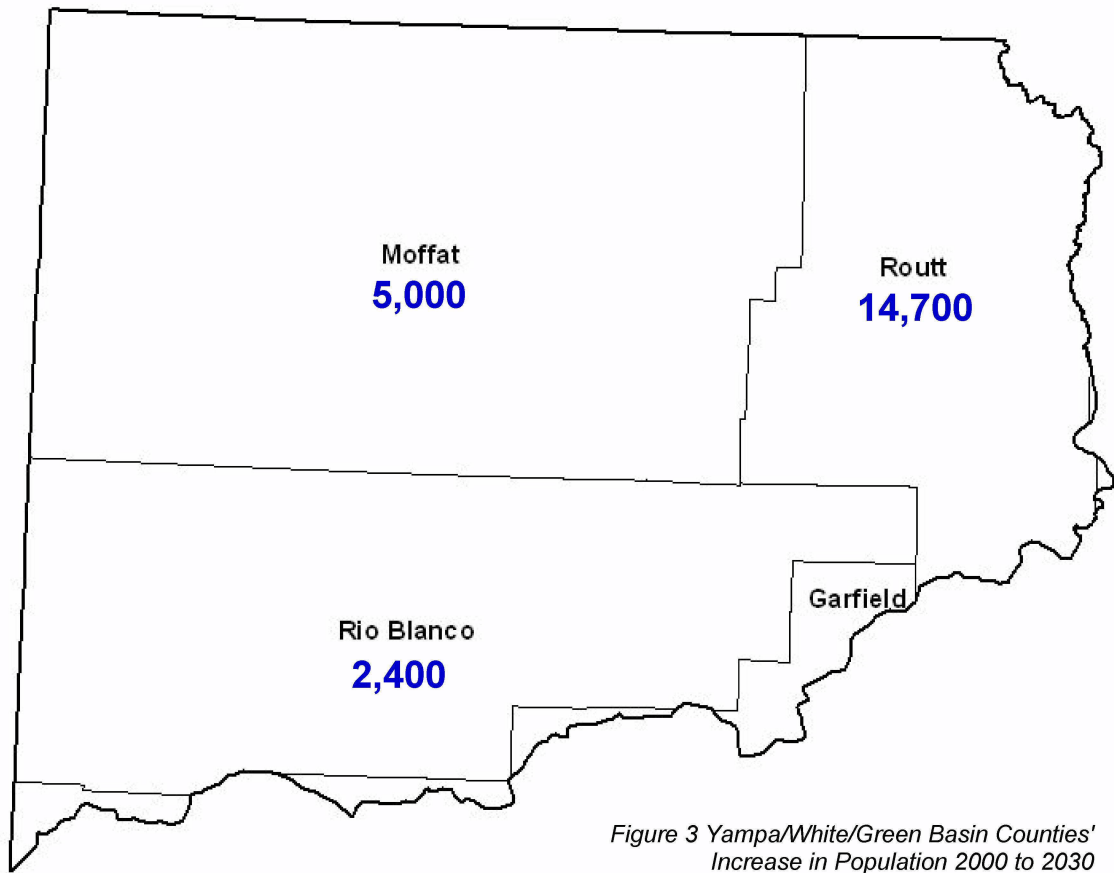


Figure 3 Yampa/White/Green Basin Counties' Increase in Population 2000 to 2030

Table 4 Yampa/White/Green Population Projections by County

County	2000 Population	2030 Population	Increase in Population 2000 to 2030	Percent Change 2000 to 2030	Percent Annual Growth Rate
Moffat	13,200	18,200	5,000	38	1.1
Rio Blanco	6,000	8,400	2,400	40	1.1
Routt	20,100	34,800	14,700	73	1.8
TOTAL	39,300	61,400	22,100	56	1.5

M&I and SSI water demand forecasts for the Yampa/White/Green Basin are shown in Table 5. Water use can be considered both in terms of gross water needs or demands – the total amount of water delivered to a user – and in consumptive use (CU), or the water that will actually be consumed. The 2000 and 2030 gross demands are presented in the table, along with conservation savings. Of the 22,300 AF of increased M&I and SSI water demands in the Yampa/White/Green Basin, this demand is proposed to be met through existing supplies and water rights and through the implementation of identified projects and processes.

Table 5 Yampa/White/Green Preliminary M&I and SSI Demand Analysis

County	2000 Gross Demand (AF)	2030 Gross Demand (AF)	Projected Conservation Savings (AF)	Increase in Gross Demand (AF)	Identified Gross Demand Shortfall (AF)	Estimated CU Demand Shortfall (AF)
Moffat	16,300	26,600	300	10,300	—	—
Rio Blanco	2,000	2,600	100	600	—	—
Routt	11,100	22,500	500	11,400	—	—
TOTAL	29,400	51,700	900	22,300	—	—

Columns and rows may not add up exactly due to rounding

Table 6 provides a list of the major identified projects and planning efforts that are underway or are planned in the Yampa/White/Green Basin. It will be very important that these projects and plans move forward or significant additional water supplies will be required.

Table 6 Major Identified Projects and Processes to Provide Additional Supply

County	Identified Projects and Processes
Moffat	■ Existing supplies and water rights and reservoir enlargements
Rio Blanco	■ Existing supplies and water rights
Routt	■ Existing supplies and water rights and reservoir enlargements

As urban growth continues, there is anticipated to be some limited retirement of agricultural lands as these properties are converted to urban use. If the existing supplies, water rights, and reservoir enlargements listed in Table 6 do not produce the planned amounts of water, there may be pressure on water providers to acquire additional agricultural water rights beyond what will normally occur. An additional 20,000 to 40,000 acres of potentially irrigable lands have been identified in Moffat County and alternatives for providing irrigation water to these lands will be identified. The long-range potential for oil shale extraction and processing has been identified in Rio Blanco County, but are not included in the projected 2030 demands. These water demands associated with oil shale development are unknown, but the demands could be significant depending on the annual volume of oil shale processed.

A final round of Basin Roundtable meetings will be held in August and September. The fourth meeting for the Yampa/White/Green Basin will take place on Wednesday, August 11, 2004. You are welcome to attend the final round, but in either case, information regarding results, decisions, and outcomes of the meetings will be available on the project website. For more information on meeting times, locations, and additional details, visit the CWCB website at www.cwcb.state.co.us and click on Statewide Water Supply Initiative.