Appendix C8
Nevada Water Demand Scenario Quantification

Appendix C8 – Nevada Water Demand Scenario Quantification

1.0 Introduction

This appendix summarizes the data sources used in scenario quantification for Colorado River demand[1] for the state of Nevada and presents the results of quantification. As presented in figure C8-1, Nevada is divided into planning areas that correspond to the Southern Nevada Water Authority (SNWA) service area and other service areas where Colorado River water is delivered. Data collection and development were completed at the planning area level, and the compiled water demands are discussed in the results section.

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 Nevada Study Area summary, followed by Colorado River demand by geography, and finally by category.

2.0 Background

The SNWA was formed in 1991 by cooperative agreement among seven Las Vegas area water and wastewater agencies. SNWA is responsible for the water treatment and delivery as well as acquiring and managing the long-term water resources for Southern Nevada. SNWA has produced a number of planning reports over time that examine long-term water resources for Southern Nevada.

SNWA, with support from member agencies, coordinated Nevada's efforts to provide information for water demand scenario quantification. These efforts largely relied on information previously generated through SNWA water resource planning, including SNWA's current plan, which was developed in 2009 (SNWA, 2009). Adjustments from the 2009 plan reflect the development of the range of scenarios established in support of the Study.

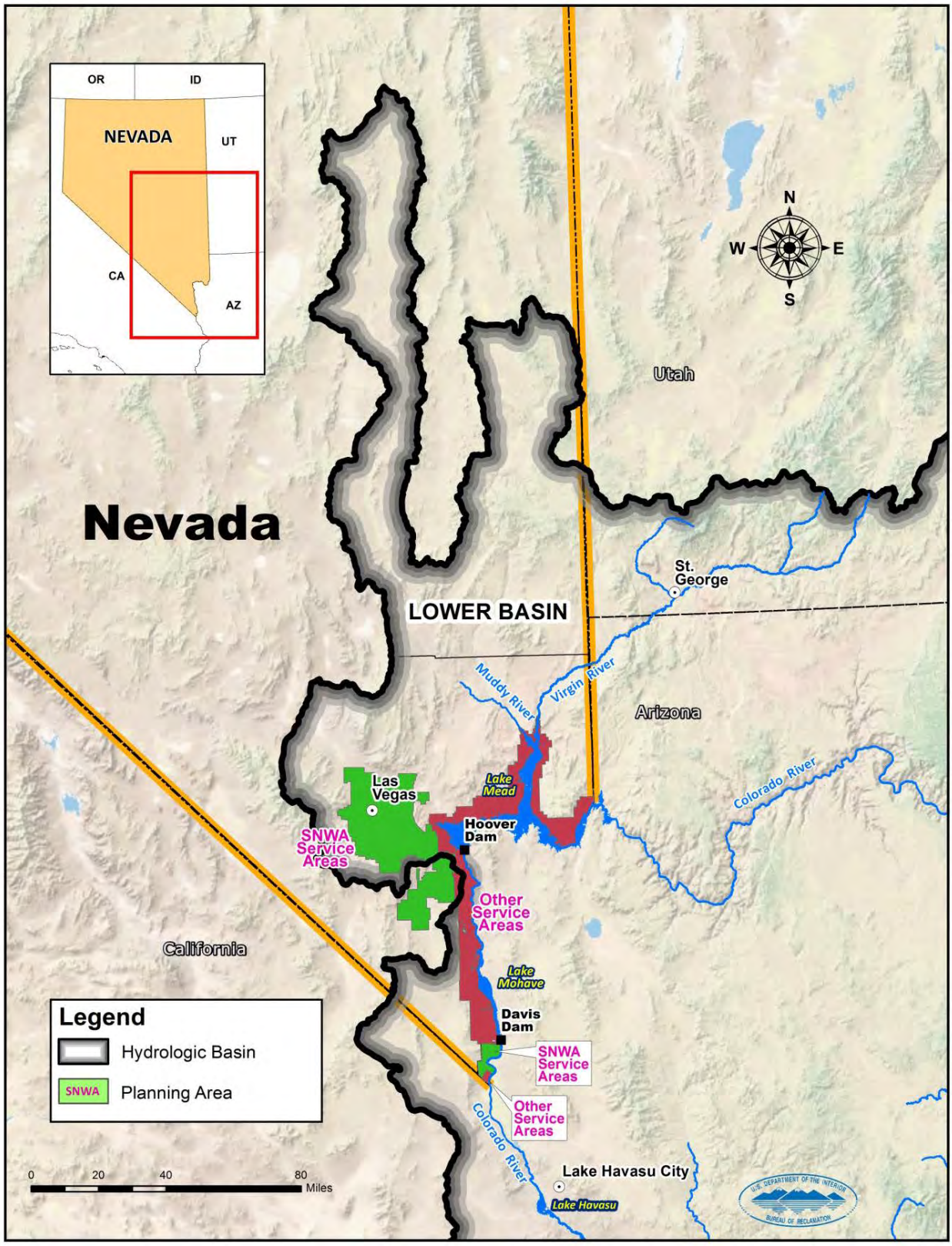
2.1 Data Sources for Quantification

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:** There are no reported Colorado River agricultural demands in Nevada.
- **Energy:** There are no reported Colorado River energy demands in Nevada.
- **Minerals:** There are no reported Colorado River minerals demands in Nevada.

[1] Colorado River demand as computed by Study Area demand minus other supplies.

FIGURE C8-1
Colorado River Hydrologic Basin and Export Service Areas in Nevada



- **Fish, Wildlife, and Recreation:** Fish, wildlife, and recreation demands were provided by SNWA based on contracted recreation use outside of SNWA's service area.
- **Tribal:** The quantification of tribal demands relied on information submitted by the Ten Tribes Partnership for use in the *Colorado River Interim Surplus Criteria Final Environmental Impact Statement* (Bureau of Reclamation [Reclamation], 2000) and used in the more recent *Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead Final Environmental Impact Statement* (Reclamation, 2007a), and Reclamation's 2005 to 2009 *Decree Accounting Report* (Reclamation, 2007b and 2010). Tribal diversion-based demands reflect full use of Fort Mojave water rights.

3.0 Results of Water Demand Scenario Quantification

This section summarizes Nevada'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. The communities within the Colorado River Basin, including the SNWA service area and other service areas, also rely on other sources of supply, including local non-tributary and imported Nevada groundwater supplies; banked resources created through local and interstate agreements (for example, Arizona Water Bank, California Water Bank, and Southern Nevada Water Bank); and projects that result in Intentionally Created Surpluses (ICS) (for example, Virgin/Muddy Rivers, Tributary Conservation ICS, Coyote Spring Valley Groundwater Imported ICS, and Brock Reservoir System Efficiency ICS).

