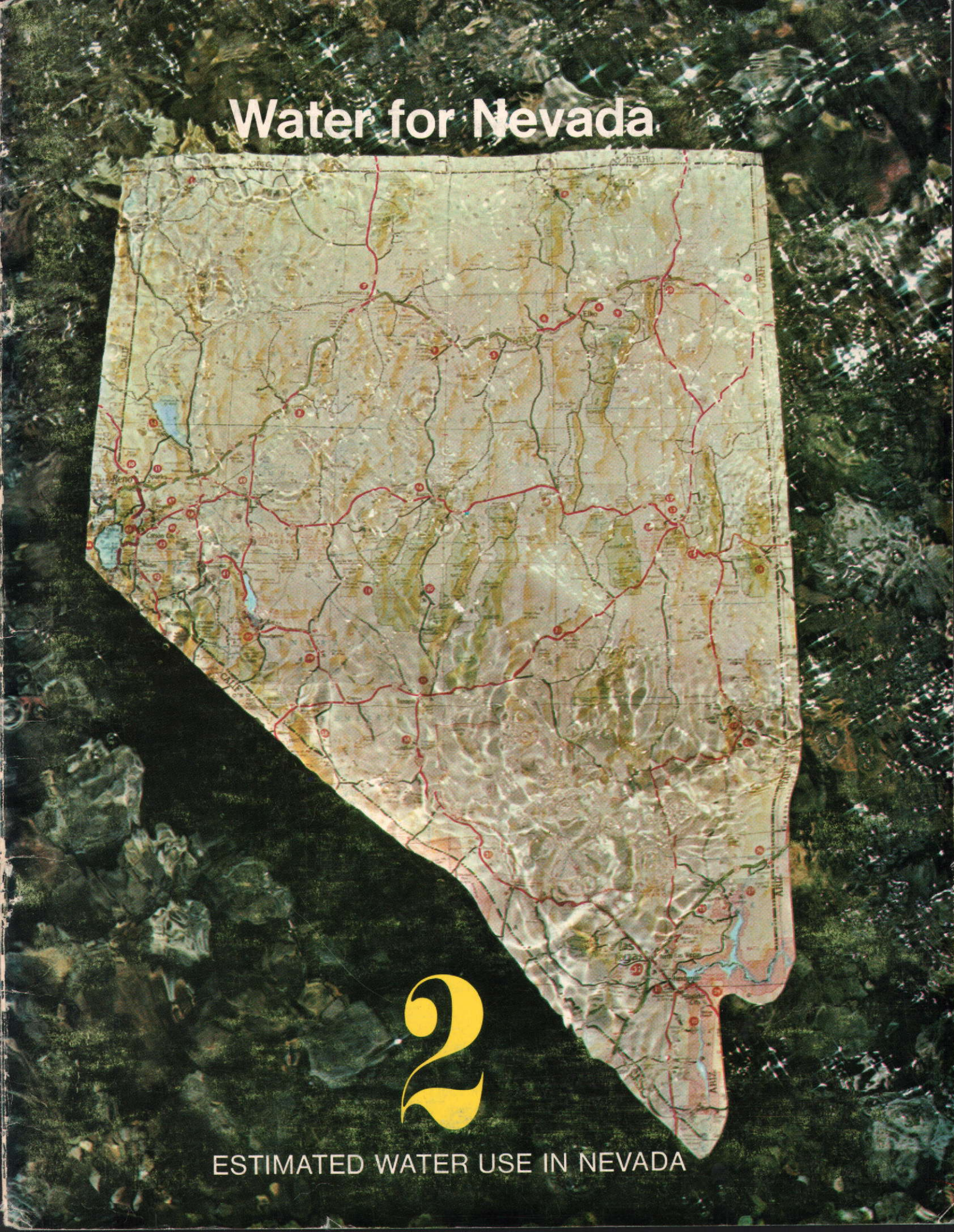
Water for Nevada



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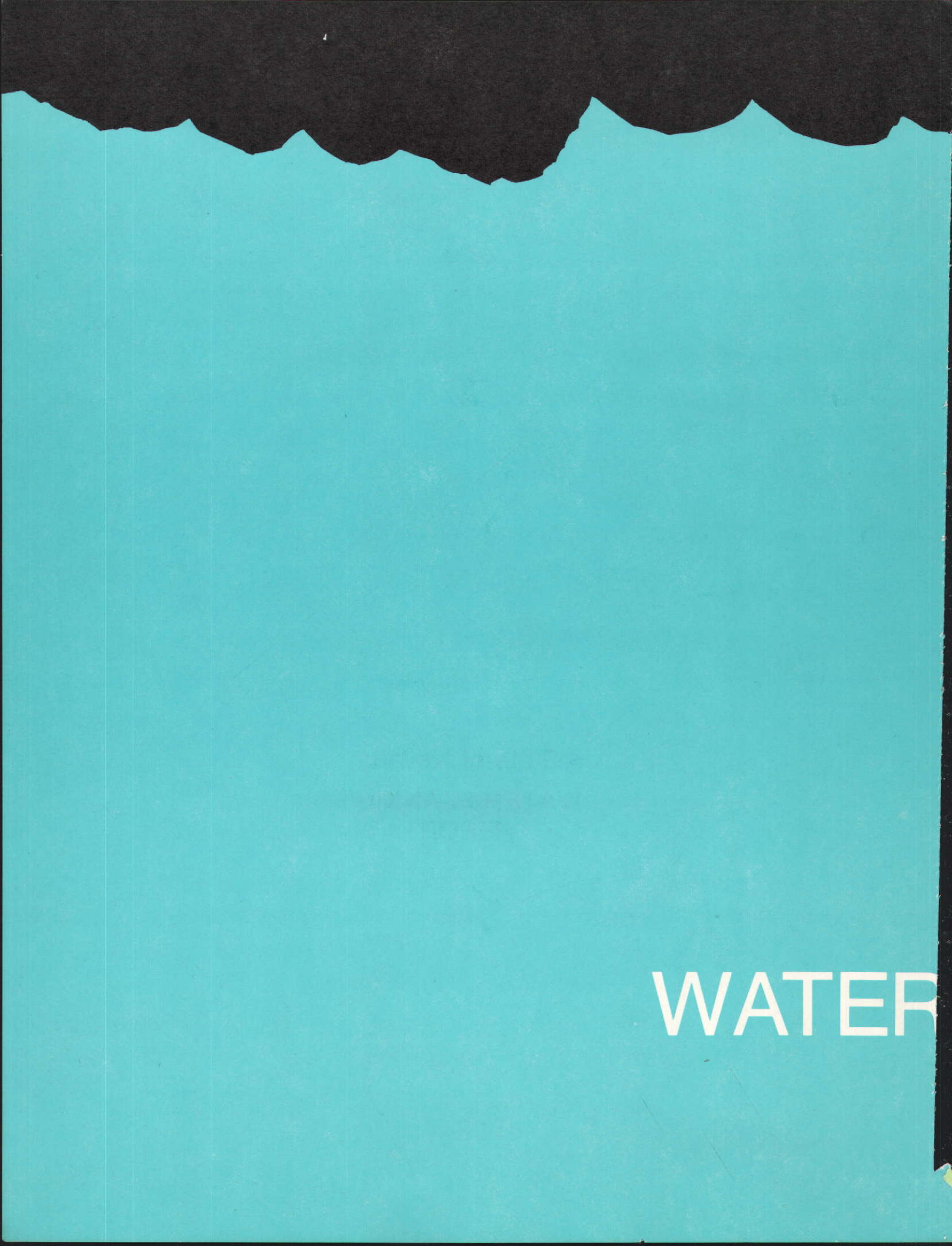
ESTIMATED WATER USE IN NEVADA

State of Nevada

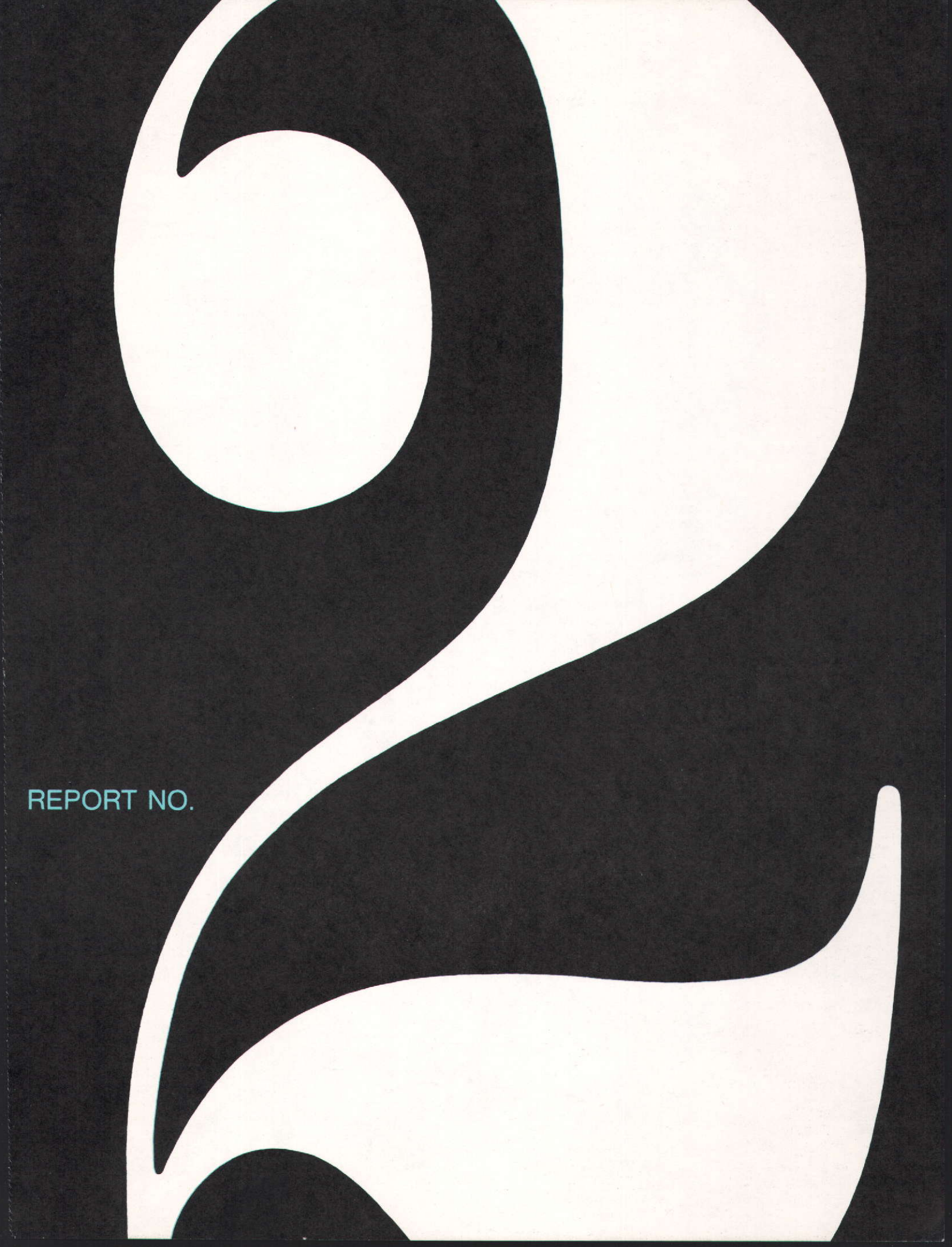
WATER PLANNING REPORT


WATER

FOR NEVADA

Prepared by the State Engineer's Office
JANUARY 1971

ESTIMATED WATER USE IN NEVADA


REPORT NO.
2

ELMO J. DeRICCO
Director

STATE OF NEVADA
DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES
DIVISION OF WATER RESOURCES
201 South Fall Street, Carson City, Nevada 89701

ROLAND D. WESTERGARD
State Engineer

In reply refer to
No.

Address All Communications to
the State Engineer, Division
of Water Resources

TO THE CITIZENS OF THE STATE OF NEVADA

Planning Report No. 2, "Estimated Water Use in Nevada", has been prepared for the people of the State as part of the State Water Planning effort and covers one portion of the inventory phase of the State Water Plan. This Report was prepared by Thomas J. Smales of the Division of Water Resources and J. R. Harrill of the U. S. Geological Survey.

Presented in this Report are detailed estimates of water withdrawals by hydrologic regions and counties for irrigation, public supply, industrial, electrical power and rural purposes in Nevada in 1969, including estimates of the amount of water actually consumed for each of these purposes. Areas in Nevada associated with non-withdrawal use (evaporation losses) from lakes, rivers, reservoirs and streams are shown. Trends and changes in use are described for the period 1950-69 and a history of water development in each category of use is given.

The estimates provided in this Report will be used as one of the basis for making projections of future water requirements in the State for different types of uses for specified target dates.

Respectfully,

Roland D. Westergard

Roland D. Westergard,
State Engineer

TABLE OF CONTENTS

2 ESTIMATED WATER USE IN NEVADA

SUMMARY

Withdrawals of water in Nevada from wells, springs, streams and rivers have increased from about 4.1 million acre-feet in 1950 to about 4.6 million ac. ft. in 1969. Use of spring discharge dropped slightly during this period, mainly due to the effects of heavy pumping in Las Vegas and Pahrump Valleys. Stream and river diversions increased from about 3.9 million ac. ft. to about 4.0 million ac. ft., an increase of about 2½ percent. Pumpage from wells has increased by more than nine fold — from some 53,000 ac. ft. in 1950 to about 490,000 ac. ft. in 1969.

Most of the water available from springs and streams has been developed for use over many years. The only increases that could be expected from these sources would be more diversions from the Colorado River and the reuse of presently available water. But most future increases will probably be from pumping ground water.

Between 1965-69 annual withdrawals for irrigation increased by less than 1 percent and electric power generation by about 4 percent. By contrast, public supply withdrawal soared by about 45 percent, and self-supplied industrial use by about 25 percent.

Rural use apparently decreased slightly, probably due to more information available about public supplies than to an actual decline in rural demands.

The estimated total withdrawal of 4.6 million ac. ft. in 1969 includes about 1 million ac. ft. of nonconsumptive withdrawals for hydroelectric power generation. This water was returned to natural sources and was subsequently withdrawn again for other purposes.

Of the 3.6 million ac. ft. withdrawn for uses other than hydroelectric power generation, about 1.7 million ac. ft. (almost half) was consumed. Water not consumed was returned to natural sources where it was available for reuse or consumption by natural evaporation.

Estimates of water withdrawn for all purposes in Nevada in 1969 are summarized by hydrographic regions in Table 1 and by counties in Table 2. The tables also list estimates of the total amount of withdrawn water consumed in each of the counties and hydrographic regions.

