

## **Appendix C5**

### **Wyoming Water Demand Scenario Quantification**

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# Appendix C5—Wyoming Water Demand Scenario Quantification

## 1.0 Introduction

This appendix summarizes the data sources used in scenario quantification for Colorado River demand<sup>1</sup> for the state of Wyoming and presents the results of quantification. As presented in figure C5-1, Wyoming is divided into a number of planning areas that align with Colorado River Basin (Basin) tributaries (Green River above Fontenelle, Fontenelle to Green River, Green River to Greendale, and Little Snake) as well as adjacent areas that are served by Colorado River water. Data collection and development were completed at the planning area level.

The following sections present background information that summarizes the state's planning areas as well as data sources used to quantify demand scenarios by category. Following the background section, results of demand scenario quantification are presented. The results section is broken out into a Wyoming Study Area summary, followed by Colorado River demand by geography and finally by category.

## 2.0 Background

The Wyoming State Engineer's Office has primary responsibility for water resource planning in the state of Wyoming. In addition, in 1979 the Wyoming legislature created the Wyoming Water Development Commission (Commission), which functions to develop the state's water resources (including production of studies and water development projects that are funded during each legislative session). As directed by the legislature, the Commission has led numerous water resource planning studies. Information presented in this summary was largely obtained from Wyoming's planning studies.

The State Engineer's Office coordinated Wyoming's efforts to provide information for scenario quantification. These efforts largely relied on information previously generated through regional plans and demographic studies. However, new assumptions and/or data development were required where the assumptions of the Colorado River Basin Water Supply and Demand Study (Study) required information not developed as part of the regional planning effort. Information presented in this summary was obtained through consultation with the Wyoming State Engineer's Office personnel.

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<sup>1</sup> Colorado River demand as computed by Study Area demand minus other supplies.

**FIGURE C5-1**  
Colorado River Hydrologic Basin and Export Service Areas in Wyoming



## 2.1 Data Sources for Quantification

This section discusses data sources for demand quantification by use category. Some category projections were based on relevant parameter data, while other category projections were developed directly as water demand. Sources include state, regional, and national agency reports.

- **Agricultural Demand:** Irrigated acreage and agricultural demands were derived from the *Green River Basin Water Planning Process* (States West Water Resources Corporation, 2001) and *Wyoming Framework Plan* (WWC Engineering, 2007). Agricultural applied water use and consumptive factors were calculated.
- **Municipal and Industrial (M&I):** Population estimates were derived from table 2 of the *Green River Basin Plan* (WWC Engineering, 2010) and from data obtained from the Wyoming Department of Administration and Information.
- For the hydrologic basin, total consumptive demands were derived from the *Green River Basin Water Planning Process* (States West Water Resources Corporation, 2001). Per capita usage was calculated based on demand, population, and a consumptive use factor of 50 percent (Wyoming State Engineer's Office, 2011).
- For the North Platte, M&I per capita use was derived from Cheyenne population and demand in 2010. M&I per capita use was applied to population to get diversion demands, and a consumptive use factor of 50 percent (Wyoming State Engineer's Office, 2011) was used to derive consumptive demands.
- **Energy:** Energy demands were derived from the *Green River Basin Water Planning Process* (States West Water Resources Corporation, 2001).
- **Minerals:** Minerals demands were derived from the *Green River Basin Water Planning Process* (States West Water Resources Corporation, 2001).
- **Fish, Wildlife, and Recreation:** Fish, wildlife, and recreation demands were derived from the *Green River Basin Water Planning Process* (States West Water Resources Corporation, 2001).
- **Tribal:** In Wyoming, there are no federally recognized tribes with rights to Colorado River water.

## 3.0 Results of Water Demand Scenario Quantification<sup>2</sup>

This section summarizes Wyoming's Colorado River water demand trends by category across the initial scenarios. The purpose of this section is to describe changes in demands, both temporally and geographically, parameters that influence changes in demands, and how the parameters and demands differ amongst scenarios.

Demands were first developed for areas that may be potentially served by Colorado River water ("Study Area" demands); independent of the source of supply. However, for areas outside of the hydrologic basin, a portion of the Study Area demand is satisfied from other supplies. The

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<sup>2</sup> By definition, scenarios representing future, projected, estimated, or potential demands are uncertain and are only one possible realization of unknown events. All scenarios represent potential Colorado River Water demand. However, for readability purposes, potential Colorado River water demand will also be varying referred to as Colorado River demand, or in some cases, just demand.

communities within the Colorado River Basin also rely on non-tributary groundwater for a portion of their supply. To develop estimates of the Colorado River demand, the Study Area demand was reduced by estimates of available supply from other sources. This appendix focuses on Colorado River demands, but includes discussion of the Study Area parameters that led to these demands.

Sections 3.1 through 3.3 summarize the results of demand scenario quantification, with section 3.1 presenting Study Area demand and Colorado River water demand, section 3.2 presenting Colorado River Demand for the state and individual planning areas across the six scenarios, and section 3.3 presenting Colorado River water demand by category across the six scenarios. Parameters and demands for all categories and all scenarios, along with references for data sources, are detailed in tables C5-2 to C5-7 in section 3.4.

### **3.1 Summary Results of Scenario Quantification**

Values were developed for parameters to quantify Study Area demand for each of the scenarios. Colorado River demand was calculated as Study Area demand minus other supplies. Table C5-1 presents summary results for the demand scenarios considered in this Study. The table presents agricultural and M&I demand parameters for the entire Study Area that distinguish the scenarios, the resulting Study Area demands, and finally the Colorado River demands by category. Because other supplies may vary among scenarios, trends observed in the parameters and Study Area demands may not be reflected identically in Colorado River demand trends.

**TABLE C5-1**  
 Summary Results of Wyoming Water Demand Scenario Quantification by 2060

Key Study Area Demand Scenario Parameters							
	2015 <sup>1</sup>	2060 Scenario Parameters					
		A	B	C1	C2	D1	D2
Population (millions)	0.31	0.41	0.37	0.44	0.44	0.41	0.44
Change in per capita water usage (%), from 2015	--	+3%	+1%	+4%	+3%	-22%	+3%
Irrigated acreage (millions of acres)	0.95	0.94	0.94	0.97	0.97	0.94	0.94
Change in per acre water delivery (%), from 2015	--	+1%	+3%	-0%	-2%	+1%	+1%
Study Area Demand (thousand acre-ft)							
	2015 <sup>1</sup>	2060 Scenario Demands					
		A	B	C1	C2	D1	D2
Ag demand	1,951	1,959	1,976	1,976	1,959	1,959	1,959
M&I demand	74	95	89	100	100	73	100
Energy demand	42 - 52	65	65	171	50	50	50
Minerals demand	20 - 34	59	59	91	33	33	33
FWR demand	2.0	10.0	10.0	10.0	25.0	25.0	25.0
Tribal demand	0	0	0	0	0	0	0
Total Study Area Demand <sup>2</sup>	2,109	2,188	2,198	2,348	2,167	2,141	2,167
Colorado River Demand (thousand acre-ft)							
	2015 <sup>1</sup>	2060 Scenario Demands					
		A	B	C1	C2	D1	D2
Ag demand	398	406	423	423	406	406	406
M&I demand	30	67	36	74	73	61	73
Energy demand	42 - 52	65	65	171	50	50	50
Minerals demand	20 - 34	59	59	91	33	33	33
FWR demand	2.0	10.0	10.0	10.0	25.0	25.0	25.0
Tribal demand	0	0	0	0	0	0	0
Total Colorado River Demand <sup>2</sup>	511	606	592	769	588	576	588

1. If range across scenarios is less than 10%, Current Projected (A) is presented. Otherwise, range (min - max) is presented.
2. Excludes potential losses (reservoir evaporation, phreatophytes, and/or operational inefficiencies) that may be charged to state

Wyoming estimates that about 310,000 people will be in Wyoming's Study Area by 2015. This number is expected to increase to 370,000 to 440,000 by 2060. The greatest population growth is associated with the Rapid Growth (C1 and C2) scenarios. The Slow Growth (B) scenario has the lowest population of the scenarios in 2060 (370,000 people), but still represents a growth of about 20 percent over 2015 estimates.

The growing municipal population is forecast to be slightly less efficient in its per capita water use than today in all scenarios except Enhanced Environment (D1) scenario, in which per capita water use is expected to be 22 percent less in 2060 than in 2015. Per capita water use for the other Current Projected (A), Slow Growth (B), Rapid Growth (C1 and C2), and Enhanced Environment (D2) scenarios is expected to be 1 to 4 percent more in 2060 than in 2015. While usage rates vary across Wyoming's planning areas, per capita changes are assumed to be consistent across the hydrologic basin planning areas.

Irrigated acreage is projected to remain relatively constant (less than 1 percent decrease to 3 percent increase) through 2060 under all scenarios. Water delivery per acre also remains relatively constant through 2060, with a 2 percent decrease in the Rapid Growth (C2) scenario and a range of no change to 3 percent increase in the other scenarios.

Study Area demand for energy is projected to increase under all scenarios due to the growing need for electricity generation (coal and solar). The greatest increases in Study Area demand for energy are anticipated in the Fontenelle to Green River and Green River to Greendale areas, with combined increase of about 8,000 acre-feet per year (afy) (Rapid Growth [C2] and Enhanced Environment [D1 and D2] scenarios) to 105,000 afy (Rapid Growth [C1] scenario).

Study Area demand for minerals is also projected to increase under all scenarios. Growth in minerals demand is entirely in the Fontenelle to Green River planning area, with a range of growth between 14,000 afy (Rapid Growth [C2] and Enhanced Environment [D1 and D2] scenarios) to 57,000 afy (Rapid Growth [C1] scenario). Growth primarily reflects increases in soda ash production.

There are no projected Study Area demands for tribal use in any of the scenarios examined.

Figure C5-2 presents demands across the scenarios in three panels as follows: 1) Study Area demand with other supplies and Colorado River demand identified, 2) Colorado River demand, and 3) change in Colorado River demand by demand category.

From panel one it can be seen that Study Area demand increases from about 2.11 million acre-feet (maf) in 2015 to between 2.14 and 2.35 maf in 2060. The range in Study Area demand growth across scenarios in 2060; however, is projected to be as low as 52 thousand acre-feet (kaf) or as high as 233 kaf. About 70 to 75 percent of the Study Area demand is expected to be met by other supplies.

Panel two provides a view of the range across scenarios of Colorado River demand. This demand increases from about 511 kaf in 2015 to between 576 and 769 kaf in 2060 (or 15 to 50 percent), depending on the scenario. This difference results in a Colorado River demand range of about 193 kaf across the scenarios in 2060 or about 34 percent.

Panel three shows how specific categories affect the projected change in Colorado River demand by scenario. Growth in Colorado River demand is influenced relatively proportionally by all categories of demand. The greatest growth, under the Rapid Growth (C1) scenario, is influenced strongly by growth in Energy and Minerals demand.