The SNWA 2009 plan includes imported Nevada groundwater to help meet future SNWA demands, and the SNWA is pursuing development of this resource by securing related Nevada groundwater right permits and corresponding federal environmental permits for this project. Nevada's Colorado River demand for the Study includes water for the long term as temporary resources (for example, System Efficiency ICS and banked resources) are exhausted without use of imported Nevada groundwater. This approach is being applied for the Study to analyze Nevada's potential future Colorado River water demands for planning purposes. If SNWA is successful in obtaining these permits for imported Nevada groundwater, this resource, along with existing and future Colorado River resources, would be integrated in local planning efforts. The subsequent Nevada Colorado River water demand may or may not differ, depending upon the application of the available resources in meeting future demands.

To develop estimates of the Colorado River demand, the Study Area demand was reduced by estimates of available supply from other sources, as discussed above. This appendix focuses on Colorado River demands, but includes discussion of the Study Area parameters that led to these demands. For the purpose of the study, additional Virgin River Basin demands in Nevada are not included. The SNWA is currently not seeking to develop its Virgin River surface water rights under Permit No. 58591 as agreed to under the Agreement Concerning Colorado River Management and Operations signed April 23, 2007, by the Seven Basin States which is a key

agreement supporting the *Colorado River Interim Guidelines for Lower Basin Shortages and the Coordinated Operations for Lake Powell and Lake Mead* (U.S. Department of the Interior, 2007).

The following sections summarize the results of demand scenario quantification, presenting Study Area demand and Colorado River water demand, Colorado River Demand for the state and individual planning areas across the six scenarios, and 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 included.

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 C8-1 presents summary results for the demand scenarios considered in the 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.

Nevada estimates that between 2.3 and 2.6 million people will reside in Nevada's Study Area by 2015. Population is expected to increase to 4.2 to 5.1 million by 2060. The greatest population growth is associated with the Rapid Growth (C1 and C2) scenarios and the Enhanced Environment (D2) scenario. The Slow Growth (B) scenario has the smallest population in 2060 of the scenarios (4.2 million by 2060), but still represents a growth of 73 percent over 2015 estimates.

The growing municipal population, however, will continue to be more efficient in its per capita water use than today. Per capita water use, based on passive and active conservation to achieve existing conservation targets, is expected to be 20 percent less in 2060 than in 2015. M&I is the largest component of Colorado River demand, and is the only component of change in Colorado River demand. The increase in M&I demand is driven by an increase in population that outpaces a decrease in per capita usage.

Figure C8-2 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 377 thousand acre-feet (kaf) in 2015 to between 514 and 624 kaf in 2060. The range in Study Area demand growth across scenarios in 2060 is projected to be about 110 kaf.

Panel two provides a view of the range across scenarios of Colorado River demand. This demand increases from about 300 kaf in 2015 to between 490 and 600 kaf in 2060 (or growth of 63 to 100 percent), depending on the scenario. This difference results in a Colorado River demand range of about 110 kaf across the scenarios in 2060, or about 20 percent.

Panel three shows how specific categories affect the projected change in Colorado River demand by scenario. Growth in M&I demand is the only factor affecting Colorado River demand across the scenarios.

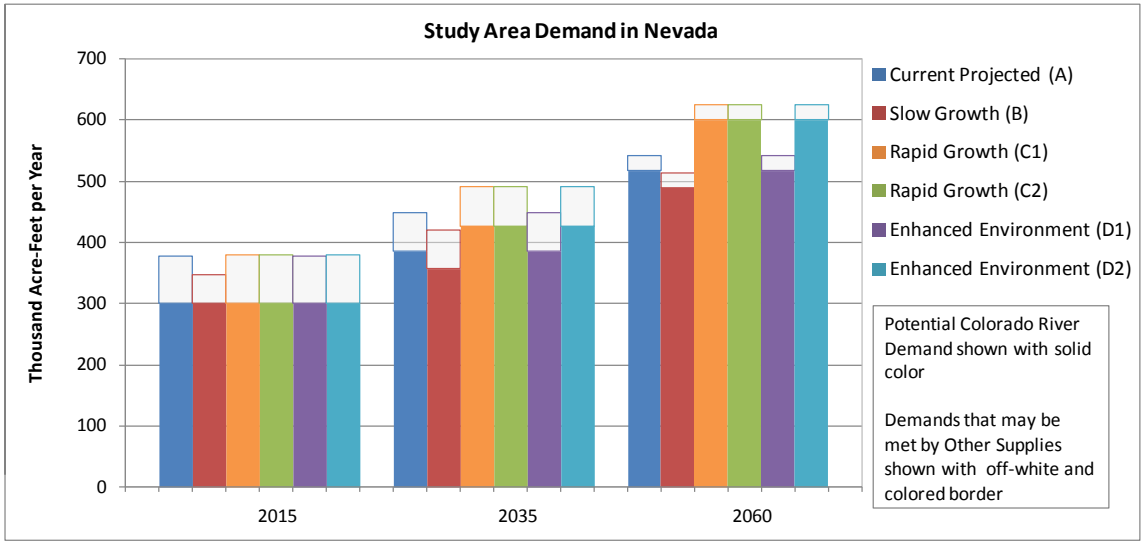
Figure C8-3 ties historical water use to the range of Colorado River demand in the quantified scenarios. The scenarios of future Colorado River demand provided in figure C8-3 do not show a smooth growth pattern, primarily due the influence of replacing temporary resources with Colorado River water. The 110 kaf range across scenarios in 2060 is easily discernible, with a relatively even spread over the range across the 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.

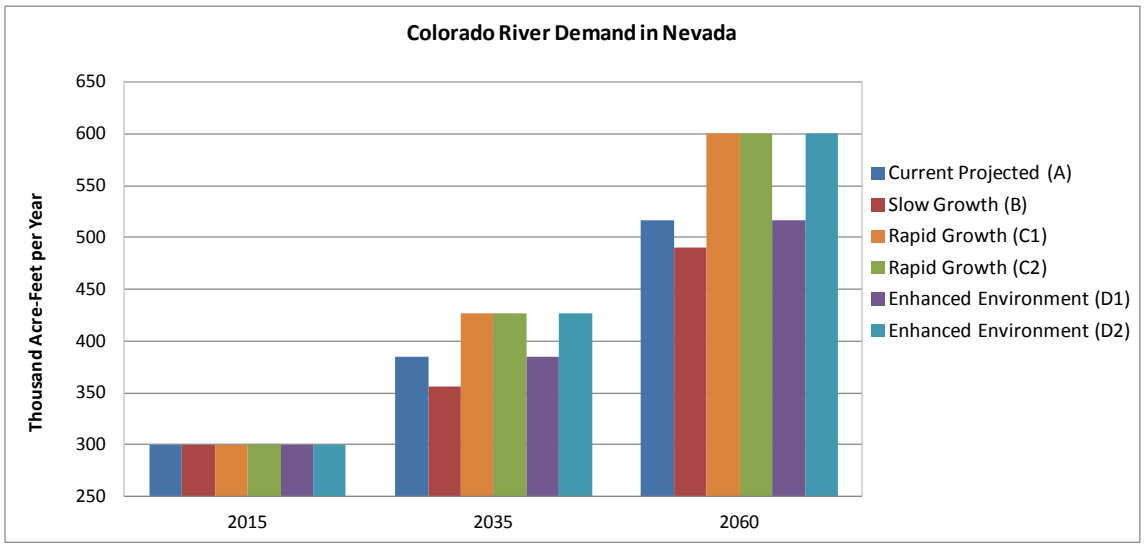
TABLE C8-1
Summary Results of Nevada Water Demand Scenario Quantification by 2060