INTRODUCTION

The estimates of water use in this report have been compiled by the Nevada Division of Water Resources — Department of Conservation and Natural Resources and the U.S. Geological Survey to provide information useful in the formulation of a state water plan.

The need for such a plan is becoming increasingly urgent because of booming demand. Most of the available surface water in the state has been appropriated and used for irrigation for many years, hence the recent development of large areas of arid land has lead to heavy pumping of ground water for irrigation. And the state's rapid population growth has resulted in increased water requirements in urban and suburban areas. Consequently, there is a need to assess periodically the withdrawals of water from various sources, what it's used for, and the amount consumed so that current information will be available to those concerned with planning for future needs of the state.

This report updates and is similar in format to a report on estimated water use in Nevada, 1950-65

Walker Lake — west shore showing shoreline of old lake levels. *Philip Hyde*

(Harrill and Worts, 1968), which was a first attempt to provide both areal coverage of the state and some degree of detail in the distribution of water use from both surface and ground-water sources.

The scope of this report has been expanded, based on recommendations made in the Harrill and Worts study and the fact that more information is now available. The five major differences in scope:

(1) Land which is watered by overflow or wild flooding during most years has been included in the present tabulations of irrigated acreage.
(2) Estimates of irrigation withdrawals include all conveyance losses of water diverted from natural sources. Previous estimates included conveyance losses between "field headgates" and crops, but did not include losses along major irrigation ditches and canals that supply several farms. Consequently, previous estimated duties of water averaged about 25 percent less than the estimated duties used in this report.
(3) Withdrawals are listed as being from wells, springs and streams rather than from surface and ground-water sources.
(4) Estimates of water consumption are presented.
(5) Estimates of water used for electric power are included in the tabulations of total use.

Therefore, the specific intent of this report is to:

(1) Provide reasonably detailed estimates of water use for irrigation, public supply, industrial, electric power and rural purposes in Nevada during 1969.
(2) Estimate the amount of water actually consumed in use.
(3) Show trends and changes in use during the period 1950-69.
(4) Identify areas where information on water use is lacking or inadequate so that improved estimates may be made in the future.

Acknowledgment is made of the cooperation received from individual water companies and state and federal agencies which supplied specific reports on water used in 1969. Current estimates of ground-water pumpage and irrigated land for most areas where significant development has occurred were provided by the State Engineer. Mr. Wyatt Owens of the Nevada Division of Water Resources compiled a preliminary tabulation of water used for public supply. Much of the computation and data tabulation for the final report was done by Student Aide Loren Kalmen of the U.S. Geological Survey.

DEFINITION OF TERMS

Since water is as common as air — and as necessary to life on earth — it would seem hardly to need definition. Yet it is precisely because it is vital that water has been made the subject of a vast body of research and scientific study. As a result, technical terms and usages have developed which may be unfamiliar to the layman. Some of those used in this report are defined here.

Types of Water

Water is generally classified as either "surface water" or "ground water".

Surface water is water on the surface of the earth (Langbein and Isevi p. 20). Ground water lies deeper, in the ground's zone of saturation, from which wells, springs and ground-water runoff are supplied (Langbein and Isevi p. 11). These definitions are based on locations at which water occurs in a hydrologic system. However, a hydrologic system is dynamic, which means that as it moves through a system, the water changes between surface and ground water, depending on its occurrence at a given point.

Surface water withdrawals, or diversions, include water taken from streams, rivers, ponds, lakes, reservoirs, springs and all effluent and other waste water. Ground-water withdrawals include all water taken from wells. Appropriation of water has long been based on this classification, since it is well-suited to allocating either surface-water or ground-water rights.

But there are some water use estimates which do not fit this classification. For example, it is important to compare estimates of use with estimates of perennial yield to see whether the yield of a system is being exceeded. In this case, spring diversions, (which are supplied entirely by ground-water discharge), must be added to pumpage to determine how much of the ground-water resource is being used.

Because of these differences, and to provide maximum flexibility in use, withdrawals of water are not classified in this report as either ground or surface water. Instead, they are discussed by sources. The three principal sources:

(1) Streams. Includes all diversions from creeks, rivers, lakes, reservoirs, and ponds (if stream supplied); also includes effluent and other types of waste water.
(2) Springs. Includes all diversions from springs and other areas of natural ground-water discharge.
(3) Wells. Includes all water withdrawn by wells. It

may be pumped or flow naturally.

Note that water from springs is classed sometimes as surface water and sometimes as ground water, depending on whether one is concerned primarily with water occurrence or water source. Thus tabulations of surface-water rights include appropriations of spring discharge, and tabulations of ground-water discharge include volumes of spring discharge.

Types of Uses

Uses of water may be classified in several different ways. Among them:

Withdrawal use. Use which requires that the water be removed from the ground or diverted from a stream or lake. This type includes irrigation, domestic, stock, public supply, electric power and industrial uses. The quantity of water withdrawn at a designated place for use is variously referred to as pumpage, water intake, duty of water or water requirement (Am. Water Works Assoc. Task Group, 1953).

Nonwithdrawal use. Use which does not require diversion. Navigation, recreation, waste disposal and conservation of fish and wildlife are examples of nonwithdrawal uses.

Consumptive use. The quantity of water discharged to the atmosphere (evaporated) or incorporated in the products of the processes in connection with vegetative growth, food processing or incidental to an industrial process (Am. Water Works Assoc. Task Group, 1953).

Non-consumptive use. Includes water withdrawn for use that is not consumed, such as most water used in conjunction with non-withdrawal purposes, and water withdrawn for purposes such as hydro-power generation.

Estimates derived in this report are primarily of withdrawal uses and consumption. Preliminary estimates are also provided of water areas commonly associated with nonwithdrawal uses, and of the estimated average annual net evaporation from these areas.

Categories of Use

Irrigation water. Water diverted or pumped for irrigation of crops or pasture. It does not include undiverted water which naturally floods unimproved pastures by overflow during high-runoff years, and water which may beneficially subirrigate land for which no other source of water is diverted.

Public-supply water. Water withdrawn by and delivered to a public water system regardless of the use made of the water. Includes water supplied both by large municipal systems and by smaller quasi-municipal or privately-owned water companies.

Industrial self-supplied water. Water withdrawn from privately developed sources and delivered through water systems established entirely or primarily for commercial and industrial use. Includes water used by mining, manufacturing, military establishments, educational and penal institutions, golf courses, hotels, motels, restaurants, casinos and other small businesses.

Electric power. (public utility). Water withdrawn by public utilities for hydroelectric power generation and condenser cooling.

Rural use. Water used by livestock and homes (domestic) not supplied by public water systems. Includes suburban developments such as apartment houses, or trailer courts with their own wells, and tracts of homes served by a central cooperatively owned well, or small water company for which no other information is available.

Units of Measurement

Quantities of water given in this report are in acre feet per year. An ac. ft. of water will cover an area of one acre to a depth of one foot; it is about 325,900 gallons. Three ac. ft. equal about 1,000,000 gallons; 1,000 ac. ft. per year equal about 0.9 million gallons per day.

Hydrographic Regions

Nevada has been divided into 14 hydrographic regions and basins (Rush and others, 1968), which are now used to compile information pertaining to water resources and water use in studies made by the Nevada Division of Water Resources – Department of Conservation and Natural Resources and the U.S. Geological Survey. These regions are listed and shown on Figure 1. A detailed list of hydrographic areas (valleys) in each of the regions was prepared by Rush and others (1968, p. 12-27).

Estimates of water use are also given by counties. Position of counties with respect to the 14 hydrographic regions or basins is also shown on Figure 1. (Note that Ormsby County became Carson City in July, 1969, and is listed as such in all tables).

Approximate 1969-70 Population

Approximate populations are used to obtain indirect estimates of water use when direct estimates are not feasible. Table 3 lists approximate 1969-70 population of Nevada by both hydrographic regions and counties. The information in Table 3 and those estimates based on population are subject to revision when final census information is available.

HISTORY

The first major use of water by diversions dates back to Nevada's early mining boom, beginning about 1849. The irrigation of lands lying adjacent to the river channels was a first step brought about by the early construction of diversion canals to supply water power to the mills that were reducing ores into concentrates. From 1849 to 1860 practically all irrigation in Nevada was a by-product of mining development, as the market for agricultural products was limited to the demands of the surrounding mining districts.

A major industry in Nevada, mining has had to be self-sufficient enough to supply its own needs, including water. Probably the first most remarkable feat performed by a mining community was the bringing of water from Trail Canyon in Fish Lake Valley, Esmeralda County, to the town of Candelaria in the late 1860's. The task consisted of laying some 31 miles of hand-riveted spiral pipe over several mountain ridges to a hand-dug and rocked reservoir. The labor was accomplished by several hundred Chinese coolies.

Candelaria was followed by similar accomplishments in such areas as Virginia City, Tonopah, Tuscarora, Osceola — and scores of others, some forgotten, some that converted the water to public supply as mining activity declined.

The earliest appropriator of water for major irrigation purposes was one Nicholas Ambrose, who diverted water from the Carson River near Empire by building a dam in the river by the Brunswick Mill.

From 1860 to 1870 many disillusioned miners settled on lands in the river bottoms of the various streams in the state. With little effort they were able to divert water for the subirrigation or free flooding of these bottom lands.

Around 1870 the livestock industry began its long and colorful career as a key factor in the growth and economic development of Nevada. Because of the unlimited available free range, it attracted to the state many bona fide farmers whose first intentions were to produce forage crops for the use of those who owned stock but no land.

By 1905 all of the lands in Nevada which irrigation could reclaim at a low cost per acre had been taken up and was being farmed, thus forcing the new settlers to find land some distance from the main streams. The expense incurred in getting water to irrigate these outlying lands was prohibitive for the average individual, so they organized canal companies to build and to operate community canals and distribution systems. The method was economically feasible because the canals did not require costly structures and thus a heavy cash outlay; and most of the investment took the form of labor by the individual stockholders.

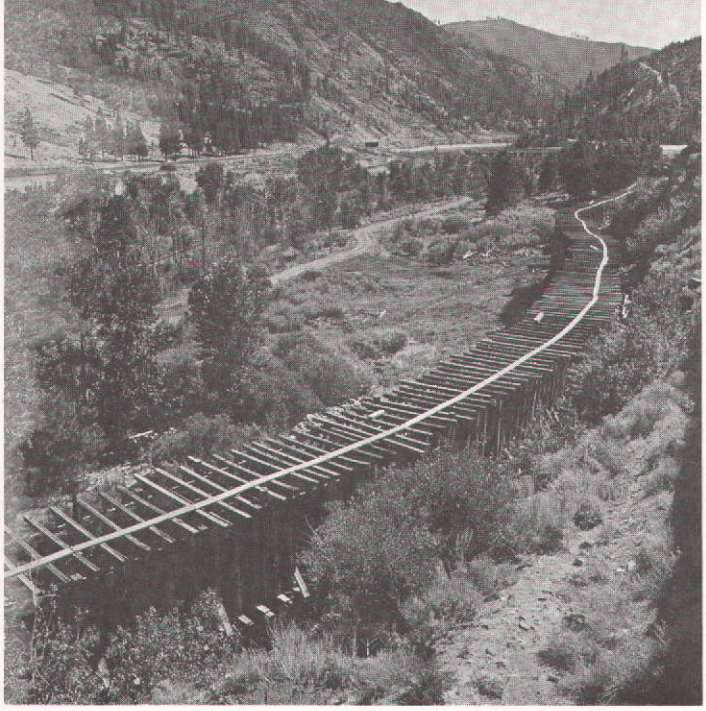
But even this kind of reclamation had its limits. Larger and more inaccessible areas of arid lands demanded reclamation through the application of irrigation water. This was sorely needed, but it required an expenditure of money for storage reservoirs, diversion dams and distribution systems beyond private resources.

It was the federal "Reclamation Act" of 1902 and enabling state legislation of 1903 that provided the tools to do such jobs. And the very first system built under that act in the entire United States was the Newlands Project at Fallon, Nevada. The initial phase of this project was the construction of Derby Dam on the Truckee River and 31 miles of canal to take the water to the Carson River. Later Lahontan Dam was built on the Carson River, downstream from where the Truckee River water entered the Carson. This project was to result in the development of 65,000 acres of productive land, plus 25,000 acres of pasture, all below Lahontan Dam.

From 1905 to about 1940, with the completion of these reservoirs and the subsequent development of the land being served from the reservoirs, the state found itself largely exhausted of major surface water supplies.

Industry made its major entrance into the water use field in the early 1940's with the construction of Basic Magnesium's pumping facilities on Lake Mead. This plus the establishment of military bases and the resultant influx of population put a burden on public water supply, particularly in southern Nevada. Ground water reservoirs developed by wells which had been used intermittently for supplemental supply and for peaking demands now became a prime source of water.

In the late 1940's it looked as if Nevada was experiencing a reincarnation of its earlier settlers. But now the water situation became even more critical. Returning veterans determined to have a piece of land of their own began filing Homestead and Desert Land



Water diverting flume, Truckee River. *Philip Hyde*

Entry applications in the various valleys of the state. But by then the surface waters had been virtually completely appropriated so these entrymen had to try to tap ground-water reservoirs. Unfortunately, only 3 percent of those entries which had been allowed ever received patents to the lands, and those that were patented usually took three separate entrymen. Little water was actually developed during this period.

The early 1950's brought in a different type of entryman. He was a bona fide farmer from farming states such as Idaho, Texas, Nebraska, California, etc., where subdivisions had grown up on his land, or where he was induced to join the Soil-Bank, or where the water level in his area had dropped so drastically he could no longer afford to pump. He was a man with some capital, experience and determination, but all of these would be tested by our arid desert valleys, diverse points of supply and even more diverse markets.

(A moratorium declared by the Bureau of Land Management in the middle 1960's for the filing of Desert Land Applications has temporarily suspended the reclamation of new lands.)

The six-week's "easy divorce" law and the legalization of gambling in 1931 accelerated the growth of Nevada to boom status during the late 1950's and all of the 1960's. In just three years, the use of water for public supply throughout the state increased by 45 percent, or from 109,000 ac. ft. in 1965 to 160,000 ac. ft. in 1969. For instance, the Las Vegas – North Las Vegas area alone used 51,000 ac. ft. in 1965 and increased this use to 76,500 ac. ft. in 1969.

And the Las Vegas Valley water use, which was approximately 15,000 ac. ft. in 1942, had more than doubled by 1950 to 34,000 ac. ft., and had zoomed to 47,500 ac. ft. by 1960, to 80,000 ac. ft. in 1965 – and to 99,000 ac. ft. in 1969.

