



Diversifying Water Resources Key to Southern Nevada Water Authority's Drought Management

Developing Partnerships Also Important to Achieving Long-Range Goals

An old Chinese proverb states, "Water always has a source, and trees always have roots." However, for most people living in the arid desert of Southern Nevada – in the midst of a prolonged, debilitating drought – it may seem difficult to believe that water truly always has a source.

For decades, Southern Nevadans have grown accustomed to relying on a seemingly endless supply of Colorado River water, from its source at Lake Mead – in fact, the region derives 300,000 acre-feet annually, or 90 percent of its water, from this single source. (One acre foot equals about 326,000 gallons.)

Even in light of the drought, many residents may still think of Lake Mead as a bottomless reservoir. However, no one ever imagined the lake's surface level would drop approximately 90 feet since the drought began in 2000, and that we would face increasing calls to conserve water in our desert paradise. Yet, even as the community's response to those calls has been impressive, the drought persists with no immediate relief in sight, and Lake Mead continues to shrink.

Facing this challenge, the Southern Nevada Water Authority (SNWA) is acceler-

ating the development of in-state water resources that will supplement the region's annual Colorado River water allotment and increase flexibility in terms of water supply options.

"The drought has challenged us to find new tools to manage the river in different times and under different conditions," said Pat Mulroy, general manager of the SNWA. "As a community, we are using water more efficiently. The face of Southern Nevada is changing. We have much more Water Smart landscaping, which is more sustainable to our desert environment."



Pat Mulroy, General Manager, SNWA

SNWA: ITS ORIGINS AND ROLE

Formed in 1991, the SNWA is responsible for acquiring and managing water resources for Southern Nevada, constructing and managing regional water facilities, ensuring municipal water supplies meet state and federal water quality standards and promoting responsible conservation measures.

The SNWA is comprised of seven water and wastewater agencies in Southern Nevada: the Big Bend Water District (providing service to Laughlin), the cities of Boulder City, Henderson, Las Vegas and North Las Vegas, the Clark County Water Reclamation District (CCWRD) and the Las Vegas Valley Water District (LVVWD).

INTEGRATED RESOURCE PLANNING

To meet future water demands in Southern Nevada, the SNWA in April 1994 initiated an Integrated Resource Planning process to identify an appropriate combination of resources, facilities and conservation programs. After more than a year of study, the SNWA adopted a series of recommendations geared toward guiding its future water-resource planning efforts. These recommendations also supported the "phasing-in" of new regional facilities to meet future water use demands.

Amargosa Pine Growers Introduces Water-Consconscious Eldarica Pines



Drought-Tolerant Evergreens
Combine Beauty and Practicality

The high desert between Las Vegas and Tonopah seems like the last place to look for a pine forest, but pine trees are now thriving there because one pioneering company had the vision to "think outside the box" when imagining uses for the property it owned. In the late 1990s Stephen Pingree began buying parcels of land in the Amargosa Valley northwest of Las Vegas as an investment, and soon discovered that water rights were at least as valuable as the land. His company, Farm Road LLC, amassed more than 300 acres of land, together with wells and water rights.

Because the Nevada Division of Water Resources requires owners of water rights to use the water in order to maintain ownership, Pingree began researching creative ways to make the most of his property. He eventually made a discovery that would prove beneficial to all Southern Nevadans in the current water crisis. He founded Amargosa Pine Growers in 1997 to grow and market Eldarica Pine trees, which are native to the region around Afghanistan. Like our own high desert, their native land is subject to extreme temperatures, high winds, dry climate and poor soil.

Most importantly, Eldarica Pine trees need very little water to thrive, which makes them especially important in light of Southern Nevada's current drought. Commercial developers in the region are turning to trees such as Eldaricas to allow them to feature lush landscapes without taxing Nevada's limited water supply. "We're incredibly proud of the water savings people gain from our Eldarica Pines. They're really an amazing decorative tree providing shade, privacy and a lush green environment. We're happy to supply them to Nevadans," said Pingree.

Eldarica Pines thrive in most all of the soils found in Clark County, and examples may be seen at many regional golf courses and along roads and highway medians, in-

cluding Summerlin Parkway. Eldarica Pines, which are good growers, can quickly offer shade as well as water savings, and a few Eldaricas can form the backbone of any desert landscape plan. Eldarica Pines can grow to a height of 30 to 60 feet, with a span of 25 to 40 feet at full maturity.