Key Study Area Demand Scenario Parameters							
	2015[1]	**2060 Scenario Parameters**					
		A	**B**	**C1**	**C2**	**D1**	**D2**
Population (millions)	2.6	4.4	4.2	5.1	5.1	4.4	5.1
Change in per capita water usage (%), from 2015	—	–20%	–20%	–20%	–20%	–20%	–20%
Irrigated acreage (millions of acres)	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Change in per acre water delivery (%), from 2015	—	n/a	n/a	n/a	n/a	n/a	n/a
Study Area Demand (thousand acre-feet [kaf])							
	2015[1]	**2060 Scenario Demands**					
		A	**B**	**C1**	**C2**	**D1**	**D2**
Ag demand	0	0	0	0	0	0	0
M&I demand	366	530	503	613	613	530	613
Energy demand	0	0	0	0	0	0	0
Minerals demand	0	0	0	0	0	0	0
FWR demand	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Tribal demand	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Total Study Area Demand[2]	**377**	**541**	**514**	**624**	**624**	**541**	**624**
Colorado River Demand (kaf)							
	2015[1]	**2060 Scenario Demands**					
		A	**B**	**C1**	**C2**	**D1**	**D2**
Ag demand	0	0	0	0	0	0	0
M&I demand	289	506	479	589	589	506	589
Energy demand	0	0	0	0	0	0	0
Minerals demand	0	0	0	0	0	0	0
FWR demand	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Tribal demand	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Total Colorado River Demand[2]	**300**	**517**	**490**	**600**	**600**	**517**	**600**

[1] If range across scenarios is less than 10 percent, 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.

FIGURE C8-2
Study Area, Colorado River, and Change in Colorado River Demand





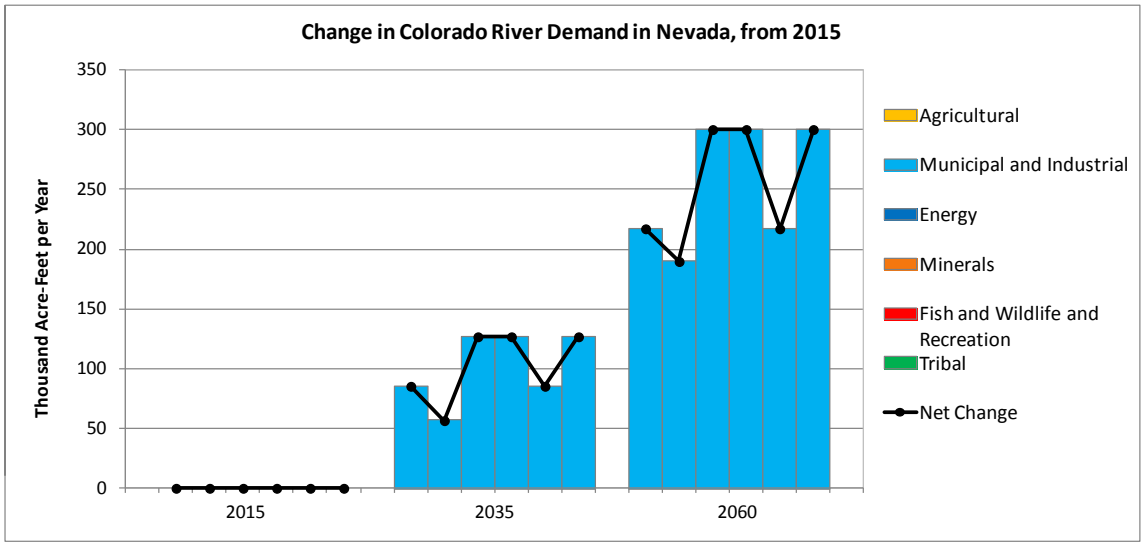
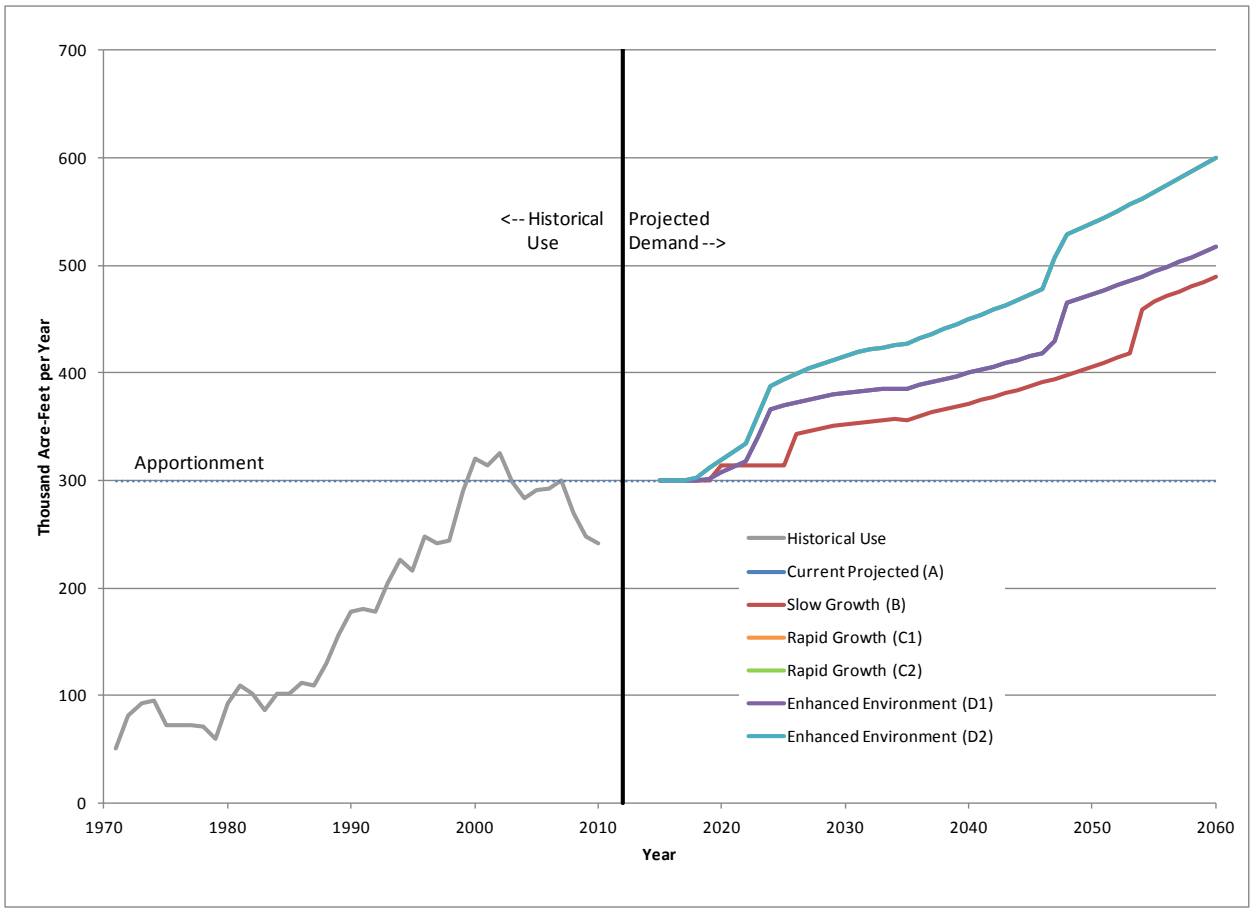