**FIGURE C5-2**  
 Study Area, Colorado River, and Change in Colorado River Demand

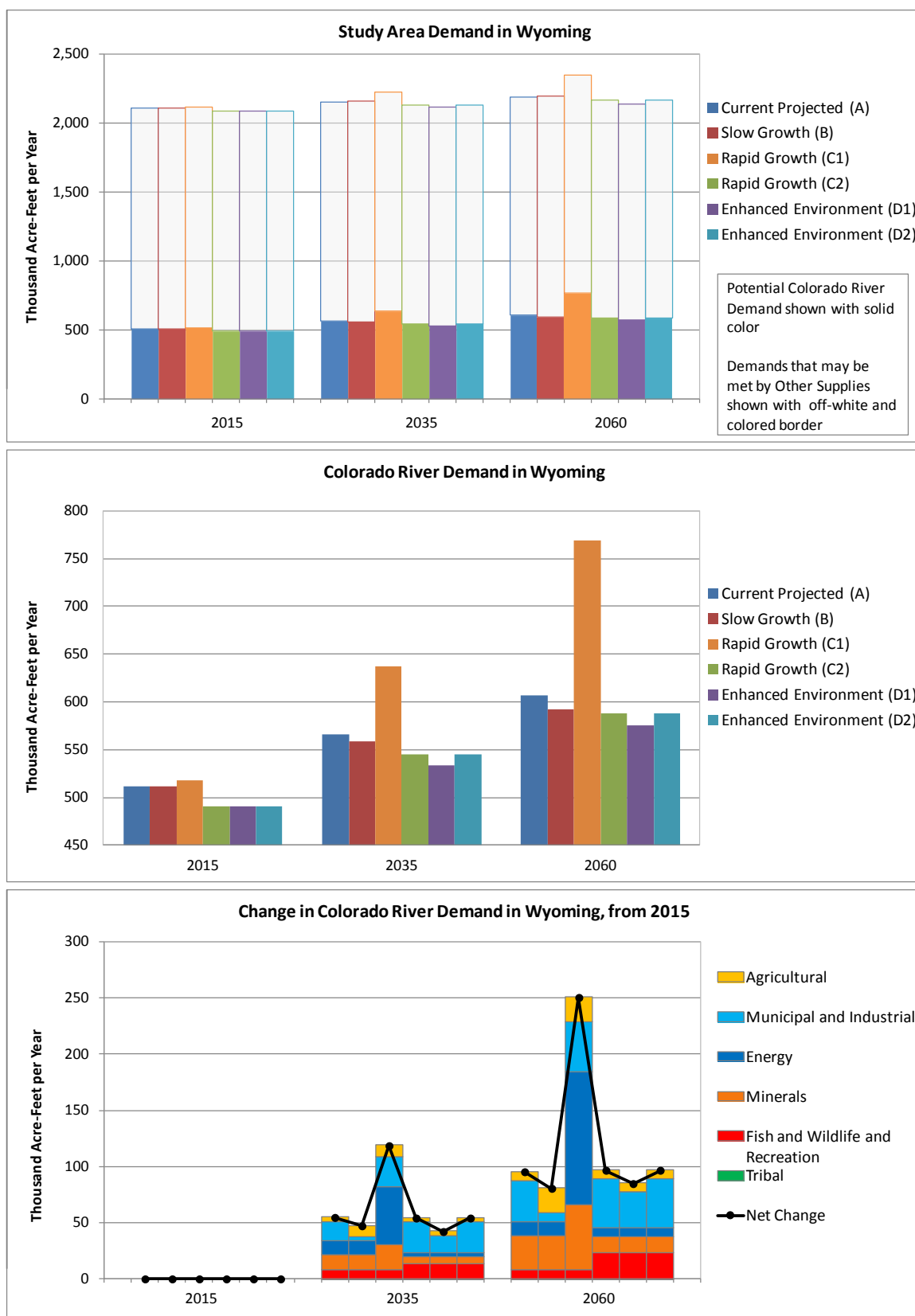
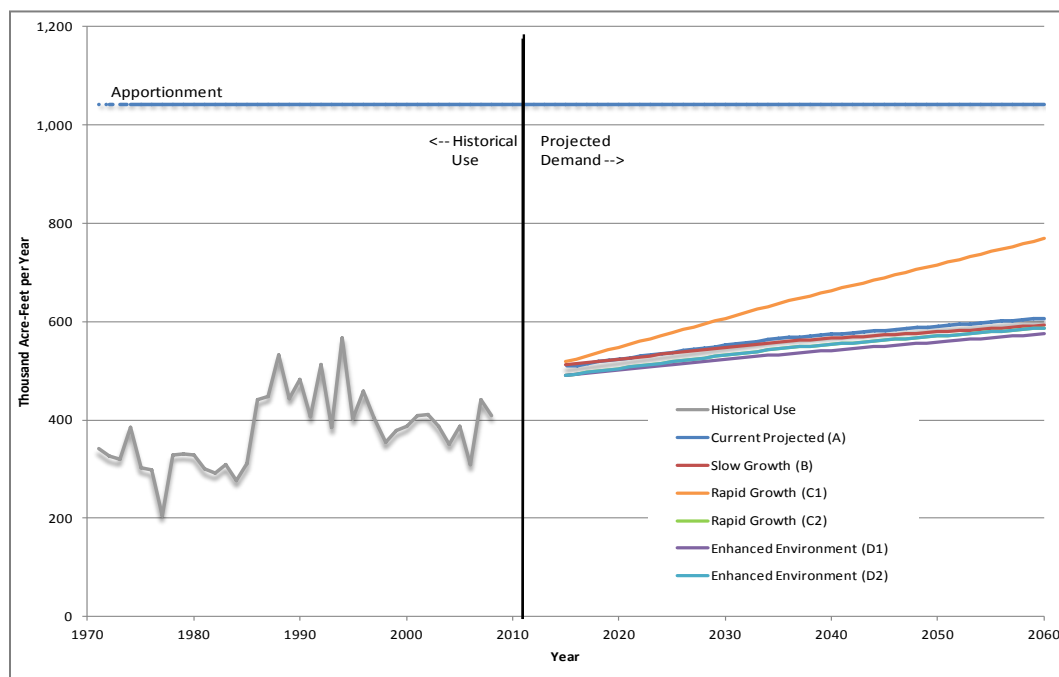


Figure C5-3 ties historical water use to the range of Colorado River demand in the quantified scenarios. The 193 kaf range across scenarios in 2060 is easily discernible, with the greatest demand under Rapid Growth (C1) scenario and a narrower range of demand across the other scenarios. In addition, it appears that the quantified scenarios track well with the peaks in historical uses that likely represent the least supply-limited conditions or actual demand.

**FIGURE C5-3**

Historical Use and Future Projected Demand Excluding Reservoir Evaporation<sup>1</sup>



<sup>1</sup>Reservoir evaporation on the order of 115 kaf is not included in this plot.

### 3.2 Colorado River Water Demand by Geography

Colorado River water demand for areas served by the Colorado River is presented in figures C5-4 and C5-5. These figures show two geographic levels: Study Area in Wyoming, and individual planning areas. Demands at each geographic level are shown across the scenarios. The columns to the right show the Colorado River demand at a point in time (2015, 2035, or 2060) by relative contribution of the categories.

When demands by category are examined in figure C5-5, the mix of demand categories in the hydrologic basin and adjacent areas are different, with agricultural demand dominating the hydrologic basin and M&I demand dominating the adjacent areas.

Figure C5-6 shows the change in Colorado River demand by category from 2015 across the scenarios. The change in both magnitude and percentage change of Colorado River demand<sup>3</sup> in Utah varies considerably across the planning area. The Fontenelle to Green River planning area shows relatively large changes, primarily due to growth in minerals and energy demands. The North Platte also shows relatively significant changes, primarily due to growth in municipal and industrial demands.

<sup>3</sup> Potential Colorado River demand is based on changes in parameters, such as population, and for the purpose of the study is not limited by apportionment.