Pingree is quick to point out the environmental benefits of planting Eldarica pines, which absorb carbon dioxide and other gases from the atmosphere while emitting fresh oxygen. One acre of Eldarica Pines absorbs five tons of carbon dioxide from the atmosphere and provides enough oxygen for 18 people.

More than 56,000 pine trees in various growth stages are now developing on land owned by Amargosa Pine Growers, supplied by water from local wells. Locally-grown trees offer many advantages, according to Pingree's partner, Alan Hinman, an agricultural economist who serves as the company's operations chief. Grown in local soil and conditions, the trees can be taken from the ground and transported to a new location within 24 hours, and can adapt more easily to their new home than trees brought in from out-of-state growers. Pingree estimates between 5 and 10 percent of pine trees brought in from other states die because of the stresses of transport and transplanting.

Since the tree farm is only 100 miles from Las Vegas, its proximity gives potential clients – which include developers, municipal officials, landscape architects and contractors – an opportunity to tour the farm and get a first-hand look at the trees' progress. "You can even pick out the trees you want and we'll earmark them for you," volunteered Pingree.

The first Eldarica Pines from Amargosa Farms will be available for commercial use in the fall of 2005. "Because we own the land and the water, we will be able to price our trees competitively," Pingree stated. "Growing these trees is a win-win project

for our company, as well as for Southern Nevadans concerned about conserving water during the drought and improving the environment."

Desert-Hardy Characteristics

- Amargosa Pine Growers is the exclusive grower of desert-hardy Eldarica Pine trees in Nevada.
- Eldarica Pines are ideal trees for the southwestern United States due to their desert-hardy characteristics, including heat, wind and drought tolerance.
- Eldarica Pines are disease and pest resistant.
- Eldarica Pines are green year-round.
- Eldarica Pines are ideal for highway medians, screening sun and wind and providing privacy at homes.
- Eldarica Pines can grow in a variety of soils, including but not limited to, acidic, alkaline, loamy, clay, sandy and well-drained.
- Eldarica Pines grow to heights ranging from 30 to 60 feet with a spread of 25 to 40 feet at full maturity.
- Eldarica Pines require very little maintenance.
- Eldarica Pines have an upright, pyramidal shape with a moderate growth rate.
- Eldarica Pines give off a mild and fresh fragrance.



amargosa
PINE GROWERS

For more detailed information on Eldarica Pines, contact Amargosa Pine Growers at (888)599-5911.
www.amargosapinegrowers.com

KEY ACCOMPLISHMENTS & RESOURCE ISSUES

Among the most substantial achievements by the SNWA in recent years was the expansion of existing Southern Nevada Water System (SNWS) treatment and delivery facilities for Southern Nevada, which increased the amount of water treated and delivered daily from 480 million gallons in 1997 to 600 million gallons in 1999. Today, the SNWS has a treatment and delivery capacity of approximately 750 million gallons per day. Upon the completion of a River Mountains Water Treatment Facility expansion scheduled for 2005, the SNWS will be able to treat and deliver up to 900 million gallons per day.

Concurrent with these infrastructure improvements, the SNWA launched a series of efforts to secure additional, long-term water supplies to serve Southern Nevada.

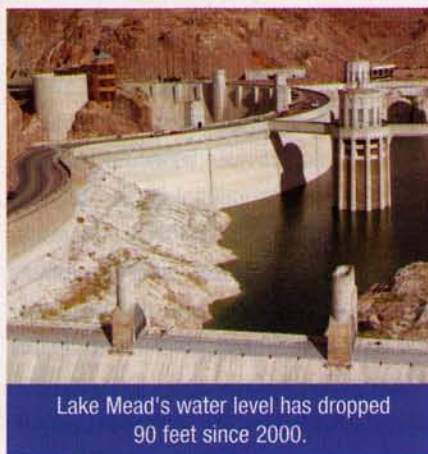
Arizona Water Bank

One of these initial efforts was a water-banking project conducted in association with the State of Arizona. This project traces its roots to 1993, when the SNWA stored 50,000 acre-feet of water through a Central Arizona Water Conservation District demonstration project. Three years later, Arizona expanded its recharge and banking efforts when the state created and funded the Arizona Water Banking Authority. Today, the SNWA has stored more than 100,000 acre-feet of water in the Arizona Water Bank, with a maximum capacity of 1.25 million acre-feet.