FIGURE C8-3
Historical Use and Future Projected Demand[1]



[1]This figure presents the range of potential scenarios. However, some of the scenarios overlap and are not discernible on this format.

3.2 Colorado River Water Demand by Geography

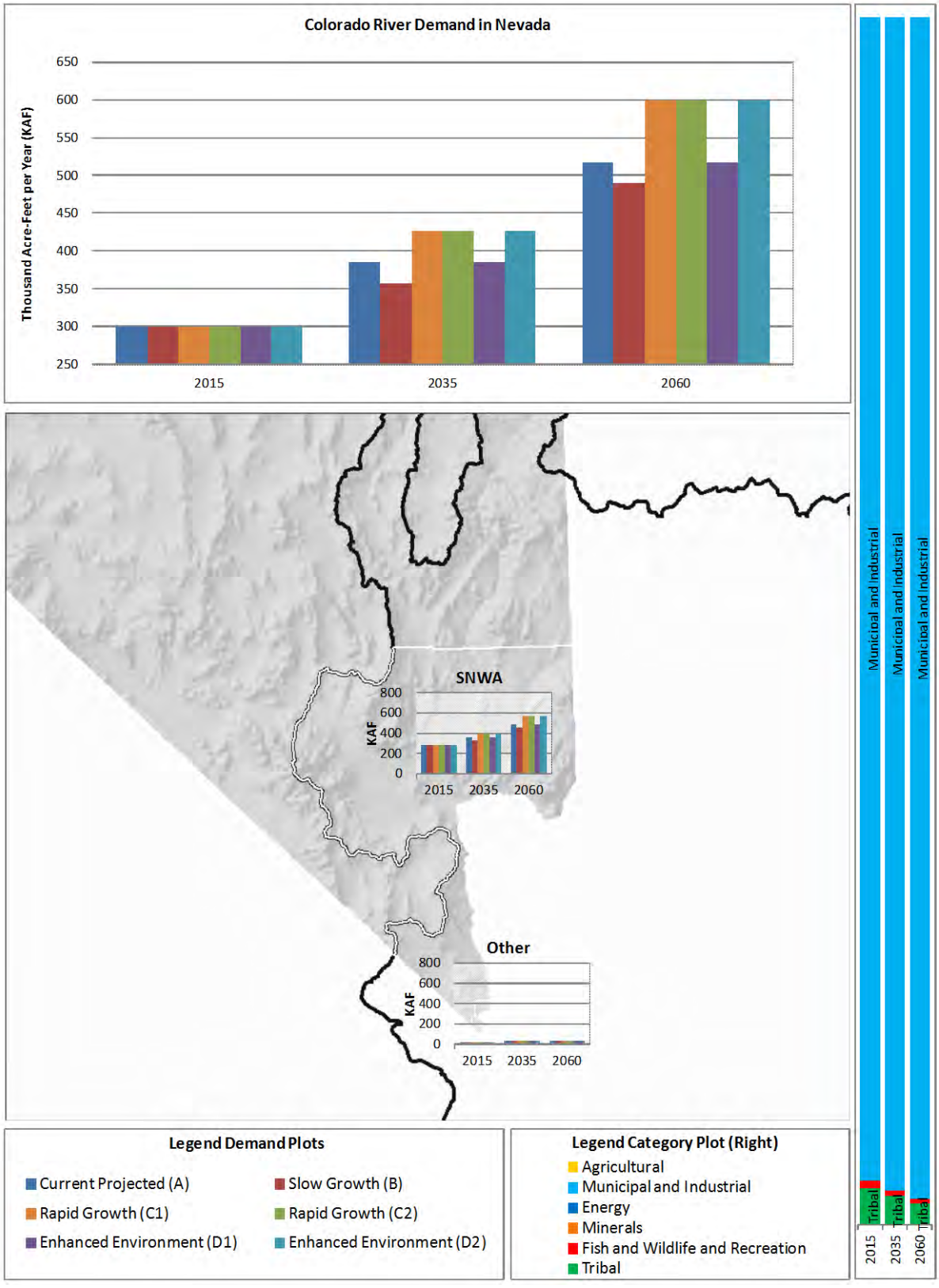
Colorado River water demand for areas served by the Colorado River is presented in figures C8-4 and C8-5. These figures show two geographic levels: Study Area in Nevada, and individual planning areas. Demands at each geographic level are shown across the scenarios. The columns to the right show the Colorado River demand at a point in time (2015, 2035, or 2060) by relative contribution of the categories.

The change in both magnitude and percentage of Colorado River demand varies considerably across scenarios. Colorado River demand[2] in Nevada is primarily in the SNWA service area. The primary demand category in the other service areas is tribal, with a small amount of fish, wildlife, and recreation demand.

Figure C8-6 shows the change in Colorado River demand by category from 2015 across the scenarios. All change in Colorado River demand is due to change in M&I demand in the SNWA service area.

[2] 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 C8-4
Colorado River Demand in Nevada



3.3.5 Fish, Wildlife, and Recreation

Recreational demands were included to account for the Lake Mead National Recreation Area. Total fish, wildlife, and recreation demands are estimated at about 2,000 acre-feet per year and are constant through time and across scenarios. No additional future environmental or non-consumptive demands were included.

3.3.6 Tribal

The Fort Mojave Indian Tribe diverts Colorado River water under water rights assigned to reservation land in Nevada.