FIGURE C5-4  
 Colorado River Demand in Wyoming

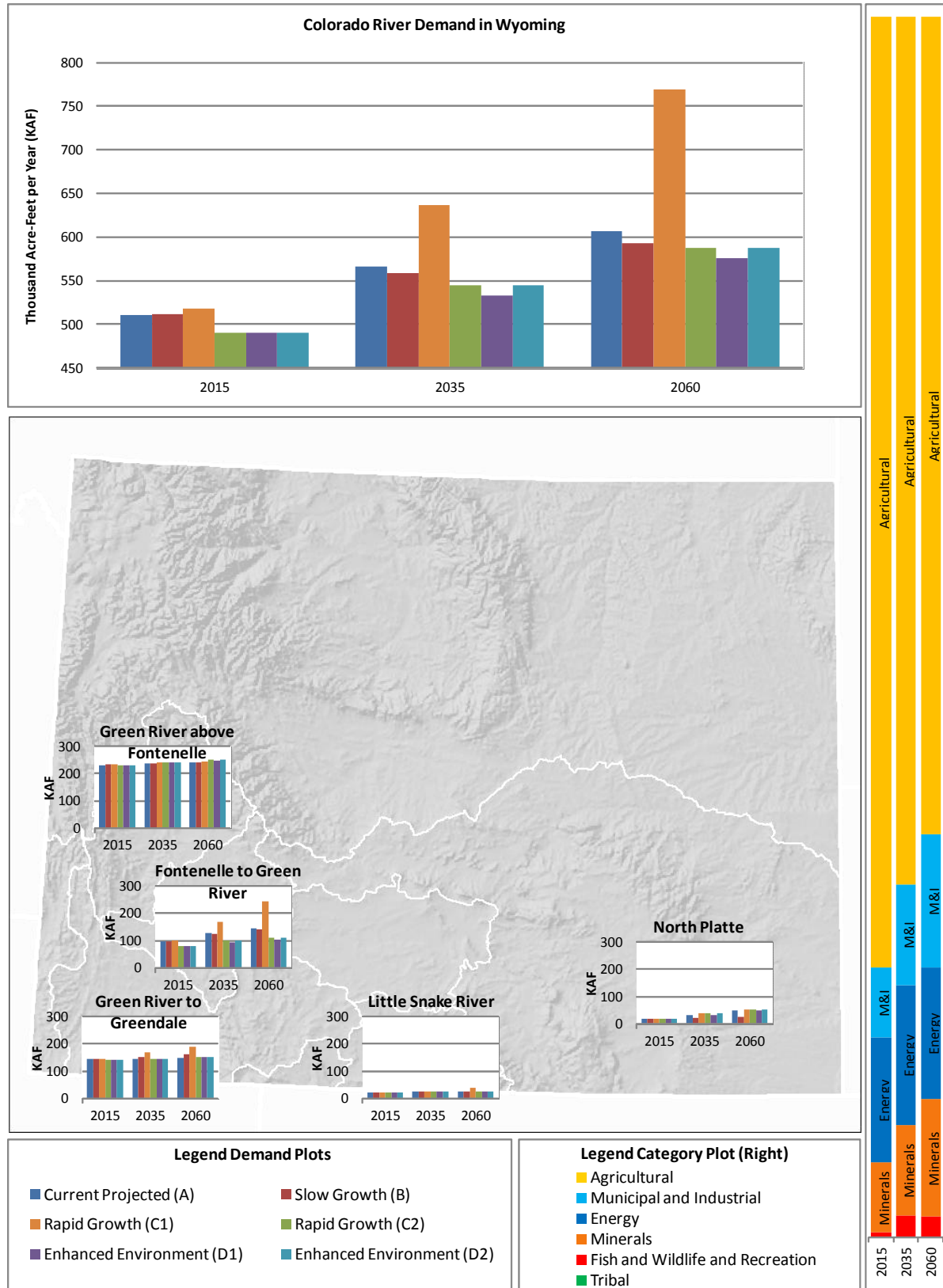


FIGURE C5-5  
Colorado River Demand by Category

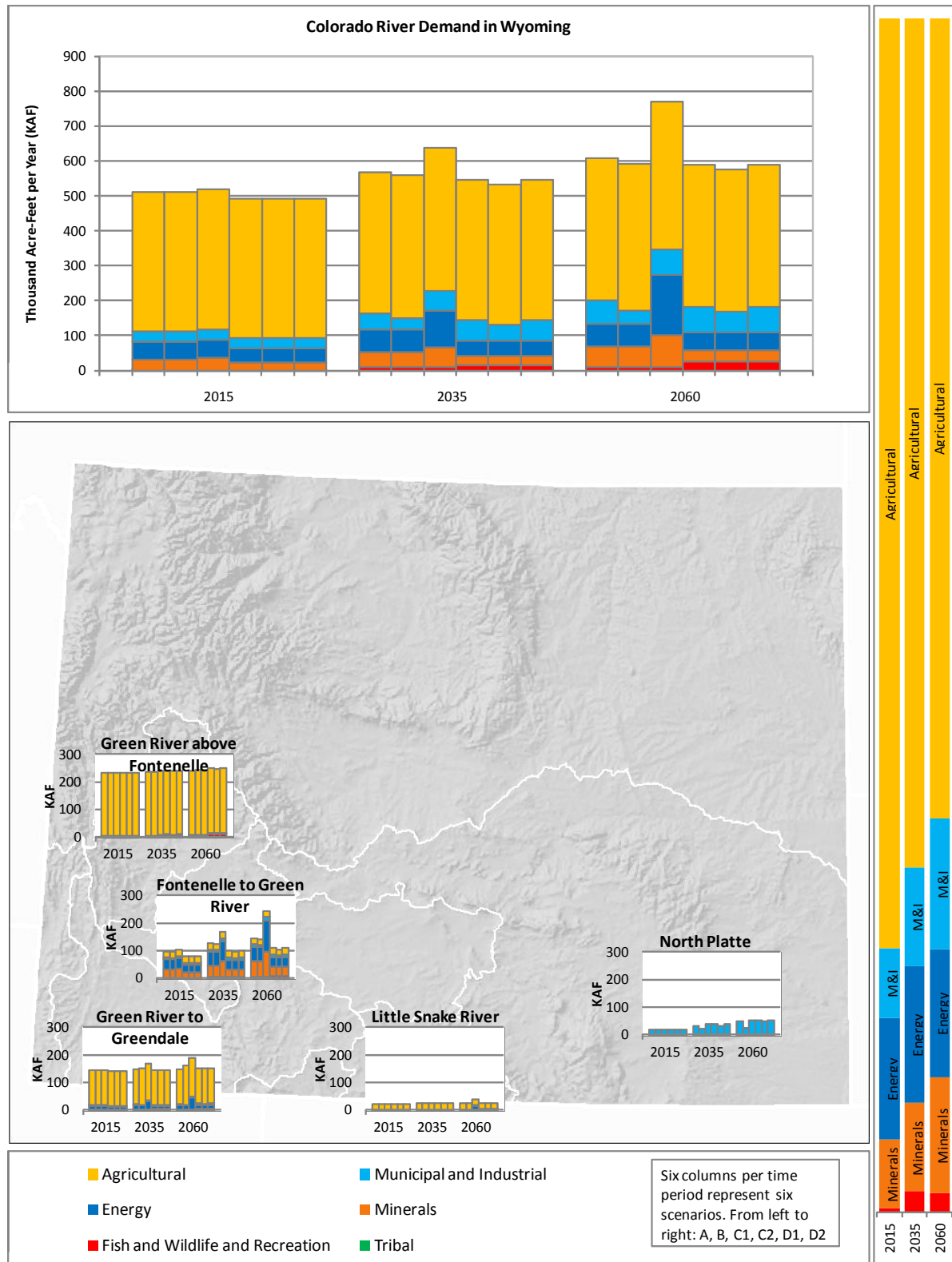
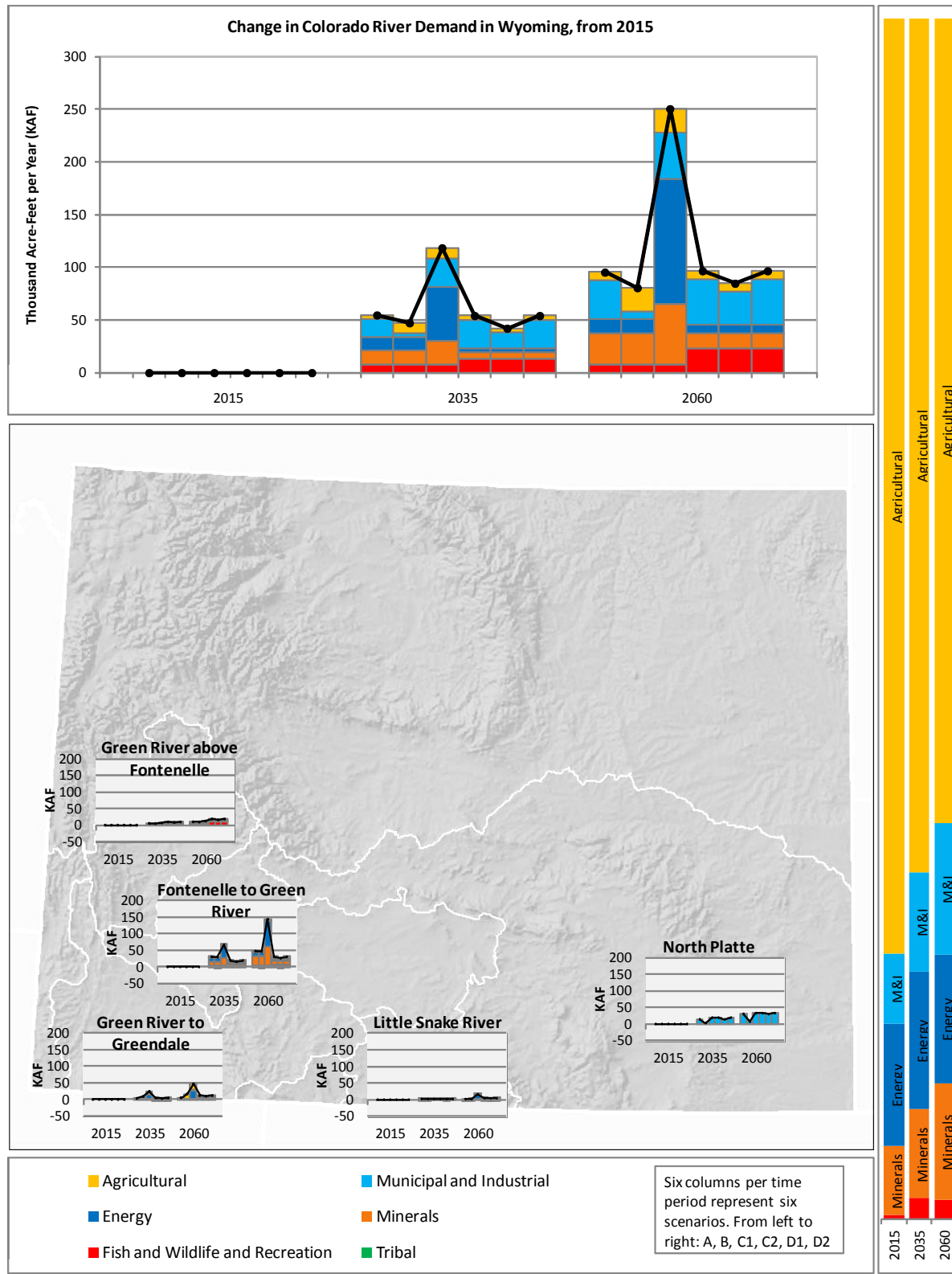


FIGURE C5-6  
 Change in Colorado River Demand in Wyoming from 2015 by Category



### 3.3 Colorado River Demand by Category

#### 3.3.1 *Agricultural*

Agricultural water demand is driven by irrigated acreage and water delivery per acre. Water delivery per acre is the amount of water diverted per irrigated acre. Components of this use include transmission and delivery losses (surface evaporation, riparian demand, and seepage), and on-farm losses that are made up of evaporation, crop irrigation requirement, and tail water (return). Each of these factors will vary by location (precipitation, growing season, etc.), irrigation method, and crop type.

Figure C5-7 presents the following by scenario in 2015, 2035, and 2060:

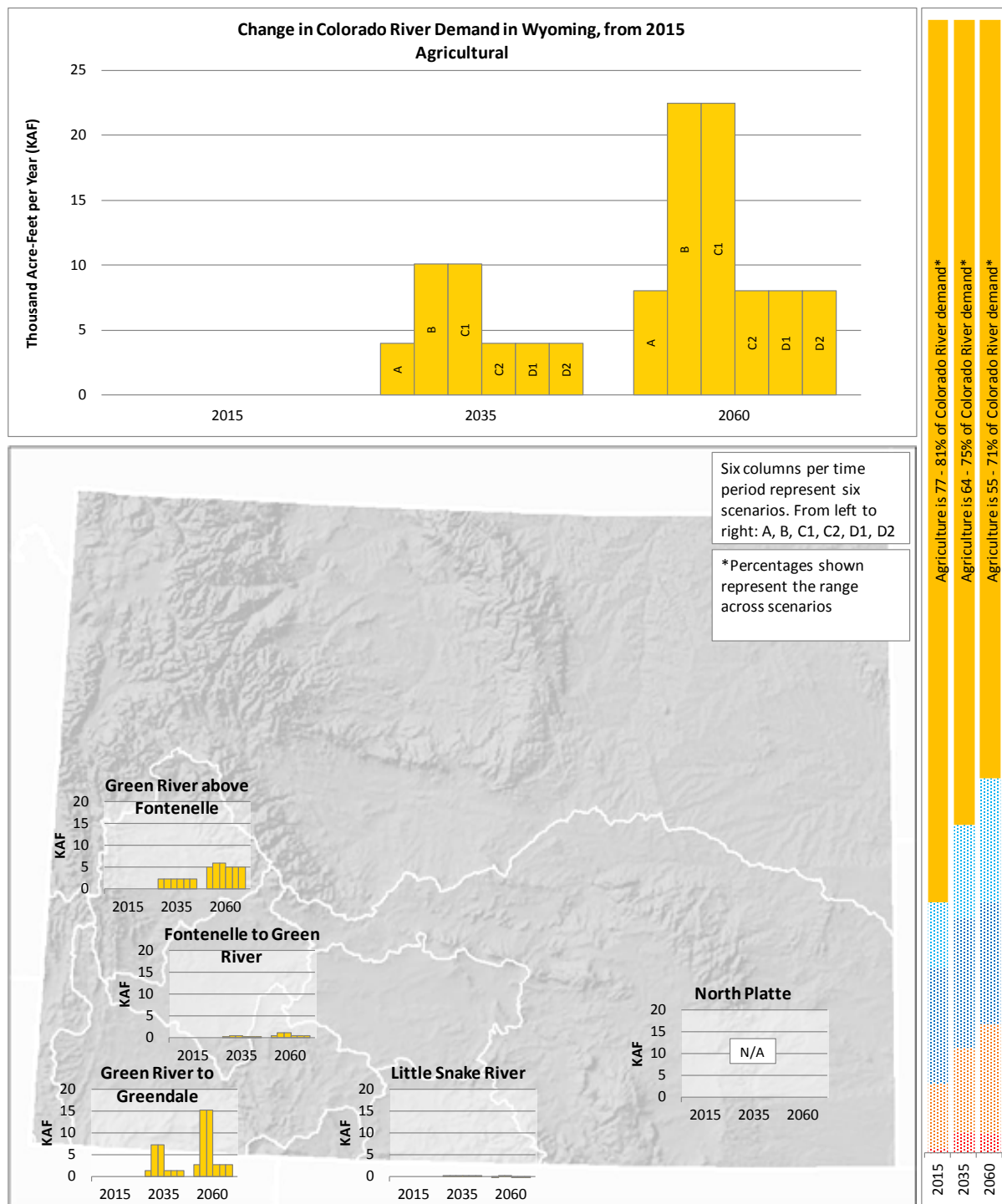
- Change in agricultural demand for Colorado River water
- Change in agricultural demand for Colorado River water by planning area
- Agricultural demand as a portion of Colorado River water demand (right hand side of graph)

As can be seen from figure C5-7, agricultural water demand is the largest component of Colorado River demand in Wyoming, dropping from about 80 percent in 2015 to between 55 and 71 percent of Colorado River demand in 2060, depending on which scenario is considered. This drop results from other categories of demand increasing at a faster rate than agriculture; agricultural demand increases across all scenarios.

Agricultural demand consistently increases through time across all scenarios. The increase in agricultural demand is driven by both a change in irrigated acres and change in water delivery per acre. For Current Projected (A), Slow Growth (B), and Enhanced Environment (D1 and D2) scenarios, irrigated acreage decreases slightly (less than 1 percent), but that slight decrease is offset by an increase in applied water use. For the Rapid Growth (C1 and C2) scenarios, irrigated acreage is forecast to increase at a faster rate than a decrease in water delivery per acre.

In examining the planning areas, the increase in agricultural demand is focused primarily in the Green River above Fontenelle and Green River to Greendale planning areas.

**FIGURE C5-7**  
 Change in Colorado River Demand in Wyoming from 2015 for Agriculture



### **3.3.2 *Municipal and Industrial***

M&I water demand can be estimated from population and M&I per capita water use. M&I per capita water use is a measure of the amount of water produced or diverted per person in a given municipality. Because this measure examines all water produced by a given municipality, it often includes industrial, commercial, and institutional demand as well as residential demand. A number of factors may influence the M&I per capita water use of a given community including the amount of industrial demand, climate, number of institutional facilities, and number of visitors.

Figure C5-8 presents the following by scenario in 2015, 2035, and 2060:

- Change in M&I demand for Colorado River water in the Study Area
- Change in M&I demand for Colorado River water in individual planning areas
- M&I demand as a portion of Colorado River water demand (right hand side of graph)

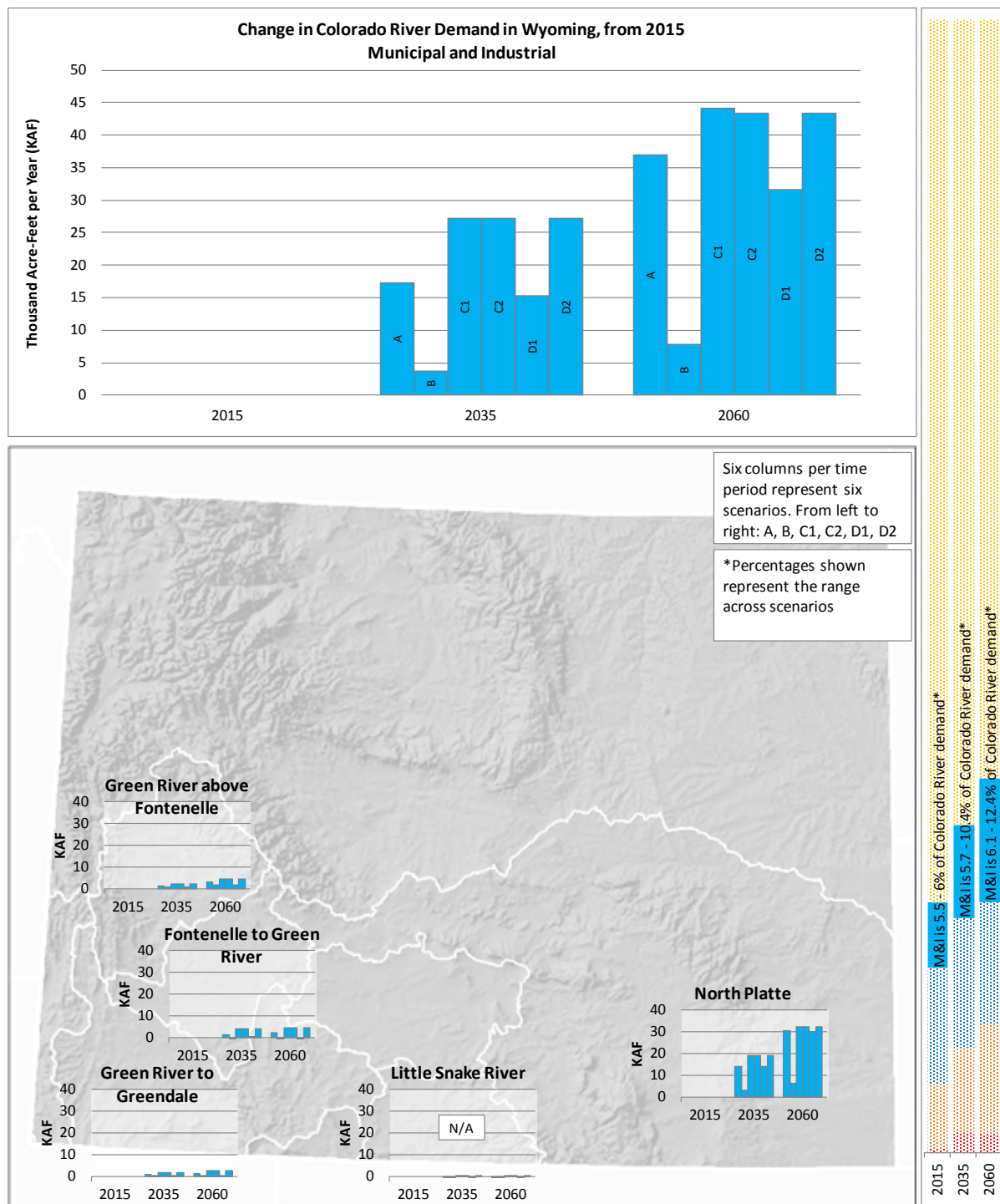
As can be seen from figure C5-8, M&I water demand increases from about 6 percent in 2015 to between 6 and 12 percent of Colorado River demand in 2060, depending on which scenario is considered.