Southern Nevada Groundwater Bank

Within the Las Vegas Valley groundwater basin, the LVWD and the City of North Las Vegas use a well-injection network to recharge unused Colorado River water into the primary aquifer during the winter months. Since the program began in 1987, Southern Nevada has stored about 275,000 acre-feet of water in the local groundwater basin for future use.

In addition, the SNWA performs recharge on behalf of the Las Vegas Valley Ground-



Lake Mead's water level has dropped 90 feet since 2000.

water Management Program. This recharge is not intended for recovery by the SNWA purveyor members, but to assist in managing the groundwater aquifer for the benefit of well users. As of 2002, the SNWA provided 5,000 acre-feet of recharge under this program.

Las Vegas Valley Groundwater Management Program

The SNWA launched another major initiative in 1996, when it began working with local well users and the Nevada State En-

gineer to address groundwater management in Southern Nevada. The Nevada Legislature created the Las Vegas Valley Groundwater Management Program to help protect the Las Vegas Valley groundwater basin from over-drafting and potential sources of contamination. Additionally, the program called for an inventory of all wells in Southern Nevada, a cost-benefit analysis of permanent recharge, increased education of groundwater users and development of well-conversion and permanent-recharge programs to benefit existing and future well users. The SNWA manages this groundwater program.

Return Flow Credits

Southern Nevada's allocation from the Colorado River is based on "net" or "consumptive" use. This regulatory framework allows Nevada to withdraw more than 300,000 acre-feet of Lake Mead water on the condition that it returns sufficient water to stay within its consumptive-use allocation. This is accomplished by treating

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Southern Nevada's wastewater to state and federal standards, then returning the reclaimed water to Lake Mead.

Called "return flow credits," this system provided Southern Nevada with about 150,000 additional acre-feet of water in 2003. In short, it means the water used inside Southern Nevada's homes, businesses and resorts has virtually no effect on the community's water resources. Only water that the sanitary sewer system does not capture — primarily landscape irrigation water — counts against Nevada's allocation.

Water Resource Plans

In 1996, the SNWA adopted a Water Resource Plan, which is reviewed annually and modified as needed to reflect the ever-evolving water resource picture for Southern Nevada. Since the plan's inception, updates to the SNWA's Water Resource Plan have been primarily related to increased water demands, landmark changes in rules, and agreements or other factors affecting the use of Colorado River water — such as the current drought. The SNWA reviews the plan annually and adopts revisions as needed.

Interim Surplus Guidelines

The Colorado River Compact of the 1920s allocated California 4.4 million acre-feet per year of river water (in contrast, Nevada's annual allotment is 300,000 acre-feet). However, California, under existing federal regulations, routinely came to use far more than its basic allocation, raising concerns among other states in the Colorado River Basin about the long-term prospects of their own allotments. To address this issue, California and the other basin states in the early 1990s began exploring proposals that would reduce California's Colorado River water use without endangering its economy or residents.

Years of discussion resulted in a proposal that would allow California a fixed period of time to reduce its river water consumption, while providing Nevada and Arizona with the opportunity to access temporary surplus Colorado River water to meet their respective near-term demands. In January 2001, the Secretary of the Interior approved guidelines for this proposal, known as "interim surplus."

Because the Colorado River's flows vary

dramatically from year to year, it is impossible to know in which future years a surplus will occur and what, if any, flows will be available to Southern Nevada. The Interim Surplus Guidelines define specific reservoir conditions through 2016, under which surplus water would be available to Southern Nevada and other states in the lower Colorado River Basin.

THE DROUGHT AND THE COMMUNITY'S RESPONSE

The conditions that began in 1999 soon evolved into the worst drought in the basin's recorded history. Because of the drought, water levels at Lake Mead have dropped approximately 90 feet. As of September 2004, the total storage capacities of Lake Mead and Lake Powell were 54 percent and 38 percent, respectively.

Responding to the drought, the SNWA Board of Directors in early 2003 approved a regional drought plan, which the SNWA's member agencies subsequently approved. The drought plan has various stages and conservation measures, with each stage determined by river conditions and the community's response.

Residents and businesses in Southern Nevada in recent years have heeded the SNWA's call to conserve water through a series of programs that are yielding significant results.

Water Smart Landscapes

One of the SNWA's most successful water conservation efforts is the Water Smart Landscapes rebate program, which rewards customers with a \$1 rebate for each square foot of turf they replace with drought-tolerant landscaping. Since the inception of the Water Smart Landscapes program in late 1999, Southern Nevada residents and businesses have responded by replacing more than 41 million square feet of grass — equivalent to 681 football fields — resulting in savings of more than 2 billion gallons of water.