The Tribe does not currently use its full diversion right as established by the Consolidated Decree of the United States Supreme Court in *Arizona* v. *California*, 547 U.S. 150 (2006); however, it is expected that it will fully use the right in the future. Associated projected tribal demands are constant over time and across scenarios. Fort Mojave use from 2015 to 2060 is represented as a constant demand at its right of 12.5 kaf with 9 kaf of consumptive use.

For additional information on tribal demand, see appendix C9.

3.4 Summary Tables of Parameters and Demands by Category

Tables C8-2 to C8-7 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 C8-2
Total Demand within Study Area under Current Projected (A) Scenario

NEVADA

Units are thousand acre-feet per year, unless otherwise noted

LEGEND: 999 From States; 999 From State Plans; 999 Calculated; 999 From Study Team

Hydrologic Basin		Planning Area	SNWA			Other			STATE TOTAL			Notes
		Year	2015	2035	2060	2015	2035	2060	2015	2035	2060	
Agricultural	Irrigated Acreage [thousands]		0	0	0	0	0	0	0	0	0	
	Per-Acre Water Delivery (Diversion) [af/ac/yr]		0	0	0	0	0	0	0	0	0	
	Consumptive factor [%]		0%	0%	0%	0%	0%	0%	0%	0%	0%	
	Demand (Consumptive)		0	0	0	0	0	0	0	0	0	
Municipal and Industrial (M&I)	Population [thousands]		2,561	3,525	4,434	0	0	0	2,561	3,525	4,434	1
	M&I Per Capita Use (Diversion) [gpcd]		237	199	190				237	199	190	2
	Consumptive factor [%]		59%	59%	59%				59%	59%	59%	3
	M&I Demand (Consumptive)		358	421	513	0	0	0	358	421	513	4
	Self Served Industrial Demand (Consumptive)		0	0	0	8	17	17	8	17	17	5
	Demand (Consumptive)		**358**	**421**	**513**	**8**	**17**	**17**	**366**	**438**	**530**	
Energy	**Demand (Consumptive)**		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	
Minerals	**Demand (Consumptive)**		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	
Fish, Wildlife, and Recreation	**Demand (Consumptive)**		**0**	**0**	**0**	**2**	**2**	**2**	**2**	**2**	**2**	6
Tribal	**Demand (Consumptive)**		**0**	**0**	**0**	**9**	**9**	**9**	**9**	**9**	**9**	7
Total Hydrologic Basin	**Demand (Consumptive)**		**358**	**421**	**513**	**19**	**28**	**28**	**377**	**449**	**541**	8
Adjacent Areas												
Agricultural	Irrigated Acreage [thousands]											
	Per-Acre Water Delivery (Diversion) [af/ac/yr]											
	Consumptive factor [%]											
	Demand (Diversion)											
	Demand (Consumptive)											
Municipal and Industrial (M&I)	Population[thousands]											
	M&I Per Capita Use (Diversion) [gpcd]											
	Consumptive factor [%]											
	M&I Demand (Diversion)											
	Self Served Industrial Demand (Diversion)											
	Demand (Diversion)											
	Demand (Consumptive)											
Energy	**Demand (Diversion)**											
Minerals	**Demand (Diversion)**											
Fish, Wildlife, and Recreation	**Demand (Diversion)**											
Tribal	**Demand (Diversion)**											
Total Adjacent Areas	Demand (Diversion)		0	0	0	0	0	0	0	0	0	
Total Demand in the Study Area			**358**	**421**	**513**	**19**	**28**	**28**	**377**	**449**	**541**	9
Demand that may be met by Other Supplies			77	64	24	0	0	0	77	64	24	10
Potential Colorado River Demand			**281**	**357**	**489**	**19**	**28**	**28**	**300**	**385**	**517**	11
Agricultural	Colorado River Demand		0	0	0	0	0	0	0	0	0	
Municipal and Industrial	Colorado River Demand		281	357	489	8	17	17	289	374	506	12
Energy	Colorado River Demand		0	0	0	0	0	0	0	0	0	
Minerals	Colorado River Demand		0	0	0	0	0	0	0	0	0	
Fish, Wildlife, and Recreation	Colorado River Demand		0	0	0	2	2	2	2	2	2	
Tribal	Colorado River Demand		0	0	0	9	9	9	9	9	9	

Notes

1) Center for Business and Economic Research (CBER). 2008. (CBER, 2008), beyond 2035 annual absolute annual growth of 37,600. SNWA services ~97 percent of Clark County's population.
2) *Water Resource Plan*. (SNWA, 2009). Personal communication (SNWA, 2011). STATE TOTAL only based on SNWA planning area.
3) *Water Resource Plan*. (SNWA, 2009).
4) Consistent with methodologies in the SNWA Water Resources Plan, 2009, municipal SNWA demand (computed as population times per capita use) is reduced by groundwater supply and reclaimed waters before multiplying by 1/1.7 (59 percent) to obtain consumptive municipal demand.
5) M&I demand in "Other" Category provided by SNWA based on contracted build-out of development outside of SNWA's service area.

5a) Row 13 (SSI) in 2011, SNWA planning area -water added to the AZ groundwater bank.

6) FWR demand in "Other" Category provided by SNWA based on contracted recreation use outside of SNWA's service area.
7) Tribal demand in "Other" Category based on the Ten Tribes Partnership schedule included in the *Colorado River Interim Surplus Criteria Final Environmental Impact Statement* (Reclamation, 2000).
8) Total Hydrologic Basin in "Other" Category based on contracted amount. Users will grow into their contract amount (28,405) by 2031.
9) Calculated from the sum of Hydrologic Basin (Consumptive) Demand and Adjacent Areas (Diversion) Demand.
10) Includes potential consumptive use banked water through ICS (Coyote Spring, Muddy/Virgin, Drop 2) and AZ groundwater bank.
11) Calculated as total demand minus other sources.
12) Colorado River demand is distributed among categories according to distribution of total Study Area demand in that planning area.

