
WATER QUALITY MANAGEMENT PLAN FOR THE CARSON RIVER

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Prepared for:

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SECTION 5.0**WASTEWATER TREATMENT FACILITIES**

Discharges to the Carson River from WWTFs ceased in 1987. The elimination of point discharges to the Carson River significantly changed how discharges from WWTFs are dealt with. WWTFs in the Carson River Basin can currently handle discharges in two ways; one option is discharging wastewater to effluent management areas such as RIBs and leach fields, and the other option is discharging wastewater to winter storage reservoirs where effluent is held until it can be reused as surface irrigation on community and private lands such as golf courses, ranches, farms, residential developments, schools and parks or to provide water for wetlands. Discharges to effluent reuse areas are regulated as point sources, but in practice, these discharges act as potential nonpoint sources of pollution. This complicates wastewater discharges, as they must be thought of holistically. Not only must the quality of water discharged be considered, but the BMPs employed in areas where the water is discharged must also be considered.

5.1 Current and Projected Wastewater Facilities

A number of planning documents have been developed to evaluate water demands and wastewater loading rates for the communities in the Carson River Basin. Although most of the following documents focus on the water supply side, several address the beneficial use of treated effluent from WWTFs.

- AMEC Infrastructure: *Effluent Management Plan for the Silver Springs Water Reclamation Facility*, Prepared for the Silver Springs GID, 2001
- Brown and Caldwell: *Water Resource Analysis for the Carson River Watershed*, Prepared for the Carson Water Subconservancy District, 2000
- Brown and Caldwell: *Interim Water Master Plan*, Prepared for Carson City Development Services, 2002
- Brown and Caldwell: *Water and Wastewater Facilities Plan*, Prepared for Churchill County Planning Department, 2003
- Brown and Caldwell: *Churchill County Wastewater Facilities Preliminary Engineering Report*, Prepared for Churchill County Planning Department, 2003

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- Brown and Caldwell: *Water Facilities Master Plan*, Prepared for Lyon County -- Utilities Division, draft in process
 - Brown and Caldwell: *Wastewater Facilities Master Plan*, Prepared for Lyon County -- Utilities Division, draft in process
 - Brown and Caldwell: *Comprehensive Water Master Plan*, Prepared for Carson City Development Services, draft in process
 - HDR Engineering, Inc.: *Reuse Master Plan Update*, Prepared for Carson City Development Services, 2001
 - HDR Engineering, Inc.: *Wetlands Capacity Study*, Prepared for Incline Village GID, 1999
 - Kennedy/Jenks Consultants: *Water Resource Analysis of the Upper Carson River Basin*, Prepared for the Carson Water Subconservancy District, 1998
 - Nevada Division of Water Planning: *Carson River Chronology*, 1997
 - Nevada Division of Water Planning: *Douglas County Socioeconomic Overview*, 1999
 - Nevada Division of Water Planning: *Carson City Socioeconomic Overview*, 1999
 - Nevada Division of Water Planning: *Lyon County Socioeconomic Overview*, 1999
 - Nevada Division of Water Planning: *Churchill County Socioeconomic Overview*, 1999
 - Vasey Engineering: *Carson Valley Comprehensive Water Plan*, Prepared for Douglas County Public Works Department, 1994
 - Vasey Engineering: *Carson Valley Wastewater Plan*, Prepared for Douglas County, 1993
 - Water Inc.: *Carson Valley Population and Municipal and Industrial Water Use Forecasts*, Prepared for the Carson Valley Water Authority, 1998
 - Water Research and Development, Inc.: *Final Draft Churchill County Water Resources Plan*, 2000

In addition to these reports, the following utilities/agencies with existing or planned effluent management operations within the Basin were contacted to provide supplemental information:

- Markleeville Public Utilities District (PUD)
- South Tahoe PUD
- U.S. Fish and Wildlife Service (USFWS) Fish Hatchery
- Incline Village General Improvement District (GID)
- Douglas County Sewer Improvement Districts (SID)
- Minden-Gardnerville Sanitation District (MGSD)
- Indian Hills GID

- Carson City Development Services (CCDS)
- State Prison Farm
- Lyon County – Dayton Utilities
- Silver Springs GID
- City of Fallon
- Churchill County

The water demand and wastewater load projections through 2025 for the Carson River Basin are based on the reports and information sources listed above. Beginning with 2000 census data, or estimates for counties with populations outside of the Basin, Table 5-1 summarizes the water demand information in five-year increments for each County based on: 1) the State Demographer population projections with revisions based on current County planning documents; and 2) the per capita consumption rates described in recent planning documents, held constant for the 20-year planning period (0.30 afy for Carson Valley; 0.21 afy for Carson City; 0.22 afy for Lyon County; and 0.27 afy for Churchill County) (Brown and Caldwell, 2000). Water demand for the Alpine County portion of the Carson River Basin is not quantified at the present time.

Table 5-1. Population and Water Demand Estimates for the Carson River Basin 2000 - 2025

Year	Douglas County (Carson Valley)		Carson City		Lyon County (Carson River Corridor)		Churchill County		Total	
	Population	Water Demand	Population	Water Demand	Population	Water Demand	Population	Water Demand	Population	Water Demand
	(persons)	(acre-feet)	(persons)	(acre-feet)	(persons)	(acre-feet)	(persons)	(acre-feet)	(persons)	(acre-feet)
2000	33,875	10,163	52,455	12,805	14,195	3,123	23,980	6,475	124,505	30,777
2005	35,905	10,772	56,145	11,790	22,710	4,996	26,875	7,256	141,635	34,814
2010	38,450	11,535	58,840	12,356	28,700	6,314	29,490	7,962	155,480	38,167
2015	41,525	12,458	61,650	12,947	33,280	7,322	32,055	8,655	168,510	41,382
2020	44,640	13,392	64,120	13,465	37,860	8,329	34,565	9,333	181,185	44,519
2025	47,540	14,262	65,955	13,851	42,440	9,337	37,055	10,005	192,990	47,455

notes: population estimates rounded to nearest 5 persons; 2000 population of Mound House, Dayton, Stagecoach and Silver Springs compiled from a variety of sources, including utility hook-ups; population growth in the Dayton area is based on current development plans, not State Demographer projections; population growth in Carson City and Churchill County may be greater than projected by the State Demographer; per capita water consumption in Douglas, Lyon and Churchill Counties may decrease over time as a result of land use changes and the implementation of conservation measures

Current and projected wastewater loads and facilities in the Nevada portion of the Carson River Basin are summarized in Table 5-2, with capacity values listed as average dry weather flow

(ADWF). This information has been provided to CWSD by the utilities and agencies listed above. Figures 5-1 through 5-5 depict the locations of these point sources. Sections 5.1.1 through 5.1.5 discuss current and projected wastewater facilities. The information for Alpine County includes the Markleeville PUD and the South Tahoe PUD. The information for Douglas County (Carson Valley) includes Incline Village GID, the Douglas County SID, the Minden-Gardnerville Sewer District and the Indian Hills GID. The information for Carson City includes State Prison lands. The information for Lyon County includes the Lyon County Utilities Division (Dayton and Mound House) and the Silver Springs GID. The information for Churchill County includes the City of Fallon and the proposed County wastewater utility, which is currently in a preliminary design phase. Available discharge permits are included in Appendix D of this revised 208 Plan.