Colorado River demand for M&I use increases over time from 2015 to 2060 across all scenarios. The increase is primarily due to population increase (20 to 38 percent increase depending on the scenario), with a slight additional influence of changing per capita M&I water use (1 to 4 percent increase, depending on the Current Projected [A], Slow Growth [B], Rapid Growth [C1 and C2], and Enhanced Environment [D2] scenarios; 22 percent decrease in the Enhanced Environment [D1] scenario).

In examining the planning areas, the majority of the increase in M&I demand for Colorado River water from 2015 to 2060 over time is due to population increase in the North Platte planning area. The three planning areas along the Green River also show increases in M&I demand.



**FIGURE C5-8**  
 Change in Colorado River Demand in Wyoming from 2015 for M&I



### **3.3.3 Energy**

Water demand for energy can be estimated through known plans for new power plants or through applying a per capita energy water use factor. Power facilities often serve areas remote from their locations and therefore potentially represent exports or imports of water from the Study Area to meet these distributed needs.

Figure C5-9 presents the following by scenario in 2015, 2035, and 2060:

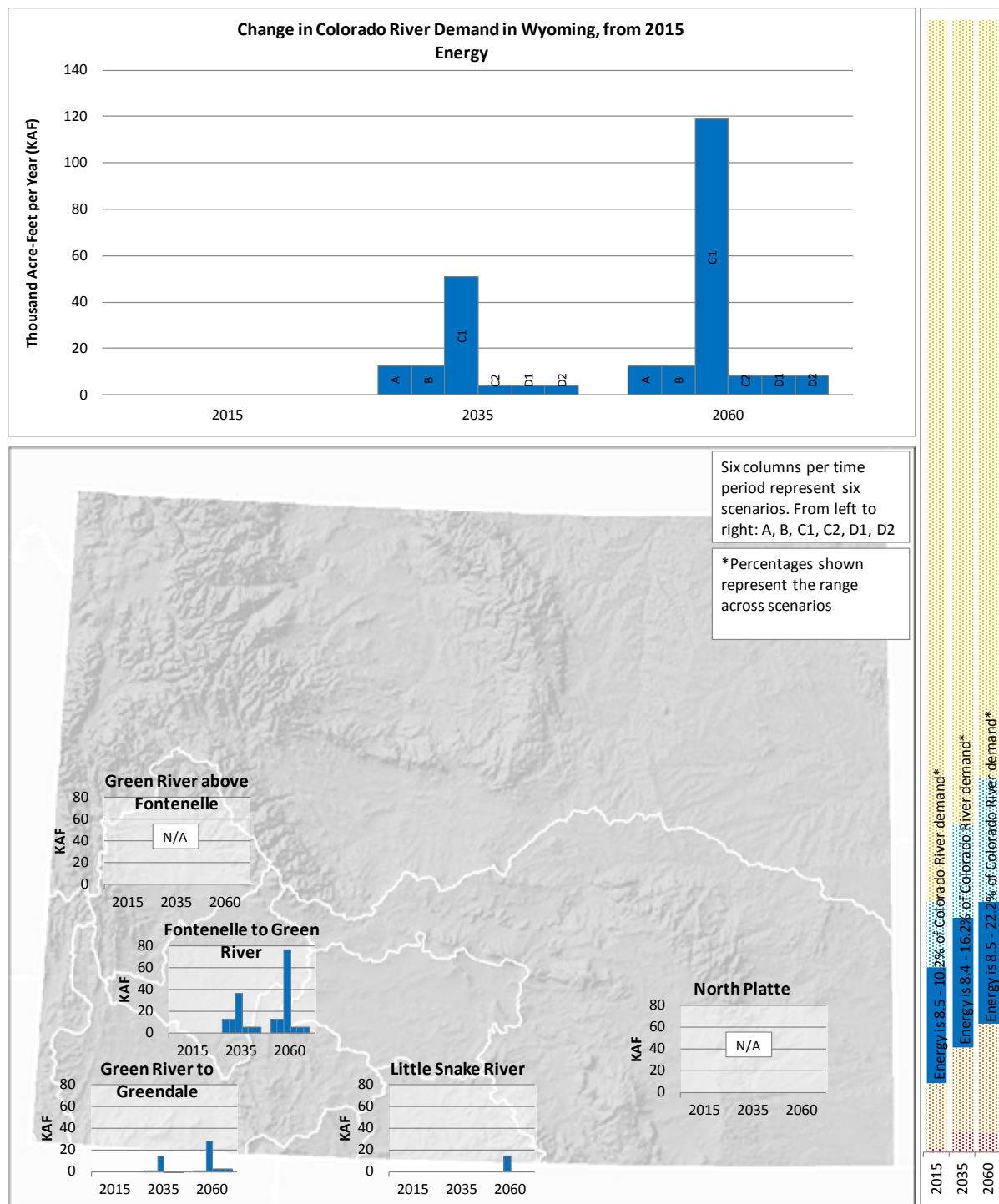
- Change in energy demand for Colorado River water
- Change in energy demand for Colorado River water in individual planning areas
- Energy demand as a portion of Colorado River water demand (right hand side of graph)

As can be seen from figure C5-9, energy water demand increases from about 9 percent of Colorado River demand in 2015 to between 9 and 22 percent of Colorado River demand in 2060, depending on which scenario is considered.

Energy demand for Colorado River water increases over time from 2015 to 2060 across all scenarios. The most notable increase occurs in the Rapid Growth (C1) scenario, where energy demand is projected to increase by nearly 120 kaf due to an increase in electricity production. The other scenarios show an increase in energy demand of about 8 to 13 kaf.

Increase in energy demand is focused primarily in the Fontenelle to Green River planning area, in which it increases across all scenarios. Some additional increase is forecast in some scenarios in the Green River to Greendale and Little Snake River planning areas.

**FIGURE C5-9**  
 Change in Colorado River Demand in Wyoming from 2015 for Energy



### **3.3.4 Minerals Extraction**

Water demand for mineral production can be estimated through existing uses and known plans for extraction in the Study Area. Water demand for mineral production can vary significantly based on market prices for a given product.

Figure C5-10 presents the following by scenario in 2015, 2035, and 2060:

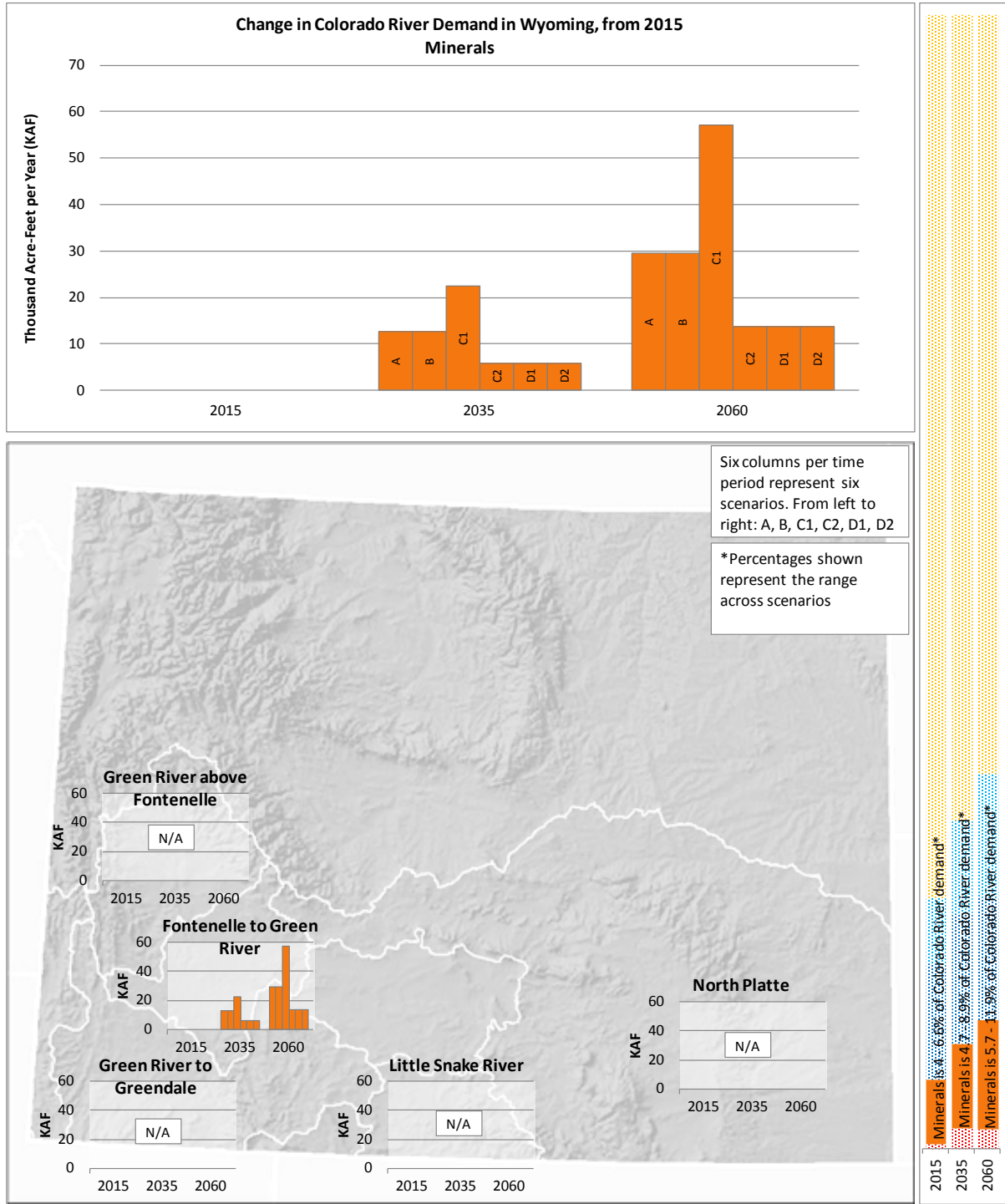
- Change in mineral production demand for Colorado River water
- Change in individual planning area mineral production demand for Colorado River water
- Minerals demand as a portion of Colorado River demand (right hand side of graph)

As can be seen from figure C5-10, minerals water demand is a relatively small fraction of Colorado River demand, increasing from about 4 to 7 percent in 2015, to between 6 and 12 percent of Colorado River demand in 2060, depending on which scenario is considered.

Minerals demand for Colorado River water increases over time from 2015 to 2060 across all scenarios.

Demand for Colorado River water for minerals production is only found in the Fontenelle to Green River Planning Area. Increase in minerals demand ranges from about 14 kaf (Rapid Growth [C2] and Enhanced Environment [D1 and D2] scenarios) to about 57 kaf (Rapid Growth [C1] scenario), with Current Projected (A) and Slow Growth (B) scenarios showing an increase of about 30 kaf.

**FIGURE C5-10**  
Change in Colorado River Demand in Wyoming from 2015 for Minerals



### 3.3.5 Fish, Wildlife, and Recreation

Water demand for fish, wildlife, and recreation is estimated from existing agreements or known consumptive use associated with this demand category. Non-consumptive demands associated with fish, wildlife and recreation, including in-stream flow requirements, are represented through the metrics portion of the Study presented in *Technical Report D – System Reliability Metrics* (Reclamation, 2012).