TABLE C8-3
Total Demand within Study Area under Slow Growth (B) Scenario

NEVADA
Units are thousand acre-feet per year, unless otherwise noted

LEGEND: 999 From Current Projected Data Sheet; 999 Input Parameter; 999 Computed

Hydrologic Basin	Planning Area / Year	SNWA 2015	SNWA 2035	SNWA 2060	Other 2015	Other 2035	Other 2060	STATE TOTAL 2015	STATE TOTAL 2035	STATE TOTAL 2060	Notes
Agricultural	Irrigated Acreage [thousands]	0	0	0	0	0	0	0	0	0	1
	Per-Acre Water Delivery (Diversion) [af/ac/yr]	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0	2
	Consumptive factor [%]	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	Demand (Consumptive)	**0**	**0**	**0**	**0**	**0**	**0**	0	0	0	
Municipal and Industrial (M&I)	Population [thousands]	2,375	3,306	4,215	0	0	0	2,375	3,306	4,215	3
	M&I Per Capita Use (Diversion) [gpcd]	237	199	190				237	199	190	4
	Consumptive factor [%]	59%	59%	59%				59%	59%	59%	
	M&I Demand (Consumptive)	329	392	485	0	0	0	329	392	485	
	Self Served Industrial Demand (Consumptive)	0	0	0	8	17	17	8	17	17	5
	Demand (Consumptive)	**329**	**392**	**485**	**8**	**17**	**17**	**337**	**410**	**503**	
Energy	**Demand (Consumptive)**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	6
Minerals	**Demand (Consumptive)**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	7
Fish, Wildlife, and Recreation	**Demand (Consumptive)**	**0**	**0**	**0**	**2**	**2**	**2**	**2**	**2**	**2**	8
Tribal	**Demand (Consumptive)**	**0**	**0**	**0**	**9**	**9**	**9**	**9**	**9**	**9**	9
Total Hydrologic Basin	**Demand (Consumptive)**	**329**	**392**	**485**	**19**	**28**	**28**	**348**	**421**	**514**	
Adjacent Areas											
Agricultural	Irrigated Acreage [thousands]										
	Per-Acre Water Delivery (Diversion) [af/ac/yr]										
	Consumptive factor [%]										
	Demand (Diversion)										
	Demand (Consumptive)										
Municipal and Industrial (M&I)	Population[thousands]										
	M&I Per Capita Use (Diversion) [gpcd]										
	Consumptive factor [%]										
	M&I Demand (Diversion)										
	Self Served Industrial Demand (Diversion)										
	Demand (Diversion)										
	Demand (Consumptive)										
Energy	**Demand (Diversion)**										
Minerals	**Demand (Diversion)**										
Fish, Wildlife, and Recreation	**Demand (Diversion)**										
Tribal	**Demand (Diversion)**										
Total Adjacent Areas	Demand (Diversion)	0	0	0	0	0	0	0	0	0	
Total Demand in the Study Area		**329**	**392**	**485**	**19**	**28**	**28**	**348**	**421**	**514**	
Demand that may be met by Other Supplies		48	64	24	0	0	0	48	64	24	10
Potential Colorado River Demand		**281**	**328**	**461**	**19**	**28**	**28**	**300**	**357**	**490**	
Agricultural	Colorado River Demand	0	0	0	0	0	0	0	0	0	11
Municipal and Industrial	Colorado River Demand	281	328	461	8	17	17	289	346	479	
Energy	Colorado River Demand	0	0	0	0	0	0	0	0	0	
Minerals	Colorado River Demand	0	0	0	0	0	0	0	0	0	
Fish, Wildlife, and Recreation	Colorado River Demand	0	0	0	2	2	2	2	2	2	
Tribal	Colorado River Demand	0	0	0	9	9	9	9	9	9	

Notes

1) No change from Current Projected.
2) No change from Current Projected.
3) 2009 *Water Resource Plan* - Clark County Short Term Adjustment to CBER. 2008. Population Forecast. SNWA services ~97 percent of Clark County's population.
4) No change from Current Projected.
5) No change from Current Projected.
6) No change from Current Projected.
7) No change from Current Projected.
8) No change from Current Projected.
9) No change from Current Projected.
10) No change from Current Projected.
11) Colorado River demand is distributed among categories according to distribution of total Study Area demand in that planning area.

TABLE C8-4
Total Demand within Study Area under Rapid Growth (C1) Scenario

NEVADA

Units are thousand acre-feet per year, unless otherwise noted

LEGEND: 999 From Current Projected Data Sheet; 999 Computed; 999 Input Parameter

Hydrologic Basin		Planning Area	SNWA			Other			STATE TOTAL			Notes
		Year	2015	2035	2060	2015	2035	2060	2015	2035	2060	
Agricultural	Irrigated Acreage [thousands]		0	0	0	0	0	0	0	0	0	1
	Per-Acre Water Delivery (Diversion) [af/ac/yr]		0.00	0.00	0.00	0.00	0.00	0.00	0	0	0	2
	Consumptive factor [%]		0%	0%	0%	0%	0%	0%	0%	0%	0%	
	Demand (Consumptive)		**0**	**0**	**0**	**0**	**0**	**0**	0	0	0	
Municipal and Industrial (M&I)	Population [thousands]		2,576	3,840	5,097	0	0	0	2,576	3,840	5,097	3
	M&I Per Capita Use (Diversion) [gpcd]		237	199	190				237	199	190	4
	Consumptive factor [%]		59%	59%	59%				59%	59%	59%	
	M&I Demand (Consumptive)		360	462	596	0	0	0	360	462	596	
	Self Served Industrial Demand (Consumptive)		0	0	0	8	17	17	8	17	17	5
	Demand (Consumptive)		**360**	**462**	**596**	**8**	**17**	**17**	**368**	**480**	**613**	
Energy	**Demand (Consumptive)**		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	6
Minerals	**Demand (Consumptive)**		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	7
Fish, Wildlife, and Recreation	**Demand (Consumptive)**		**0**	**0**	**0**	**2**	**2**	**2**	**2**	**2**	**2**	8
Tribal	**Demand (Consumptive)**		**0**	**0**	**0**	**9**	**9**	**9**	**9**	**9**	**9**	9
Total Hydrologic Basin	**Demand (Consumptive)**		**360**	**462**	**596**	**19**	**28**	**28**	**379**	**491**	**624**	
Adjacent Areas												
Agricultural	Irrigated Acreage [thousands]											
	Per-Acre Water Delivery (Diversion) [af/ac/yr]											
	Consumptive factor [%]											
	Demand (Diversion)											
	Demand (Consumptive)											
Municipal and Industrial (M&I)	Population[thousands]											
	M&I Per Capita Use (Diversion) [gpcd]											
	Consumptive factor [%]											
	M&I Demand (Diversion)											
	Self Served Industrial Demand (Diversion)											
	Demand (Diversion)											
	Demand (Consumptive)											
Energy	**Demand (Diversion)**											
Minerals	**Demand (Diversion)**											
Fish, Wildlife, and Recreation	**Demand (Diversion)**											
Tribal	**Demand (Diversion)**											
Total Adjacent Areas	Demand (Diversion)		0	0	0	0	0	0	0	0	0	
Total Demand in the Study Area			**360**	**462**	**596**	**19**	**28**	**28**	**379**	**491**	**624**	
Demand that may be met by Other Supplies			79	64	24	0	0	0	79	64	24	10
Potential Colorado River Demand			**281**	**398**	**572**	**19**	**28**	**28**	**300**	**427**	**600**	
Agricultural	Colorado River Demand		0	0	0	0	0	0	0	0	0	11
Municipal and Industrial	Colorado River Demand		281	398	572	8	17	17	289	416	589	
Energy	Colorado River Demand		0	0	0	0	0	0	0	0	0	
Minerals	Colorado River Demand		0	0	0	0	0	0	0	0	0	
Fish, Wildlife, and Recreation	Colorado River Demand		0	0	0	2	2	2	2	2	2	
Tribal	Colorado River Demand		0	0	0	9	9	9	9	9	9	

Notes

1) No change from Current Projected.
2) No change from Current Projected.
3) Clark County population: for 2011 used 2008 CBER population from 2012 to 2030 marginally increased population projection by the 2008 CBER annual growth rates to illustrate an Expansive Scenario, then a fixed absolute annual growth of ~52,000 annually. SNWA services ~97 percent of Clark County's population.
4) No change from Current Projected.
5) No change from Current Projected.
6) No change from Current Projected.
7) No change from Current Projected.
8) No change from Current Projected.
9) No change from Current Projected.
10) No change from Current Projected.
11) Colorado River demand is distributed among categories according to distribution of total Study Area demand in that planning area.