Note that while these figures include water pumped from Lake Mead for use by the Las Vegas Valley Water District, they do not include water diverted from Lake Mead by Basic Management, Inc. for industrial purposes and for water used in the city of Henderson. That diversion began in April of 1942 and reached a peak of approximately 13,500 ac. ft. per year during 1943 and 1944. The amount fluctuated greatly in the years after World War II, but by 1965 it had reached 16,000 ac. ft. per year and had risen to 26,000 ac. ft. in 1969.

Reno and Sparks, while not booming in population at the fantastic rate of the Las Vegas area, were nonetheless having many growing pains. By 1965 they were using 32,000 ac. ft. per year for public supply; four years later usage reached 38,000 ac. ft.

The rise in public supply use in the Reno-Sparks area has resulted in a decrease of use for irrigation because as water rights are purchased for public supply the former cropland is used for residential development.

The Lake Tahoe area had long been the serene setting of mountain meadows and summer homes scattered along the shore, withdrawing less than 1,000 ac. ft. of water in both Nevada and California for public supply in 1948. But it erupted as a tourist mecca in the 1950's and 1960's, and water use soared along the Nevada shores as hotels, casinos and subdivisions were built to accommodate the visitors. Tahoe water use on the Nevada side alone amounted to 3,300 ac. ft. in 1965 and rose to 4,400 ac. ft. in 1969, when pollution problems temporarily halted additional construction within the basin.

Other Nevada cities, towns and communities have had their problems with public water supply. Many of the smaller communities whose water supply was from springs or streams until about 1930, were forced to search for underground waters because of population growth. Elko, Carlin, Winnemucca, Lovelock, Beatty, Bunkerville-Mesquite, Carson City, Ely, Eureka, Fernley, Hawthorne, Mina, Lamoille, and Empire are good examples of communities that outgrew their springs and streams as public water supplies.

THE CURRENT ROLE OF INDUSTRY

Even though the fabulous glory days of the Comstock and its equally romatic successors are gone, mining remains a key factor in Nevada's industrial picture: There are some mining operations which accounted for the use of 86,000 ac. ft. of water in 1969. Note these examples:

Basic Management, Inc., at Henderson, used 42,000 ac. ft., plus 6,000 ac. ft. for public supply.

Cooling pond — Tracy steam electric plant. Kaminski

Kennecott Copper Corp. is one of the state's largest mining operations — and a big water user. It had its beginning on June 7, 1906 when the ranch and appurtenant water rights on Duck Creek were purchased from W.G. Gallagher. By 1911 the Steptoe Valley Smelting and Mining Company, predecessor to Kennecott Copper Corp., had completed a 46,000 ft. wood and steel pipeline which conveyed Duck Creek water to the mill and smelter located at McGill. In 1969 this operation withdrew 11,000 ac. ft. from Duck Creek, 3,500 ac. ft. from McGill Spring, plus an additional 2,200 ac. ft. of ground water at Ruth.

The Foote Mineral Co. in Clayton Valley, situated near the old mining camp at Silver Peak, 40 miles southwest of Tonopah, had its beginning in 1965. In 1966 they pumped 3,000 ac. ft. and by 1969 had increased water use to 7,000 ac. ft. In this unique operation the water occurs in a brine heavily laden with lithium as well as many other by-products. The water is pumped through transit lines to evaporation ponds. The end result accounts for 25 percent of the total United States output of lithium carbonate.

Basic Refractories Brucite Plant at Gabbs had its beginning in the middle 1930's as Sierra Magnesite. Prior to the construction at Basic Magnesium, Inc. at Henderson its ores were shipped to San Jose, Calif. They have increased their pumpage from 300 ac. ft. in 1960 to 1,100 ac. ft. in 1969.

The Anaconda Copper Co. at Weed Heights near Yerington must pump water to de-water areas for mining. However, of the 9,000 ac. ft. pumped in 1969, all but 246 ac. ft. was used in the plant operation. This compares to 1960 when 3,200 ac. ft. were pumped and all of it was used.

Other mining interests included in the category, self-supplied industrial, along with their water use in 1969 are: U.S. Gypsum Co., at Empire, 90 ac. ft.; Cordero Mine, near McDermitt, 900 ac. ft.; Carlin Gold Mine, near Carlin, 200 ac. ft.; Cortez Gold Mine near the old mining town at Cortez, 20 miles south of Beowawe, 550 ac. ft.; Duval Corp., south of Battle Mountain, 2,000 ac. ft.; and Eagle Picher Co. plants located near Lovelock and in the Truckee Canyon, 170 ac. ft. each. There are, of course, many smaller mining operations that are included in the totals.

Golf courses which supply their own water are also included in this category. They include Hidden Valley, Reno Municipal, Lakeridge and Washoe County near Reno; Carson Valley Country Club near Gardnerville; Mason Valley Country Club and Penrose Country Club near Yerington; Stead Golf Course at the Stead Facilities north of Reno; Wells Golf Course at Wells; and the Elko Golf Course at Elko.

The Atomic Energy Commission used a total of approximately 1,500 ac. ft. of water in 1969 at their various test sites.

United States Military Establishments are also listed in this category and include the Naval Ammunition Depot at Hawthorne, 700 ac. ft.; Indian Springs Air Force Base, 254 ac. ft.; Wendover Air Force Base, 1,400 ac. ft.; and the Naval Air Station at Fallon, 415 ac. ft.

Nellis Air Force Base, major hotels and motels, golf courses, trailer parks, etc., located within Las Vegas Valley used a total of 15,000 ac. ft. in 1969.

WATER AND ELECTRIC POWER

The use of electricity, fundamental to practically all modern living, began in Nevada in 1882 with the incorporation of the Reno Electric Light & Power Co. The first operation, a small steamplant located near the center of Reno, was fired by wood supplemented by coal. However, the lack of adequate supplies of cheap fuel hastened the development of hydroelectric power.

Strangely enough the first hydroelectric plant was underground. About 1890 the Chollar Mining & Milling Co. installed the plant in the depths of one of its Comstock Lode Mines at Virginia City, and used its power to operate subterranean pumps and ventilation equipment.

By the turn of the century, silver mine operators of Virginia City found themselves in dire need of power for pumping, lighting and ventilation. The deep mines of the Comstock had filled with water and stopped production. Desperate, the operators joined forces and formed the Truckee River General Electric Co. The company built the Farad hydroplant near Floriston, Calif., and regular service at Virginia City began on Oct. 20, 1900. In 1905 this same company built the Fleish hydroelectric plant, located in Nevada just downstream from the Farad plant; in 1969 it used 220,000 ac. ft. of water to generate electricity. In 1912 the Verdi hydroplant, downstream from the Fleish plant, was completed; it used 225,000 ac. ft. of water in 1969. And the Washoe hydroelectric plant, below Verdi, completed in 1905, used 245,000 ac. ft. of water in 1969.

These three plants, now owned by Sierra Pacific Power Co., account for 685,000 ac. ft. of the total of 744,000 ac. ft. of water used for power generation in the Truckee River Basin. (The original steamplant in Reno was replaced by the Reno hydroplant in 1901 which was itself retired in 1960.)

Sierra Pacific Power Co. built the Tracy plant, a gas-fired steam unit on the Truckee River below Sparks in Storey County, in 1963. In 1965 a second unit was added, which increased water use from 24,000 ac. ft. to 59,000 ac. ft. in 1969. The water is used for cooling and is returned to the Truckee River after being held in a small reservoir to lower its temperature.

The Humboldt River Basin features two hydroelectric plants. One, owned by Nevada Power Co. (formerly Elko-Lamoille Power Co.) was constructed in 1913 on Lamoille Creek, about 20 miles south of Elko. This is still in operation and continues to produce 200 kw. per hour, and the water use in 1969 is the same as in 1913, i.e. 2,500 ac. ft.

The other plant is owned by the Wells Rural Electric Cooperative, formerly Wells Power Co. Built in 1928 on Trout Creek in Starr Valley west of Wells, it still operates and used 5,000 ac. ft. in 1969.

A by-product of the Newlands Project near Fallon was the construction of a hydroelectric plant at Lahontan Dam. This and a small hydroplant in the Vee Canal (an irrigation canal, built in 1955) are presently leased to Sierra Pacific Power Co. Water use in 1969 amounted to 110,000 ac. ft. at Lahontan Dam and 150,000 ac. ft. in the Vee Canal.

The largest draught of ground water for electric power occurs in Mason Valley near Yerington at Sierra Pacific Power Co.'s Fort Churchill plant which used 4,300 ac. ft. in 1969. The water is pumped from wells into a cooling tower, then to a 100-acre pond for cooling, and allowing a slight overflow into the Walker River. The water in the pond is recirculated.

The E.L. Cord System is a small privately-owned system serving the Circle L Ranch in Fish Lake Valley in Esmeralda County. Energy for this independent system is supplied by a 200 kw. hydroelectric plant constructed in 1941 which uses 400 ac. ft. of water of Leidy (Robinson) Creek.

The Nevada Power Co., successor to the Consolidated Power & Telephone Co. and the Southern Nevada Power Co., serves the Las Vegas area. Originating in 1906, the system supplied energy from internal combustion plants: in the 1906-1916 period from company-owned generation, and in the 1916-1937 period from the Los Angeles and Salt Lake City Railroad Co. generation. After 1937 all power requirements were met by purchases from the Boulder Dam Project, until growth of the area required construction of the present Clark, Reid-Gardner and Sunrise steam plants and the west side diesel plant.

The Reid-Gardner plant, located near Moapa in 1969 used 2,000 ac. ft. of Muddy River water during the winter months and 1,500 ac. ft. of ground water during the summer months.

The Clark and Sunrise plants used 1,700 ac. ft. of sewage effluent for their cooling towers.

Water used for hydroelectric power generation and for condenser cooling at steam electric plants is returned to the steam system for reuse. Of the water employed in evaporation cooling, about 85 percent is consumed; however this amounts to less than 1 percent of the water withdrawn for electric power purposes.

The Boulder Dam Project uses 4 million ac. ft. of Colorado River water for power generation which compares to slightly more than the 1 million ac. ft. used for power generation within the state.

RECREATION

One of the greatest uses of water in Nevada has long been for recreation. Falling under the category of "nonwithdrawal use," such recreation includes everything from skiing and snowmobiling, to swimming and boating, fishing and hunting. Nonwithdrawal use for waste disposal and dillution is a lesser, but significant use.

Although the present demand on water use for recreation seems especially strong, and we are inclined to think of water recreation as something that has burgeoned just since the late 1940's, such activity in Nevada is hardly new.

When Peter Skene Ogden first saw Nevada in 1825, the most common and widely distributed native game fish was the black-spotted (or Lahontan cutthroat) trout. At that time it occupied the whole Lahontan drainage system. That system consists of stream systems — the Humboldt River Basin, Carson River Basin, Walker River Basin and Truckee River Basin — as well as Lakes Tahoe, Pyramid, Winnemucca and Walker. This fish could be found all along the system, reaching out even to the Humboldt River and its tributaries in Pershing, Humboldt, Lander, Eureka and Elko counties, and in the Reese River and its feeding streams. It is now found mainly in Pyramid and Walker lakes.

The Chinook or King salmon, and the Dolly Varden trout, were also native to Nevada, spawning in waters of the Snake River Basin streams of the Owyhee, Bruneau, Jarbidge and Salmon Falls rivers. Utah cutthroat trout were native to various streams in the Snake Range and Kern mountains in the Great Salt Lake Basin in the eastern part of the state, while the Colorado River Basin contained what was probably a variety of cutthroat known as the Colorado cutthroat trout.

Enjoyed by all, Lake Tahoe. *Don Wolter*

Pyramid Lake and the Truckee River have the unique Cui-ui (pronounced "Kwee-wee"), a sucker that is found nowhere else in the world.

The large Central Region, the Northwest Region, Escalante Desert Basin and Death Valley Basin contain no native game fish. The Black Rock Desert Region has been equally barren — except for a perplexing occurrence of native black-spotted trout which exists in isolated Summit Lake in northwestern Humboldt County.

The first fish planting took place from the 1850's to 1870's. The method was a far cry from today's scientific approach. A settler — say a rancher or miner who lived in an area barren of game fish would find a stream that had natives in it, capture some fingerlings, carry them to his favorite stream and plant them.

In 1873, George and Henry Schmidtlein, living on the East side of the Toiyabes, noted that the mountains had fine streams but were devoid of fish. They trekked over the top of the range with pack horses and mules to trap cutthroat fingerlings in Washington Creek, a tributary of the Reese River. Crossing back over the range, they swung North and planted the small fish in Kingston Creek. Almost 100 years later — in early 1970 — the Nevada Department of Fish and Game built a dam and reservoir on that same creek.

State Sen. C.H. Eastman, representing Roop and Washoe counties, introduced the first legislation calling for the appointment of a fish commission in 1871. Although the bill was defeated, it helped to set the stage for future laws.

The first of these came in 1877, when the legislature approved "An Act to Provide for the Preservation of Fish in the Waters of this State". This created the state office of fish commissioner which since has grown to our present Nevada Department of Fish and Game.

The construction of dams and reservoirs for the reclamation of lands has damaged the natural spawning practices of our native game fish. The cutthroat trout fishery on the Truckee River began to fade with the building of Derby Dam in 1905. The Chinook or King salmon was wiped out completely from streams in the Snake River Basin with the building of dams on the Snake River in Idaho. The completion of Schurz Dam and Weber Reservoir caused the demise of native game fish in Walker Lake.

The Fish and Game Commission noted that such developments were making fishing the "step-child" of reclamation. To offset them, it built hatcheries for artificial planting, even introducing exotic species. The results have been more than positive. In some areas, fishing is better now than it ever was.

Nonwithdrawal uses of water do not involve any consumption in the ordinary sense. But evaporation losses occur from all water surfaces and these losses are considered consumption. They are associated with recreation when they come from terminal lakes (such as Pyramid and Walker) and from single-purpose recreational facilities. These include the many wildlife refuges throughout Nevada.

The process of evaporation, especially in such a dry state as Nevada, becomes both of key importance and of considerable fascination when viewed historically. Its effects reach in part from prehistoric times, when a vast ancient lake covered some 8,665 square miles of what is now desert, mostly in northwestern Nevada. That was the original Lake Lahontan, and today only two major remnants exist — Walker Lake and Pyramid Lake.

Walker Lake now occupies part of what was the southernmost arm of Lake Lahontan. Records indicate that the lake's level dropped during the early 1800's, but rose again to a maximum in the late 1800's — in 1882 it was at an altitude of 4,083 feet. By 1908 the level had fallen to 4,078 feet, and by 1927 it had dropped another 23 feet to an altitude of 4,055 feet. This latter decline came from large-scale diversions for irrigation and the construction of reservoirs at Topaz Lake and Bridgeport in the 1920's. And with the construction of Weber Reservoir in 1935, the water level has continued to drop; in 1968 the altitude of the lake was down to 3,970 feet.