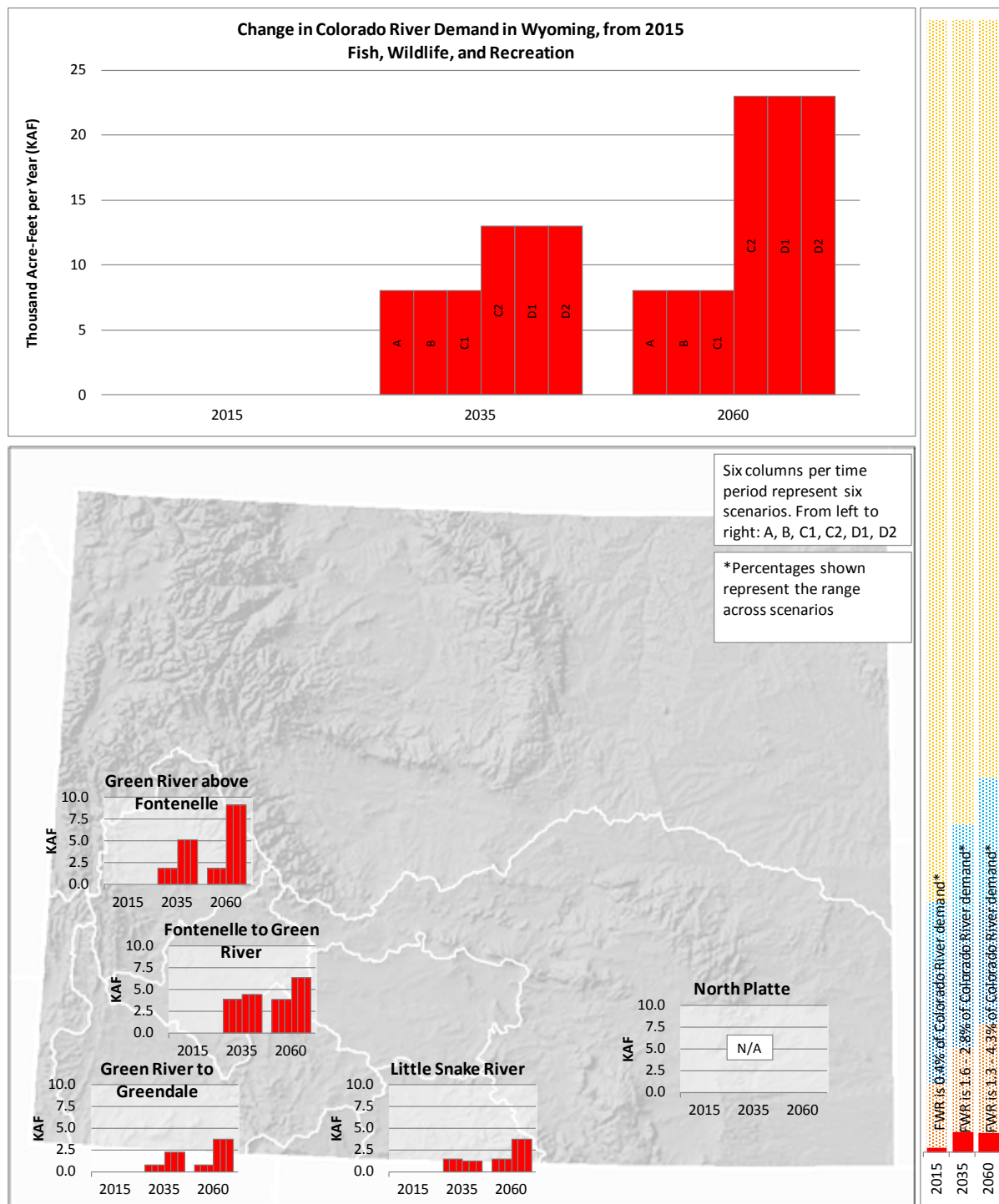
Figure C5-11 presents the following by scenario in 2015, 2035, and 2060:

- Change in fish, wildlife, and recreation demand for Colorado River water
- Change in fish, wildlife, and recreation demand for Colorado River water in individual planning areas
- Fish, wildlife, and recreation demand as a portion of Colorado River demand (right hand side of graph)

As can be seen from figure C5-11, fish, wildlife, and recreation water demand is a small fraction of Colorado River demand, increasing from less than 1 percent in 2015 to between 1 and 4 percent of Colorado River demand in 2060 across all scenarios.

Total increase in fish, wildlife, and recreation demand ranges from about 8 kaf (Current Projected [A], Slow Growth [B], and Rapid Growth [C1] scenarios) to about 23 kaf (Rapid Growth [C2] and Enhanced Environment [D1 and D2] scenarios). These increases are relatively evenly split between the four hydrologic basin planning areas, with the upper two Green River planning areas exhibiting slightly greater increases.

**FIGURE C5-11**  
 Change in Colorado River Demand in Wyoming from 2015 for Fish, Wildlife, and Recreation



### **3.3.6 Tribal**

In Wyoming, there are no federally recognized tribes with rights to Colorado River water.

## **3.4 Summary Tables of Parameters and Demands by Category**

Tables C5-2 to C5-7 present the specific parameter data collected by planning area. Each table is a complete set of data for a given scenario. These data were used to develop Study Area demands and subsequently Colorado River demands once other supplies were considered. These tables provide the specific information used in the creation of the summary and category plots previously discussed and provide reference information for the data provided.



TABLE C5-2  
Total Demand within Study Area under Current Projected (A) Scenario

		WYOMING																		Source and comments	
Planning Area		Green River above Fontenelle			Fontenelle to Green River			Green River to Greendale			Little Snake River			North Platte			STATE TOTAL				
Hydrologic Basin	Year	2015	2035	2060	2015	2035	2060	2015	2035	2060	2015	2035	2060	2015	2035	2060	2015	2035	2060		
Agricultural	Irrigated Acreage	acres	193,050	194,980	191,080	18,596	18,782	18,406	105,900	106,959	104,820	17,994	18,174	17,389			335,540	338,895	331,695	1)	
	Per-Acre Water Delivery (Diversion)	af/ac/yr	4.22	4.22	4.36	4.22	4.22	4.36	4.22	4.22	4.36	4.22	4.22	4.36			4.22	4.22	4.36	2)	
	Consumptive factor	%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%			28%	28%	28%	3)	
	Demand (Consumptive)	af/yr	229,116	231,413	234,030	22,070	22,291	22,543	125,685	126,945	128,381	21,356	21,570	21,298			398,227	402,219	406,252		
Municipal and Industrial	Population		9,879	17,589	27,638	42,809	48,316	52,235	16,751	20,332	23,813	1,113	1,043	839			70,552	87,280	104,525	4)	
	Municipal and Industrial Per Capita Use (Diversion)	gpcd	287	297	306	287	297	306	287	297	306	287	296	306			287	297	306	5)	
	Consumptive factor	%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%			50%	50%	50%	6)	
	Municipal and Industrial Demand (Consumptive)	af/yr	1,586	2,921	4,739	6,871	8,025	8,958	2,689	3,377	4,084	179	173	144			11,325	14,496	17,925	7)	
Energy	Self Served Industrial Demand (Consumptive)	af/yr	0	0	0	0	0	0	0	0	0	0	0	0			0	0	0	8)	
	Demand (Consumptive)	af/yr	1,586	2,921	4,739	6,871	8,025	8,958	2,689	3,377	4,084	179	173	144			11,325	14,496	17,925		
	Demand (Consumptive)	af/yr	0	0	0	37,800	50,000	50000	14,500	15,000	15000	0	0	0			52,300	65,000	65,000	9)	
	Minerals	Demand (Consumptive)	af/yr	0	0	0	29,100	41,836	58700	0	0	0	0	0	0			29,100	41,836	58,700	10)
Fish, Wildlife, and Recreation	Demand (Consumptive)	af/yr	850	2,700	2,700	600	4,500	4,500	250	1,000	1,000	300	1,800	1,800			2,000	10,000	10,000	11)	
	Demand (Consumptive)	af/yr	0	0	0	0	0	0	0	0	0	0	0	0			0	0	0	12)	
Total Hydrologic Basin	Demand (Consumptive)	af/yr	231,552	237,034	241,469	96,441	126,652	144,701	143,124	146,322	148,465	21,835	23,543	23,242	0	0	0	492,952	533,551	557,877	
Adjacent Areas																					
Agricultural	Irrigated Acreage	acres													612,000	612,000	612,000	612,000	612,000	612,000	13)
	Per-Acre Water Delivery (Diversion)	af/ac/yr													2.54	2.54	2.54	2.54	2.54	2.54	
	Consumptive factor	%													43%	43%	43%	43%	43%	43%	
	Demand (Diversion)	af/yr													1,553,000	1,553,000	1,553,000	1553000	1553000	1553000	14)
Municipal and Industrial	Demand (Consumptive)	af/yr													663,000	661,000	661,000	663,000	661,000	661,000	14)
	Population														244,167	270,000	301,000	244,167	270,000	301,000	15)
	Municipal and Industrial Per Capita Use (Diversion)	gpcd													229	229	229	229	229	229	16)
	Consumptive factor	%													50%	50%	50%	50%	50%	50%	17)
Energy	Municipal and Industrial Demand (Diversion)	af/yr													62,726	69,263	77,216	62,726	69,263	77,216	18)
	Self Served Industrial Demand (Diversion)	af/yr													0	0	0	0	0	0	
	Demand (Diversion)	af/yr													62,726	69,263	77,216	62,726	69,263	77,216	
	Demand (Consumptive)	af/yr													31,363	34,632	38,608	31,363	34,632	38,608	
Energy	Demand (Diversion)	af/yr													0	0	0	0	0	0	
Minerals	Demand (Diversion)	af/yr													0	0	0	0	0	0	
Fish, Wildlife, and Recreation	Demand (Diversion)	af/yr													0	0	0	0	0	0	
Tribal	Demand (Diversion)	af/yr													0	0	0	0	0	0	
Total Adjacent Areas	Demand (Diversion)	af/yr	0	0	0	0	0	0	0	0	0	0	0	0	1,615,726	1,622,263	1,630,216	1,615,726	1,622,263	1,630,216	
Total Demand in the Study Area		af/yr	231,552	237,034	241,469	96,441	126,652	144,701	143,124	146,322	148,465	21,835	23,543	23,242	1,615,726	1,622,263	1,630,216	2,108,678	2,155,815	2,188,093	19)
Demand that may be met by Other Supplies (Diversion)		af/yr	0	0	0	0	0	0	0	0	0	0	0	0	1,597,525	1,589,953	1,581,596	1,597,525	1,589,953	1,581,596	20)
Potential Colorado River Demand		af/yr	231,552	237,034	241,469	96,441	126,652	144,701	143,124	146,322	148,465	21,835	23,543	23,242	18,201	32,310	48,620	511,153	565,861	606,497	21)
Agricultural	Colorado River Demand	af/yr	229,116	231,413	234,030	22,070	22,291	22,543	125,685	126,945	128,381	21,356	21,570	21,298	0	0	0	398,227	402,219	406,252	22)
Municipal and Industrial	Colorado River Demand	af/yr	1,586	2,921	4,739	6,871	8,025	8,958	2,689	3,377	4,084	179	173	144	18,201	32,310	48,620	29,526	46,806	66,545	
Energy	Colorado River Demand	af/yr	0	0	0	37,800	50,000	50,000	14,500	15,000	15,000	0	0	0	0	0	0	52,300	65,000	65,000	
Minerals	Colorado River Demand	af/yr	0	0	0	29,100	41,836	58,700	0	0	0	0	0	0	0	0	0	29,100	41,836	58,700	
Fish, Wildlife, and Recreation	Colorado River Demand	af/yr	850	2,700	2,700	600	4,500	4,500	250	1,000	1,000	300	1,800	1,800	0	0	0	2,000	10,000	10,000	
Tribal	Colorado River Demand	af/yr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

999 From States

999 Calculated

999 From State Plans

999 From Study Team

Source and Comments

- 1) Green River Basin Water Planning Process, 2001, Linear interpolation was used to project acreage in 2015.
- 2) Calculated - represents average unit water supply-limited diversion required per acre.
- 3) Calculated based on Statewide Diverted Water use in 2011 of 4.22 ac-ft/ac documented on pg. 5-7 of Wyoming Framework Water Plan Volume 1.
- 4) Hydrologic Basin: Green River Basin Plan, Table 2.
- 5) Calculated from total demand, consumptive use factor, and population.
- 6) Wyoming State Engineer's Office, personal communication 2011.
- 7) Green River Basin Water Planning Process, 2001, Wyoming State Engineer's Office, personal communication 2011, Linear interpolation used project demand for 2015.
- 8) Green River Basin Water Planning Process, 2001, Wyoming State Engineer's Office, personal communication 2011, Linear interpolation used project demand for 2015.
- 9) Green River Basin Water Planning Process, 2001, Linear interpolation was used to project demand for 2015.
- 10) Green River Basin Water Planning Process, 2001, Linear interpolation was used to project demand for 2015.
- 11) Green River Basin Water Planning Process, 2001, Wyoming State Engineer's Office, personal communication 2011, Linear interpolation used project demand for 2015.
- 12) Green River Basin Water Planning Process, 2001, Linear interpolation was used to project demand for 2015.
- 13) Wyoming Framework Water Plan, Volume I, October 2007
- 14) Wyoming Framework Water Plan, Volume I, October 2007 for 2015 and 2035, 2036 demands assumed steady through 2060
- 15) Wyoming Department of Administration and Information, Economic Analysis Division - WYOMING AND COUNTY POPULATION PROJECTIONS BY AGE: 2008 TO 2030, July, 2008, : forecasts from 2009 of 2010 and 2030 data were used with 2010 census data to develop population. 2010 and 2030 population were linearly interpolated to find population projections for 2035 and 2060.
- 16) M&I water use efficiency is calculated from Cheyenne population and demand in 2010. This value is then used for demand calculations from population estimates in future years.
- 17) Wyoming State Engineer's Office, personal communication 2011.
- 18) Calculated from M&I efficiency, consumptive use factor, and population.
- 19) Calculated from the sum of Hydrologic Basin (Consumptive) Demand and Adjacent Areas (Diversion) Demand.
- 20) Calculated as the difference in Study Area Demand and Potential Colorado River Demand.
- 21) Green River Basin Water Planning Process, 2001, Wyoming State Engineer's Office, personal communication 2011, Linear interpolation used project demand for 2015. In 2011 15,281 ac-ft represent represents Cheyenne's current contract, 2,920 represents current agricultural contracts. In 2035 and 2060 22,700 ac-ft/yr represents Cheyenne's current contract, 2,920 represents current agricultural contracts. The remaining projected growth is 9,390 ac-ft in 2035 and 25,000 ac-ft in 2060.
- 22) For North Platte, all Potential Colorado River Demand is M&I.