TABLE C8-5
Total Demand within Study Area under Rapid Growth (C2) Scenario

NEVADA

Units are thousand acre-feet per year, unless otherwise noted

LEGEND: 999 From Current Projected Data Sheet; 999 Input Parameter; 999 Computed

Hydrologic Basin	Planning Area / Year	SNWA 2015	SNWA 2035	SNWA 2060	Other 2015	Other 2035	Other 2060	STATE TOTAL 2015	STATE TOTAL 2035	STATE TOTAL 2060	Notes
Agricultural	Irrigated Acreage [thousands]	0	0	0	0	0	0	0	0	0	1
	Per-Acre Water Delivery (Diversion) [af/ac/yr]	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0	2
	Consumptive factor [%]	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	Demand (Consumptive)	**0**	**0**	**0**	**0**	**0**	**0**	0	0	0	
Municipal and Industrial (M&I)	Population [thousands]	2,576	3,840	5,097	0	0	0	2,576	3,840	5,097	3
	M&I Per Capita Use (Diversion) [gpcd]	237	199	190				237	199	190	4
	Consumptive factor [%]	59%	59%	59%				59%	59%	59%	
	M&I Demand (Consumptive)	360	462	596	0	0	0	360	462	596	
	Self Served Industrial Demand (Consumptive)	0	0	0	8	17	17	8	17	17	5
	Demand (Consumptive)	**360**	**462**	**596**	**8**	**17**	**17**	**368**	**480**	**613**	
Energy	**Demand (Consumptive)**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	6
Minerals	**Demand (Consumptive)**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	7
Fish, Wildlife, and Recreation	**Demand (Consumptive)**	**0**	**0**	**0**	**2**	**2**	**2**	**2**	**2**	**2**	8
Tribal	**Demand (Consumptive)**	**0**	**0**	**0**	**9**	**9**	**9**	**9**	**9**	**9**	9
Total Hydrologic Basin	**Demand (Consumptive)**	**360**	**462**	**596**	**19**	**28**	**28**	**379**	**491**	**624**	
Adjacent Areas											
Agricultural	Irrigated Acreage [thousands]										
	Per-Acre Water Delivery (Diversion) [af/ac/yr]										
	Consumptive factor [%]										
	Demand (Diversion)										
	Demand (Consumptive)										
Municipal and Industrial (M&I)	Population[thousands]										
	M&I Per Capita Use (Diversion) [gpcd]										
	Consumptive factor [%]										
	M&I Demand (Diversion)										
	Self Served Industrial Demand (Diversion)										
	Demand (Diversion)										
	Demand (Consumptive)										
Energy	**Demand (Diversion)**										
Minerals	**Demand (Diversion)**										
Fish, Wildlife, and Recreation	**Demand (Diversion)**										
Tribal	**Demand (Diversion)**										
Total Adjacent Areas	Demand (Diversion)	0	0	0	0	0	0	0	0	0	
Total Demand in the Study Area		**360**	**462**	**596**	**19**	**28**	**28**	**379**	**491**	**624**	
Demand that may be met by Other Supplies		79	64	24	0	0	0	79	64	24	10
Potential Colorado River Demand		**281**	**398**	**572**	**19**	**28**	**28**	**300**	**427**	**600**	
Agricultural	Colorado River Demand	0	0	0	0	0	0	0	0	0	11
Municipal and Industrial	Colorado River Demand	281	398	572	8	17	17	289	416	589	
Energy	Colorado River Demand	0	0	0	0	0	0	0	0	0	
Minerals	Colorado River Demand	0	0	0	0	0	0	0	0	0	
Fish, Wildlife, and Recreation	Colorado River Demand	0	0	0	2	2	2	2	2	2	
Tribal	Colorado River Demand	0	0	0	9	9	9	9	9	9	

Notes

1) No change from Current Projected.
2) No change from Current Projected.
3) Clark County population: for 2011 used 2008 CBER Population from 2012 to 2030 marginally increased population projection by the 2008 CBER annual growth rates to illustrate an Expansive Scenario, then a fixed absolute annual growth of ~52,000 annually. SNWA services ~97 percent of Clark County's population.
4) No change from Current Projected.
5) No change from Current Projected.
6) No change from Current Projected.
7) No change from Current Projected.
8) No change from Current Projected.
9) No change from Current Projected.
10) No change from Current Projected.
11) Colorado River demand is distributed among categories according to distribution of total Study Area demand in that planning area.

TABLE C8-6
Total Demand within Study Area under Enhanced Environment (D1) Scenario