At that 1968 stage, Walker Lake contained about 3

million ac. ft. of water and had a surface area of 38,000 acres. The net loss in evaporation averages about 140,000 ac. ft. per year.

Pyramid Lake, the other big remnant of Lake Lahontan, covered an area of approximately 144,000 acres about the time irrigation began in the Truckee River in 1860. Under natural conditions at that time, the lake level fluctuated as much as 20 feet between wet and dry periods, but its average altitude was about 3,878 feet.

In 1905, Derby Dam and the Truckee Canal were built to divert water to Lahontan Reservoir for use on the Newlands Project near Fallon. That sharply accelerated the decline of the lake level, and by 1968 it had fallen to an altitude of 3,789 feet – a drop of 89 feet. In 1969 the level rose slightly; at an altitude of 3,792.4 feet, Pyramid Lake in that year covered a surface area of 108,900 acres and contained a volume of 20.9 million ac. ft. of water. Net evaporation loss from the lake at this altitude is about 375,000 ac. ft. per year.

The Truckee and Carson rivers get considerable use as single purpose recreational facilities. The Stillwater Wildlife Management Area, contains a basic 22,800 acres of waterfowl habitat. In average or greater water years, the area has an additional 11,000 acres of habitat. Evaporation loss averages 91,200 ac. ft. per year normally, but in wetter water years it increases to as much as 135,200 ac. ft.

The Fernley Wildlife Management Area contains 540 acres of wildlife habitat, which loses 2,200 ac. ft. of water through evaporation.

The Truckee and Carson Rivers supply water for two private or semi-private gun clubs: the Canvasback Gun Club, which covers some 4,000 acres of water-fowl habitat; and the Greenhead Duck Club, which covers 5,000 acres of marsh land. Evaporation losses from these areas is about 36,000 ac. ft. per year.

The water supply for the Stillwater Wildlife Management Area, Fernley Wildlife Management Area, Greenhead Duck Club and the Canvasback Gun Club comes from spills and precautionary flood control release from Lahontan Reservoir, and drainage flows from the Newlands Project.

Single purpose recreational nonwithdrawal uses in the Colorado River Basin include Schroeder Reservoir, Overton Wildlife Management Area, Pahranagat National Wildlife Refuge, Eagle Valley Dam, Wayne E. Kirch Wildlife Management Area, and the Railroad Valley Wildlife Management Area. These all cover approximately 1,500 surface acres, and have a net evaporation loss of 6,000 ac. ft. of water.

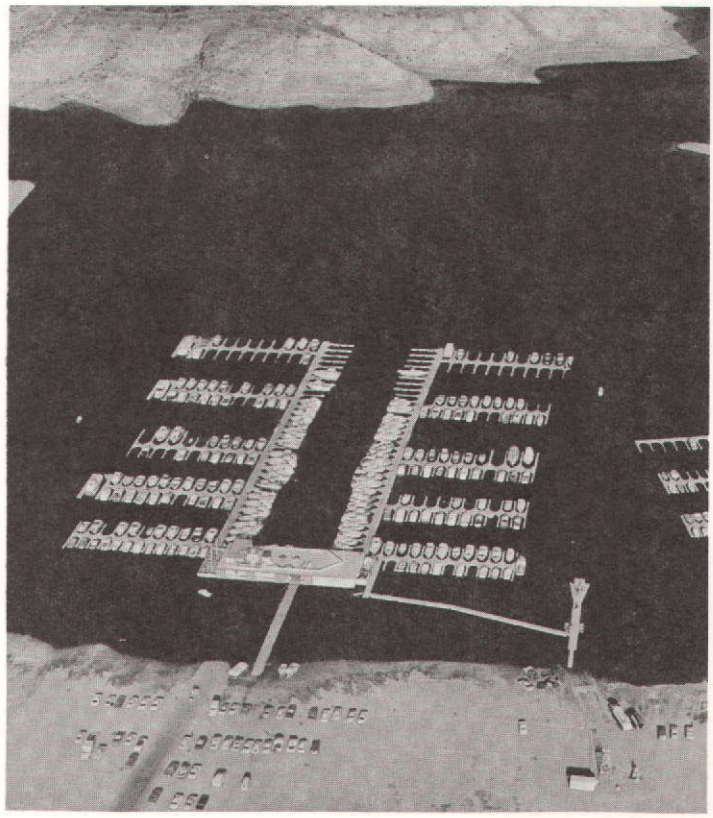
Evaporation losses attributed to recreation in the Snake River Basin amount to 3,400 ac. ft. from the 850 surface acre Sheep Creek Reservoir located in the Duck Valley Indian Reservation near Owyhee.

Other evaporation losses occurring throughout the state would be the same whether or not any recreational benefits were served. Most of these losses come from facilities constructed for reclamation or flood control purposes, but from which recreation has benefited because they provide fishing, water skiing, boating and swimming.

Other facilities on the Truckee River or its tributaries which provide exceptional recreational benefits are Donner and Independence lakes; Boca, Prosser Creek and Stampede Reservoirs, all located in California; and Big and Little Washoe lakes in Nevada. Areas in Nevada on the Truckee River total about 44,100 surface acres with evaporation losses of 176,400 ac. ft. per year.

The Carson River and the Truckee River supply water to the 11,000 surface acres of Lahontan Reservoir. The evaporation loss depends on the water level, but the maximum from a full reservoir would be approximately 44,000 ac. ft. per year.

Peaceful cove — Lake Mead. *Hwy. Dept.*



The Walker River supplies water for Bridgeport Reservoir, located in California; and Lake Topaz, located on the border of California and Nevada. That portion of Lake Topaz within Nevada covers 2,300 surface acres, with a maximum evaporation loss of approximately 9,200 ac. ft. Weber Reservoir, a 950-acre lake on the Walker River Indian Reservation, has a net evaporation loss of approximately 3,800 ac. ft. Drain water from irrigated lands in Smith Valley supplies Artesia Lake.

The Humboldt River supplies water to the Pitt-Taylor Reservoirs and Rye Patch Reservoir (near Lovelock) which cover 12,000 surface acres. Drain water, when available, supplies 7,000 surface acres of Toulon and Humboldt lakes below Lovelock, which provides excellent duck habitat.

In the Humboldt River Basin there are an additional 2,000 surface acres comprised of small reservoirs in Elko, Lander, Eureka and Humboldt counties; and numerous small lakes in Elko County – all of which provide many recreational benefits.

The Central Region contains 9,900 acres of lakes and reservoirs, the largest of which is 9,000 acre Ruby Lake, a single purpose recreation area within the Ruby Lake National Wildlife Refuge.

Government-owned Sheep Creek Reservoir, previously described, and Wildhorse Reservoir, recently reconstructed along with privately owned reservoirs of Wilson, Bull Run and Jake's Creek, comprise the major portion of Snake River Basin's 3,300 surface acres of lakes and reservoirs.

Approximately 3,800 acres of the 4,000 acres tributary to the Great Salt Lake Basin are located on Thousand Springs Creek and Crittenden Creek in Elko County. The remaining 200 acres are located on the Goshute Indian Reservation in White Pine County.

Nevada portions of Lake Mead and Lake Mohave on the Colorado River total 106,300 acres of surface area within the Lake Mead National Recreation Area.

In addition to lakes and reservoirs, Nevada has approximately 1,980 miles of fishable streams and rivers, covering a surface area of about 4,600 acres.

Nevada also has approximately 1.6 million acres of principal area of snow accumulation. No estimates have been made of evaporation and sublimation from areas of snow accumulation, because the actual area varies seasonally and from year to year; hence average rates of evaporation and sublimation from snow areas are not available. Preliminary estimates of net evaporation (total evaporation minus precipitation) from lakes, reservoirs, streams and rivers are made from the total area of lakes and reservoirs shown on Tables 14 and 15, and about 4,600 acres of fishable streams and rivers. If an average annual net evaporation rate of 4 feet per year is used for the entire state, then net evaporation from the 380,000 acres of lakes, reservoirs, streams and rivers in Nevada is approximately 1.5 million ac. ft. per year. Nearly half of that may be attributed solely to recreation, meaning that it comes from the 190,600 acres of terminal lakes and single purpose recreational facilities.

THE STREAM SYSTEM

In addition to its contribution to the Lahontan irrigation system, and its nearly 100,000 acres, Carson River supplies water to about 35,000 acres in Douglas County, 3,500 acres in the Dayton area and 2,500 acres between the Dayton area and Lahontan Dam. All of this totals about 131,000 of the 144,000 acres irrigated within the Carson River Basin. The rest includes 10,000 acres irrigated from numerous small streams flowing from the west side of Carson Valley, and 3,000 acres under such streams as Clear Creek, Ash Canyon, King's Canyon and other small streams within the basin.

The water of the Truckee River, besides being diverted to the Lahontan project, is used for the irrigation of 18,000 acres within the Truckee Meadows, 1,700 acres in Spanish Spring Valley, 1,580 acres in the area between Vista and the Pyramid Lake Indian Reservation, 300 acres on the Pyramid Lake Indian Reservation, plus 5,200 acres in Washoe and Pleasant Valleys south of Reno. The remaining 1,220 acres of a total of 28,000 acres irrigated within the Truckee River Basin is comprised of small acreages in Warm Spring Valley and Lake Tahoe Basin.

The third major stream system arising in California and flowing into Nevada is the Walker River, which accounts for practically all of the 74,000 irrigated acres within the Walker River Basin. While much of the land in Smith and Mason Valleys was under cultivation, the construction of Lake Topaz Reservoir in 1922 and the Bridgeport Reservoir in 1924 made possible the development of 22,000 acres in Smith Valley and 39,000 acres in Mason Valley. The construction of Weber Reservoir in 1934 provided the Walker River Indian Reservation with a firm supply of water for its 6,100 cultivated acres. The remaining acreage within the basin is located on the East Fork of the Walker River and Antelope Valley in Douglas County.

The Humboldt River system is unique in the state. From its beginning in flowing potholes at Wells, Nevada

(formerly Humboldt Wells), it runs in a westerly direction, picking up the flow off the tributaries from the north – Mary's River; North Fork of the Humboldt between Wells and Elko; Susie and Maggie Creeks near Carlin; Rock Creek near Dunphy, just east of Battle Mountain; and from the south – Starr Valley and Lamoille Creek between Wells and Elko; and South Fork of the Humboldt 10 miles west of Elko; Pine Creek near Palisade; and Little Rock and Pole Creeks near Golconda. The Humboldt River winds a tortuous route of 1,000 miles from Wells to the Humboldt Sink, west of Lovelock, an airline distance of only 250 miles.

The Humboldt River Basin also includes the Little Humboldt River in Paradise Valley, north of Winnemucca; Kelly Creek and Clover's area north of Battle Mountain; Reese River south of Battle Mountain; Pumpernickel Valley south of Golconda; and Grass Valley south of Winnemucca.

This basin contains the most irrigated acreage of the 14 basins or hydrographic regions in the state – 263,000 of the 825,000 irrigated acres in Nevada. And this does not include the 28,000 acres of pasture which are irrigated only in very wet years.

This basin has been divided into three areas: The Upper, which includes all of the basin upstream from Palisade; the Middle, which includes the area between Palisade and Comus, a siding on the Southern Pacific Railroad about nine miles northeast of Golconda; and the Lower, which includes all of the area from Comus to the Humboldt Sink.

The 124,000 acres irrigated in the Upper area are all supplied by the Humboldt River and tributaries. Some 70,500 acres of these are irrigated from tributaries which have their origin in the Ruby Mountains to the south and include Starr Valley, 13,000 acres; Lamoille area, 28,000 acres; and South Fork of the Humboldt River (including the Jiggs, Dixie Creek and Ten-Mile Creek areas), 29,500 acres. The major northern tributaries, Mary's River and the North Fork of the Humboldt River, supply water for the irrigation of 18,000 acres in each area. The remaining acreage is supplied by smaller tributaries and the Humboldt River itself, which accounts for 12,000 acres in the Upper area of the basin.

The Middle area of the basin contains 56,000 acres and includes not only the lands irrigated by the Humboldt River and tributaries, but also lands irrigated by small streams which would not reach the Humboldt, and lands irrigated solely from wells.

The Humboldt River and tributaries – Pine and Rock Creeks – supply water for 34,000 acres. About 12,000 acres are supplied by streams in Reese River Valley, Crescent, Pumpernickel and Carrice Lake Valleys and Kelly Creek and Clover's areas. Some 10,000 acres are supplied by ground water pumped from wells at Crescent, Reese River and Pumpernickel Valleys, and Boulder Flat, Clover, and Kelly Creek areas.

The Lower area of the basin has some 83,000 irrigated acres. This includes the Little Humboldt River, which is not legally a tributary to the Humboldt River, but contains 36,000 acres of irrigated land. Another 3,000 acres in Grass Valley, south of Winnemucca, are irrigated by small streams and wells. Of acreage located along the Humboldt River in the Winnemucca-Imlay-Mill City-Lovelock areas, 31,000 acres are located below the Pitt-Taylor Reservoirs and Rye Patch Dam.

Before Rye Patch Dam was constructed in the mid-1930's, the irrigated acreage in Lovelock Valley had been reduced from approximately 20,000 acres to something less than 10,000 acres. Much of this was due to the drought condition of the early 1930's. Yet even the large heads of water then available could not be controlled or used; so much of the water entered the Humboldt Sink to evaporate. But the construction of Rye Patch Dam boosted the cultivated acreage to its present 31,000 acres.

BORDER AREA WATER

The Black Rock Desert is the only one of the 14 hydrographic regions where most irrigation comes from wells; approximately 53 percent of the 71,000 acres is irrigated by ground water. This is a result of the Desert Land Entry programs which are highly successful in the Quinn River Valley (17,000 acres) and the King's River Valley (11,000) acres, both northwesterly of Winnemucca and close to the Oregon border. Other successful Desert Land Entry areas, though on a smaller scale, include Hualapai Flat, 3,300 acres, located 25 miles north of Gerlach; Pine Forest Valley, 2,000 acres, located 25 miles south of Denio; and other small areas in San Emidio Desert near Empire; Silver State Valley, north of Winnemucca; and Desert Valley, near the old railroad town of Jungo 25 miles west of Winnemucca. Other significant ground-water development areas are the Smoke Creek Desert and Black Rock Desert.

Surface water development occurs in: Quinn River Valley, 22,000 acres; Pine Forest Valley, 3,000 acres; King's River Valley, 1,600 acres. Lesser development has taken place in the Smoke Creek, Black Rock and San Emidio Deserts, and Silver State, Pine Forest and

Desert Valleys and Hualapai Flat.