999 From States  
999 Calculated  
999 From State Plans  
999 From Study Team

TABLE C5-3  
Total Demand within Study Area under Slow Growth (B) Scenario

		WYOMING																					Source and comments
Planning Area		Green River above Fontenelle			Fontenelle to Green River			Green River to Greendale			Little Snake River			North Platte			STATE TOTAL						
Hydrologic Basin	Year	2015	2035	2060	2015	2035	2060	2015	2035	2060	2015	2035	2060	2015	2035	2060	2015	2035	2060				
Agriculture	Irrigated Acreage	acres	193,050	194,980	191,080	18,596	18,782	18,406	105,900	106,959	104,820	17,994	18,174	17,389			335,540	338,895	331,695	1)			
	Per-Acre Water Delivery (Diversion)	af/ac/yr	4.24	4.24	4.40	4.24	4.29	4.50	4.24	4.45	4.81	4.24	4.21	4.44			4.24	4.31	4.53				
	Consumptive Factor	%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%			28%	28%	28%				
	Demand (Consumptive)	af/yr	230,256	232,500	236,144	22,180	22,654	23,258	126,310	133,613	141,585	21,462	21,507	21,687			400,208	410,274	422,674				
Municipal and Industrial	Population		8,783	12,908	17,453	38,061	35,457	33,310	14,893	14,921	15,166	990	765	535			62,727	64,051	66,464	3)			
	Municipal and Industrial Per Capita Use (Diversion)	gpcd	287	297	306	287	297	306	287	297	306	287	296	306			287	297	306	4)			
	Consumptive factor	%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%			50%	50%	50%	5)			
	Municipal and Industrial Demand (Consumptive)	af/yr	1,410	2,144	2,993	6,109	5,889	5,712	2,391	2,478	2,601	159	127	92			10,069	10,638	11,398				
	Self Served Industrial Demand (Consumptive)	af/yr	0	0	0	0	0	0	0	0	0	0	0	0			0	0	0				
	Demand (Consumptive)	af/yr	1,410	2,144	2,993	6,109	5,889	5,712	2,391	2,478	2,601	159	127	92			10,069	10,638	11,398				
Energy	Demand (Consumptive)	af/yr	0	0	0	37,800	50,000	50,000	14,500	15,000	15,000	0	0	0			52,300	65,000	65,000	6)			
Minerals	Demand (Consumptive)	af/yr	0	0	0	29,100	41,836	58,700	0	0	0	0	0	0			29,100	41,836	58,700	7)			
Fish, Wildlife, and Recreation	Demand (Consumptive)	af/yr	850	2,700	2,700	600	4,500	4,500	250	1,000	1,000	300	1,800	1,800			2,000	10,000	10,000	8)			
Tribal	Demand (Consumptive)	af/yr	0	0	0	0	0	0	0	0	0	0	0	0			0	0	0	9)			
Total Hydrologic Basin	Demand (Consumptive)	af/yr	232,516	237,344	241,837	95,789	124,879	142,170	143,451	152,091	160,186	21,921	23,434	23,579	0	0	0	493,677	537,748	567,772			
Adjacent Areas																							
Agriculture	Irrigated Acreage	acres													612,000	612,000	612,000	612,000	612,000	612,000	10)		
	Per-Acre Water Delivery (Diversion)	af/ac/yr													2.54	2.54	2.54	2.54	2.54	2.54	11)		
	Consumptive factor	%													43%	43%	43%	43%	43%	43%			
	Demand (Diversion)	af/yr													1,553,000	1,553,000	1,553,000	1,553,000	1,553,000	1,553,000			
	Demand (Consumptive)	af/yr													663,000	661,000	661,000	663,000	661,000	661,000			
Municipal and Industrial	Population														244,167	270,000	301,000	244,167	270,000	301,000	12)		
	Municipal and Industrial Per Capita Use (Diversion)	gpcd													229	229	229	229	229	229	13)		
	Consumptive factor	%													50%	50%	50%	50%	50%	50%	14)		
	Municipal and Industrial Demand (Diversion)	af/yr													62,726	69,263	77,216	62,726	69,263	77,216			
	Self Served Industrial Demand (Diversion)	af/yr													0	0	0	0	0	0			
	Demand (Diversion)	af/yr													62,726	69,263	77,216	62,726	69,263	77,216			
	Demand (Consumptive)	af/yr													31,363	34,632	38,608	31,363	34,632	38,608			
Energy	Demand (Diversion)	af/yr													0	0	0	0	0	0	15)		
Minerals	Demand (Diversion)	af/yr													0	0	0	0	0	0	16)		
Fish, Wildlife, and Recreation	Demand (Diversion)	af/yr													0	0	0	0	0	0	17)		
Tribal	Demand (Diversion)	af/yr													0	0	0	0	0	0	18)		
Total Adjacent Areas	Demand (Diversion)	af/yr	0	0	0	0	0	0	0	0	0	0	0	0	1,615,726	1,622,263	1,630,216	1,615,726	1,622,263	1,630,216			
Total Demand in the Study Area		af/yr	232,516	237,344	241,837	95,789	124,879	142,170	143,451	152,091	160,186	21,921	23,434	23,579	1,615,726	1,622,263	1,630,216	2,109,403	2,160,011	2,197,988			
Demand that may be met by Other Supplies		af/yr	0	0	0	0	0	0	0	0	0	0	0	0	1,597,525	1,600,873	1,605,516	1,597,525	1,600,873	1,605,516	19)		
Potential Colorado River Demand		af/yr	232,516	237,344	241,837	95,789	124,879	142,170	143,451	152,091	160,186	21,921	23,434	23,579	18,201	21,390	24,700	511,878	559,138	592,472	20)		
Agricultural	Colorado River Demand	af/yr	230,256	232,500	236,144	22,180	22,654	23,258	126,310	133,613	141,585	21,462	21,507	21,687	0	0	0	400,208	410,274	422,674	21)		
Municipal and Industrial	Colorado River Demand	af/yr	1,410	2,144	2,993	6,109	5,889	5,712	2,391	2,478	2,601	159	127	92	18,201	21,390	24,700	28,270	32,028	36,098			
Energy	Colorado River Demand	af/yr	0	0	0	37,800	50,000	50,000	14,500	15,000	15,000	0	0	0	0	0	0	52,300	65,000	65,000			
Minerals	Colorado River Demand	af/yr	0	0	0	29,100	41,836	58,700	0	0	0	0	0	0	0	0	0	29,100	41,836	58,700			
Fish, Wildlife, and Recreation	Colorado River Demand	af/yr	850	2,700	2,700	600	4,500	4,500	250	1,000	1,000	300	1,800	1,800	0	0	0	2,000	10,000	10,000			
Tribal	Colorado River Demand	af/yr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			

Source and Comments

1) No changes from current projected

2) High Growth scenario from Green River Basin Water Plan, 2010.

3) Population estimates from Low Growth scenario of the Green River Basin Water Plan, 2010.

4) Moderate Growth scenario from Green River Basin Water Plan, 2010. GPCD computed with Moderate Growth population and M&I demand

5) No changes from current projected

6) No changes from current projected

7) Moderate Growth scenario from Green River Basin Water Plan, 2010. GPCD computed with Moderate Growth population and M&I demand

8) Moderate Growth scenario from Green River Basin Water Plan, 2010. GPCD computed with Moderate Growth population and M&I demand

9) No changes from current projected

10) No changes from current projected

11) No changes from current projected

12) Population estimates from Low Growth scenario of the Green River Basin Water Plan, 2010.

13) Moderate Growth scenario from Green River Basin Water Plan, 2010. GPCD computed with Moderate Growth population and M&I demand

14) No changes from current projected

15) No changes from current projected

16) No changes from current projected

17) No changes from current projected

18) No changes from current projected

19) Low Growth scenario from Green River Basin Water Plan, 2010.

20) Low Growth scenario exports to North Platte from Green River Basin Water Plan, 2010.

21) For North Platte, all Potential Colorado River Demand is M&I.

TABLE C5-4  
Total Demand within Study Area under Rapid Growth (C1) Scenario

		WYOMING																		Source and comments	
Planning Area		Green River above Fontenelle			Fontenelle to Green River			Green River to Greendale			Little Snake River			North Platte			STATE TOTAL				
Hydrologic Basin	Year	2015	2035	2060	2015	2035	2060	2015	2035	2060	2015	2035	2060	2015	2035	2060	2015	2035	2060		
Agriculture	Irrigated Acreage	acres	193,050	197,808	202,566	18,596	19,274	19,951	105,900	113,676	121,453	17,994	18,298	18,603			335,540	349,056	362,573	1)	
	Per-Acre Water Delivery (Diversion)	af/ac/yr	4.24	4.18	4.15	4.24	4.18	4.15	4.24	4.18	4.15	4.24	4.18	4.15			4.24	4.18	4.15		
	Consumptive Factor	%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%			28%	28%	28%		
	Demand (Consumptive)	af/yr	230,256	232,500	236,144	22,180	22,654	23,258	126,310	133,613	141,585	21,462	21,507	21,687			400,208	410,274	422,674		
Municipal and Industrial	Population		9,879	23,635	35,246	42,809	64,922	67,270	16,751	27,320	30,628	1,113	1,403	1,081			70,552	117,280	134,225	3)	
	Municipal and Industrial Per Capita Use (Diversion)	gpcd	287	297	306	287	297	306	287	297	306	287	296	306			287	297	306	4)	
	Consumptive factor	%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%			50%	50%	50%		
	Municipal and Industrial Demand (Consumptive)	af/yr	1,586	3,925	6,044	6,871	10,783	11,536	2,689	4,538	5,253	179	233	186			11,325	19,479	23,018		
	Self Served Industrial Demand (Consumptive)	af/yr	0	0	0	0	0	0	0	0	0	0	0	0			0	0	0	5)	
	Demand (Consumptive)	af/yr	1,586	3,925	6,044	6,871	10,783	11,536	2,689	4,538	5,253	179	233	186			11,325	19,479	23,018		
Energy	Demand (Consumptive)	af/yr	0	0	0	37,800	74,100	114,500	14,500	29,000	42,500	0	0	14,000			52,300	103,100	171,000	6)	
Minerals	Demand (Consumptive)	af/yr	0	0	0	34,200	56,600	91,400	0	0	0	0	0	0			34,200	56,600	91,400	7)	
Fish, Wildlife, and Recreation	Demand (Consumptive)	af/yr	850	2,700	2,700	600	4,500	4,500	250	1,000	1,000	300	1,800	1,800			2,000	10,000	10,000	8)	
Tribal	Demand (Consumptive)	af/yr	0	0	0	0	0	0	0	0	0	0	0	0			0	0	0	9)	
Total Hydrologic Basin	Demand (Consumptive)	af/yr	232,692	239,125	244,888	101,651	168,637	245,194	143,749	168,151	190,338	21,941	23,540	37,673	0	0	500,033	599,453	718,092		
Adjacent Areas																					
Agriculture	Irrigated Acreage	acres													612,000	612,000	612,000	612,000	612,000	10)	
	Per-Acre Water Delivery (Diversion)	af/ac/yr													2.54	2.54	2.54	2.54	2.54		
	Consumptive factor	%													43%	43%	43%	43%	43%		
	Demand (Diversion)	af/yr													1,553,000	1,553,000	1,553,000	1,553,000	1,553,000	11)	
	Demand (Consumptive)	af/yr													663,000	661,000	661,000	663,000	661,000		
Municipal and Industrial	Population														244,167	270,000	301,000	244,167	270,000	12)	
	Municipal and Industrial Per Capita Use (Diversion)	gpcd													229	229	229	229	229	13)	
	Consumptive factor	%													50%	50%	50%	50%	50%		
	Municipal and Industrial Demand (Diversion)	af/yr													62,726	69,263	77,216	62,726	69,263		
	Self Served Industrial Demand (Diversion)	af/yr													0	0	0	0	0	14)	
	Demand (Diversion)	af/yr													62,726	69,263	77,216	62,726	69,263		
	Demand (Consumptive)	af/yr													31,363	34,632	38,608	31,363	34,632		
Energy	Demand (Diversion)	af/yr													0	0	0	0	0	15)	
Minerals	Demand (Diversion)	af/yr													0	0	0	0	0	16)	
Fish, Wildlife, and Recreation	Demand (Diversion)	af/yr													0	0	0	0	0	17)	
Tribal	Demand (Diversion)	af/yr													0	0	0	0	0	18)	
Total Adjacent Areas	Demand (Diversion)	af/yr	0	0	0	0	0	0	0	0	0	0	0	0	1,615,726	1,622,263	1,630,216	1,615,726	1,622,263		
Total Demand in the Study Area		af/yr	232,692	239,125	244,888	101,651	168,637	245,194	143,749	168,151	190,338	21,941	23,540	37,673	1,615,726	1,622,263	1,630,216	2,115,759	2,221,716	2,348,308	
Demand that may be met by Other Supplies		af/yr	0	0	0	0	0	0	0	0	0	0	0	0	1,597,525	1,584,953	1,579,596	1,597,525	1,584,953	1,579,596	19)
Potential Colorado River Demand		af/yr	232,692	239,125	244,888	101,651	168,637	245,194	143,749	168,151	190,338	21,941	23,540	37,673	18,201	37,310	50,620	518,234	636,763	768,712	20)
Agricultural	Colorado River Demand	af/yr	230,256	232,500	236,144	22,180	22,654	23,258	126,310	133,613	141,585	21,462	21,507	21,687	0	0	0	400,208	410,274	422,674	21)
Municipal and Industrial	Colorado River Demand	af/yr	1,586	3,925	6,044	6,871	10,783	11,536	2,689	4,538	5,253	179	233	186	18,201	37,310	50,620	29,526	56,789	73,638	
Energy	Colorado River Demand	af/yr	0	0	0	37,800	74,100	114,500	14,500	29,000	42,500	0	0	14,000	0	0	0	52,300	103,100	171,000	
Minerals	Colorado River Demand	af/yr	0	0	0	34,200	56,600	91,400	0	0	0	0	0	0	0	0	0	34,200	56,600	91,400	
Fish, Wildlife, and Recreation	Colorado River Demand	af/yr	850	2,700	2,700	600	4,500	4,500	250	1,000	1,000	300	1,800	1,800	0	0	0	2,000	10,000	10,000	
Tribal	Colorado River Demand	af/yr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Source and Comments