New Building Codes

Recently adopted building codes are enhancing the SNWA's water conserva-



Water Smart landscaping can be beautiful while conserving precious water.

tion efforts as well. Implemented by city and county governments, these codes prohibit grass at new businesses, prohibit grassy front yards at new homes in favor of Water Smart landscaping, and limit turf to 50 percent or less of the landscapable area of new side or back yards. This dramatically reduces the impact of new homes and businesses on the community's water resources by decreasing their "consumptive" use.

Drought Watering Restrictions

In addition to the building code changes, city and county governments have adopted other restrictions to help curb water use during the drought. Among these are landscape watering restrictions, which permit drip irrigation any day of the week, but assign customers to mandatory watering groups limiting the days of the week when they may operate lawn sprinklers. Customers using sprinklers on days other than on those assigned to them could face water-waste fees.

The Net Result

These and other programs are resulting in impressive water savings. In 2002, Southern Nevada consumed 325,000 acre-feet of Colorado River water, above its basic allotment but permitted under the Interim Surplus Guidelines. However, in 2003, that total dropped to approximately 270,000 acre-feet, despite the addition of approximately 70,000 new residents. At the current pace, the SNWA is estimating the region's water use for 2004 will be even less than in 2003. Because of these savings, the SNWA intends to store conserved water in the water banks, allowing the region to expand its already formidable reserves for future and ongoing drought protection.

However, even with the success of these programs, the SNWA is exploring available options within Nevada's boundaries that are not dependent on the Colorado River.

IN-STATE WATER RESOURCES

To insulate itself from future droughts and to augment Southern Nevada's Colorado River allotment, the SNWA is moving forward with three in-state resource projects stemming from water rights applications filed in 1989 for groundwater in Clark, Lincoln, Nye and White Pine counties and for surface water from the Virgin and Muddy rivers.

Presently, the SNWA has groundwater rights in: Three Lakes Valley, in northwestern Clark County; surface water from the Muddy and Virgin rivers in northeastern Clark County, to which the SNWA already has rights; and groundwater in Clark, Lincoln, and White Pine counties.

Virgin and Muddy Rivers

The SNWA holds surface-water rights on both the Muddy and Virgin rivers that could provide 120,000 acre-feet of water annually to Southern Nevada (7,000 acre-feet from the Muddy and 113,000 acre-feet from the Virgin). The surface water devel-



Southern Nevada
Water Authority

FOR MORE INFORMATION:
702-258-3930 or 1-866-300-5600
www.snwa.com

PREPARING FOR A SUSTAINABLE NEVADA

The Southern Nevada Water Authority is taking measures toward developing non-Colorado River water resources. As it moves forward, the Water Authority is committed to working with rural Nevada communities to make sure their way of life and environment are preserved. Moreover, the proposed projects could also provide the communities of origin access to water supplies and infrastructure for their own needs.

While concern for the environment and pre-existing water rights has been expressed, federal regulations and Nevada state water law provide protections related to water rights holders and sensitive environmental resources. The Water Authority is committed to an open process and to complying with these laws.

Although the SNWA does not have the authority to limit the number of people who move to the region, it can and does affect how much water they use. Strict landscaping codes, combined with one of the country's most aggressive and comprehensive water conservation programs, have both dramatically reduced the impact of growth on the water supply and decreased water use among existing residents.

For instance, businesses and citizens have voluntarily removed approximately 43 million square feet of grass during the past few years, saving billions of gallons of water each year. Additionally, thanks to the landscaping code changes, watering schedules and strict enforcement of water waste rules, the community used about 16 billion gallons less water last year than it did in 2002 despite the addition of approximately 70,000 new residents.

The Water Authority embraces responsible water resource development and is firmly committed to working with federal, state and local interests to meet the long-term water needs of Southern Nevada while respecting the needs of all its neighbors.

We invite you to learn more about *Preparing for a Sustainable Nevada*:

INTEGRATED WATER PLANNING ADVISORY COMMITTEE MEETING

Monday, Nov. 22, 2004 from 4 to 6 p.m.

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Broadcast live on www.snwa.com

opment project will involve a delivery method that will be determined based on a variety of environmental and operational factors. The SNWA is committed to responsible environmental practices, and will comply with all applicable state and federal regulations.

