

Nevada State Water Plan

Executive Summary

Findings and Recommendations

Introduction

The *Nevada State Water Plan* is designed to guide the development, management and use of the state's water resources. It assesses the quantity and quality of our water resources, identifies constraints and opportunities which affect water resource decision making, and seeks to coordinate future actions to ensure that Nevadans obtain the greatest benefit from their water resources in the years to come. The first state water plan, *Water for Nevada*, was developed in the late 1960s and early 1970s. It identified a variety of issues and contained recommendations for improved water management, many which have now been implemented. Administration and management of the state's water resources has continued to evolve much to the benefit of the state's residents and the resources themselves.

Much has changed in the 25 years since that first plan was completed. Nevada's population has tripled, there is increased competition for our limited water resources, and new state and federal regulations have been enacted which impact local and state water management. An updated plan is needed to establish a comprehensive process for addressing our evolving water needs and addressing the challenges generated by growth in this, the driest of states.

Development of the *State Water Plan* is mandated by Nevada Revised Statute (NRS) 540. The *State Water Plan* was developed by the Nevada Division of Water Planning (NDWP) with the assistance of the 15-member Advisory Board for Water Resources Planning and Development (Board), the Department of Conservation and Natural Resources (DCNR) Steering Committee, local, state and federal agencies, and the public. This Executive Summary summarizes some key components of the *State Water Plan*. While the *Plan* contains a wealth of information, the following summary focuses only on water demand projections, and issues and recommendations.

Future Water Needs

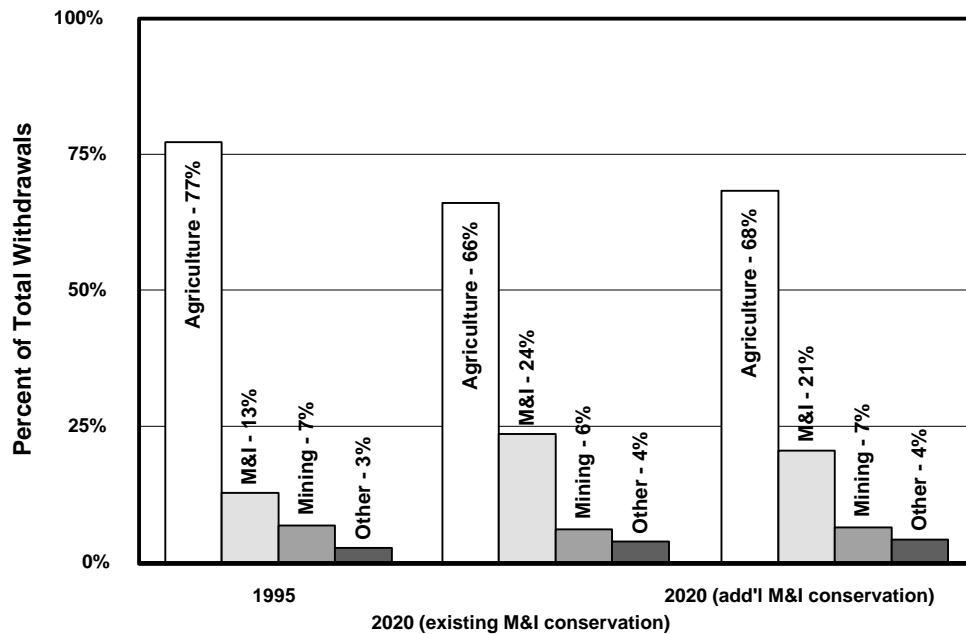
Total statewide water withdrawals are forecasted to increase about 9 percent from 4,041,000 acre-feet (af) in 1995 to 4,391,000 af in 2020, assuming current levels of conservation. Approximately one-half of these withdrawals are consumptively used. This projected increase in water use is directly attributable to Nevada's increasing population and related increases in economic endeavors. Figure ES-1 summarizes forecasted population, irrigated acres, and water withdrawals for the major use categories: agriculture, municipal and industrial (M&I), mining, and other self-supplied users (commercial, industrial, thermoelectric, domestic).

Fig. ES-1. Summary of Key Water Use Statistics

	1995	2020	Percent Increase or Decrease
Population	1,579,000	3,047,000	93%
Served by Public Supply Systems	1,488,000	2,907,000	95%
Self-Supplied	91,000	140,000	53%
Total Employment (workers)	784,000	1,512,000	93%
Irrigated Acres	715,000	666,000	-7%

	1995	2020 (existing M&I conservation)	2020 (add'l M&I conservation)
Water Withdrawals (acre-feet)			
Agriculture	3,120,000	2,902,000	2,902,000
Public Supply (M&I)	525,000	1,034,000	884,000
Mining	274,000	278,000	278,000
Other	122,000	177,000	177,000
Total	4,041,000	4,391,000	4,241,000

Distribution of Water Withdrawals by Category



The anticipated rise in total statewide water withdrawals primarily reflects expected increases in public supply for M&I water usage to meet the needs of a growing urban population, with expanding commercial and industrial activities. Nevada's population is projected to reach about 3,047,000 by the year 2020, with about 95 percent of these residents served by public water systems. It is expected that Nevada's population will become increasingly concentrated in its primary urban areas of Las Vegas (Clark County), Reno/Sparks (Washoe County) and Carson City, with varied spillover effects on neighboring counties.