While practically all of the water used in Nevada either flows into the state or originates and is used within the state, the Snake River Basin proves a major exception — its waters head in Nevada and flow into Idaho. However, 71,000 acres are irrigated in Nevada before the water passes the state line.

The South Fork of the Owyhee River supplies water to some 32,000 acres of Nevada land, including Independence Valley near Tuscarora. Wildhorse Dam, built on the Owyhee River near Mountain City in 1937, allowed for the orderly development of 14,000 acres in Nevada plus additional acreage in Idaho.

Salmon Falls Creek provides water for some 14,000 acres of Nevada land in the O'Neil Basin near Jackpot. Other streams flowing into Idaho which are used first in Nevada are Goose Creek, Bruneau River and the Jarbidge River.

The largest of the 14 regions is the Central Region. It is made up of parts of Elko, White Pine, Lincoln, Eureka, Lander, Clark, Pershing, Humboldt, Churchill, Nye, Mineral, Esmeralda and Lyon counties, and contains 78 hydrologic areas, 42 of which have no significant irrigated acreages. Pahrump Valley, unique for cotton raising, is one of the state's larger areas which derives most of its water from wells; they supplied 8,400 of the 8,600 acres irrigated.

Diamond Valley, located just north of Eureka, was used for grazing purposes until the early 1960's when the Desert Land Entry program made it possible for interested farmers to cultivate the land. Of the 17,700 acres irrigated, 15,000 acres are irrigated by wells drilled under the program.

Ruby, Clover, Big Smoky, Fish Lake, Steptoe, Spring and Newark Valleys account for 55,000 acres of the 111,000 acres irrigated in this region.

The sparsely populated Northwest Region has only 9,000 irrigated acres — 4,000 acres in the Denio area and 5,000 near the Vya area.

The only irrigation of any significance in the West Central Region is located in the Fernley area. The 4,500 acres there are supplied by the Truckee River through the Truckee Canal which delivers water to Lahontan Dam.

Some 15,000 acres of the 19,000 acres irrigated in the Great Salt Lake Region is supplied by Thousand Springs Creek located north of Montello. Most of the remaining acreage is located in Snake Valley which adjoins the Utah border.

Most of the 27,000 acres irrigated in the Colorado River Region is in the Muddy River Valley near Moapa and Overton; in the Virgin River Valley near Mesquite and Bunkerville; in Panaca Valley near Panaca; and on the White River near Preston and Lund. Other areas of development occur in Pahranagat Valley near Hiko and Alamo, Dry Valley, Rose Valley, Eagle Valley, Spring Valley, Clover Valley, Meadow Valley Wash, California Wash and Las Vegas Valley.

Irrigation in the Death Valley Region is limited to Oasis Valley near Beatty and the Amargosa Desert area. Total irrigated acreage is 2,300 acres.

The only region that has no irrigation at all is the Escalante Desert Basin, which lies about 20 miles east of Panaca and drains into Utah.

Approximately 3.3 million ac. ft. of water is diverted for irrigation within the state of which 3 million is from surface water or springs, the remaining 300,000 ac. ft. is developed from wells.

ESTIMATED WITHDRAWALS IN 1969

The following text information and tables are designed as a detail extention of the preceeding report.

Irrigation

Water withdrawals for irrigation were estimated by determining acreages in production in 1969 and multiplying them by an estimated duty of water. Individual estimates of irrigated land and water withdrawal were made for each of the 232 hydrographic areas of the state (Rush, 1968).

The individual estimates are based primarily on information from reports of the Nevada Department of Conservation and Natural Resources, Water Resources Reconnaissance Series and other published reports prepared cooperatively by the U.S. Geological Survey which provide areal coverage of the state.

Estimates in the Humboldt River Basin were obtained largely from reports on the water and related land resources of the Humboldt River Basin prepared by the Nevada Department of Conservation and Natural Resources and the United States Department of Agriculture. Estimates of current pumpage and acreages irrigated by pumping for developed valleys were obtained from the Nevada Division of Water Resources. Additional information on certain areas was supplied by county agents or other persons who were familiar with the areas in question. Estimates for the hydrographic areas were then grouped by hydrographic regions and by counties to form the composite estimates presented in Tables 4 and 5 respectively.

The estimated 825,000 acres of irrigated land

shown in Tables 4 and 5 run so much greater than the 730,000 acres previously estimated (Harrill and Worts, 1968) because that first estimate did not include some areas irrigated by wild flooding (which are included here) and because of increased acreages irrigated by pumping ground water.

Actual acreage irrigated varies from year to year depending on how much water is available. Thus it can range from as much as 1 million acres in very wet years to as little as 600,000 acres in extremely dry years.

The 825,000 acres of irrigated land discussed in this report include about 500,000 acres of cropland which are irrigated to some degree during virtually all years, and about 300,000 acres of pasture and native hay which are irrigated during most, but not all years.

The estimated duties of water for "irrigation withdrawals" in Tables 4 and 5 represent the amount diverted from streams and other natural sources and include all conveyance losses. Average duty of water estimated in this report is about 25 percent higher than the average duty estimated in previous reports as those reports included only the conveyance losses between the field headgate and crops. Consumption estimates are based on consumptive use rates used by Houston (1950) for various areas of the state.

Public Supply

Estimates of public supply withdrawals during 1969 are based largely on reports of water use supplied by towns and water companies. Where no direct estimates were available, public supply withdrawals were based on estimated populations served and per capita use rates approximately the same as those in nearby towns of similar size.

Tables 6 and 7 give estimates of public supply withdrawals for the principal towns and cities in Nevada by hydrographic regions and by counties. Water withdrawals by cooperatively owned systems and small private companies serving tracts of houses in the Las Vegas Valley area and in Hidden Valley near Reno are included in the public supply estimate. Withdrawals by other cooperatively owned systems or small water companies are included in the estimate of rural use developed later in this report.

Estimated consumption of water withdrawn averaged about 30 percent of the total withdrawal but ranged from 20 percent to nearly 50 percent, depending on the characteristics of each town. The percentage of water withdrawn that flowed through the sewer facility ranged from 20 to more than 80 percent, and averaged about 40 percent.

An estimated consumption of about 30 percent of all water withdrawn implies that about half of the water which does not flow to the waste facility is consumed; the rest must be accounted for either by pipe leakage, deep percolation of lawn water, lawn water runoff to gutters and storm drains, and other means. Additional information is needed before more accurate estimates of public supply consumption can be made.

Of the 160,000 ac. ft. of water withdrawn for public supply in 1969, about 70 percent came from wells. Per capita withdrawals for public supply ranged from 60 to 600 gallons per day, and averaged about 320 gallons per capita for the entire state. Nearly 50,000 ac. ft. of the 160,000 ac. ft. withdrawn were consumed.

Self-supplied Industrial Water

Tables 8 and 9 list estimated 1969 withdrawals of industrial self-supplied water in Nevada by hydrographic regions and by counties, respectively. The estimated 86,000 ac. ft. withdrawn includes use by self-supplied hotels, motels, and casinos, principally in Las Vegas, and water diverted from Lake Mead for industrial purposes. Water used for electric power generation is estimated separately. About 60 percent of all self-supplied industrial water withdrawn is estimated to be consumed.

Electric Power Generation

Tables 10 and 11 list estimates of water withdrawals for electric power generation in Nevada in 1969. The tables list withdrawals for both hydroelectric power generation and steam electric power generation. Estimates of withdrawals for hydroelectric power generation are based on hydraulic characteristics of the power plants, reported power output, periods of operation, and an assumed efficiency of 70 percent. These estimates do not include water withdrawn for electric power generation at Hoover and Davis dams. Estimated withdrawals for steam electric power generation are based on reported use by the companies.

Virtually none of the water used for hydroelectric power generation is consumed. Of the water used for condenser cooling at steam electric plants on the Truckee River, virtually all of the water withdrawn is returned to the river. However, other plants in the state employ evaporation towers for cooling and about 85 per cent of the water withdrawn is thus consumed. Treated effluent is used for condenser cooling at steam electric plants in Las Vegas.

Of the total 1,021,000 ac. ft. withdrawn for power generation, only about 8,300 ac. ft. — less than 1 percent — was consumed.

Rural Use (Livestock and Domestic)

Rural use estimates include withdrawals for both domestic and livestock use. Domestic use is measured on

the basis of rural populations and an average per capita use of 100 gpd (gallons per day) in rural areas and 200 gpd in suburban areas not served by public supplies.

Rural populations are defined as the difference between total populations listed in Table 3 and populations served by public supplies, which are listed in Tables 6 and 7. This use includes water pumped by cooperatively owned systems and small water companies that serve tract homes in suburban areas, for which no other information is available.

Stock use includes about 13,000 milk cows at 20 gpd, 600,000 range cattle at 6 gpd, 235,000 sheep at 2 gpd, 6,000 hogs and pigs at 2 gpd, and 13,000 horses and mules at 10 gpd (Mackichan and Kammerer, 1961, p. 4). These values on stock use do not include conveyance losses for winter stockwater diversions along irrigation canals. These losses probably run at several times the estimated use, but insufficient data is available to be certain.

Tables 12 and 13 list estimated 1969 withdrawals for rural use by hydrographic regions and counties. Estimated domestic withdrawals in 1969 are less than estimated for 1965. This drop is not due to an actual decrease in rural use, but is because information is now available on public supply use in some areas that were considered served by rural supplies in 1965.

NONWITHDRAWAL USE

Tables 14 and 15 list areas in Nevada commonly associated with nonwithdrawal uses — which are mainly for recreation purposes in this state — by hydrographic regions and by counties. The principal areas of snow accumulation associated with nonwithdrawal uses are those above 8,000 feet in national forests, but some privately owned land in the vicinity of Lake Tahoe is also included. Areas of lakes and reservoirs in the Great Basin part of Nevada were obtained from a tabulation prepared for the Great Basin Region Comprehensive Framework Study. Areas in the Snake River Basin and Colorado River Basin were estimated from published maps of the U.S. Geological Survey. Lengths of fishable streams and rivers were obtained from a report by the Nevada Fish and Game Commission (Frantz and King, 1958).

Nonwithdrawal uses do not involve any consumption as such; however, evaporation losses generally occur from all water surfaces. These losses are considered consumption associated with nonwithdrawal use, even though (except in reservoirs or regulated lakes) the same consumption would occur whether or not any use was made of the water.

No estimate is made of evaporation and sublimation from areas of snow accumulation because the actual area varies seasonally and from year to year. Also, average rates of evaporation and sublimation from snow areas are not available. Preliminary estimates of total evaporation minus precipitation from lakes, reservoirs, streams and rivers are made from the total area of lakes and reservoirs shown on Table 14 and 15, and about 4,600 surface areas of fishable streams and rivers estimated by Frantz and King (1958, p. 159). If an average annual net evaporation of 4 feet per year is used for the entire state, then net evaporation from the 380,000 acres of lakes, reservoirs, streams and rivers in Nevada is approximately 1,500,000 ac. ft. per year.

TRENDS IN USE 1959-69

Estimates of water use in Nevada for the years 1950, 1955, 1960 and 1965 and presented in the U.S. Geological Survey Circulars 115 (Mackichan, 1951), 398 (Mackichan, 1957), 456 (Mackichan and Kammerer, 1961), and 556 (Murray, 1968). More detailed estimates of use in 1965 are made in Nevada Department of Conservation and Natural Resources, Division of Water Resources Information Series Report 7, (Harrill and Worts, 1968). For purposes of comparison, estimates in these reports have been segregated into the three categories used in this report. In certain cases where new information is available, or where older estimates did not include all conveyance losses, former estimates have been revised. Table 16 summarizes these estimates and indicates which have been revised.

In general, total water use has risen sharply in all categories. This increase is due principally to withdrawals from wells, which have increased more than nine fold since 1950. They will probably continue to rise at a rate at least equal to the average annual increase of almost 30,000 ac. ft. per year during the 1965-69 period. Total spring diversions have dropped by about 6 percent since 1950. This was due mainly to heavy pumping in Pahrump and Las Vegas valleys, which has almost eliminated the natural spring discharge.

Stream diversions for irrigation have remained essentially the same. In suburban areas near Reno, irrigation use of stream and river water has dropped as water rights have been purchased for public supply, and former cropland has been turned to residential development. The slight rise in total stream withdrawals is due primarily to: (1) increased diversion of Colorado River water from Lake Mead; and (2) increased multiple use (reuse) of water.

Tables follow —

Table 1. – Summary of 1969 withdrawals in Nevada, by regions 1/

(Estimated withdrawals, in acre-feet, are significant to no more than two figures, columns may not cross-total due to independent rounding)

	Northwest Region	Black Rock Desert Region	Snake River Basin	Humboldt River Basin	West Central Region	Truckee River Basin	Western Region	Carson River Basin	Walker River Basin	Central Region	Great Salt Lake Basin	Colorado River Basin	Death Valley Basin	State
IRRIGATION 2/														
Wells	3,400	108,000	3,000	41,400	—	1,000	1,800	6,000	8,700	110,000	1,500	40,000	5,000	330,000
Springs	1,700	800	Minor	1,570	—	1,000	1,200	—	100	47,000	2,000	39,000	6,300	100,000
Streams	22,000	102,000	236,000	1,151,000	c 50,000	151,000	700	b 674,000	307,000	114,000	52,000	68,000	300	2,900,000
PUBLIC SUPPLY														
Wells	—	230	34	6,300	140	7,500	320	2,700	1,500	1,500	—	80,500	120	101,000
Springs	—	67	—	540	—	—	—	—	—	3,200	300	590	—	4,700
Streams	—	—	—	70	—	33,600	—	1,200	1,200	—	—	18,400	—	54,000
SELF-SUPPLIED INDUSTRIAL														
Wells	Minor	900	60	3,700	6	2,100	100	1,100	9,400	12,700	20	15,000	1,000	46,000
Springs	—	Minor	Minor	Minor	—	80	—	80	—	5,200	—	—	Minor	5,400
Streams	Minor	—	—	Minor	—	1,500	—	430	640	12,000	—	20,000	—	35,000
ELECTRIC POWER														
Wells	—	—	—	—	—	—	—	—	4,300	—	—	1,500	—	5,800
Springs	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Streams	—	—	—	7,500	—	744,000	—	260,000	—	400	—	3,700	—	1,016,000
RURAL														
Wells	61	85	88	500	21	1,800	30	1,200	340	400	45	1,600	60	6,200
Springs	45	85	70	340	20	110	10	70	20	300	24	400	10	1,500
Streams	140	300	320	1,000	30	300	—	480	250	480	90	90	—	3,500
TOTAL WITHDRAWAL														
Wells	3,500	109,000	3,200	52,000	170	12,000	2,200	11,000	24,000	125,000	1,600	139,000	6,200	490,000
Springs	1,700	950	70	2,400	20	1,200	1,200	150	120	56,000	2,300	40,000	6,300	110,000
Streams	22,000	102,000	236,000	1,160,000	50,000	930,000	700	886,000	309,000	127,000	52,000	110,000	300	4,000,000 a
AMOUNT CONSUMED	16,000	129,000	128,000	470,000	9,500	71,000	2,800	322,000	145,000	190,000	28,000	157,000	9,900	1,700,000

1. Does not include Escalante Desert Basin because there are just minor withdrawals from domestic wells.
2. Upper Humboldt Basin: wells, 1,400; springs, minor; streams, 614,000. Middle Humboldt Basin: wells, 24,000; springs, 970; streams, 215,000. Lower Humboldt Basin: wells, 16,000; springs, 600; streams, 322,000.

a. Includes about 1,000,000 acre-feet of nonconsumptive hydroelectric power withdrawals.
b. Includes 114,000 acre-feet withdrawn from the Truckee River through the Derby Canal.
c. Withdrawn from the Truckee River through the Derby Canal.