Three Lakes Valley

In Clark County, the SNWA is planning to convey groundwater from production wells in the Three Lakes Valley, based on water right applications filed with the Nevada State Engineer in 1989. The SNWA hopes to accomplish this via pipeline and transmission facilities planned within an existing utility corridor, thus minimizing environmental impacts and increasing delivery efficiency from this area.

The SNWA in May 2003 submitted a report detailing the results of hydrologic investigations in these groundwater basins to the Nevada State Engineer, in support of the applications. Pending receipt of state and necessary environmental approvals, the SNWA is planning to drill monitoring wells in the near future to further characterize the hydrology of these basins.

Lincoln and White Pine Counties

Within neighboring rural counties are numerous groundwater aquifers. Studies indicate there is sufficient water to serve rural communities and existing water-rights holders in those counties, while maintaining the hydrologic needs of the environment and supplementing Southern Nevada's water resources.

In 2003, the SNWA reached an agreement with Lincoln County that resolved longstanding conflicts over the SNWA's applications for groundwater there. Under terms of the agreement, the SNWA's applications are divided into three categories: Category I basins are allocated to the SNWA and/or the LVVWD; Category II basins are allocated to Lincoln County; and Category III basins are shared, where Lincoln County is entitled to the first 3,000 acre-feet per year of any water granted in each of the basins. The agreement also established a coopera-

For more than a decade, the SNWA has committed its energy and resources to continue providing the region with a safe, steady supply of water.

tive relationship between Lincoln County, the LVVWD and SNWA that will include sharing of resources and data during the development of groundwater in eastern and central Nevada.

In August 2004, the SNWA submitted applications to the federal Bureau of Land Management to build wells and pipelines along rights-of-way in Lincoln and White Pine counties. This action sets in motion an environmental evaluation and review process for the project. It is important to understand that this project must comply with National Environmental Policy Act requirements and other regulations. Additionally, only those water rights granted by the Nevada State Engineer will be available for the SNWA's use.

COMMUNITY OUTREACH

In June 2004, the SNWA Board of Directors authorized formation of an important element of this program, the Integrated Water Planning Advisory Committee (IWPAC). This 29-member panel includes: various stakeholders in Clark, Lincoln, Nye and White Pine counties, and members representing Boulder City, Henderson, Las Vegas, North Las Vegas and unincorporated Clark County; the Virgin Valley and Moapa Valley water districts; environmental organizations; businesses; unions; gaming; the development industry; and ex officio members representing the Nevada Colorado River Commission, the State Legislative Committee on Public Lands and the Office of the Governor.

Created to develop recommendations for the SNWA concerning how to integrate in-state water resources with other portfolio options and facilities, the IWPAC held its first meeting Aug. 30, 2004. Each IWPAC

meeting is open to the public and is subject to the Nevada Open Meeting Law. Public comment is expected and encouraged at each meeting, as is the free-flow give-and-take of ideas and opinions among members of the IWPAC.

Although not required by law, as a courtesy, the SNWA has broadcast these meetings live in Alamo, Baker, Ely, Logandale, Lund, Pahrump and Panaca to provide audiences in those communities access to the proceedings. Meetings also are broadcast live on www.snwa.com. The IWPAC is expected to meet monthly for 15 to 18 months.

Among the issues the IWPAC will tackle are: effects of the drought on water facilities; resource planning, including demand forecasting, flexibility and reliability needs; conservation and drought response; Nevada water law and state and federal environmental processes; all three major in-state water resources, including the Muddy and Virgin rivers, Three Lakes Valley, and Clark, Lincoln and White Pine county groundwater; water re-use; and funding. The IWPAC expects to make recommendations on these issues to the SNWA Board of Directors.

LOOKING FORWARD

For more than a decade, the SNWA has committed its energy and resources to continue providing the region with a safe, steady supply of water. It has accomplished this through a variety of agreements with neighboring states, as well as efforts to secure much-needed water rights within Nevada's borders.

With the drought continuing unabated, the SNWA is accelerating its efforts to utilize its diverse array of in-state, non-Colorado River water resources, to serve not only the residents and businesses of Southern Nevada, but also to provide long-term benefits in neighboring counties that serve as the source of that water.

The sources are out there – the SNWA is working to secure them, not only to help relieve pressure from the current drought, but also to benefit Nevada's brilliant future. 🌵

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Southern Nevada Water Authority member agencies: Big Bend Water District; the cities of Boulder City, Henderson, Las Vegas and North Las Vegas; the Clark County Water Reclamation District and the Las Vegas Valley Water District.