M&I withdrawals currently account for about 13 percent of the water used in Nevada. Annual M&I water use is projected to increase from 525,000 af in 1995 to 1,034,000 af in 2020 (24 percent of total water withdrawals) based upon existing water use patterns and conservation measures (Figure ES-1). However, the implementation of additional conservation measures will result in M&I water withdrawals lower than the 1,034,000 af predicted. Planning groups for Southern Nevada and Washoe County have estimated that their planned additional conservation measures will result in an annual savings of about 150,000 af by the year 2020 (a 15 percent reduction in predicted withdrawals). The achievement of additional conservation is an integral part of Southern Nevada's water supply plan for the future.

About 77 percent of water withdrawals are for agricultural use. Forecasts suggest that agricultural water use could experience a 7 percent decline through 2020, with irrigated acreage possibly decreasing from about 715,000 to 666,000 acres. The historic data indicate that in some counties, irrigated acres will remain about the same, while in other counties, encroaching urbanization and the transfer of agricultural water rights to other uses will lead to reductions in irrigated acreage. Nonetheless, agriculture will continue to account for a majority of the statewide use during the next 20 years. It must be noted that statewide agricultural water use is highly variable, depending upon weather conditions and water supplies, and can vary more than 25 percent from a wet year to a dry year as a result of changing water availability.

Almost 6 to 7 percent of statewide water withdrawals occur in the mining industry. It is anticipated that mining water withdrawals will remain relatively constant at around 275,000 afy for the next 20 years. In 1995, a majority of the mining withdrawals were associated with mine dewatering with about 185,000 acre-feet per year either discharged to surface water systems, reinjected into aquifers or used by other sectors such as irrigation. This trend is expected to continue.

Self-supplied uses for commercial, industrial, thermoelectric, and domestic purposes are projected to increase from about 122,000 acre-feet in 1995 to 177,000 acre-feet in 2020. During the planning horizon, these self-supplied uses are expected to account for 3 to 4 percent of the total statewide water withdrawals.

Interest in obtaining the necessary water supplies for wildlife and environmental needs is increasing. Additionally, the popularity of water-based outdoor recreation continues to grow. It is anticipated that these trends will continue, resulting in increased water supply demands for wildlife, environmental and recreational purposes.

Future Water Supplies

Currently, surface water supplies are virtually fully appropriated. The increase in total statewide demand, particularly M&I water use, is expected to be met via better demand management (conservation), use of alternative sources (reused water, reclaimed water and greywater), purchases, leases or other transfers from existing water users, and by new groundwater appropriations. Much of the state's unappropriated groundwater is located in basins at a distance from urban centers. Thus, increasing attention will be placed on interbasin and intercounty transfers, and implementation of underutilized water management tools such as water marketing and water banking. Water for instream flow purposes, wildlife protection, environmental purposes and recreation will likely be generated by increased conservation and the acquisition of existing water rights.

Issues and Recommendations

The *Nevada State Water Plan* presents a number of important water-related issue papers and related recommendations for future water policy development and planning. The issues presented in the *Plan* were selected after an extensive public scoping process, and were then prioritized by members of the Board, administrators within DCNR, NDWP staff and inputs from the general public. Fourteen issue discussions and recommendations were then cooperatively developed. The list of issues discussed in the *State Water Plan* is by no means exhaustive, but does represent a spectrum of the significant issues affecting Nevada's water future. Future updates of the *Water Plan* will evaluate the state's progress in addressing these issues, as well as identify and address additional issues.

The *Plan's* 14 issues were divided into five categories: water supply and allocation, water quality, resource conservation and recreational uses, flood management, and water planning and management. Of the 14 issues, two deserve special mention. Data acquisition and management represents one of the greatest challenge facing water planners and managers in the state. The State must improve its capability to collect and analyze data about its water resources and about water usage statewide. Development of the 1999 *State Water Plan* was hampered by the inaccessibility of data and concern about the reliability of the existing data. This issue affects water planning at all levels of government. The quality of future state water plans will be impaired if the State does not address the issue of data acquisition and management in the near future.

The transfer of water between basins and between counties is a significant issue statewide. Currently, Nevada has more than 15 interbasin or intercounty water transfers, and water transfers represent a significant opportunity to meet future water needs. However, water managers need to carefully identify the potential benefits and impacts water transfers may on areas of origin and areas receiving the water. Information about water transfers must continue to be made available to the public, and the State must continue to evaluate transfer proposals to ensure that such transfers are in the public interest.