Table 2. — Summary of 1969 withdrawals in Nevada, by counties
(Estimated withdrawals, in acre-feet, are significant to no more than two figures, columns may not cross-total due to independent rounding)

	Carson City	Churchill	Clark	Douglas	Elko	Esmeralda	Eureka	Humboldt	Lander	Lincoln	Lyon	Mineral	Nye	Pershing	Storey	Washoe	White Pine	State
IRRIGATION																		
Wells	—	6,400	10,000	7,000	8,400	6,000	30,000	115,000	14,000	30,000	7,400	1,300	52,000	14,000	—	12,000	18,000	330,000
Springs	—	600	—	100	7,800	—	6,300	2,700	730	23,000	—	—	23,000	550	—	3,400	33,000	100,000
Streams	1,500	[b] 413,000	53,000	234,000	948,000	18,000	80,000	355,000	74,000	12,000	[c] 350,000	37,000	11,000	132,000	2,500	175,000	39,000	2,900,000
PUBLIC SUPPLY																		
Wells	1,400	900	80,000	415	3,700	20	7	1,150	350	639	1,150	630	850	1,200	—	7,900	550	101,000
Springs	—	—	540	—	700	—	26	130	10	55	—	45	25	—	—	67	3,100	4,700
Streams	1,000	—	18,000	1,200	3	—	—	70	—	—	—	1,200	—	—	176	32,400	—	54,000
SELF-SUPPLIED INDUSTRIAL																		
Wells	230	450	14,000	410	700	7,000	300	900	2,600	1,000	9,400	100	3,400	200	200	2,100	3,000	46,000
Springs	80	—	—	—	1,400	40	Minor	—	—	—	—	—	Minor	—	—	84	3,800	5,400
Streams	430	—	20,000	85	—	—	—	—	Minor	—	—	640	—	—	—	1,400	12,000	35,000
ELECTRIC POWER																		
Wells	—	—	1,500	—	—	—	—	—	—	—	4,300	—	—	—	—	—	—	5,800
Springs	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Streams	—	260,000	3,700	—	7,500	400	—	—	—	—	—	—	—	—	54,000	690,000	—	1,016,000
RURAL																		
Wells	260	930	1,600	25	340	60	75	190	50	40	380	65	120	67	16	1,900	100	6,200
Springs	Minor	50	150	15	360	25	70	140	47	60	45	5	150	50	Minor	250	90	1,500
Streams	30	240	30	200	880	Minor	120	480	120	56	290	Minor	140	190	Minor	470	210	3,500
TOTAL WITHDRAWAL																		
Wells	1,900	8,700	107,000	7,800	13,000	13,000	30,000	117,000	17,000	32,000	23,000	2,100	56,000	15,000	220	24,000	22,000	490,000
Springs	80	650	690	120	10,000	65	6,400	3,000	790	23,000	45	50	23,000	600	—	3,800	40,000	110,000
Streams	3,000	673,000	95,000	235,000	956,000	18,000	80,000	356,000	74,000	12,000	350,000	39,000	11,000	132,000	57,000	899,000	51,000	[a] 4,000,000
AMOUNT CONSUMED	2,100	208,000	97,000	91,000	429,000	14,000	58,000	237,000	40,000	53,000	149,000	17,000	55,000	76,000	1,100	82,000	68,000	1,700,000

a. Includes about 1,000,000 acre-feet of nonconsumptive hydroelectric power withdrawals.
b. Includes 114,000 acre-feet withdrawn from the Truckee River through the Derby Canal.
c. Includes 50,000 acre-feet withdrawn from the Truckee River through the Derby Canal.

Table 3. — Approximate 1969-70 populations of counties and hydrographic regions in Nevada

County	Approximate population (preliminary census figures, rounded)	Hydrographic region	Approximate population (Author's estimate) 1/
Carson City	15,300	Northwest Region	500
Churchill	10,400	Black Rock Desert	1,200
Clark	a 270,000	Snake River Basin	1,000
Douglas	6,000	Humboldt River Basin	23,000
Elko	13,500	West Central Region	800
Esmeralda	600	Truckee River Basin	120,000
Eureka	900	Western Region	2,000
Humboldt	6,200	Carson River Basin	30,000
Lander	2,600	Walker River Basin	13,000
Lincoln	2,500	Central Region	17,000
Lyon	8,100	Great Salt Lake Basin	500
Mineral	7,000	Escalante Desert	0
Nye	5,500	Colorado River Basin	272,000
Pershing	2,600	Death Valley Basin	1,000
Storey	680		
Washoe	120,000	Total (rounded)	482,000
White Pine	9,800		
Total (rounded)	482,000		

1. Subject to revision when final census figures are available.
a. Subject to revision by recount.

Table 4. — Estimated 1969 irrigation withdrawals by hydrographic regions
(Estimated withdrawals, in acre-feet, are significant to no more than two figures, columns may not cross-total due to independent rounding)

REGION	Estimated Acreage Irrigated in 1969	ESTIMATED PERCENTAGE IRRIGATED BY:				IRRIGATION WITHDRAWALS						ESTIMATED CONSUMPTION	
						Acre-feet Per Acre							
		Wells	Springs	Streams	Wells and Other[1/]	Probable Range	Average	Pumpage	Springs	Streams	Total	Acre-feet Per Acre	Acre-feet
Northwest Region	a 9,000	11	8	76	5	2-4	3.0	3,400	1,700	22,000	27,000	1.8	16,000
Black Rock Desert Region	b 71,000	53	Minor	47	Minor	2-4	3.0	108,000	800	102,000	211,000	1.8	128,000
Snake River Basin	71,000	1	—	98	1	2-5+	3.4	3,000	Minor	236,000	239,000	1.8	128,000
Humboldt River Basin[2/] U	c 124,000	Minor	—	98	2	2-7+	5.0	1,900	Minor	614,000	616,000	1.6	198,000
M	56,000	17	1	78	4	2-7+	4.3	24,000	970	215,000	240,000	1.8	101,000
L	83,000	3	Minor	89	8	2-6	4.1	16,000	600	322,000	339,000	2.0	166,000
West Central Region	4,500	—	—	100	—	6-15	11.	—	—	i 50,000	50,000	2.1	9,400
Truckee River Basin	28,000	—	1	92	7	3-10	5.5	1,000	1,000	151,000	153,000	2.1	59,000
Western Region	1,300	16	19	34	31	1.5-3.5	2.8	1,800	1,200	700	3,700	2.0	2,600
Carson River Basin	d 144,000	Minor	—	97	3	2.5-7+	4.7	6,000	—	j 674,000	680,000	2.2	317,000
Walker River Basin	e 74,000	1	Minor	77	22	1.5-6	4.3	8,700	100	307,000	316,000	1.8	133,000
Central Region	111,000	34	22	38	6	1-5	2.4	110,000	47,000	114,000	271,000	1.5	166,000
Great Salt Lake Basin	19,000	—	—	94	6	1-5	2.1	1,500	2,000	52,000	56,000	1.5	28,000
Escalante Desert Basin	0	—	—	—	—	—	—	—	—	—	—	—	—
Colorado River Basin	27,000	22	10	52	16	4-7	5.4	f 40,000	g 39,000	h 68,000	147,000	3.7	100,000
Death Valley Basin	2,300	44	43	13	—	2-7	5.2	5,000	6,300	300	12,000	4.0	9,200
State	825,000	12	3	79	6	1-15	4.0	330,000	100,000	2,900,000	3,300,000	1.9	1,600,000

1. Areas irrigated by streams, rivers, or springs and supplemental pumping.
2. Subdivisions in Humboldt River Basin: U, area above Palisade; M, area between Palisade and Comus; L, area below Comus.

a. Does not include about 12,000 acres on the floor of Duck Lake Valley which has water rights but receives water only in very wet years. Most of this acreage was included in the 1965 estimate.
b. Increase over 1965 estimate due to: (1) about 6,000 acres irrigated by surface water which was not included in the 1965 estimate, and (2) to increased ground-water use (as a result of both growth and more comprehensive estimates).
c. Does not include about 28,000 acres of pasture (primarily unimproved diversified pasture) with water rights which receive water only in very wet years. Includes about 20,000 acres irrigated by "wild flooding" which was not included in the 1965 estimate.
d. Includes about 25,000 acres in Carson Pasture which is irrigated by drain water from the Newlands Project.
e. Higher than 1965 estimate because of better information.,
f. Lower than 1965 estimate because of: (1) better inventories, and (2) a slight decrease in irrigation pumping in Las Vegas Valley.
g. Does not include Muddy River withdrawals which were included in the 1965 estimate.
h. Includes 28,000 acre-feet diverted from the Muddy River (a spring-supported river) and 4,100 acre-feet of effluent.
i. Withdrawn from the Truckee River through the Derby Canal.
j. Includes 114,000 acre-feet withdrawn from the Truckee River through the Derby Canal.

Table 5. – Estimated 1969 irrigation withdrawals by counties
(Estimated withdrawals, in acre-feet, are significant to no more than two figures, columns may not cross-total due to independent rounding)

County	Estimated Acreage Irrigated In 1969	ESTIMATED PERCENTAGE IRRIGATED BY:				IRRIGATION WITHDRAWALS						ESTIMATED CONSUMPTION	
						Acre-feet Per Acre							
		Wells	Springs	Streams	Wells and Other 1/	Probable Range	Average	Pumpage	Springs	Streams	Total	Acre-feet Per Acre	Acre-feet
Carson City	500	—	—	100	—	2-5	3.0	—	—	1,500	1,500	2.0	1,000
Churchill	a 94,000	2	1	97	—	2-7	4.5	6,400	600	f 413,000	420,000	2.2	207,000
Clark	10,000	14	—	79	7	4-7	6.3	b 10,000	—	c 53,000	63,000	4.0	40,000
Douglas	50,000	1	Minor	89	10	2-7	4.8	7,000	100	234,000	241,000	1.8	90,000
Elko	d 236,000	Minor	Minor	97	3	1-7	4.1	8,400	7,800	948,000	964,000	1.8	425,000
Esmeralda	5,100	—	—	—	100	3-6	4.7	6,000	—	18,000	24,000	1.8	9,200
Eureka	39,000	44	11	43	2	1-7	3.0	30,000	6,300	80,000	116,000	1.5	58,000
Humboldt	131,000	27	1	67	5	1-7	3.6	115,000	2,700	355,000	473,000	1.8	236,000
Lander	25,000	27	2	66	5	1-7	3.6	14,000	730	74,000	89,000	1.5	38,000
Lincoln	15,000	45	12	40	3	3-7	4.3	30,000	23,000	12,000	65,000	3.5	52,000
Lyon	e 76,000	1	—	79	20	2-15	4.7	7,400	—	g 350,000	357,000	1.8	137,000
Mineral	8,200	9	—	91	—	2-7	4.6	1,300	—	37,000	38,000	2.0	16,000
Nye	29,000	42	38	20	—	1-7	3.0	52,000	23,000	11,000	86,000	1.8	52,000
Pershing	38,000	12	1	85	2	2-6	3.9	14,000	550	132,000	147,000	2.0	76,000
Storey	500	—	—	100	—	2-7	2.5	—	—	2,500	2,500	2.0	1,000
Washoe	37,000	9	3	82	6	2-10	5.1	12,000	3,400	175,000	190,000	1.9	70,000
White Pine	31,000	16	32	42	10	1-5	2.9	18,000	33,000	39,000	90,000	1.8	56,000
State	825,000	12	3	79	6	1-15	4.0	330,000	100,000	2,900,000	3,300,000	1.9	1,600,000

1. Areas irrigated by streams, rivers, or springs and supplemental pumping.
a. Includes about 25,000 acres in Carson Pasture which is irrigated by drain water from the Newlands Project.
b. Lower than 1965 estimate because of: (1) better inventories, and (2) a slight decrease in irrigation pumping in Las Vegas Valley.
c. Includes 28,000 acre-feet diverted from the Muddy River (a spring-supported river) and 4,100 acre-feet of effluent.
d. Does not include about 28,000 acres of pasture (primarily unimproved diversified pasture) with water rights which receive water only in very wet years. Includes about 20,000 acres irrigated by "wild flooding" which was not included in the 1965 estimate.
e. Higher than 1965 estimate because of better information.
f. Includes 114,000 acre-feet withdrawn from the Truckee River through the Derby Canal.
g. Includes 50,000 acre-feet withdrawn from the Truckee River through the Derby Canal.