- 1) High Growth scenario from Green River Basin Water Plan, 2010.
- 2) High Growth scenario from Green River Basin Water Plan, 2010.
- 3) Population estimates from High Growth scenario of the Green River Basin Water Plan, 2010.
- 4) Moderate Growth scenario from Green River Basin Water Plan, 2010. GPCD computed with Moderate Growth population and M&I demand
- 5) No changes from current projected
- 6) High Growth scenario from Green River Basin Water Plan, 2010.
- 7) High Growth scenario from Green River Basin Water Plan, 2010.
- 8) Moderate Growth scenario from Green River Basin Water Plan, 2010.
- 9) No changes from current projected
- 10) No changes from current projected
- 11) No changes from current projected
- 12) Population estimates from High Growth scenario of the Green River Basin Water Plan, 2010.
- 13) Moderate Growth scenario from Green River Basin Water Plan, 2010. GPCD computed with Moderate Growth population and M&I demand
- 14) No changes from current projected
- 15) No changes from current projected
- 16) No changes from current projected
- 17) No changes from current projected
- 18) No changes from current projected
- 19) High Growth scenario from Green River Basin Water Plan, 2010.
- 20) High Growth scenario exports to North Platte from Green River Basin Water Plan, 2010.
- 21) For North Platte, all Potential Colorado River Demand is M&I.

TABLE C5-5  
Total Demand within Study Area under Rapid Growth (C2) Scenario

		WYOMING																		Source and comments		
Planning Area		Green River above Fontenelle			Fontenelle to Green River			Green River to Greendale			Little Snake River			North Platte			STATE TOTAL					
Hydrologic Basin	Year	2015	2035	2060	2015	2035	2060	2015	2035	2060	2015	2035	2060	2015	2035	2060	2015	2035	2060			
Agriculture	Irrigated Acreage	acres	193,050	197,808	202,566	18,596	19,274	19,951	105,900	113,676	121,453	17,994	18,298	18,603				335,540	349,056	362,573	1)	
	Per-Acre Water Delivery (Diversion)	af/ac/yr	4.22	4.16	4.11	4.22	4.12	4.02	4.22	3.97	3.76	4.22	4.20	4.07				4.22	4.10	3.99		
	Consumptive Factor	%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%				28%	28%	28%		
	Demand (Consumptive)	af/yr	229,116	231,413	234,030	22,070	22,291	22,543	125,685	126,945	128,381	21,356	21,570	21,298				398,227	402,219	406,252		
Municipal and Industrial	Population		9,879	23,635	35,246	42,809	64,922	67,270	16,751	27,320	30,628	1,113	1,403	1,081				70,552	117,280	134,225	3)	
	Municipal and Industrial Per Capita Use (Diversion)	gpcd	287	296	297	287	296	297	287	296	297	287	296	297				287	297	297	4)	
	Consumptive factor	%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%				50%	50%	50%		
	Municipal and Industrial Demand (Consumptive)	af/yr	1,586	3,925	5,871	6,871	10,781	11,205	2,689	4,537	5,102	179	233	180				11,324	19,476	22,357		
	Self Served Industrial Demand (Consumptive)	af/yr	0	0	0	0	0	0	0	0	0	0	0	0				0	0	0	5)	
	Demand (Consumptive)	af/yr	1,586	3,925	5,871	6,871	10,781	11,205	2,689	4,537	5,102	179	233	180				11,324	19,476	22,357		
Energy	Demand (Consumptive)	af/yr	0	0	0	30,000	35,000	35,500	11,600	10,600	14,500	0	0	0				41,600	45,600	50,000	6)	
Minerals	Demand (Consumptive)	af/yr	0	0	0	19,500	25,400	33,300	0	0	0	0	0	0				19,500	25,400	33,300	7)	
Fish, Wildlife, and Recreation	Demand (Consumptive)	af/yr	850	6,000	10,000	600	5,000	7,000	250	2,500	4,000	300	1,500	4,000				2,000	15,000	25,000	8)	
Tribal	Demand (Consumptive)	af/yr	0	0	0	0	0	0	0	0	0	0	0	0				0	0	0	9)	
Total Hydrologic Basin	Demand (Consumptive)	af/yr	231,552	241,338	249,901	79,041	98,472	109,548	140,224	144,582	151,983	21,835	23,303	25,478	0	0	0	472,651	507,695	536,909		
Adjacent Areas																						
Agriculture	Irrigated Acreage	acres													612,000	612,000	612,000	612,000	612,000	612,000	10)	
	Per-Acre Water Delivery (Diversion)	af/ac/yr													2.54	2.54	2.54	2.54	2.54	2.54		
	Consumptive factor	%													43%	43%	43%	43%	43%	43%		
	Demand (Diversion)	af/yr													1,553,000	1,553,000	1,553,000	1,553,000	1,553,000	1,553,000	11)	
Demand (Consumptive)		af/yr													663,000	661,000	661,000	663,000	661,000	661,000		
Municipal and Industrial	Population														244,167	270,000	301,000	244,167	270,000	301,000	12)	
	Municipal and Industrial Per Capita Use (Diversion)	gpcd													229	229	229	229	229	229	13)	
	Consumptive factor	%													50%	50%	50%	50%	50%	50%		
	Municipal and Industrial Demand (Diversion)	af/yr													62,726	69,263	77,216	62,726	69,263	77,216		
	Self Served Industrial Demand (Diversion)	af/yr													0	0	0	0	0	0	14)	
	Demand (Diversion)	af/yr													62,726	69,263	77,216	62,726	69,263	77,216		
Demand (Consumptive)		af/yr													31,363	34,632	38,608	31,363	34,632	38,608		
Energy	Demand (Diversion)	af/yr													0	0	0	0	0	0	15)	
Minerals	Demand (Diversion)	af/yr													0	0	0	0	0	0	16)	
Fish, Wildlife, and Recreation	Demand (Diversion)	af/yr													0	0	0	0	0	0	17)	
Tribal	Demand (Diversion)	af/yr													0	0	0	0	0	0	18)	
Total Adjacent Areas	Demand (Diversion)	af/yr	0	0	0	0	0	0	0	0	0	0	0	0	1,615,726	1,622,263	1,630,216	1,615,726	1,622,263	1,630,216		
Total Demand in the Study Area		af/yr	231,552	241,338	249,901	79,041	98,472	109,548	140,224	144,582	151,983	21,835	23,303	25,478	1,615,726	1,622,263	1,630,216	2,088,377	2,129,958	2,167,125		
Demand that may be met by Other Supplies		af/yr	0	0	0	0	0	0	0	0	0	0	0	0	1,597,525	1,584,953	1,579,596	1,597,525	1,584,953	1,579,596	19)	
Potential Colorado River Demand		af/yr	231,552	241,338	249,901	79,041	98,472	109,548	140,224	144,582	151,983	21,835	23,303	25,478	18,201	37,310	50,620	490,852	545,005	587,529	20)	
Agricultural	Colorado River Demand	af/yr	229,116	231,413	234,030	22,070	22,291	22,543	125,685	126,945	128,381	21,356	21,570	21,298	0	0	0	398,227	402,219	406,252	21)	
Municipal and Industrial	Colorado River Demand	af/yr	1,586	3,925	5,871	6,871	10,781	11,205	2,689	4,537	5,102	179	233	180	18,201	37,310	50,620	29,525	56,786	72,977		
Energy	Colorado River Demand	af/yr	0	0	0	30,000	35,000	35,500	11,600	10,600	14,500	0	0	0	0	0	0	41,600	45,600	50,000		
Minerals	Colorado River Demand	af/yr	0	0	0	19,500	25,400	33,300	0	0	0	0	0	0	0	0	0	19,500	25,400	33,300		
Fish, Wildlife, and Recreation	Colorado River Demand	af/yr	850	6,000	10,000	600	5,000	7,000	250	2,500	4,000	300	1,500	4,000	0	0	0	2,000	15,000	25,000		
Tribal	Colorado River Demand	af/yr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		

Source and Comments

1) High Growth scenario from Green River Basin Water Plan, 2010.

2) Moderate Growth scenario from Green River Basin Water Plan, 2010.

3) Population estimates from High Growth scenario of the Green River Basin Water Plan, 2010.

4) High Growth scenario from Green River Basin Water Plan, 2010. GPCD computed with High Growth population and M&I demand

5) No changes from current projected

6) Low Growth scenario from Green River Basin Water Plan, 2010.

7) Low Growth scenario from Green River Basin Water Plan, 2010.

8) High Growth scenario from Green River Basin Water Plan, 2010.

9) No changes from current projected

10) No changes from current projected

11) No changes from current projected

12) Population estimates from High Growth scenario of the Green River Basin Water Plan, 2010.

13) No changes from current projected

14) No changes from current projected

15) No changes from current projected

16) No changes from current projected

17) No changes from current projected

18) No changes from current projected

19) High Growth scenario from Green River Basin Water Plan, 2010.

20) High Growth scenario exports to North Platte from Green River Basin Water Plan, 2010.

21) For North Platte, all Potential Colorado River Demand is M&I.