NEVADA
Units are thousand acre-feet per year, unless otherwise noted

LEGEND: 999 From Current Projected Data Sheet; 999 Input Parameter; 999 Computed

Hydrologic Basin		Planning Area	SNWA			Other			STATE TOTAL			Notes
		Year	2015	2035	2060	2015	2035	2060	2015	2035	2060	
Agricultural	Irrigated Acreage [thousands]		0	0	0	0	0	0	0	0	0	1
	Per-Acre Water Delivery (Diversion) [af/ac/yr]		0.00	0.00	0.00	0.00	0.00	0.00	0	0	0	2
	Consumptive factor [%]		0%	0%	0%	0%	0%	0%	0%	0%	0%	
	Demand (Consumptive)		**0**	**0**	**0**	**0**	**0**	**0**	0	0	0	
Municipal and Industrial (M&I)	Population [thousands]		2,561	3,525	4,434	0	0	0	2,561	3,525	4,434	3
	M&I Per Capita Use (Diversion) [gpcd]		237	199	190				237	199	190	4
	Consumptive factor [%]		59%	59%	59%				59%	59%	59%	
	M&I Demand (Consumptive)		358	421	513	0	0	0	358	421	513	
	Self Served Industrial Demand (Consumptive)		0	0	0	8	17	17	8	17	17	5
	Demand (Consumptive)		**358**	**421**	**513**	**8**	**17**	**17**	**366**	**438**	**530**	
Energy	**Demand (Consumptive)**		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	6
Minerals	**Demand (Consumptive)**		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	7
Fish, Wildlife, and Recreation	**Demand (Consumptive)**		**0**	**0**	**0**	**2**	**2**	**2**	**2**	**2**	**2**	8
Tribal	**Demand (Consumptive)**		**0**	**0**	**0**	**9**	**9**	**9**	**9**	**9**	**9**	9
Total Hydrologic Basin	**Demand (Consumptive)**		**358**	**421**	**513**	**19**	**28**	**28**	**377**	**449**	**541**	
Adjacent Areas												
Agricultural	Irrigated Acreage [thousands]											
	Per-Acre Water Delivery (Diversion) [af/ac/yr]											
	Consumptive factor [%]											
	Demand (Diversion)											
	Demand (Consumptive)											
Municipal and Industrial (M&I)	Population[thousands]											
	M&I Per Capita Use (Diversion) [gpcd]											
	Consumptive factor [%]											
	M&I Demand (Diversion)											
	Self Served Industrial Demand (Diversion)											
	Demand (Diversion)											
	Demand (Consumptive)											
Energy	**Demand (Diversion)**											
Minerals	**Demand (Diversion)**											
Fish, Wildlife, and Recreation	**Demand (Diversion)**											
Tribal	**Demand (Diversion)**											
Total Adjacent Areas	Demand (Diversion)		0	0	0	0	0	0	0	0	0	
Total Demand in the Study Area			**358**	**421**	**513**	**19**	**28**	**28**	**377**	**449**	**541**	
Demand that may be met by Other Supplies			77	64	24	0	0	0	77	64	24	10
Potential Colorado River Demand			**281**	**357**	**489**	**19**	**28**	**28**	**300**	**385**	**517**	
Agricultural	Colorado River Demand		0	0	0	0	0	0	0	0	0	11
Municipal and Industrial	Colorado River Demand		281	357	489	8	17	17	289	374	506	
Energy	Colorado River Demand		0	0	0	0	0	0	0	0	0	
Minerals	Colorado River Demand		0	0	0	0	0	0	0	0	0	
Fish, Wildlife, and Recreation	Colorado River Demand		0	0	0	2	2	2	2	2	2	
Tribal	Colorado River Demand		0	0	0	9	9	9	9	9	9	

Notes

1) No change from Current Projected.
2) No change from Current Projected.
3) No change from Current Projected.
4) No change from Current Projected.
5) No change from Current Projected.
6) No change from Current Projected.
7) No change from Current Projected.
8) No change from Current Projected.
9) No change from Current Projected.
10) No change from Current Projected.
11) Colorado River demand is distributed among categories according to distribution of total Study Area demand in that planning area.

TABLE C8-7
Total Demand within Study Area under Enhanced Environment (D2) Scenario

NEVADA
Units are thousand acre-feet per year, unless otherwise noted

LEGEND: 999 From Current Projected Data Sheet; 999 Computed; 999 Input Parameter

Hydrologic Basin	Planning Area / Year	SNWA 2015	SNWA 2035	SNWA 2060	Other 2015	Other 2035	Other 2060	STATE TOTAL 2015	STATE TOTAL 2035	STATE TOTAL 2060	Notes
Agricultural	Irrigated Acreage [thousands]	0	0	0	0	0	0	0	0	0	1
	Per-Acre Water Delivery (Diversion) [af/ac/yr]	0.00	0.00	0.00	0.00	0.00	0.00	0	0	0	2
	Consumptive factor [%]	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	Demand (Consumptive)	**0**	**0**	**0**	**0**	**0**	**0**	0	0	0	
Municipal and Industrial (M&I)	Population [thousands]	2,576	3,840	5,097	0	0	0	2,576	3,840	5,097	3
	M&I Per Capita Use (Diversion) [gpcd]	237	199	190				237	199	190	4
	Consumptive factor [%]	59%	59%	59%				59%	59%	59%	
	M&I Demand (Consumptive)	360	462	596	0	0	0	360	462	596	
	Self Served Industrial Demand (Consumptive)	0	0	0	8	17	17	8	17	17	5
	Demand (Consumptive)	**360**	**462**	**596**	**8**	**17**	**17**	**368**	**480**	**613**	
Energy	**Demand (Consumptive)**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	6
Minerals	**Demand (Consumptive)**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	7
Fish, Wildlife, and Recreation	**Demand (Consumptive)**	**0**	**0**	**0**	**2**	**2**	**2**	**2**	**2**	**2**	8
Tribal	**Demand (Consumptive)**	**0**	**0**	**0**	**9**	**9**	**9**	**9**	**9**	**9**	9
Total Hydrologic Basin	**Demand (Consumptive)**	**360**	**462**	**596**	**19**	**28**	**28**	**379**	**491**	**624**	
Adjacent Areas											
Agricultural	Irrigated Acreage [thousands]										
	Per-Acre Water Delivery (Diversion) [af/ac/yr]										
	Consumptive factor [%]										
	Demand (Diversion)										
	Demand (Consumptive)										
Municipal and Industrial (M&I)	Population[thousands]										
	M&I Per Capita Use (Diversion) [gpcd]										
	Consumptive factor [%]										
	M&I Demand (Diversion)										
	Self Served Industrial Demand (Diversion)										
	Demand (Diversion)										
	Demand (Consumptive)										
Energy	**Demand (Diversion)**										
Minerals	**Demand (Diversion)**										
Fish, Wildlife, and Recreation	**Demand (Diversion)**										
Tribal	**Demand (Diversion)**										
Total Adjacent Areas	Demand (Diversion)	0	0	0	0	0	0	0	0	0	
Total Demand in the Study Area		**360**	**462**	**596**	**19**	**28**	**28**	**379**	**491**	**624**	
Demand that may be met by Other Supplies		79	64	24	0	0	0	79	64	24	10
Potential Colorado River Demand		**281**	**398**	**572**	**19**	**28**	**28**	**300**	**427**	**600**	
Agricultural	Colorado River Demand	0	0	0	0	0	0	0	0	0	11
Municipal and Industrial	Colorado River Demand	281	398	572	8	17	17	289	416	589	
Energy	Colorado River Demand	0	0	0	0	0	0	0	0	0	
Minerals	Colorado River Demand	0	0	0	0	0	0	0	0	0	
Fish, Wildlife, and Recreation	Colorado River Demand	0	0	0	2	2	2	2	2	2	
Tribal	Colorado River Demand	0	0	0	9	9	9	9	9	9	

Notes

1) No change from Current Projected.
2) No change from Current Projected.
3) No change from Current Projected.
4) No change from Current Projected.
5) No change from Current Projected.
6) No change from Current Projected.
7) No change from Current Projected.
8) No change from Current Projected.
9) No change from Current Projected.
10) No change from Current Projected.
11) Colorado River demand is distributed among categories according to distribution of total Study Area demand in that planning area.

4.0 References

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