Smoke Creek Desert — spring run-off. *Philip Hyde*

Table 6. — Estimated 1969 public-supply withdrawals, by hydrographic regions
(Estimated withdrawals, in acre-feet, are significant to no more than two figures, columns may not cross-total due to independent rounding)

Regions and Towns	Source of Supply 1/	Estimated 1969 Population Served	Number of Services Residential/ Commercial	ESTIMATED 1969 WITHDRAWAL				Gallons Per Day Per Capita	Estimated Consumption
				Wells	Springs	Streams	Total		
Northwest Region									
Denio	SS	—	—	—	—	—	—	—	—
Vya	SS	—	—	—	—	—	—	—	—
Subtotal		—		—	—	—	—	—	—
Black Rock Desert Region									
Empire	Well	450	—	180	—	—	180	360	70
Gerlach	Springs	100	—	—	67	—	67	600	20
McDermitt	Well	250	23/10	51	—	—	51	180	30
Orovada	SS	—	—	—	—	—	—	—	—
Subtotal		800		230	67		300	330	120
Snake River Basin									
Owyhee	2 Wells	300	100/5	34	—	—	34	100	10
Mountain City	SS	—	—	—	—	—	—	—	—
Jarbidge	Bear Creek	a 15	50/3	—	—	3	3	180	1
Jackpot	SS	—	—	—	—	—	—	—	—
Subtotal		315		34	—	3	37	100	1
Humboldt River Basin									
Wells	2 Wells	1,100	—	320	—	—	320	360	100
Lamoille	SS	—	—	—	—	—	—	—	—
Elko	9 Wells	b 8,800	—	3,300	—	—	3,300	330	1,000
Carlin	Springs and Wells	b 1,800	540/75	40	400	—	440	220	130
Austin	Well, Springs	250	100/40	10	10	—	20	70	10
Battle Mountain	3 Wells	2,200	495/48	340	—	—	340	140	120
Midas	Spring	6	4/0	—	Trace	—	Trace	—	—
Winnemucca	4 Wells, Spring, and Creek	b 4,500	1,036/213	1,100	130	70	1,300	260	450
Lovelock	Wells	b 2,000	650/80	1,200	—	—	1,200	540	300
Subtotal		20,700		6,300	540	70	6,900	300	2,100
West Central Region									
Fernley	2 Wells	700	270	140	—	—	140	180	55
Truckee River Basin									
Little Nixon	Well	30	5	5	—	—	5	150	2
Nixon	Wells	350	60	50	—	—	50	130	20
Wadsworth	Wells	60	10	10	—	—	10	150	4
Spanish Springs	SS	—	—	—	—	—	—	—	—
Sun Valley	Sierra Pacific	4,000	700/0	—	—	180	180	40	70
Reno-Sparks									
Sierra Pacific	Wells, Streams, and Truckee River	96,000	—	7,000	—	31,000	38,000	350	8,000
Others	Well	790	175	370	—	—	370	420	70
South Lake Tahoe	Streams, Lake Tahoe, and Well	3,600	—	50	—	1,190	1,240	310	310
North Lake Tahoe	Streams and Lake Tahoe	4,000	—	—	—	1,200	1,200	270	300
Verdi	SS	—	—	—	—	—	—	—	—
Subtotal		109,000		7,500	—	33,600	41,100	340	8,800
Western Region									
Black Springs	2 Wells	135	45/0	23	—	—	23	150	7
Lemmon Valley	3 Wells	1,500	400/10	300	—	—	300	180	60
Subtotal		1,640		320	—	—	320	170	67
Carson River Basin									
Fallon	Wells	3,000	875/200	900	—	—	900	270	300
Silver Springs	Well	200	58/6	27	—	—	27	120	8
Dayton	SS	—	—	—	—	—	—	—	—
Virginia City, Gold Hill, Silver City	Springs, Stream, and Hobart Reservoir	540	—	—	—	176	176	290	40
Carson City	Wells, Streams, and State System	13,000	2,987/569	1,400	—	1,000	2,400	160	700
Jacks Valley	2 Wells	130	30	20	—	—	20	140	6
Minden	2 Wells	450	130/50	75	—	—	75	150	20
Gardnerville	Wells	1,600	270/30	270	—	—	270	150	80
Subtotal		18,900		2,700	—	1,200	3,900	180	1,200

CONTINUED

Table 6. – Estimated 1969 public-supply withdrawals, by hydrographic regions – Continued

Regions and Towns	Source of Supply 1/	Estimated 1969 Population Served	Number of Services Residential/ Commercial	ESTIMATED 1969 WITHDRAWAL				Gallons Per Day Per Capita	Estimated Consumption
				Wells	Springs	Streams	Total		
Walker River Basin									
Schurz	SS	—	—	—	—	—	—	—	—
Smith	SS	—	—	—	—	—	—	—	—
Mason	3 Wells	650	160	130	—	—	130	180	40
Yerington	2 Wells	b 2,200	650/50	630	—	—	630	260	170
Weed Heights	Wells	1,000	—	220	—	—	220	200	60
Hawthorne	4 Wells, Creek	3,000	1,098/219	490	—	250	740	220	200
Babbitt	Wells and Stream	3,000	—	75	—	960	1,035	310	300
Subtotal		9,850		1,500	—	1,200	2,700	240	770
Central Region									
Luning	Well	50	24	45	—	—	45	800	10
Mina	Spring and Well	500	133	20	45	—	65	120	20
Gabbs	Wells	900	200/1	400	—	—	400	400	120
Round Mountain	Spring	195	—	—	25	—	25	110	<10
Tonopah	4 Wells	2,190	750	330	—	—	330	130	100
Goldfield	Well	200	160	20	—	—	20	90	6
Eureka	Springs and Wells	500	100/34	7	26	—	33	60	10
Indian Springs	Well	500	138/8	72	—	—	72	130	20
Jean	Well	65	—	20	—	—	20	270	6
Ely, East Ely	Spring and Wells	b 6,000	1,900	400	3,000	—	3,400	510	1,100
Ruth	Springs	1,000	192	—	110	—	110	100	30
McGill	Well	1,900	615	150	—	—	150	70	50
Subtotal		14,000		1,500	3,200	—	4,700	300	1,500
Great Salt Lake Basin									
Montello	Springs	150	—	—	40	—	40	240	8
Wendover (Utah-Nevada)	Springs	—	—	—	260	—	260	—	(260)
Subtotal		150		—	300	—	300	—	270
Colorado River Basin									
Pioche	Wells, Spring	500	180/24	129	55	—	180	320	50
Panaca	Wells	500	157/3	120	—	—	120	210	35
Caliente	Wells	1,000	—	390	—	—	390	350	110
Henderson	Lake Mead	16,100	—	—	—	5,900	5,900	330	1,800
Las Vegas									
North Las Vegas	Wells and	35,000	8,674/342	10,300	—	—	10,300	260	3,500
Las Vegas Valley Water District	Lake Mead	c 194,000	39,522	67,000	—	9,500	76,500	350	25,000
Others	Wells	7,000	—	2,400	—	—	2,400	310	800
Boulder City	Lake Mead	5,000	—	—	—	3,000	3,000	540	1,200
Searchlight	SS	—	—	—	—	—	—	—	—
Glendale	SS	—	—	—	—	—	—	—	—
Logandale	Spring	2,000	376/30	—	405	—	400	180	120
Overton	Spring	1,100	198/27	—	130	—	130	110	40
Mesquite	Well	700	—	130	—	—	130	170	40
Bunkerville	Well	300	—	100	—	—	100	300	30
Subtotal		263,000		80,600	590	18,400	99,500	340	33,000
Death Valley Basin									
Beatty	3 Wells	550	200/25	120	—	—	120	190	40
State Total		440,000		101,000	4,700	54,000	160,000	320	48,000

1. SS indicates town probably is served largely by individual domestic wells or small privately owned water company.
a. Permanent residents, population about 150 in summer.
b. Estimated population served larger than 1970 preliminary census figures for the town. Was not determined whether service area extends beyond town limits or whether estimated population served was high.
c. Subject to revision after census recount.

Table 7. — Estimated 1969 public-supply withdrawals, by counties
(Estimated withdrawals, in acre-feet, are significant to no more than two figures, columns may not cross-total due to independent rounding)

Counties and Towns	Source of Supply[1/]	Estimated 1969 Population Served	Number of Services Residential/ Commercial	ESTIMATED 1969 WITHDRAWAL				Gallons Per Day Per Capita	Estimated Consumption
				Wells	Springs	Streams	Total		
Carson City	Wells, Streams, and State System	13,000	2,987/569	1,400	—	1,000	2,400	160	700
Churchill County									
Fallon	Wells	3,000	875/200	900	—	—	900	270	300
Clark County									
Indian Springs	Well	500	138/8	72	—	—	72	130	20
Jean	Well	65	—	20	—	—	20	270	6
Henderson	Lake Mead	16,100	—	—	—	5,900	5,900	330	1,800
Las Vegas									
North Las Vegas	Well and	35,000	8,674/342	10,300	—	—	10,300	260	3,500
Las Vegas Valley Water District	Lake Mead	a 194,000	39,522	67,000	—	9,500	76,500	350	25,000
Others	Wells	7,000	—	2,400	—	—	2,400	310	800
Boulder City	Lake Mead	5,000	—	—	—	3,000	3,000	540	1,200
Searchlight	SS	—	—	—	—	—	—	—	—
Glendale	SS	—	—	—	—	—	—	—	—
Logandale	Spring	2,000	376/30	—	405	—	405	180	120
Overton	Spring	1,100	198/27	—	130	—	130	110	40
Mesquite	Well	700	—	130	—	—	130	170	30
Bunkerville	Well	300	—	100	—	—	100	340	25
Subtotal		262,000		80,000	540	18,000	99,000	340	33,000
Douglas County									
South Lake Tahoe	Streams, Well, and Lake Tahoe	3,600	—	50	—	1,190	1,240	310	310
Jacks Valley	2 Wells	130	30	20	—	—	20	140	6
Minden	2 Wells	450	130/50	75	—	—	75	150	20
Gardnerville	Wells	1,600	270/30	270	—	—	270	150	80
Subtotal		5,780		415	—	1,200	1,600	250	416
Elko County									
Owyhee	2 Wells	300	100/5	34	—	—	34	100	10
Mountain City	SS	—	—	—	—	—	—	—	—
Jarbidge	Bear Creek	b 15	50/3	—	—	3	3	180	1
Jackpot	SS	—	—	—	—	—	—	—	—
Wells	2 Wells	1,100	—	320	—	—	320	260	100
Lamoille	SS	—	—	—	—	—	—	—	—
Elko	9 Wells	c 8,800	—	3,300	—	—	3,300	330	1,000
Carlin	Springs and Wells	c 1,800	540/75	40	400	—	440	220	130
Midas	Spring	6	4/0	—	Trace	—	Trace	—	—
Montello	Springs	150	—	—	40	—	40	240	8
Wendover (Utah-Nevada)	Springs	—	—	—	260	—	260	—	(260)
Subtotal		12,200		3,700	700	3	4,400	330	1,500
Esmeralda County									
Goldfield	Well	200	160	20	—	—	20	90	6
Eureka County									
Eureka	Springs and Wells	500	100/34	7	26	—	33	60	10
Humboldt County									
Denio	SS	—	—	—	—	—	—	—	—
McDermitt	Well	250	23/10	51	—	—	51	180	30
Orovada	SS	—	—	—	—	—	—	—	—
Winnemucca	4 Wells, Spring, and Creek	c 4,500	1,036/213	1,100	130	70	1,300	260	450
Subtotal		4,750		1,150	130	70	1,350	250	480
Lander County									
Austin	Well, Springs	250	100/40	10	10	—	20	70	10
Battle Mountain	3 Wells	2,200	495/48	340	—	—	340	140	120
Subtotal		2,450		350	10	—	360	130	130
Lincoln County									
Pioche	Wells, Springs	500	180/24	129	55	—	180	320	50
Panaca	Wells	500	157/3	120	—	—	120	210	35
Caliente	Wells	1,000	—	390	—	—	390	350	110
Subtotal		2,000		639	55	—	690	310	200

CONTINUED

Table 7. — Estimated 1969 public-supply withdrawals, by counties — Continued

Counties and Towns	Source of Supply	Estimated 1969 Population Served	Number of Services Residential/ Commercial	ESTIMATED 1969 WITHDRAWAL				Gallons Per Day Per Capita	Estimated Consumption
				Wells	Springs	Streams	Total		
Lyon County									
Fernley	2 Wells	700	270	140	—	—	140	180	55
Silver Springs	Well	200	58/6	27	—	—	27	120	8
Dayton									
Smith	SS	—	—	—	—	—	—	—	—
Mason	3 Wells	650	160	130	—	—	130	180	40
Yerington	2 Wells	c 2,200	650/50	630	—	—	630	260	170
Weed Heights	Wells	1,000	–	220	—	—	220	200	60
Subtotal		4,750		1,150	—	—	1,150	220	330
Mineral County									
Schurz									
Hawthorne	4 Wells, Creek	3,000	1,098/219	490	—	250	740	220	200
Babbitt	Wells and Stream	3,000	—	75	—	960	1,035	310	300
Luning	Well	50	24	45	—	—	45	800	10
Mina	Spring and Well	500	133	20	45	—	65	120	20
Subtotal		6,550		630	45	1,200	1,900	260	530
Nye County									
Gabbs	Wells	900	270/1	400	—	—	400	400	120
Round Mountain	Spring	195	—	—	25	—	25	110	10
Tonopah	4 Wells	2,190	750	330	—	—	330	130	100
Beatty	3 Wells	550	200/25	120	—	—	120	190	40
Subtotal		3,840		850	25	—	880	200	270
Pershing County									
Lovelock	Wells	c 2,000	650/80	1,200	—	—	1,200	540	300
Storey County									
Virginia City	Springs, Stream, and								
Gold Hill	Hobart Reservoir	540	—	—	—	176	176	290	40
Silver City									
Washoe County									
Vya	SS	—	—	—	—	—	—	—	—
Empire	Well	450	—	180	—	—	180	360	70
Gerlach	Springs	100	—	—	67	—	67	600	20
Little Nixon	Well	30	5	5	—	—	5	150	2
Nixon	Wells	350	60	50	—	—	50	130	20
Wadsworth	Wells	60	10	10	—	—	10	150	4
Spanish Springs	SS	—	—	—	—	—	—	—	—
Sun Valley	Sierra Pacific	4,000	700/6	—	—	180	180	40	70
Reno-Sparks									
Sierra Pacific	Wells, Streams, and Truckee River	96,000	—	7,000	—	31,000	38,000	350	8,000
Others	Well	790	175	370	—	—	370	420	70
North Lake Tahoe	Streams and Lake Tahoe	4,000	—	—	—	1,200	1,200	270	300
Verdi	SS	—	—	—	—	—	—	—	—
Lemmon Valley	3 Wells	1,500	400/10	300	—	—	300	180	60
Black Springs	2 Wells	135	45/0	23	—	—	23	150	7
Subtotal		107,400		7,900	67	32,400	40,000	330	8,600
White Pine County									
Ely and East Ely	Springs and Wells	c 6,000	1,900	400	3,000	—	3,400	510	1,100
Ruth	Springs	1,000	192	—	110	—	110	100	30
McGill	Well	1,900	615	150	—	—	150	70	50
Subtotal		8,900		550	3,100	—	3,700	370	1,200
State Total		440,000		101,000	4,700	54,000	160,000	320	48,000

1. SS indicates town probably is served largely by individual domestic wells or small privately owned water company.,
a. Subject to revision after census recount.
b. Permanent residents, population about 150 in summer.
c. Estimated population served larger than 1970 preliminary census figures for the town. Was not determined whether service area extends beyond town limits or whether estimated population served was high.