TABLE C5-6  
Total Demand within Study Area under Enhanced Environment (D1) Scenario

		WYOMING																		Source and comments		
Planning Area		Green River above Fontenelle			Fontenelle to Green River			Green River to Greendale			Little Snake River			North Platte			STATE TOTAL					
Hydrologic Basin	Year	2015	2035	2060	2015	2035	2060	2015	2035	2060	2015	2035	2060	2015	2035	2060	2015	2035	2060			
Agriculture	Irrigated Acreage	acres	193,050	194,980	191,080	18,596	18,782	18,406	105,900	106,959	104,820	17,994	18,174	17,389			335,540	338,895	331,695	1)		
	Per-Acre Water Delivery (Diversion)	af/ac/yr	4.22	4.22	4.36	4.22	4.22	4.36	4.22	4.22	4.36	4.22	4.22	4.36			4.22	4.22	4.36			
	Consumptive Factor	%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%			28%	28%	28%			
	Demand (Consumptive)	af/yr	229,116	231,413	234,030	22,070	22,291	22,543	125,685	126,945	128,381	21,356	21,570	21,298			398,227	402,219	406,252			
Municipal and Industrial	Population		9,879	17,589	27,638	42,809	48,316	52,235	16,751	20,332	23,813	1,113	1,043	839			70,552	87,280	104,525	3)		
	Municipal and Industrial Per Capita Use (Diversion)	gpcd	287	258	222	287	258	222	287	258	222	287	258	222			287	258	222			
	Consumptive factor	%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%			50%	50%	50%			
	Municipal and Industrial Demand (Consumptive)	af/yr	1,586	2,542	3,437	6,871	6,982	6,495	2,689	2,938	2,961	179	151	104			11,324	12,613	12,997			
Self Served Industrial	Demand (Consumptive)	af/yr	0	0	0	0	0	0	0	0	0	0	0	0			0	0	0	5)		
	Demand (Consumptive)	af/yr	1,586	2,542	3,437	6,871	6,982	6,495	2,689	2,938	2,961	179	151	104			11,324	12,613	12,997			
	Energy	Demand (Consumptive)	af/yr	0	0	0	30,000	35,000	35,500	11,600	10,600	14,500	0	0	0			41,600	45,600		50,000	6)
	Minerals	Demand (Consumptive)	af/yr	0	0	0	19,500	25,400	33,300	0	0	0	0	0	0			19,500	25,400		33,300	
Fish, Wildlife, and Recreation	Demand (Consumptive)	af/yr	850	6,000	10,000	600	5,000	7,000	250	2,500	4,000	300	1,500	4,000			2,000	15,000	25,000	8)		
	Demand (Consumptive)	af/yr	0	0	0	0	0	0	0	0	0	0	0	0			0	0	0		9)	
Total Hydrologic Basin	Demand (Consumptive)	af/yr	231,552	239,955	247,467	79,041	94,673	104,838	140,224	142,983	149,842	21,835	23,221	25,402	0	0	0	472,651	500,832	527,549		
Adjacent Areas																						
Agriculture	Irrigated Acreage	acres													612,000	612,000	612,000	612,000	612,000	10)		
	Per-Acre Water Delivery (Diversion)	af/ac/yr													2.54	2.54	2.54	2.54	2.54			
	Consumptive factor	%													43%	43%	43%	43%	43%			
	Demand (Diversion)	af/yr													1,553,000	1,553,000	1,553,000	1,553,000	1,553,000			
Municipal and Industrial	Population														663,000	661,000	661,000	663,000	661,000	11)		
	Municipal and Industrial Per Capita Use (Diversion)	gpcd													229	206	178	229	206			
	Consumptive factor	%													50%	50%	50%	50%	50%			
	Municipal and Industrial Demand (Diversion)	af/yr													62,726	62,307	60,019	62,726	62,307			
Self Served Industrial	Demand (Diversion)	af/yr													0	0	0	0	0	14)		
	Demand (Diversion)	af/yr													62,726	62,307	60,019	62,726	62,307			
	Demand (Consumptive)	af/yr													31,363	31,153	30,010	31,363	31,153			
	Energy	Demand (Diversion)	af/yr												0	0	0	0	0		15)	
Minerals	Demand (Diversion)	af/yr												0	0	0	0	0	16)			
Fish, Wildlife, and Recreation	Demand (Diversion)	af/yr													0	0	0	0		0	17)	
	Demand (Diversion)	af/yr													0	0	0	0	0	18)		
Total Adjacent Areas	Demand (Diversion)	af/yr	0	0	0	0	0	0	0	0	0	0	0	0	1,615,726	1,615,307	1,613,019	1,615,726	1,615,307		1,613,019	
Total Demand in the Study Area		af/yr	231,552	239,955	247,467	79,041	94,673	104,838	140,224	142,983	149,842	21,835	23,221	25,402	1,615,726	1,615,307	1,613,019	2,088,377	2,116,138	2,140,568		
Demand that may be met by Other Supplies		af/yr	0	0	0	0	0	0	0	0	0	0	0	0	1,597,525	1,583,135	1,564,911	1,597,525	1,583,135	1,564,911		
Potential Colorado River Demand		af/yr	231,552	239,955	247,467	79,041	94,673	104,838	140,224	142,983	149,842	21,835	23,221	25,402	18,201	32,171	48,108	490,852	533,003	575,657		
Agricultural	Colorado River Demand	af/yr	229,116	231,413	234,030	22,070	22,291	22,543	125,685	126,945	128,381	21,356	21,570	21,298	0	0	0	398,227	402,219	406,252		
Municipal and Industrial	Colorado River Demand	af/yr	1,586	2,542	3,437	6,871	6,982	6,495	2,689	2,938	2,961	179	151	104	18,201	32,171	48,108	29,525	44,784	61,105		
Energy	Colorado River Demand	af/yr	0	0	0	30,000	35,000	35,500	11,600	10,600	14,500	0	0	0	0	0	0	41,600	45,600	50,000		
Minerals	Colorado River Demand	af/yr	0	0	0	19,500	25,400	33,300	0	0	0	0	0	0	0	0	0	19,500	25,400	33,300		
Fish, Wildlife, and Recreation	Colorado River Demand	af/yr	850	6,000	10,000	600	5,000	7,000	250	2,500	4,000	300	1,500	4,000	0	0	0	2,000	15,000	25,000		
Tribal	Colorado River Demand	af/yr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		

Source and Comments

1) No changes from current projected

2) Moderate Growth scenario from Green River Basin Water Plan, 2010.

3) Population estimates from Moderate Growth scenario of the Green River Basin Water Plan, 2010.

4) High Growth scenario from Green River Basin Water Plan, 2010. GPCD computed with High Growth population and M&I demand

5) No changes from current projected

6) Low Growth scenario from Green River Basin Water Plan, 2010.

7) Low Growth scenario from Green River Basin Water Plan, 2010.

8) High Growth scenario from Green River Basin Water Plan, 2010.

9) No changes from current projected

10) No changes from current projected

11) No changes from current projected

12) Population estimates from Moderate Growth scenario of the Green River Basin Water Plan, 2010.

13) No changes from current projected

14) No changes from current projected

15) No changes from current projected

16) No changes from current projected

17) No changes from current projected

18) No changes from current projected

19) Moderate Growth scenario from Green River Basin Water Plan, 2010.

20) Moderate Growth scenario exports to North Platte from Green River Basin Water Plan, 2010.

21) For North Platte, all Potential Colorado River Demand is M&I.

TABLE C5-7  
Total Demand within Study Area under Enhanced Environment (D2) Scenario

		WYOMING																		Source and comments	From Current Projected Data Sheet	
		Green River above Fontenelle			Fontenelle to Green River			Green River to Greendale			Little Snake River			North Platte			STATE TOTAL				Input Parameter	
Hydrologic Basin	Planning Area	2015	2035	2060	2015	2035	2060	2015	2035	2060	2015	2035	2060	2015	2035	2060	2015	2035	2060		Computed	
Agriculture	Irrigated Acreage	acres	193,050	194,980	191,080	18,596	18,782	18,406	105,900	106,959	104,820	17,994	18,174	17,389			335,540	338,895	331,695	1)		
	Per-Acre Water Delivery (Diversion)	af/ac/yr	4.22	4.22	4.36	4.22	4.22	4.36	4.22	4.22	4.36	4.22	4.22	4.36			4.22	4.22	4.36			
	Consumptive Factor	%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%	28%			28%	28%	28%			
	Demand (Consumptive)	af/yr	229,116	231,413	234,030	22,070	22,291	22,543	125,685	126,945	128,381	21,356	21,570	21,298			398,227	402,219	406,252	2)		
Municipal and Industrial	Population		9,879	23,635	35,246	42,809	64,922	67,270	16,751	27,320	30,628	1,113	1,403	1,081			70,552	117,280	134,225	3)		
	Municipal and Industrial Per Capita Use (Diversion)	gpcd	287	296	297	287	296	297	287	296	297	287	296	297			287	297	297	4)		
	Consumptive factor	%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%			50%	50%	50%			
	Municipal and Industrial Demand (Consumptive)	af/yr	1,586	3,925	5,871	6,871	10,781	11,205	2,689	4,537	5,102	179	233	180			11,324	19,476	22,357			
	Self Served Industrial Demand (Consumptive)	af/yr	0	0	0	0	0	0	0	0	0	0	0	0			0	0	0	5)		
	Demand (Consumptive)	af/yr	1,586	3,925	5,871	6,871	10,781	11,205	2,689	4,537	5,102	179	233	180			11,324	19,476	22,357			
Energy	Demand (Consumptive)	af/yr	0	0	0	30,000	35,000	35,500	11,600	10,600	14,500	0	0	0			41,600	45,600	50,000	6)		
Minerals	Demand (Consumptive)	af/yr	0	0	0	19,500	25,400	33,300	0	0	0	0	0	0			19,500	25,400	33,300	7)		
Fish, Wildlife, and Recreation	Demand (Consumptive)	af/yr	850	6,000	10,000	600	5,000	7,000	250	2,500	4,000	300	1,500	4,000			2,000	15,000	25,000	8)		
Tribal	Demand (Consumptive)	af/yr	0	0	0	0	0	0	0	0	0	0	0	0			0	0	0	9)		
Total Hydrologic Basin	Demand (Consumptive)	af/yr	231,552	241,338	249,901	79,041	98,472	109,548	140,224	144,582	151,983	21,835	23,303	25,478	0	0	472,651	507,695	536,909			
Adjacent Areas																						
Agriculture	Irrigated Acreage	acres													612,000	612,000	612,000	612,000	612,000	10)		
	Per-Acre Water Delivery (Diversion)	af/ac/yr													2.54	2.54	2.54	2.54	2.54			
	Consumptive factor	%													43%	43%	43%	43%	43%			
	Demand (Diversion)	af/yr													1,553,000	1,553,000	1,553,000	1,553,000	1,553,000	11)		
	Demand (Consumptive)	af/yr													663,000	661,000	661,000	663,000	661,000			
Municipal and Industrial	Population														244,167	270,000	301,000	244,167	270,000	12)		
	Municipal and Industrial Per Capita Use (Diversion)	gpcd													229	229	229	229	229	13)		
	Consumptive factor	%													50%	50%	50%	50%	50%			
	Municipal and Industrial Demand (Diversion)	af/yr													62,726	69,263	77,216	62,726	69,263			
	Self Served Industrial Demand (Diversion)	af/yr													0	0	0	0	0	14)		
	Demand (Diversion)	af/yr													62,726	69,263	77,216	62,726	69,263			
	Demand (Consumptive)	af/yr													31,363	34,632	38,608	31,363	34,632			
Energy	Demand (Diversion)	af/yr													0	0	0	0	0	15)		
Minerals	Demand (Diversion)	af/yr													0	0	0	0	0	16)		
Fish, Wildlife, and Recreation	Demand (Diversion)	af/yr													0	0	0	0	0	17)		
Tribal	Demand (Diversion)	af/yr													0	0	0	0	0	18)		
Total Adjacent Areas	Demand (Diversion)	af/yr	0	0	0	0	0	0	0	0	0	0	0	0	1,615,726	1,622,263	1,630,216	1,615,726	1,622,263			
Total Demand in the Study Area		af/yr	231,552	241,338	249,901	79,041	98,472	109,548	140,224	144,582	151,983	21,835	23,303	25,478	1,615,726	1,622,263	1,630,216	2,088,377	2,129,958	2,167,125		
Demand that may be met by Other Supplies		af/yr	0	0	0	0	0	0	0	0	0	0	0	0	1,597,525	1,584,953	1,579,596	1,597,525	1,584,953	1,579,596	19)	
Potential Colorado River Demand		af/yr	231,552	241,338	249,901	79,041	98,472	109,548	140,224	144,582	151,983	21,835	23,303	25,478	18,201	37,310	50,620	490,852	545,005	587,529	20)	
Agricultural	Colorado River Demand	af/yr	229,116	231,413	234,030	22,070	22,291	22,543	125,685	126,945	128,381	21,356	21,570	21,298	0	0	0	398,227	402,219	406,252	21)	
Municipal and Industrial	Colorado River Demand	af/yr	1,586	3,925	5,871	6,871	10,781	11,205	2,689	4,537	5,102	179	233	180	18,201	37,310	50,620	29,525	56,786	72,977		
Energy	Colorado River Demand	af/yr	0	0	0	30,000	35,000	35,500	11,600	10,600	14,500	0	0	0	0	0	0	41,600	45,600	50,000		
Minerals	Colorado River Demand	af/yr	0	0	0	19,500	25,400	33,300	0	0	0	0	0	0	0	0	0	19,500	25,400	33,300		
Fish, Wildlife, and Recreation	Colorado River Demand	af/yr	850	6,000	10,000	600	5,000	7,000	250	2,500	4,000	300	1,500	4,000	0	0	0	2,000	15,000	25,000		
Tribal	Colorado River Demand	af/yr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		

Source and Comments

- 1) No changes from current projected
- 2) Moderate Growth scenario from Green River Basin Water Plan, 2010.
- 3) Population estimates from High Growth scenario of the Green River Basin Water Plan, 2010.
- 4) High Growth scenario from Green River Basin Water Plan, 2010. GPCD computed with High Growth population and M&I demand
- 5) No changes from current projected
- 6) Low Growth scenario from Green River Basin Water Plan, 2010.
- 7) Low Growth scenario from Green River Basin Water Plan, 2010.
- 8) High Growth scenario from Green River Basin Water Plan, 2010.
- 9) No changes from current projected
- 10) No changes from current projected
- 11) No changes from current projected
- 12) Population estimates from High Growth scenario of the Green River Basin Water Plan, 2010.
- 13) No changes from current projected
- 14) No changes from current projected
- 15) No changes from current projected
- 16) No changes from current projected
- 17) No changes from current projected
- 18) No changes from current projected
- 19) High Growth scenario from Green River Basin Water Plan, 2010.
- 20) High Growth scenario exports to North Platte from Green River Basin Water Plan, 2010.
- 21) For North Platte, all Potential Colorado River Demand is M&I.

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