Following are summaries of the recommendations presented in the *State Water Plan*.

Water Supply and Allocation

Water Conservation. Recommendations include establishment of a state Office of Water Conservation, changes to existing conservation plan requirements, formalizing a credit for conservation program, providing assistance to agricultural users and state agencies in implementing conservation measures, establishment of a fund for water conservation demonstration projects, metering of public supply water deliveries, greater use of effluent and greywater, and initiation of a water measurement pilot program.

Integrated Water Management. Recommendations include continuation of monitoring to refine perennial yield estimates, increased development of recharge/recovery projects, increased use of a variety of water sources, and assurance that users of multiple water sources do not exceed their combined water use allocation.

Interbasin and Intercounty Transfers. Recommendations include recognition of the net value water transfers can have as long as potential impacts are addressed and public involvement is encouraged; and ensuring that water transfers are justified, environmentally sound, consistent with regional plans and do not unduly limit growth in the area of origin. Other recommendations encourage the development of mitigation plans, the provision of water planning assistance to local governments to help them respond to water transfer proposals and conducting additional research on water banking and water marketing.

Water Use Measurement and Estimation. Recommendations include development and funding of a comprehensive water use measurement and estimation program.

Domestic Wells. Recommendations include the State Engineer continuing to notify counties of potential water resource impacts due to multiple parceling activities and of appropriate water right dedication requirements; establishment of domestic well inventories; distribution of education materials to existing and potential domestic well owners; and funding support for the installation or expansion of regional water supply and/or wastewater treatment in areas where domestic well water quality has been impaired.

Water Quality

Nonpoint Source Pollution. Recommendations include the continuation of the nonpoint source program consisting of regulatory and voluntary measures.

Comprehensive Ground Water Protection and Management. Recommendations include continued support for the development and implementation of the Comprehensive State Ground Water Protection Program; development of a comprehensive groundwater monitoring network; the Division of Environmental Protection's continued evaluation of MTBE and other gasoline additives, and activities necessary to control nitrate contamination; and funding support for the installation or expansion of regional water supply systems in areas where septic tank pollution has become an issue.

Resource Conservation and Recreational Uses

Maintenance of Recreational Values. Recommendations include continued evaluation of the state's

water-based recreation resources and application of this information to recreation planning and management efforts; stronger consideration of the impacts to recreation resources resulting from proposed water-related projects, such as dams and reservoirs; continuation of water right acquisitions from willing sellers for recreational purposes; enhanced funding for the development of recreation facilities; increased research on alternative ways to meet water-based recreation needs; and increased management of watersheds to protect and enhance recreation values, among other considerations.

Water for Wildlife and Environmental Purposes. Recommendations include the development of a comprehensive and integrated management plan for prioritizing and coordinating maintenance of instream flows; adoption of a policy encouraging the purchase, lease or donation of water rights for wildlife and environmental purposes, and creation of a trust fund for acquisitions; establishment of incentive programs for the restoration of impaired aquatic and riparian resources; and the convening of a statewide working group of experts to identify alternative ways to obtain water supplies for wildlife and environmental purposes.

Flood Management

Flood Management in Nevada. Recommendations include amendment of NRS to include floodplain management as an official duty of the Division of Water Planning; development of a task force to develop a predictive model for alluvial fan flooding; development of a plan for reviewing, updating and maintaining flood maps; improved coordination with all involved agencies to improve floodplain management; creation of a flood mitigation fund; continued development of a state flood management plan; and revision of the state's model floodplain ordinance.

Water Planning and Management

Watershed Planning and Management. Recommendations include development of a Department of Conservation and Natural Resources strategy for participation in watershed planning efforts; support of watershed planning at the local level; continued development and implementation of basin plans for Nevada's hydrographic regions; funding for watershed planning groups; and participation in the review of watershed management plans.

Water Resources Data Management. Recommendations include support of agencies and local governments in the development of electronic databases and improved access to data; creation of a state GIS task force; development of a detailed water resources data inventory; development of information describing available data; development of a comprehensive water use measurement and estimation program; establishment of a groundwater quality and level monitoring network for priority basins; continued support for cooperative agreements with the U.S. Geological Survey for the funding of the stream gaging station network; and continued support of research projects such as efforts to update perennial yield estimates for priority basins.

Water Planning Assistance to Local Governments. Recommendations include enhancement of state water planning assistance to local governments through financial and/or technical means; improved water use measurement and estimation; improved data management, coordination and sharing; and enhanced watershed management and planning.

Water Education. Recommendations include expanding funding for the state’s water education program; creation of a water education coordinator position in the Division of Water Planning; increased evaluation of water education programs at all levels; and increased coordination of statewide (public and private) water education activities.