Table 8. — Estimated 1969 self-supplied industrial withdrawals, by hydrographic regions

(Excludes water used for electric-power generation)

(Estimated withdrawals, in acre-feet, are significant to no more than two figures, columns may not cross-total due to independent rounding)

Region	Wells	Springs	Streams	Total	Amount Consumed
Northwest Region	Minor	—	Minor	Minor	—
Black Rock Desert Region	900	Minor	—	900	180
Snake River Basin	50	Minor	—	50	25
Humboldt River Basin	3,700	Minor	Minor	3,700	2,400
West Central Region	6	—	—	6	3
Truckee River Basin	2,100	80	1,500	3,700	2,000
Western Region	100	—	—	100	70
Carson River Basin	1,100	80	430	1,600	670
Walker River Basin	9,400	—	640	10,000	7,700
Central Region	12,700	5,200	12,000	30,000	19,000
Great Salt Lake Basin	20	—	—	20	10
Escalante Desert Basin	—	—	—	—	—
Colorado River Basin	15,000	—	a 20,000	35,000	18,000
Death Valley Basin	1,000	Minor	—	1,000	600
State	46,000	5,400	35,000	86,000	51,000

a. Largely Lake Mead diversions for industrial use.

Table 9. — Estimated 1969 self-supplied industrial withdrawals, by counties
(Excludes water use for electric-power generation)
(Estimated withdrawals, in acre-feet, are significant to no more than two figures, columns may not cross-total due to independent rounding)

County	Wells	Springs	Streams	Total	Amount Consumed
Carson City	230	80	430	740	290
Churchill	450	--	--	450	130
Clark	14,000	--	a 20,000	34,000	18,000
Douglas	410	--	85	500	280
Elko	700	1,400	--	2,100	1,800
Esmeralda	7,000	40	--	7,000	4,700
Eureka	300	Minor	--	300	170
Humboldt	900	--	--	900	100
Lander	2,600	--	Minor	2,600	1,800
Lincoln	1,000	--	--	1,000	710
Lyon	9,400	--	--	9,400	7,500
Mineral	100	--	640	740	210
Nye	3,400	Minor	--	3,400	2,100
Pershing	200	--	--	200	45
Storey	200	--	--	200	80
Washoe	2,100	84	1,400	3,600	2,100
White Pine	3,000	3,800	12,000	19,000	11,000
State	46,000	5,400	35,000	86,000	51,000

a. Largely Lake Mead diversions for industrial use.

Table 10. — Estimated 1969 withdrawals for electric power generations, by hydrographic regions
(Estimated withdrawals, in acre-feet, are significant to no more than two figures, columns may not cross-total due to independent rounding)

Region	ESTIMATED WITHDRAWALS											
	HYDRO-ELECTRIC POWER GENERATION				STEAM-ELECTRIC POWER GENERATION				ALL POWER GENERATION			
	Wells	Streams	Total	Amount Consumed	Wells	Streams	Total	Amount Consumed	Wells	Streams	Total	Amount Consumed
Northwest Region	—	—	—	—	—	—	—	—	—	—	—	—
Black Rock Desert Region	—	—	—	—	—	—	—	—	—	—	—	—
Snake River Basin	—	—	—	—	—	—	—	—	—	—	—	—
Humboldt River Basin	—	7,500	7,500	0	—	—	—	—	—	7,500	7,500	0
West Central Region	—	—	—	—	—	—	—	—	—	—	—	—
Truckee River Basin	—	690,000	690,000	0	—	54,000	54,000	nil	—	744,000	744,000	nil
Western Region	—	—	—	—	—	—	—	—	—	—	—	—
Carson River Basin	—	260,000	260,000	0	—	—	—	—	—	260,000	260,000	0
Walker River Basin	—	—	—	—	4,300	—	4,300	3,600	4,300	—	4,300	3,600
Central Region	—	400	400	0	—	—	—	—	—	400	400	0
Great Salt Lake Basin	—	—	—	—	—	—	—	—	—	—	—	—
Escalante Desert Basin	—	—	—	—	—	—	—	—	—	—	—	—
Colorado River Basin	—	(a)	(a)	—	1,500	3,700	5,200	4,700	1,500	3,700	5,200	4,700
Death Valley Basin	—	—	—	—	—	—	—	—	—	—	—	—
State	—	a 958,000	a 958,000	0	5,800	58,000	64,000	8,300	5,800	1,015,600	1,021,000	8,300

a. Does not include water used for power generation at Hoover and Davis Dams.

Table 11. — Estimated 1969 withdrawals for electric power generations, by counties
(Estimated withdrawals, in acre-feet, are significant to no more than two figures, columns may not cross-total due to independent rounding)

Region	ESTIMATED WITHDRAWALS											
	HYDRO-ELECTRIC POWER GENERATION				STEAM-ELECTRIC POWER GENERATION				ALL POWER GENERATION			
	Wells	Streams	Total	Amount Consumed	Wells	Streams	Total	Amount Consumed	Wells	Streams	Total	Amount Consumed
Carson City	—	—	—	—	—	—	—	—	—	—	—	—
Churchill	—	260,000	260,000	0	—	—	—	—	—	260,000	260,000	0
Clark	—	(a)	(a)	—	1,500	3,700	5,200	4,700	1,500	3,700	5,200	4,700
Douglas	—	—	—	—	—	—	—	—	—	—	—	—
Elko	—	7,500	7,500	0	—	—	—	—	—	7,500	7,500	0
Esmeralda	—	400	400	0	—	—	—	—	—	400	400	0
Eureka	—	—	—	—	—	—	—	—	—	—	—	—
Humboldt	—	—	—	—	—	—	—	—	—	—	—	—
Lander	—	—	—	—	—	—	—	—	—	—	—	—
Lincoln	—	—	—	—	—	—	—	—	—	—	—	—
Lyon	—	—	—	—	4,300	—	4,300	3,600	4,300	—	4,300	3,600
Mineral	—	—	—	—	—	—	—	—	—	—	—	—
Nye	—	—	—	—	—	—	—	—	—	—	—	—
Pershing	—	—	—	—	—	—	—	—	—	—	—	—
Storey	—	—	—	—	—	54,000	54,000	nil	—	54,000	54,000	nil
Washoe	—	690,000	690,000	0	—	—	—	—	—	690,000	690,000	0
White Pine	—	—	—	—	—	—	—	—	—	—	—	—
State	—	a 958,000	a 958,000	0	5,800	58,000	64,000	8,300	5,800	1,015,600	1,021,000	8,300

a. Does not include water used for power generation at Hoover and Davis Dams.

Table 12. – Estimated 1969 withdrawals for rural use, by hydrographic regions
(Estimated withdrawals, in acre-feet, are significant to no more than two figures, columns may not cross-total due to independent rounding)

Region	Estimated Rural Population	DOMESTIC WITHDRAWALS				LIVESTOCK WITHDRAWALS				TOTALS				Amount Consumed
		Wells	Springs	Streams	Total	Wells	Springs	Streams	Total	Wells	Springs	Streams	Total	
Northwest Region	500	31	15	10	56	30	30	130	190	61	45	140	250	120
Black Rock Desert Region	400	25	15	5	45	60	70	290	420	85	85	300	470	240
Snake River Basin	700	38	20	20	78	50	50	300	400	88	70	320	480	250
Humboldt River Basin	2.300	200	40	20	260	300	300	1,000	1,600	500	340	1,000	1,800	900
West Central Region	100	11	—	—	11	10	20	30	60	21	20	30	71	40
Truckee River Basin	11,000	1,800	100	200	2,100	10	10	100	120	1,800	110	300	2,200	1,100
Western Region	360	30	10	—	40	Minor	Minor	Minor	Minor	30	10	—	40	20
Carson River Basin	11,100	1,150	10	40	1,200	60	60	440	560	1,200	70	480	1,800	900
Walker River Basin	3,150	320	10	20	350	20	10	230	260	340	20	250	610	300
Central Region	3,000	200	100	40	340	200	200	440	840	400	300	480	1,200	600
Great Salt Lake Basin	350	30	9	Minor	39	15	15	90	120	45	24	90	160	80
Escalante Desert Basin	0	—	—	—	—	—	—	—	—	—	—	—	—	—
Colorado River Basin	9,000	1,500	300	Minor	1,800	70	100	90	260	1,600	400	90	2,100	900
Death Valley Basin	450	50	Minor	—	50	10	10	—	20	60	10	—	70	40
State	42,000	5,400	630	360	6,400	840	880	3,100	4,800	6,200	1,500	3,500	11,000	5,500

Table 13. – Estimated 1969 withdrawals for rural use, by counties
(Estimated withdrawals, in acre-feet, are significant to no more than two figures, columns may not cross-total due to independent rounding)

Region	Estimated Rural Population	DOMESTIC WITHDRAWALS				LIVESTOCK WITHDRAWALS				TOTALS				Amount Consumed
		Wells	Springs	Streams	Total	Wells	Springs	Streams	Total	Wells	Springs	Streams	Total	
Carson City	2,300	250	Minor	10	260	10	Minor	20	30	260	Minor	30	290	150
Churchill	7,400	830	Minor	Minor	830	100	50	240	390	930	50	240	1,200	600
Clark	8,000	1,600	100	Minor	1,700	50	50	30	130	1,600	150	30	1,800	900
Douglas	220	10	Minor	15	25	15	15	190	220	25	15	200	240	120
Elko	1,300	90	70	20	180	250	300	850	1,400	340	360	880	1,600	800
Esmeralda	400	40	5	Minor	45	20	20	Minor	40	60	25	Minor	85	50
Eureka	400	35	10	Minor	45	40	60	120	220	75	70	120	260	130
Humboldt	1,450	90	40	30	160	100	100	450	650	190	140	480	810	350
Lander	150	10	7	Minor	17	40	40	120	200	50	47	120	220	110
Lincoln	500	20	30	6	56	20	30	50	100	40	60	50	160	80
Lyon	3,350	350	20	10	380	25	25	280	330	380	45	290	720	350
Mineral	450	50	Minor	Minor	50	15	5	Minor	20	65	5	Minor	70	40
Nye	1,660	70	100	20	190	50	50	120	220	120	150	140	410	200
Pershing	600	47	20	Minor	67	20	30	190	240	67	50	190	310	160
Storey	140	16	Minor	—	16	Minor	Minor	Minor	Minor	16	Minor	Minor	16	8
Washoe	12,600	1,800	200	240	2,300	50	50	230	330	1,900	250	470	2,600	1,300
White Pine	900	60	30	10	100	40	60	200	300	100	90	210	400	200
State	42,000	5,400	630	360	6,400	840	880	3,100	4,800	6,200	1,500	3,500	11,000	5,500

Table 14. – Areas in Nevada associated with nonwithdrawal uses by regions

Region	Principal Area of Snow Accumulation	Area of Lakes and Reservoirs (acres)	Length of Streams and Rivers (miles)
Northwest Region	--	4,700	13
Black Rock Desert Region	7,500	1,700	176
Snake River Basin	87,500	3,300	404
Humboldt River Basin	270,000	21,600	550
West Central Region	--	600	--
Truckee River Basin	49,000	153,000	136
Western Region	--	170	--
Carson River Basin	6,900	15,300	79
Walker River Basin	45,500	57,200	144
Central Region	970,000	9,900	330
Great Salt Lake Basin	130,000	4,000	102
Escalante Desert Basin	--	0	--
Colorado River Basin	50,000	107,200	46
Death Valley Basin	--	150	--
State	1,600,000	380,000	a 1,980

a. Surface area approximately 4,600 acres.

Table 15 – Areas in Nevada associated with nonwithdrawal uses by counties

County	Principal Area of Snow Accumulation	Area of Lakes and Reservoirs (acres)	Length of Streams and Rivers (miles)
Carson City	3,750	7,500	21
Churchill	--	14,700	20
Clark	49,500	106,700	15
Douglas	10,000	20,000	38
Elko	280,000	17,400	749
Esmeralda	32,500	20	37
Eureka	44,000	30	21
Humboldt	14,500	2,300	295
Lander	69,500	1,100	90
Lincoln	3,750	900	15
Lyon	23,000	560	120
Mineral	39,500	55,000	13
Nye	580,000	220	108
Pershing	--	19,000	33
Storey	--	10	14
Washoe	43,000	133,000	132
White Pine	425,000	630	259
State	1,600,000	380,000	a 1,980

a. Surface area approximately 4,600 acres.

Table 16. — Summary of estimated withdrawals in Nevada, 1950-69

(Estimates for 1950-60 from U.S. Geological Survey Circulars 115, 398, and 456; estimates for 1965 from Nevada Department Conservation and Natural Resources Information Series Report 7, unless otherwise indicated; all estimates in acre-feet, significant to no more than two figures.)

Year	Irrigation[1/]				Public Supply			
	Wells	Springs	Streams	Total	Wells	Springs	Streams	Total
1950	30,000	a 106,000	a 2,900,000±	a 3,000,000	17,000	4,700±	28,000	50,000
1955	70,000	a 104,000	a 2,900,000±	a 3,100,000	27,000	4,700±	40,000	72,000
1960	170,000	a 102,000	a 2,900,000±	a 3,200,000	43,000	4,700±	40,000	88,000
1965	280,000	a 100,000	2,900,000	a 3,300,000	62,000	4,700±	42,000	110,000
1969	330,000	100,000	2,900,000	3,300,000	101,000	4,700	54,000	160,000

Year	Self-Supplied Industrial				Electric Power Generation[2/]			
	Wells	Springs	Streams	Total	Wells	Springs	Streams	Total
1950	2,000	5,000±	a 21,000	a 28,000	Minor	0	900,000±	900,000
1955	a 6,000	5,000±	a 27,000	a 38,000	Minor	0	900,000±	900,000
1960	a 15,000	5,000±	a 27,000	47,000	Minor	0	900,000±	900,000
1965	35,000	5,400±	29,000	69,000	Minor	0	900,000±	900,000
1969	46,000	5,400	35,000	86,000	5,800	0	1,000,000	1,000,000

Year	Rural				All Uses			
	Wells	Springs	Streams	Total	Wells	Springs	Streams	Total
1950	a 4,400	1,500±	a 4,400	a 10,000	53,000	117,000	3,900,000	4,100,000
1955	a 5,000	1,500±	a 4,400	a 11,000	110,000	115,000	3,900,000	4,100,000
1960	a 6,000	1,500±	a 4,000	a 12,000	230,000	113,000	3,900,000	4,200,000
1965	a 7,500	1,500±	a 3,700	a 13,000	380,000	110,000	3,900,000	4,400,000
1969	b 6,200	b 1,500	b 3,500	b 11,000	490,000	110,000	4,000,000	4,600,000

a. Revised estimate.
b. Subject to revision when final census figures are released.
1. Stream withdrawals estimated at point of diversion from river. Previous estimates, made at "field headgate," revised to be compatible with 1969 estimate.
2. Does not include flow through Hoover and Davis Dams used to generate power.

State of Nevada

WATER PLANNING REPORT